Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Pall Corporation Site
Operable Unit No. 1
Surface and Shallow Subsurface Contamination
City of Glen Cove, Nassau County, New York
Site Number 1-30-053B

March 2004

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

DECLARATION STATEMENT - RECORD OF DECISION

Pall Corporation Inactive Hazardous Waste Disposal Site
Operable Unit No. 1 - Surface and Shallow Subsurface Contamination
City of Glen Cove, Nassau County, New York
Site No. 1-30-053B

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit 1 of the Pall Corporation 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 1 of the Pall Corporation 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 Pall Corporation site and the criteria identified for evaluation of alternatives, the NYSDEC has selected in-situ chemical oxidation to remediate Operable Unit 1 of the site. The components of the remedy are as follows:

- A remedial design program, including pilot tests, will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
- Installation of additional on-site and off-site injection wells to actively treat the contaminated groundwater.
- Injection of a chemical oxidant into the injection wells to destroy groundwater contaminants.

- Remediation of contaminated soil by excavation and off-site disposal or in-situ chemical oxidation.

- The operation of the remedy will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable.

- Development of a site management plan to: (a) address residual contaminated soils that may be excavated from the site during future redevelopment; (b) evaluate the potential for vapor intrusion for any buildings developed on the site and above the contaminant plume, including provision for mitigation of any impacts identified; and (c) limit the property use to commercial or industrial.

- Imposition of an institutional control in form of an environmental easement that will: (a) require compliance with the approved site management plan, (b) limit the use and development of the property to commercial or industrial uses only; (c) restrict 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; and, (d) require the property owner to complete and submit to the NYSDEC an annual certification.

- The property owner will provide an annual certification, which will certify that the institutional controls and engineering controls put in place, are unchanged from the previous certification and nothing has occurred that impairs the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or site management plan.

- Since the remedy will result in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted.

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 2004

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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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 Pall Corporation ("Pall") Site - Operable Unit (OU) 1. OU1 includes on-site and off-site surface and shallow subsurface contamination. In this Record of Decision (ROD), shallow subsurface contamination is defined as all contamination within 60 feet of the ground surface. 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, discarding of solvents and Freon from previous industrial operations have resulted in the disposal of hazardous wastes, including volatile organic compounds (VOCs). These wastes have contaminated the soil, groundwater, surface water and aquatic sediment at the site, and have resulted in:

- a significant threat to human health associated with this site's contravention of groundwater standards in a sole source aquifer.

- a significant environmental threat associated with the impacts of contaminants to a sole source aquifer.

To eliminate or mitigate these threats, the NYSDEC has selected in-situ chemical oxidation to remediate the site. The remedy includes the following elements:

- A remedial design program, including pilot tests, will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

- Installation of additional on-site and off-site injection wells to actively treat the contaminated groundwater.

- Injection of a chemical oxidant into the injection wells to destroy groundwater contaminants.

- Remediation of contaminated soil by excavation and off-site disposal or in-situ chemical oxidation.

- The operation of the remedy will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is technically impracticable.

- Development of a site management plan to: (a) address residual contaminated soils that may be excavated from the site during future redevelopment; (b) evaluate the potential for vapor intrusion for any buildings developed on the site and above the contaminant plume, including provision for mitigation of any impacts identified; and (c) limit the property use to commercial or industrial.

- Imposition of an institutional control in form of an environmental easement that will: (a) require compliance with the approved site management plan, (b) limit the use and development of the property to commercial or industrial uses only; (c) restrict 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; and, (d) require the property owner to complete and submit to the NYSDEC an annual certification.

- The property owner will provide an annual certification, which will certify that the institutional controls and engineering controls put in place, are unchanged from the previous certification and nothing has occurred that impairs the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or site management plan.

- Since the remedy will result in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted.

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 Pall site is located at 30-36 Sea Cliff Avenue in the City of Glen Cove, Nassau County. The site is situated on the north side of Sea Cliff Avenue and is approximately 4.6 acres in size. Glen Cove Creek forms the western property border. See Figure 1 for a site location map.

The Pall site contains two industrial buildings. The 30 Sea Cliff Avenue building is currently unoccupied. August Thomsen, a pastry bag manufacturer, currently occupies the building at 36 Sea Cliff Avenue. The rest of the site is almost entirely paved with asphalt. See Figure 2 for a site map.

Residential, commercial and industrial properties are located in the vicinity of the Pall site. A day care center borders the Pall site on the north. Adjacent to the day care center is the inactive Carney Street public water supply well field. One well at the well field is still viable for potable use and is 168 feet deep. This well has been out of service since 1978.

Two other inactive hazardous waste disposal sites are adjacent to the Pall site. The Photocircuits Corporation ("Photocircuits") site (site no. 1-30-009) is located southeast of the Pall site. The Pass and Seymour site (site no. 1-30-053A) is located southwest of the Pall site. The Photocircuits and Pass and Seymour sites are across Sea Cliff Avenue from the Pall site. As the groundwater flow direction at the Pall site is north-northwest, the Photocircuits site is hydraulically upgradient of the Pall site.

Operable Unit (OU) No. 1, which is the subject of this ROD, consists of on-site and off-site surface and shallow subsurface contamination. In this ROD, shallow subsurface contamination is defined as all contamination within 60 feet of the ground surface. 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 deep groundwater contamination. As detailed in Section 5, some of the groundwater contamination beneath the Pall site originated at the Photocircuits site.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The building at 30 Sea Cliff Avenue was constructed in 1918 and was used as an ice house. In 1953, Pall Corporation purchased and occupied the building until 1999. In 1958, Pall Corporation constructed the building at 36 Sea Cliff Avenue and occupied the building until 1971, when Pall Corporation sold the building to August Thomsen.

Pall Corporation used both industrial buildings in manufacturing filtration products. Nassau County industrial chemical profiles indicate that Pall Corporation used tetrachloroethylene (PCE) and trichloroethylene (TCE) at the site. PCE and TCE were found in the unsaturated soils beneath the Pall site. As these chemicals are not naturally occurring, their presence in the soil beneath the Pall site is evidence of past disposal. Nassau County records also indicate that Pall Corporation used Freon at the site, which was found in on-site groundwater samples.

3.2: Remedial History

In 1996, the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). 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. As detailed in the remainder of this section, the site was listed in the Registry because:

- Pall Corporation used PCE and TCE at the site;
- Soils beneath the site contained PCE and TCE, indicating past disposal;

- Groundwater beneath the site contained TCE, PCE and other VOCs exceeding New York State groundwater standards; and

- On-site VOC concentrations in groundwater were significantly higher than VOC levels at the upgradient edge of the site.

The listing of the site was based on past investigations of the site and surrounding area. In the late 1970's, VOCs were discovered in the water pumped from the Carney Street public water supply wells. These wells are northwest and downgradient of the Pall and Photocircuits sites. The three wells have been out of service since 1978. According to an engineering report prepared for the City of Glen Cove in November 2000, two of the three wells have been abandoned and cannot be redeveloped. The third well is 168 feet deep and has an approved capacity of 1,400 gallons-per-minute (gpm). However, drinking water cannot be provided to the public without meeting New York State drinking water standards.

In 1990, Nassau County published the results of an investigation of groundwater contamination in the vicinity of the Pall site. The document was entitled, "Investigation of Contaminated Aquifer Segment, City of Glen Cove, Nassau County." Although no monitoring wells were installed on the Pall site during the study, a pair of monitoring wells was installed at the Carney Street well field. Maximum concentrations of PCE, TCE, and 1,2 dichloroethylene (DCE) in these wells were 3,700 parts-per-billion (ppb), 500 ppb, and 1,300 ppb. The New York State groundwater standard for each of these contaminants is 5 ppb.

The report also summarized data from groundwater samples obtained from the Carney Street public wells after the well field was closed. Maximum TCE concentrations during 1977-1980, 1981-1984, and 1985-1988 were 300 ppb, 380 ppb and 690 ppb, respectively. Maximum PCE concentrations during 1977-1980, 1981-1984, and 1985-1988 were 375 ppb, 64 ppb and 46 ppb, respectively.

In 1994, the Nassau County Department of Public Works submitted a Preliminary Site Assessment (PSA) to the NYSDEC for the Sea Cliff Industrial Area. This PSA evaluated several properties, including the Pall site. As several previous studies had already collected environmental data, the PSA relied on data from these past studies rather than collecting new data. For the Pall site, the PSA evaluated data collected in a report prepared in 1992 for the Photocircuits Corporation entitled, "Source Area Investigation, Sea Cliff Industrial Area, Glen Cove, New York".

The PSA report presented analytical results from soil and groundwater samples taken at the Pall site. The maximum total xylenes concentration in on-site soils were 4.4 parts-per-million (ppm), exceeding the NYSDEC guidance value of 1.2 ppm. Maximum PCE and TCE levels in on-site soils were 1.0 ppm and 0.040 ppm, respectively. Although the PCE and TCE concentrations in the PSA did not exceed NYSDEC guidance values, their presence in the soil is evidence of past disposal.

The PSA also evaluated the results of on-site groundwater sampling. Maximum PCE, TCE and 1,2-DCE concentrations were 880 ppb, 1,600 ppb and 3,400 ppb, respectively. These concentrations

exceed New York State groundwater standards. A monitoring well at the upgradient edge of the site had TCE and 1,2-DCE levels of 12 ppb, and 25 ppb, respectively.

After the site was listed, Pall Corporation sued the NYSDEC to remove the site from the Registry. The NYSDEC successfully defended the lawsuit.

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 Pall Corporation entered into a Consent Order covering on-site contamination on March 1, 1999. The Order obligates the responsible party to implement an RI/FS remedial program. The NYSDEC will approach the PRPs to implement the selected remedy under an Order on Consent.

SECTION 5: SITE CONTAMINATION

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

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between February 1998 and July 2000. The field activities and findings of the investigation are described in the RI report. Additional investigations were performed after the RI report was finalized. The results of these investigations were reported in the October 2001 Feasibility Study Report and the October 2003 Phase I Pilot Test Report.

The following activities were conducted during the RI:

- Research of historical information;
- Installation of 97 soil borings and 32 monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions;
- Sampling of 51 new and existing monitoring wells;
- Collection of approximately 116 discrete groundwater samples using a direct push technique;
- A survey of public and private water supply wells in the area around the site;
- Collection of three surface water samples;

- Collection of three aquatic sediment samples;

- Collection of three indoor air samples. The NYSDOH collected and analyzed the air samples.

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

- Groundwater, drinking water, and surface water SCGs are based on 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".

- Sediment SCGs are based on the NYSDEC "Technical Guidance for Screening Contaminated Sediments."

- The air SCG for PCE is based on the NYSDOH "Tetrachloroethene (PERC) in Indoor and Outdoor Air Fact Sheet."

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

Three geologic units underlie the site: the upper glacial aquifer, the Port Washington aquifer and the Lloyd aquifer. The upper glacial aquifer is directly beneath the surface and ranges from 260-440 feet thick in the vicinity of the site. The upper zone of this aquifer consists of sandy and silty till deposits. The lower zone consists of sand, gravel and discontinuous silt and clay lenses.

All subsurface samples collected during the RI were from the upper glacial aquifer. The groundwater contamination included in this operable unit is also entirely within the upper glacial aquifer. Soil sampling indicates that the subsurface is mostly sand mixed with gravel, silt and/or clay. However, some discontinuous clay layers were found at the site. These clay layers do not appear to have appreciably influenced the flow of contaminants. Groundwater at the site was encountered from 2-6 feet below ground surface (bgs) and generally flows north-northwest.

The other two deeper aquifers were not investigated during the RI. The Port Washington aquifer is 50-200 feet thick and consists of sand with some silt, clay and sandy clay lenses. The Lloyd aquifer is beneath the Port Washington aquifer and is 0-550 feet thick. The Lloyd aquifer contains fine to

coarse sand and gravel with a clayey matrix with some layers of silty or solid clay. Bedrock underlies the Lloyd aquifer.

5.1.2: Nature of Contamination

As described in the RI report, many soil, groundwater, indoor air, surface water and sediment 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 VOCs.

The VOCs of concern are chlorinated solvents such as tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE), vinyl chloride (VC), trichloroethane (TCA) and dichloroethane (DCA). TCE, DCE and VC are breakdown products of PCE. DCA is a breakdown product of TCA. 1,1,2-trichlorotrifluoroethane (Freon-113) is also a VOC of concern. Other VOCs of concern are acetone, 2-pentanone, bromoform and gasoline constituents such as benzene, toluene, ethylbenzene and xylene.

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 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 soil, sediment, indoor air, groundwater and surface water 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.

Subsurface Soil

Soil samples were obtained at the Pall site in two phases. During the Phase 1 RI, maximum concentrations of PCE, TCE and DCE were 0.7 ppm, 0.029 ppm and 0.048 ppm, respectively. These levels were all below SCGs. Xylenes were detected at a maximum level of 2.3 ppm, which exceed the SCG of 1.2 ppm. Benzene (0.082 ppm) also exceeded the SCG of 0.060 ppm at one location. No SCGs were exceeded in any other Phase 1 soil samples, including the three samples obtained beneath the floor of the 30 Sea Cliff Avenue building. Refer to the Phase 1 RI Report for the locations of the Phase 1 soil samples.

Additional soil samples were obtained during the Phase 2 RI, as shown on Figures 3 through 5. Please note that the sampling data in these figures are expressed in micrograms per kilogram ($\mu g/kg$), which is equivalent to parts-per-billion (ppb). To convert the chemical concentrations on these figures to ppm, divide the chemical concentrations on the figures by 1,000. As shown on Figure 4, PCE (950 ppm), TCE (19 ppm), 1,2-DCE (4.124 ppm) and 1,1,1-TCA (0.98 ppm) exceeded their

SCGs of 1.4 ppm, 0.7 ppm, 0.3 ppm and 0.8 ppm, respectively, at boring 5-SB-15. These contaminant levels were the maximum concentrations found at the site. As shown on Figures 4 and 5, several soil samples were taken near boring 5-SB-15 to delineate the extent of soil contamination. The sampling results indicate that the areal extent of the soil contamination was limited to within 30 feet of 5-SB-15.

Phase 2 soil sampling results also exceeded SCGs at three other locations at the site. At two of these locations (SB-5 and SB-7), adjacent sampling results indicated that the areal extent of the soil contamination is limited to within 15 feet of the sample. Also, the contaminant levels at these two locations are 100 times less than the contaminant levels at 5-SB-15. The third sample, SB-1, was below the water table and will be more efficiently remediated by a comprehensive groundwater contamination remedy. Therefore, no soil remediation is will be conducted for the contamination at SB-1, SB-5 and SB-7.

Sediments

During the Phase 1 RI, three sediment samples were obtained from Glen Cove Creek on the west side of the Pall site. The creek flows from southeast to northwest. No VOCs were detected in the upstream and midstream sediment samples. However, PCE (2.1 ppm) and TCE (0.1 ppm) exceeded their SCGs of 0.0034 ppm and 0.0085 ppm, respectively, in the downstream sample (SED-3R). Refer to the Phase 1 RI Report for the locations of the sediment samples.

The SCGs that the sediment sample exceeded are based on human consumption of fish. It is very unlikely that this portion of the creek could support a fish population, as the creek flows underground after leaving the industrial area. Thus, human consumption of fish is very unlikely. Therefore, the contaminated sediment is not considered a threat to human health or the environment and does not require remediation.

Shallow Groundwater

The operable unit for this ROD, OU1, includes shallow groundwater contamination. The shallow groundwater interval for the purposes of this ROD is from 0-60 feet bgs. Although this subsection distinguishes between shallow (water table) and intermediate (45-60 feet bgs) contamination, all contamination above 60 feet bgs is covered by this ROD.

Five rounds of groundwater sampling were conducted prior to the groundwater remediation pilot test (see Section 5.2). In general, the highest site-related groundwater concentrations were detected at the north end of the site. Upgradient concentrations were near or below SCGs at shallow depths but increased with depth. Table 2 compares on-site VOC concentrations with upgradient levels for the Phase 2 RI, FS, and baseline samples for the groundwater pilot test.

During the Phase1 RI, groundwater samples were obtained in February and March 1998 from direct push borings and existing monitoring wells. Refer to the Phase 1 RI Report for the locations of the groundwater samples. Sampling depths for the direct push borings ranged from 8-68 feet bgs. The

highest VOC concentrations were in the shallow groundwater at the north (downgradient) end of the site. The maximum on-site PCE, TCE, 1,2-DCE and VC concentrations were 140,000 ppb, 9,600 ppb, 15,000 ppb, and 1,000 ppb, respectively. The SCG for PCE, TCE and 1,2-DCE in groundwater is 5 ppb. The SCG for VC in groundwater is 2 ppb.

Several groundwater samples were taken at the upgradient edge of the site during the Phase1 RI. Shallow samples (6-13 feet bgs) were below SCGs, but several intermediate depth samples exceeded SCGs. The highest PCE, TCE, and 1,2-DCE levels at the upgradient edge of the site were 36 ppb, 81 ppb, and 300 ppb, respectively.

In April 1999, Pall Corporation's consultant installed several new monitoring wells and obtained samples from existing and new wells. Figures 6 and 7 show the results of the shallow and intermediate groundwater sampling. Some of the wells shown on these figures were not installed until after this round of sampling; therefore, no test results are listed for these wells. In general, on-site shallow and intermediate wells are 5-15 feet bgs and 45-55 feet bgs. Please keep in mind that although this operable unit addresses "shallow" groundwater contamination, the operable unit includes all groundwater contamination to 60 feet bgs.

In April 1999, the highest concentrations in the shallow groundwater were near the north (downgradient) end of the site. Maximum on-site PCE, TCE, 1,2-DCE and VC concentrations were 200 ppb, 230 ppb, 3,657 ppb, and 250 ppb, respectively. Although not on the analyte list during this round of sampling, Freon-113 was detected as a tentatively identified compound (TIC) in some samples with a maximum level of 480 ppb. This level exceeds the SCG of 5 ppb. Of the three wells at the upgradient edge of the site, 1,2-DCE (10 ppb) exceeded its SCG in one well. No other VOCs exceeded their SCGs in the shallow wells at the upgradient edge of the site.

Although the shallow wells at the upgradient edge of the site had low levels of VOC contamination in April 1999, the highest intermediate VOC concentrations were in MW-6P, located on the upgradient edge of the site. This well had total VOC, 1,2-DCE and TCE levels of 1,330 ppb, 924 ppb, and 150 ppb, respectively. In comparison, highest total VOC level found at the downgradient edge of the site was 614 ppb. Freon-113 was found on-site as a TIC at 470 ppb, but was not found in any upgradient sample.

To determine the extent of off-site groundwater contamination, direct-push samples were obtained in April 1999 and monitoring wells were sampled in May 1999. Five direct push borings were installed in the area directly north of the site, which includes the day care center and the inactive public water supply well field. Shallow (9-10 feet bgs) and intermediate (55 feet bgs) samples were taken from each boring. Figure 8 shows the locations of the borings along with the sampling results. Chlorinated solvents (i.e., PCE, TCA and their breakdown products) exceeding SCGs were found in the shallow and intermediate depths for all five borings, with a maximum chlorinated solvent concentration of 2,950 ppb. In addition, benzene, toluene, ethylbenzene and xylene (BTEX) were detected at a maximum total concentration of 4,600 ppb. BTEX compounds are typically found in petroleum. Although BTEX compounds exceeded SCGs in some of the on-site soil samples, on-site BTEX groundwater concentrations did not exceed 36 ppb.

In May 1999, existing off-site groundwater monitoring wells were sampled. Figure 9 depicts the sampling results. The shallow well located in the rear of the water district property, GC-3S, had PCE, TCE and 1,2-DCE levels of 340 ppb, 150 ppb and 543 ppb, respectively. In comparison, none of the shallow wells located downgradient of the water district property had total VOC concentrations exceeding 50 ppb.

Three additional rounds of groundwater samples were obtained before the groundwater remediation pilot test occurred (see Section 5.2). All three rounds of data were evaluated in determining the nature and extent of contamination. As the results of the three sampling events were similar, this ROD will only discuss the December 2000 groundwater samples. Figures 10 and 11 depict the test results for the shallow and intermediate groundwater samples. As Freon-113 was added to the list of analytes, the total VOC results for the December 2000 sampling event should not be compared to the April 1999 sampling results by examining the tables in the FS Report.

In December 2000, the most contaminated shallow wells were at the downgradient (north) end of the site. The maximum PCE, TCE, 1,2-DCE and Freon-113 concentrations in the shallow groundwater were 580 ppb, 1,700 ppb, 1,500 ppb and 1,240 ppb, respectively. In contrast, none of the wells on the upgradient edge of the site exceeded SCGs.

The highest VOC concentrations in the intermediate depth wells were also found at the downgradient edge of the site during the December 2000 sampling event. The maximum PCE, TCE, 1,2-DCE and Freon-113 levels were 1,400 ppb, 770 ppb, 2,400 ppb, and 565 ppb, respectively. The highest upgradient PCE, TCE, and 1,2-DCE levels were 34 ppb, 63 ppb, and 410 ppb, respectively. Freon-113 was not found in the upgradient wells.

Deep Groundwater

Although this ROD does not propose a remedy for deep groundwater contamination, the deep groundwater sampling results are presented to provide a complete account of the site conditions. On-site deep monitoring wells were screened from approximately 90-100 feet bgs.

