# REMEDIAL INVESTIGATION FEASIBILITY STUDY REPORT

## VOLUME ONE

FOR BOWE SYSTEC, INC.
HICKSVILLE, NEW YORK
NASSAU COUNTY

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NYSDEC REGION 1

NYSDEC SITE NO. 1-30-048

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NOVEMBER 1998

H2MGROUP
Engineers • Architects • Scientists • Planners

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# BOWE SYSTEC, INC.
# 200 FRANK ROAD
# HICKSVILLE, NEW YORK

## NYSDEC SITE # 1-30-048

November 1998

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**November 1998**

## EXECUTIVE SUMMARY

This Remedial Investigation/Feasibility Study (RI/FS) Report summarizes the findings of the remedial investigation at the Böwe Systec, Inc. (Böwe) site, discusses the results of contaminant fate and transport modeling and baseline risk assessment, and evaluates the various alternatives for achieving the remedial action objective for the site.

The principal contaminant of concern at the Böwe site is tetrachloroethene (PCE) which was used at the facility to test dry cleaning equipment. In the later part of 1989, 10 to 15 gallons of PCE was reportedly spilled inside the building and into a floor drain which discharged to a drywell system located beneath a paved area behind the building. Investigations conducted in November 1989 and January 1990 revealed elevated levels of PCE in the bottom of the drywells and in the underlying groundwater. PCE concentrations as high as 8,100 ug/l were detected in the on-site groundwater. In March 1991, a remedial action was undertaken to excavate and dispose of approximately 450 tons of PCE contaminated soils beneath and surrounding the three most highly impacted drywells (i.e., drywells DW-1, DW-2 and DW-3).

In June 1991, H2M conducted a Site Screening Investigation (SSI) at the Böwe site to identify potential source areas to be further investigated during the RI. Results of the SSI confirmed that the remedial action implemented in March 1991 was successful in removing PCE contamination from the impacted drywells, and identified three other potential source areas, namely, the building's subsurface sanitary wastewater disposal system (i.e., septic tank and leaching pools) located off the north side of the building, a former spray booth area located off the southwest corner of the building, and an additional drywell (DW-8) located at the bottom of a truck bay/loading dock in the rear of the building. Subsequent to the SSI, but prior to conducting the RI, interim remedial measures (IRMs) were undertaken to remove PCE impacted soils at the former spray booth and beneath the sanitary disposal system and loading dock drywell (DW-8).

Upon completing the IRMs, H2M conducted the first phase of the remedial investigation. The Phase I RI included a series of soil borings in the three previously identified potential source areas, and the installation and sampling of additional on-site groundwater monitoring wells. Results of the Phase I RI confirmed that the initial remedial action and IRMs undertaken in 1991 and 1992 were highly successful in remediating the four contaminant source areas at the site. Groundwater monitoring during the Phase I RI revealed PCE levels in the range of 100 to 450 ug/l. These concentrations were an order of magnitude lower than those previously reported, indicating that the remedial actions were successful in removing the source areas, thereby eliminating further migration of PCE from the soils to groundwater.

As part of the Phase I RI, H2M also conducted contaminant fate and transport modeling. Because the areas downgradient of the Böwe site are all served by public water, the primary concern was potential impacts to two Hicksville Water District public water supply wells located approximately three quarters of a mile south of the site. Computer modeling results predicted that the plume would eventually migrate as far south as the public water supply wells by the year 2000, and that the maximum PCE concentration at the wells as a result of the Böwe site would be approximately 0.2 ug/l, well below the 5 ug/l drinking water MCL.

An off-site groundwater investigation was conducted during the Phase II RI, and included two off-site exploratory well programs involving the installation and sampling of seven temporary off-site wells points and one permanent off-site monitoring well.

While the results of the off-site groundwater investigation indicate that a contaminant plume is migrating from the Böwe site, the extent of the plume is very limited in both horizontal and vertical extent. PCE concentrations within 400 feet downgradient of the site ranged from non-detectable to 34 ug/l. These levels were significantly lower than those predicted by the contaminant transport model, and represent reductions of one to two orders of magnitude compared to PCE concentrations in the on-site groundwater. This dramatic drop in PCE concentrations as the plume migrates off-site is attributed primarily to Böwe's having successfully removed the contaminant source areas, and to a lesser degree, natural degradation, dilution and attenuation.

Four additional rounds of on-site groundwater monitoring were also conducted during the Phase II RI. Over a four year period, PCE concentrations in the downgradient on-site wells decreased by approximately fifty percent. This significant reduction has been attributed the success of the initial remedial action and subsequent IRMs in removing the contaminant source areas, thereby preventing further migration of PCE into the groundwater.

As part of the RI, a baseline risk assessment was performed to assess potential risks to human health as result of contamination at the Böwe site. Results of the quantitative assessment indicate that under worst case scenarios, unacceptable risk to human health may be present via the soil dermal contact and groundwater ingestion exposure pathways. These results however were obtained using overly conservative, unrealistic scenarios. For example, under the groundwater ingestion exposure pathway, chronic and carcinogenic exposures were based on a "movable well" scenario in which it was assumed that groundwater could be drawn for potable use from anywhere in the shallow aquifer, and that the supply well would always be located in the most contaminated portion of the plume. In reality, public water supply wells would never be located in the center of a known contaminant plume. While the contaminant fate and transport modeling predict that PCE will ultimately migrate downgradient toward two existing public water supply wells, maximum PCE concentrations by the time the plume reaches the wells are predicted to be well within the drinking water MCL. In addition, it should be noted that the PCE concentrations evidenced during the off-site groundwater investigation were less than those predicted by the contaminant transport model. It is therefore likely that the maximum PCE levels when the plume ultimately reaches the public supply wells, if ever, will be less than the computer model predicted. It should also be noted that historical data from the two public supply wells indicate VOC concentrations at the wells from other sources that pre-date Böwe are already much higher than the contribution predicted by the contaminant transport model. Results from the qualitative assessment, which evaluated risk under more realistic present and future scenarios, indicate the overall risk to public health from the ingestion of groundwater is within the USEPA's acceptable range for increased cumulative risk of one in one million to one in ten thousand.

Based upon the findings of the RI, a remedial action objective of meeting Class GA Water Quality Standards at the limits of the area of concern was established. The area of concern was defined as the two public supply wells located roughly three quarters of a mile downgradient of the Böwe site. A feasibility study (FS) was conducted to identify and evaluate alternatives capable of meeting the remedial action objective. Remedial alternatives included pumping and treating the on-site PCE plume (by air stripping, carbon adsorption and U V oxidation), in-situ treatment of the on-site PCE plume by air sparge/vapor extraction, and no further action. Results of the FS indicate that all five alternatives were capable of achieving the remedial action objective. However, the estimated present worth costs for active groundwater remediation (assuming a ten year operating life) were approximately $400,000 (in-situ air sparge/vapor extraction) to $1,500,000 (pump and treat with U V oxidation) more expensive than the no further action alternative. The present worth cost for the no further action alternative, assuming the same ten years of quarterly groundwater monitoring as with the active remediation alternatives, is estimated at approximately $83,000.

Because the overall risk to human health is below levels that warrant concern even without taking additional remedial actions beyond those already completed by

Böwe, implementing a groundwater remediation program will only reduce the risk level beyond what is already considered to be acceptable by the USEPA. The incremental reduction in risk afforded by active groundwater remediation does not justify the significant costs associated with these alternatives. We therefore recommend no further action at the Böwe site. Although the no further action alternative as discussed in the FS includes provisions for continued groundwater monitoring, it is our opinion that the site no longer constitutes a significant threat to human health or the environment, and that additional groundwater monitoring is not warranted. Accordingly, we also recommend that Böwe petition the NYSDEC to have the site deleted from the registry of Inactive Hazardous Waste Disposal Sites or reclassified to a Class 5 site.

# 1.0 INTRODUCTION

Holzmacher, McLendon & Murrell, P.C. (H2M) was contracted by the management of Böwe Systec, Inc. to conduct a Remedial Investigation/Feasibility Study (RI/FS) of the Böwe Systec, Inc. (Böwe) site located at 200 Frank Road in Hicksville, New York. The Böwe site has been listed by the New York State Department of Environmental Conservation (NYSDEC) in the Registry of Inactive Hazardous Waste Disposal Sites in New York State (Site Number 1-30-048). The NYSDEC has classified the Böwe site as a Classification "2" (Class 2 Site) due to the presence of volatile organic compounds (VOCs) at the property. The RI phase of the project was conducted in accordance with an Order on Consent (Index # W1-0587-92-03) between Böwe Systec, Inc. and the NYSDEC.

## 1.1 Purpose of the Report

The overall purpose of the RI Report is to evaluate the nature and extent of contaminants at the site. Information in the report will be presented to the NYSDEC and used to determine whether remedial measures are necessary. The specific objectives of the RI were as follows:

(1) Provide sufficient analytical data about the site so that areas that have been previously identified or suspected as potential source areas of contamination are confirmed or determined to be either free of contamination or below regulatory levels.

