Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

National Heatset Printing Site
Town of Babylon, Suffolk County
Site Number 1-52-140

June 1999

New York State Department of Environmental Conservation

GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

National Heatset Printing Inactive Hazardous Waste Disposal Site
Town of Babylon, Suffolk County, New York
Site No. 1-52-140

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the National Heatset Printing inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the National Heatset Printing Inactive Hazardous Waste Disposal Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix.

Assessment of the Site

Actual or threatened release 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 the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) and the criteria identified for evaluation of alternatives the NYSDEC has selected in-situ density driven convection type in-well stripping to remediate the site. The elements of the selected remedy are as follows:

1. A remedial design program which includes a pilot test to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Additional investigation needed for the pilot test or the remedial design will be conducted.

2. Based on the pilot test data, the effectiveness of the in-well stripping system at the source area will be evaluated. Since the high VOC concentrations at the source area indicate the presence of undissolved product mixed with groundwater, an alternative remedy such as extraction and treatment or sparging with air or ozone may be chosen to recover and/or treat the undissolved product. The two downgradient in-well stripping systems would be retained to prevent migration of the contaminant plume.

3. Construction and implementation of the in-well stripping systems or an alternative remedy supported by pilot test data, which includes:

- One system at the source area, consisting of two groundwater circulation wells. This system will remediate the area with the highest VOC concentrations;

- One system at the south end of the site consisting of three groundwater circulation wells. This system will prevent additional VOC contamination from leaving the site; and

- One system downgradient of the southern edge of the one (1) ppm groundwater contamination contour. This system will consist of seven wells and will halt further migration of VOCs downgradient of the site.

4. Providing public water to any properties that utilize private wells within the affected area. Any private wells identified downgradient of the site will be tested for VOCs by the Suffolk County Department of Health Services. If site-related contaminants are detected in the well samples, the home or business serviced by the contaminated well will be connected to public water.

5. Since the remedy results in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. Monitoring wells will be installed, where needed, and sampled upgradient and downgradient of each of the three in-well stripping systems. Wells already exist on-site and upgradient and downgradient of the site. Additional wells will be installed downgradient of the site. This program will allow the effectiveness of the in-well stripping to be monitored and will be a component of the operation and maintenance for the site; and

6. Institutional controls will be implemented and deed restrictions will be recorded in the chain of title of the property to restrict future use of groundwater at the site.

The estimated present worth cost to implement the remedy is $2,666,755. The cost to construct the remedy is estimated to be $1,109,800 and the estimated average annual operation and maintenance cost for 15 years is $150,000.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being 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.

June 17, 1999
Date

Michael J. O'Toole, Jr., 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 the remedy to address the significant threat to human health and the environment created by the presence of hazardous waste at the National Heatset Printing Site, which has been designated a Class 2 site by the NYSDEC. A Class 2 site is a site that has been determined to be a significant threat to human health and/or the environment. The National Heatset Printing Company occupied a portion of the building on this site from 1983-1989. Their operations consisted of lithographic tri-color printing of newspaper and periodical advertisements and the manufacture of lithographic plates. The company filed for bankruptcy in 1987. After filing for bankruptcy, National Heatset disposed of its chemical inventory by dumping the materials onto the soils and into a leaching pool located off the rear of the building at the northeast side of the property. The chemicals that were disposed of at this site included a number of hazardous wastes, including tetrachloroethylene (PCE) and trichloroethylene (TCE). Some of these wastes have migrated from the site to surrounding areas, including the residential area located south-southeast of the site.

These disposal activities have resulted in the following significant threats to the public health and/or the environment:

- a significant environmental threat associated with impacts of contaminants to groundwater resources; and

- a significant threat to human health associated with exposure to site-related contaminants in private drinking water wells, and the potential for exposure to site-related contaminants in public drinking water supply wells.

The Remedial Investigation (RI) performed by the NYSDEC under State Superfund identified areas where subsurface soils and groundwater are contaminated with significantly elevated levels of volatile organic compounds (VOCs), including PCE. The contaminated soils were detected in the zone saturated by groundwater located directly beneath the leaching pool. The highest concentrations of PCE in groundwater were detected at approximately 80 feet below ground surface (bgs) on top of a clay layer. Concentrations of total VOCs greater than 1,000 ppb [maximum 12,021 parts per billion (ppb)] in the groundwater were present in the 75 to 85-foot sampling depth to a distance of 4,100 feet downgradient (south-southeast) of the site. These concentrations attenuated to non-detect levels approximately 7,100 feet downgradient of the site.

The Suffolk County Water Authority Albany Avenue well field is located 6,500 feet directly downgradient of the site. The wells are 419 to 509 feet bgs. Monthly testing of the wells has not detected any contamination. It appears that the clay layer located approximately 80 feet bgs may be retarding the downward migration of VOC contamination. However, the groundwater plume could potentially penetrate through the clay layer and threaten the supply wells.

An Interim Remedial Measure (IRM) was conducted to provide public water to homes and businesses that use private wells which are threatened or contaminated by the site-related plume. Exposure to site-related contaminants in private drinking wells has occurred in the past. Based on an area private well survey

conducted during the investigation of the Fairchild Republic Aircraft site, and information provided by the Suffolk County Water Authority (SCWA) and the Suffolk County Department of Health Services (SCDHS), all homes and businesses downgradient from the site are currently connected to public water.

The source area is highly contaminated with VOCs, as evidenced by the test results for the soil sample obtained just above the clay layer (7,700 ppm of PCE). Such high levels indicate the presence of undissolved product mixed with contaminated groundwater. This undissolved product may need to be recovered for groundwater treatment to be effective. As part of the pilot test for the design of the remediation system, data will be collected to determine the effectiveness of remediating the source area by in-situ in-well stripping and the potential need for supplemental remedial measures. If the pilot test data indicate that in-well stripping would be ineffective for remediating the source area, an alternative remedy would be chosen such as extraction and treatment, air sparging, and/or ozone sparging to treat and/or recover undissolved VOCs. The two downgradient in-well stripping systems would be retained to prevent migration of the contaminant plume.

In order to restore the National Heatset Printing inactive hazardous waste disposal site to predisposal conditions to the extent feasible and authorized by law, but at a minimum to eliminate or mitigate the significant threats to the public health and/or the environment that the hazardous waste disposed at the site has caused, the following remedy was selected:

1. A remedial design program which includes a pilot test to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Additional investigation needed for the pilot test or the remedial design will be conducted.

2. Based on the pilot test data, the effectiveness of the in-well stripping system at the source area will be evaluated. Since the high VOC concentrations at the source area indicate the presence of undissolved product mixed with groundwater, an alternative remedy such as extraction and treatment or sparging with air or ozone may be chosen to recover and/or treat the undissolved product. The two downgradient in-well stripping systems would be retained to prevent migration of the contaminant plume.

3. Construction and implementation of the in-well stripping systems or an alternative remedy supported by pilot test data, which includes:

- One system at the source area, consisting of two groundwater circulation wells. This system will remediate the area with the highest VOC concentrations;

- One system at the south end of the site consisting of three groundwater circulation wells. This system will prevent additional VOC contamination from leaving the site; and

- One system downgradient of the southern edge of the one (1) ppm groundwater contamination contour. This system will consist of seven wells and will halt further migration of VOCs downgradient of the site.

4. Providing public water to any properties that utilize private wells within the affected area. Any private wells identified downgradient of the site will be tested for VOCs by the Suffolk County Department of Health Services. If site-related contaminants are detected in the well samples, the home or business serviced by the contaminated well will be connected to public water.

5. Since the remedy results in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. Monitoring wells will be installed, where needed, and sampled upgradient and downgradient of each of the three in-well stripping systems. Wells already exist on-site and upgradient and downgradient of the site. Additional wells will be installed downgradient of the site. This program will allow the effectiveness of the in-well stripping to be monitored and will be a component of the operation and maintenance for the site; and

6. Institutional controls will be implemented and deed restrictions will be recorded in the chain of title of the property to restrict future use of groundwater at the site.

The selected remedy, discussed in detail in Section 8 of this document, is intended to attain the remediation goals selected for this site in Section 6 of this Record of Decision (ROD), in conformity with applicable standards, criteria, and guidance (SCGs).

SECTION 2: SITE LOCATION AND DESCRIPTION

The National Heatset Printing site is located at One Adams Boulevard in the Hamlet of Farmingdale, Town of Babylon, Suffolk County. The site contains one multi-tenant industrial building and is approximately 4.5 acres in size. The property is located in an industrial area and is bordered by railroad tracks to the north, Adams Boulevard to the southeast, and another industrial property to the south. Refer to Figures 1 and 2 for the location map and site plan.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The National Heatset Printing Company occupied a portion of this building from July 1983 to April 1989. Their operations consisted of lithographic tri-color printing of newspaper and periodical advertisements and the manufacture of lithographic printing plates. National Heatset had been using organic solvents at the site since 1983. An inspection by the SCDHS in 1983 revealed that National Heatset was discharging photo plate making waste to the on-site sanitary system. In March 1986, an inspection performed by the SCDHS revealed strong evidence of dumping from staining of inks and oils on the ground. The inspection report indicated that drums were being stored improperly both inside and outside of the building.

The National Heatset Printing Company filed for bankruptcy in 1987. The SCDHS discovered that after filing for bankruptcy, National Heatset disposed of its chemical inventory by dumping the materials onto the soils and into a leaching pool located off the rear of the building in the northeast side of the property.

3.2: Remedial History

In February 1988, a water sample collected by the SCDHS from the leaching pool on the northeast side of the property contained elevated levels of volatile organic compounds (VOCs) of up to 24,000 parts per billion (ppb) of 1,2-dichloroethene (1,2-DCE) and 1,000 ppb of p-ethyltoluene. At the request of SCDHS, the leaching pool was pumped, washed, and dredged of liquid and solid contents down to the water table. The empty concrete rings were lined with impervious PVC material and were backfilled with clean sand. End-point samples were collected in November 1988. The end-point soil sample taken at approximately 15 feet bgs indicated that the remaining leaching pool sediment still contained elevated levels of VOCs (i.e. 13,000 parts per million (ppm) of PCE).

In October of 1987, elevated levels of PCE (maximum of 32 ppm) were detected in private well samples collected on nearby Miller Avenue by the SCDHS. All homes on Miller Avenue served by private wells were connected to public water by the Town of Babylon in 1988. In response to the contamination detected in private wells on Miller Avenue, in 1989 and 1990 the SCDHS conducted an off-site groundwater investigation downgradient of the National Heatset site. As part of this study (called the Miller Avenue Study), SCDHS installed a total of 30 deep vertical profile wells and collected groundwater samples from various depths in the aquifer for VOC analysis. Based upon the off-site investigation, SCDHS concluded that:

- A clay unit was present at a majority of the soil borings. This clay unit occurs at depths ranging from 70 to 85 feet bgs;
- The highest PCE concentrations in groundwater were found directly below the leaching pool and just above the clay unit; and
- The center of the PCE plume was located just east of Columbus Boulevard, north of the North Amityville Town pool.

The Suffolk County Water Authority Albany Avenue well field is located 6,500 feet directly downgradient (south-southeast) of the site. The wells are situated 419-509 feet bgs. A clay layer exists at approximately 80 feet bgs and extends the entire distance from the site location to the well field. However, the clay layer is not impenetrable and there is the potential for contaminant migration below the clay layer. The possibility also exists that the clay layer is not continuous from the site to the drinking water supply wells. Monthly testing of the wells has not detected any contamination.

In May 1989, a site investigation was conducted by the property owner's consultant. The investigation included the installation and sampling of one shallow upgradient (side gradient) well and three shallow downgradient wells. Two soil borings were also performed in the suspected source area, off the rear of the building. The two soil borings taken from 15-17 feet bgs confirmed the presence of VOCs at high concentrations in the soil (14,000 ppm of PCE and 62 ppm of TCE). Of the three downgradient monitoring wells, MW-3A was the most highly contaminated (i.e. 2,700 ppb of TCE) and was reported to be directly downgradient of the leaching pool.

In the spring of 1990, Adams Boulevard Corporation, Inc., the site landlord who is a potentially responsible party (PRP) for this site, installed a treatment system in the area of the contaminated leaching pool. The

treatment system attempted to remove VOCs from the soils located above the water table. The PRP has indicated that with the exception of a three-month period from March through May 1994, the system reportedly has operated continuously since mid-1991; however, NYSDEC staff observed the system to be out-of-service in September 1998. No operational data has ever been submitted to the Department to confirm the effectiveness of the treatment system.

In April 1993, the site was listed in the New York State Registry of Inactive Hazardous Waste Disposal sites as a Class 2 site. A Class 2 site is a site which is a significant threat to the public health and/or environment.

The PRP collected additional groundwater samples in May 1993. The results indicated elevated levels of VOCs (i.e., 15,000 ppb of PCE and 2,600 ppb of TCE) in the groundwater samples collected from the downgradient wells.

In July 1995, the PRP conducted additional soil borings in the source area behind the building. A total of 18 borings were advanced to approximately 13 feet below ground surface (bgs). Soil samples collected from this depth revealed elevated levels of VOCs (370 ppm of PCE and 3 ppm of TCE). The results of these additional soil borings indicated that the areal extent of the VOC contamination was much larger than previously thought, possibly extending onto the adjoining property to the north, an undetermined distance to the east and the south and possibly west. At the time of the PRP's investigation, the area of contamination appeared to extend beyond the area targeted by the treatment system. Soil samples obtained in the immediate area of the treatment system still contained up to 55.4 ppm total VOCs.

SECTION 4: SITE CONTAMINATION

To evaluate the contamination present at the site and to evaluate alternatives to address the significant threat to human health and the environment posed by the presence of hazardous waste, the NYSDEC has recently conducted a Remedial Investigation/Feasibility Study (RI/FS).

4.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted between August 1997 and January 1999. A report entitled Remedial Investigation/Feasibility Study Report, dated January 1999, has been prepared which describes the field activities and findings of the RI in detail.

The RI included the following activities:

- *Collection of 26 subsurface soil samples from beneath and adjacent to on-site drainage structures, to determine if wastes were disposed to these drainage systems;*
- *Collection of 6 surface soil and 47 subsurface soil samples to confirm that activities at the site resulted in contamination of soil;*

- *Collection of 74 Geoprobe groundwater samples at 52 locations to further characterize on-site and off-site groundwater contamination due to site activities;*

- *Installation and sampling of eight new monitoring wells, and sampling of four existing monitoring wells, to determine groundwater quality; and*

- *Performance of a human exposure assessment to evaluate public health concerns.*

To determine which media (soil, groundwater, etc.) contain contamination at levels of concern, the RI analytical data was compared to New York State Standards, Criteria, and Guidance values (SCGs). Groundwater and drinking water SCGs identified for the National Heatset Printing site are based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. For soils, NYSDEC TAGM 4046 provides soil cleanup objectives for the protection of groundwater, background conditions, and health-based exposure scenarios.

Based on the RI results in comparison to the SCGs, and in evaluation of the potential pathways of human and environmental routes of exposure, on-site subsurface soils and on-site and off-site groundwater require remediation. The findings of the RI are summarized below. More complete information can be found in the RI/FS Report.

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

4.1.1 Nature of Contamination

As described in the RI/FS Report, many soil and groundwater samples were collected to characterize the nature and extent of contamination. The main categories of contaminants which exceed their SCGs are volatile organic compounds (VOCs). The principal contaminant of concern at this site is PCE. Other VOCs detected during the RI include trichloroethene (TCE), 1,2-dichloroethene (1,2-DCE), 1,2-dichloroethane (1,2-DCA), and 1,1,1-trichloroethane (1,1,1-TCA), some of which are breakdown compounds of PCE.

4.1.2 Extent of Contamination

The following are the media which were investigated and a summary of the findings of the investigation.

Soil

Both surface and subsurface soil samples were taken on-site as part of this investigation. Six surface soil samples were obtained from 0-6 inches bgs at the leaching pool area and were tested for VOCs. None of the surface soils exhibited concentrations exceeding NYSDEC soil cleanup objectives. Locations of surface soil samples are provided in Figure 3.

Subsurface soil samples were obtained at or adjacent to the following drainage structures on-site:

- Leaching pool directly northeast of the building;

- Fourteen (14) stormwater drywells; and
- Four (4) sanitary wastewater disposal systems.

The samples were collected at varying depths ranging from 0-85 feet bgs. Soil samples obtained at the stormwater drywells and the sanitary wastewater disposal systems ranged from 0-12 feet bgs. The analytical results for each of these drainage structures were evaluated to determine which structures are potential sources of contamination.

All stormwater drywell samples and sanitary wastewater disposal system samples were analyzed for VOCs and four samples were also analyzed for semivolatile organic compounds (SVOCs), metals, and pesticides/PCBs. With the exception of SDW-12N (0-2 feet bgs) which exceeded the NYSDEC soil cleanup level of 50 ppm for zinc (105 ppm), none of the unsaturated subsurface soil samples taken beneath and downgradient of the on-site drywells and sanitary systems exhibited any contaminants exceeding NYSDEC soil cleanup objectives. The highest concentration of PCE (262 ppb) detected for these structures was at SDW-11 from 5-7 feet bgs.

Subsurface soil samples were collected from saturated and unsaturated soils to characterize the extent of contamination from the leaching pool. Saturated soils are located below the water table (approximately 15 feet bgs) and are therefore in direct contact with groundwater. Unsaturated soils are located above the water table. During the PRP's investigation, contaminated soils in the source area were excavated down to 15 feet and were backfilled with clean sand under the supervision of the SCDHS. The results of the RI revealed that no soil contaminants were found in the unsaturated soils, which are above 15 feet bgs. PCE was detected in the saturated soils located directly below the leaching pool at concentrations exceeding the NYSDEC soil cleanup objective of 1.4 ppm. The exceedances ranged from 8.2 ppm (soil sample MW-7 from 16-18 feet bgs) to 7,700 ppm (soil sample MW-7 at 80-82 feet bgs). These results indicate that the leaching pool was the primary source area of PCE contamination. Subsurface soil sampling locations are depicted in Figures 4 and 5. A summary of subsurface soil sample results are included in Table 1.

Groundwater

Twelve groundwater monitoring wells were sampled, including one upgradient, seven on-site, and four downgradient wells. Seventy-four Geoprobe™ groundwater samples were also obtained, including eight upgradient, 39 on-site, and 27 downgradient.

Groundwater flows south-southeast from the site. Groundwater depth for the site is approximately 15 feet bgs.

Eight upgradient groundwater samples were obtained from two Geoprobe™ borings at the auto repair shop located north of the site. A groundwater monitoring well was subsequently installed at the repair shop and sampled. None of the analytical data obtained for these upgradient samples reveal exceedances of NYSDEC groundwater standards. Therefore, the groundwater contamination described below is site-related. Locations of on-site and upgradient Geoprobe™ groundwater samples are included in Figure 6.

Elevated concentrations of PCE, TCE, and 1,2-DCE were detected in the Geoprobe™ groundwater samples obtained below the on-site leaching pool (GP-01 through GP-05), which has been identified as the source area.

Concentrations of PCE (496-7,690 ppb), TCE (162-9,620 ppb) and 1,2-DCE (124-12,200 ppb) exceeded the NYSDEC groundwater standard of 5 ppb directly below the leaching pool. Samples from shallow [MW-06 (28 feet bgs)] and deep [MW-07 (80 feet bgs)] monitoring wells below the leaching pool exhibited PCE concentrations of 210 ppb and 330 ppb, respectively.

Analytical results from the five monitoring wells (MW-2A, MW-3A, MW-4A, MW-9, MW-10) in the southeastern portion of the site reveal that groundwater contamination has migrated downgradient from the source area. PCE concentrations in shallow monitoring wells (MW-2A to MW-4A, approximately 25 feet deep) ranged from 120 ppb to 9,600 ppb. The two deep wells (MW-9 and MW-10, approximately 80 feet deep) exhibited PCE concentrations of 250 ppb and 470 ppb. All monitoring well locations are included in Figure 7.

Geoprobe™ groundwater samples were obtained adjacent to several on-site drainage structures (see Figure 6). A sample obtained below one stormwater drywell (DW-11) at 15 feet bgs exhibited concentrations of PCE (34,000 ppb), TCE (3,000 ppb) and DCE (6,600) which exceeded groundwater standards of 5 ppb, 4 ppb, and 5 ppb, respectively. Since soil samples from this drywell exhibited concentrations below soil cleanup objectives and the drywell is directly downgradient of the leaching pool, the contamination in this groundwater sample can be traced to the leaching pool. Monitoring wells located directly downgradient of the drywell (MW-2A, MW-3A) also exhibited high PCE concentrations, as previously discussed.

Based upon the on-site groundwater quality data collected below the leaching pool, sanitary disposal systems and stormwater drywells, the only continuing source area of VOC contamination at the National Heatset site is in the saturated zone beneath the leaching pool northeast of the building. There was no evidence that any of the other on-site drainage structures are contributing to the VOC contaminant plume in the groundwater.

To evaluate the extent of groundwater contamination downgradient of the site, several Geoprobe™ groundwater samples (sample designations: M-4, M-7, M-17, M-28, M-29, M-30, M-35, M-36, Silverpine Street, 41st Street, Autumn Lane, Miller Avenue, Susan Lane, Debbie Lane) were taken at varying depths from 50-85 feet bgs. Locations of off-site Geoprobe™ groundwater samples are included in Figure 8. Referring to Figure 9, concentrations of total VOCs at 50 feet bgs for the off-site Geoprobe™ groundwater samples reach a maximum of 26.3 ppb at the Silver Pine location. Figure 10 depicts the groundwater plume at 65-70 feet bgs. The total VOC concentrations are highest at the Autumn Lane location (2,750 ppb).