In April 1999, the highest total VOC levels in the deep groundwater were detected at the downgradient end of the site. The well with the highest VOC levels at the downgradient end of the site (MW-5PD) had total VOC levels of 695 ppb, with 54 ppb of PCE, 270 ppb of TCE and 242 ppb of 1,2-DCE. However, a well on the upgradient edge of the site (MW-6PD), had a total VOC concentration of 431 ppb, with 32 ppb of PCE, 53 ppb of TCE and 222 ppb of 1,2-DCE. The April 1999 groundwater sampling results are depicted on Figure 12.

In December 2000, the highest total VOC levels in the deep wells were in a monitoring well at the upgradient edge of the site (2,228 ppb). This well (MW-6PD) had 130 ppb of TCE, 1,700 ppb of 1,2-DCE, 170 ppb of VC, and 120 ppb of 1,1-DCA. At the downgradient end of the site, the highest total VOC concentration was 1,941 ppb at MW-12PD, including 990 ppb of TCE and 880 ppb of 1,2-DCE. The December 2000 groundwater sampling results are depicted on Figure 13.

Surface Water

Three surface water samples were obtained from Glen Cove Creek during the Phase 1 RI. No VOCs were detected in the upstream and midstream samples. However, PCE, TCE, 1,2-DCE and VC were detected in the downstream sample at 77 ppb, 29 ppb, 28 ppb and 2 ppb, respectively. PCE exceeded its SCG of one (1) ppb. The surface water may be hydraulically connected to the adjacent groundwater, which had high levels of VOCs. Refer to the Phase 1 RI Report for the locations of the surface water samples.

The SCG that the surface water sample exceeded is based on human consumption of fish. It is very unlikely that this portion of the creek could support a fish population, as the creek flows underground after leaving the industrial area. Thus, human consumption of fish is very unlikely. Therefore, the contaminated surface water is not a threat to human health or the environment and does not require remediation.

Air

In June 2002, the NYSDOH obtained air samples at the day care center adjacent to the site. Only Freon-113 was detected in the two samples taken inside the building. Both samples had a Freon-113 concentration of 1.4 $\mu g/m^3$. In the crawl space beneath the day care center, PCE, TCE, 1,2-DCE and Freon-113 levels were 6.6 $\mu g/m^3$, 2.1 $\mu g/m^3$, 5.4 $\mu g/m^3$ and 1.5 $\mu g/m^3$, respectively. One outdoor air sample was collected, and Freon-113 (1.1 $\mu g/m^3$) was the only compound detected. The concentrations of Freon-113 detected inside and outside the building were similar to typical background levels. Of the detected compounds, only PCE has an indoor air SCG. Although the SCG for PCE is 100 $\mu g/m^3$, reasonable and practical actions should be taken to reduce PCE exposure when indoor air levels are above background. PCE did not exceed its SCG in any of the samples and was not detected in any of the samples obtained inside the day care center.

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.

Pall Corporation performed two pilot tests at the site that remediated the on-site soil contamination and some of the on-site groundwater contamination. In August 2000, Pall Corporation installed a soil vapor extraction (SVE) system at the site to remediate some of the soil contamination in the vicinity of boring 5-SB-15. In December 2002, Pall used in-situ chemical oxidation to remediate some of the on-site groundwater contamination.

The SVE system consisted of one vapor extraction well and a vapor treatment system. The extraction well removed the VOCs from the soil by vacuuming the VOC-laden vapor from the pore spaces in the soil. As the vapor-phase VOCs were removed from the pore spaces, additional liquid-phase VOCs vaporized and were vacuumed into the SVE well. The SVE well was installed horizontally at approximately 3 feet bgs. The location of the SVE well is shown on Figure 4.

After the VOC-rich air was vacuumed into the SVE well, the VOCs were removed from the air stream using vapor-phase granulated activated carbon. The treated air was then discharged to the atmosphere.

In January 2002, Pall obtained confirmatory soil samples to evaluate the performance of the SVE system. The soil sample obtained at the most contaminated location had a PCE concentration of 40 ppm. Although the PCE concentration in the confirmatory sample exceeded the SCG, the PCE level decreased 95% from the concentration found during the RI. As Pall turned off the SVE system after receiving the confirmatory sample results, additional soil remediation will be required.

A pilot test was also performed on the on-site shallow groundwater contamination to a depth of 60 feet bgs. The pilot test was performed in November and December of 2002 and consisted of in-situ chemical oxidation using potassium permanganate. A 2% potassium permanganate solution was injected into 10 on-site injection wells. The locations of these wells are shown in Figure 14. Five wells were screened in the shallow zone (5-25 feet bgs) and five wells were screened in the intermediate zone (35-55 feet bgs). The potassium permanganate reacted with organic contaminants to form nontoxic byproducts such as carbon dioxide, manganese dioxide and water. A process schematic is shown on Figure 15.

Groundwater samples were obtained in April 2003 after the pilot test injections. The sampling results are summarized on Figure 1. The injections were more successful in the intermediate depth groundwater (45-60 feet bgs) than in the shallow groundwater (water table). Within the calculated area of influence of the pilot test, maximum post-injection PCE, TCE, DCE and Freon-113 levels at the intermediate depth were 27 ppb, 18 ppb, 19 ppb and 15 ppb, respectively. However, an intermediate depth well downgradient of the zone of influence had 130 ppb of PCE. In the shallow zone, most of the wells within the area of influence were cleaned to near or below SCGs. However, one well within the calculated area of influence still had 330 ppb of PCE, 490 ppb of TCE, 300 ppb of DCE and 580 ppb of Freon-113. In addition, a shallow well downgradient of the zone of influence had 220 ppb of TCE, 270 ppb of DCE and 230 ppb of Freon-113.

The post-injection sampling results show that the pilot test partially remediated the VOC contamination near the injection wells. Additional groundwater remediation will be required.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 6.1 of the Phase 2 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.

Currently, there are no known complete exposure pathways involving contamination from the Pall site. In the past, there was a completed exposure pathway related to the use of water from the City of Glen Cove's Carney Street public water supply wells. This exposure pathway was cut off when the contaminated wells were taken out of service in 1978.

There is no longer a complete exposure pathway involving the public water supply that serves the site and the surrounding area. Even though the site contamination has not impacted any active public water supply wells, the entire public water supply is routinely monitored and treated, if necessary, to ensure that it complies with federal and state drinking water standards.

Potential exposure pathways at the site involve:

- use of contaminated groundwater,
- contact with contaminated soil
- contact with contaminated surface water and sediment in the creek near the site
- consumption of fish from the creek near the site; and
- inhalation of vapors in air.

No one is currently using shallow groundwater at the site for drinking or other uses, but groundwater could be used in the future. Although possible, it is not likely that the contaminated water would be used for drinking because a public water supply serves the surrounding area.

Small areas of contaminated soil remain beneath the parking lot at the site. As the parking lot is paved, employees and visitors at the site would not contact contaminated soil. However, construction workers could be exposed to the contaminated soil if the parking lot is excavated.

Contact with surface water and sediment in the small creek near the site is possible, but it does not appear likely that people are regularly accessing the creek in this industrial area. If there were edible fish in the creek, human consumption of fish could lead to exposures. However, the creek flows underground after passing through the industrial area, making the existence of fish in this portion of the creek very unlikely.

Inhalation of contaminated indoor air is possible because of the high concentrations of contaminants in groundwater at and near the site. These contaminants could volatilize into soil gas and affect the indoor air in buildings on and near the site.

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.

The surface water and sediments in the Glen Cove Creek are contaminated with VOCs at the downstream end of the site. Although PCE and TCE exceeded their SCGs for sediments and PCE exceeded its SCG in surface water, these SCGs are based on human consumption of fish. There are no SCGs for aquatic life for the VOCs detected in the creek. As the creek is shallow, becomes an underground storm sewer downstream of the contaminated sample, and is in an industrial area, human consumption of fish is unlikely.

Although the contamination in Glen Cove Creek is not a completed pathway, site contamination has impacted the groundwater resource in the upper glacial aquifer, which is designated a sole source aquifer in Nassau County.

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:

- VOC contamination in on-site soil;
- VOC contamination in on-site and off-site groundwater;
- Off-site migration of contaminants in groundwater; and
- The potential for exposures of persons at or around the site to VOCs in indoor air.

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

- ambient groundwater quality standards

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Pall Site were identified, screened and evaluated in the FS report which is available at the document repositories identified in Section 1.

The alternatives in the FS report were developed for on-site remediation only. However, the description of alternatives in the FS applies to the expanded treatment area. Costs have been updated in this ROD to account for the on-site and off-site treatment.

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

Except for Alternative 1 (No Further Action), all of the remedial alternatives would involve active groundwater treatment. These alternatives would actively treat all of the groundwater contamination beneath the Pall site, the adjacent day care center and the Carney street well field to a depth of 60 feet bgs. The boundaries of active treatment are shown on Figure 16. The furthest downgradient shallow well (MW-3S) within the treatment area had a total VOC level of 1,156 ppb. In contrast, the highest total VOC level recorded downgradient of the active treatment area was 156 ppb. Therefore, all shallow groundwater contamination downgradient of the treatment area would be remediated by monitored natural attenuation.

Alternatives 2, 3, and 4 would evaluate the potential for soil vapor intrusion into buildings above the groundwater contaminant plume. If necessary, mitigative measures such as subslab ventilation would be employed.

Finally, Alternatives 2, 3, and 4 would include remediation of contaminated soil in the vicinity of sample location 5-SB-15. The soil remediation would be accomplished by either excavation and off-site disposal or in-situ chemical oxidation. With in-situ chemical oxidation, a chemical oxidant would be applied directly to the contaminated soil to react with the contaminants. The treatment would result in nontoxic byproducts. Soil samples would be obtained following remediation to confirm that contaminant levels are below SCGs.

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

Alternative 1: No Further Action

The No Further Action alternative recognizes remediation of the site conducted under previously completed IRMs. To evaluate the effectiveness of the remediation completed under the IRM, only continued monitoring is necessary.

The soil vapor extraction (SVE) and in-situ chemical oxidation IRMs remediated some of the contaminated soil and groundwater. However, contaminants remain in the soil and groundwater at levels exceeding SCGs. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment.

Alternative 2: Air Sparging/Soil Vapor Extraction

Present Worth: *$5,383,666*
Capital Cost: *$2,061,886*
Annual OM&M:
(Years 1-3): *$940,125*
(Years 4-20): *$78,200*

The air sparging/soil vapor extraction (AS/SVE) system would be used to remove VOC contamination from groundwater. This system would remediate contaminated groundwater and prevent further migration of contaminants. A compressor would inject air into several air sparge wells screened at 60-65 feet bgs. The air would bubble through the formation and strip the VOCs from the groundwater. A blower would create a vacuum in the SVE wells, which would capture the air bubbles as they reached the water table. As the water table is shallow, the SVE wells would be installed horizontally 1-2 feet above the water table. The vacuumed vapors would pass through a moisture separator and would be treated with vapor phase carbon before being discharged to the atmosphere. This remedy would require approximately one year to design, two years to construct, three years of operation and 17 years of long-term monitoring

The SVE pilot test IRM revealed a complication in implementing this alternative. While the SVE system was operating, the water table occasionally submerged the SVE well and flooded the moisture separator. The flooding resulted in occasional shutdowns of the system and decreased efficiency. As SVE is part of this alternative, flooding of the SVE wells could hinder operation of the system. The operation and maintenance cost estimate for the first three years provides for additional labor and materials to manage flooding of the SVE system.

Alternative 3: In-situ Chemical Oxidation

Present Worth: *$1,970,530*
Capital Cost: *$320,275*
Annual OM&M:
(Years 1-2): *$441,600*
(Years 3-20): *$78,200*

In-situ chemical oxidation would involve injecting oxidant chemicals into the contaminated aquifer. The chemicals would react with the contaminants to form nontoxic byproducts such as carbon dioxide and water. This system would remediate contaminated groundwater and therefore prevent further off-site migration of contaminants.

Including the ten injection wells used in the pilot test, Pall Corporation has already installed 36 injection wells, 18 shallow (5-25 feet bgs) and 18 intermediate (35-55 feet bgs). These wells would remediate the on-site groundwater contamination on the north side of the site. Additional injection wells would be installed on-site and off-site to remediate the rest of the plume. The number and location of these wells would be determined during the design phase. Figure 15 shows a process schematic for potassium permanganate injection. The process would be similar if a different oxidant is used.

A pilot test has already been performed using potassium permanganate. The pilot test was successful in remediating the VOCs near the injection wells. Although Freon-113 levels downgradient of the injection wells decreased during the post-injection sampling, bench scale testing during the FS indicated that potassium permanganate may not efficiently destroy Freon-113. Therefore, the final choice of oxidant(s) would be determined during the design phase after additional pilot testing and/or bench scale testing. Alternate oxidants would include sodium permanganate, Fenton's Reagent (hydrogen peroxide with an iron catalyst), and ozone.

The remedy would require approximately six months to design, six months to construct, 2 years of injections, and 18 years of long-term monitoring. The NYSDEC estimates that the remedy will achieve remedial goals within 20 years. The operation and maintenance cost estimate for the first two years includes the cost of the oxidant chemicals.

Alternative 4: Groundwater Extraction and Treatment

Present Worth: *$18,995,217*
Capital Cost: *$4,711,447*
Annual OM&M:
(Years 1-20): *$1,146,167*

In this alternative, groundwater would be pumped from the aquifer to an aboveground treatment system. Extraction wells would be screened from 5-55 feet bgs. The treatment system would remove VOCs from the groundwater and the clean groundwater would be reinjected into the aquifer. This system would remediate contaminated groundwater and prevent further migration of contaminants. The remedy would require two years to design, two years to construct and 20 years to remediate the contaminated groundwater.

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 alternatives in this ROD address both on-site and off-site contamination. Although the alternatives presented in the FS Report address only on-site groundwater contamination, the analysis is valid for the increased scope of remediation.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the 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 3.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It was evaluated after public comments on the Proposed Remedial Action Plan were 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 selective remedy. However, some adverse comments were received. Several comments were received pertaining to the potential for contaminants to migrate onto the Pall site from the Photocircuits site during the remedial action. However, Photocircuits Corporation has installed a hydraulic control system to prevent migration of contaminated groundwater from their only known source area onto the Pall site. As the hydraulic control system is preventing migration of contaminants from the Photocircuits source area onto the Pall site to more than 60 feet bgs, the groundwater contamination at the Photocircuits site will not affect 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 3, In-Situ Chemical Oxidation as the remedy for OU1 of 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 3 is being 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 actively remediating the contaminated soil and groundwater. The active remediation will eliminate off-site migration of contaminated groundwater by treating on-site soil contamination and on-site and off-site groundwater contamination. The active remediation will also restore soil and groundwater quality to soil cleanup guidance values and ambient water quality standards, respectively, to the extent practicable, which will comply with SCGs and protect human health and the environment. Alternative 3 will ensure that people are not exposed to airborne contaminants by evaluating the potential for vapor intrusion for any buildings beneath the contaminant plume and mitigating any impacts identified. Alternatives 2 and 4 would also comply with SCGs and protect human health and the environment by actively treating contaminated soil and groundwater, and by evaluating and addressing the potential for vapor intrusion. Alternative 1 was

removed from consideration because it would not remediate contaminated groundwater and therefore would not satisfy either of the threshold criteria.

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 (AS/SVE), 3 (in-situ chemical oxidation), and 4 (extraction and treatment) all have short-term impacts which could easily be controlled. As the natural attenuation of downgradient groundwater contamination would take about the same amount of time for each alternative and would take as long as any of the active remedies, all three alternatives would meet ambient water quality standards in the same amount of time. However, Alternative 3 will prevent off-site migration of contaminants in the shortest time period.

Alternatives 2, 3, and 4 would be equally effective in remediating the contaminated groundwater. All three alternatives would actively treat the contaminated groundwater.

Alternative 3 is favorable in that it is readily implementable. Some of the injection wells for Alternative 3 were already installed as part of the pilot test. Alternative 4 would also be implementable. Alternative 2 would be more difficult to implement because the SVE system would be shut down when the water table submerges the SVE wells.

Alternatives 2 (AS/SVE), 3 (in-situ chemical oxidation), and 4 (extraction and treatment) would reduce the toxicity and volume of the contaminants at the site. As each alternative would directly remove contaminants from the groundwater, the toxicity and volume of contaminants would be reduced. Alternative 4 would reduce the mobility of contaminants through hydraulic control. Alternatives 2 and 3 would not decrease the mobility of contaminants, but they would remediate the contamination.

Alternative 3 is the least expensive remedy and has lower capital and annual operation and maintenance costs than Alternatives 2 and 4.

The estimated present worth cost to implement the remedy is $1,970,530. The cost to construct the remedy is estimated to be $320,275 and the estimated average annual operation, maintenance, and monitoring costs for 2 years is $441,600. An additional 18 years of long-term monitoring at an annual cost of $78,200 is also included.

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. The design program includes pilot testing to determine the number of injection wells and the oxidant.

2. Installation of additional on-site and off-site injection wells to actively treat the entire area shown in Figure 16.

3. Injection of a chemical oxidant into the injection wells to destroy groundwater contaminants. Post-injection sampling will be performed to determined if additional injection events are needed.

4. Remediation of contaminated soil by excavation and off-site disposal or in-situ chemical oxidation.

5. 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.

6. Development of a site management plan to: (a) address residual contaminated soils that may be excavated from the site during future redevelopment. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (b) evaluate the potential for vapor intrusion for any buildings developed on the site and above the contaminant plume, including provision for mitigation of any impacts identified; and (c) limit the property use to commercial or industrial.

7. Imposition of an institutional control in form of an environmental easement that will: (a) require compliance with the approved site management plan, (b) limit the use and development of the property to commercial or industrial uses only; (c) restrict 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; and, (d) require the property owner to complete and submit to the NYSDEC an annual certification.

8. The property owner will provide an annual certification, prepared and submitted by a Professional Engineer or environmental professional acceptable to the NYSDEC, which will certify that the institutional controls and engineering controls put in place, are unchanged from the previous certification and nothing has occurred that impairs the ability of the control to protect public health or the environment or constitute a violation or failure to comply with any operation and maintenance or site management plan.

9. Since the remedy will result in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. Several on-site and off-site groundwater monitoring wells will be sampled quarterly during and after injections. The monitoring wells will be chosen during the remedial design, but the sampling plan can be adjusted based on site conditions. Monitoring will continue until the remediation goals are met or the NYSDEC determines that monitoring is no longer needed. This program will allow the effectiveness of the in-situ chemical oxidation remedy to be monitored and will be a component of the operation, maintenance, and monitoring 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.
- Fact sheets were mailed to the public contact list in February 1998, November 2001 and February 2004 to update the public on the progress of the investigation.
- Public meetings were held on March 24, 1998 and November 15, 2001 to solicit public input on the investigation and interim remedial measures.
- A public meeting was held on March 10, 2004 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.

TABLE 1
Nature and Extent of Contamination
February 1998 to November 2002

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Tetrachloroethene	ND[c] to 950	1.4	1 of 96
	Trichloroethene	ND to 19	0.7	1 of 96
	1,2-Dichloroethene	ND to 4.1	0.3	3 of 96
	Benzene	ND to 0.082	0.06	1 of 96
	Xylenes	ND to 3.1	1.2	2 of 96
	1,1,1-Trichloroethane	ND to 0.98	0.8	1 of 96
SEDIMENTS	**Contaminants of Concern**	**Concentration Range Detected (ppm)[a]**	**SCG[b] (ppm)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compounds (VOCs)	Tetrachloroethene	ND to 2.1	0.0034	1 of 3
	Trichloroethene	ND to 0.1	0.0085	1 of 3
GROUNDWATER	**Contaminants of Concern**	**Concentration Range Detected (ppb)[a]**	**SCG[b] (ppb)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compounds (VOCs)	Tetrachloroethene	ND to 140,000	5	168 of 281
	Trichloroethene	ND to 9,600	5	200 of 281
	1,2-Dichloroethene	ND to 15,000	5	220 of 281
	1,1-Dichloroethene	ND to 350	5	72 of 281
	Vinyl Chloride	ND to 1,000	2	135 of 281
	1,1,1-Trichloroethane	ND to 420	5	47 of 281
	1,1,2-Trichloroethane	ND to 22	1	6 of 281
	1,1-Dichloroethane	ND to 390	5	132 of 281
	1,2-Dichloroethane	ND to 22	0.6	56 of 281
	Chloroethane	ND to 9	5	3 of 281
	1,1,2-Trichlorotrifluoroethane (Freon-113)	ND to 150,480	5	78 of 196
	Acetone	ND to 16,000	5	22 of 196

TABLE 1
Nature and Extent of Contamination
February 1998 to November 2002

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
	Methylene Chloride	ND to 52	5	8 of 281
	Benzene	ND to 7	0.6	24 of 281
	Toluene	ND to 290	5	8 of 281
	Ethylbenzene	ND to 840	5	4 of 281
	Xylenes	ND to 3,470	5	11 of 281
	2-Hexanone	ND to 1,700	50	1 of 196
	Bromoform	ND to 61	50	1 of 281
	Chlorobenzene	ND to 7	5	1 of 281
	1,2-Dichloropropane	ND to 6	1	4 of 281
GROUNDWATER POST-IRM	**Contaminants of Concern**	**Concentration Range Detected (ppb)[a]**	**SCG[b] (ppb)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compounds (VOCs)	Tetrachloroethene	ND to 330	5	7 of 19
	Trichloroethene	ND to 490	5	8 of 19
	1,2-Dichloroethene	ND to 300	5	9 of 19
	1,1-Dichloroethene	ND	5	0 of 19
	Vinyl Chloride	ND to 38	2	8 of 19
	1,1,1-Trichloroethane	ND to 4	5	0 of 19
	1,1,2-Trichloroethane	ND	1	0 of 19
	1,1-Dichloroethane	ND to 28	5	1 of 19
	1,2-Dichloroethane	ND to 4	0.6	1 of 19
	Chloroethane	ND	5	0 of 19
	1,1,2-Trichlorotrifluoroethane (Freon-113)	ND to 580	5	7 of 19
	Acetone	ND to 75	5	2 of 19

TABLE 1
Nature and Extent of Contamination
February 1998 to November 2002

GROUNDWATER POST-IRM	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
	Methylene Chloride	ND	5	0 of 19
	Benzene	ND	0.6	0 of 19
	Toluene	ND	5	0 of 19
	Ethylbenzene	ND	5	0 of 19
	Xylenes	ND	5	0 of 19
	2-Hexanone	ND	50	0 of 19
	Bromoform	ND	50	0 of 19
	Chlorobenzene	ND	5	0 of 19
	1,2-Dichloropropane	ND	1	0 of 19
SURFACE WATER	**Contaminants of Concern**	**Concentration Range Detected (ppb)[a]**	**SCG[b] (ppb)[a]**	**Frequency of Exceeding SCG**
Volatile Organic Compounds (VOCs)	Tetrachloroethene	ND to 77	1	1 of 3
	Trichloroethene	ND to 29	40	0 of 3
	1,2-Dichloroethene	ND to 28	210	0 of 3
	1,1-Dichloroethane	ND to 1	2,100	0 of 3
	Vinyl Chloride	ND to 2	980	0 of 3
	Acetone	14 to 28	50,000	0 of 3
	1,1,2-Trichlorotrifluoroethane (Freon-113)	ND to 25	None	N/A
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)	Tetrachloroethene	ND to 6.6	100/ Background[d]	0 of 4
	Trichloroethene	ND to 2.1	None	0 of 4

TABLE 1
Nature and Extent of Contamination
February 1998 to November 2002

AIR	Contaminants of Concern	Concentration Range Detected ($\mu g/m^3$)[a]	SCG[b] ($\mu g/m^3$)[a]	Frequency of Exceeding SCG
	1,2-Dichloroethene	ND to 5.4	None	0 of 4
	1,1,2-Trichlorotrifluoroethane (Freon-113)	1.1 to 1.5	None	0 of 4

[a] ppb = parts per billion, which is equivalent to micrograms per liter, µg/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
$\mu g/m^3$ = micrograms per cubic meter

[b] SCG = standards, criteria, and guidance values

[c] ND = not detected

[d] The NYSDOH "Tetrachloroethene in Indoor and Outdoor Air" fact sheet states, "Reasonable and practical actions should be taken to reduce PERC [Tetrachloroethene] exposure when indoor air levels are above background, even when they are below the guideline of 100 $\mu g/m^3$... The goal of the recommended actions is to reduce PERC levels in indoor air to as close to background as practical."