(2) If source areas are found to be present at the site, determine the nature, type, physical extent and migratory path of contamination at and/or emanating from those areas so that appropriate remedial measures can be implemented.

(3) If source areas are found to be present at the site, determine the impact of contamination on human health and the environment.

(4) Document that areas that are free of contamination or are already properly

remediated.

(5) Present and discuss the data necessary to support the development of remedial measures, if necessary.

Analytical data have been collected to achieve these objectives using methods in accordance with NYSDEC protocols and analyzed by approved methods subject to NYSDEC Analytical Services Protocol (ASP) and Contract Laboratory Protocol (CLP) procedures.

This report has been formatted as outlined in the U. S. Environmental Protection Agency (USEPA) Guidance Document, "Guidance on Remedial Investigations under CERCLA", EPA 540/G-89/004, October 1988 and the draft "Interim Final Guidance for Conducting RI/FS under CERCLA" EPA October 1988. The format also follows the proposed outline as presented in the NYSDEC-approved Final Remedial Investigation Work Plan (H2M September 1992) and Phase II Remedial Investigation Work Plan (H2M September 1993).

## 1.2 Site Background

This section of the RI Report provides an overview of the site, including site description and history, together with a discussion of previous investigations and interim remedial actions conducted at the site.

### 1.2.1 Site Description

The Böwe Systec site is located at 200 Frank Road in Hicksville, New York. The site is situated roughly 650 feet north of Old Country Road, 450 feet south of Duffy Avenue and 900 feet east of Henrietta Street at the foot of Frank Road in the Town of Oyster Bay in central Nassau County. See Figure 1.2.1, Location Map.

The property is approximately 2.1 acres in size and includes a single story 25,000 square foot masonry block building. Paved parking areas are located on the east and south sides of the site. The site is bordered on the north, northeast, south and west by industrial properties, and on the southeast by residential properties. See Figure 1.2.2, Site Plan and Adjacent Land Use.

The Böwe property is bounded on the east by Frank Road, a lightly traveled roadway which terminates at the site's parking lot. To the east of Frank Road is the Valley Transit property, which has been vacant since 1992. Valley Transit used the majority of their property for fleet maintenance and parking. To the north of Böwe's building is Jodee Plastics (manufacturing) and to the west the Metco, Inc. (Metco) facility, a manufacturer of aluminum products. The southern portion of the Böwe property is bounded on the west by a recharge basin approximately 150 foot square by 15 feet deep which is located on the Metco property. Influent piping from Metco to the recharge basin is located in the northwest slope of the basin. The influent piping is believed to have been closed off several years ago due to releases of unknown chemicals from Metco, directly to the north. During H2M's inspection of the basin, the bottom portion of the basin exhibited stressed vegetation. Just above the high water line, mature vegetation and semi-mature trees, approximately 15 to 25 years old, were identified. Debris, including bicycle parts, roofing singles, tires and plastic were scattered around parts of the basin.

### 1.2.2 Site History

Böwe Systec, Inc. purchased the property in the early 1980s. The previous property owner was reported to be Dyna Magnetic Devices. Although the specific operations conducted by Dyna Magnetic Devices are unknown, an industrial profile developed by the Nassau County Department of Health (NCDH) identified the facility as a user of trichloroethene (TCE) on the order of 200 gallons per year.

When Böwe purchased the property, the building was vacant. During Böwe's occupancy, approximately 5,700 square feet were utilized for office activities, with the remainder of the building used for warehousing and assembly, testing and rebuilding of dry cleaning equipment. At one time, American Permac, a dry cleaning equipment importer, shared the building with Böwe. Besides importing, American Permac conducted some assembly, testing and rebuilding of dry cleaning equipment on the premises. Tetrachloroethene (PCE) was used in testing the equipment, and was stored in an indoor 300 gallon above ground tank located along the south wall of the building. In October 1990, the PCE was sold to dry cleaners in the area and the tank was removed.

During the testing of dry cleaning equipment, non-contact cooling water from the municipal water supply was used to cool the PCE, which was continuously recycled and reused in the testing process. Non-contact cooling water was discharged to a floor drain that emptied into an on-site subsurface disposal system (i.e., stormwater drywells) located off the south side of the building. Under normal operating conditions, there was no cross connection between the non-contact cooling water and the PCE. The location of the floor drain and drywell system is shown in Figure 1.2.2.

Other than PCE, chemical usage at the site was minor and consisted of small quantities of paints, thinners, solvents and oils. Table 1.2.1 itemizes the limited chemical inventory which was maintained at the site.

Böwe temporarily vacated the property in 1992. At the time, the building was used only for the storage of printed paper, and no PCE or other chemicals were being used. Böwe reoccupied the building in the latter part of 1994.

### 1.2.3 Previous Investigations and Remedial Actions

In the later part of 1989, approximately 10 to 15 gallons of PCE was reportedly spilled inside the building and into a floor drain. This floor drain was determined to lead into drywell DW-1 by a dye tracer test. Other areas of potential VOC contamination were identified, including a small spill into the truck bay drywell, DW-8, and the unpaved area located outside the former paint spray booth door, where solvents may have been spilled (see Figure 1.2.2).

Groundwater monitoring wells were first installed at the site as part of an environmental assessment conducted by Soil Mechanics Drilling Corporation (Soil Mechanics) in November 1989. Samples collected from these initial monitoring wells (MW-1 through MW-4) indicated the presence of PCE in the groundwater. The results of this testing program led to a supplemental investigation by Soil Mechanics in February 1990, which consisted of the collection of soil/sediment samples at depths from the stormwater drywells and an examination of an unpaved area off the west side of the building. The soil/sediment samples were analyzed for priority pollutant metals and VOCs.

Elevated concentrations of VOCs were reported in the bottom sediments collected from drywells DW-1, DW-2, DW-3 and DW-8, and in the unpaved area located outside the former paint spray booth door, off the southwest corner of the building. Copper and zinc in the sediment sample collected from drywell DW-1, were the only metals reported to be present at concentrations of concern.

Analytical results for sediments collected from drywell DW-4, DW-5, DW-6 and DW-7 indicated that VOCs were not present above detection levels at a depth of two to four feet below the bottom of the drywells. The results of Soil Mechanics' initial investigations were summarized in reports dated January 1990 and February 13, 1990. A recommendation was made to remove the VOC contaminated soils present at drywells DW-1, DW-2 and DW-3.

Excavation and removal of the impacted soils beneath and surrounding drywells DW-1, DW-2 and DW-3, was performed by Fenley & Nicol, Co., Inc. (Fenley & Nicol) under the oversight of NYSDEC. Approximately 450 tons of impacted soils were removed and disposed of at a licensed off site disposal facility. The remediation program was conducted to the satisfaction of NYSDEC and documented in an April 17, 1991 Soil Excavation Report prepared by Fenley & Nicol. As part of the remediation project, the connection between DW-1 and the floor drain inside the building was sealed.

After the initial site remediation program was completed, three additional monitoring wells (MW-5, MW-6 and MW-7) were installed on-site, downgradient of the remediated drywells to provide supplemental monitoring of groundwater quality and to assess the effectiveness of the remedial action.

Subsequent to the services provided by the previous contractors, H2M was retained to conduct a Site Screening Investigation (SSI) prior to implementation of a NYSDEC approved RI Work Plan. The objective of the SSI was to provide an overview of the existing conditions at the site by tentative identification of source areas and, to limited degree, the extent of contamination, if any. To accomplish this objective, four main potential source areas were investigated. These areas included: Area 1 (drywells DW-1, DW-2 and DW-3); Area 2 (drywell DW-8); Area 3 (stressed vegetation along the southwest corner of building outside the former spray booth); and Area 4 (the building's subsurface sanitary wastewater disposal system). Drywells DW-4, DW-6 and DW-7 were also investigated, although previous studies indicated that there was little to no contamination present at these locations.

The SSI included a combination of a soil gas survey, soil borings and temporary monitoring wells. Soil borings were conducted through drywells DW-1, DW-2, DW-3 and DW-8. Following a soil gas survey, two additional soil borings were conducted in the unpaved area off the southwest side of the building (former spray booth area). Selected soil samples from the borings were submitted for VOC analyses. Sediment/sludge samples were also collected from the septic tank and overflow leaching pools, and also analyzed for VOCs. Groundwater samples were collected from the previously installed monitoring wells and temporary well points.

Findings of the SSI were summarized in an August 10, 1992 Site Screening Investigation Report. Based on the results of the SSI, H2M concluded the following:

- Evidence of PCE contamination in a bottom sediment sample collected from drywell DW-8 indicated this area to be a potential source of groundwater contamination. Soil samples collected from the bottom of the drywell (10-12 ft. below ground surface (bgs)) and 23-25 ft. bgs both exhibited elevated VOC contamination by the PID. Laboratory analysis of the sample from 10-12 ft. bgs indicated elevated concentrations of PCE, identifying DW-8 as a potential source area.