Concentrations of total VOCs (maximum 12,021 ppb) greater than 1,000 ppb were present in the 75 to 85-foot sampling intervals for a distance of about 4,100 feet downgradient (Geoprobe sampling point M-28) of the site, as shown in Figure 11. Concentrations exceeding 100 ppb extend to approximately 5,700 feet downgradient (Geoprobe sampling point M-29). These concentrations attenuated to non-detect levels approximately 7,100 feet downgradient of the site (Geoprobe sampling point M-30).

A cross-sectional diagram of the contaminant plume is included in Figure 12. As indicated on the figure, the PCE concentration is greatest directly above the clay layer. The highest PCE concentrations were found at M-4 (11,900 ppb), approximately 2,200 feet downgradient of the site.

A summary of analytical data for the groundwater monitoring wells and the Geoprobe™ groundwater samples are included in Tables 2 and 3, respectively.

Based on the results of the Geoprobe™ groundwater sampling, two deep (approximately 80 feet bgs) groundwater monitoring wells (MW-11 and MW-12) were placed downgradient of the site. PCE at 260 ppb was detected in monitoring well MW-11, located on Poplar Street. PCE at 1,500 ppb was detected in the southernmost monitoring well (MW-12), located on Schleigel Boulevard.

Based upon the analytical data, it appears that VOC-contaminated groundwater is migrating off-site in a south-southeast direction. As previously identified by the SCDHS, the level of site-related contamination appears greatest in the groundwater samples collected from just above the clay unit at approximately 80 to 85 feet bgs. It should be noted that the clay was not penetrated during the RI activities and the quality of the groundwater from beneath the clay is not known at this time.

As discussed in Section 2, the Albany Avenue well field is located 6,500 feet directly downgradient of the site. The public drinking water wells range from 419 to 509 feet bgs. Monthly monitoring has not detected the presence of contamination. The clay layer at 80 feet bgs retards the downward migration of the VOCs. However, the clay layer is not impenetrable and there is the potential for contaminant migration below the clay layer. The possibility also exists that the clay layer is not continuous from the site to the drinking water supply wells. Based on the RI, it is evident that the plume is migrating downgradient from the site, is sinking and concentrations in the plume exceed groundwater standards. In review of the analytical date, there is no indication that the plume is undergoing natural attenuation. Natural attenuation is the process by which a reduction in contaminant concentration would be achieved in the absence of any remedial interventions. Therefore, the plume remains a threat to the water quality and the Albany Avenue well field.

4.2 Interim Remedial Measures:

Interim Remedial Measures (IRMs) are conducted at sites when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

While conducting the RI/FS it became apparent that groundwater contaminated with elevated levels of VOCs was migrating toward the residential area south of the site. Several homes and businesses served by private wells that were impacted by the site were identified downgradient from the site. The levels of contamination detected in some of the private wells exceeded public drinking water standards. To date, six residences and three contiguous stores have been hooked up to public water. Exposure to site-related contaminants in private drinking wells has occurred in the past. Based on an area private well survey conducted during the investigation of the Fairchild Republic Aircraft site, and information provided by the SCWA and the SCDHS, all homes and businesses downgradient from the site are currently connected to public water.

4.3 Summary of Human Exposure Pathways:

This section discusses the potential pathways of exposure for people living near the National Heatset Site. A more detailed discussion of the exposure pathways can be found in Section 7 of the RI Report. An exposure pathway is how an individual may come in contact with a contaminant. The elements of an exposure pathway include: the source of contamination; the contaminated environmental media (i.e., soil, water, and air); the manner the contaminant migrates from the source; the location where one may be exposed to the contamination; how the contaminant enters the body (i.e., inhalation, ingestion, and/or absorption through the skin); and the population exposed to the contamination.

The potential pathways of exposure of concern at the National Heatset Site include the ingestion of contaminated groundwater and contact with contaminated soil. VOCs associated with the site have been detected in on-site groundwater and subsurface soil, and in off-site groundwater monitoring wells.

Exposure to site-related contaminants in private drinking wells has occurred in the past. Based on an area private well survey conducted during the investigation of the Fairchild Republic Aircraft site, and information provided by the SCWA and the SCDHS, all homes and businesses within or near the groundwater contaminant plume are currently connected to public water. Public drinking water supplies are sampled, at minimum, on a quarterly basis and must meet NYSDOH drinking water standards.

The Albany Avenue well field is located 6,500 feet downgradient from the site. The wells are 419 to 509 feet bgs and are situated below the contaminant plume. Monthly monitoring of these wells has not detected the presence of any contamination. Data collected during the RI indicates that the groundwater contaminant plume migrating from the National Heatset site is sinking, and therefore may eventually contaminate the public drinking water well field. However, exposure to contaminants that may reach the Albany Avenue well field is not expected since these wells are monitored on a monthly basis and must meet NYSDOH standards.

The selected plan to remediate this site includes DDC type "in-well" stripping systems to reduce the level of contamination in the groundwater, and thus reduce the possible contamination of the Albany Avenue well field. Additional measures to protect the Albany Avenue well field are part of the March 1998 Record of Decision (ROD) for the Fairchild Republic Main Plant site (#152130), located upgradient from the National Heatset site. Elements of the Fairchild ROD which would protect the Albany Avenue well field from contamination include: extraction and treatment of contaminated groundwater originating on the Fairchild site; installation and quarterly monitoring for VOCs of outpost monitoring wells installed upgradient from the public drinking wells; a wellhead treatment plan for the design, construction, operation and maintenance of drinking wellhead treatment systems, if necessary; and monthly monitoring of the well field for total VOCs.

The potential for exposure to site related contamination in soil has been significantly reduced since areas of soil contamination identified during site investigations have been excavated and removed off-site, or are 13 or more feet bgs, and thus significantly limit the possibility of exposure. The remedy selected for this site is designed to remediate on-site groundwater and the remaining subsurface soil contamination.

4.4 Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site.

As part of the environmental exposure assessment conducted as part of the RI, no significant pathways for environmental exposure have been identified at the site.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

National Heatset Printing Company
1 Adams Boulevard
East Farmingdale, New York 11735

Adams Boulevard Corporation, Inc.
195 Marine Street
Farmingdale, New York 11735

The National Heatset Printing Company has declared bankruptcy and has gone out of business. Since the property owner, Adams Boulevard Corporation, Inc., and the NYSDEC could not agree on the terms and conditions of an RI/FS consent order, the RI/FS for this site was conducted with State Superfund money. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the NYSDEC will implement the selected remedial action with the State Superfund money. The PRPs may be subject to legal actions by the State for recovery of all response costs the State has incurred.

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. The overall remedial goal is to meet all Standards, Criteria And Guidance (SCGs) and be protective of human health and the environment. At a minimum, the remedy selected should 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 goals selected for this site are:

- *Eliminate, to the extent practicable, the source area contamination by remediating the groundwater directly below the leaching pool;*
- *Eliminate, to the extent practicable, ingestion of groundwater affected by the site that does not attain NYSDOH drinking water standards; and*
- *Eliminate, to the extent practicable, further off-site migration of groundwater that does not attain NYSDEC Class GA Ambient Water Quality Criteria.*

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the National Heatset Printing site were identified, screened and evaluated in the report entitled Feasibility Study Report, dated January 1999.

A summary of the detailed analysis follows. As presented below, the time to implement reflects only the time required to construct the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

7.1: Description of Remedial Alternatives

The potential remedies are intended to address the contaminated groundwater at the site. Present worth is calculated using an annual discount rate of five percent.

Alternative #1: No Further Action

Present Worth:	*$ 518,985*
Capital Cost:	*$ 0*
Annual O&M:	*$ 50,000*
Time to Implement	*None*

This alternative recognizes remediation of the site conducted under a previously completed IRM. Only continued monitoring is necessary to evaluate the effectiveness of the remediation completed under the IRM. The monitoring program would include sampling of the twelve existing groundwater monitoring wells on a quarterly basis. This sampling program would be performed for 15 years and would be reevaluated annually.

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: Groundwater Extraction and Treatment with Air Stripping

Present Worth:	*$ 5,535,268*
Capital Cost:	*$ 2,016,550*
Annual O&M:	*$ 339,000*
Time to Implement	*12-18 months*

Under this alternative, the groundwater contaminant plume would be collected via extraction wells and treated to remove VOCs to levels in compliance with NYSDEC groundwater discharge standards. The system would be expected to remediate the groundwater plume to New York State Class GA groundwater standards within 15 years. At a minimum, two separate recovery networks would be required. The first recovery well network would capture VOC-impacted groundwater at the National Heatset property. Two wells would be placed on-site, one at the leaching pool area pumping at approximately 30 gallons per minute (gpm) and the second at the south end of the facility near the Adams Boulevard cul-de-sac pumping at approximately 50 gpm. The leaching pool area well and the cul-se-sac well are expected to have radii of influence of 50 feet and 100 feet, respectively. The second recovery well network would be located downgradient of the site at the southern edge of 1 ppm VOC contamination contour to intercept the contaminant plume. Approximately three extraction wells oriented in an approximate east-west direction, each pumping at about 100 gpm, would be required to create a capture zone of sufficient width to intercept the downgradient portion of the plume. Each well would be expected to have a radius of influence of 200 feet. Proposed locations of the extraction and treatment systems are depicted in Figure 13.

A treatment system would be constructed for each of the two recovery networks. The treatment system would consist of an air stripper, which would remove VOCs from the groundwater. Air stripping is generally implemented by pumping untreated groundwater to the top of a packed column, which consists of a specified height and cross-sectional area of inert "packing" material along with water distribution and collection systems. The column receives ambient air under pressure in an upward vertical direction from the bottom of the column

as the water flows downward. The packed tower promotes intimate contact between a gas phase and a liquid phase so as to enhance the transfer of VOCs from the water. Based on the anticipated influent feed concentration to the stripping tower, treatment of the off-gas would be required. Treatment of the off-gas would be accomplished using a vapor phase carbon system. This system would include granulated activated carbon (GAC) filters to remove VOCs from air prior to discharge. A schematic diagram of the pump and treat system is included in Figure 14.

The treated water would then be discharged on- or off-site as recharge to groundwater. An injection well system would be constructed below grade to accomplish this task. The wells, well vaults and all interconnecting piping could be designed and constructed to accommodate traffic loading conditions, as required, based on the established design criteria.

Periodic monitoring of groundwater would be conducted in order to observe groundwater cleanup progress and to ensure capture of the contaminant plume. Additional monitoring of influent and effluent groundwater with respect to the treatment system would also be conducted to monitor treatment system efficiency and effluent compliance.

Alternative #3A: In-Situ Density Driven Convection (DDC) Type In-Well Stripping

Present Worth:	*$ 2,666,755*
Capital Cost:	*$ 1,109,800*
Annual O&M:	*$ 150,000*
Time to Implement	*6-9 months*

Under this alternative, the groundwater contaminant plume would be treated in-situ using a series of groundwater circulation wells (also referred to as in-well stripping systems) to capture and circulate groundwater within the aquifer. This system would be expected to remediate the groundwater plume to New York State Class GA groundwater standards within 15 years. The groundwater circulation well system creates in-situ vertical groundwater circulation cells by drawing groundwater from an aquifer formation through one screen section of a double-screened well and discharging it through the second screen section. The lower screen would be situated directly above the clay layer (approximately 80 feet bgs) and the upper screen would be at the water table. While groundwater circulates in and out of the stripping cell, no groundwater is removed from the ground. The upward groundwater flow experienced within a cell is achieved via an air-lift effect using a blower. Bubbling air within a cell creates a hydrostatic head gradient along the well bore which drives aerated water out of the upper well screen while simultaneously drawing groundwater in through the lower screen. The density gradient between the well bore fluid (air and water mixture) with the formation water creates the driving force for groundwater circulation. The air would capture the VOC contamination. A schematic diagram of the DDC type in-well stripping system is included in Figure 15.

The wellhead of each DDC type well would be connected to a vacuum blower, which would collect the air from the air-groundwater mixture by providing a negative pressure in the section of the well above the upper screen. One vacuum blower would be required for each of the three well systems. The blower would direct the air to a granulated activated carbon (GAC) filtration system, which would remove the VOCs from the air. The air would then be discharged into the atmosphere.

All groundwater treatment would be performed in-situ; therefore, no groundwater would be discharged as part of this remedy.

Because of the relatively wide aerial distribution of the plume in the downgradient direction, three separate in-well stripping networks would be utilized. Each well would have an effective capture radius of approximately 100 feet. Capture radii could be adjusted by adjusting the air flow through the wells. The first set of groundwater circulation wells would consist of a minimum of two groundwater circulation wells located on-site in the vicinity of the former source area. The second in-well stripping system, consisting of a minimum of three groundwater circulation wells, would be located near the southern border of the site to treat groundwater exiting the property. The third in-well stripping system would consist of a groundwater circulation well network of a minimum of seven wells located at the southern edge of the 1 ppm groundwater contamination contour. Proposed locations of the in-well stripping systems are included in Figure 16.

In rare cases, fouling of the wells with metals may occur because air is introduced into the system. This potential problem would be addressed as a portion of the operations and maintenance (O&M) activities. If fouling of the well occurs, the well would be redeveloped using compressed air.

Alternative #3B: In-Situ Underdruck-Verdampfer-Brunnen (UVB) In-Well Stripping

Present Worth:	*$ 4,046,739*
Capital Cost:	*$ 1,918,900*
Annual O&M:	*$ 205,000*
Time to Implement	*9-12 months*

This alternative is similar to Alternative #3A; however, the wells use a submersible pump to actively pump the groundwater through a submersible "stripping reactor", a labyrinthian column that operates on the same principles as an air stripper. This system would be expected to remediate the groundwater plume to New York State Class GA groundwater standards within 15 years. Off gas from the stripping reactor would be collected and treated using vapor-phase carbon prior to being discharged into the atmosphere. A schematic diagram of the UVB system is included in Figure 17.

The wells systems would be installed in the same locations and depths as in Alternative 3A and would project the same capture radius of 100 feet.

This alternative would require large diameter well bores than Alternative 3A and installation of complex subsurface mechanical equipment. This system has a high electrical demand and is sensitive to water quality (iron, minerals, turbidity, etc.).

7.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each of the criteria, a brief description is provided, followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is included in the Feasibility Study.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

The analytical data for this site indicates exceedances of SCGs for VOCs in the on-site and off-site groundwater. For a remedy to be considered for this site, it must remediate the groundwater to Class GA groundwater standards listed in the Technical and Operational Guidance Series 1.1.1 entitled, "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations".

Since no remedial actions are included in Alternative #1, SCGs would not be met and concentrations of on-site and off-site groundwater contaminants would remain at unacceptable levels.

The other three alternatives (#2, #3A, and #3B) would involve treating the groundwater and would be designed such that the groundwater concentrations would meet SCGs. All contaminated subsurface soil that exceeds SCGs is located below the water table at the on-site leaching pool. All three alternatives would provide for a groundwater treatment system at this location. The subsurface soil would be remediated to below SCGs resulting from treatment of groundwater that is in direct contact with the soil.

2. 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.

Alternative #1 would not present an imminent public health concern since all residents within the plume area are connected to public water provided by the Suffolk County Water Authority (SCWA). However, this alternative would not provide long-term protection to the SCWA's well field located 6,500 feet downgradient of the site.

The remaining three alternatives (#2, #3A and #3B) would be protective of human health and the environment. These alternatives would target the groundwater contaminant plume and would reduce the potential for further migration of contaminants in the direction of the SCWA well field.

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.

Alternative #1 would not include construction activities; therefore, there would be no impact on construction workers or neighbors due to construction. In the short term, groundwater contaminants would remain above SCGs and threaten the downgradient public well field.

For the remaining three alternatives (#2, #3A and #3B), construction activities would be temporarily disruptive to the community. Health risks to workers and residents would be minimal. These alternatives would capture groundwater in the area of highest VOC concentrations (on and near the site) and would also prevent further migration of the contaminant plume.

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 controls intended to limit the risk, and 3) the reliability of these controls.

Alternative #1 would leave the site in its present condition. VOCs in groundwater would continue to be in contravention of standards. This alternative would not provide long-term protection for the SCWA's supply wells located downgradient of the plume.

Alternatives #2 would utilize a technology that is effective and proven for the removal of VOCs from groundwater. It would be considered a permanent solution since contaminants would be removed from the groundwater media.

Alternatives #3A and #3B would utilize a technology that has been initiated at other New York State Superfund sites on Long Island with similar groundwater contaminants. These alternatives would be considered a permanent solution since contaminants would be removed from the groundwater media.

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.

Alternative #1 would result in no reduction of toxicity, mobility or volume of contaminants.

Alternative #2 would extract a total of 380 gpm of contaminated groundwater using five extraction wells. The expected removal rate of VOCs for Alternative #2 would be greater than 99%.

Alternatives #3A and #3B would treat groundwater contaminants effectively by removing VOCs from the groundwater using multiple pass stripping through in-situ stripping wells. Removal efficiencies of greater than 99% would be expected for these alternatives.

Alternatives #2, #3A and #3B would greatly reduce toxicity, mobility, and volume of wastes in the groundwater.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

Since Alternative #1 requires only continued monitoring, it would be easily implementable. Groundwater monitoring would be conducted to detect changes in groundwater quality.

For Alternatives #2 and #3A, the treatment equipment would be readily installed; however, land access would be required from the property owner and/or Town to construct the system on private property or within public right-of-ways. The system for Alternative #3A is patented and therefore must be obtained from licensed vendors. This may cause minor delays in the implementation of this project.

Alternative #3B would require large diameter well bores and installation of complex subsurface mechanical equipment. This system has a high electrical demand and is sensitive to water quality (iron, minerals, turbidity, etc.). Additionally, land access would be required from the property owner and/or Town to construct the system

on private property or within public right-of-ways. The system for Alternative #3B is patented and therefore must be obtained from licensed vendors.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 4.

The estimated long-term (15 year) operation and maintenance (O&M) present worth cost associated with Alternative #1 is $518,985. The estimated capital cost and present worth O&M cost of Alternatives #2, #3A and #3B is $7,542,518, $2,666,755 and $4,046,739, respectively, based on 15 years of operation for the treatment system and continued monitoring.

8. Community Assessment - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and how the Department will address the concerns raised.

In general the public comments received were supportive of the selective remedy. However, comments submitted by the property owner's attorney and engineer were received that recommended that the "No Further Action" alternative be chosen. The engineer presented an alternative hypothesis of the nature and extent of contamination and the fate of the contaminants. The NYSDEC has reviewed the engineer's comment letter and has found the methodology and assumptions to be seriously flawed. The letters were not able to refute the conclusions of the FS which state that the "No Further Action" alternative would not meet SCGs and would not be protective of human health and the environment. Since neither of these two threshold criteria would be met, the "No Further Action" alternative was not chosen. Copies of both letters, along with detailed responses from the NYSDEC, are included in Appendix A.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, the NYSDEC is selecting Alternative 3A as the remedy for this site. This ROD is based upon the comparison of the four alternatives developed for this site. Alternative #1 was eliminated because it would not meet either of the two threshold criteria. The other three alternatives would meet the first six evaluation criteria, although Alternative #3B would be more difficult to implement and would require more maintenance. Alternative #3A would utilize simpler technology and would therefore require less maintenance and repair. Since Alternative #3A would be either equal or superior to Alternatives #2 and #3B with respect to the first six evaluation criteria and would cost less than these two other alternatives, Alternative #3A was chosen as the selected remedy for this site. Alternative #3A is referred to as "In-Situ Density Driven Convection Type In-Well Stripping" and includes:

- Remediation of contaminated groundwater by installation and implementation of in-situ DDC type in-well stripping systems. In-well stripping bubbles air through the bottom of a well and promotes transfer of VOCs from the groundwater to the air as the mixture travels up the well. The VOCs and air mixture is filtered by a granulated activated carbon filter and clean air is released to the atmosphere. Three well systems will be installed: one at the source area (leaching pool behind the building on-site), one at the

south end of the site, and one at the downgradient edge of the one ppm groundwater contamination contour;

- Public water will be provided to any properties that utilize private wells within the affected area; and

- Contaminated subsurface soil will remain on site, the subsurface soil will be treated to below SCGs as a result of groundwater treatment. All contaminated subsurface soil is located below the water table at the leaching pool. This remedy provides for a well system at the leaching pool. Since the soil is in direct contact with the treated groundwater, contaminants in soil will be reduced to below SCGs.

The contaminated groundwater plume must be remediated to protect public health. The groundwater contamination plume has not experienced natural attenuation. Instead, it has migrated downward to the clay layer (approximately 80 feet bgs) and has traveled over one mile downgradient from the site. The Albany Avenue public drinking water supply well field is located 6,500 feet downgradient of the site and 419 to 509 feet bgs. Monthly monitoring of the drinking water wells has not detected contamination. A clay layer at 80 feet bgs retards the downward migration of the VOCs. However, the clay layer is not impenetrable and there is the potential for contaminant migration below the clay layer. The possibility also exists that the clay layer is not continuous from the site to the drinking water supply wells. The selected remedy will protect the well field and insure the quality of the public drinking water.

The Fairchild Republic Main Plant Site (Site #1-52-130) is located directly upgradient of the National Heatset Printing site. The ROD for the Fairchild site indicates that VOC contamination from the Fairchild site also threatens the Albany Avenue well field, although the contamination from Fairchild is deeper and further east than from National Heatset. The Fairchild ROD includes the installation and testing of long term groundwater monitoring wells directly upgradient of the Albany Avenue well field and provides for a wellhead treatment contingency if monitoring indicates that the well field has been impacted. The remedy selected for the National Heatset site will not duplicate remedial actions planned for the Fairchild Republic site.