Table 2
Comparison of Total VOCs - On-site vs. Upgradient

Depth	Date	Highest On-site[1] Concentration	Highest Upgradient[2] Concentration
Shallow[3]	April 1999	4,300[4]	18
Shallow	January 2000[5]	3,078	5
Shallow	December 2000	3,775	94
Shallow	Oct/Nov 2002	14,437	46
Intermediate[6]	April 1999	614	1,330
Intermediate	January 2000	2,009	332
Intermediate	December 2000	4,952	713
Intermediate	Oct/Nov 2002	3,306	167
Deep[7]	April 1999	695	431
Deep	January 2000	12,711	1,751
Deep	December 2000	1,941	2,228
Deep	Oct/Nov 2002	4,500	1,604

[1]Does not include wells at the upgradient edge of the Pall site

[2]Includes wells at the upgradient edge of the Pall site

[3]Shallow wells are water table wells. Water table is about 5 feet deep

[4]For April 1999 and January 2000 sampling events, total VOCs does not include Freon-113. For December 2000 and Oct/Nov 2002 sampling events, Freon 113 is included in total VOCs

[5]The January 2000 sampling occurred while the City was pump testing the Carney Street well, which was formerly used as a public water supply well

[6]Intermediate wells are about 60 feet deep

[7]Deep wells are about 100 feet deep

Table 3
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual OM&M	Total Present Worth
1: No Further Action	$29,900	Years 1-30: $78,200	$1,232,026
2: Air Sparge/Soil Vapor Extraction	$2,061,886	Years 1-3: $940,125 Years 4-20: $78,200	$5,383,666
3: In-Situ Chemical Oxidation	$320,275	Years 1-2: $441,600 Years 3-20: $78,200	$1,970,530
4: Extraction and Treatment	$4,711,447	Years 1-20: $1,146,167	$18,995,217

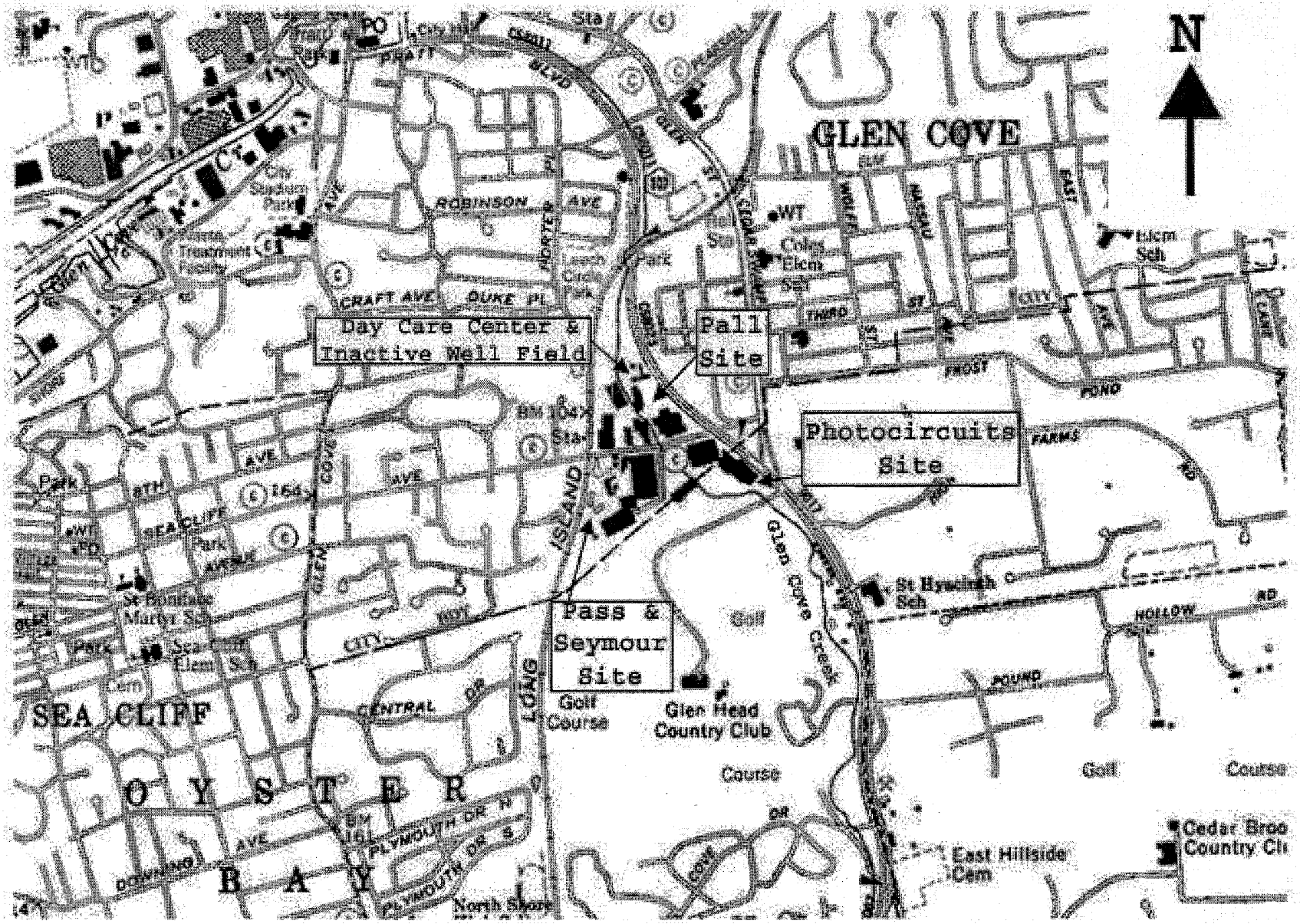
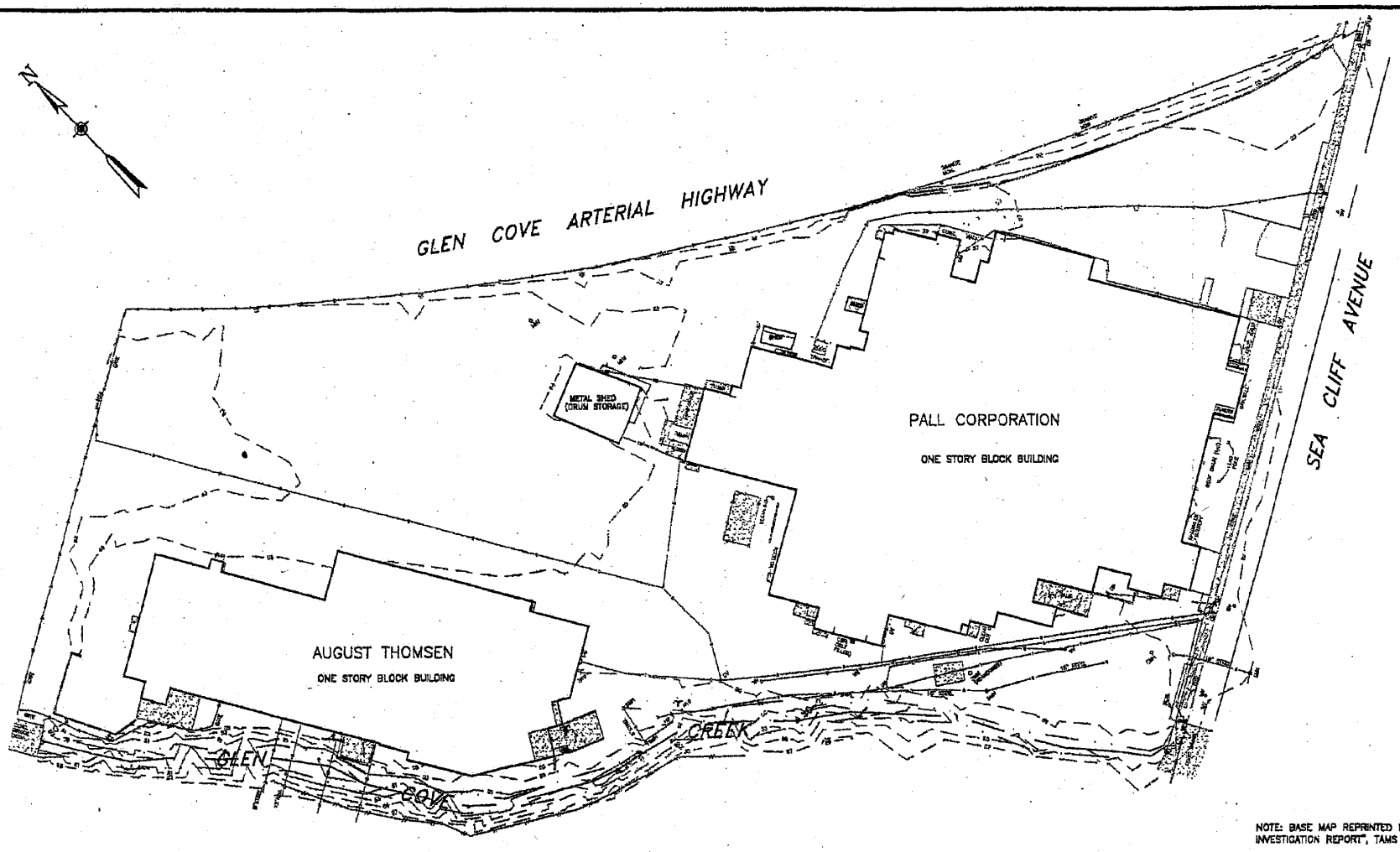


Figure 1: Site Location Map



NOTE: BASE MAP REPRINTED FROM "FOCUSED REMEDIAL INVESTIGATION REPORT", TAMS & GZA, 4/99

GRAPHIC SCALE 0 30 60

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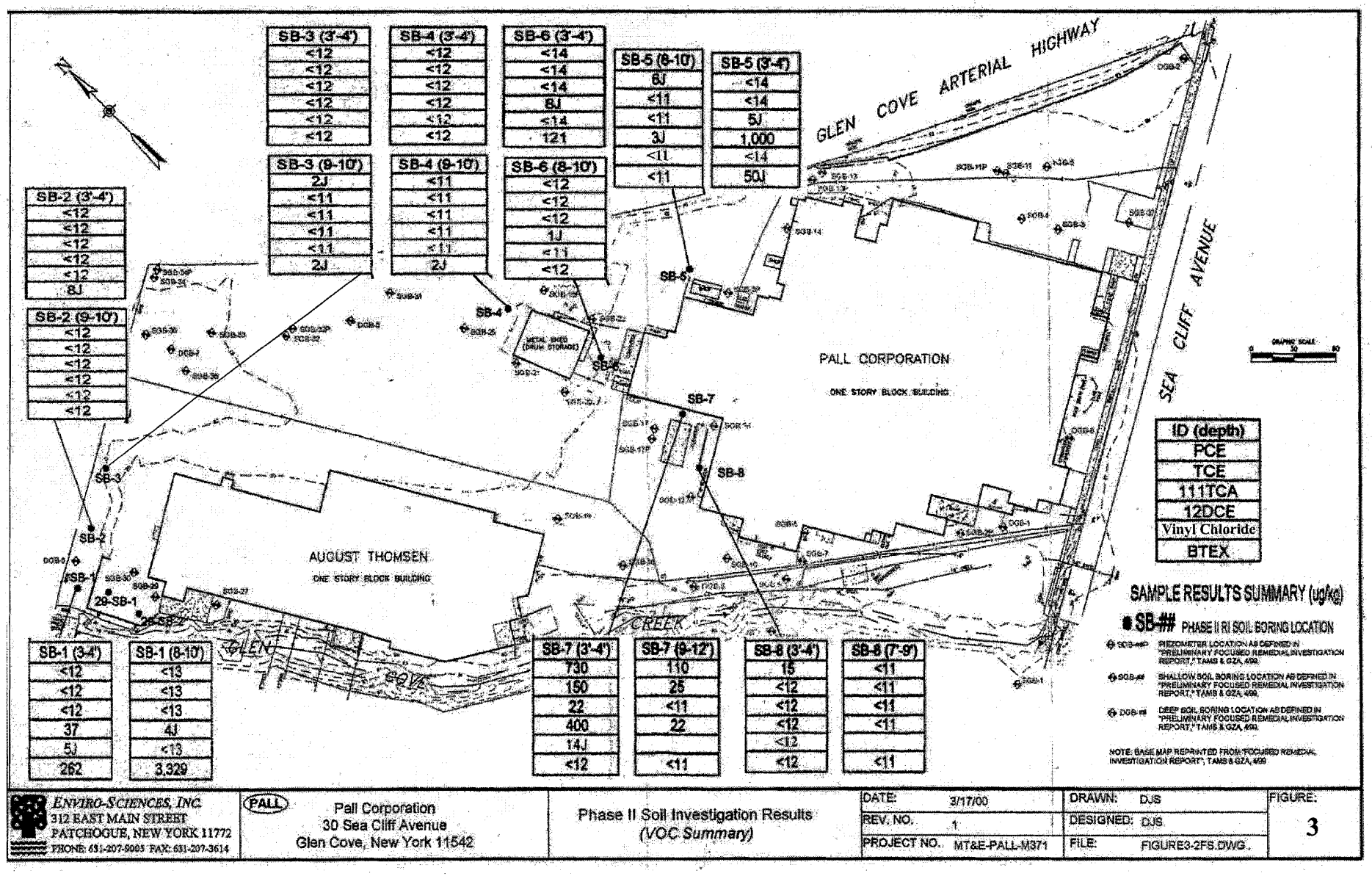
30 Sea Cliff Avenue
Glen Cove, New York 11542

Pall Corp. / August Thomsen
Site Plan

DATE: 03/09/00	DRAWN: DJS	FIGURE: 2
REV. NO. 1	DESIGNED: DJS	
PROJECT NO. MT&E-PALL-M371	FILE: FIGURE1-2.DWG	



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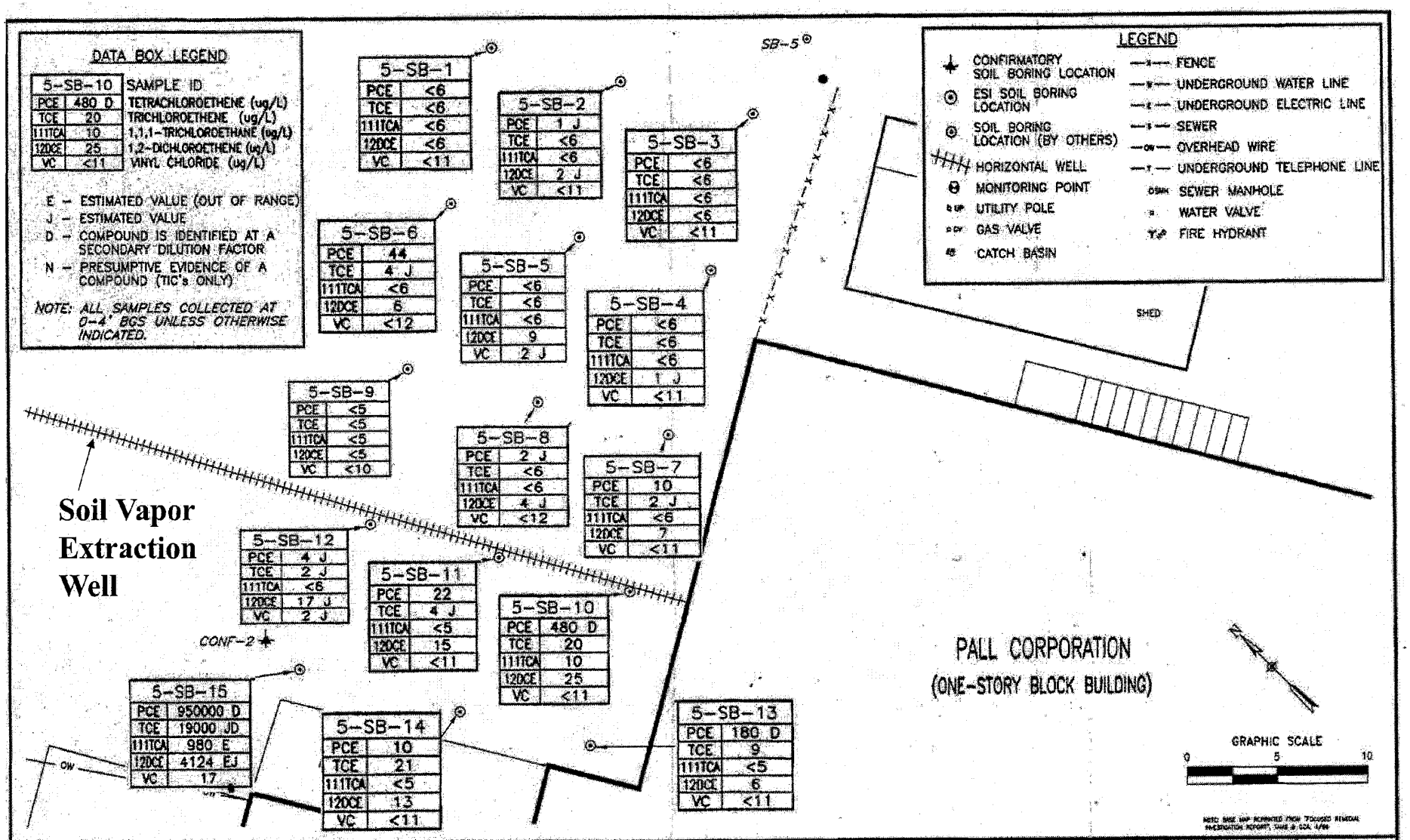
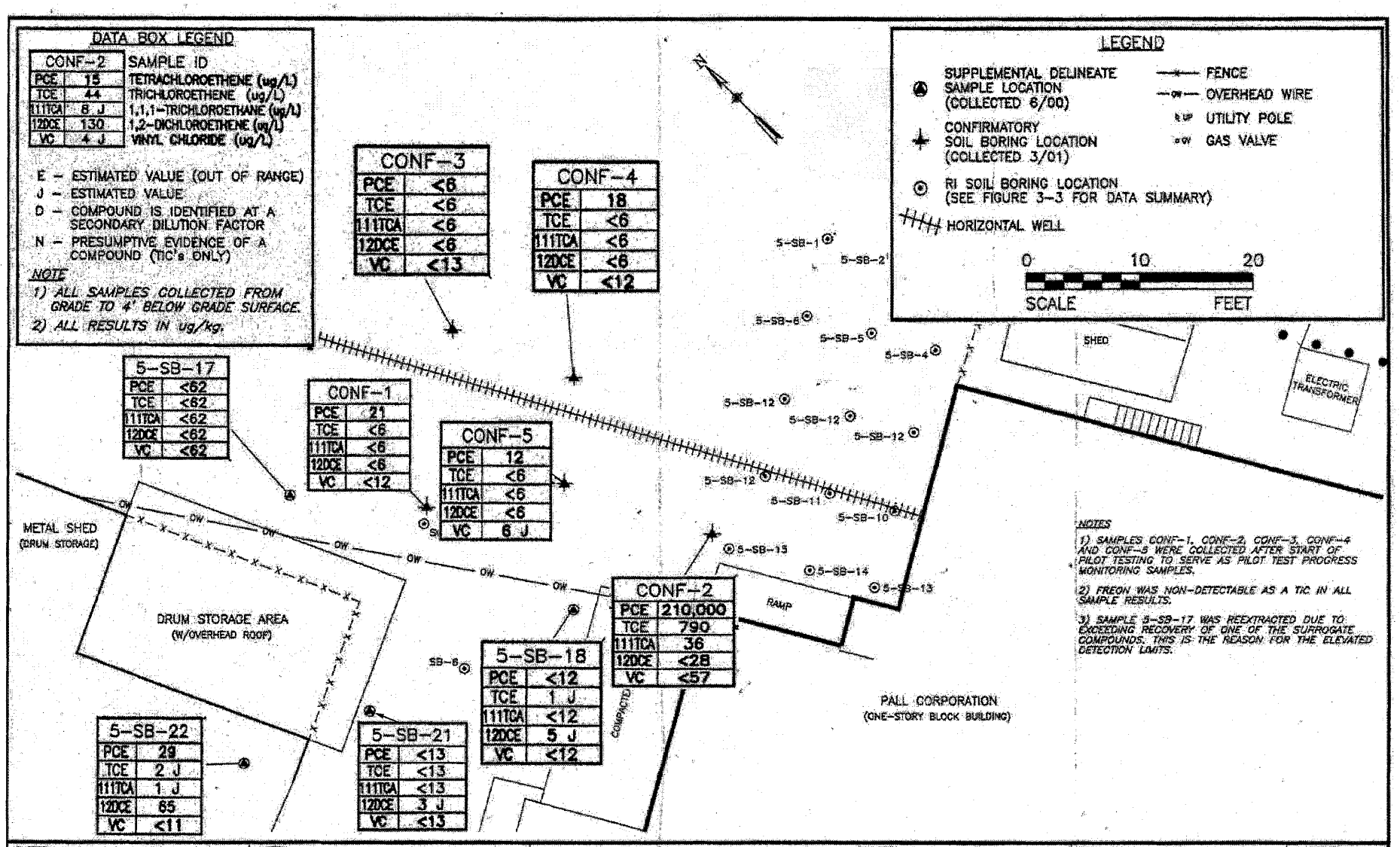
Phase II Soil Investigation Results
(VOC Summary)