- Soil samples collected from drywells DW-1, DW-2, DW-3, DW-4, DW-6 and DW-7 did not exhibit evidence of VOC contamination. These results supported past investigations and remedial efforts.

- Shallow soils in the grassy area (near the former spray booth), were impacted by VOCs (within a limited area). This area may have been a source of VOC contaminants since laboratory analysis of soil samples SB-1 (2-4 feet bgs) and SB-2 (2-4 feet bgs) indicated elevated concentrations of PCE.

- Analysis of three sediment/sludge samples from the sanitary disposal system indicated no PCE contamination. However, in sample LP-2, VOCs commonly found in sanitary waste streams (i.e., dichlorobenzenes) were detected. The presence of dichlorobenzenes could be attributed to aromatic toilet discs usually placed in restroom facilities. The absence of these VOCs in groundwater indicates that the extent is limited.

- Site-specific groundwater flow direction indicated a localized influence from the recharge basin, located west of the site. Typically, a local groundwater mound results from groundwater recharging from a basin. The regional groundwater flow was measured to be south/southeast and may slightly fluctuate with changes in precipitation and amount of recharge over the area.

- Based on groundwater flow direction, the groundwater sampling points selected for the SSI provided downgradient coverage of the four potential areas of concern on site. Groundwater sampling results indicated a relatively low concentration VOC plume (primarily PCE) at the property's southern boundary. This was evidenced by the concentrations of VOCs detected at the most downgradient wells (MW-6, T-1 and T-2). Concentrations of PCE detected in the groundwater were similar to past results (Soil Mechanics 1990, Fenley & Nicol 1991). The presence of other VOCs (TCE and DCE) indicated the breakdown of PCE by natural degradation. The highest concentration of PCE in the groundwater was detected at MW-6 which is located downgradient of the remediated drywells DW-1, DW-2 and DW-3, the grassy area and drywell DW-8.

- 1,1,1-trichloroethane (1,1,1-TCA) was detected in a groundwater sample obtained from the well closest to the recharge basin (T-1). This detection, paired with the groundwater influence from the recharge basin, suggests that an off-site source of VOCs may be mixing with PCE from the Böwe site.

As a follow-up to the SSI, H2M executed a NYSDEC-approved Interim Remedial Measures (IRM) Work Plan for Böwe Systec, Inc. The work also included the cleanout of the subsurface sanitary disposal system. All IRM activities were carried out under the oversight of both NYSDEC and NCDH officials. All work was completed in accordance with approved methods as confirmed in the field during site remediation.

The IRM conducted for the former spray booth area off the southwest side of the building was effective in removing VOC impacted soils from the grassy area. However, soils beneath the concrete pad, closer to the spray booth, required additional investigation as part of the RI.

The IRM conducted at DW-8 removed VOC impacted soils to a depth of approximately 5 feet below the bottom of the drywell. The deeper soils at this area were further investigated during the RI.

Both liquid/sludge and bottom sediment/soils were removed from the sanitary disposal system. The cleanout included pumping out and power washing the septic tank, distribution leaching pool and two overflow leaching pools.

All materials removed from the site were disposed of at approved facilities. The liquid sanitary waste was transported to Cedar Creek POTW, and all solid wastes were transported to Athens Hocking Reclamation Center in Logan, Ohio for proper disposal. All work performed as part of the IRM was documented in a Interim Remedial Measures Report dated February 1993.

## 1.3 Report Organization

This RI/FS Report follows the general outline proposed in the NYSDEC approved RI Work Plan (September 1992). Section 2.0 summarizes the investigation techniques used to conduct the Phase I and Phase II RI field work. Section 3.0 discusses the physical characteristics of the Böwe area, including surface features, surface water hydrology, surrounding land use, regional geology and hydrogeology and ambient groundwater quality. Section 4.0 presents the results of the field investigation in terms of the nature and extent of contamination in soils and groundwater. Quality assurance/quality control (QA/QC), data validation and data usability are discussed in Section 5.0. Section 6.0 presents the results of contaminant fate and transport modeling. The baseline risk assessment conducted for the Böwe site is presented in Section 7.0. Section 8.0 presents the summary and conclusions of the RI. Section 9.0 of the RI/FS Report presents the results of a focused feasibility study.

## 2.0 STUDY AREA INVESTIGATION TECHNIQUES

This section of the RI Report presents a description of the field investigation activities conducted during the site characterization phase of the project. Investigative techniques and analytical procedures are discussed in subsections for each of the three suspected source areas.

The RI at the Böwe site was conducted in two phases. The Phase I RI focused on characterizing the local environment and suspected contaminant source areas, and their potential impacts to soils and groundwater. The field investigation program for the Phase I RI included a fish and fish and wildlife assessment, drilling and sampling ten soil borings, installation of two new on-site monitoring wells, groundwater sampling from the newly installed and pre-existing monitoring wells, and conducting aquifer characteristics testing.

Field investigation activities during the Phase II RI included the installation and sampling of one on-site and seven off-site temporary groundwater monitoring wells, installation and sampling of one permanent off-site groundwater monitoring well, and additional sampling of selected on-site monitoring wells. The objective of the Phase II RI was to:

1. Further define groundwater flow conditions in the vicinity of the site;
2. Define the area extent, both horizontally and vertically, of the PCE plume, if any, emanating from the Böwe site.
3. Identify any potential receptors with the path of the plume, if any off-site plume is determined to exist;
4. Determine the maximum levels of contaminants within the plume, if any off-site plume is determined to exist; and
5. Provide any additional information or data necessary to support a feasibility study for the site.

## 2.1 Contaminant Source Area and Soils Investigation

Based on the history of site operations and alleged VOC contamination, an RI Work Plan to investigate and characterize potential source areas was prepared and approved by the NYSDEC. Based upon the results of the site screening investigation (SSI), areas suspected as potentially contaminated by VOCs were identified as the stormwater drywell system to the south of the building, the former spray booth area off the southwest side of the building and the facility's subsurface sanitary disposal system located off the north side of the building. Each area of concern was investigated by soil borings and soil sampling.

### 2.1.1 Drywell System

A series of eight stormwater drywells, designated DW-1 through DW-8, provide drainage for the paved area to the rear (south) of the Böwe facility (see Figure 1.2.2). Drywell DW-1 was found to be the discharge point for a floor drain inside the building. A PCE spill into this floor drain, and in turn into DW-1, prompted the initial investigation of the drywell system, and the remediation of drywells DW-1, DW-2 and DW-3. The SSI identified DW-8 as another potential source of PCE contamination at the site.

Soil borings were utilized during the RI to further characterize the drywell system. The drywells investigated as part of the RI were DW-4, DW-5, DW-6, DW-7 and DW-8. Drywells DW-1, DW-2 and DW-3 were remediated in March 1991, with oversight by the NYSDEC. The results of the remedial action and post remediation sampling of DW-1, DW-2 and DW-3 are summarized in an April 17, 1991 Soil Excavation Report prepared by Fenley & Nicol.

In June 1992, drywells DW-1, DW-2, DW-3 and DW-8 were again investigated as part of the SSI. Soil samples from drywells DW-1, DW-2 and DW-3 revealed no evidence of PCE contamination, confirming that the remedial action completed by Fenley & Nicol was successful. Evidence of PCE contamination was detected in drywell DW-8. Subsequent to the SSI, an IRM was conducted in drywell DW-8. Soils at the base of

DW-8 were removed to a depth of approximately five feet.

During the Phase I RI, soil borings were conducted either directly through the center or immediately adjacent to each on-site drywell. The location of each soil boring is shown in Figure 2.1.1. Split spoon soil samples were collected at 5 foot intervals starting at the bottom the drywell or at an equivalent depth of 10 feet below grade at borings conducted adjacent to the drywell. Each split spoon soil sample was screened for evidence of VOCs using a photoionization detector (PID). To ensure accurate readings, the PID was calibrated at a minimum of once a day. Soil samples exhibiting the highest PID response were retained for laboratory analysis. Split-spoon sampling was conducted to a minimum of 17 feet below the bottom of each drywell (approximately 25 to 27 feet bgs). As the borings were advanced below this depth, the frequency of split spoon sampling was increased to a 10 foot interval. Each soil boring was advanced until two consecutive soil samples exhibited no response on the PID.

Soil samples retained for laboratory analysis included DW-4 (16-20 ft. and 26-28 ft. bgs), DW-5 (17-19 ft. and 47-49 ft. bgs), DW-6 (12-14 ft. and 22-24 ft. bgs), DW-7 (16-18 ft. and 26-28 ft. bgs) and DW-8 (10-12 ft. and 25-27 ft. bgs). Each soil sample was analyzed for target compound list (TCL) VOCs, TCL semi-volatile organic compounds (SVOCs) and target analyte (TAL) metals. Soil samples from DW-5 (17-19 ft. bgs) and DW-6 (12-14 ft. bgs) were also analyzed for TCL pesticides and polychlorinated biphenyls (PCBs). All analyses were conducted in accordance with contract laboratory protocol (CLP) procedures. All appropriated QA/QC samples (i.e., trip and field blanks, blind duplicates and matrix spike/matrix spike duplicates) as specified in the RI Work Plan were collected and analyzed. All laboratory data were independently validated.