The source area is highly contaminated with VOCs, as evidenced by the test results for the soil sample obtained just above the clay layer (7,700 ppm of PCE). Such high levels indicate the presence of undissolved product mixed with contaminated groundwater. This undissolved product may need to be recovered for groundwater treatment to be effective. As part of the pilot test for the design of the remediation system, data will be collected to determine the effectiveness of remediating the source area by in-situ in-well stripping and the potential need for supplemental remedial measures. If the pilot test data indicate that in-well stripping would be ineffective for remediating the source area, an alternative remedy would be chosen such as extraction and treatment, air sparging, and/or ozone sparging to treat and/or recover undissolved VOCs. The two downgradient in-well stripping systems would be retained to prevent migration of the contaminant plume.

The elements of the selected remedy are as follows:

1. A remedial design program which includes a pilot test to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Additional investigation needed for the pilot test or the remedial design will be conducted.

2. Based on the pilot test data, the effectiveness of the in-well stripping system at the source area will be evaluated. Since the high VOC concentrations at the source area indicate the presence of undissolved product mixed with groundwater, an alternative remedy such as extraction and treatment or sparging with air or ozone may be chosen to recover and/or treat the undissolved product. The two downgradient in-well stripping systems would be retained to prevent migration of the contaminant plume.

3. Construction and implementation of the in-well stripping systems or an alternative remedy supported by pilot test data, which includes:

- One system at the source area, consisting of two groundwater circulation wells. This system will remediate the area with the highest VOC concentrations;

- One system at the south end of the site consisting of three groundwater circulation wells. This system will prevent additional VOC contamination from leaving the site; and

- One system downgradient of the southern edge of the one (1) ppm groundwater contamination contour. This system will consist of seven wells and will halt further migration of VOCs downgradient of the site.

4. Providing public water to any properties that utilize private wells within the affected area. Any private wells identified downgradient of the site will be tested for VOCs by the Suffolk County Department of Health Services. If site-related contaminants are detected in the well samples, the home or business serviced by the contaminated well will be connected to public water.

5. Since the remedy results in untreated hazardous waste remaining at the site, a long term monitoring program will be instituted. Monitoring wells will be installed, where needed, and sampled upgradient and downgradient of each of the three in-well stripping systems. Wells already exist on-site and upgradient and downgradient of the site. Additional wells will be installed downgradient of the site. This program will allow the effectiveness of the in-well stripping to be monitored and will be a component of the operation and maintenance for the site; and

6. Institutional controls will be implemented and deed restrictions will be recorded in the chain of title of the property to restrict future use of groundwater at the site.

The estimated present worth cost to implement the remedy is $2,666,755. The cost to construct the remedy is estimated to be $1,109,800 and the estimated average annual operation and maintenance cost for 15 years is $150,000.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort 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:

- A repository for documents pertaining to the site was established.

- A site mailing list was established which included nearby property owners, local political officials, local media and other interested parties.

- Fact Sheets were mailed to the mailing list in July 1997 and February 1999 to update interested parties on the site status.

- Public informational meetings were held in August 1997 and March 1999 to discuss the project and answer questions posed by the public.

- In February 1999 a public information sheet was mailed to the public mailing list and a public meeting was held on March 3, 1999 to present the National Heatset Printing Site Proposed Remedial Action Plan (PRAP). A 30 day public comment period was established for the receipt of written comments which was originally scheduled to end on March 14, 1999. However, the comment period was extended to March 22, 1999 at the request of the property owner's consultant. A notice of the comment period extension was mailed to the public contact list.

- In June 1999, a Responsiveness Summary was prepared and made available to the public, to address the comments received during the public comment period for the PRAP.

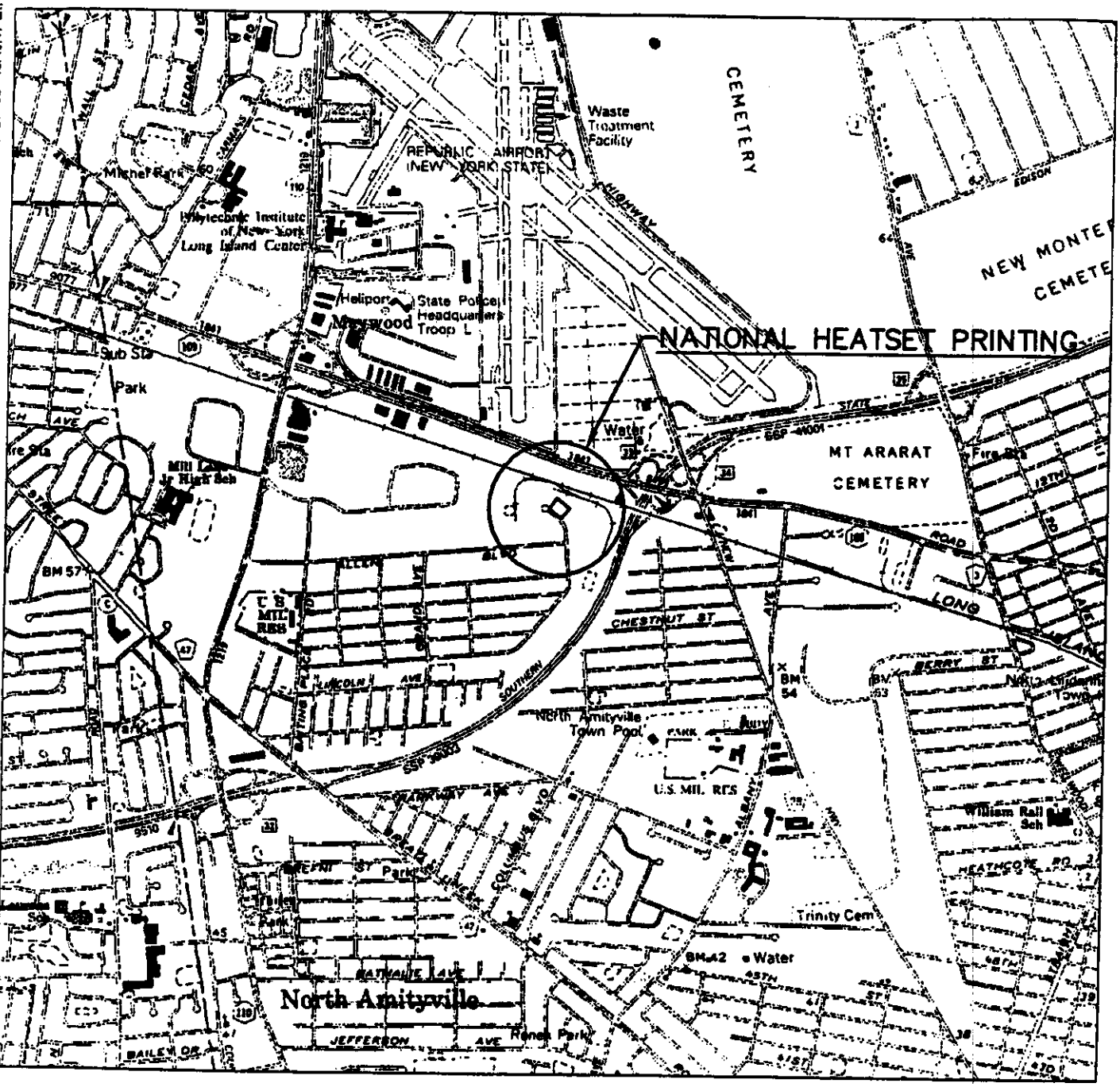

FIGURE 1

LOCATION MAP

SCALE: 1" = 2000'

NATIONAL HEATSET PRINTING

RCE: U.S.G.S. N.Y.S. QUADRANGLE MAP

H2MGROUP ENGINEERS • ARCHITECTS • PLANNERS • SCIENTISTS • SURVEYORS
MELVILLE, N.Y. SHELTON, CT. TOTOWA, N.J.

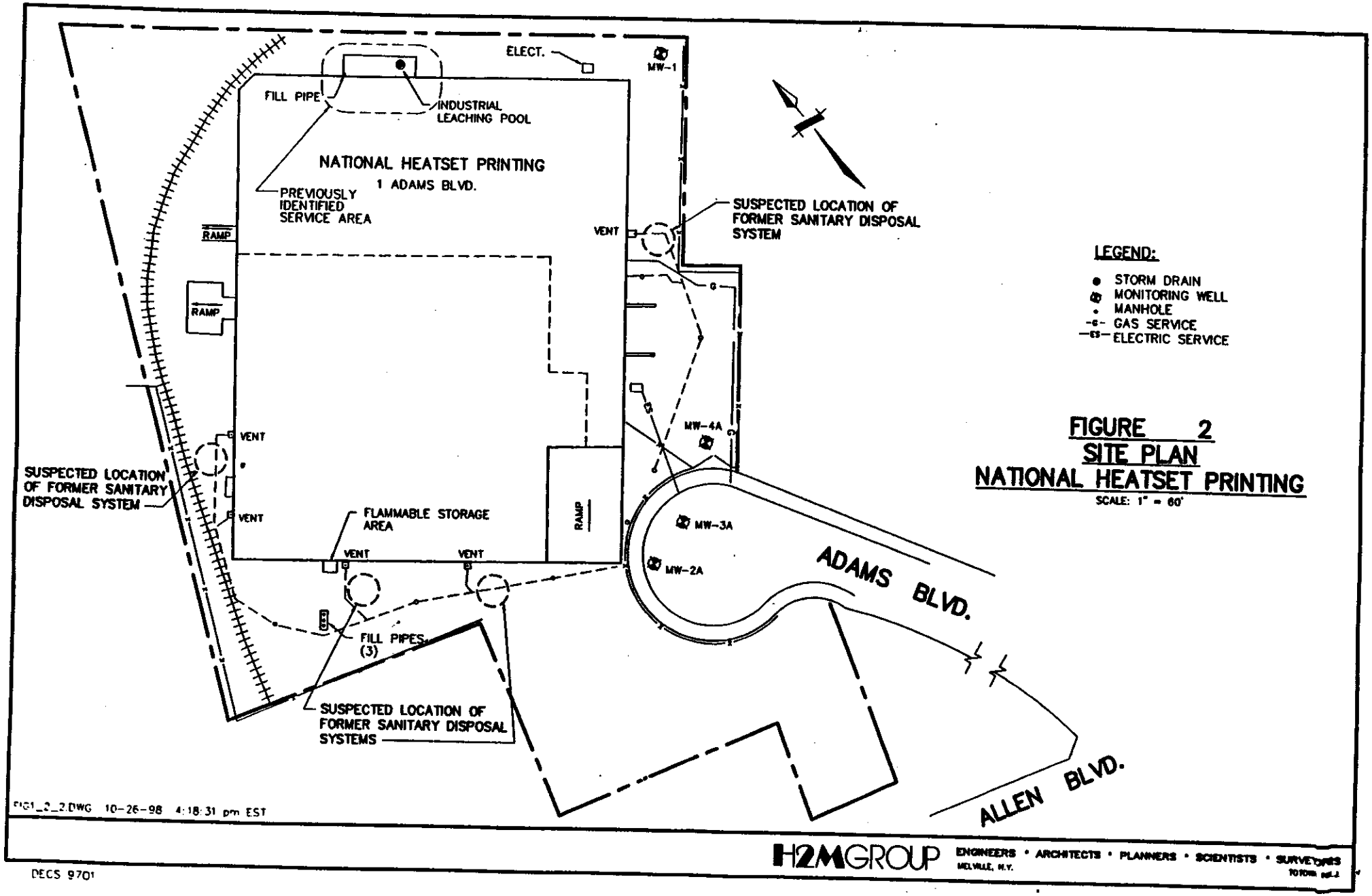

FIGURE 2
SITE PLAN
NATIONAL HEATSET PRINTING
SCALE: 1" = 60'

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MELVILLE, N.Y.

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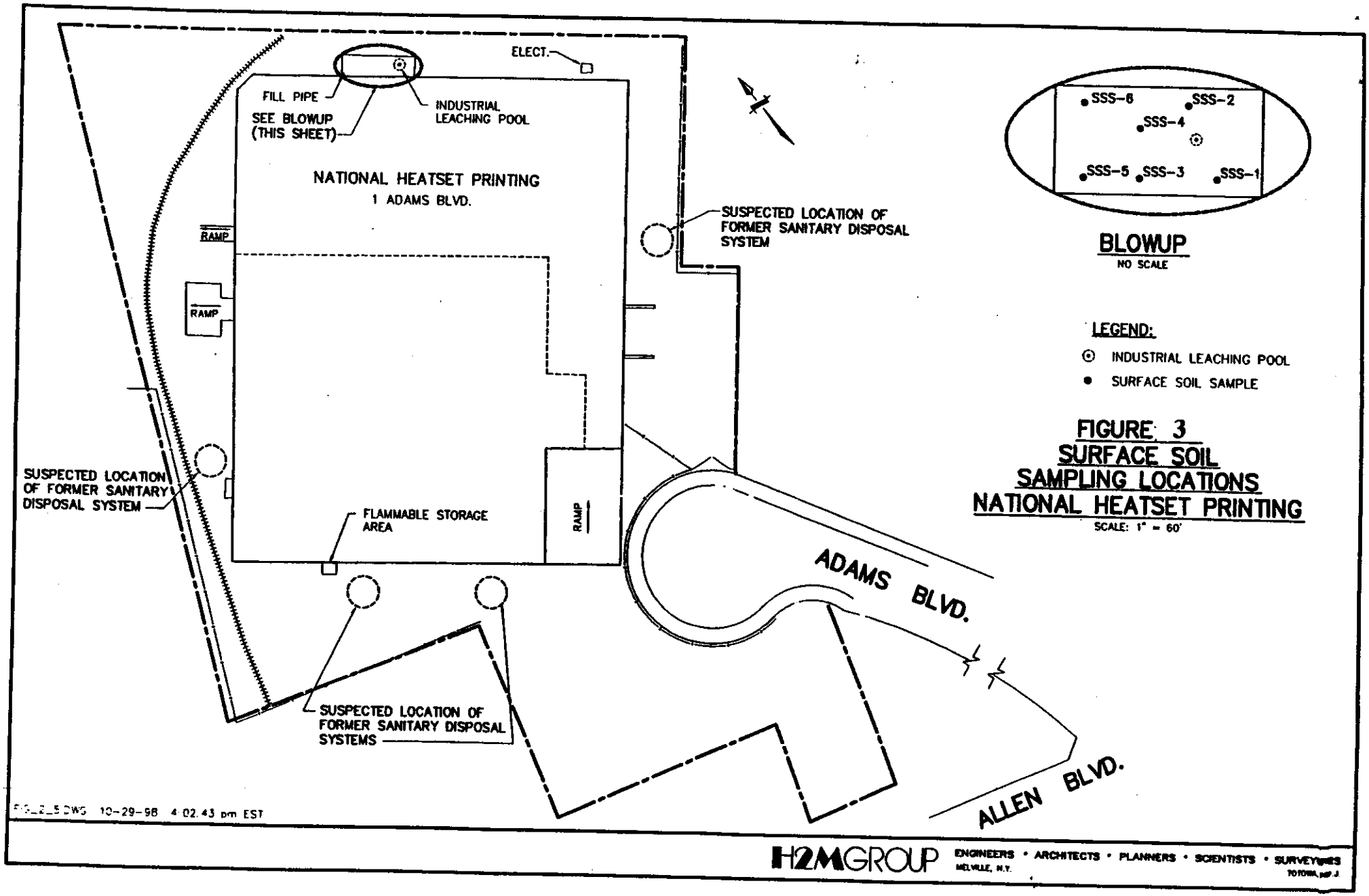
ELECT.
FILL PIPE
SEE BLOWUP (THIS SHEET)
INDUSTRIAL LEACHING POOL
NATIONAL HEATSET PRINTING
1 ADAMS BLVD.
RAMP
RAMP
RAMP
SUSPECTED LOCATION OF FORMER SANITARY DISPOSAL SYSTEM
SUSPECTED LOCATION OF FORMER SANITARY DISPOSAL SYSTEM
FLAMMABLE STORAGE AREA
SUSPECTED LOCATION OF FORMER SANITARY DISPOSAL SYSTEMS
ADAMS BLVD.
ALLEN BLVD.
SSS-6
SSS-2
SSS-4
SSS-5
SSS-3
SSS-1
BLOWUP
NO SCALE
LEGEND:
INDUSTRIAL LEACHING POOL
SURFACE SOIL SAMPLE
FIGURE 3
SURFACE SOIL SAMPLING LOCATIONS
NATIONAL HEATSET PRINTING
SCALE: 1" = 60'
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TOTOWA, N.J.

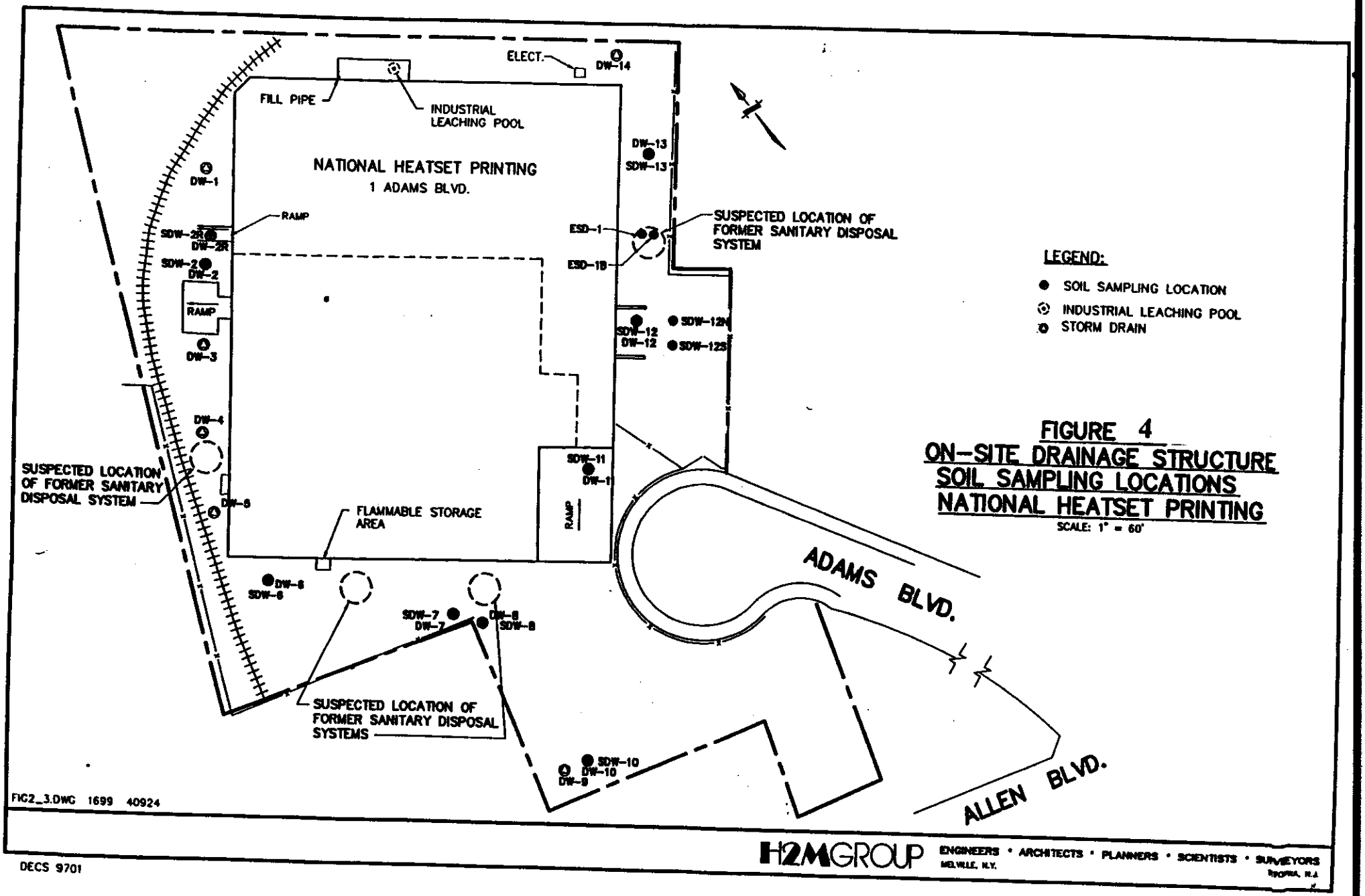

FIGURE 4
ON-SITE DRAINAGE STRUCTURE SOIL SAMPLING LOCATIONS NATIONAL HEATSET PRINTING

SCALE: 1" = 60'