DATE:	3/17/00	DRAWN:	DJS
REV. NO.	1	DESIGNED:	DJS
PROJECT NO.	MT&E-PALL-M371	FILE:	FIGURE3-2FS.DWG

FIGURE: 3



ENVIRO-SCIENCES, INC. 312 EAST MAIN STREET PATCHOGUE, NEW YORK 11772 PHONE: 631-207-9005 FAX: 631-207-5614	Pall Corporation 30 Sea Cliff Avenue Glen Cove, New York 11542	AREA SB5 Soil Sample Results Summary (Samples Collected August 1999)	DATE: 06/12/01	DRAWN: TRS	FIGURE: 4
			REV. NO. -	DESIGNED: DJS	
			PROJECT NO. MT&E-PALL-M371	FILE: PALLSB5C.DWG	



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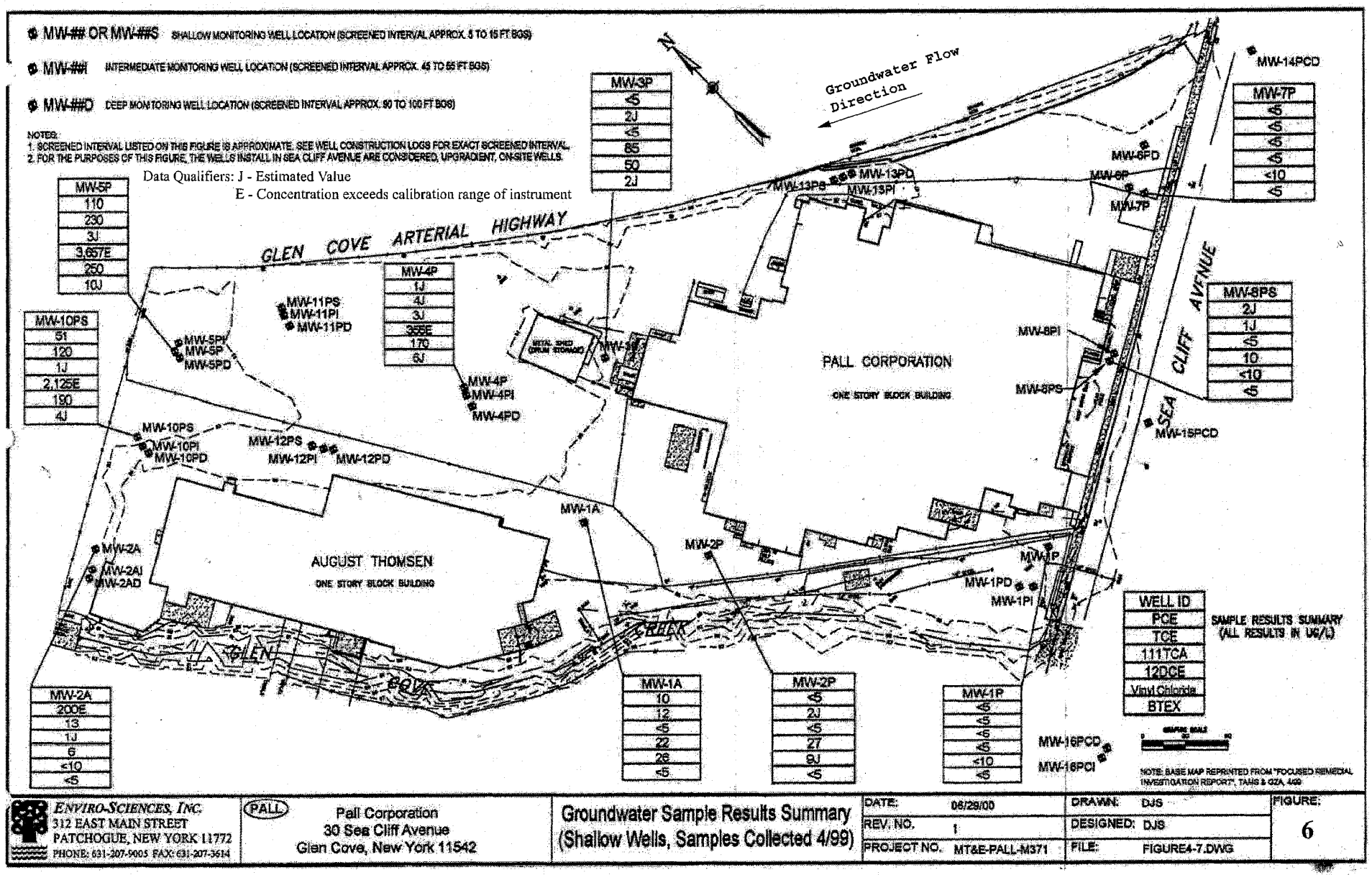
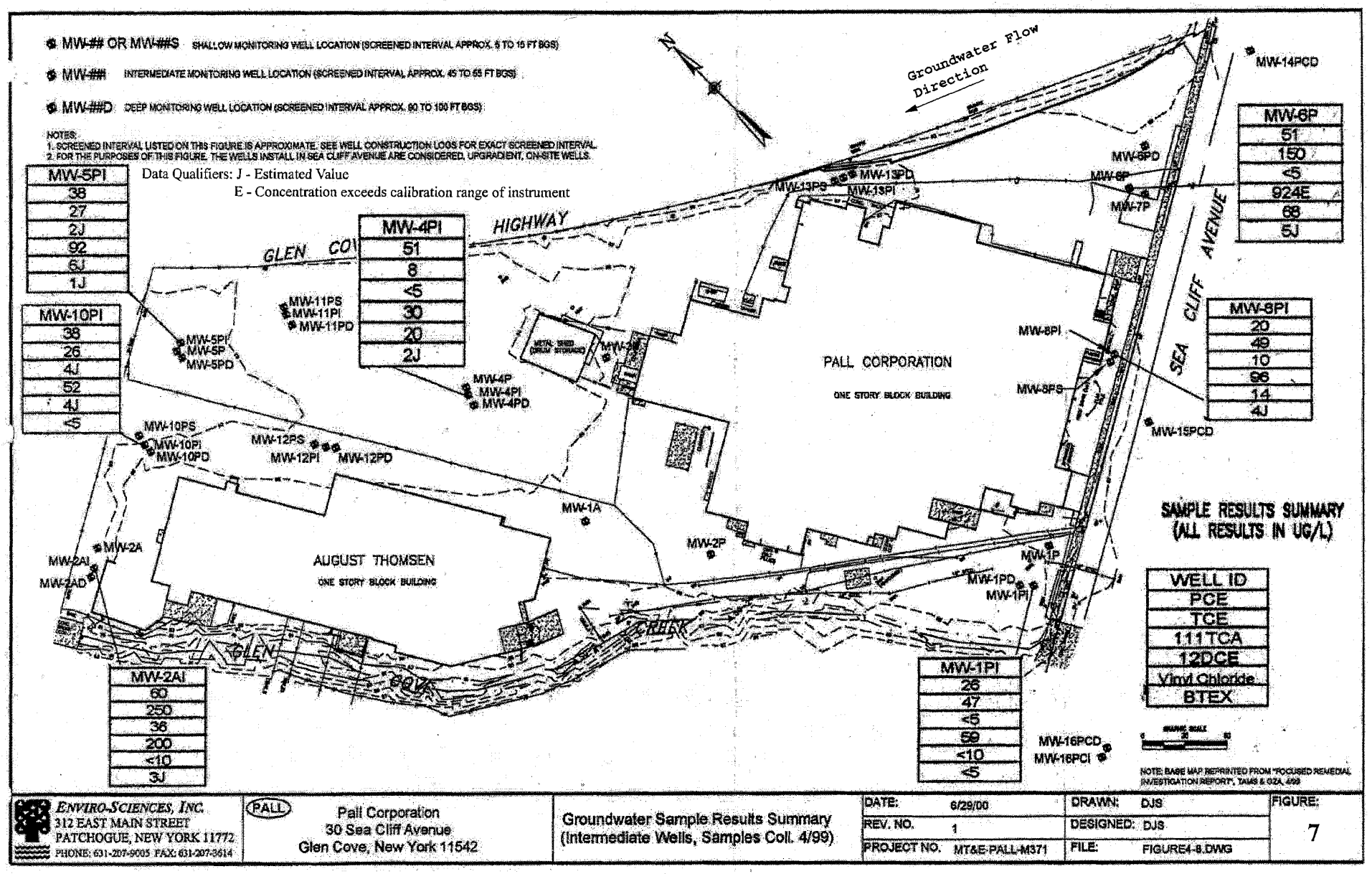
PILOT TEST SOIL SAMPLE RESULTS
(ADDITIONAL DELINEATION DATA)

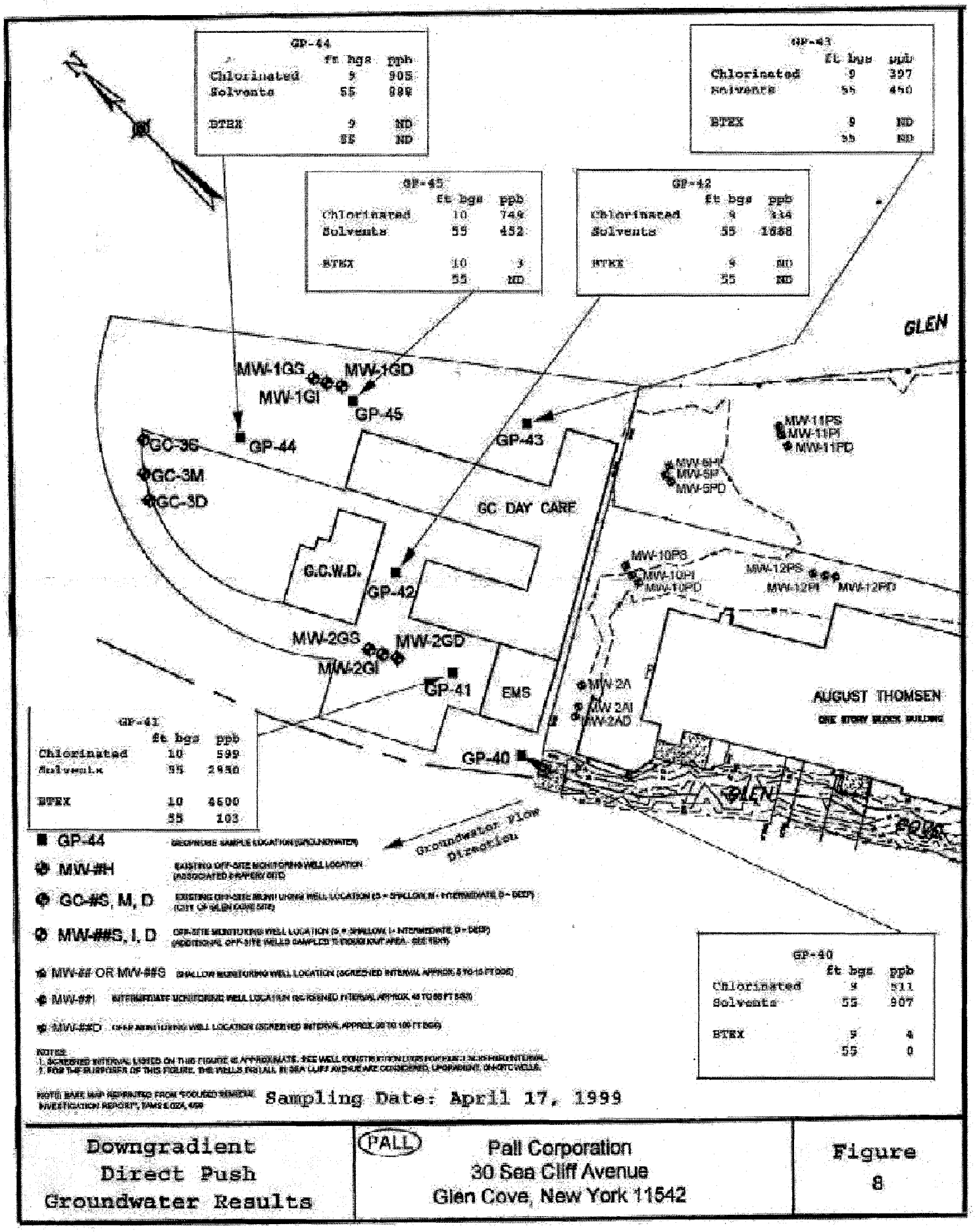
DATE: 08/30/01	DRAWN: TRS	FIGURE: 5
REV. NO. -	DESIGNED: DJS	
PROJECT NO. MT&E-PALL-M371	FILE: PALLCF37A.DWG	



ENVIRO-SCIENCES, INC. 312 EAST MAIN STREET PATCHOGUE, NEW YORK 11772 PHONE: 631-207-9005 FAX: 631-207-3614	Pall Corporation 30 Sea Cliff Avenue Glen Cove, New York 11542	Groundwater Sample Results Summary (Shallow Wells, Samples Collected 4/99)	DATE: 06/29/00 · REV. NO. 1 · PROJECT NO. MT&E-PALL-M371 · DRAWN: DJS · DESIGNED: DJS · FILE: FIGURE4-7.DWG	FIGURE: 6



ENVIRO-SCIENCES, INC. 312 EAST MAIN STREET PATCHOGUE, NEW YORK 11772 PHONE: 631-207-9005 FAX: 631-207-3614	Pall Corporation 30 Sea Cliff Avenue Glen Cove, New York 11542	Groundwater Sample Results Summary (Intermediate Wells, Samples Coll. 4/99)	DATE: 6/29/00 REV. NO. 1 PROJECT NO. MT&E-PALL-M371	DRAWN: DJS DESIGNED: DJS FILE: FIGURE4-8.DWG	FIGURE: 7



Downgradient Direct Push Groundwater Results

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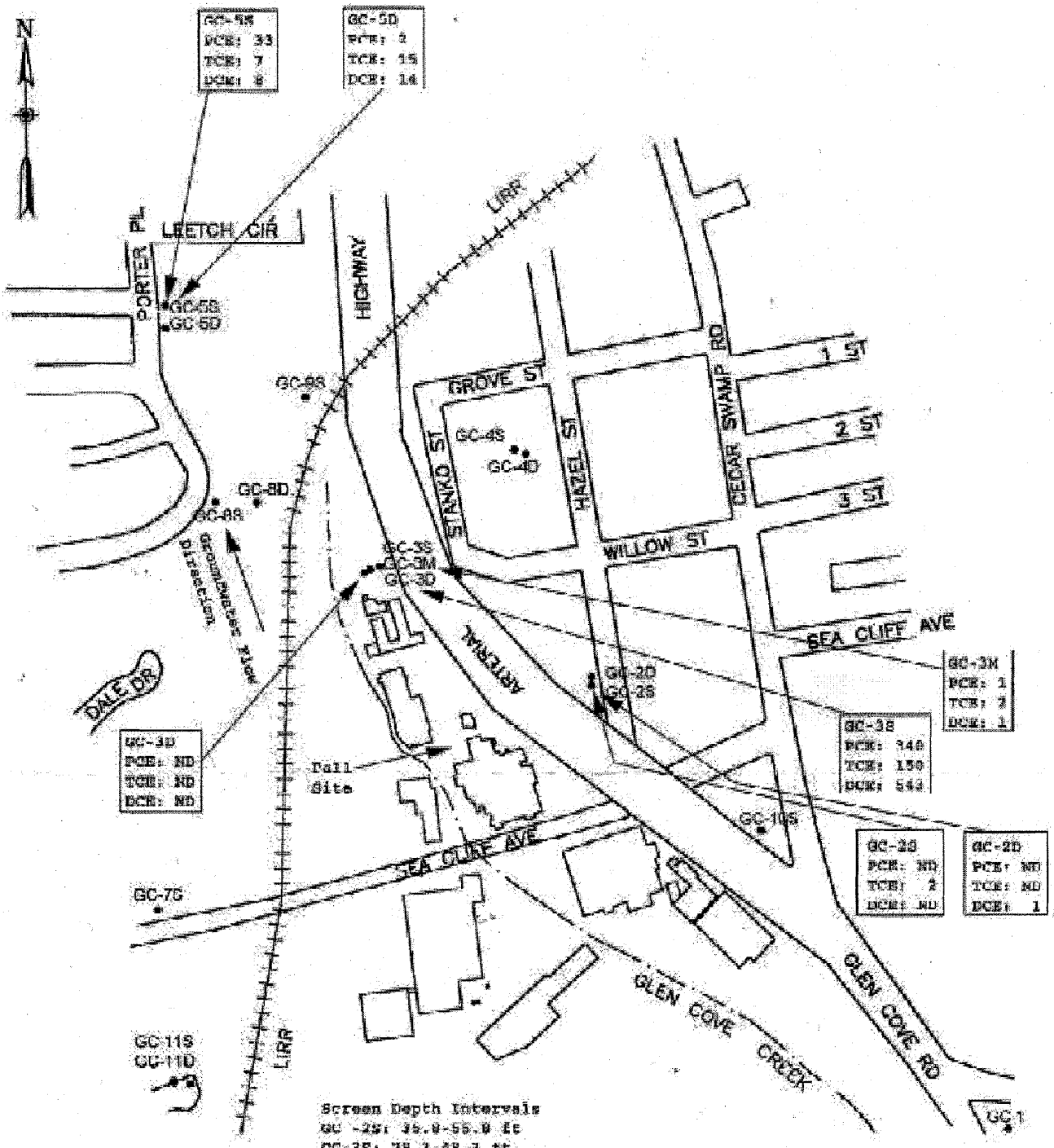
Glen Cove, New York 11542