### 2.1.2 Former Spray Booth

In 1992, H2M conducted an SSI, as previously discussed in Section 1.2.3. Results of the SSI indicated the a limited area of shallow soils adjacent to the former spray booth were impacted with PCE. Following the SSI, a NYSDEC approved Interim Remedial Measure (IRM) Work Plan for a limited soil excavation program was executed. Post remediation soil samples collected as part of the IRM revealed additional soils impacted with PCE underlying a concrete pad in the vicinity of the former spray booth. As part of the Phase I RI, soil vapor surveys (SVSs) were conducted in the area north, south and west of the former spray booth to identify potential soil boring locations. Based on the result of the SVS, two soil borings (SBC-1 and SBC-2) were conducted just south of the former spray booth. Two additional soil samples (SG-4 and SG-14) were collected from the areas north and west of the former spray booth. The locations of the soil borings and soil sample points are shown in Figure 2.1.1.

Soil samples were retained for analysis from SBC-1 and SBC-2 at 5-7 ft. and 15-17 ft. bgs. Soil samples SG-4 and SG-14 were collected from depths within two feet of grade. All six soil samples were analyzed for TCL VOCs. Soil samples from SBC-1 and SBC-2 were also analyzed for TAL metals. The specific suite of analyses selected for each soil sample was based upon previous sampling results from the SSI and IRM conducted in this area. A sieve analysis was performed on the soil sample from SBC-1 (15-17 ft. bgs) to plot grain size distribution and obtain permeability estimate.

As part of this investigative task, a background soil sample was collected and analyzed for TAL metals (see Figure 2.1.1). All analyses were conducted in accordance with CLP procedures and QA/QC protocols as specified in the RI Work Plan.

### 2.1.3 Sanitary Disposal System

The subsurface sanitary disposal system at the Böwe facility consists of a septic tank and three leaching pools. Sludge and bottom sediment samples obtained from the disposal system as part of the SSI, revealed slightly elevated levels of VOCs (dichlorobenzenes) and metals. Although most contaminant concentrations were within NYSDEC guidelines, the disposal system was remediated by pumping and cleaning.

Based upon post-remediation sampling results, a soil boring was conducted through leaching pool S-2 (see Figure 2.1.1). Split spoon soil samples were obtained at depths of 17-19 ft. and 27-29 ft. bgs. Each soil sample was analyzed for TCL VOCs, TCL SVOCs and TAL metals. All analyses were conducted in accordance with CLP procedures and QA/QC protocols as specified in the RI Work Plan.

Subsequent to the RI sampling and analysis, the Böwe facility was connected to the municipal sewer system, and the sanitary disposal system was abandoned following NCDH protocols.

## 2.2 Hydrogeologic Investigations

As part of the Phase I RI, two additional on-site groundwater monitoring wells were installed to supplement the seven existing on-site monitoring wells. The two new wells were designated MW-8 and MW-9 (see Figure 2.1.1). Following installation of the two new monitoring wells, a survey was performed to accurately establish each well's location and elevation.

Groundwater elevation measurements were collected several times over the course of the Phase I and Phase II RI. Depth to water was measured to the nearest 0.01 ft. in reference to the top of each well casing to generate groundwater elevation contours for each monitoring event and interpret groundwater flow direction beneath the site.

As part of the Phase I RI, H2M attempted to conduct slug tests as specified in the RI Work Plan. However, the hydraulic conductivity for the aquifer was too high for adequate calculations and accuracy. In place of the slug tests, H2M conducted single point pump tests at two on-site monitoring wells (MW-5 and MW-8) in order to measure response to pumping and rate of recovery. In addition, two split spoon soil samples collected from the saturated zone while drilling monitoring wells MW-8 (55-57 ft. bgs) and MW-9 (55-57 ft. bgs) were retained for sieve analysis to plot grain size distribution and estimate permeability values of the aquifer.

The single point pump tests were conducted using a decontaminated submersible pump with a pumping rate of 5 gallons per minute (gpm). Rate of drawdown and rate of recovery were measured and recorded on a log-cycle time scale using pressure transducers and a data logger. These data were used as part of the aquifer analysis as described in Section 4.0.

## 2.3 Groundwater Investigations

As part of the Phase I RI, two additional on-site groundwater monitoring wells were installed to better assess groundwater quality upgradient and downgradient of suspected source areas. Based upon groundwater elevation data, local groundwater flow direction was determined to be toward the south-southeast. Based upon the groundwater flow direction, one upgradient well (MW-8) was installed in the northwest corner of the site, and one downgradient (MW-9) was installed on the southeast side of the site (see Figure 2.1.1). The two new monitoring wells were intended to compliment the seven pre-existing wells and provide additional coverage across the site. Before sampling, the two new monitoring wells were developed until pH and conductivity readings stabilized and turbidity readings of less than 50 NTUs were obtained.

Two rounds of groundwater monitoring were performed during the Phase I RI. The wells sampled by H2M included a combination of upgradient wells MW-1 and MW-8, and downgradient wells MW-3, MW-5, MW-6 and MW-9. During the first round of sampling, the NYSDEC also sampled well MW-7. Each sample collected during the first round of monitoring were analyzed for TCL VOCs, SVOCs and pesticides/PCBs, and TAL metals following CLP procedures. Based upon the results of the first round of sampling, and with the approval of the NYSDEC, the second round samples were analyzed non-CLP for VOCs only. Three additional rounds of groundwater monitoring were conducted as part of the Phase II RI.

The Phase II RI included two off-site exploratory well programs, which focused on determining the horizontal and vertical extent of PCE, if any, in groundwater downgradient of the site. During the first exploratory well program, one on-site and three off-site temporary wells were installed. Temporary on-site well (EW-1), was positioned in the southwest corner of the Böwe site (see Figure 2.1.1), and was intended to assess potential VOC contamination from the recharge basin immediately west of the site. One groundwater sample was collected from just below the water table (55-60 ft. bgs) and analyzed non-CLP for VOCs.

One exploratory off-site well (EW-2) was installed on Old Country Road, approximately 525 feet south-southeast of the Böwe site's southern property line (see Figure 2.3.1). Two exploratory off-site wells (EW-3 and EW-4) were installed on Bridle Lane approximately 1,075 feet and 1,100 feet south-southeast of the Böwe site's southern property line. All three off-site exploratory wells were installed in public right-of-ways (i.e., town roads). Groundwater samples were collected from just below the water table (55-60 ft. bgs) and at twenty foot intervals deeper into the aquifer (80-85 ft., 105-110 ft., 130-135 ft. and 155-160 ft, bgs). Each sample was analyzed non-CLP for VOCs.

Based upon results from the initial three off-site exploratory wells, a second round of exploratory wells were installed downgradient of the Böwe site. Exploratory wells EW-5, EW-6 and EW-7 were installed approximately 120, 250 and 390 feet south of the Böwe site's south property line, respectively. Exploratory wells EW-8 and EW-9 were installed 60 feet east and west of EW-7, respectively (see Figure 2.3.2). All five of the exploratory wells were installed on private properties after obtaining access agreements from each property owner.

Two groundwater samples were collected from exploratory wells EW-5, EW-7, EW-8 and EW-9. Samples were collected from just below the water table (60-70 ft. bgs) and twenty five feet below the water table (85-90 ft. bgs). Each sample was analyzed non-CLP for VOCs.

Following the exploratory well programs, and after consultation with the NYSDEC and negotiating a new access agreement with the property owner, a permanent downgradient off-site well (OW-1) was installed approximately 75 feet south of the Böwe site's south property line (see Figure 2.3.2). Utilizing the newly installed off-site well and selected on-site wells, one final round of groundwater monitoring was conducted. Each groundwater sample was analyzed non-CLP for VOCs.

## 2.4 Fish and Wildlife Assessment

A Fish and Wildlife Assessment was conducted as part of the Phase I RI. The assessment included an analysis of black and white aerial photographs to characterize land patters, identify open spaces and preliminary designation of naturally vegetated habitat types. Field reconnaissance was then conducted to verify observations from aerial photography. Coordination and consultation with regulatory and non-regulatory fish and wildlife authorities was included as part of the assessment.

## 3.0 PHYSICAL CHARACTERISTICS

This Section of the RI Report discusses the pertinent physical characteristics of the Böwe site including surface features, surface water hydrology, geology, hydrogeology, demography, land use and ecology. The site specific geology and hydrogeology as determined by the field investigation are further discussed in Section 4.0.

### 3.1 Surface Features

The local topography surrounding the site consists of relatively flat terrain of little or no relief. The gradient of the natural land surface within the site boundaries is less than three feet. Gradients of man-made surfaces (i.e., paved areas) at the site can be as much as four feet due to truck loading bays sloping back toward the building. The recharge basin, located at the adjourning property to the west, has moderately sloping sides, with a base elevation approximately 10 to 15 feet below that of the surrounding property (roughly 110 to 115 feet above msl).