FIG2_3.DWG 1699 40924

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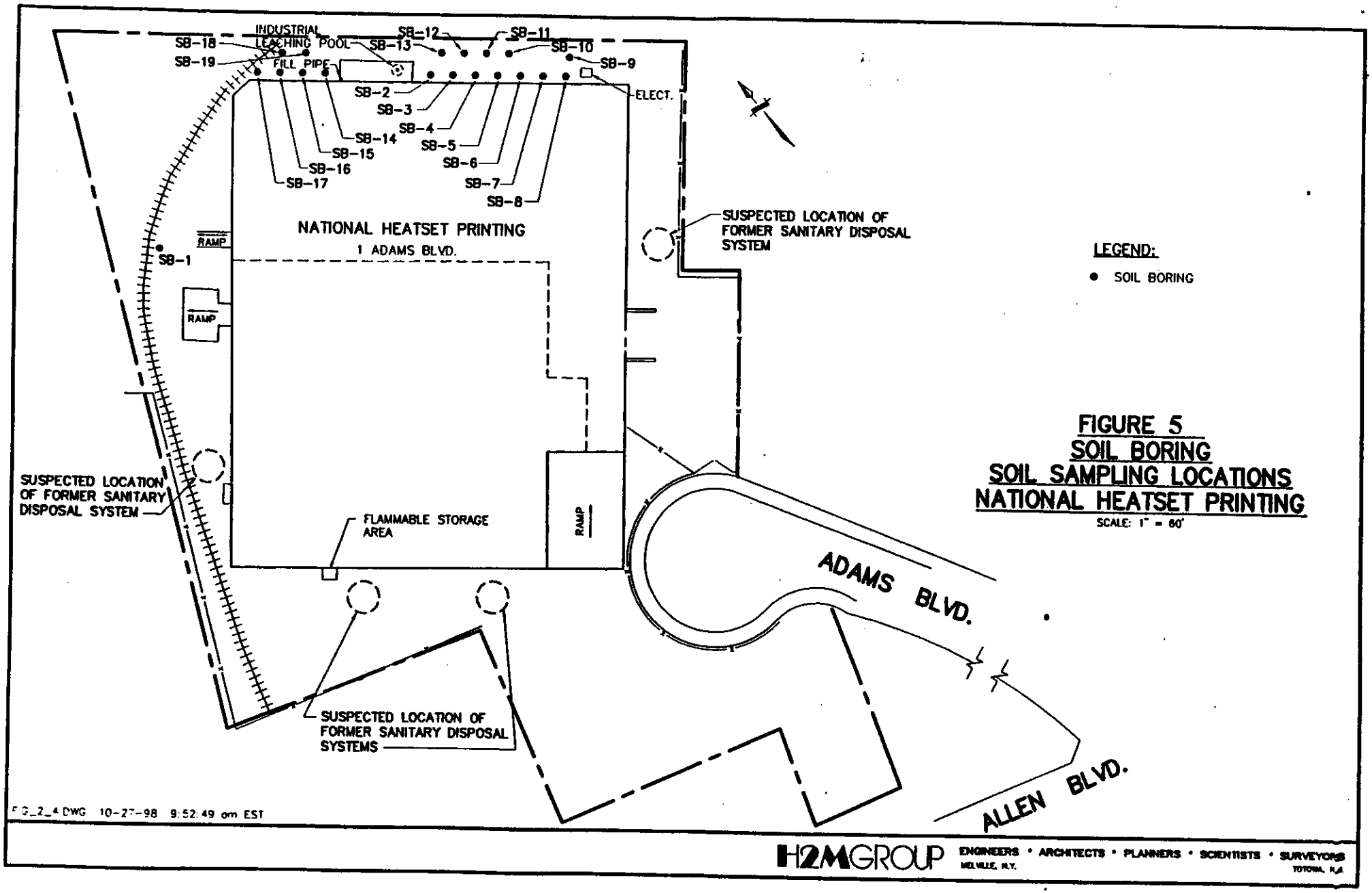
MELVILLE, N.Y. PEORIA, IL


INDUSTRIAL LEACHING POOL
FILL PIPE
SB-18
SB-19
SB-13
SB-12
SB-11
SB-10
SB-9
ELECT.
SB-2
SB-3
SB-4
SB-5
SB-6
SB-7
SB-8
SB-14
SB-15
SB-16
SB-17
NATIONAL HEATSET PRINTING
1 ADAMS BLVD.
RAMP
SB-1
RAMP
SUSPECTED LOCATION OF FORMER SANITARY DISPOSAL SYSTEM
SUSPECTED LOCATION OF FORMER SANITARY DISPOSAL SYSTEM
FLAMMABLE STORAGE AREA
RAMP
SUSPECTED LOCATION OF FORMER SANITARY DISPOSAL SYSTEMS
ADAMS BLVD.
ALLEN BLVD.
LEGEND:
SOIL BORING
FIGURE 5
SOIL BORING
SOIL SAMPLING LOCATIONS
NATIONAL HEATSET PRINTING
SCALE: 1" = 60'
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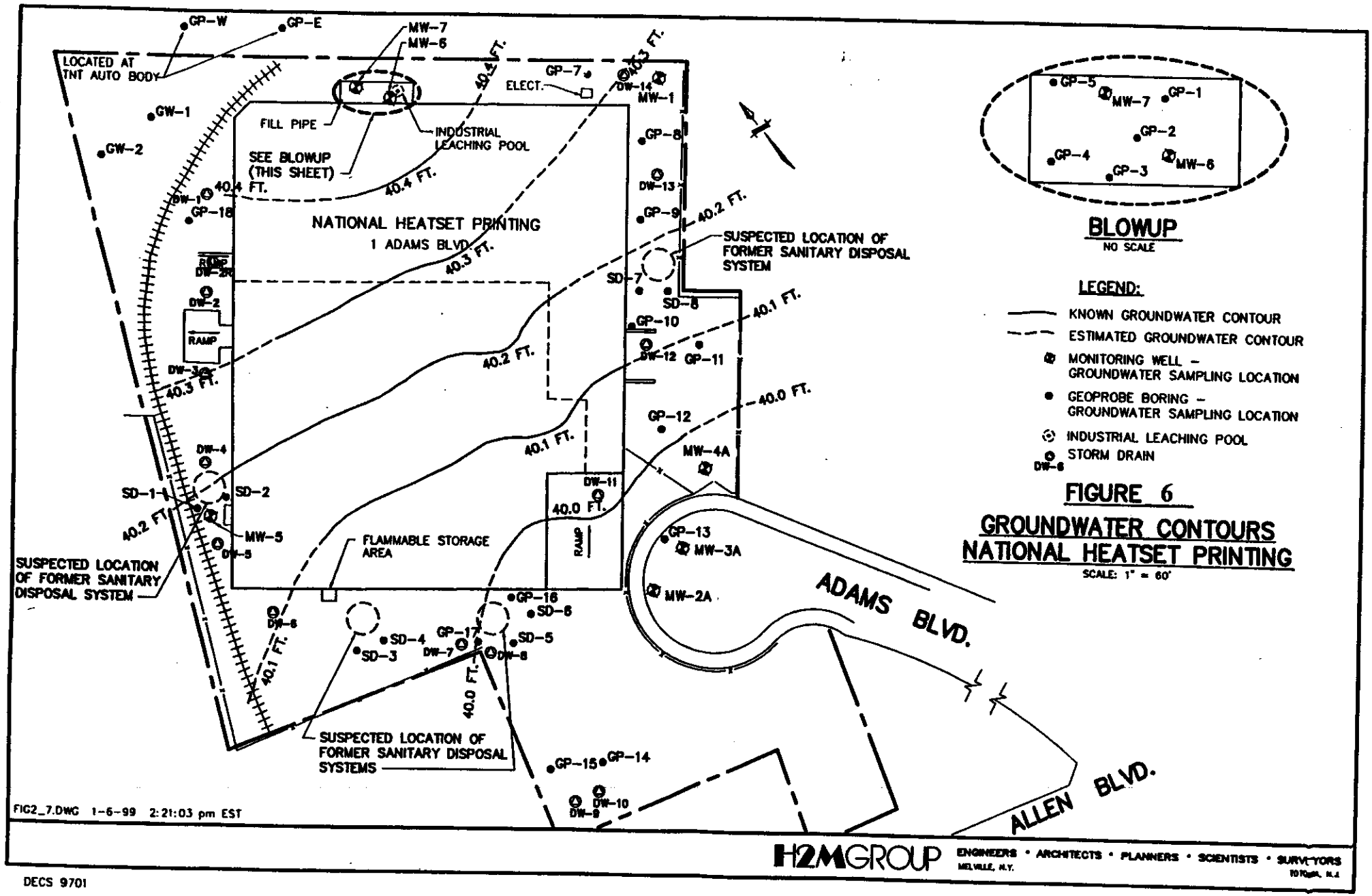
MELVILLE, N.Y.
TOTOWA, N.J.



BLOWUP
NO SCALE

LEGEND:

- KNOWN GROUNDWATER CONTOUR
- ESTIMATED GROUNDWATER CONTOUR
- MONITORING WELL – GROUNDWATER SAMPLING LOCATION
- GEOPROBE BORING – GROUNDWATER SAMPLING LOCATION
- INDUSTRIAL LEACHING POOL
- STORM DRAIN

FIGURE 6

GROUNDWATER CONTOURS NATIONAL HEATSET PRINTING

SCALE: 1" = 60'

FIG2_7.DWG 1-6-99 2:21:03 pm EST

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MELVILLE, N.Y.

DECS 9701

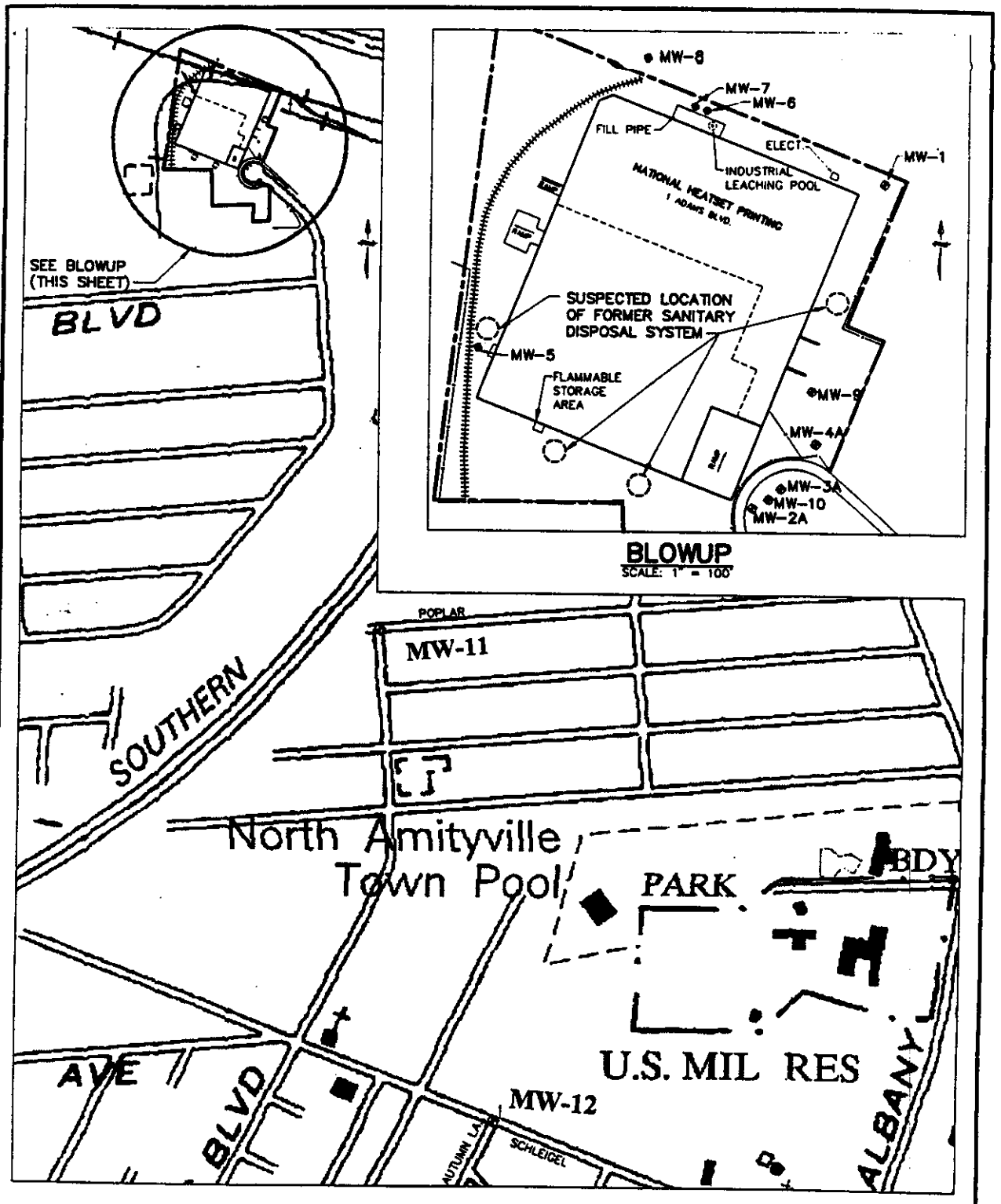

FIGURE 7
GROUNDWATER MONITORING WELL LOCATIONS NATIONAL HEATSET PRINTING

SCALE: 1" = 400'

LEGEND:

⊕ MONITORING WELL

FIG_2_1.DWG 10-26-98 4:50:38 pm EST

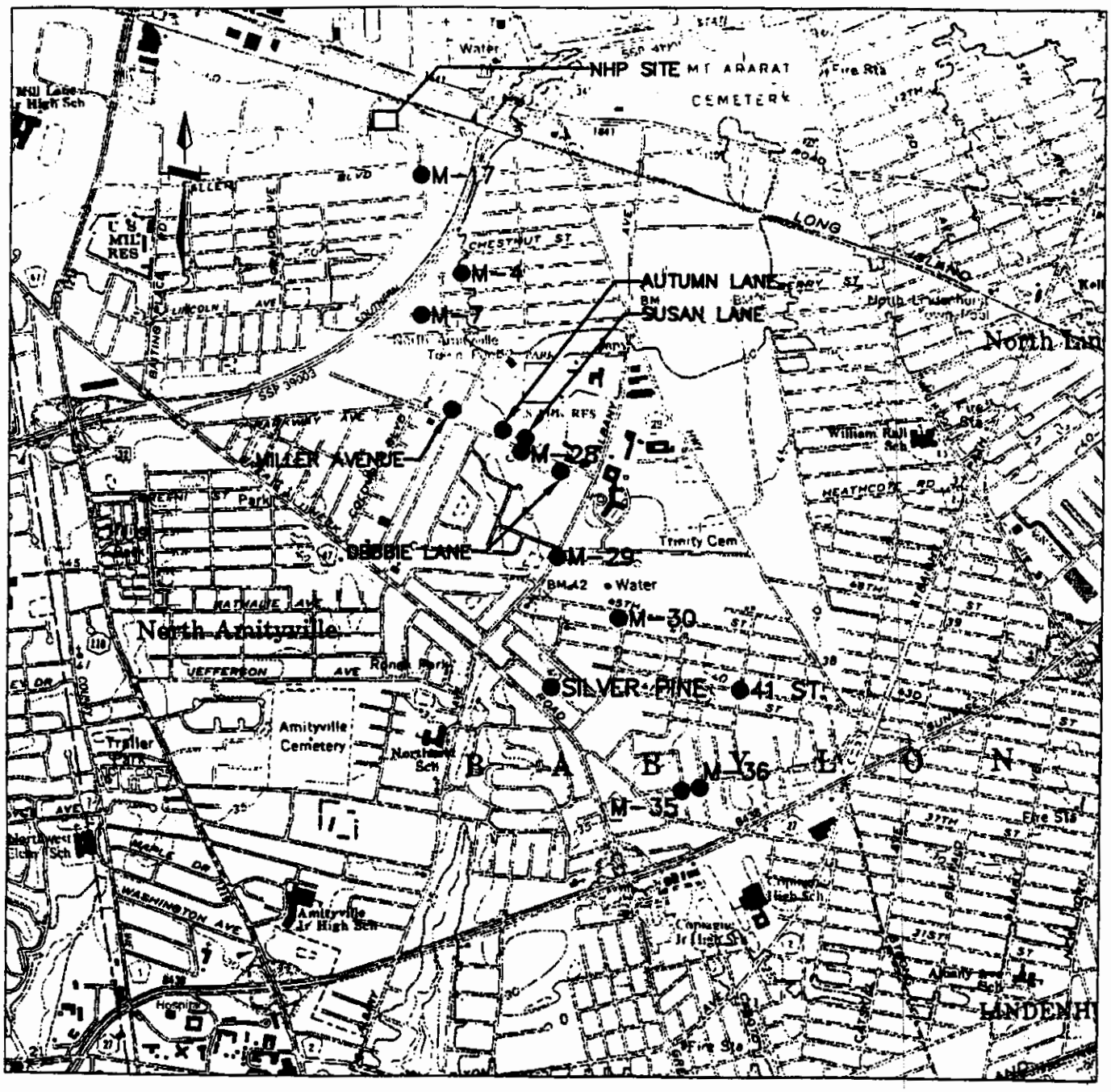

FIGURE 8

OFF-SITE GROUND WATER INVESTIGATION
NATIONAL HEATSET PRINTING

SCALE: 1" = 2000'

LEGEND:

● GEOPROBE SAMPLING POINT

SOURCE: U.S.G.S. AMITYVILLE QUADRANGLE 1969

H2MGROUP ENGINEERS • ARCHITECTS • PLANNERS • SCIENTISTS • SURVEYORS
MELVILLE, N.Y. SHELTON, CT. TOTOWA, N.J.

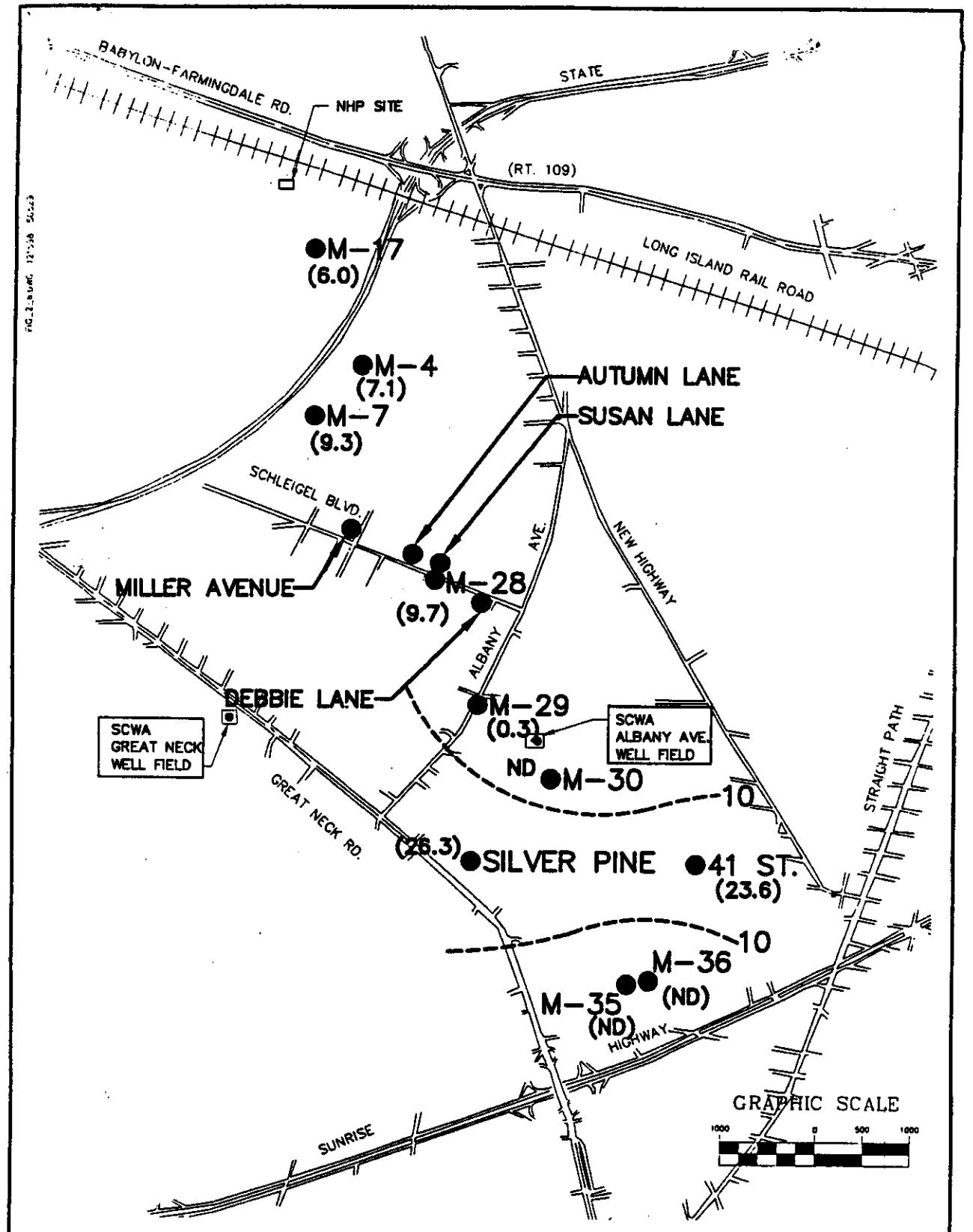

FIGURE 9

50' BGS TOTAL VOCS
NATIONAL HEATSET PRINTING
OFF-SITE GROUNDWATER INVESTIGATION

LEGEND:

- ● GEOPROBE GROUND WATER SAMPLING POINT
  ALL UNITS ARE IN PPB
  (ND) – NONDETECT

SOURCE: U.S.G.S. AMITYVILLE QUADRANGLE, 1969

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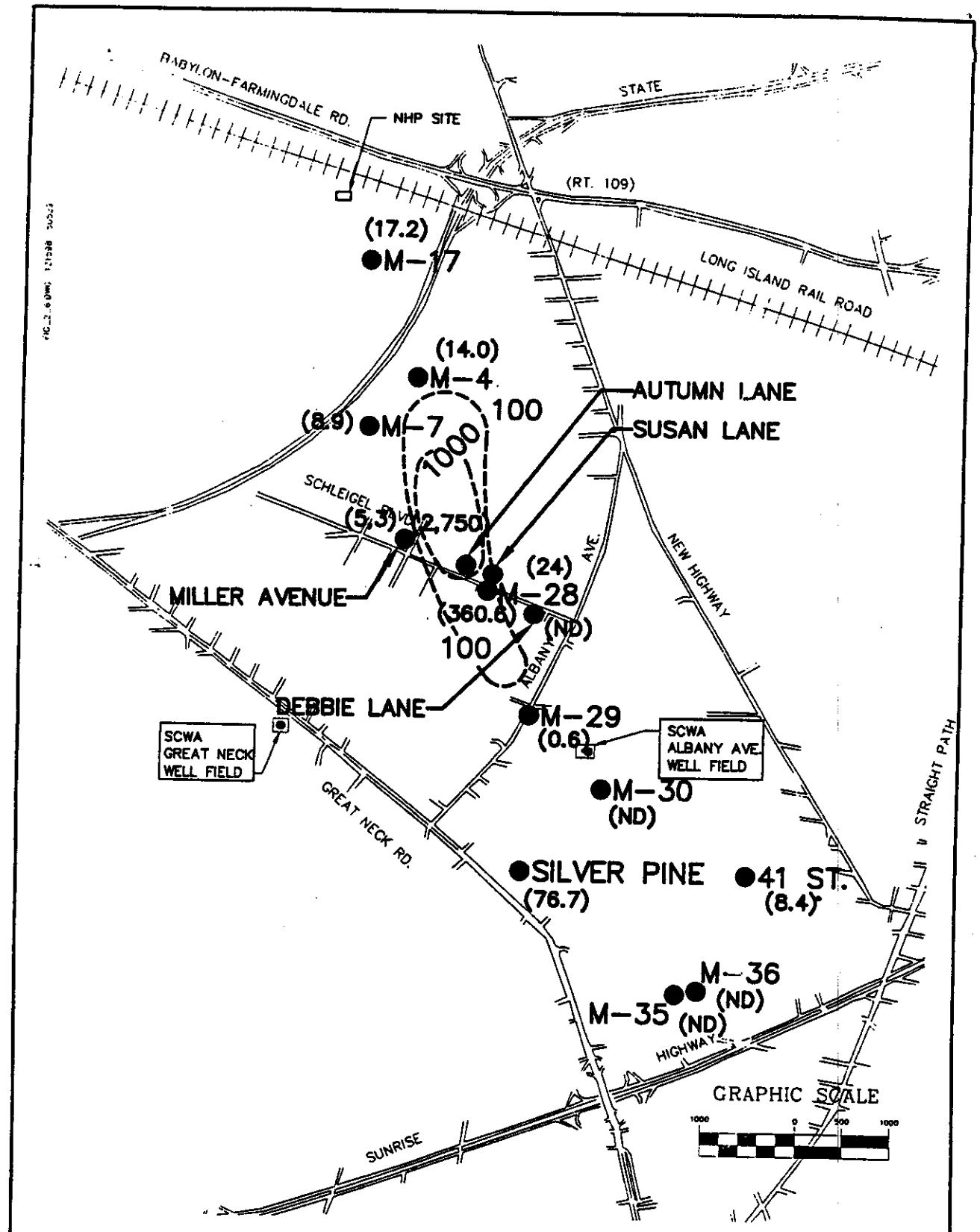


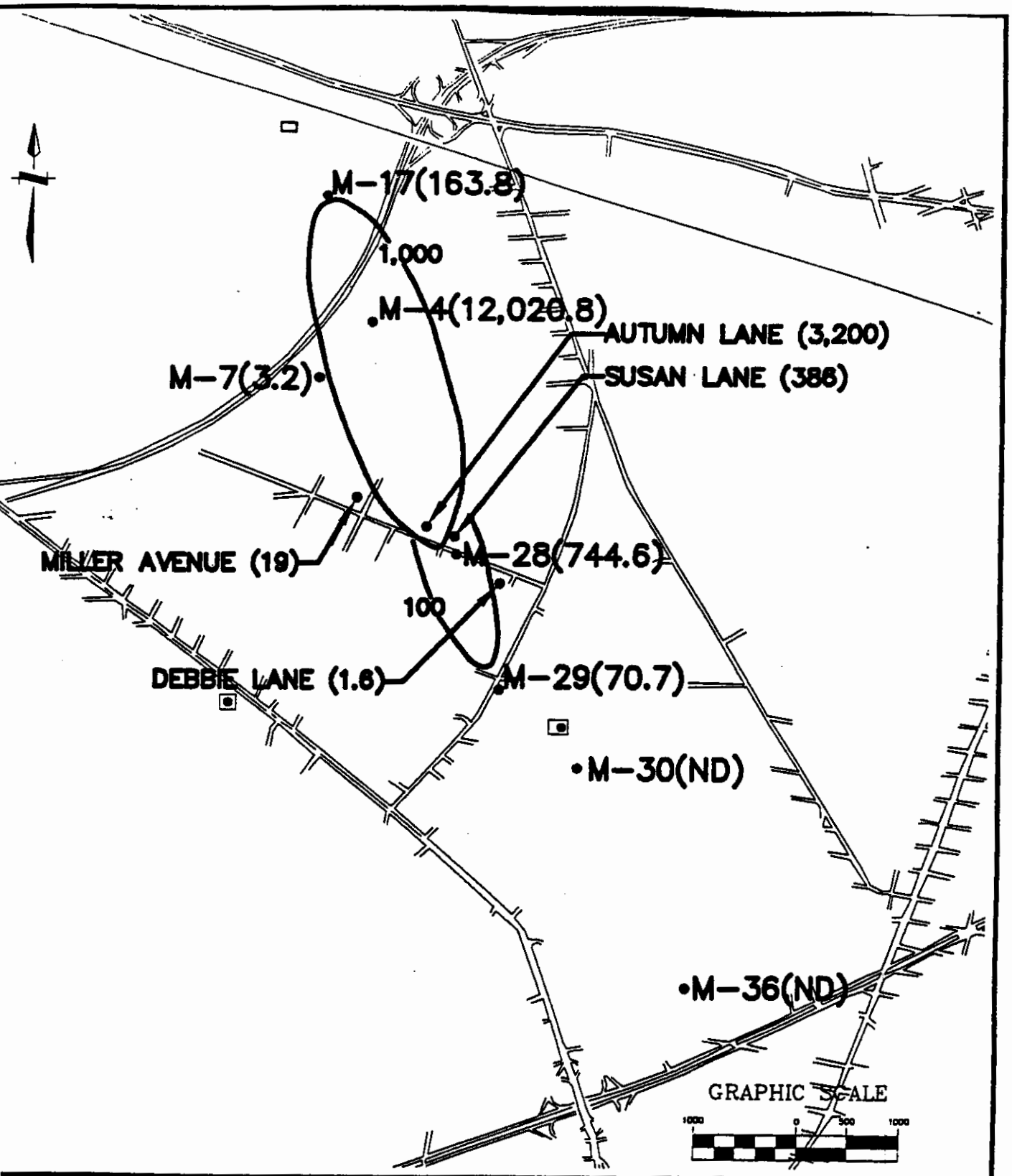
FIGURE 10

65' TO 70' BGS TOTAL VOCS
NATIONAL HEATSET PRINTING
OFF-SITE GROUNDWATER INVESTIGATION

LEGEND:

- ● GEOPROBE GROUND WATER SAMPLING POINT
  ALL UNITS ARE IN PPB
  (ND) – NONDETECT

SOURCE: U.S.G.S. AMITYVILLE QUADRANGLE 1969



LEGEND:

GEOPROBE GROUNDWATER SAMPLING POINT
ALL UNITS ARE IN UG/L
– NON DETECT

U.S.G.S. AMITYVILLE QUADRANGLE 1969

FIGURE 11
75'–85' BGS TOTAL VOCs
NATIONAL HEATSET PRINTING
OFF–SITE GROUNDWATER INVESTIGATION

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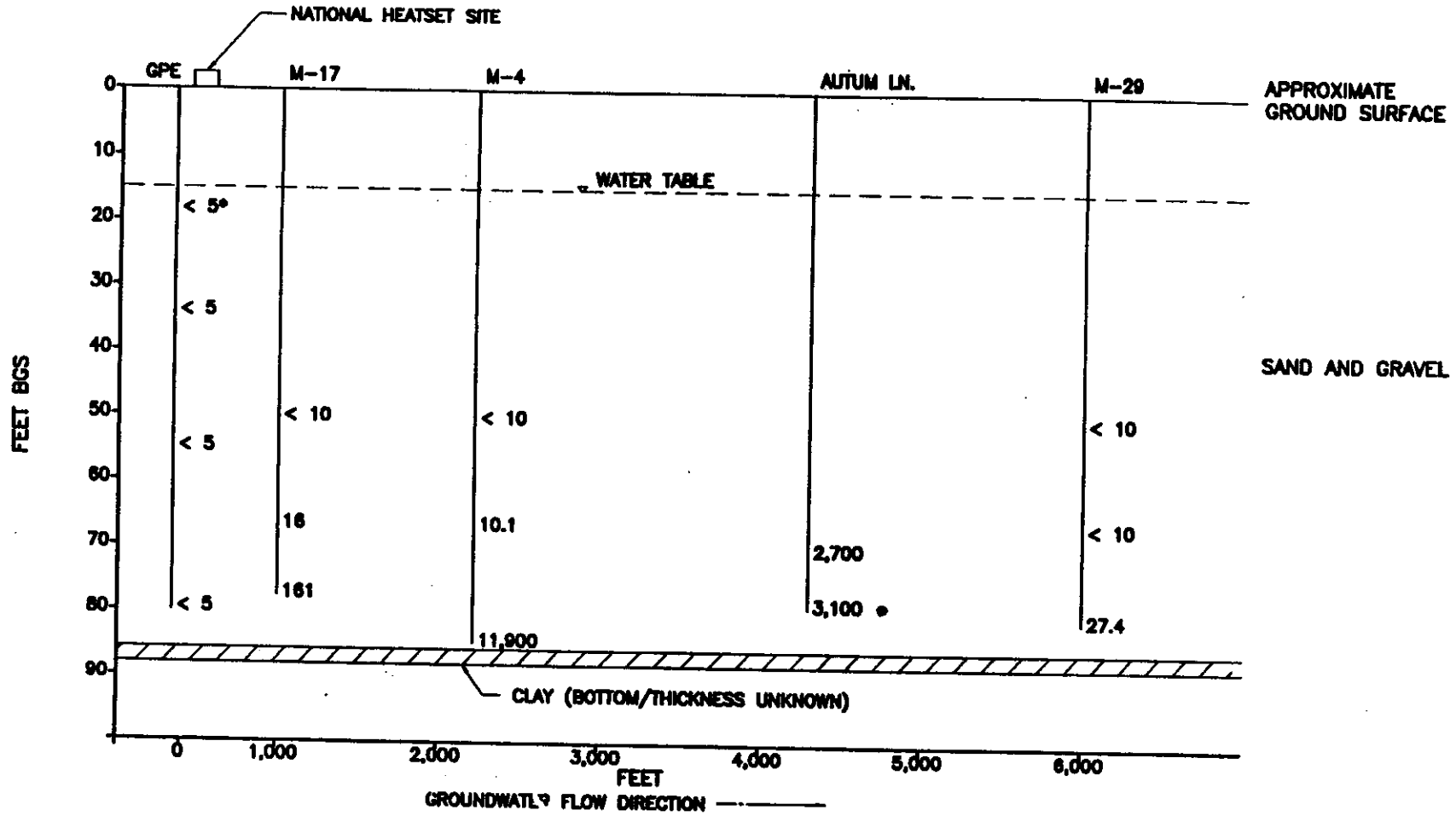

NOTE:

* PCE IN PPB

FIGURE 12

CONCEPTUAL OFF-SITE CROSS-SECTION

NATIONAL HEATSET PRINTING

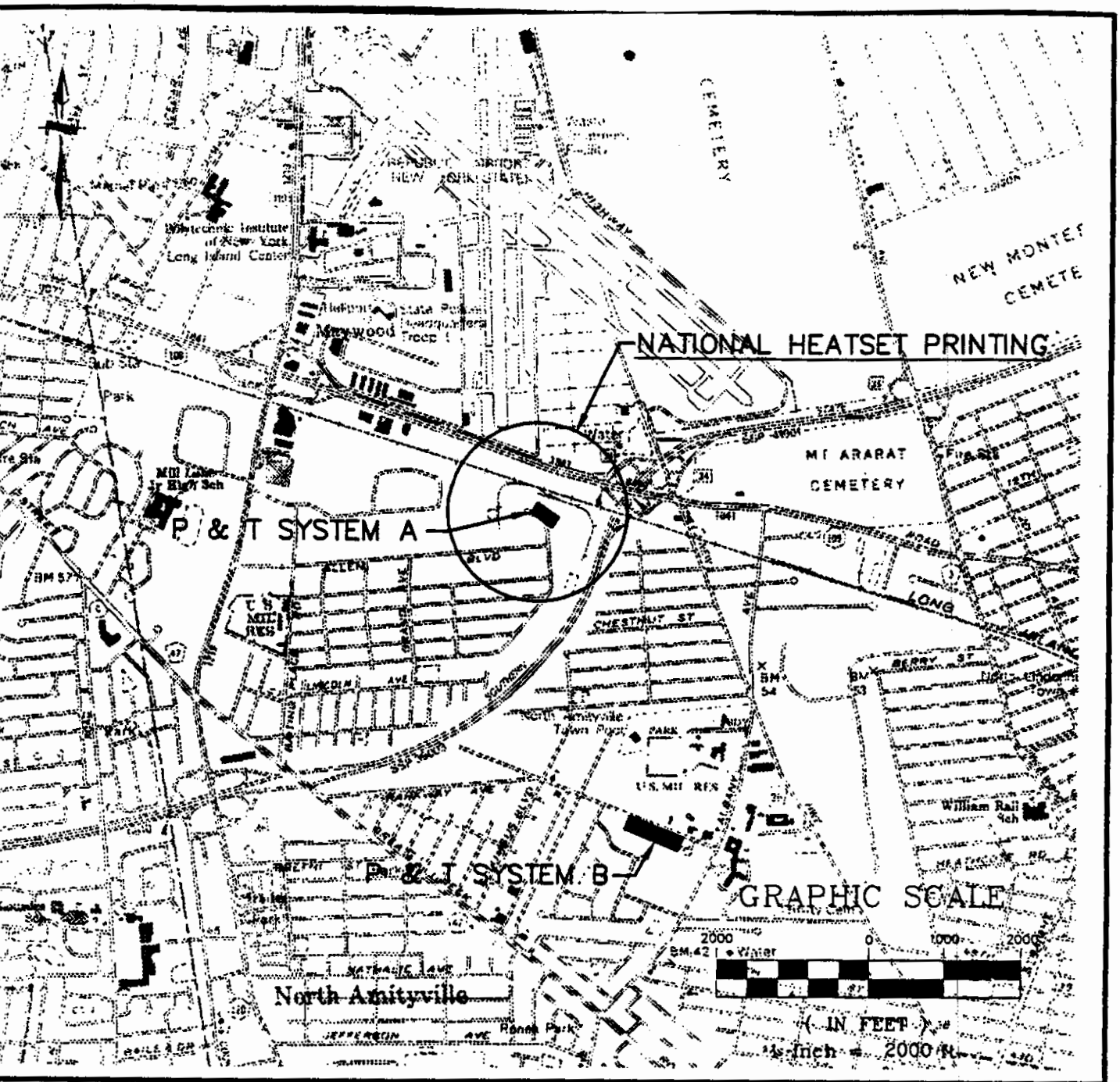

FIGURE 13
ALTERNATIVE 2
GROUNDWATER EXTRACTION AND TREATMENT
ONCEPTUAL LAYOUT OF EXTRACTION WELL NETWORK

NATIONAL HEATSET PRINTING

RCE: U.S.G.S. N.Y.S. QUADRANGLE MAP

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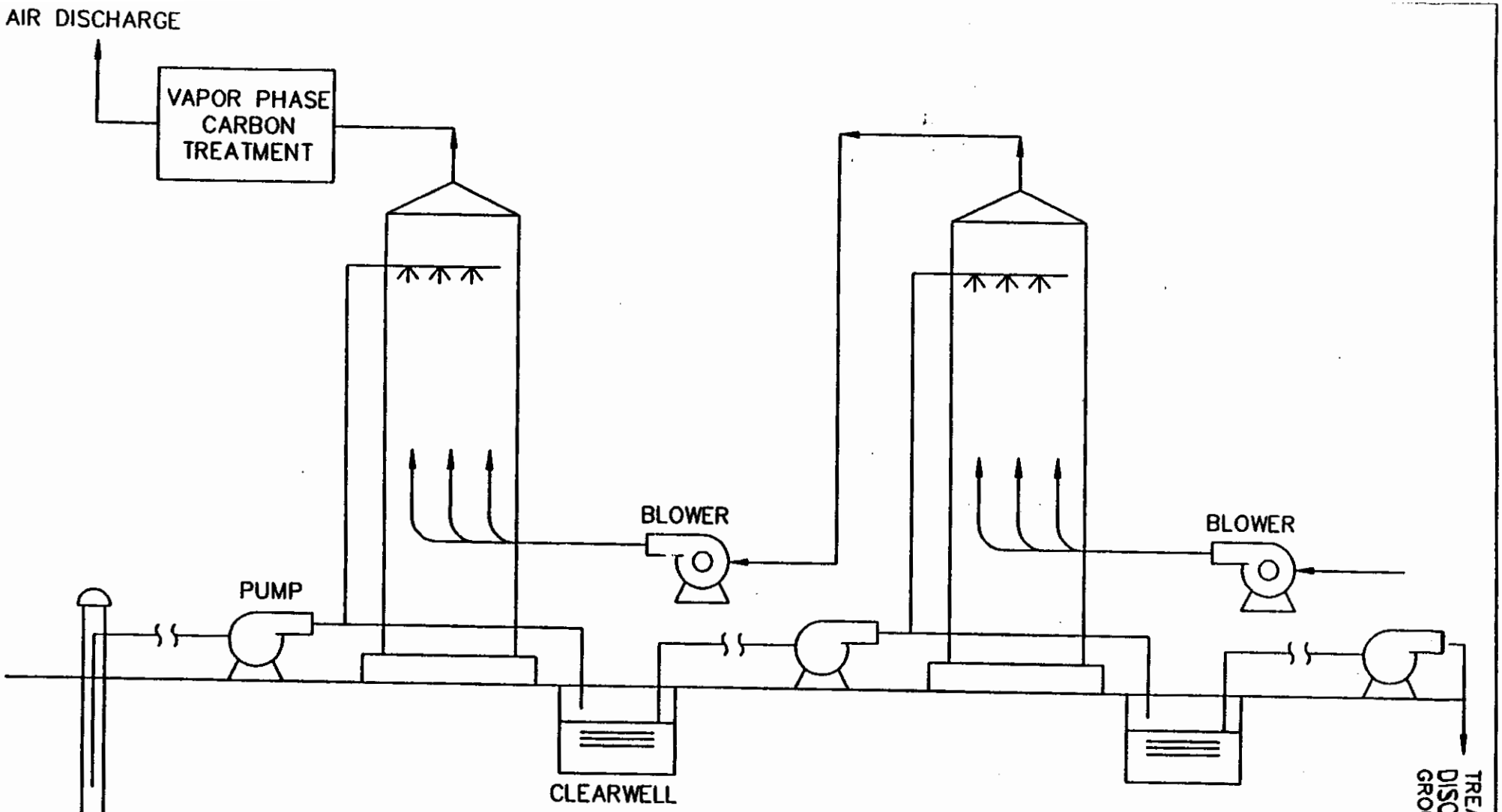