Figure 8



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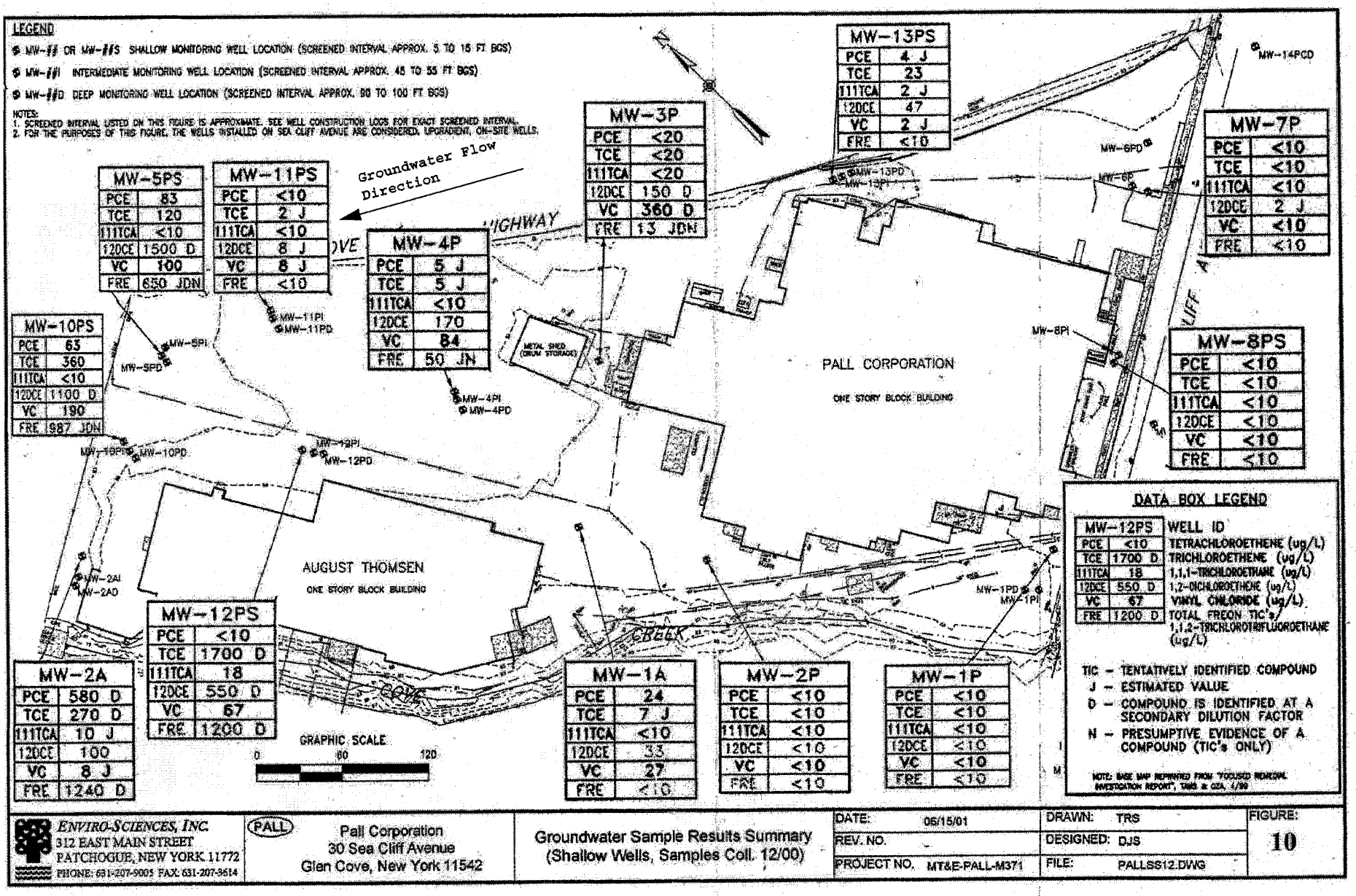
Pall Corporation Glen Cove, New York Off-Site, Public Monitoring Well Locations Near Site	DATE: 03/13/00 DRAWN: DJS DESIGNED: DJS MT&E-PALL-M371	FIGURE 9

FILE: figure4-3a.dwg REV. # 1



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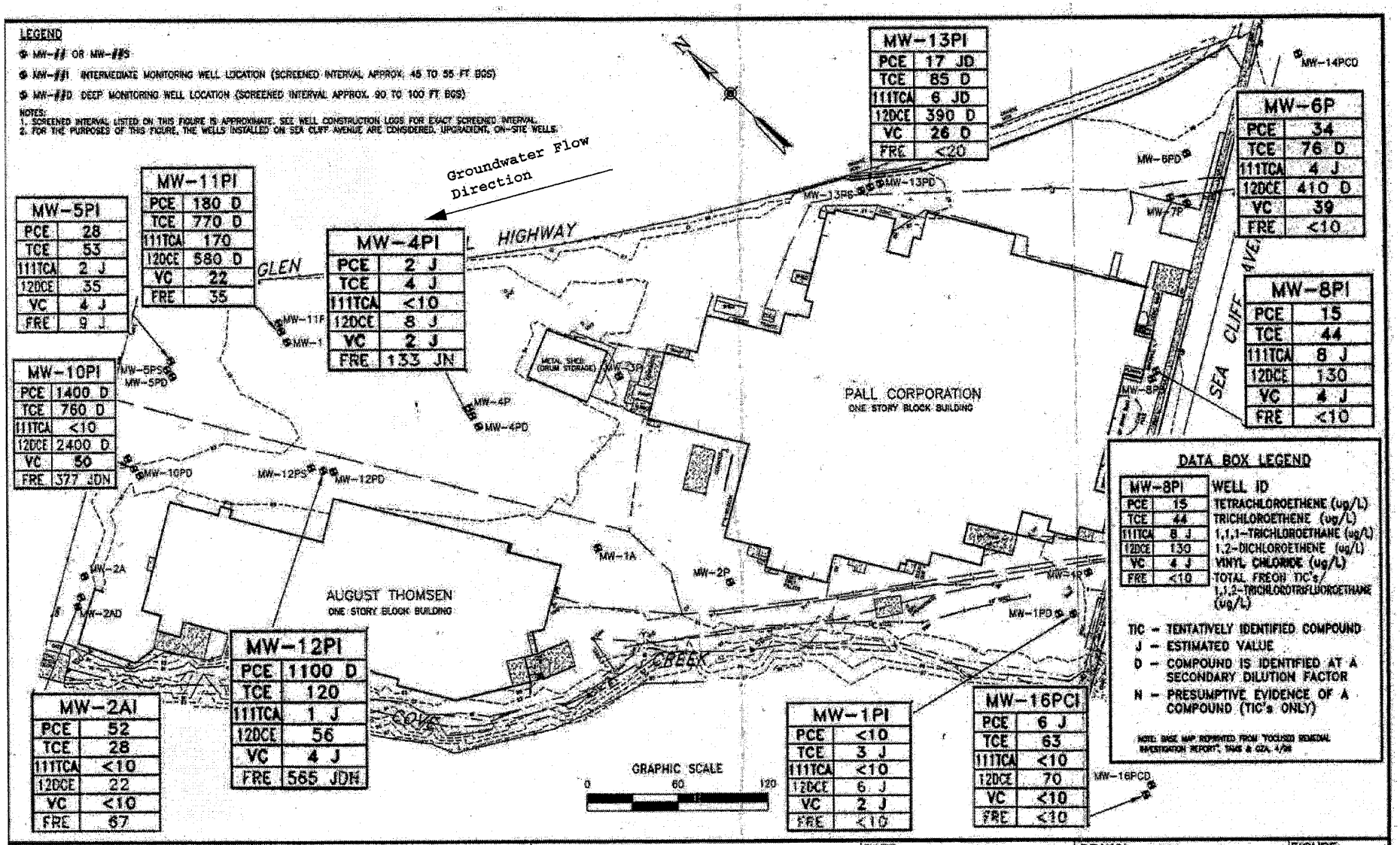
Groundwater Sample Results Summary
(Shallow Wells, Samples Coll. 12/00)

DATE: 06/15/01		DRAWN: TRS	FIGURE: 10
REV. NO. -		DESIGNED: DJS	
PROJECT NO. MT&E-PALL-M371		FILE: PALLSS12.DWG	



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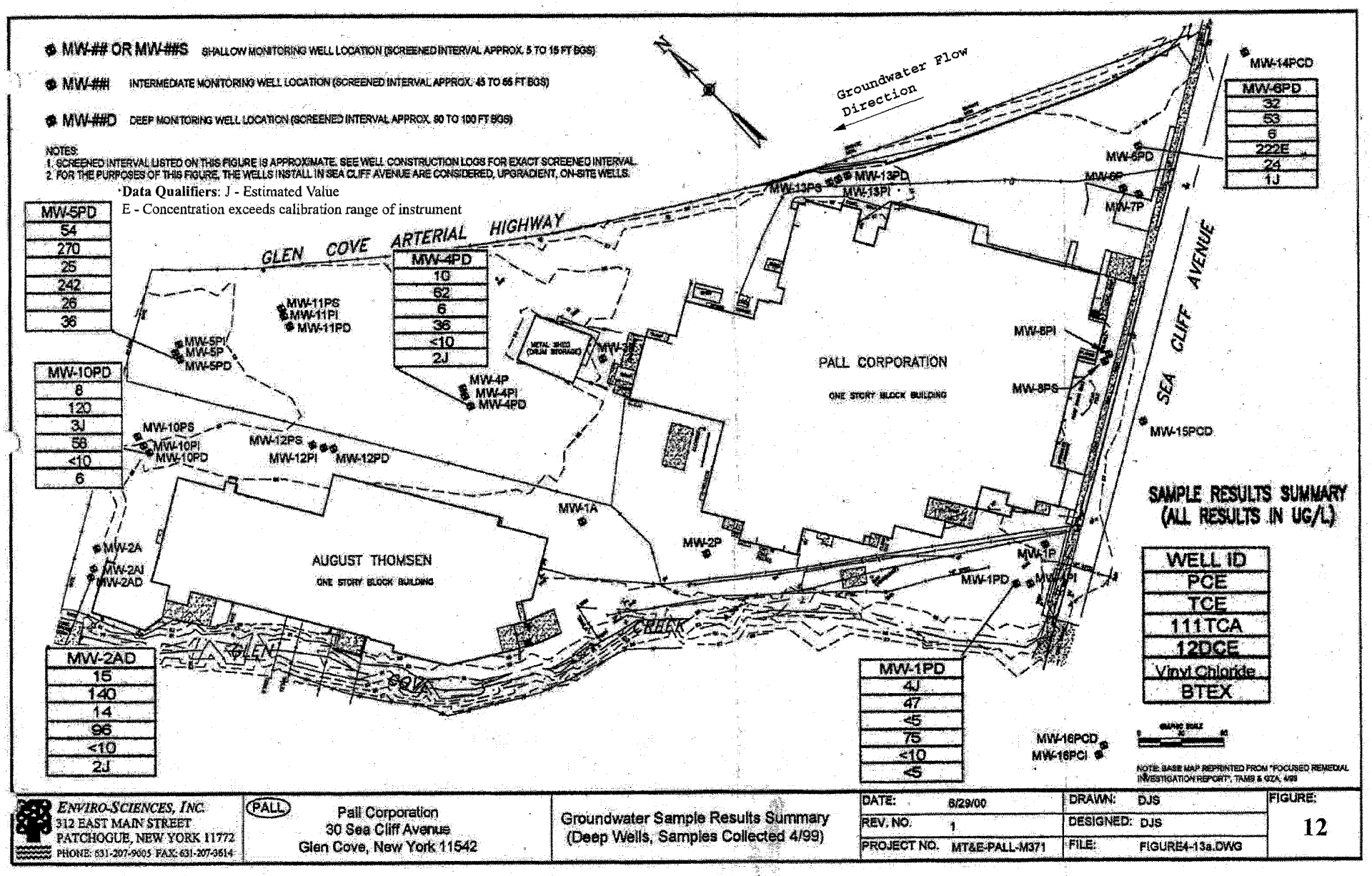
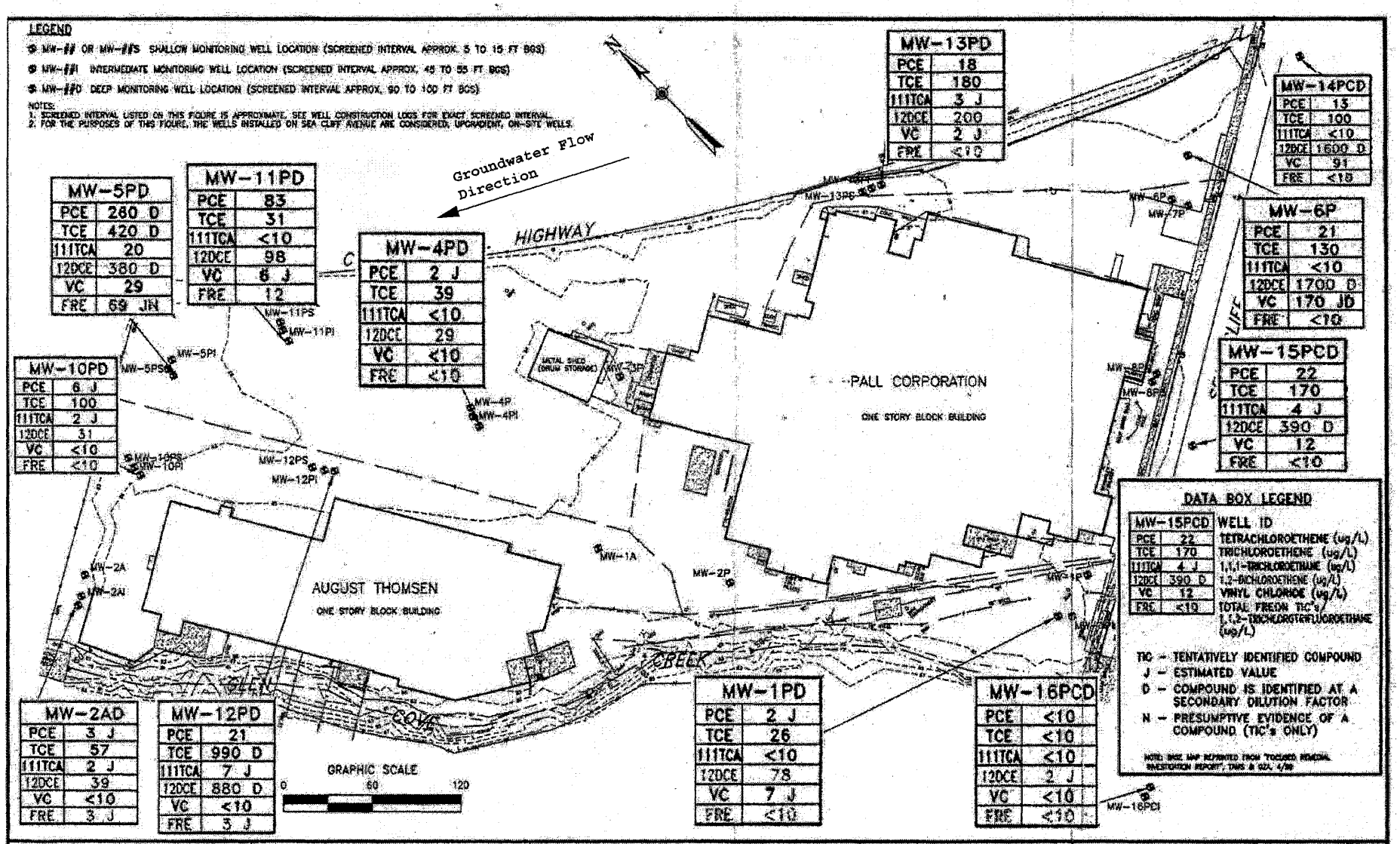
Groundwater Sample Results Summary
(Intermediate Wells, Samples Coll. 12/00)

DATE:	06/12/01	DRAWN:	TRS
REV. NO.	-	DESIGNED:	DJS
PROJECT NO.	MT&E-PALL-M371	FILE:	PALLSI12.DWG

FIGURE: 11



ENVIRO-SCIENCES, INC. 312 EAST MAIN STREET PATCHOGUE, NEW YORK 11772 PHONE: 631-207-9005 FAX: 631-207-9514	PALL Pall Corporation 30 Sea Cliff Avenue Glen Cove, New York 11542	Groundwater Sample Results Summary (Deep Wells, Samples Collected 4/99)	DATE: 6/29/00 REV. NO. 1 PROJECT NO. MT&E-PALL-M371	DRAWN: DJS DESIGNED: DJS FILE: FIGURE4-13a.DWG	FIGURE: 12



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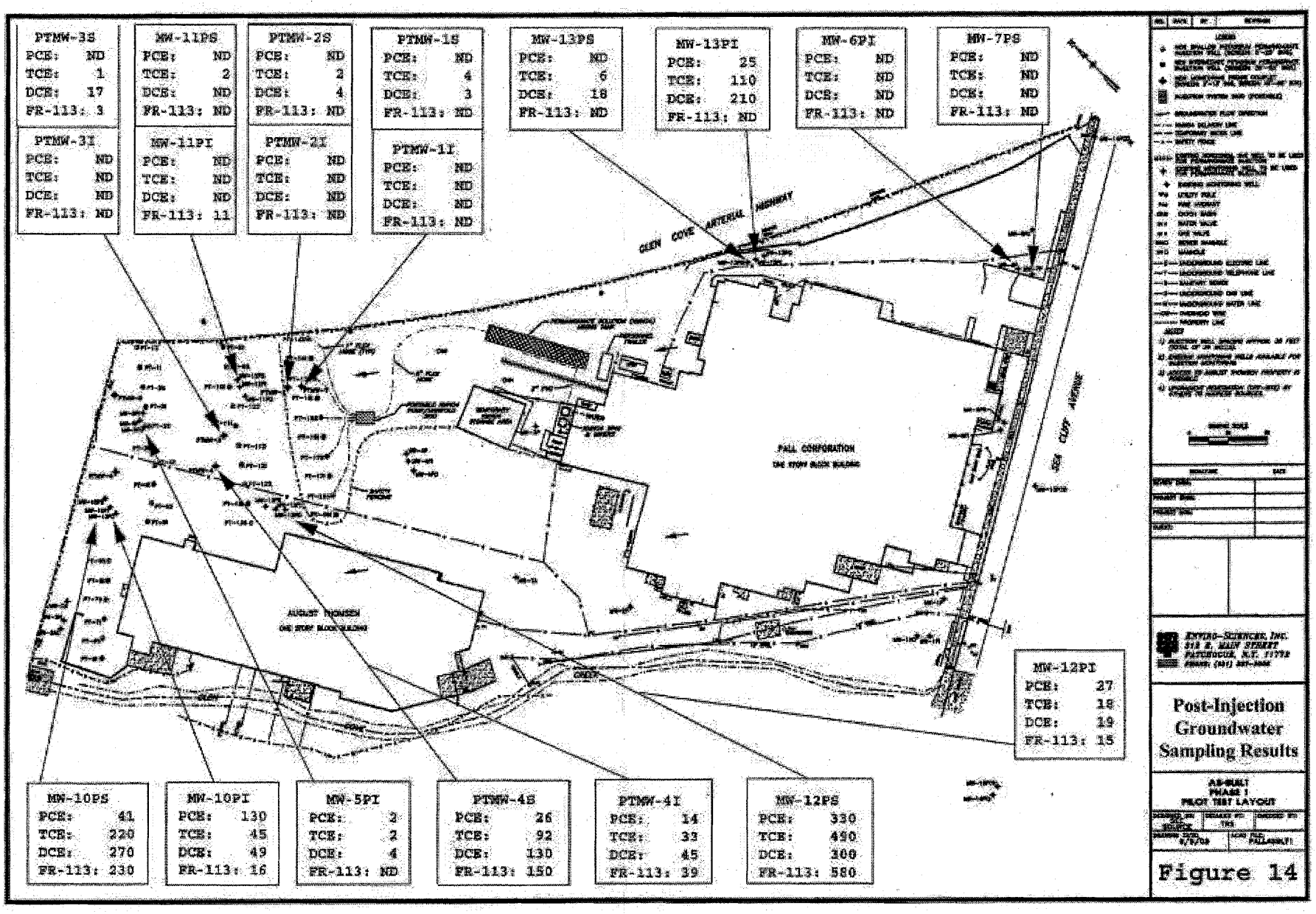
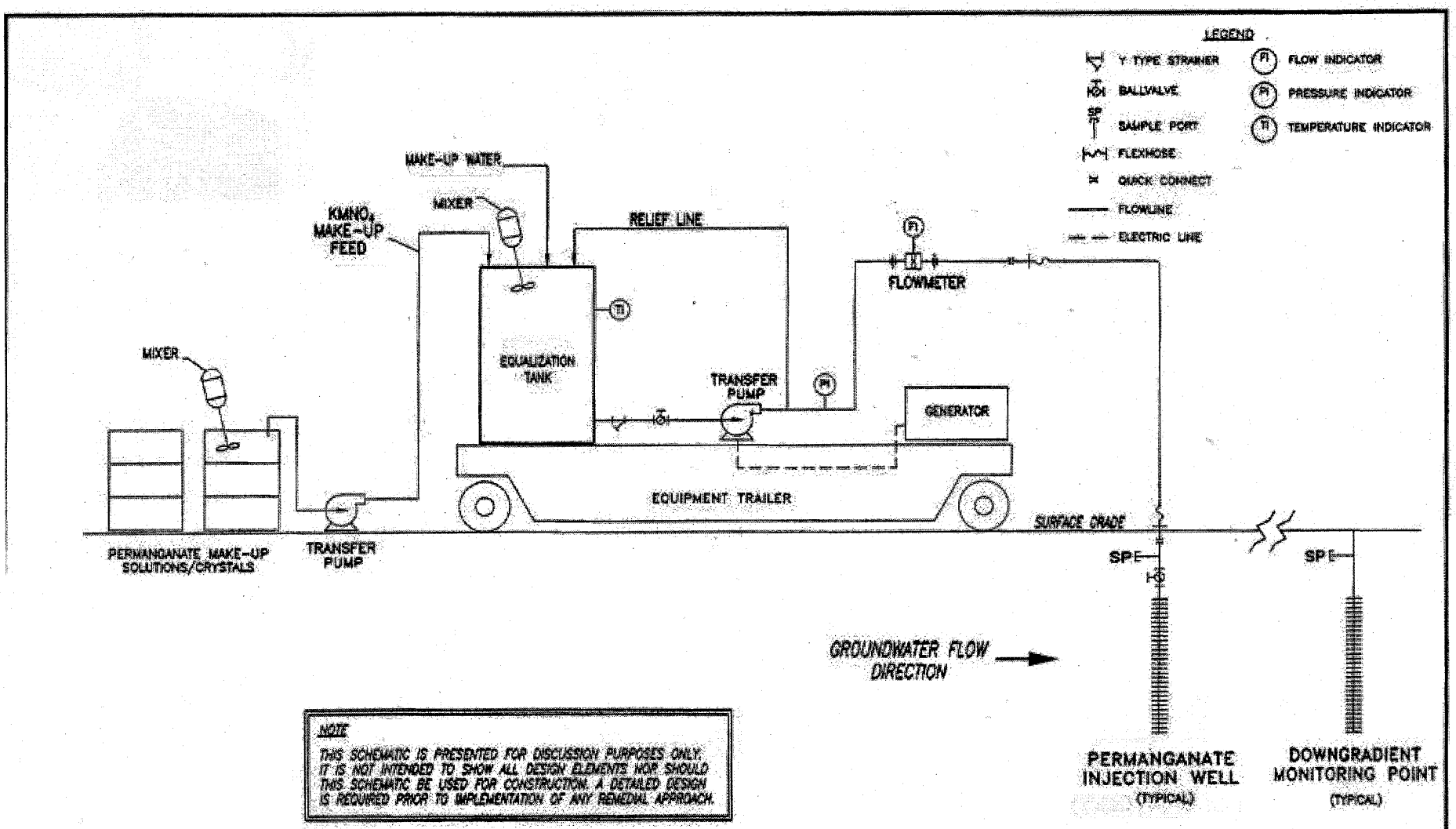
Groundwater Sample Results Summary
(Deep Wells, Samples Coll. 12/00)