### 3.2 Surface Water Hydrology

No surface water bodies exist within the borders of the Böwe site. Additionally, there is no evidence of ephemeral streams or stream-cut channels on the site. Review of the Hicksville and Freeport 7.5 minute quadrangle United States Geographic Survey (USGS) topographic maps support these field observations. The nearest stream shown on the topographic maps is an unnamed creek/stream located just north of the intersection of Jericho Turnpike (Rt. 25) and the Long Island Expressway (I 495) approximately 1.75 miles north-northeast of the Böwe site. The headwaters of East Meadow Brook are located near the intersection of the Meadowbrook Parkway and Hempstead Turnpike (Rt. 24) approximately 3.25 miles southeast of the Böwe site.

## 3.3 Surrounding Land Use and Potential Upgradient Contaminant Sources

Residential portions of the general area, immediately southeast of the site and south of Old Country Road, are considered to be of intermediate density, with approximately five to ten dwellings per acre. The area is serviced by the Hicksville Water District. The area is also served by the Nassau County Sewer District No. 3, and most facilities have been connected to the sewer system since the early 1980s.

In 1975, an industrial survey was performed as part of the Contaminant Aquifer Segment Study in West Hicksville (NCDH 1986). The study indicated that the areas surrounding the Böwe site are heavily industrialized. Types of industries present during the study included chemicals, electronics and electrical equipment, among others. Table 3.3.1 provides an industrial profile of the area from 1997 to 1985, and includes estimates of the annual usage of organic chemicals for each industry. During this period, industrial and commercial facilities were abundant in the area, primarily along West John Street and Duffy Avenue, which run east and west through central Hicksville, parallel to the Long Island Railroad.

As indicated in Table 3.3.1, twelve industrial and commercial facilities in the area used, stored and/or disposed of approximately 12,000 gallons per year of organic chemicals, including benzene, 1,1,1-TCA, methylene chloride, TCE, methyl chloride, PCE and trichlorotrifluoroethane during this period.

According to an Environmental Risk Information and Imaging Service report (ERIIS, 1992), Anchor Chemicals (Anchor), later known as Anchor-Lith Kem Co, is a National Priorities List (NPL) site. The facility, located at 500 West John Street, operated on the 1.5 acre site from 1964 to 1984. While Anchor was in operation, chemicals were stored above and below ground. Seventeen underground storage tanks (USTs), ranging in size from 550 to 4,000 gallons, were installed beneath the Anchor building. Between mid-1981 and early 1983, six leaking USTs were taken out of service. In 1982, three groundwater monitoring wells installed by Anchor revealed the subsurface soils and underlying groundwater to be impacted with chlorinated organic compounds.

Review of the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list revealed several facilities within a one mile radius of the Böwe site, which are either known or suspected uncontrolled or abandoned hazardous waste sites. The sites have been investigated or are currently being investigated by the EPA and/or NYSDEC for the release, or threatened release of hazardous substances. Three of these sites are located directly upgradient of the Böwe site. A list of these CERCLIS sites and their location relative to the Böwe site is provided in Table 3.3.2.

Review of the Resource Conservation and Recovery Information System (RCRIS) report of large quantity hazardous waste generators and hazardous waste treatment, storage and disposal (TSD) facilities, identified several sites within a one mile radius of the Böwe site which generate greater than 1,000 kilograms of hazardous wastes per month.

Two RCRIS sites are located on Cantiague Rock Road, upgradient of the Böwe site. Air Techniques, located at 70 Cantiague Rock Road, generates non-specific hazardous wastes, including spent halogenated solvents used in degreasing such as PCE and TCE. Nine RCRIS sites are located on West John Street, also upgradient of the Böwe site. Litton Applied Technology (Litton), located at 530 West John Street, generates ignitable hazardous wastes and non-specific hazardous wastes, such as spent non-halogenated solvents. Litton operates a second facility at 600A West John Street, which generates non-specific hazardous wastes including spent halogenated solvents used in degreasing. General Instruments Corporation, located at 600 West John Street, also generates spent halogenated degreasing solvents. The facility is located west-northwest (upgradient) of the Böwe site.

Seven RCRIS sites are located on Duffy Avenue in the vicinity of the Böwe site. Amperex Electronics Corporation, located at 230 Duffy Avenue generates non-specific hazardous wastes, including spent degreasing solvents. Metco, Inc., located immediately west of the Böwe site at 325 Duffy Avenue, also generates spent halogenated solvents.

There are two landfills located in the vicinity of the Böwe site. The West John Street landfill, located east of Charlotte Street, is owned by AGO Associates and has been abandoned. The second landfill, located on Duffy Avenue, is a municipal landfill owned by the New York State Department of Parks and Recreation. The landfill reportedly accepted agricultural waste, sweepings, rubbish and leaves.

According to the 1986 NCDH study, there were several reported complaints concerning the release of organic chemicals in the West Hicksville area. A February 1982 spill by Mattiace Petrochemicals involved the release of methyl ethyl ketone (MEK), contaminating the surrounding soils and groundwater. In September 1982, the EPA issued an Administrative Order requiring Mattiace to remediate the contaminated soils and groundwater. The firm complied with the cleanup order for five months, from May through October 1984, when the project was terminated due to lack of funds.

In February 1984, Alsy Manufacturing, located at 270 Duffy Avenue, was found discharging industrial wastewaters containing excessive levels of metals and VOCs into on-site leaching pools. The NYSDEC issued an Abatement Order in April 1985 requiring that all non-compliant discharges be terminated, and that all contaminated materials in the leaching pools be removed. Cleanup of the leaching pools was completed in May 1985.

A complaint against General Instrument, located at 600 West John Street, involved soil contamination caused by a leaking UST containing organic chemicals. A soil remediation system was installed and operating by February 1984.

Numerous other spills were noted within the one mile radius covered by the ERIIS report. According to the NYSDEC spills report, fifty spills occurred within a one mile radius of the Böwe site between June 1986 and March 1991. The types of materials involved included VOC, acids, petroleum products, organic resins and pesticides.

Overall, the entire industrial area surrounding the Böwe site has been or still is occupied by numerous facilities which generate small and large quantities of hazardous wastes, including spent chlorinated solvents. The number of industrial facilities, reported spills and contaminated sites in the area, suggests that numerous potential sources of groundwater contamination exist. Figure 3.3.1 shows the location of each CERCLIS and RCRIS site in relation to the Böwe site.

## 3.4 Hydrogeologic Setting

The geologic formations that underlie Nassau County are composed of a series of thick deposits of unconsolidated water bearing sediments of late Cretaceous and Pleistocene age. These unconsolidated deposits are underlain by crystalline bedrock of Precambrian age.

There are three primary water-bearing aquifers underlying Nassau County. These aquifers, from shallow to deep are the Upper Glacial, Magothy and Lloyd. The aquifers are considered to be hydraulically connected, with the Glacial and Magothy contributing recharge for the underlying Lloyd aquifer. Together, they are a federally designated sole source of drinking water for Long Island.

The Upper Glacial aquifer, consisting of highly permeable sand and gravel with occasional thin clay beds, is not commonly used for drinking water supply in Nassau County due to historical water quality impacts from local industry and other forms of land use. The saturated Upper Glacial aquifer is approximately 100 feet thick in Nassau County.

The Magothy aquifer is the principal water supply aquifer in Nassau County. It consists primarily of lenticular beds of very fine to medium sand that are interbedded with clay and sandy clay, silt and some gravel and sand. The majority of the fine sediments are within the upper half of the aquifer. Beds of coarse sand with gravel are common in the lower 100 to 150 feet of the aquifer. The Magothy is absent in many areas along the north shore and reaches its maximum thickness of approximately 1,000 feet in the southern part of Nassau County.

Below the Magothy aquifer is the Raritan clay formation. This formation is a significant confining unit above the Lloyd aquifer that consists mainly of clay and silty clay, and ranges in thickness from 0 to 200 feet. The clay has a very low hydraulic conductivity, but does not totally prevent movement of water between the Magothy and the underlying Lloyd aquifer.

The Lloyd aquifer is the oldest and deepest water bearing unit. It rests on impermeable crystalline bedrock and consists of lenticular deposits of clay silt, sandy clay, sand and gravel. The upper surface of the aquifer dips southeast from about 500 feet below sea level in the northern part of Nassau County to more than 1,400 feet below sea level in the southern portion of the County.

## 3.5 Well Survey

As part of the Phase I RI, H2M examined information on file with the USGS, NYSDEC and NCDH concerning private or public water supply wells or monitoring wells within the area bounded by Old Country Road to the north, Hempstead Turnpike to the south and one mile east and west of the Wantagh Parkway. Subsequent contact with the USGS narrowed the study radius to an area in the vicinity of the Böwe site, roughly bounded by the Northern State Parkway on the north, Old Country Road on the south, Broadway (Route 106/107) on the east and the Wantagh Parkway on the west. The USGS had no wells in their data base within the above noted study area.