FIGURE 14

SCHEMATIC OF TYPICAL AIR STRIPPING SYSTEM

NATIONAL HEATSET PRINTING

NO SCALE

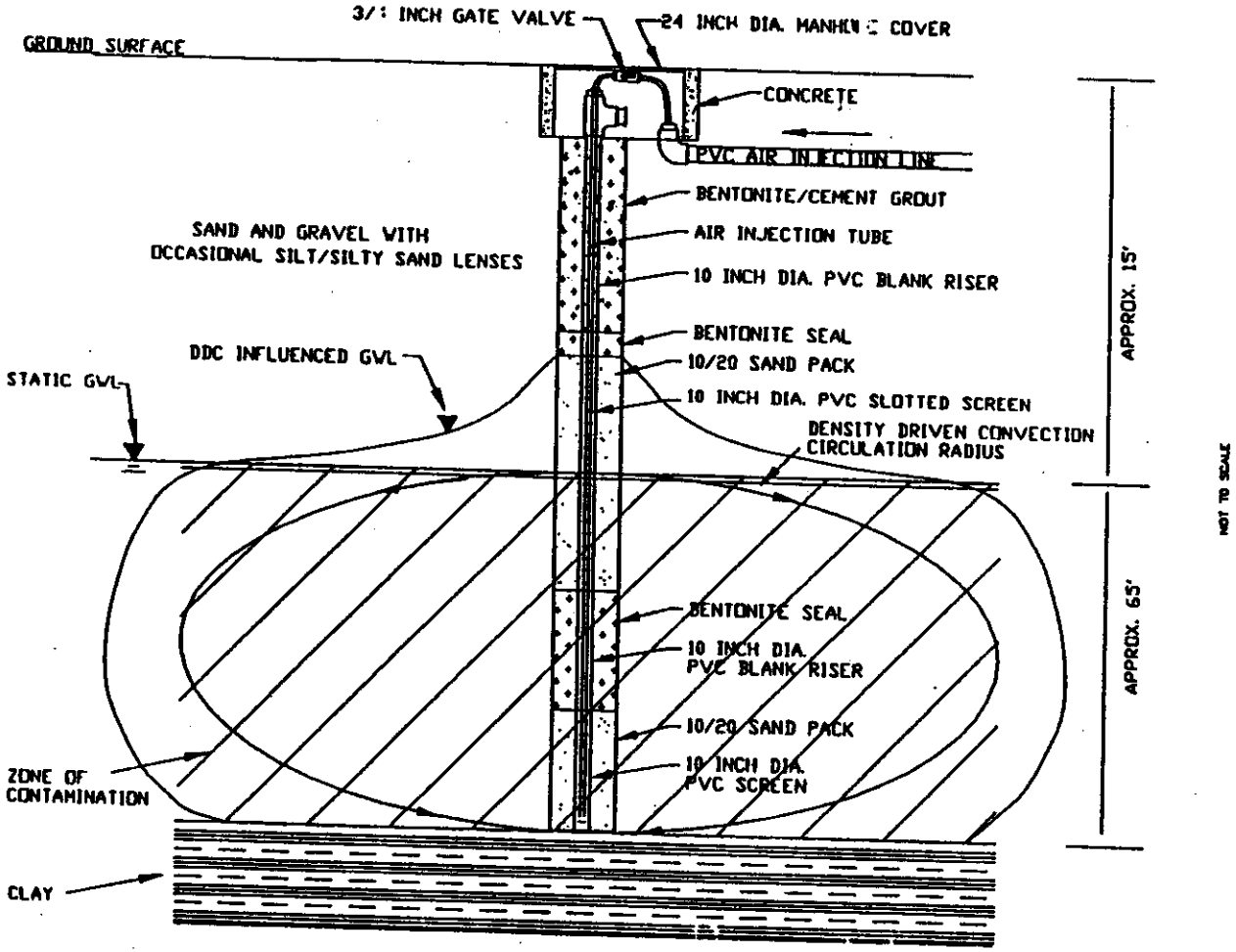

FIGURE 15

CIRCULATION FLOW CELL
CROSS SECTION OF TYPICAL DDC WELL

DRAWING NOT TO SCALE

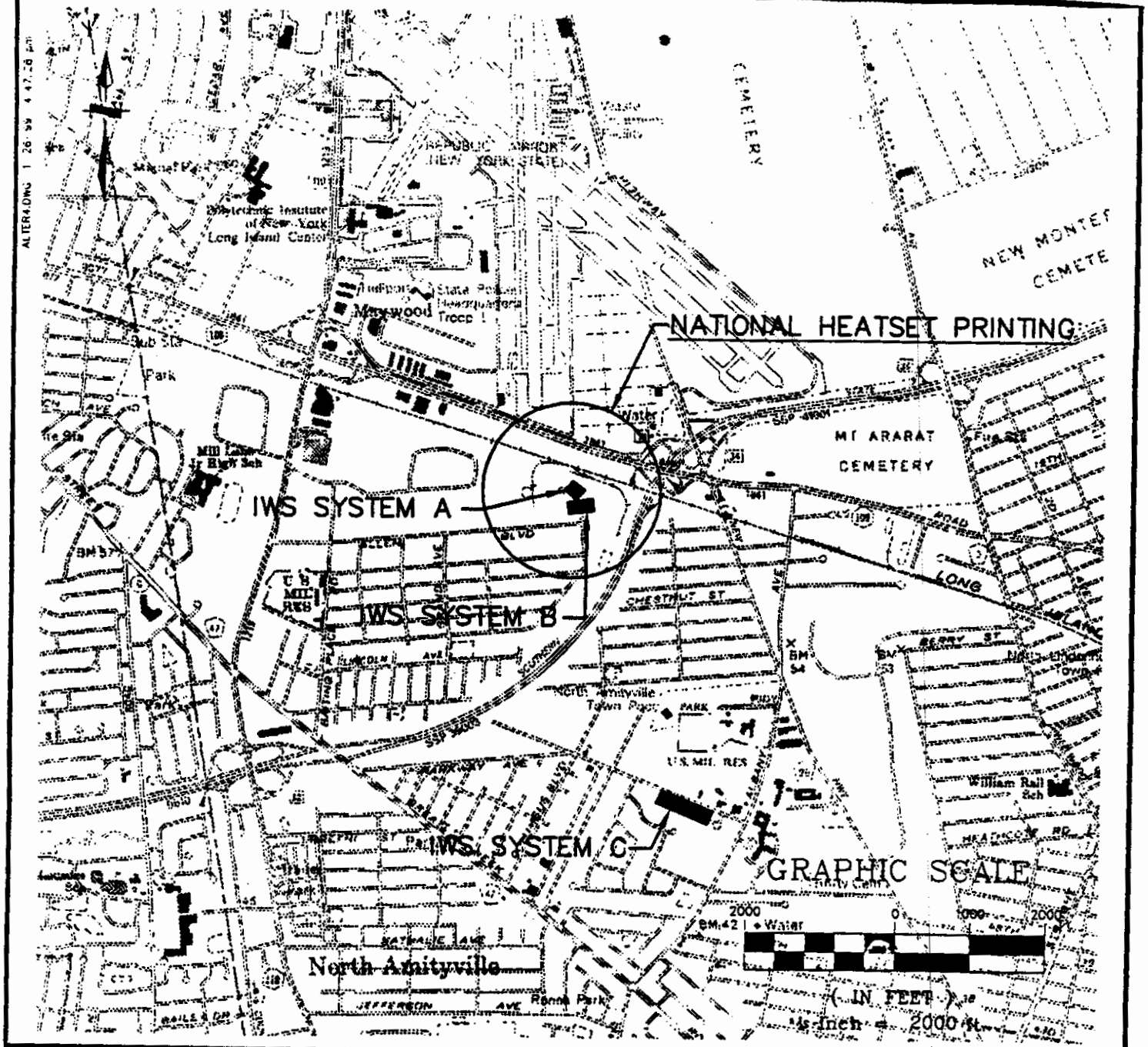

FIGURE 16
ALTERNATIVE 4
GROUNDWATER TREATMENT BY IN-WELL STRIPPING
CONCEPTUAL LAYOUT OF IN-SITU STRIPPING WELLS

SCALE: 1" = 2000'

NATIONAL HEATSET PRINTING

SOURCE: U.S.G.S. N.Y.S. QUADRANGLE MAP

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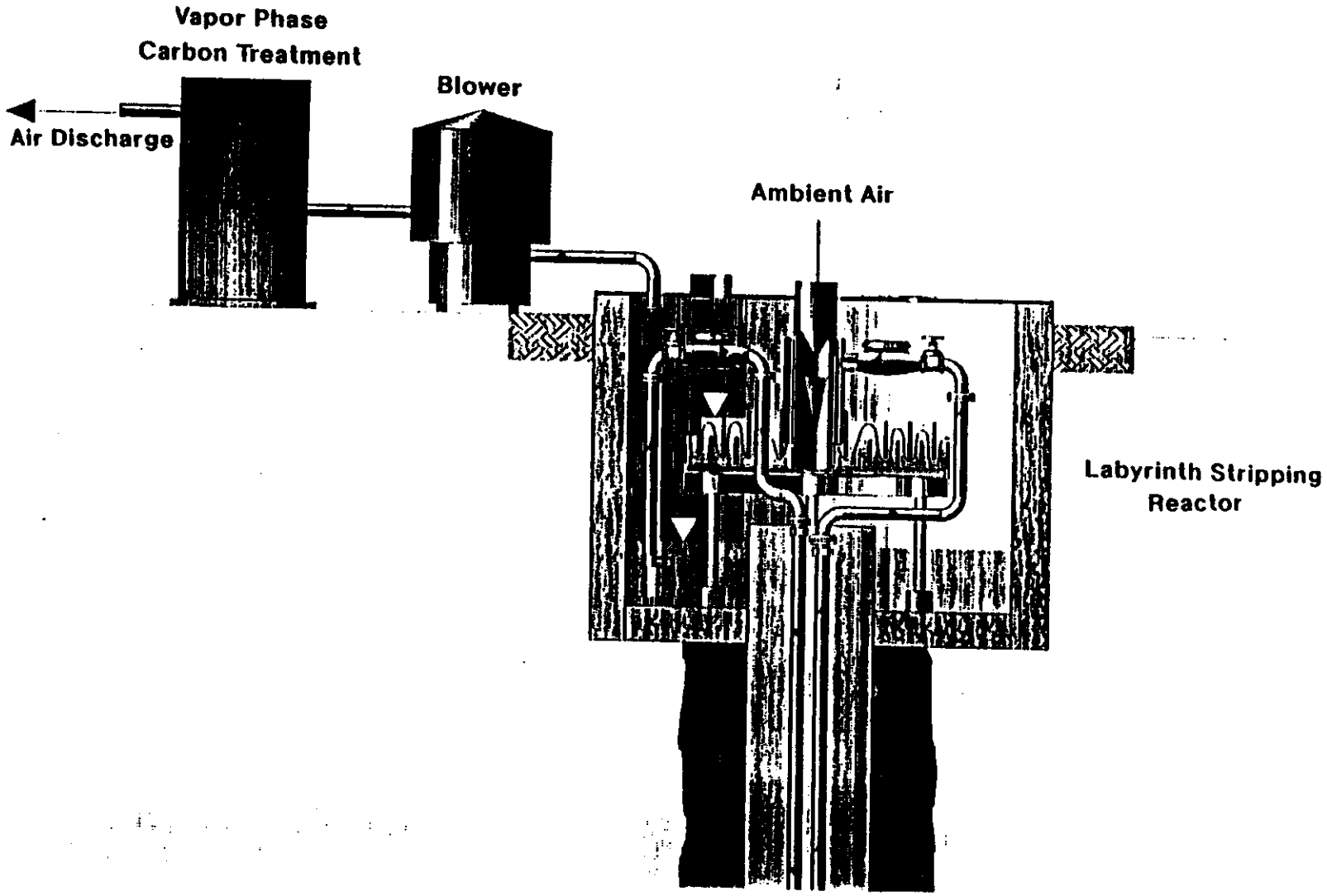

FIGURE 17
SCHEMATIC OF UVB METHOD

SCHEMATIC FROM IEG TECHNOLOGIES CORP.

TABLE 1
NATIONAL HEATSET PRINTING SITE (1-52-108)
SUMMARY OF EXCEEDANCES OF NYSDEC RECOMMENDED SOIL CLEANUP OBJECTIVES
SUBSURFACE SOIL SAMPLES
VOLATILE ORGANIC COMPOUNDS

SAMPLE LOCATION	On-Site (Leaching Pool)			NYSDEC SOIL CLEANUP OBJECTIVES (ppm)
SAMPLE DEPTH, FT	0-16	17-70	71-85	
DATE SAMPLED	9/97-10/97	9/97-10/97	9/97-10/97	
ANALYTES	(ppm)	(ppm)	(ppm)	
Trichloroethene (TCE)	ND-0.097	ND-0.752	ND	0.7
Tetrachloroethene (PCE)	0.0412-42.3	ND-210	ND-7,700	1.4

ND: Not Detected

TABLE 2
NATIONAL HEATSET PRINTING SITE (1-52-140)
SUMMARY OF EXCEEDANCES OF NEW YORK STATE GROUNDWATER STANDARDS
GROUNDWATER MONITORING WELL SAMPLES

SAMPLE TYPE	Shallow Wells (25 feet bgs)	Deep Wells (100 feet bgs)			NYSDEC Groundwater Standards (ppb)
SAMPLE LOCATION	On-site	Upgradient	On-site	Downgradient	
	(ppb)	(ppb)	(ppb)	(ppb)	
SAMPLE DATE	12/97 & 6/98	6/98	12/97 & 6/98	6/98	
Vinyl Chloride	ND	ND	ND	ND-3	2
1,2-Dichloroethene	ND	0.4	ND-2	6-35	5
1,2-Dichloroethane	ND-3,100	ND	ND	ND	0.6
Trichloroethene (TCE)	1-1,100	4	ND-5	3-56	4
Tetrachloroethene (PCE)	10-11,000	5	BGA-1,000	260-1,500	5

ND: Not Detected

TABLE 3
NATIONAL HEATSET PRINTING SITE (1-52-140)
SUMMARY OF EXCEEDANCES OF NEW YORK STATE GROUNDWATER STANDARDS
GEOPROBE GROUNDWATER SAMPLING RESULTS

SAMPLE TYPE	Shallow Samples (above 50 feet bgs)		Deep Samples (below 50 feet bgs)		NYSDEC Class GA
SAMPLE LOCATION	Upgradient	On-site	Upgradient	Downgradient	Groundwater
	(ppb)	(ppb)	(ppb)	(ppb)	Standards
SAMPLE DATE	10/97	9/97-10-97	10/97	3/98 & 8/98	(ppb)
Vinyl Chloride	ND	ND	ND	ND-32.4	2
1,1-Dichloroethene	ND	ND-20.6	ND	ND-1.3	5
1,2-Dichloroethene	ND	ND-12,200	ND	ND-330	5
1,1-Dichloroethane	ND	ND-20.6	ND	ND-2.5	5
1,1,1-Trichloroethane	ND	ND-159	ND	ND-4	5
Trichloroethene	ND	ND-9,620	ND	ND-103	5
Tetrachloroethene	ND	ND-34,000	ND	ND-11,900	5
Ethylbenzene	ND	ND-90.1	ND	ND	5

ND: Not Detected

Table 4
Remedial Alternative Costs

Remedial Alternative	Capital Cost	Annual O&M	Total Present Worth
Alt. #1: No Further Action	$0	$50,000	$518,985
Alt. #2: Pump & Treat with Air Stripping	$2,016,550	$339,000	$5,535,268
Alt. #3A: DDC Type In-Well Stripping	$1,109,800	$150,000	$2,666,755
Alt. #3B: UVB In-Well Stripping	$1,918,900	$205,000	$4,046,739

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

National Heatset Printing Site
Record of Decision
Town of Babylon, Suffolk County
Site No. 1-52-140

The Proposed Remedial Action Plan (PRAP) for the National Heatset Printing site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on February 12, 1999. This Plan outlined the preferred remedial measure proposed for the remediation of the contaminated soil and groundwater at the National Heatset Printing site. The preferred remedy is "In-Situ Density Driven Convection (DDC) Type In-Well Stripping."

The release of the PRAP was announced via a notice to the mailing list, informing the public of the PRAP's availability.

A public meeting was held on March 3, 1999 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. Written comments were received from Mr. Theodore Firetog, an attorney representing the property owner, and Donnelly Engineering, a consulting engineering firm representing the property owner.

The public comment period for the PRAP was originally scheduled to end on March 14, 1999. However, the comment period was extended to March 22, 1999 at the request of the property owner's consultant. A notice of the comment period extension was mailed to the public contact list.

This Responsiveness Summary responds to all questions and comments raised at the March 3, 1999 public meeting and to the written comments received.

The following are the comments received at the public meeting, with the NYSDEC's responses:

COMMENT 1: Is the property owner liable for cleanup costs?

RESPONSE 1: The property owner has been designated a Potential Responsible Party for this site and may be subject to cost recovery by the NYSDEC.

COMMENT 2: How much will the preferred remedy cost? Will the cost be recovered from the Potential Responsible Party?

RESPONSE 2: The costs for the preferred remedy are estimated at $1,109,800 in capital costs and $150,000 in annual operation and maintenance costs. The NYSDEC will first give the PRPs the opportunity to assume responsibility for implementation of the remedy. If the PRPs fail to

reach an agreement with the NYSDEC, the National Heatset site will be remediated using State Superfund money. Through litigation, the NYSDEC reserves the right to recover costs from Potential Responsible Parties.

COMMENT 3: How long will the system take to build? How long will the system be in operation? Will construction activities be noisy? Will residents be notified prior to construction activities?

RESPONSE 3: The system will take approximately six months to design and six to nine months to construct. The NYSDEC has estimated that the system will remediate the contaminated groundwater plume to New York State Department of Health (NYSDOH) drinking water standards within 15 years. Construction practices will be implemented that will minimize disturbances to area residents. Residents will be notified prior to initiation of construction activities.

COMMENT 4: When will the final decision regarding the remedy be made?

RESPONSE 4: After the public comment period ends on March 22, 1998, the NYSDEC will consider the public comments and determine the final remedy.

COMMENT 5: How much money remains in the State Superfund?

RESPONSE 5: The State Superfund currently has $328,851,311 as of February 28, 1999.

COMMENT 6: Does NYSDEC negotiate cleanup costs with PRPs with an upper limit which cannot be exceeded even if the cleanup is incomplete?

RESPONSE 6: No, the PRPs are liable for all costs borne by the NYSDEC and the NYSDOH in the investigation and remediation of a hazardous waste site.

COMMENT 7: Have the Suffolk County Water Authority Great Neck Road wells been impacted by site-related contamination? There have been water quality problems with the water pumped from these wells.

RESPONSE 7: The well field has not been impacted by contaminants related to this site. The water quality problems at the Great Neck well field were likely the result of naturally occurring iron present in the Magothy aquifer. The Suffolk County Water Authority currently treats the water for high iron content.

COMMENT 8: Has the leaching pool in back of the building been cleaned out?

RESPONSE 8: Yes, the leaching pool has been cleaned out and filled with clean soil.

COMMENT 9: Have cancer studies been conducted by the NYSDOH in the vicinity of the site?

RESPONSE 9: No cancer studies have been conducted by the NYSDOH that relate specifically to the National Heatset site. Several cancer incidence investigations have been conducted for surrounding communities. Individuals with questions about past or ongoing studies in Nassau or Suffolk Counties should contact the NYSDOH at 1-800-458-1158. Anyone with specific concerns about cancer is encouraged to discuss these with his or her physician but may also contact the NYSDOH at 1-800-458-1158 for additional information.

Cancer is a group of more than 100 different diseases that are due to abnormal growth of body cells. Cancer is very common. One in three persons will be diagnosed with cancer at some time in their life and it will eventually affect three of every four families. Scientists agree that one way people can get cancer is through repeated long-term contact with one or more cancer-causing agents (carcinogens). Such agents include tobacco, sunlight, x-rays and certain chemicals that may be found in air, water, food, drugs and the workplace. Researchers do not fully understand why some people develop cancer while others do not. Susceptibility to cancer-causing agents probably varies among individuals due to genetic factors. Other factors, as yet unknown, may also play a part in causing this disease. Factors associated with our personal habits and lifestyle are believed to contribute to the majority of cases.

A cancer incidence investigation compares the number of cancer cases occurring among residents of a study area during a defined period of time with the number of cancer cases that would be expected in an area having a similar age and sex distribution, population size and degree of urbanization. This type of study can identify instances where the observed numbers of a particular cancer are significantly higher than expected. This type of study does not tell us, however, why the excess has occurred or whether it will continue. Additional information may be sought to help identify risk factors that contributed to the cancer excesses.

COMMENT 10: Is tetrachloroethylene (PCE) the same chemical that is used in dry cleaning operations? Does PCE emit the odor associated with dry cleaning establishments? Do people exposed to PCE suffer ill health effects or premature death?

RESPONSE 10: PCE is the predominant solvent used in dry cleaning operations and emits the odor associated with dry cleaning operations.

Studies show that exposures to very high concentrations of PCE in air (such as those experienced in a workplace setting) cause central nervous system symptoms such as dizziness, headache, sleepiness, lightheadedness, and poor balance. These effects disappeared soon after exposure ended. Studies of dry cleaning workers indicate that long-term exposure to high concentrations of PCE in air reduces scores on behavioral tests and causes biochemical changes in blood and urine. The biochemical changes indicate liver and kidney damage. Exposure to high concentrations of PCE has caused liver and kidney damage in laboratory animals.

Whether or not PCE causes cancer in humans is not definitively known. PCE causes cancer in laboratory animals exposed to high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in people who are exposed to lower levels over long periods of time. Some studies show a slightly increased risk of cancer and reproductive effects among workers exposed to PCE, including dry cleaning workers. The cancers associated with exposure included cancers of the esophagus and cervix and non-Hodgkin's lymphoma. The

reproductive effects associated with exposure included increased risks of spontaneous abortion, menstrual and sperm disorders, and reduced fertility. The data suggest, but do not prove, that the effects were caused by PCE and not by some other factor or factors.

It should be noted that the above discussion relates primarily to occupational exposures in air and not to the lower-level exposures that may occur due to residual contamination in the environment. With respect to the National Heatset site, some individuals were exposed to PCE for an unknown period of time through contaminated drinking water prior to 1988. The duration of time was probably less than 4 years (National Heatset began operations in 1983). Because we do not have water samples prior to the discovery of the contaminated wells in late 1987, we do not have data on specific PCE levels present during these 4 years and cannot accurately determine people's exposures or health risks.

COMMENT 11: Can the comment period be extended?

RESPONSE 11: Yes, the comment period in this particular situation was extended from March 14, 1999 to March 22, 1999.

COMMENT 12: Could there may be other sources of the off-site groundwater contamination other than the National Heatset Printing site?

RESPONSE 12: The National Heatset Printing site has been identified as the source of the off-site groundwater plume. The plume is directly downgradient of the National Heatset site and contains the same contaminants that were detected in the soil and groundwater samples collected from the National Heatset site. The Department has no information that would indicate another source of off-site groundwater contamination.

COMMENT 13: Were the drill cuttings analyzed for waste-characterization purposes and were they disposed of off-site?

RESPONSE 13: The drill cuttings were analyzed for hazardous waste characteristics and were disposed of at a permitted disposal facility.

COMMENT 14: Does the Fairchild Republic groundwater contamination plume intersect the National Heatset plume?

RESPONSE 14: No, the Fairchild Republic plume is east of the National Heatset plume and is deeper.

COMMENT 15: Does more data need to be collected to determine the extent of the downgradient groundwater contamination?

RESPONSE 15: Enough data has been collected to determine the extent of contamination and select a remedy for groundwater remediation. Additional sampling will be conducted, if necessary, to determine the design parameters for the remediation system.

A letter dated March 19, 1999 was received from Mr. Theodore Firetog, the property owner's attorney which included the following comments:

COMMENT 1: The RI/FS and PRAP were prepared by H2M and LMS for the DEC (page 1, paragraph 1).

RESPONSE 1: The NYSDEC prepared the PRAP. The RI/FS was prepared by H2M and LMS.

COMMENT 2: The letter alleges that time, distance, and groundwater velocity do not correlate with the theory that PCE detected downgradient came from One Adams Boulevard (page 2, paragraph 1).

RESPONSE 2: As part of the RI, the NYSDEC's consultant determined the groundwater flow direction for the site and its surroundings. Groundwater samples obtained directly downgradient of the site were contaminated with PCE while samples taken to the east and west of the groundwater flow line contained lower concentrations of PCE or PCE was not detected. Samples obtained upgradient of the site did not detect PCE.