DATE:	06/15/01	DRAWN:	TRS
REV. NO.	-	DESIGNED:	DJS
PROJECT NO.	MT&E-PALL-M371	FILE:	PALLSD12.DWG

FIGURE: 13


PTMW-3S
PCE: ND
TCE: 1
DCE: 17
FR-113: 3
PTMW-3I
PCE: ND
TCE: ND
DCE: ND
FR-113: ND
MW-11PS
PCE: ND
TCE: 2
DCE: ND
FR-113: ND
MW-11PI
PCE: ND
TCE: ND
DCE: ND
FR-113: 11
PTMW-2S
PCE: ND
TCE: 2
DCE: 4
FR-113: ND
PTMW-2I
PCE: ND
TCE: ND
DCE: ND
FR-113: ND
PTMW-1S
PCE: ND
TCE: 4
DCE: 3
FR-113: ND
PTMW-1I
PCE: ND
TCE: ND
DCE: ND
FR-113: ND
MW-13PS
PCE: ND
TCE: 6
DCE: 18
FR-113: ND
MW-13PI
PCE: 25
TCE: 110
DCE: 210
FR-113: ND
MW-6PI
PCE: ND
TCE: ND
DCE: ND
FR-113: ND
MW-7PS
PCE: ND
TCE: ND
DCE: ND
FR-113: ND
GLEN COVE ARTERIAL HIGHWAY
FALL CORPORATION
AUGUST THOMSEN
SEA COURT AVENUE
MW-12PI
PCE: 27
TCE: 18
DCE: 19
FR-113: 15
MW-10PS
PCE: 41
TCE: 220
DCE: 270
FR-113: 230
MW-10PI
PCE: 130
TCE: 45
DCE: 49
FR-113: 16
MW-5PI
PCE: 2
TCE: 2
DCE: 4
FR-113: ND
PTMW-4S
PCE: 26
TCE: 92
DCE: 130
FR-113: 150
PTMW-4I
PCE: 14
TCE: 33
DCE: 45
FR-113: 39
MW-12PS
PCE: 330
TCE: 490
DCE: 300
FR-113: 580
Post-Injection Groundwater Sampling Results
AS-BUILT PHASE I PILOT TEST LAYOUT
Figure 14



NOTE

THIS SCHEMATIC IS PRESENTED FOR DISCUSSION PURPOSES ONLY. IT IS NOT INTENDED TO SHOW ALL DESIGN ELEMENTS NOR SHOULD THIS SCHEMATIC BE USED FOR CONSTRUCTION. A DETAILED DESIGN IS REQUIRED PRIOR TO IMPLEMENTATION OF ANY REMEDIAL APPROACH.

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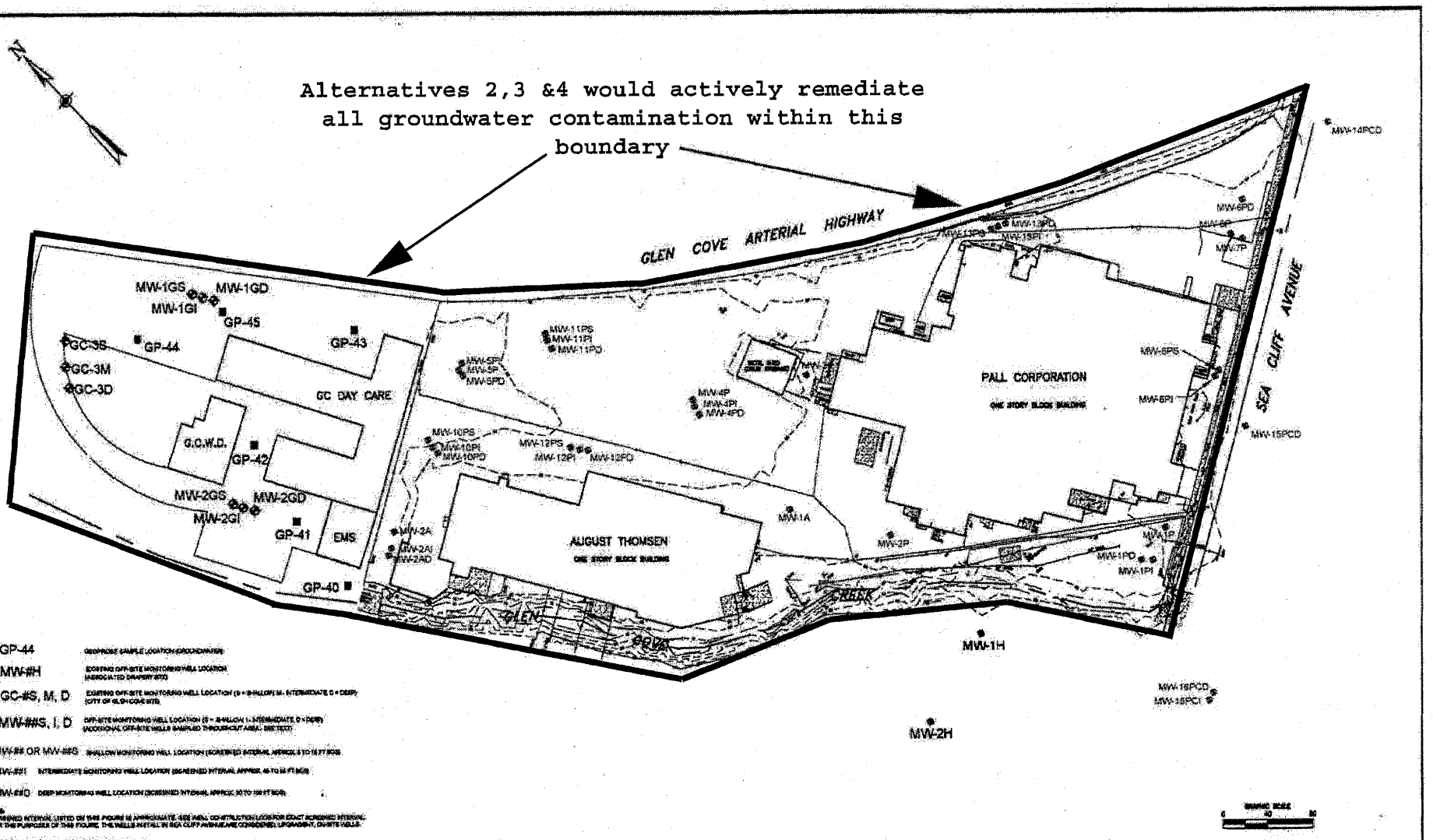
Glen Cove, New York 11542

Permanganate Injection
Process Schematic

DATE: 10/24/01	DRAWN: TRS	FIGURE: 15
REV. NO. -	DESIGNED: DJS	
PROJECT NO. MT&E-PALL-M371	FILE: PALLALT3BFS.DWG	



ENVIRO-SCIENCES, INC. 312 EAST MAIN STREET PATCHOGUE, NEW YORK 11772 PHONE: 631-207-9005 FAX: 631-207-3614	PALL Pall Corporation 30 Sea Cliff Avenue Glen Cove, New York 11542	**Boundaries for Active Groundwater Remediation**	DATE: 6/29/00 REV. NO. 1 PROJECT NO. MT&E-PALL-M371	DRAWN: DJS DESIGNED: DJS FILE: FIGURE5-2.DWG	FIGURE: 16

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Pall Corporation Site
Operable Unit No. 1 - Surface and Shallow Subsurface Contamination
City of Glen Cove, Nassau County, New York
Site No. 1-30-053B

The Proposed Remedial Action Plan (PRAP) for the Pall Corporation 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, 2004. The PRAP outlined the remedial measure proposed for the contaminated soil, groundwater, and air at the Pall Corporation 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 10, 2004, which included a presentation of the Remedial Investigation (RI) and the Feasibility Study (FS) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 29, 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: How does the hydraulic barrier at the Photocircuits site work and how long has it been operating? Is the hydraulic barrier at the Photocircuits site preventing migration of contaminated groundwater onto the Pall site to a depth of 60 ft bgs?

RESPONSE 1: The hydraulic barrier at the north end of the Photocircuits site consists of four 4-inch diameter wells screened from the top of the water table (2-6 feet bgs) to a depth of 80 ft bgs. The wells are equipped with air driven pumps that are capable of providing variable pumping rates of up to 3 gallons per minute per well; however, the normal pumping rate for the system is approximately 1 to 2 gallons per minute per well. The system has been in operation since May 2003.

The hydraulic barrier is preventing migration of contaminants from beneath the Photocircuits site to a depth of at least 60 feet within its calculated area of influence. The system was designed to intercept contamination originating in the only known source area of the Photocircuits site, which is the former tank farm area located in the northeast corner of the property. The four wells are installed around the periphery of the main Photocircuits building in this area. Before the system design was finalized, hydraulic tests were conducted in the area to ensure that the system would prevent migration of contaminated groundwater from beneath the known source area on the Photocircuits site. According to the information provided by the hydraulic tests, the system as designed would be sufficient to

ensure that contaminated groundwater, to a depth of at least 60 ft bgs, will not migrate from the source area at the Photocircuits site.

Groundwater monitoring well sampling and system effluent sampling were conducted at the Photocircuits site after system startup. Test results indicate that the system is performing as designed by creating an area of hydraulic control, removing contaminated groundwater, and preventing further migration of contaminated groundwater from the known source area towards the Pall site to a depth of at least 60 feet bgs.

Although the hydraulic restraint system is performing as designed, the system influences contaminated groundwater migrating from the known source area and any contaminated groundwater west of the main Photocircuits building will not be prevented from exiting the Photocircuits site.

COMMENT 2: If Glen Cove Creek floods, will the hydraulic barrier be effective?

RESPONSE 2: If the creek floods, the groundwater velocity may increase and the water table may rise. However, the variable speed pumps in the extraction wells can be adjusted to maintain hydraulic control.

COMMENT 3: If a power failure occurs at the Photocircuits site, would contaminants migrate onto the Pall site?

RESPONSE 3: As groundwater moves very slowly, shutdown of the extraction wells for short periods of time would not allow groundwater contamination to migrate from the Photocircuits site onto the Pall site.

COMMENT 4: Who is paying for the cleanup?

RESPONSE 4: The NYSDEC will ask the Pall Corporation to enter into a Consent Order to remediate the site. If Pall Corporation refuses to implement the selected remedy, the NYSDEC will remediate the site using state money and will seek to recover costs from the Pall Corporation.

COMMENT 5: Is the site useable and can it be redeveloped?

RESPONSE 5: A site management plan will be prepared as part of the selected remedy. Any redevelopment must be conducted in accordance with the site management plan. If no redevelopment occurs, the only way occupants of the site could be exposed to existing contaminants is from vapor intrusion. The site management plan will determine the potential for vapor intrusion and mitigate any impacts.

COMMENT 6: Maximum on-site groundwater concentrations increased from December 2000 to October/November 2002. Why did these concentrations increase, as Pall Corporation did not operate at the site during that period?

RESPONSE 6: As shown in Table 2, there is no pattern of increasing or decreasing groundwater concentrations during four rounds of groundwater sampling. The maximum groundwater concentrations in 2002 were detected in the shallow zone. Upgradient wells in this zone had low VOC concentrations during all groundwater sampling events. The variations in groundwater concentrations reflect the groundwater flow across the site and any seasonal variations in the water table.

COMMENT 7: Would any new tenants on the Pall site be liable for the contamination?

RESPONSE 7: In general, a new tenant that has no affiliation with any of the responsible parties would not have liability. However, the new tenant would be responsible for any contamination that it releases and would also have liability if, through its actions, it exacerbates environmental conditions at the site.

COMMENT 8: Is Pall Corporation legally allowed to sell the property?

RESPONSE 8: Yes.

COMMENT 9: If Pall Corporation sells the property, would the new owner be liable for the contamination?

RESPONSE 9: The new owner would be liable except if it can successfully establish that it meets the criteria for the exceptions and/or defenses to liability afforded in ECL 27-1323 (Liability Exemptions and Defenses).

COMMENT 10: Why did the NYSDEC choose the December 2000 groundwater data to present at the public meeting?

RESPONSE 10: The five rounds of groundwater sampling produced similar results. Therefore, the NYSDEC presented one typical round of groundwater data to allow more time for questions and comments from the meeting attendees.

COMMENT 11: Where were the highest contaminant levels in the soil found?

RESPONSE 11: The highest levels were found in boring number 5-SB-15. See Figure 4 for the location of the boring.

COMMENT 12: How does the contamination affect local residents?

RESPONSE 12: The public water supply provides drinking water to local residents. Therefore, local residents are not drinking the contaminated groundwater beneath the site. The only potential exposure pathway is indoor vapor intrusion, in which VOCs volatilize from the groundwater and enter homes and businesses. As part of the remedy, the potential for vapor intrusion will be evaluated and mitigated, if needed.

COMMENT 13: What is the time frame for the soil and groundwater remediation?

RESPONSE 13: The soil cleanup is expected to be completed within one year. The NYSDEC anticipates that groundwater remediation of operable unit 1 will require six months to design and two years of injections followed by long-term monitoring.

COMMENT 14: Can the deep groundwater contamination be investigated at the same time that the shallow groundwater contamination is remediated.

RESPONSE 14: Yes

COMMENT 15: When will the Photocircuits site be remediated?

RESPONSE 15: Additional investigation of the deep groundwater contamination is needed at the Photocircuits site. This investigation will be conducted in conjunction with the Pall site's deep groundwater investigation. Although a hydraulic restraint system is currently remediating the groundwater at the northern boundary of the Photocircuits site, the site will not be completely remediated for several years.

COMMENT 16: Can the NYSDEC choose to remediate the deep groundwater using the Carney Street well without performing the deep groundwater investigation?

RESPONSE 16: The NYSDEC does not have enough information to choose a remedy for the deep groundwater. Hence, additional investigation is required.

COMMENT 17: How can the site be remediated using state Superfund money when the state Superfund is bankrupt?

RESPONSE 17: The State Superfund was fully funded by the passage of the Superfund/Brownfields law in October 2003. If none of the responsible parties enter into an Order on Consent to remediate the site, the site will be cleaned up using state Superfund money. The State would then attempt to recover costs from the responsible parties.

COMMENT 18: Has in-situ chemical oxidation been used at other sites? Have there been community complaints about this type of remedy?

RESPONSE 18: The remedy has been pilot tested at the Pall site and has been used at several other sites. The NYSDEC is not aware of any community complaints concerning this remedy.

COMMENT 19: Do workers wear gas masks during remediation?

RESPONSE 19: Workers may be required to wear respirators during some parts of the remediation. However, a community air monitoring plan will be implemented to help protect the community from potential airborne contaminant releases during remediation.

COMMENT 20: How many State Superfund sites are in New York State?

RESPONSE 20: As of March 31, 2003, there were 875 sites on the Registry of Inactive Hazardous Waste Disposal Sites. Of these sites, 507 were listed as Class 2 sites, indicating that they are a significant threat to human health and/or the environment. There were 197 sites that have been cleaned up and were removed from the Registry. Also, 241 sites had been properly remediated and require continued management and remained listed in the Registry under a Class 4 designation. In addition, 17 sites had been properly cleaned up, required no further action and remained listed in the Registry under a Class 5 category.

COMMENT 21: How was deep groundwater remediated at other sites?

RESPONSE 21: Groundwater deeper than 60 feet bgs is often remediated by the three active remedial alternatives considered in this ROD: air sparging/soil vapor extraction, in-situ chemical oxidation and groundwater extraction and treatment. In-well vapor stripping has also been used to remediate deep groundwater contamination. In-well vapor stripping systems clean the groundwater in underground treatment wells. Each of these technologies has depth limitations, which are dependent on local geology.

COMMENT 22: How big is the groundwater plume?

RESPONSE 22: The groundwater contamination plume extends approximately 1,250 feet downgradient (northwest) of the Pall site.

COMMENT 23: How soon must Pall/Photocircuits sign the Consent Order for the deep groundwater?

RESPONSE 23: The NYSDEC will complete Consent Order negotiations by the end of June 2004.

COMMENT 24: Is the Glen Cove public water department overseeing our work?

RESPONSE 24: The NYSDEC has been working cooperatively with the Glen Cove Public Works Department.

COMMENT 25: What happens if the remedy doesn't work?

RESPONSE 25: The NYSDEC believes that the selected remedy will achieve the remedial goals. The effectiveness of the remedy will be monitored during and after the remediation until the remedial goals are met or the NYSDEC determines that monitoring is no longer needed. If the remedy proves to be ineffective in achieving the remedial goals, the NYSDEC will evaluate further measures.

COMMENT 26: Is the NYSDEC cleaning up the site for the benefit of the residents or because the NYSDEC can make Pall Corporation remediate the site?

RESPONSE 26: The Pall site is a listed inactive hazardous waste disposal site, which poses a significant threat to human health and the environment. The final remedy for operable unit 1 has been chosen in this ROD because the NYSDEC has enough information to select a remedy to protect the public health and the environment.

COMMENT 27: Is the most threatening part of the contamination being cleaned up now?

RESPONSE 27: A large portion of the site's contamination will be cleaned up by the selected remedy, which will decrease the threat to human health and the environment.

COMMENT 28: What levels will the groundwater be cleaned to?

RESPONSE 28: The goal of the remedy is to clean the groundwater to groundwater quality standards, to the extent practicable. These standards are protective of human health and the environment.

COMMENT 29: Should warning signs be posted to discourage people from letting their animals drink from Glen Cove Creek?

RESPONSE 29: The NYSDEC and NYSDOH believe that the concentrations of VOCs in sediments and surface water of the creek are not a threat to human health or the environment. Therefore, it will not be necessary to post warning signs at the creek.

COMMENT 30: Have we sampled the retention pond located in Glen Cove Creek downstream of the Pall site?

RESPONSE 30: No samples were obtained from the retention pond downstream of the Pall site. The contaminant concentrations in the furthest downstream surface water and sediment samples at the Pall site are not considered a threat to human health or the environment. The surface water and sediment downstream of the Pall site are expected to contain lower VOC levels because the surrounding groundwater is less contaminated and is therefore less likely to contaminate the surface water.

COMMENT 31: When is the next public meeting for the Pall site?

RESPONSE 31: At this time, there are no plans to hold additional public meetings for the Pall site. However, the public will be informed of the remediation status via fact sheets by mail.

COMMENT 32: How deep were the sediment samples in Glen Cove Creek?

RESPONSE 32: The samples were taken from the surface of the creek bed.

COMMENT 33: How will the NYSDEC obtain access to private properties for investigation and remediation?

RESPONSE 33: When accessing private properties, the NYSDEC will make every effort to accommodate property owners' concerns. The Environmental Conservation Law 27-1309 gives the NYSDEC the right to access inactive hazardous waste disposal sites and areas near these sites.

COMMENT 34: Why were the Pall and Photocircuits sites listed as two separate sites?

RESPONSE 34: The Pall site and Photocircuits site are owned by two different parties and are separate sources of contamination. Therefore, they were listed as two separate sites.

COMMENT 35: Does Photocircuits still use the chemicals that have contaminated the groundwater?

RESPONSE 35: According to Photocircuits' environmental consultant, Photocircuits has phased out the use of the chemicals that have contaminated the groundwater.

COMMENT 36: Are people getting sick from the site?

RESPONSE 36: We do not know of any ongoing exposures to contamination from the site. In order for people to experience health effects, they would have to be exposed to the contamination by inhaling, ingesting, or coming into

direct contact with contaminated material. There appear to be no exposures to the limited area of soil contamination remaining at the site, which is not readily accessible. People are not being exposed to contaminated groundwater, as the City of Glen Cove provides a public water supply for the entire area. The public water supply must be tested regularly to ensure that it complies with state and federal drinking water standards. The remedy for the site includes an evaluation of the potential for soil vapor intrusion into the on-site buildings and buildings over the groundwater contamination plume. If any actual or potential exposures are found during that evaluation, they will be addressed during implementation of the remedy.

COMMENT 37: Will the air quality be safe during and after the cleanup? Will air monitoring be performed in residential areas?