H2M reviewed files in the offices of the NYSDEC Water Supply Unit and NCDH Water Resources Bureau to confirm the locations of public water supply wells, monitoring/observation wells and industrial/private wells located downgradient of the

Böwe site. Eleven wells were identified from NCDH maps as being within or in close proximity to the study area. The location of these and other wells within a three mile radius downgradient of the site are shown in Figure 3.5.1.

Requests were made to the NCDH for water quality information from wells N-1197, N-6417, N-7856, N-8807, N-8808, N-9020, N-9021, N-9925 and N-9590. Information was received for wells N-1197 and N-8880. Well N-1197 is an observation well located approximately one mile downgradient of the Böwe site. Well N-8880 is an industrial well located on the grounds of Metco, Inc., an industrial facility located at 325 Duffy Avenue immediately west of Böwe.

Additional requests were made to NCDH for water quality information from a series of public water supply wells, including wells N-2402, N-2580, N-3456, N-3457, N-3552, N-4447, N-4448, N-4450, N-5301, N-5302, N-5321, N-5322, N-5336, N-7561, N-7797, N-8321, N-8526, N-8956, N-8957 and N-9212. Information was received only for wells N-7561 and N-9212. Both of these wells are public water supply wells operated by the Hicksville Water District and are located approximately three-quarters of a mile downgradient of the Böwe site. NCDH also provided water quality data for wells N-10312, N-10313, N-10314 and N-10317. These are all monitoring wells located within 2,000 feet downgradient of the Böwe site, and were installed as part of the NCDH study (1986) (see Figure 3.5.2).

Inquiries were made with the Hicksville Water District and Town of Hempstead Water Department for any records their offices maintained regarding residences or industries that may not be connected to the public water supply. Information received from the Town of Hempstead Water Department showed sections of our study area radius serviced by the Bowling Green Water District and Levittown Water District. No information was received regarding properties that were not serviced by these water districts.

A survey/inspection conducted by H2M, confirmed that the remaining areas of the study area radius are connected and serviced by a public water supply. Most of the study area is supplied drinking water by the Hicksville Water District (see Figure 3.5.3), with smaller areas in the northeast and southern sections of the study area served by the Bowling Green Water District and Levittown Water Districts, respectively.

## 3.6 Ambient Groundwater Quality

Past studies at the Böwe site have shown local groundwater flow direction in the vicinity is generally toward the south/southeast. Shallow groundwater in the area has been documented by NCDH has being impacted by VOCs, primarily 1,1,1-TCA. In the deeper Magothy aquifer, the primary VOC is TCE. Contamination has reportedly migrated into the Magothy aquifer to depths of over 250 feet bgs (NCDH 1986). Clay layers that would impede contaminant migration were identified in deeper (Magothy aquifer) wells in the West Hicksville area. However, the stratigraphic continuity of these clay layers is unknown. Based on land use, it has been reported by NCDH that the contamination evidenced in the groundwater originates from the industrial area along West John Street and Duffy Avenue, parallel to the Long Island Railroad (LIRR).

Laboratory reports for VOC analyses from September 1978 to March 1990 were reviewed for observation/monitoring well N-1197. This well is located approximately one mile downgradient of the Böwe site, and screened in the shallow aquifer approximately 65 feet bgs. The primary VOC detected in this well was 1,1,1-TCA (3 to 3,119 ug/l), with lesser concentrations of TCE (3 to 1,770 ug/l), PCE (3 to 180 ug/l), 1,1-DCA (1 to 89 ug/l), methylene chloride (6 to 47 ug/l) and 1,1-DCE (4 to 10 ug/l). All detected VOCs in well N-1197 from September 1978 to March 1990 are shown in Table 3.6.1. The results show that chlorinated organics have been detected in the groundwater pre-dating Böwe's occupancy at the site. In addition, the primary contaminants detected in this well have historically been 1,1,1-TCA and TCE. The contaminant of concern at the Böwe site is PCE.

Laboratory reports for VOC analyses from April 1978 to March 1984 were reviewed for observation/monitoring well N-8880. This well is located on the Metco, Inc. property at 325 Duffy Avenue, just west of the Böwe site, and is screened at depth of approximately 220 feet bgs. The VOCs detected in this wells included TCE (100 to 350 ug/l), with lesser concentrations of 1,1,1-TCA, PCE, 1,1-DCE, toluene and benzene. All detected VOCs in well N-8880 from April 1978 to March 1984 are shown in Table 3.6.2. Based on the historical water quality data from this well, TCE has been the primary contaminant detected, and the contamination extends downward into the deeper Magothy aquifer.

Laboratory reports for VOC analyses from October 1984 through October 1991 were reviewed for observation/monitoring wells N-10312, N-10313, N-10314 and N-10317 (see Figure 3.5.1). These wells were first sampled by NCDH as part of the Aquifer Segment Study (NCDH 1986). All four wells are screened in the shallow groundwater approximately 55 feet bgs. The primary VOC detected in these wells was TCE. Well N-10314, located approximately 1,700 feet east of the Böwe site contained up to 900 ug/l of TCE and up to 23 ug/l of PCE. Well N-10317, located roughly 900 feet south-southwest of the Böwe site, contained up to 100 ug/l of TCE and up to 9 ug/l of PCE. PCE was detected (3 ug/l) on only one sampling event (November 1990) in well N-10313, located approximately 600 feet southeast of the Böwe site. TCE was not detected in well N-10313. Neither TCE or PCE were detected in well N-10312, which is located roughly 800 feet west of the Böwe site. TCE and PCE concentrations in Wells N-10313, N-10314 and N-10317 from December 1984 through July 1991 are summarized in Table 3.6.3. Although PCE was also detected, TCE was the primary VOC in these three wells. Once again, PCE was detected in the wells during late 1970s, pre-dating Böwe's occupancy at the site.

Water quality data was also reviewed for two public water supply wells of the Hicksville Water District located approximately 4,100 feet south of the Böwe site (see Figure 3.5.1). Data for the period of March 1989 through September 1992 were reviewed for wells N-9212 and N-7561, and is summarized in Tables 3.6.4 and 3.6.5, respectively.

The presence of TCE and 1,1,1-TCA, among others, indicates multiple sources of VOC contamination within the groundwater contributing area of these well fields.

## 3.7 Demography and Land Use

A review of potentially exposed populations in support of the human-based risk assessment was conducted with the aid of 1980 US Census data. Census data within a three kilometer (approximately 1.5 miles) radius around the Böwe site was reviewed to determine the most probable potentially exposed populations. The largest local population is located to the southeast of the Böwe site, with a potentially exposed population of approximately 28,000 people. Review of neighboring land uses indicates that the population to the southeast is primarily residential, with small scale commercial and industrial properties also present.

In addition to the general population, potentially significant sub-populations were also investigated. It was determined that there are twenty schools located within a three kilometer radius of the Böwe site. Of these, only three are located hydraulically downgradient of the site. Although these schools represent a potential sub-population of concern because of the children in attendance, none of the schools should be adversely impacted by the Böwe site, because all of the schools are connected to the public water supply.

## 3.8 Fish and Wildlife Assessment

As part of the Phase I RI, a Fish and Wildlife Assessment was conducted to evaluate fish and wildlife concerns with respect to the Böwe site. The assessment was conducted in a phased approach in order to facilitate an efficient ecological evaluation of the site and its surroundings, as well as to evaluate potential impacts on fish and wildlife resources. Coordination and consultation with regulatory fish and wildlife authorities was also performed as part of the assessment.

The landscape of the area surrounding and including the Böwe site is heavily developed by industrial, commercial and residential use properties, with small, isolated fragments of natural forest, landscaped grass and ornamental vegetation. Wildlife, commonly known as "backyard species", including dogs, cats, squirrels, raccoon, opossum and rodents are common in the area. Migratory songbirds frequent the area as well. Several wildlife habitats were initially designated by analyzing aerial photography, and subsequently field-verified for refinement.

There are three recharge basins within a one-half mile radius of the site, including the basin that borders the southern portion of Böwe's west property line. This recharge basin contains steep slopes, is overgrown by weedy plant species and has a higher occasion of assorted trees than most basins in the area. The basin appears to be maintained periodically, although some debris is present at the base of the slope.

Also within the one-half mile radius is the northwest corner of Plainlawn Cemetery and southern portion of Cantiague Park. Both the cemetery and park have extensive, maintained turf grass and sporadic ornamental vegetation. Along the Wantagh State Parkway, between Old Country Road and the LIRR tracks, the right-of-way includes maintained turf grass and various trees, such as oak, birch, cherry and maple. A cover map is provided in Figure 3.8.1.