The letter's allegation concerning velocity refers to the Miller Avenue study, which was performed by the Suffolk County Department of Health Services in 1989-1990. The property owner's consultant's comment report elaborates on this comment by stating that, assuming that groundwater travels 1.3 feet per day, the contamination could not have migrated to point M-4 and M-28 (see Figure 8) in the one to two years following the spill incident in 1988.

National Heatset had been using organic solvents at the site since 1983. The deliberate dumping of organic solvents in 1987 was not the first improper disposal incident on this property. For example, in March 1986 an inspection performed by the SCDHS revealed strong evidence of dumping from staining of inks and oils on the ground. The inspection report indicated that drums were being stored improperly both inside and outside of the building. An inspection by the SCDHS in 1983 revealed that National Heatset was discharging photo plate making waste to the on-site sanitary system. The results of the inspections and the deliberate dumping reveal a pattern of improper handling and disposal of hazardous waste and materials that extend throughout National Heatset's occupation of the site. Contamination from these and other improper disposal incidents from 1983-1989 caused the groundwater contamination at M-4 and M-28.

COMMENT 3: Installing a multimillion dollar in-well stripping remediation system in the former source area based upon one sampling point that indicates minimal and decreasing ground water contamination is arbitrary and capricious (page 2, paragraph 2).

RESPONSE 3: The groundwater samples taken at the former leaching pool (source area) in October 1998 exhibited PCE concentrations of 210 ppb at 28 feet bgs and 330 ppb at 80 feet bgs. These levels of PCE are more than 40 times the drinking water standard (5 ppb) for this contaminant, which are not "minimal" as the letter describes. 1,2-DCE, a breakdown product of PCE, was detected at 1,800 ppb which is 380 times the drinking water standard (5 ppb) for this contaminant. Although the PCE concentrations in the October 1998 samples are less than those detected in September 1997 (1900 ppb for 28 feet bgs and 1000 ppb for 80 feet bgs), the concentrations of 1,2-DCE in the 28 feet

bgs sample have doubled from 970 ppb to 1,800 ppb. Therefore, contaminant levels at the former leaching pool are not decreasing as the letter maintains.

In addition, the NYSDEC did not use one sampling point in selecting the remedy, as the letter alleges. In addition to the above mentioned source area contamination, the results of the RI revealed that groundwater directly downgradient of the former leaching pool contains over 10,000 ppb of PCE, a soil sample taken at the former leaching pool at 80 feet bgs as part of the monitoring well installation in 1997 exhibited a PCE concentration of 7,700 ppm, which is 5,500 times greater than the NYSDEC soil cleanup objective (1.4 ppm).

The data presented above indicate that the groundwater below the former leaching pool is highly contaminated. Also, the PCE contamination is traveling south-southeast from the source area and is also degrading into another hazardous waste (i.e. 1,2-DCE). The soils below the former leaching pool act as an ongoing source of groundwater contamination. Therefore, a remediation system at the source area is necessary to prevent further contamination of the groundwater.

COMMENT 4: Installing an in-well stripping remediation system to act as a barrier system to prevent contaminants from leaving the National Heatset site when such contaminants are nothing more than a temporary contaminant surge caused by the DEC's RI/FS is clearly a decision that is arbitrary and capricious (page 2, paragraph 2).

RESPONSE 4: The NYSDEC believes that this comment refers to the comment report submitted by the property owner's consultant, which claims that the high contaminant levels detected in the groundwater monitoring wells were a result of using hollow-stem augers to drill the wells. This method of well drilling is the accepted standard practice for monitoring well installation. In fact, the property owner's consultant claims to have used the same method when he installed the original on-site wells on May 24, 1989 (Addendum A, Report on August 1995 Soil Sampling Activities, Supplemental Sampling Program, Donnelly Engineering, April 1996).

In the comment report, the property owner's consultant indicates that he installed an additional groundwater monitoring well on-site in September 1997 and sampled an existing well located downgradient of the new well several times between October 1998 and February 1999 to prove the above mentioned theory. The NYSDEC was not informed of the installation of this new monitoring well in 1997 or the sampling activities until the property owner's consultant's comment report was received in March 1999. Therefore, since the monitoring well was installed and the sampling activities were performed without the oversight or approval of the NYSDEC, there is no way of knowing if proper sampling procedures and chain of custody procedures were followed, acceptable sample handling and correct analytical methods were used, and the integrity and safety of the monitoring well was preserved. Therefore, the NYSDEC cannot consider the data in evaluating the proposed remedy. Since hollow stem auger drilling is an accepted standard practice in installing monitoring wells and the data for the property owner's consultant's argument was unsupportable, the groundwater contamination data obtained at the downgradient edge of the site is not a temporary contaminant surge but is indicative of a groundwater contamination plume migrating south-southeast from the site. Therefore, the NYSDEC's decision to select a groundwater treatment system to treat and mitigate contaminants migrating off-site is logical and necessary.

COMMENT 5: The letter refers to the Fact Sheet and RI/FS report, which stated that National Heatset disposed of its chemical inventory by dumping material onto the soils and into a leaching pool located on the northeast side of the building. Yet, if the DEC had done a more responsible investigation, it would have discovered that most of National Heatset's chemical inventory were contained in drums, which were subsequently removed from the site (page 2, footnote).

RESPONSE 5: The discharge was witnessed by a representative of the Suffolk County Department of Health Services. Samples taken by the Suffolk County Department of Health Services after the incident indicated significant subsurface soil contamination, including 13,000 ppm of PCE at the bottom of the leaching pool excavation. Based upon this information, the statement in the Fact Sheet and the RI/FS report is accurate.

COMMENT 6: The letter states that it has taken the NYSDEC eleven years to address remediation of the site. By contrast, the owner performed cleanup activities as soon as he could access the property. The DEC has not assisted the owner with its ongoing cleanup activities (page 3, paragraph 1).

RESPONSE 6: Although the disposal incident occurred in 1987, the Suffolk County Department of Health Services managed the investigation of the National Heatset site until 1993. During this time, the property owner excavated the contents of the leaching pool, performed a limited site investigation, and installed a treatment system in the area of the former leaching pool. However, the Suffolk County Department of Health Services sampled the bottom of the leaching pool excavation in 1988 and detected 13,000 ppm of PCE, among other VOCs. This contamination was never addressed by the property owner.

In 1993, the NYSDEC listed the site on the Registry of Inactive Hazardous Waste Disposal Sites and thereby acquired regulatory responsibility for the site. As required by statute, the NYSDEC attempted to negotiate with the Potentially Responsible Parties (PRPs) to give them the opportunity to investigate and remediate the site themselves. The NYSDEC can refer a site for investigation under the State Superfund only if an agreement cannot be reached with the PRPs. The National Heatset Printing Corp. has declared bankruptcy and has gone out of business. Since the property owner and the Department could not agree on the terms and conditions of an RI/FS Consent Order, the site was referred to State Superfund for investigation by the NYSDEC.

The owner has chosen to operate a treatment system without a consent order with oversight from the NYSDEC. By operating this system, the property owner is tampering with the investigation and remediation of a hazardous waste site.

COMMENT 7: The NYSDEC has failed to take any action against National Heatset Printing Co., or to seek prosecution of any of the company's officers or directors for the intentional discharge of hazardous substances at the site (page 3, paragraph 1).

RESPONSE 7: The National Heatset Printing Co. has declared bankruptcy and has gone out of business. To date, the NYSDEC has not taken action against either the property owner or the National Heatset Printing Company. The NYSDEC reserves the right to bring a cost recovery action against the National Heatset Printing Company, the property owner, and any other responsible parties.

COMMENT 8: The Department repeatedly writes in its Report about a single PRP, the property owner. No mention is made of the polluter, National Heatset Printing Co., as being a PRP (page 3, paragraph 2).

RESPONSE 8: Section 5 of both the PRAP and ROD, "Enforcement Status", identifies both the National Heatset Printing Co. and Adams Boulevard Corporation as PRPs for this site.

COMMENT 9: The DEC claims that no operational data has ever been submitted to confirm the effectiveness of the treatment system installed by the property owner. However, the Supplemental Sampling and Interim Remedial Measures Workplan (Report on August 1995 Soil Sampling Activities, Supplemental Sampling Program, Donnelly Engineering, April 1996) provided such operational data. The treatment system has removed 2000 pounds of PCE and the DEC has hazardous waste manifests documenting the removal of such PCE (page 3, paragraph 3).

RESPONSE 9: The abovementioned report contains a spreadsheet that purportedly lists amounts of water and PCE recovered from July 1993 to September 1995 from the property owner's treatment system. This spreadsheet does not include operational data such as: daily field logs, removal rate, copies of test results, methods used to collect the data, etc.

As stated previously, the owner has chosen to operate a treatment system without a consent order with oversight from the NYSDEC. Since the NYSDEC could not provide oversight of the data collection, there is no way of knowing if proper sampling procedures and chain of custody procedures were followed, acceptable sample handling and correct analytical methods were used.

In addition to being unverifiable, the spreadsheet data is also incomplete. The letter states that 2,000 pounds of PCE have been removed by the treatment system. The spreadsheet claims a removal of 1172 pounds of PCE from July 1993 to September 1995. A note on the bottom of the spreadsheet claims a removal of 828 pounds of PCE from previous operations.

The NYSDEC has received one hazardous waste manifest from the property owner, dated September 1995, for the disposal of 120 gallons of hazardous waste liquid. The manifest does not state the concentrations of PCE in the waste; therefore, the amount of PCE disposed of in this shipment is unknown.

Based upon the above information, the assumption that the treatment system has recovered more than 2,000 pounds of PCE is unsubstantiated and unsupportable.

COMMENT 10: The RI data demonstrates that the treatment system has removed all contamination overlying the saturated zone (page 4, paragraph 1).

RESPONSE 10: The RI data indicate that none of the soil samples above the water table exceeded SCGs. However, since the NYSDEC could not provide oversight for the treatment system, there is no way of knowing if the treatment system is responsible for the condition of the unsaturated surface soil.

Nonetheless, the contamination has migrated to the saturated subsurface soils and groundwater directly below the former leaching pool area. The saturated soils located directly below the water

table exhibited PCE concentrations of 42.3 ppm at 13-15 feet bgs, 19.8 ppm at 15-17 feet bgs, and 54.7 ppm at 18-20 feet bgs. These contaminant levels are 14 to 39 times the soil cleanup objective of 1.4 ppm.

COMMENT 11: Because the DEC has used information derived from previous reports submitted to the DEC by the owner in the preparation of its report, we ask that all such reports and data be included in the Administrative Record for this matter and that such reports be made available to the public in its document repositories (page 4, paragraph 2).

RESPONSE 11: The NYSDEC has received one report from the property owner's consultant entitled, Supplemental Sampling Program/Interim Remedial Measures Workplan, Donnelly Engineering, April 1996. The appendices of this report contain information concerning previous investigations of the site.

The NYSDEC has never approved this report because the work was not performed with oversight or approval from the Department. Therefore, this document will not be included in the Administrative Record for the site.

However, the NYSDEC will place copies of the above mentioned document in the document repositories with a disclaimer stating that the NYSDEC has not approved the report.

COMMENT 12: The DEC was an eye witness to the intentional dumping of hazardous substances at a property located directly upgradient of the National Heatset site (page 4, paragraph 3).

RESPONSE 12: The NYSDEC believes that this claim refers to an incident at an auto repair shop, located north of the National Heatset site, in which the NYSDEC witnessed employees transferring liquid from five-gallon pails into 55-gallon drums. The NYSDEC subsequently performed an extensive investigation of the auto repair shop, which did not indicate any serious violations occurring or the mishandling of any wastes. The NYSDEC also collected Geoprobe groundwater samples and installed a groundwater monitoring well at the auto repair shop. The results of the sampling activities indicated no VOC contamination, including PCE, in the groundwater below the auto repair shop.

COMMENT 13: The DEC is well aware that two Albany Avenue drinking-water wells were closed due to PCE contamination before the One Adams Boulevard property was developed (page 4, paragraph 3).

RESPONSE 13: The Suffolk County Water Authority closed three drinking water supply wells at the Albany Avenue well field in the late 1970's. The wells were screened at 84-85 feet bgs. The well data indicate the presence of the following contaminants prior to decommissioning: TCE (maximum 8,000 ppb), chloroform (maximum 500 ppb), trichloroethane (maximum 330 ppb), and PCE (maximum 120 ppb). The three wells that currently operate at the Albany Avenue well field are screened at 419 to 509 feet bgs and have shown no signs of contamination.

The NYSDEC has not attributed the contamination at the well field in the late 1970's to operations at the National Heatset Printing Company. However, the data collected at the National Heatset site

supports the finding that a groundwater contamination plume originating at the National Heatset Printing Company is migrating toward the Albany Avenue well field at this time.

COMMENT 14: Groundwater samples taken downgradient of the site contained PCE and other contaminants, which are not attributable to National Heatset because of the distance involved (page 4, paragraph 4).

RESPONSE 14: The NYSDEC believes this assertion is referring to the Miller Avenue study, which was performed by the Suffolk County Department of Health Services in 1989-1990. The property owner's consultant's comment report elaborates on this comment by stating that, assuming that groundwater travels 1.3 feet per day, the contamination could not have migrated to point M-4 and M-28 (see Figure 8) in the one to two years following the spill incident in 1988.

National Heatset had been using organic solvents at the site since 1983. The deliberate dumping of organic solvents in 1987 was not the first improper disposal incident on this property. For example, in March 1986 an inspection performed by the SCDHS revealed strong evidence of dumping from staining of inks and oils on the ground. The inspection report indicated that drums were being stored improperly both inside and outside of the building. An inspection by the SCDHS in 1983 revealed that National Heatset was discharging photo plate making waste to the on-site sanitary system. The results of the inspections and the deliberate dumping reveal a pattern of improper handling and disposal of hazardous waste and materials that extend throughout National Heatset's occupation of the site. Contamination from these and other improper disposal incidents from 1983-1989 caused the groundwater contamination at M-4 and M-28.

COMMENT 15: The Great Neck well field water analysis showed the presence of 1,1 dichloroethane, which is not a site-related compound (page 5, footnote).

RESPONSE 15: The NYSDEC has not attributed contamination at the Great Neck well field to National Heatset because the well field is located west of the groundwater contamination plume.

COMMENT 16: There is no diagram in the report that describes the vertical and horizontal limits of the groundwater contamination plume as a function of time and concentration (page 5, footnote).

RESPONSE 16: Three maps (Figures 4.1-4.3) are included in the RI/FS that plot the horizontal limits of contamination at three different depths. A map is also included in the RI/FS (Figure 4.4) that plots the concentration of PCE with respect to depth and distance from the site. These maps were included as Figures 9-12 in the PRAP. In fact, these maps were presented and provided as handouts at the March 3, 1999 public meeting, which the property owner's attorney attended.

COMMENT 17: The property owner's attorney cautioned the NYSDEC in his Comments on the Work Plan for the RI/FS that any soil penetrations located within the former leaching pool area will have serious ramifications. As a result of the soil borings in this area, the NYSDEC has caused considerable short-term groundwater contamination downgradient of the site, as explained in the comment report by the property owner's consultant (page 5, paragraph 3).

RESPONSE 17: As discussed in Comment #4, the property owner's consultant stated that the downgradient groundwater contamination was caused by the use of hollow stem augers during the

RI/FS field investigation. This comment was refuted in Response #4. The property owner's consultant expressed no other reservations about drilling in the source area in his comment report.

The property owner's attorney did not express concerns about hollow stem auguring in his Comments on the RI/FS Work Plan (September 17, 1997). Instead, concern was expressed about puncturing the membrane associated with the property owner's treatment system. Yet the property owner's consultant, under the direction of the property owner, performed soil borings in 1995 in the same area that the property owner's attorney cautioned the NYSDEC not to disturb. During a September 9, 1997 meeting with the NYSDEC, the property owner's consultant indicated that his firm grouted the borings to protect the surface liner. At the advice of the property owner's consultant, the NYSDEC grouted all borings within the former leaching pool area, as specified on page 2-2 of the Field Activities Plan for the RI/FS. Therefore, the NYSDEC was responsive in addressing the concern.

COMMENT 18: In the property owner's attorney's comments on the Work Plan for the RI/FS, he asked about the results of a cost analysis for investigation-derived waste. Although he did not receive a response to his request, he was later informed that the DEC's consultant inadvertently discharged development purge water into a leaching pool on the owner's property (page 6, paragraphs 1 and 2).

RESPONSE 18: After the investigation-derived waste was collected, the NYSDEC's consultant solicited bids for disposal of the waste. The lowest bidder was chosen and the waste was disposed of off-site at a permitted disposal facility.

On one occasion, a field technician for the NYSDEC's consultant mistakenly poured water collected from groundwater monitoring well development into a stormwater drywell instead of discharging into a storm sewer line. At the direction of the NYSDEC, the consultant sampled the drywell water and bottom sediment immediately after the incident. The test results of the drywell water sampling indicated a PCE concentration of 6 ppb, which was less than the PCE concentration detected in 1997 during the field investigation (98.7 to 117 ppb). The sediment sample test results did not detect PCE or any other site related contaminants.

COMMENT 19: The RI/FS did not investigate any sources of groundwater contamination other than the National Heatset site. Existing regional data show that other sources of PCE contamination exist. The DEC only conducted groundwater sampling in an area where a plume would be expected to appear if a plume had originated from the site (page 6, paragraphs 3 and 4).

RESPONSE 19: The NYSDEC's objective of the RI was to determine the nature and extent of contamination resulting from the hazardous waste disposal at the National Heatset site.

The NYSDEC's consultant determined the groundwater flow direction prior to placing the downgradient groundwater sampling points. Based on the groundwater flow direction and historical sampling data from the Miller Avenue study, the NYSDEC determined the locations for the downgradient sampling points. The results of the downgradient Geoprobe groundwater sampling clearly show a groundwater plume that originated at the National Heatset site. Downgradient monitoring well results supported this conclusion.

The NYSDEC has investigated other potential sources of contamination for the downgradient groundwater. For example, the NYSDEC sampled the groundwater at the auto repair shop directly upgradient of the site. No VOCs were detected in any of the groundwater samples taken at the auto repair shop. Also, the NYSDEC reviewed the Record of Decision for the Fairchild Republic Site (site #1-52-130) and found that the groundwater contamination attributable to the Fairchild Republic site is situated east of and deeper than the contamination associated with the National Heatset site.

COMMENT 20: The data from the RI/FS contradicts the supposition that a continuous contaminant plume from the National Heatset site exists. The data also indicate the other sources are contributing to the contamination found downgradient of the site (page 7, paragraph 1).

RESPONSE 20: This comment relies on information provided in the accompanying comment report from the property owner's consultant. In this report, the property owner's consultant first attempts to use the vertical profile well data from the Miller Avenue Study (performed by the SCDHS in 1989-1990) to prove that the plume is discontinuous and is therefore not attributable to the National Heatset site. During the Miller Avenue Study, the SCDHS obtained groundwater samples at 10-foot depth intervals from the clay layer to the water table. The analytical results were then recorded on a map, which is included in the property owner's consultant's comment report. The map shows concentrations of VOCs for each sampling point in the following format: PCE/TCE/DCE/Vinyl Chloride. The sampling results depicted on the map are for the depth with the highest total VOC concentrations. Analytical results from other depths were not included on the map.

The property owner's consultant's comment report indicates that neither PCE nor TCE were detected in the sample results depicted on the Miller Avenue Study map at the corner of Alan Boulevard and Adams Boulevard. However, the Miller Avenue Study states that 3,600 ppb of 1,2-DCE, a site-related contaminant and breakdown product of PCE, was found in the sample. Therefore, this sample was highly contaminated with site-related VOCs. Also, since the map does not provide information about contaminant concentrations at other depths, there is no way of knowing if PCE or TCE was detected at other depths. Therefore, the basis for the property owner's attorney's supposition that the contaminant plume lacks continuity is not supported by the data collected.

The NYSDEC disagrees with the property owner's consultant's assessment of the nature and extent of the downgradient groundwater contamination. Geoprobe groundwater samples M-4 and Autumn Lane were located directly downgradient from the National Heatset site, as determined by the NYSDEC's consultant. The analytical results obtained from these samples detected the same VOCs that were found on-site. Therefore, the data from the RI/FS supports the fact that downgradient groundwater contamination originated at National Heatset.

COMMENT 21: The property owner's attorney requests that the DEC reevaluate its PRAP and reissue its Report and PRAP based on these comments and the property owner's consultant's comment report (page 7, paragraph 4).

RESPONSE 21: After a careful review of the comments, the NYSDEC will not reconsider the proposed remedy. The RI/FS has identified significant on-site and off-site groundwater contamination and the proposed remedy is a cost-effective method of addressing this contamination.

A copy of Mr. Firetog's letter is attached.

A document entitled, "Response to NYSDEC RI/FS Report and Proposed Remedial Action Plan for National Heatset Printing" dated March 1999 was received from Donnelly Engineering, the property owner's engineering firm, which included the following comments. A copy of the report with NYSDEC's disclaimer has been placed in the repositories. Some of the comments were already addressed in the response to the property owner's attorney's letter.

COMMENT 1: The high concentrations shown in the RI/FS occur at different elevations and are separated by a distance of over 2000 feet. There is no technical rationale for assuming that the two readings are part of the same plume (page 2, paragraph 3).

RESPONSE 1: The deepest sample from each boring was obtained directly above the clay layer at approximately 80 feet bgs. Other samples were obtained at 50 feet bgs and 65-70 feet bgs for both locations. Although the two points are separated by a distance of 2000 feet, both locations are directly downgradient of the National Heatset site and contain the same contaminants found at the site.

COMMENT 2: The data for MW-6, MW-7, and MW-10 indicate that the VOC discharge sank rapidly to the clay layer and was quickly bound up in the clay. In that condition, the VOC could not readily enter the groundwater flow stream, resulting in extremely low values in the groundwater immediately above the clay layer (page 2, paragraph 3).