RESPONSE 37: The proposed remedy is not expected to release a significant amount of contamination into the air. Nevertheless, a community air monitoring plan will be in place during the remediation. This plan, which must be approved by the NYSDEC and NYSDOH, will require air monitoring at the perimeter of the work area, and it will specify when actions must be taken to reduce contaminant concentrations in air. The plan may also require soil vapor monitoring during remediation to assess whether the oxidant injections affect contaminant concentrations in soil vapor.

There should not be a need to monitor in residential areas for impacts from the chemical oxidant injections; the community air monitoring would be done closer to the injection points. However, the remedy does include an assessment of potential impacts from soil vapor related to the groundwater contaminant plume.

Mr. John Palumbi submitted a letter (dated February 28, 2004) which included the following comments:

COMMENT 38: If the conditions at the site threaten human health and the environment, as stated on the fact sheet, we want the site remediated as soon as possible.

RESPONSE 38: The site will be remediated in accordance with State and federal laws as quickly as possible.

Mr. Nicholas DeSantis of the Glen Cove Department of Public Works submitted a letter (dated March 19, 2004) which included the following comments:

COMMENT 39: Can the Department provide a site plan of the location of the well points utilized for the hydraulic barrier on the Photocircuits site?

RESPONSE 39: The NYSDEC will provide a figure with the Photocircuits extraction well locations to Mr. DeSantis shortly.

COMMENT 40: How long has data been recorded and reviewed by the Department regarding the 'hydraulic barrier' between the Photocircuits and Pall property lines?

RESPONSE 40: The NYSDEC has received and evaluated data from Photocircuits on the performance of the hydraulic control system covering the period from May to December of 2003.

COMMENT 41: What confirmatory data has been reviewed and approved by the Department verifying that the hydraulic grade line has not moved from the Photocircuits property line to the Pall property line?

RESPONSE 41: Mr. DeSantis clarified this comment in a subsequent telephone conversation. His comment was essentially the same as Comment #1 of this responsiveness summary.

COMMENT 42: It was stated that the Department will intervene if Pall and Photocircuits can not enter into a cooperative agreement to perform investigation of deep ground water issue. The Department stated if Pall and Photocircuits can not come to a mutual agreement, that the Department will initiate investigation during 2nd quarter of 2004. What is the work plan and schedule of activities that the Department will undertake?

RESPONSE 42: As previously stated, the NYSDEC will complete Consent Order negotiations by the end of June 2004. If Pall and/or Photocircuits enter into a Consent Order for the deep groundwater contamination, they would submit a Remedial Investigation/Feasibility Study (RI/FS) Work Plan, which would contain a scope of work and schedule of activities. The scope of work and schedule will not be finalized until the NYSDEC approves the RI/FS Work Plan. If neither party agrees to investigate the deep groundwater contamination, the NYSDEC will retain an engineering consultant to prepare an RI/FS Work Plan.

COMMENT 43: Though not part of the presentation, the Department stated they have a good idea of delineation of Plume. It was stated that this information will be included in the Record of Decision.

RESPONSE 43: Section 5.1.3 of this ROD discusses the extent of the contaminant plume. A more detailed discussion can be found in the RI Reports.

COMMENT 44: The public feels that Photocircuits contamination should be addressed at the same time if not first since they are up gradient. The DEC did not respond about Photocircuits since the DEC Project Manager was not in attendance. When will a public hearing regarding the progress of Photocircuits be conducted?

RESPONSE 44: A public meeting will be conducted for the Photocircuits site after the NYSDEC proposes a remedy for the site in a Proposed Remedial Action Plan (PRAP). The NYSDEC anticipates that a PRAP for the Photocircuits site will be released in December 2004.

Ms. Beth Dressler of the Glen Cove Chamber of Commerce submitted a letter (dated March 24, 2004) which included the following comments:

COMMENT 45: Based on our Committee report, we are very concerned that no solid answers were provided and no data was given to the public, even under direct questioning, on the performance of barrier wells (or on the barrier well technology) and on the exact flow of contamination from the Photocircuits property onto the Pall portion of the cleanup site.

RESPONSE 45: Refer to Response 1 for a detailed description of the hydraulic control system and an explanation of the system's performance.

COMMENT 46: The Glen Cove Chamber of Commerce opposes the issuance of an R.O.D. at this time. We feel that the issues relating to returning this site to commercial use are not settled and that any business wishing to acquire the site will be at risk of continuing pollution from the contaminated water that could, and most likely will, flow from the Photocircuits region. We are concerned that the attempt to remediate the Pall site, without even having a plan for the remediation of the Photocircuits site and the surrounding area, is poor planning and a serious cloud for businesses in Glen Cove.

RESPONSE 46: As detailed in Response 1, the hydraulic barrier is preventing migration of contaminants from the known source of contamination at the Photocircuits site to a depth of at least 60 feet. Therefore, the groundwater contamination at the Pall site can be remediated without significant contamination migrating from the Photocircuits site. As the groundwater at the Pall site is a threat to human health and the environment and requires remediation, the NYSDEC will not delay the remediation of shallow groundwater contamination at the Pall site.

Mr. Hyman Katz of the Pall Corporation submitted a letter (dated March 26, 2004) which included the following comments:

COMMENT 47: Pall requests NYSDEC to add to Section 5 of the PRAP, relating to Site Contamination, a statement that specifically describes the impact of the upgradient Photocircuits site on the quality of the shallow and intermediate groundwater at the Pall site.

RESPONSE 47: This ROD presents the results of the remedial investigation, which is the best description of site conditions. In Section 2, the ROD states that the Photocircuits site is hydraulically upgradient of the Pall site. In Section 5.1.3, the ROD discusses the extent of contamination, including upgradient sampling results.

COMMENT 48: The PRAP should contain a description of the significance of upgradient hydraulic containment on the short-term and long-term effectiveness and permanence of the proposed remedy for the shallow and intermediate groundwater at the Pall Site.

RESPONSE 48: As detailed in Response 1, the hydraulic barrier is intercepting contamination originating at the only known source area at the Photocircuits site. Therefore, the evaluations of short-term effectiveness, long-term effectiveness and permanence in the Feasibility Study report and in Section 8 of this ROD are complete.

COMMENT 49: The PRAP should describe the nature of the information upon which NYSDEC has relied in determining that the upgradient hydraulic containment system is preventing shallow and intermediate groundwater from flowing from the Photocircuits site to the Pall site.

RESPONSE 49: See Response 1

COMMENT 50: The PRAP should state explicitly that Photocircuits will be required to remediate the impacts of the off-site migration of contamination from its site onto the Pall site.

RESPONSE 50: If the Pall Corporation enters into an Order on Consent for Operable Unit 1, they will be responsible for implementing the entire remedy for Operable Unit 1. However, if contamination from the

Photocircuits site is commingled with Pall's contamination, Pall would have a cause of action to seek recovery for remediating Photocircuits' contamination.

COMMENT 51: Pall's Feasibility Study addressed on-site remediation only; however, the PRAP extends the remediation area to a 2.3-acre area off-site of the Pall site. The PRAP should state in the introductory portion of Section 7 that the implementation of remediation in the expanded treatment area will require additional investigation including pilot testing in order to support use of the remedial design for this area.

RESPONSE 51: During the remedial investigation, Pall Corporation performed comprehensive soil and groundwater sampling in the downgradient active treatment area. Therefore, additional investigation is not necessary.

The selected remedy provides for pilot testing as part of the remedial design. If Pall Corporation enters into an Order on Consent to remediate Operable Unit 1 of the site, they may propose the locations of the pilot test.

COMMENT 52: The PRAP should state that the additional pilot testing is required in order to demonstrate, among other things, the feasibility of the oxidation remedy.

RESPONSE 52: The pilot test included in the remedy will be used to identify the appropriate oxidant, number of injection wells and dosing rates. However, after reviewing the feasibility study and the pilot test results, the NYSDEC concluded that the selected remedy is feasible.

COMMENT 53: The description in the PRAP of on-site soil contamination should specify the small number of samples containing VOCs that exceeded SCGs.

RESPONSE 53: Section 5.1.3 and Table 1 of the ROD describe the extent of soil contamination at the site. The number of samples exceeding SCGs is listed in Table 1.

COMMENT 54: On-site VOC concentrations in groundwater were not always significantly higher than VOC levels at the upgradient edge of the site. The last bullet on page 4 under Section 3.2, Remedial History, should be revised. Pall has data from some sampling events that show the highest concentrations of VOCs in upgradient wells.

RESPONSE 54: The referenced bullet states, "On-site VOC concentrations in groundwater were significantly higher than VOC levels at the upgradient edge of the site." This bullet is one of a list of reasons why the site was listed on the Registry of Inactive Hazardous Waste Disposal Sites and therefore summarizes the data that was collected before the site was listed on the Registry. The subsequent data collected by Pall during the remedial investigation is presented in Section 5.1.3. In addition, Table 2 compares on-site VOC concentrations in groundwater with upgradient concentrations for four different sampling events during the remedial investigation. Therefore, the ROD distinguishes between historic data and remedial investigation data.

COMMENT 55: The direct push sampling performed by NYSDEC during the Phase 1 Remedial Investigation ("RI") (see page 8 of the PRAP) may not have allowed proper well development or purging, thereby resulting in data that were biased high in the shallow groundwater at the north end of the Site. Pall believes that this concern was confirmed when properly installed wells were sampled in the same general location at a later time and the elevated levels of VOCs detected by NYSDEC in groundwater collected from direct push borings were never

subsequently confirmed nor repeatable. Only groundwater data collected from properly installed, developed and purged monitoring wells should be compared to groundwater quality standards.

RESPONSE 55: Direct push groundwater sampling, in conjunction with groundwater monitoring well sampling, is a common method of investigating groundwater contamination at inactive hazardous waste disposal sites. In the case of the Pall site, the monitoring well results confirmed the results of the direct push sampling. Although VOC levels varied during the five rounds of groundwater sampling, the overall groundwater data support the following two key conclusions in the ROD:

- In general, the highest site-related groundwater concentrations were detected at the north (downgradient) end of the site; and

- Upgradient concentrations were near or below SCGs at shallow depths but increased with depth.

COMMENT 56: The nature and extent of BTEX contamination is discussed at page 9 of the PRAP. This discussion should also include a reference to historic BTEX impacts on the properties in the vicinity of the Pall Site, including City-owned properties.

RESPONSE 56: Along with presenting the BTEX groundwater data on the downgradient properties, the ROD also mentions the following two facts: a) BTEX compounds exceeded SCGs in some of the on-site soil samples; and b) on-site BTEX groundwater concentrations did not exceed 36 ppb. In addition, the Remedial Investigation report indicates that Pall obtained seven soil samples on the downgradient properties. BTEX compounds were not detected in any of these samples.

COMMENT 57: Figure 5 in the PRAP represents data from an intermediate sampling event during SVE pilot testing and this figure should be deleted. A new figure depicting the final sampling results from pilot testing would accurately represent post-testing conditions and should replace Figure 5.

RESPONSE 57: Section 5.2 includes the final sampling results for the SVE system. Figure 5 is needed in the ROD to delineate the extent of the soil contamination.

COMMENT 58: The statements in the PRAP regarding the cost of the proposed remedy are incorrect; they should be deleted and replaced by more accurate cost estimates.

RESPONSE 58: The NYSDEC revised the cost estimates based on the data provided in the Feasibility Study. Although the final cost estimate cannot be prepared until the remedial design is completed, the cost estimates in the ROD are accurate enough for the purpose of selecting a remedy.

COMMENT 59: The reference to Tweezerman's tenancy on page 3 of the PRAP should be deleted.

RESPONSE 59: The reference to Tweezerman's tenancy has been deleted.

Dr. Glen W. Howard submitted a letter (dated March 30, 2004) which included the following comments:

COMMENT 60: There was no discussion or data presented that would assure that the rest of the contaminated area encompassed by the Photocircuits, Slater, and surrounding land are under control or that this present contaminated groundwater will not invade the Pall site rendering the Pall effort null and void.

RESPONSE 60: As detailed in Response 1, the hydraulic barrier is preventing migration of contaminants from the known source of contamination at the Photocircuits site to a depth of at least 60 feet. Therefore, the groundwater contamination at the Pall site can be remediated without significant contamination migrating from the Photocircuits site. The contamination on the Pass and Seymour (formerly Slater Electric) site is not directly upgradient of the Pall site, and therefore should not affect the selected remedy. There are no other sources of contamination that would affect the selected remedy.

COMMENT 61: One of the most contentious points was the discussion about the three injection wells on the Photocircuits site that were touted as being able to prevent water movement down toward the Sound (and onto the Pall site.) No hydrology data or data of any sort was presented, nor was it even stated to exist, that supported the statements of the DEC representative that these wells would actually work.

RESPONSE 61: Refer to Response 1 for a detailed description of the hydraulic control system and an explanation of the system's performance.

COMMENT 62: In addition, while the DEC stated that the remediation of the Pall site was effective, they also stated that they had no idea what to do on the Photocircuits site. This was very disturbing because the Pall remedy, if actually as successful at touted, should be equally effective on the rest of the area.

RESPONSE 62: The remedy was selected at the Pall site by evaluating each alternative using the eight criteria in Section 7.2 of the ROD. The same evaluation process will be performed for the Photocircuits site before selecting a remedy. As the two sites have different site conditions, the remedy chosen for the Photocircuits site may not be the same remedy that was chosen for the Pall site.

COMMENT 63: I feel that the NYSDEC must not issue a ROD for the Pall site at this time and must have a solid scientific supported approach to the entire area that assure that remediation is possible and that eliminates any risk of recontamination of the Pall site.

RESPONSE 63: As detailed in Response 1, the hydraulic barrier is preventing migration of contaminants from the known source of contamination at the Photocircuits site to a depth of at least 60 feet. Therefore, the groundwater contamination at the Pall site can be remediated without significant contamination migrating from the Photocircuits site. As the groundwater at the Pall site is a threat to human health and the environment and requires remediation, the NYSDEC will not delay the remediation of shallow groundwater contamination at the Pall site.

2/28/04

Mr John Palumbi
63 Hazel Street
Glen Cove, N.Y.
11542

Mr. Jeffrey Dyber
Project Manager
NYSDEC

Mr. Jeffrey Dyber
I received Fact Sheet
February 2004 regarding
Pall Corporation Site
City of Glen Cove Site number
1-30-053B Operable Unit 1
Surface and Shallow
Subsurface Contamination
Mr. Dyber I am very
Concerned about this issue.
We hope you will
fix this situation A.S.A.P.
Unfortunately due to my
work hours and other
responsibilities I will
not be able to attend
meetings

Turn

If the present situation threatens human health and the environment as said on the Fact Sheet, We want this situation remedied A.S.A.P. "PLEASE"

Thank You
Very Sincerely
Mr. John Palumbi
+ Family

File on eDOCs? ____ Yes ____ No
Site Name _____
Site # _____
County _____
Town _____
Foilable _____ Yes _____ No
Please Write The eDOC File
Name Description _____

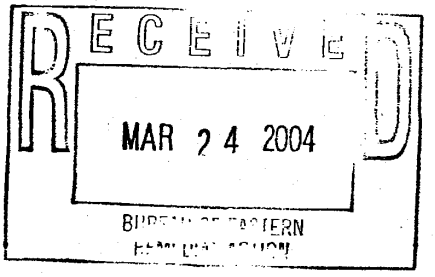
Mary Ann Holzkamp
Mayor

Phone: (516) 676-2000
Fax: (516) 676-0108
www.glencove-li.com

THE CITY OF GLEN COVE

City Hall, Glen Cove, NY 11542

March 19, 2004



Mr. Jeffrey L. Dyber, P.E.
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7015

Re: Pall Corporation Site – Operable Unit 1
Surface and Shallow Subsurface Contamination

Dear Mr. Dyber:

The following are comments, for inclusion into the Record of Decision which the City requests responses;

1. Can the Department provide a site plan of the location of the well points utilized for the hydraulic barrier on the Photocircuit's site?
2. How long has data been recorded and reviewed by the Department regarding the 'hydraulic barrier' between the Photocircuit's and Pall property lines?
3. What confirmatory data has been reviewed and approved by the Department verifying that the hydraulic grade line has not moved from the Photocircuit's property line to the Pall property line?
4. It was stated that the Department will intervene if Pall and Photocircuit's can not enter into a cooperative agreement to perform investigation of deep ground water issue. The Department stated if Pall and Photocircuit's can not come to a mutual agreement, that the Department will initiate investigation during 2nd quarter of 2004. What is the work plan and schedule of activities that the Department will undertake?
5. Though not part of the presentation, the Department stated they have a good idea of delineation of Plume. It was stated that this information will be included in the Record of Decision.
6. The Public feels that Photocircuit's contamination should be addressed at the same time if not first since they are up gradient. The DEC did not respond about Photocircuit's since the DEC Project Manager was not in attendance. When will a public hearing regarding the progress of Photocircuit's be conducted?

The Public Hearing was well presented and the City is looking forward to continued progress at both State Superfund Sites.

Sincerely,

Nicholas J DeSantis, P.E.
Director of Public Works

Cc: Pall File

Glen Cove Chamber Of Commerce
P.O. Box 721, Glen Cove, NY 11542
Tel /Fax: 516-676-6666
E-Mail: info@glencovechamber.org Website: www.glencovechamber.org

March 24, 2004

Mr. Jeffery Dyber, P.E.
Project Manager
NYSDEC
625 Broadway
Albany, NY 12233-7015

Dear Mr. Dyber,

Members of the Government Liaison Committee of the Glen Cove Chamber of Commerce attended the Public Hearing on Site Number 1-30-053 (Pall Corporation) held on March 10, 2004. Their report to the Board of Directors has raised some strong concerns within the Chamber.

It is our understanding that this hearing is the last public hearing before the NYSDEC issues a Record of Decision (ROD) on a specific remediation plan for the upper water table on the Pall Site.

The Glen Cove Chamber of Commerce opposes the issuance of an R.O.D. at this time.

We feel that the issues relating to returning this site to commercial use are not settled and that any business wishing to acquire the site will be at risk of continuing pollution from the contaminated water that could, and most likely will, flow from the Photocircuits region.

Based on our Committee report, we are very concerned that no solid answers were provided and no data was given to the public, even under direct questioning, on the performance of barrier wells (or on barrier well technology) and on the exact flow of the contamination from the Photocircuits property onto the Pall portion of the cleanup site. The engineers representing the NYSDEC would only state that they "believed" everything was working and would not fail without stating any facts, prior studies, or experts to substantiate their beliefs.

As a Chamber of Commerce we find that the DEC has not come close to resolving the issues at the sight, and this causes us great concern from a business viewpoint both for the businesses in Glen Cove, and for the hope of brining new business to Glen Cove.

We feel that it is imperative that the subsurface water remediation for the entire site, not just the Pall property, must be properly put into motion. We are concerned that the attempt to remediate the Pall site, without even having a plan for the remediation of the Photocircuits site and the surrounding area, is poor planning and a serious cloud for businesses in Glen Cove.

Until a full remediation plan is in place, the Glen Cove Chamber of Commerce feels that any ROD for the Pall sight would be premature and could create serious concerns about the entire remediation process.

Sincerely yours,
Glen cove Chamber of Commerce

Beth Dressler
President

Cc. Senator Carl Marcellino
Assemblyman David Sidikman

PALL Pall Corporation

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March 26, 2004

VIA FACSIMILE AND FEDERAL EXPRESS

Jeffrey L. Dyber, P.E.
Project Manager
New York State Department of Environmental Conservation
625 Broadway, 11th Floor
Albany, New York 12233-7015

Re: *Proposed Remedial Action Plan - Operable Unit 1*
Pall Corporation Site, City of Glen Cove
Site No. 1-30-053B

Dear Mr. Dyber:

Pall Corporation ("Pall") has examined the Proposed Remedial Action Plan (the "PRAP") and the Fact Sheet ("Fact Sheet"), both dated February 2004, prepared by the New York State Department of Environmental Conservation ("NYSDEC") for the Pall Corporation Site (the "Site"), Site No. 1-30-053B, located in the City of Glen Cove. By this letter, Pall provides its written comments on the PRAP and the Fact Sheet within the public comment period, which ends March 29, 2004.

Proposed Remedial Action Plan

1. Pall requests NYSDEC to add to Section 5 of the PRAP, relating to Site Contamination, a statement that specifically describes the impact of the upgradient Photocircuits site on the quality of the shallow and intermediate groundwater at the Pall Site.

The PRAP states at page 4 that the Photocircuits site is an inactive hazardous waste disposal site located hydraulically upgradient of the Pall Site. However, the PRAP does not specifically identify the impact on the quality of the shallow and intermediate groundwater at the Pall Site of groundwater migrating from the Photocircuits site.

At the March 10, 2004 public meeting, NYSDEC described the regional groundwater flow direction as north-northwest. NYSDEC demonstrated using highlighting on a site map the direction of groundwater flow as it moves from the Photocircuits site beneath the Pall Site.

While the PRAP acknowledges at page 4 that the Photocircuits site is hydraulically upgradient of the Pall Site, there is no clear description in Section 5 of the PRAP of the impact this flow has had or is having on conditions at the Pall Site. This is important because a final remedy must explicitly recognize all contributing conditions.

Therefore, Pall requests NYSDEC to add the following statement to Section 5.1.3, Extent of Contamination, at the end of the Shallow Groundwater discussion on page 8: "The presence of VOCs in upgradient shallow and intermediate groundwater has impacted groundwater quality in these zones on the Pall Site."

2. The PRAP should contain a description of the significance of upgradient hydraulic containment on the short-term and long-term effectiveness and permanence of the proposed remedy for the shallow and intermediate groundwater at the Pall Site.