Within a two mile radius of the site, there are no local or state-designated Critical Environmental Areas (CEAs), Freshwater Wetlands or Significant Habitats. The Wantagh State Parkway, Northern State Parkway and Long Island Expressway are all within a two mile radius of the Böwe site. All three right-of-ways contain maintained turf grass and sporadic trees. Cantiague Park (with ball fields and nine hole golf course), and several smaller neighborhood parks, ballfields and school yards are also located with the two mile radius of the site. Several recharge basins with weedy plant species are within a two mile radius. Typical wildlife that may be attracted to these areas include cottontail rabbit, raccoon, opossum and red fox, as well as several types of birds. Birds observed during the field surveys included sparrows, cardinals, finches, starlings, morning doves, meadowlark, pigeons and red-winged black birds.

Return correspondence from the United States Department of Interior, Fish and Wildlife Services indicates that no federally classified or proposed endangered or threatened plant or animal species under federal jurisdiction are known to occur within the study area.

The NYSDEC indicated in return correspondence that the "few flowered nutrush" (Scleria pauciflora), a state-designated threatened plant, is known to occur in the area (last observed in 1912). Follow-up conversations with the NYSDEC confirmed that the plant is afforded legal protection, however, no one may pick or damage the plant in any way without express permission of the property owner on which the plant occurs. In-field inspections did not locate the plant within the site boundaries.

Impacts due to a potential contaminant pathway or from site remediation activities is not anticipated to have any effect on fish due to the lack of surface waters or creeks that would contain significant fish populations with a two mile radius of the Böwe site. Also, no discernible pathway of contaminant migration and exposure to animal wildlife resources could be identified.

## 4.0 NATURE AND EXTENT OF CONTAMINATION

This section of the RI Report presents and evaluates the nature and extent of contamination present at the Böwe site, and is organized based upon the suspected source areas and the media (i.e., soils, groundwater) sampled. Section 4.1 discusses the results of soil sampling in the stormwater drywell system, Section 4.2 discusses the results of soil sampling at the former spray booth, Section 4.3 discusses sludge and sediment sampling of the subsurface sanitary disposal system, and Section 4.4 discusses the results of on-site and off-site groundwater sampling.

Because the Böwe site is listed Class 2 site, the initial Applicable or Relevant and Appropriate Requirements (ARARs) for soils and sediments analyzed as part of the RI were selected to be the Recommended Soil Cleanup Objectives (RSCOs) presented in the NYSDEC Division Technical and Administrative Guidance Memorandum (TAGM): Determination of Soil Cleanup Objectives and Cleanup Levels, HWR-94-4046, January 24, 1994 (revised April 1995). The initial ARARs for groundwater are the Class GA Groundwater Quality Standards presented in the NYSDEC Water Quality Regulations for Surface Waters and Groundwaters, 6 NYCRR Parts 700 - 705. A more formal ARARs analysis is presented in the health-based risk assessment included as Section 7.0.

### 4.1 Drywell System

A series of eight stormwater drywells, designated DW-1 through DW-8, provide drainage for the paved area to the rear (south) of the Böwe facility. Subsurface soils directly beneath or adjacent to drywells DW-4, DW-5, DW-6, DW-7 and DW-8 were sampled and analyzed as part of the Phase I RI. Drywells DW-1, DW-2 and DW-3 were remediated in March 1991, with oversight by the NYSDEC, and were sampled again during the SSI in June 1992. The SSI results confirmed that the remedial action was successful in removing the VOC impacted soils. No additional sampling of drywells DW-1, DW-2 or DW-3 was conducted during the RI. Drywell DW-8 was remediated in September 1992. Additional sampling during the Phase I RI was intended to confirm the effectiveness of the IRM.

In accordance with the NYSDEC-approved RI Work Plan (September 1992), soil borings were conducted through the center of, or immediately adjacent to, drywells DW-4, DW-5, DW-6, DW-7 and DW-8. See Figure 2.1.1 for boring locations. Soil boring logs are provided in Appendix A. Drywells DW-4, DW-5, DW-7 and DW-8 had solid cast iron covers, while DW-6 was equipped with an open grate cover, allowing stormwater runoff to enter directly into the drywell.

Split spoon soil samples were collected at five foot intervals starting at the bottom of each drywell, and screened for evidence of VOC contamination with a PID. Each soil boring was advanced until two consecutive split spoon soil samples exhibited no PID response. Two soil samples from each boring (drywell) were retained for laboratory analysis. The criteria employed in selecting which samples were submitted for analyses were as follows:

1. The sample exhibiting the highest PID reading.
2. If no elevated PID responses were obtained, a sample from the bottom of each drywell was submitted, along with the deepest split spoon sample from each boring.

Each soil sample was analyzed for TCL VOCs, TCL SVOCs and TAL metals. Two soil samples from DW-5 (17-19 ft. bgs) and DW-6 (12-14 ft. bgs) were also analyzed for TCL pesticides/PCBs. All appropriate QA/QC samples were collected as specified in the Phase I RI Work Plan, and all analyses were conducted in accordance with CLP procedures and all lab data was independently validated.

### 4.1.1 TCL VOCs

TCL VOC analytical results are presented in Table 4.1.1. Also included in Table 4.1.1 are the NYSDEC's Recommended Soil Cleanup Objectives (RSCOs) for VOCs. Trace amounts of VOCs were detected in six of the ten soil samples obtained from the drywells. All detected VOCs were at concentrations orders of magnitude below their respective RSCOs. PCE was detected at 140 ug/kg in DW-4 (16-20 ft. bgs), 31 ug/kg in DW-5 (17-19 ft. bgs), 5J ug/kg in DW-5 (47-49 ft. bgs), 12 ug/kg in DW-7 (16-18 ft. bgs) and at 10 ug/kg in DW-8 (10-12 ft. bgs). Acetone and 2-Butanone were detected in DW-6 (12-14 ft. bgs) at 48 ug/kg and 16 ug/kg respectively. All other TCL VOCs were non-detectable.

Volatile organic tentatively identified compounds (TICs) were detected in samples collected from DW-6 (12-14 ft.) and DW-7 (26-28 ft.), and in the field blank and trip blank. A summary of the detected volatile organic TICs is presented in Table 4.1.1 A.

Based upon the TCL VOC analyses, the soils within and directly below drywells DW-4, DW-5, DW-6, DW-7 and DW-8 contain non-detectable to trace levels of VOCs. None of the VOCs were detected at concentrations above their respective RSCOs, therefore, no remedial actions are warranted.

### 4.1.2 TCL SVOCs

TCL SVOC analytical results are presented in Table 4.1.2. Only those SVOCs which were detected in one or more samples are listed in Table 4.1.2. Also included in Table 4.1.2 are the NYSDEC's RSCOs for SVOCs. One or more SVOCs were detected at very low concentrations in all ten samples. All detected SVOCs were well within their respective RSCOs.

Semi-volatile organic TICs were detected in seven of ten soil samples collected from the drywells. A summary of the detected semi-volatile organic TICs is presented in Table 4.1.2 A.

Based upon the analytical results, SVOCs have been determined not to be contaminants of concern in the drywell system, and no remedial actions are warranted.

### 4.1.3 TCL Pesticides/PCBs

Two of the ten soil samples collected from the drywells were analyzed for TCL pesticides/PCBs. Analytical results are presented in Table 4.1.3. Also included in Table 4.1.3 are the NYSDEC's RSCOs. All pesticides and PCBs were either non-detectable or detected in trace amounts well below their respective RSCO. Based on this data, pesticides and PCBs have been determined not to be contaminants of concern in the drywell system, and no remedial actions are warranted.

### 4.1.4 TAL Metals

TAL metals analytical results are presented in Table 4.1.4. Also included in Table 4.1.4 are the NYSDEC's RSCOs and typical background levels for the eastern United States. Analytical results for a site-specific background sample (see Section 4.2) are also included in Table 4.1.1. Several TAL metals were detected at concentrations which exceeded either a RSCO or site-specific background levels. These included beryllium (DW-4), calcium (DW-4, DW-6 and DW-7), copper (DW-6 and DW-7), lead (DW-4, DW-6 and DW-7), mercury (DW-7), nickel (DW-4), silver (DW-4 and DW-7), vanadium (DW-6 and DW-7) and zinc (DW-4, DW-5, DW-6 and DW-7). In all cases, the higher metal concentrations were detected in the shallower soil samples (i.e., sediments at the bottom of the drywells), and in all cases, the concentrations dropped below their respective RSCOs in the deeper soil samples. All other TAL metals were either non-detectable or present at concentrations below their respective RSCOs.

Based on this data, it has been determined that some metals are present in the shallow soils within the drywells at levels exceeding the NYSDEC's RSCO. However, the metal concentrations do not constitute a significant source of contamination and the depth extent is limited to within the first five to ten feet below the bottom of the drywells. As a result, no remedial actions are warranted.