RESPONSE 2: The PCE concentrations in MW-6, MW-7, and MW-10 were 210 ppb, 330 ppb, and 250 ppb, respectively, during the October 1998 sampling exercise. These values range from 42-66 times the NYSDOH drinking water standard (5 ppb). 1,2-DCE was also found in MW-6 at 1,900 ppb, which is 380 times the drinking water standard of 5 ppb. Therefore, the levels of groundwater contamination in these wells cannot be characterized as "extremely low".

It is to be pointed out that these wells are the least contaminated monitoring wells. MW-2A and MW-3A exhibited PCE concentrations of 9,600 ppb and 1,200 ppb, respectively, and are located at the downgradient edge of the site.

The data collected by the RI indicates that PCE is present in the groundwater at concentrations exceeding the NYSDEC groundwater standards and that the groundwater plume is being replenished by the source area below the former leaching pool.

COMMENT 3: The first groundwater sample was collected from the top of the clay unit. How was the depth of the clay unit determined? The report does not address the possibility that the VOC plume is stationary or flows upgradient due to the slope of the clay layer (page 3, paragraph 2).

RESPONSE 3: The depth of the clay layer was determined by the resistance encountered by the Geoprobe rig. These depths were confirmed visually during the installation of the downgradient monitoring wells and by subsurface maps supplied by the SCDHS. The monitoring well survey in the RI Report (Table 2.2) indicates that the clay layer elevation decreases downgradient of the National Heatset site. Therefore, the groundwater plume is not flowing upgradient or remaining stationary.

COMMENT 4: In a telephone conversation with the property owner's consultant, Mr. Dyber, the NYSDEC Project Manager, referred to his personal notes from the installation of MW-10. Mr. Dyber said that in the 82-foot to 84-foot split spoon, flame ionization detector (FID) readings within the clay were 5-40 ppm of VOCs while FID readings for the sand directly above the clay were non-detect. This recollection was corroborated by the well boring log provided by the NYSDEC's consultant. This information proves that the VOCs are bound in the clay layer and are not contributing to the groundwater plume (pp. 3-5).

RESPONSE 4: The property owner's consultant misquotes Mr. Dyber's statements to him concerning the content of Mr. Dyber's personal notes. Although Mr. Dyber's notes indicate FID readings within the clay at MW-10, no readings are recorded for the sand above the clay layer. When questioned as to whether the absence of recorded FID readings indicated that the readings were non-detect, Mr. Dyber specifically warned the property owner's consultant not to make that assumption because many other circumstances may have led to the absence of an FID reading in Mr. Dyber's notes. Nevertheless, the property owner's consultant made the assumption that FID readings in the sand were non-detect and then falsely attributed the quote to Mr. Dyber.

The property owner's consultant's comment report also misinterprets the boring log for MW-10. The boring log indicates a FID reading of 45.0 ppm at the 82-foot bgs interval. The log does not distinguish between the sand and clay portions of the sample. Therefore, the individual FID readings of the sand and clay are not stated. Yet the property owner's consultant references the boring log to corroborate his assumption that the clay exhibited high FID readings while the sand did not. It is worthwhile to remember that FID and photoionization detector (PID) readings are used as screening tools and are not to be used for determining the extent of contamination.

The ultimate proof that the VOCs have entered the aquifer are the groundwater samples themselves. As stated above, the analytical results from the Geoprobe groundwater samples and groundwater monitoring well samples reveal the presence of a VOC-contaminated plume migrating south-southeast from the National Heatset site. This fact invalidates the property owner's consultant's supposition that the VOCs are immobilized within the clay layer.

COMMENT 5: The property owner's consultant strongly advises against groundwater treatment. He bases his conclusion on an alleged 80% decrease in VOC contamination at MW-6. The comment report indicates that the main source of groundwater contamination was the soil in the vadose zone which has been remediated by the property owner's treatment system (page 6).

RESPONSE 5: The groundwater contaminant plume extends several thousand feet downgradient from the site. The aquifer is a sole source aquifer for public water supply. Choosing the 'No Further Action" alternative would not mitigate this threat to the public health or the sole source aquifer.

The comment report only mentioned the data from one groundwater monitoring well (MW-6) in concluding that a "No Further Action" decision is warranted. The property owner's consultant claimed that the VOC concentrations dropped 80% from the September 1997 sampling event to the October 1998 sampling event. Actually, the total VOC concentration at MW-6 decreased from 3,124 ppb to 2,083 ppb, less than a 50% decrease. As stated above, the October 1998 VOC detection in MW-6 is over 100 times the NYSDOH drinking water standard. In his conclusions, the property owner's consultant himself states, "The quality of GW leaving the site at shallow and deeper depths,

are [sic] very low and continuing [sic] to decline." (page 6, paragraph 2) Therefore, the NYSDEC will not reconsider the selected remedy.

COMMENT 6: The NYSDEC's consultant made calculation errors in determining the TAGM 4030 score, a method used in comparing the remedial alternatives. The correct calculation raises the score of the "No Further Action" alternative. The NYSDEC's consultant also did not answer some of the worksheet questions for the "No Further Action" alternative, which may have given that alternative the highest score.

RESPONSE 6: Both the property owner's consultant's comment report and the RI/FS prepared by the NYSDEC's consultant incorrectly utilized the method for evaluating remedial alternatives prescribed in TAGM 4030. Both reports total the score on the worksheet, called the "Worksheet Score", and multiply it by a "Cost Score" to obtain the total score for each alternative. This procedure is incorrect.

TAGM 4030 assigns a relative weight to each of the seven evaluation criteria, which are given as:

- Compliance with SCGs (10%)
- Protection of human health and the environment (20%)
- Short-term effectiveness (10%)
- Long-term effectiveness and permanence (15%)
- Reduction of toxicity, mobility, and volume (15%)
- Implementability (15%)
- Cost (15%)

The scores for the first six evaluation criteria are determined by completing the worksheets included in the RI/FS report. The remaining criterion, cost, is determined by assigning a score of 15 to the alternative with the lowest present worth. The other alternatives are assigned cost scores inversely proportional to their present worth, as directed by TAGM 4030. The property owner's consultant's analysis gives the "No Further Action" alternative a cost score of 38, which exceeds the TAGM 30's maximum allowable cost score of 15. Therefore, even if all of the property owner's consultant's assumptions were legitimate, the total score for the "No Further Action" alternative would remain below any of the other alternatives.

However, several assumptions made by the property owner's consultant in calculating the worksheet scores are also unsupportable. The property owner's consultant charges that the NYSDEC's consultant deliberately left responses on the worksheet blank to lower the score of Alternative #1. In reality, the NYSDEC's consultant left some of the responses blank because they did not apply to an alternative in which no further action would be taken. One example of a question that was left blank was, "After remediation, how is the untreated, residual hazardous waste material disposed?" This question is not applicable to Alternative #1 because there would be no remediation and no disposal.

The responses that were left blank on the worksheet for Alternative #1 totaled 21 points. In his assessment of these questions, the property owner's consultant liberally credited Alternative #1 with 20 of the 21 possible points. Listed below are some of the conditions that would need to be met for Alternative #1 to be given 20 points:

- The remediation would be accomplished by on-site treatment. (3 points)
- The treated residual would be nontoxic. (1 point)
- Untreated hazardous waste would be disposed of off-site by destruction and/or treatment. (2 points)
- 90-100% of available wastes would be immobilized after treatment. (2 points)
- The technology is very reliable in meeting the performance goals. (3 points)

The five conditions listed above would not be met by Alternative #1 since there would be no treatment of contaminated groundwater and only continued groundwater monitoring would be performed. Therefore, the property owner's consultant's assertion that 20 points should be added to the worksheet score for Alternative #1 is unjustifiable.

The NYSDEC has reevaluated the worksheet score for Alternative #1 and has given this alternative a score of 9 points. Added to the cost score of 15 points, the total score for Alternative #1 is 24 points. This score is over 53 points less than the closest alternative (#3B) and 57 points less than the preferred alternative (#3A). Amended scoring sheets have been placed in the document repositories.

The correction of the TAGM 4030 scores have widened the gap between the "No Further Action" alternative and the groundwater treatment alternatives. In addition, since Alternative #1 would not meet SCGs and would not be protective of human health and the environment, which are threshold evaluation criteria, this alternative could not be selected. The selected alternative, DDC Type In-Well Stripping, had the highest worksheet score, the second highest cost score, and the highest total score. Therefore, Alternative #3A was selected through a systematic evaluation of the alternatives, not in an "arbitrary and capricious" manner, as claimed in the comment report.

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March 19, 1999

VIA OVERNIGHT DELIVERY

Mr. Jeffrey L. Dyber
Project Manager
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, N.Y. 12233-7010

Re: National Heatset Printing Co.
NYS DEC Site No. 1-52-140
Comments to Remedial Investigation/Feasibility Study and Proposed Remedial Action Plan

Dear Mr. Dyber:

The following letter, and the enclosed document prepared by Donnelly Engineering dated March 1999, are comments submitted on behalf of One Adams Boulevard Realty Corp., the owner of real property located at 1 Adams Boulevard, Farmingdale, N.Y., to the Remedial Investigation/Feasibility Study ("RI/FS") Report (the "Report") and the Proposed Remedial Action Plan ("PRAP"), both of which are dated February 1999, and both of which were prepared for the New York State Department of Environmental Conservation (the "DEC" or the "Department") by Holzmacher, McLendon and Murrell ("H2M") and Lawler, Matusky and Skelly Engineers ("LMS") in connection with the above-referenced Site.

INTRODUCTION

The owner's comments with respect to the Report and the PRAP, as well as the presentation by the DEC at a Public Meeting held on March 9, 1999, are twofold. First, the owner is concerned with the unsupported or biased conclusions and assumptions set forth in the Report that were used to prepare the PRAP. Simply stated, the core conclusions of the Report relating to the RI/FS and the PRAP are not supported by the body of data contained in the Report and, indeed, are suspect because of the amount of existing relevant data and information which is missing from the Report.

For example, the Report attempts to establish a link between the contamination found near Miller Avenue to contamination which may have traveled off-Site from the National Heatset Printing Site (*see, e.g.*, page 4-13 of the Report). Yet, there are numerous data gaps in the Report, misinterpretation of data, and information withheld, which seriously undermines the existence of such a link. Specifically, time, distance, and ground-water velocity do not correlate with the theory stated in the Report that the perchloroethylene ("PCE") detected down gradient came from 1 Adams Boulevard. Furthermore, there are obvious errors in the calculations made utilizing the TAGM HWR-90-4030 scoring method and relating to the selected remedial alternative for ground water. Because most of these comments are of a technical nature, they are discussed in more detail in the enclosed document from Donnelly Engineering.

It is quite apparent, however, even to a nontechnical layman, that installing a multimillion dollar in-well stripping remediation system in the former source area based upon one sampling point that indicates minimal and decreasing ground water contamination (as well as installing an in-well stripping remediation system to act as "a barrier system to prevent contaminants from leaving the National Heatset site" when such contaminants are nothing more that a temporary contaminant surge caused by the DEC's RI/FS) is clearly a decision that is arbitrary and capricious.

A second, and more basic or fundamental, concern of the owner, relates to the misinformation distributed and the facts that were deliberately withheld by the DEC in connection with this matter and the Report. We believe that these actions tantamount to nothing less that an effort by the DEC to make the current owner of the Site a scapegoat for what we believe is the DEC's mishandling of the contamination caused by National Heatset Printing and of the RI/FS, as well as an effort by the DEC to rationalize unjustifiable actions recommended in the PRAP.[1]

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[1] Moreover, certain statements by the DEC seem directed at exaggerating or exacerbating the origin of the contamination problem at the Site. For example, on page Exec-2 of the Report and on the second page of the Fact Sheet (which was distributed to affected or concerned citizens) the DEC states that National Heatset Printing "disposed of its chemical inventory by dumping material onto the soils and into a leaching pool located on the northeast side of the building." Yet, if the DEC had done a more

GENERAL COMMENTS RELATING TO THE REPORT

There is no question that it has taken the DEC nearly eleven years to begin addressing the possible remediation of a problem caused by the illegal acts committed by National Heatset Printing Co. By contrast, the owner of the Site, once it was able to regain some control of the property through court approval, immediately undertook emergency removal actions. For eleven years the DEC has not assisted the owner in any way with respect to its ongoing cleanup activities. Moreover, to date, the DEC has failed to take any action against National Heatset Printing Co., or to seek prosecution of any of the company's officers or directors for the intentional discharge of hazardous substances at the Site.

Nevertheless, in its Report your Department repeatedly writes about a single PRP (Potentially Responsible Party, *i.e.*, a person who may be responsible for conducting a cleanup under various environmental statutes). The single PRP, according to DEC, is the owner of the property (*see, e.g.*, Exec-1 and Exec-2 of the Report). No mention is made of the polluter, National Heatset Printing Co., as being a PRP!

Also, in Exec-2 of the Report, the DEC claims the actual effectiveness of the remediation or recovery system that the property owner has installed has yet to be fully assessed and "that no operational data has ever been submitted to the Department to confirm the effectiveness of the 'treatment system.'" That statement is simply untrue. More than two years ago, the property owner submitted to the DEC a report and proposed Supplemental Sampling and Interim Remedial Measures Workplan which included such "operational data." In addition, on at least three occasions the Department has inspected the recovery system. There is no question, that the "Cyclo-Purge" remediation system has recovered more than 2,000 pounds of PCE from the soil. In fact, as you well know, the DEC has in its possession copies of the hazardous waste manifests documenting

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responsible investigation, it would have discovered that most of National Heatset Printing's chemical inventory were contained in drums, which were subsequently removed from the Site.

the removal of such PCE.[2] Indeed, your consultants' own data clearly and unequivocally demonstrates that the "Cyclo-Purge" system has removed all contamination in the soil overlying the saturated zone (*see, e.g.*, page 9-1 of the Report).

Yet, although the Department has used in its Report and PRAP certain information gathered from previous reports submitted to the DEC by the owner's consultant, the DEC does not specifically reference such reports or make such reports available to the public in its document repositories. Is this simply an attempt by the DEC to exclude such reports from the Administrative Record? Why else would the DEC want to hide the data and reports generated by the only person who had actually conducted remedial activities at the Site? Because the DEC has used information derived from all previous reports submitted to the DEC by the owner in the preparation of its Report, we ask that all such reports and data be included in the Administrative Record for this matter.

There is no question that any references in the Report to information previously submitted to the DEC by the property owner have been very selective. No mention, for example, is made of other potential sources of ground-water contamination which were brought to the attention of the Department by the property owner. Certainly, the DEC is well aware of such sources. In fact, the DEC was an eye witness to the intentional dumping of hazardous substances at a site located directly up gradient to the 1 (not "One") Adams Boulevard location. This incident occurred in plain view of DEC personnel while such personnel were inspecting the Cyclo-Purge operations. Furthermore, the DEC is well aware that two Albany Avenue drinking-water wells were closed due to PCE contamination even before the 1 Adams Boulevard property was ever developed!

The DEC clearly has data in its possession, but which it has deliberately withheld from the Report, regarding ground-water samples that were taken near residential areas down gradient of the Site and which indicate the presence of PCE and other

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[2] In addition, although the DEC has coined the phrase "treatment system" with respect to the Cyclo-Purge operation, no waste actually is being treated. Technically, the proper term would be to describe the operation as a "recovery system" which is designed to recover the hazardous substances that previously were discharged at the Site.

contaminants. Given the distance involved, such PCE and contaminants could not have possibly come from the National Heatset Site. Yet, no mention is made in the DEC's Report as to the existence of any other sources of ground-water contamination, or that any effort had been undertaken to distinguish the contamination arising from these sources from that caused by National Heatset Printing Co.[3]

GENERAL COMMENTS TO THE RI/FS

Equally important, is the fact that the Report is based upon an RI/FS Work Plan and Field Activities Plan which were totally inappropriate for determining what, if any, remedial action should be considered with respect to the contamination caused by National Heatset Printing Co. As the enclosed document from Donnelly Engineering clearly establishes, the DEC skewed, withheld data, and misinterpreted data, in order to justify and rationalize a PRAP that is ill-advised and, according to the DEC's own protocol, improper.

As I stated in my comments to the DEC's RI/FS Work Plan and Field Activities Plan "Any soil penetrations located within the recovery area (i.e., the fenced-in area on the northeast side of the building adjacent to the main railroad tracks) will have serious ramifications." Apparently, the DEC did not heed my warning, and as a result (as more fully set forth in the enclosed document from Donnelly Engineer), we have documented that the DEC

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[3] In fact, several times in the Report, the DEC's consultants mention "site related compounds," "site-related halogenated VOCs," or "Site-related groundwater contamination plume." Yet, as the DEC well knows, The Great Neck Well Field water analysis showed the presence of 1,1 dichloroethane, which is not a "site related compound" of the National Heatset Printing Site. Furthermore, there is no diagram or narrative in the Report that describes the alleged "Site-related groundwater contamination plume" with its vertical and horizontal limits identified as a function of time and concentration. Any explanation of such a plume, if such a plume does exist, would have to address the drinking water wells that were closed prior to the time that any building was constructed at 1 Adams Boulevard and the influence of pumping at the public drinking water wells in the vicinity of Miller Ave. Such important considerations simply were not discussed in the Report.

caused considerable (albeit relatively short-term) contamination of the ground-water down gradient of the Site.

I also stated in my comments to the RI/FS Work Plan that

> On page 3-9 of the Work Plan we note that concurrently with the preparation of the Work Plan, H2M will complete a cost analysis to determine the most cost-effective method for the disposal of investigation-derived waste ("IDW"). Has such a cost analysis been done? And, if so, what was the result of the analysis?

I never did receive a response from the DEC to my questions. What we did discover, however, is that the DEC dumped development purge water contaminated with PCE in a leeching pool on the owner's property.

Although the number of samples (more than 194) taken and the type of analysis employed during the RI/FS were excessive, it is apparent that no consideration was given to Site specific contaminants or, more significantly, none of the samples were designed to determine the nature and extent of the contamination caused, or hazard substances released or threatened to be released, by any other individual or person other than National Heatset Printing. It is apparent that the RI/FS was designed as a very expensive soil and hydrogeologic engineering exercise to document the activities of National Heatset Printing Co. without regard to the existing regional data which shows that other sources of PCE contamination exist.

In fact, during the March 9 Public Meeting you admitted that the RI/FS down gradient ground-water sampling was designed to investigate "where the contaminant plume should be if such a plume existed from the National Heatset Site." In other words, the DEC only conducted ground water sampling in the area where a plume would be expected to appear if such a plume had originated from the Site. Because the DEC found some contamination in that area, the Department assumes and avers that it came from the Site. No consideration was taken into account, and no testing was done outside that area to prove or disprove the very real possibility that other sources of contamination could have caused the results obtained.

Notwithstanding this flaw in the RI/FS, the DEC's own data contained in the Report does not support the Department's assertion that the contamination detected down gradient of the

Site came from the National Heatset Site. The data obtained from the RI/FS, for example, does not demonstrate and, in fact, contradicts the supposition that a continuous contaminant plume from the National Heatset Site exists. More significantly, the data (as documented in the enclosed Donnelly Engineering Report) indicates that other sources are contributing to the contamination found down gradient of the Site.

An RI/FS investigation that is based upon an invalid assumption that any contamination down gradient from the 1 Adams Boulevard location is from the National Heatset Site is absurd. To initiate and undertake a multimillion dollar remediation effort down gradient without exploring potential other sources of contamination, which may still exist, is even more absurd.

Obviously, the RI/FS, the Report, and the PRAP demonstrate the lack of any methodology for differentiating other sources or plumes of contamination.[4] In addition, the RI/FS, the Report, and the PRAP deliberately ignore data gaps, use outdated data, and disregard questionable data and data anomalies in order to substantiate and justify a multimillion dollar preferred remediation alternative. There is no question that the DEC engaged in very intensive and expensive field investigatory program that was tailored to support a preconceived and inappropriate remediation plan, which is as ill-conceived and as inappropriate as the RI/FS that the Department previously had undertaken.

Therefore, we request that the DEC re-evaluate its PRAP and re-issue its Report and PRAP based upon the comments, data, and other information herewith submitted by the owner of the above-reference property.

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[4] Although we have requested information from the DEC regarding Republic Airport's ground-water contamination, we have not as yet received any such information from the DEC. Such information, however, is crucial for determining to what extent, if any, the Site has impacted down gradient ground-water quality. We know, for example, that such contamination caused the closure of at least two drinking water wells in the Albany Avenue location, the location that the DEC says was contaminated by National Heatset Printing. And, we believe that such information will provide evidence that the underlying clay layer of concern is not uniform or without gaps as the DEC would like us to believe.

If you have any questions concerning this matter, please do not hesitate to contact me.

Very truly yours,

Theodore W. Firetog

TWF:kf
Enclosure
cc: One Adams Blvd. Realty Corp.
Donnelly Engineering
John Bryne, Esq.

APPENDIX B

Administrative Record

APPENDIX B
NATIONAL HEATSET PRINTING ADMINISTRATIVE RECORD

1. Work Plan for Remedial Investigation/Feasibility Study of National Heatset Printing Site, Lawler, Matusky & Skelly Engineers and H2M Group, August 1997

2. Health and Safety Plan for Remedial Investigation/Feasibility Study of National Heatset Printing Site, H2M Group, September 1997

3. Quality Assurance Project Plan for Remedial Investigation/Feasibility Study of National Heatset Printing Site, H2M Group, September 1997

4. Field Activities Plan for Remedial Investigation/Feasibility Study of National Heatset Printing Site, H2M Group, September 1997

5. Record of Decision for Fairchild Republic Main Plant Site (Site # 1-52-130), NYSDEC, March 1998

6. Remedial Investigation/Feasibility Study Report, Lawler, Matusky & Skelly Engineers and H2M Group, February 1999

7. Proposed Remedial Action Plan for National Heatset Printing Site, NYSDEC, February 1999