After NYSDEC's description of the direction of regional groundwater flow, a majority of the nearly two dozen individuals present at the March 10 public meeting questioned why NYSDEC was proceeding with the shallow and intermediate groundwater remedy on the Pall Site before the upgradient source of contamination was fully investigated and addressed. Among the concerns these individuals raised was the potential for implementing a groundwater remedy that would be ineffective and fail to benefit the public because of the continuing migration of groundwater from the Photocircuits site. As you are aware, Pall shares these concerns.

NYSDEC responded at the meeting that, based on a review of data, the hydraulic containment system installed on the Photocircuits site is effective up to 60 feet below ground surface. NYSDEC indicated that in its view the containment is working and that it will make this data available in its responsiveness summary appended to the Record of Decision ("ROD").

Information regarding hydraulic control should be included not only in the responsiveness summary, but also in the text of the PRAP. The PRAP should describe the role of the upgradient hydraulic containment system in preventing the off-site migration of shallow and intermediate groundwater onto the Pall Site. This data and information is critical because the presence of VOC contamination in upgradient groundwater has the potential to adversely impact the effectiveness and permanence of the proposed groundwater remedy.

Pall requests NYSDEC to add the following statement to Section 8, Summary of the Proposed Remedy, in Item 3 on page 18: "Because of its potential to affect the short-term and long-term effectiveness and permanence of the proposed remedy, ongoing upgradient hydraulic containment will have been demonstrated before Pall implements the groundwater remedy."

3. The PRAP should describe the nature of the information upon which NYSDEC has relied in determining that the upgradient hydraulic containment system is preventing shallow and intermediate groundwater from flowing from the Photocircuits site to the Pall Site.

At the March 10 public meeting, NYSDEC did not have any detailed information nor data available concerning the elements of the hydraulic containment system installed on the Photocircuits site. NYSDEC did, however, acknowledge that the system must be effective for the proposed remedy at the Pall Site (and downgradient of the Pall Site) to be effective. At the meeting, NYSDEC stated simply that it had evaluated data that leads it to believe that the hydraulic containment system is effective to 60 feet below ground surface. NYSDEC indicated that such data and a statement to this effect is to be included in the responsiveness summary. However, information regarding system effectiveness is extremely important and should also be included in the text of the PRAP because the effectiveness and long-term benefit (i.e., permanence) of the proposed remedy depends on the operation of the containment system. Moreover, hydraulic containment below 60 feet below the ground surface must be addressed even for the shallow and intermediate groundwater because the contamination, which exists below 60 feet on the Photocircuits and Pass & Seymour sites, can be drawn downstream on the Pall Site during such events as pumping or flooding of the Glen Cove creek.

Prior to issuance of the PRAP, NYSDEC should have informed Pall and the public of the data indicating that the hydraulic control system is preventing the continued migration of contaminants from Photocircuits onto, across, beneath and downgradient of the Pall Site. At the March 10 meeting, when the public questioned the seemingly backwards sequencing of remediation (i.e., Pall first, then Photocircuits), NYSDEC responded that the reason the Photocircuits site could not be addressed first is that additional investigation and study is required at the Photocircuits site. This response raises significant concerns because unless the nature and extent of contamination on the Photocircuits site has been characterized, NYSDEC cannot be certain at this time that the hydraulic control system is preventing ***all*** contaminants from migrating off-site. Simply stated, it is not possible to confirm that hydraulic control is effective for an undefined source area.

Based upon recent Freedom of Information Law (FOIL) document reviews that Pall has conducted, Pall believes that there is not sufficient data to determine the effectiveness of the hydraulic control system, and that it would be arbitrary and capricious to maintain otherwise. In fact, the limited data available, including recent data collected from downgradient wells, indicate that the system is not maintaining hydraulic control.

Specifically, the following information is either missing or indicative of a system that is not functioning effectively to prevent all contamination from migrating onto the Pall site:

- Water table potentiometric surface data and quality sampling have never been collected immediately downgradient of the recovery well system to confirm capture of contaminants. This is critical data needed to determine if the hydraulic control system is working. Pall does not understand how NYSDEC can reach any final determination regarding system effectiveness without this key data.

- Water table potentiometric surface data and quality sampling have never been collected cross-gradient and adjacent to the recovery well system to confirm the capture of contaminants. Cross-gradient data is critical given the nature of the flow pathways that have been confirmed under the Arterial Highway and west of the hydraulic control well network.

- Tracer studies or other more advanced field tests (e.g., long-term pump tests, one-well and two-well injection/withdrawal tests, etc.) typically used to design and/or confirm hydraulic control have not been performed. NYSDEC should require Photocircuits to perform these studies/tests before it reaches any conclusions regarding the effectiveness of the hydraulic control system.

- The original Photocircuits design proposed the use of five wells to meet control objectives. Only four wells were installed due to utility concerns. NYSDEC never addressed the fact that the installed system was inconsistent with the approved design documents and that it resulted in 20% less coverage than the original design.

- Photocircuits lists a 3 gpm system flow rate as its optimum operating condition. How can 3 gpm be sufficient to control a plume in an aquifer that can produce hundreds of gallons per minute? This concern is compounded by the very limited operating data that shows actual flow rates have often been less than 3 gpm.

- The installed system is intended only to capture contaminants from the MW-7 source area. All other areas of contamination on the Photocircuits site (including the Pass & Seymour site) are ignored. These areas have historically been the source, and still are the source of contaminant migration off-site and onto the Pall Site as evidenced by the testing results of upgradient well sampling by Pall.

- In the status report for the second quarter of 2003, Photocircuits presents potentiometric surface maps that it claims confirm that the hydraulic control system is working properly. However, this cannot be the case because using Photocircuits' own contour lines, it is clear that the system is not capturing groundwater near the Arterial Highway to the east where some of the highest levels of contaminants migrating off-site have been detected in the past.

- In the status report for the third quarter of 2003, Photocircuits acknowledges that the system flow rate was reduced to 33% of its optimum operating condition (1 gpm instead of intended 3 gpm) because of problems with a critical compressed air supply system. During this period of reduced flow rate, capture was likely adversely impacted. To the best of our knowledge, the actions recommended by Photocircuits to "ensure" that this does not happen again have never been designed, implemented or approved by NYSDEC. Pall has serious concerns that this scenario is likely to recur and that slugs of contamination will continue to migrate off the Photocircuits and Pass & Seymour sites and onto the Pall Site.

- It is important to note that the New York State Department of Health (NYSDOH) also expressed its concerns that sufficient data were not available or presented to document effectiveness of the hydraulic control system in a letter to NYSDEC dated December 16, 2003. Pall has no information indicating that the deficiencies identified by the NYSDOH, for example, the need for downgradient sampling and well gauging, were ever fully addressed.

- Recent baseline well sampling by Pall as part of a Pilot Test (results still draft) has indicated that there are still levels of contaminants in upgradient wells on the Pall Site immediately downgradient of the Photocircuits hydraulic control system. This is evidence that contamination from Photocircuits is adversely affecting the groundwater quality at the Pall Site even though the hydraulic control system has reportedly been in operation for over 10 months.

- Recent baseline well sampling by Pall (results still draft) has indicated that there are still levels of contaminants in upgradient wells on Pall adjacent to the Photocircuits hydraulic control system. This is evidence that the hydraulic control system is not capturing contamination from some areas of the Photocircuits and Pass & Seymour sites, and contaminated groundwater is migrating onto Pall to the east and west of the hydraulic control system.

- Static water height measurements both upgradient and downgradient of the Photocircuits control system are needed for any evaluation of the system's effectiveness. Resistivity images and injections must be used to determine whether the Photocircuits control system needs to be extended in breadth and in depth to adequately intercept the channel and horizontal confining layers.

In summary, the NYSDEC records that Pall has examined contain insufficient information to support NYSDEC's preliminary conclusion announced at the March 10 public meeting regarding the effectiveness of the hydraulic control system upgradient of the Pall Site.
At a minimum, the PRAP should describe the scientific basis for NYSDEC's conclusion that the upgradient control installed by Photocircuits is working. NYSDEC should further address the

public's concerns and state that the effectiveness of the hydraulic control system at the Photocircuits site will have been demonstrated before implementation of the proposed remedy at the Pall Site.

4. The PRAP should state explicitly that Photocircuits will be required to remediate the impacts of the off-site migration of contamination from its site onto the Pall Site.

The PRAP ignores the element of time when it discusses groundwater conditions on the Pall Site. Historic upgradient plumes from the 1970s and earlier on the Photocircuits site are present at the northern sector and boundary of the Pall Site. In addition, the PRAP ignores the significant impact of the Carney Street Well on plume dynamics. During its operation, well pumping at Carney Street dragged contaminants from Photcircuits across the Pall Site and downward. This is further supported by detailed modeling studies. The time travel of contaminants and the effect of the operation of the Carney Street Well are aspects of regional groundwater that need to be included in the description in Section 5 of the PRAP of Site Contamination. These aspects also explain why in Table 2 some of the VOC concentrations beneath the Pall site exceed the upgradient concentrations.

Furthermore, the Pass & Seymour site is not currently contributing VOCs to on-site groundwater at the Pall site, but had been a source when the Carney Street Well was pumping.

Even if the hydraulic control system is modified and augmented to function as intended in the future, the PRAP should require Photocircuits to remediate contamination that NYSDEC acknowledges has already migrated onto the Pall Site from the Photocircuits site. The PRAP will require Pall to remediate groundwater impacts that exist downgradient of its site even though the alleged contamination was caused in part by migration from the Photocircuits site. It is only fair that NYSDEC hold Photocircuits to the same standard as Pall by requiring Photocircuits to remediate any contamination that has migrated or is migrating off of its site and onto the Pall Site. A double standard is not in the public interest.

5. Pall's Feasibility Study addressed on-site remediation only; however, the PRAP extends the remediation area to a 2.3-acre area off-site of the Pall Site.

The PRAP should state in the introductory portion of Section 7 that the implementation of remediation in the expanded treatment area will require additional investigation including pilot testing in order to support use of the remedial design for this area. This work will affect the schedule that Pall will propose for the remedial work required in the additional treatment area.

6. The PRAP should state that the additional pilot testing is required in order to demonstrate, among other things, the feasibility of the oxidation remedy.

Pilot testing in connection with the design program is discussed on page 1 of the PRAP. In the section addressing the proposal to use chemical oxidation, a statement should be added to indicate that the design phase of the work will necessarily include pilot testing to demonstrate the feasibility of the oxidation remedy as opposed to alternatives, and to fine tune the remedial approach by identifying the appropriate oxidant, number of injection wells and dosing rates. Pilot testing is also needed to ensure that the full-scale remedy, as proposed by the NYSDEC, could be safely implemented off-site near the Day Care Center.

7. The description in the PRAP of on-site soil contamination should specify the small number of samples containing VOCs that exceeded SCGs.

As indicated in Table 1 attached to the PRAP, 96 soil samples were collected at the Pall Site. The following summary of the results of soil testing should be added to Section 5.1.3 of the PRAP because it is in the public interest to explicitly define the extent of this contamination:

"Only six of the VOCs analyzed were detected in site soil above the applicable soil cleanup objective. For four of these compounds, only one sample in 96 exceeded the SCG. One compound was detected in two of the samples; another compound was detected in three of the samples."

8. On-site VOC concentrations in groundwater were not always significantly higher than VOC levels at the upgradient edge of the site.

The last bullet on page 4 under Section 3.2, Remedial History, should be revised. Pall has data from some sampling events that show the highest concentrations of VOCs in upgradient wells. The PRAP acknowledges that the highest levels of contamination in the intermediate zone in April 1999 were in the upgradient wells, yet the overall conclusions of the PRAP provide little emphasis on the upgradient contributions to shallow and intermediate on-site groundwater.

A statement should also be added to the PRAP at the end of Section 3 on page 5 that indicates: "After the PSA was performed, samples collected from monitoring wells placed at the upgradient edge of the site contained concentrations of VOCs that were significantly higher than samples collected from on-site wells."

The direct push sampling performed by NYSDEC during the Phase I Remedial Investigation ("RI") (see page 8 of the PRAP) may not have allowed proper well development or purging,

thereby resulting in data that were biased high in the shallow groundwater at the north end of the Site. Pall believes that this concern was confirmed when properly installed wells were sampled in the same general location at a later time and the elevated levels of VOCs detected by NYSDEC in groundwater collected from direct push borings were never subsequently confirmed nor repeatable. Only groundwater data collected from properly installed, developed and purged monitoring wells should be compared to groundwater quality standards.

NYSDEC should add a statement to the PRAP indicating that the on-site elevated VOC levels identified during the Phase I RI were not duplicated at any later time and may have been an artifact of boring and sampling techniques.

The nature and extent of BTEX contamination is discussed at page 9 of the PRAP. This discussion should also include a reference to historic BTEX impacts on the properties in the vicinity of the Pall Site, including City-owned properties.

9. Pilot Testing. Figure 5 in the PRAP represents data from an intermediate sampling event during SVE pilot testing and this figure should be deleted. A new figure depicting the final sampling results from pilot testing would accurately represent post-testing conditions and should replace Figure 5.

10. The statements in the PRAP regarding the cost of the proposed remedy are incorrect; they should be deleted and replaced by more accurate cost estimates.

All costs presented in Section 7 of the PRAP are based on NYSDEC's interpretation and extrapolation. Unfortunately, the costs are not consistent with the work performed as part of the FS, and underestimate the costs Pall will incur. For example, the FS only evaluated on-site and preliminary remedial alternatives, and therefore, additional work needed for remedial design on the expanded treatment area and for Fenton's reagent and other chemicals would not have been considered by NYSDEC in preparing the cost estimates. In addition, the complexities associated with expanding the remedial area, used as the basis for the FS, to off-site properties significantly increases project costs due to access limitations, requirements to work on weekends, utility limitations, etc.

11. Miscellaneous.

The reference to Tweezerman's tenancy on page 3 of the PRAP should be deleted. The 30 Sea Cliff Avenue building is unoccupied. In the alternative, NYSDEC may state that the building was most recently occupied by Tweezerman.

Fact Sheet

12. Site Description and History, page 2, Par. 1: The Fact Sheet states the following in reference to the Photocircuits site and the Pass & Seymour site: "Both sites are contaminated with chlorinated solvents, which are also associated with the Pall Corporation site." This statement can be misconstrued as implying that contaminants from Pall are adversely affecting the Photocircuits and Pass & Seymour sites.

This statement should be reworded as follows to eliminate any misunderstandings and to clarify that the Photocircuits contamination has affected the Pall site and not the other way around:

"Both sites are upgradient of the Pall Site, and are contaminated with chlorinated solvents, which are also found on the Pall Corporation site."

13. The Remedial Investigation, page 2, Par. 2: The discussion of the Remedial Investigation focused solely on current data and does not discuss other sampling events when elevated levels of contaminants upgradient were identified.

Before a final remedy is documented in a Record of Decision (ROD), we urge that the above information be fully considered and carefully addressed in an unhurried, well-reasoned responsiveness summary that provides detailed responses to the comments on the PRAP.

We appreciate the opportunity to provide these comments on the PRAP and the Fact Sheet, and are available to discuss them with you. We have scheduled a meeting on April 6 with NYSDEC to discuss the available information relating to the Photocircuits hydraulic control system and look forward to meeting with you in Albany.

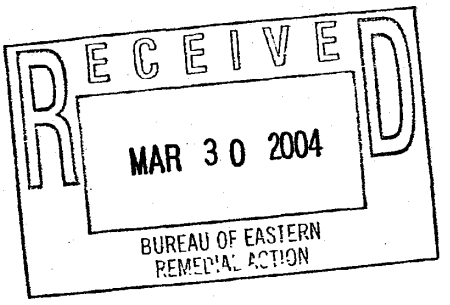
Very truly yours,

PALL CORPORATION

Hyman Katz

Hyman Katz, Ph.D.

cc: Mary Ann Bartlett, Esq.
Mr. Farsad Fotouhi
Virginia C. Robbins, Esq.
Daniel J. Smith, P.E.



18 Southfield Road
Glen Cove, NY 11542
March 24, 2004

Mr. Jeffery Dyber, P.E.
Project Manager
NYSDEC
625 Broadway
Albany, NY 12233-7015

Dear Mr. Dyber,

To me the March 10th NYSDEC Public Hearing on the Pall Corporation Site (Number 1-30-053B) in Glen Cove was a bit of a disappointment. I had expected a much more thorough and factual presentation. While the information presented was interesting and provided a general understanding of the cleanup process at the Pall site, it did not give any insight into the total remediation needed for the entire area or the plan to achieve it.

In fact, even though the remediation at Pall site appears to be partially successful, there was no discussion or data presented that would assure that the rest of the contaminated area encompassed by the Photociruits, Slater, and surrounding land are under control or that this present contaminated water will not invade the Pall site rendering the Pall effort null and void.

The NYSDEC representatives assertions that they "believed" that all was well, that the Pall site was under control, and that no contaminated water would encroach on the site was not supported by any facts, expert opinion, or comparative references. In fact, despite every attempt of members of the community to elicit information or solid facts, none were forthcoming, leaving everyone at the meeting in a quandary.

One of the most contentious points was the discussion about the three injection wells on the Photocircuits site that were touted as being able to prevent water movement down toward the Sound (and onto the Pall site.) No hydrology data or data of any sort was presented, nor was it even stated to exist, that supported the statements of the DEC representative that these wells would actually work.

In addition, while the DEC stated that the remediation of the Pall site was effective, they also stated that they had no idea what to do on the Photocircuits site. This was very disturbing because the Pall remedy, if actually as successful at touted, should be equally effective on the rest of the area. Obviously the DEC feels that this is not so, and therefore I strongly feel that this calls into question the true effectiveness of the remediation now in use on the Pall site.

For a public hearing that would result in an ROD being issued by the NYSDEC, a ROD that would affect all of Glen Cove and the surrounding communities, it was not only weak, but it was as if the decision on the ROD had been made in advance and the hearing was only being done Pro forma to comply with the law.

I feel that the NYSDEC must not issue an ROD for the Pall site at this time and must have a solid scientifically supported approach to the entire area that assure that remediation is possible and that eliminates any risk of recontamination of the Pall site. To do otherwise is slip shod.

Sincerely yours,

Glenn W. Howard, Jr.

Glenn W. Howard, Jr., Ph.D.

APPENDIX B

Administrative Record

Administrative Record

Pall Corporation Site
Operable Unit No. 1
Site No. 1-30-053B

1. Proposed Remedial Action Plan for the Pall Corporation site, Operable Unit No. 1, dated February 2004, prepared by the NYSDEC.

2. Order on Consent, Index No. W1-0831-98-11, between NYSDEC and Pall Corporation, executed on March 1, 1999.

3. "Engineering Investigations at Inactive Hazardous Waste Sites, Preliminary Site Assessment, Sea Cliff Industrial Area", March 1994, prepared by Nassau County Department of Public Works

4. "Project Management Plan, Pall Corporation Site FRI/FS", January 1998, prepared by TAMS Consultants and GZA Geoenvironmental of NY

5. "Field Activities Plan, Focused Remedial Investigation, Pall Corporation Site", February 1998, prepared by TAMS Consultants and GZA Geoenvironmental of NY

6. "Quality Assurance Project Plan, Focused Remedial Investigation, Pall Corporation Site", February 1998, prepared by TAMS Consultants and GZA Geoenvironmental of NY

7. "Health and Safety Plan, Focused Remedial Investigation, Pall Corporation Site", February 1998, prepared by TAMS Consultants and GZA Geoenvironmental of NY

8. "Phase II Remedial Investigation/Feasibility Study Quality Assurance Project Plan, Pall Corporation Facility", February 1999, prepared by IT Corporation

9. "Phase II Remedial Investigation/Feasibility Study Work Plan, Pall Corporation Facility", February 1999, prepared by IT Corporation

10. "Preliminary Focused Remedial Investigation Data Report, Pall Corporation Site", Volumes 1 and 2, April 1999, prepared by TAMS Consultants and GZA Geoenvironmental of NY

11. "Supplemental Work Plan for RI/FS, Pall Corporation", July 1999, prepared by Enviro-Sciences, Inc.

12. "Phase II Remedial Investigation Report, Pall Corporation", Volumes 1, 2 and 3, July 2000, prepared by Enviro-Sciences, Inc.

13. "Feasibility Study Report, Pall Corporation", October 2001, prepared by Enviro-Sciences, Inc.

14. "Pilot Test Work Plan, In-Situ Chemical Oxidation: Permanganate Injection, Pall Corporation", October 2001, prepared by Enviro-Sciences, Inc.

15. "In-Situ Chemical Oxidation Pilot Test Design, Pall Corporation", July 2002, prepared by Enviro-Sciences, Inc.

16. "In-Situ Chemical Oxidation Phase I Pilot Test Report, Pall Corporation", October 2003, prepared by Enviro-Sciences, Inc.

17. SVE Confirmatory Sampling Results, February 3, 2004, from Daniel Smith of Apex Environmental, Inc., transmitted by electronic mail

18. Fact Sheet, February 1998, prepared by the NYSDEC

19. Fact Sheet, November 2001, prepared by the NYSDEC

20. Fact Sheet, February 2004, prepared by the NYSDEC

21. Letter dated February 28, 2004 from Mr. John Palumbi

22. Letter dated March 19, 2004 from Mr. Nicholas DeSantis of the Glen Cove Department of Public Works

23. Letter dated March 24, 2004 from Ms. Beth Dressler of the Glen Cove Chamber of Commerce

24. Letter dated March 24, 2004 from Dr. Glen Howard

25. Letter dated March 26, 2004 from Dr. Hyman Katz of the Pall Corporation