## 4.2 Former Spray Booth

Located off the southwest corner of the Böwe facility, the former spray booth was investigated as part of the SSI in 1992. A soil vapor survey (SVS) was conducted in the unpaved area just outside (south) of the former spray booth shed. Based on the SVS results, a limited area of VOC impacted soils were identified, and subsequently excavated as part of an IRM conducted in September 1992. As part of the Phase I RI, the excavated area, just south of the spray booth, and concrete pad area north of the spray booth were investigated to determine whether residual VOCs are still present, and if so, to establish the vertical and horizontal extent of contamination. The investigation of the former spray booth area was conducted in two phases (October 1992 and January 1993).

In October 1992, a grid-formatted soil vapor survey (SVS) was conducted in the area just south of the former spray booth shed. Background PID levels were 0 to 1.0 equivalent parts per million (eppm). Subsurface PID readings were obtained by creating a 1/4-inch diameter hole extending 2.5 feet below grade with a slam bar. A length of dedicated Teflon tubing was attached to the PID and inserted down into the hole. PID readings in the subsurface soils ranged from 0 to 6.2 eppm. Figure 4.2.1 shows the SVS test points and associated PID responses. Soil borings SBC-1 and SBC-2 were conducted at the two locations where the highest PID responses were obtained (see Figure 4.2.1). Soil boring logs are provided in Appendix A.

Four split spoon soil samples were collected from each boring (1-3 ft., 5-7 ft., 10-12 ft. and 15-17 ft. bgs) and screened for evidence of VOCs with a PID. Each soil boring was advanced until two consecutive split spoon soil samples exhibited no PID response. Overall, there were no elevated PID responses in any of the soil samples. Two soil sampling intervals were selected from each boring (5-7 ft. and 15-17 ft. bgs) and analyzed for TCL VOCs and TAL metals. In addition, a soil sample was collected from the front of the Böwe facility, in the grass area between the building and Frank Road, and analyzed for TAL metals to represent background conditions. All appropriate QA/QC samples were collected as specified in the Phase I RI Work Plan. All analyses were conducted in accordance with CLP procedures and all lab data was independently validated.

Subsequent to analyzing the samples from soil borings SBC-1 and SBC-2, and after reviewing all available groundwater monitoring data, it was agreed by H2M and the NYSDEC that an additional SVS on the north side of the former spray booth shed was warranted. This was noted as a potential area of concern due to visual evidence of drum storage (exhibited by staining of the concrete pad). The second phase SVS was conducted in January 1993, and included fourteen test points surrounding the concrete pad, in the area between the building and the west fence line (see Figure 4.2.1). Of the fourteen SVS test points, only three locations evidenced PID responses above background. Although the PID responses, ranging from 1.6 to 3.0 eppm, where not indicative of significant VOC contamination, soil samples were collected from the two locations exhibiting the highest PID readings (SG-4 and SG-14). At both locations the soil sample was collected from within two feet of surface grade. Each soil sample was analyzed for TCL VOCs. All analyses were conducted in accordance with CLP procedures.

### 4.2.1 TCL VOCs

TCL VOC analytical results are presented in Table 4.2.1. Also included in Table 4.2.1 are the NYSDEC RSCOs for VOCs. Trace amounts of VOCs were detected in the shallower soil samples and but were non-detectable in the deeper samples. All detected VOCs were present at concentrations orders of magnitude below their respective RSCOs. PCE was detected at 140 ug/kg and 31 ug/kg in SBC-1 (5-7 ft. bgs) and SBC-2 (5-7 ft. bgs), respectively. TCE was detected at estimated concentrations of 5J ug/kg and 9J ug/kg in SBC-1 (5-7 ft. bgs) and SBC-2 (5-7 ft. bgs), respectively. All other VOCs were non-detectable. PCE was detected in SG-4 and SG-14 at estimated concentration of 5J ug/kg and 9J ug/kg, respectively.

Volatile organic TICs were detected in SBC-1 (15-17 ft. bgs), SBC-2 (5-7 ft. bgs) and SBC-2 (15-17 ft. bgs). All TICs were detected at estimated concentrations of 10J u/kg or less.

This data, together with the results of previous investigations, indicates that the former spray booth area has experienced limited impacts from past spillage of PCE, and that the IRM conducted in September 1992 was successful in removing the highly impacted soils. The extent of PCE has been determined to be limited to the very shallow soils, with residual concentrations well within the NYSDEC's RSCOs. Based upon the RI sampling results, the former spay booth area does not warrant further remediation.

### 4.2.2 TAL Metals

TAL metals analytical results are presented in Table 4.2.2. Also included in Table 4.2.2 are the NYSDEC RSCOs for metals. Potassium was present in SBC-1 (5-7 ft.) at a concentration above the site-specific background level. All other TAL metals were either non-detectable or present at concentrations below their respective RSCOs. Based on this data, TAL metals are not of concern in the area of the former spray booth, and no remedial actions are required.

## 4.3 Sanitary Disposal System

Located off the north side of the Böwe facility, the former subsurface sanitary disposal system consisted of a septic tank and three leaching pools. The disposal system was investigated as a potential source area as part of the SSI and subsequently underwent an IRM involving the pumping and cleaning of the septic tank and leaching pools. Based upon the results of post-IRM sampling, an additional soil boring was conducted through the center of leaching pool S-2 (see Figure 2.1.1) as part of the Phase I RI.

Split spoon soil samples were collected at five foot intervals, beginning at the bottom of the leaching pool. Soil samples were obtained from the bottom of the leaching pool (17-19 ft. bgs) and at depths of 22-24 ft. and 27-29 ft. bgs. The soil lithology ranged from very loose, poorly graded, fine sands, to well compressed coarse to fine tan brown sands. A soil boring log is provided in Appendix A. Each split spoon soil sample was screened for evidence of VOCs with a PID. No PID responses above background levels were noted in any of the three samples. Samples from 17-19 ft. and 27-29 ft. bgs were analyzed for TCL VOCs, TCL SVOCs and TAL metals. All analyses were conducted in accordance with CLP procedures and all lab data was independently validated.

### 4.3.1 TCL VOCs

TCL VOC analytical results are presented in Table 4.3.1. Also included in Table 4.3.1 are the NYSDEC RSCOs for VOCs. Trace amounts of VOCs were detected in the 17-19 ft. bgs sample at concentrations orders of magnitude below their respective RSCOs. PCE was detected at 8J ug/kg and TCE at 7J ug/kg. All other VOCs were non-detectable in this sample. All TCL VOCs were non-detectable in the deeper soil sample (27-29 ft. bgs). There were no volatile organic TICs detected in either of the two samples from the sanitary disposal system.

Although trace amounts of VOCs were detected in soil samples from leaching pool S-2, their concentrations were orders of magnitude below their respective RSCOs. Based on this data it has been determined that the former sanitary disposal system at Böwe does not constitute a source of PCE contamination, and that no further remediation is required.

### 4.3.2 TCL SVOCs

TCL SVOC analytical results are presented in Table 4.3.2. Only those SVOCs which were detected in one or more samples are listed in Table 4.3.2. Also included in Table 4.3.2 are the NYSDEC RSCOs for SVOCs. Five TCL SVOCs were detected in the shallow (17-19 ft. bgs) soil sample. Benzo(a)anthracene, benzo(b)fluoranthene, chrysene, benzo(k)fluoranthene and benzo(a)pyrene were detected at concentrations above their respective RSCOs. All other TCL SVOCs in this sample were either non-detectable or present at concentrations below their respective RSCOs.

Bis(2-ethylhexyl)phthalate was the only TCL SVOC detected in the 27-29 ft. bgs soil sample. Its concentration (310 BJ ug/kg) was orders of magnitude below the RSCO. All other TCL SVOCs were non-detectable in the deeper sample.

Semi-volatile organic TICs were detected in the shallower (17-19 ft. bgs) of two samples collected from soil boring S-2. These included methylphenanthrene isomer (90J ug/kg), benzo(e)pyrene (300J ug/kg), 9,10-anthracenedione (200J ug/kg), 4H-cyclopenta(def)phenanthrene (200J ug/kg), 11H-benzo(b)fluorene (100J ug/kg), 11H-benzo(a)fluorene (90J ug/kg) and unknowns (600J ug/kg). No semi-volatile organic TICs were detected in the deeper (27-29 ft. bgs) soil sample.

Based on this data, it has been determined that five specific semi-volatile organic compounds were present in the soils directly below leaching pool S-2 at concentrations in excess of their respective RSCOs. However, the concentrations detected do not constitute a significant source of SVOC contamination, and the depth extent is limited to the shallow soils within five to ten feet of the bottom of the leaching pool. As a result, no further remedial action is warranted.

### 4.3.3 TAL Metals

TAL metals analytical results are presented in Table 4.3.3. Also included in Table 4.3.3 are the NYSDEC RSCOs, typical background concentrations for the Eastern United States and analytical results from the site-specific background sample. Several TAL metals were detected at concentrations above the site-specific background levels in the shallower (17-19 ft. bgs) of two soil samples collected from S-2. These metals included beryllium, calcium, copper, magnesium, potassium and zinc. All other TAL metals in the shallow soil sample were either non-detectable or present at concentrations below their respective RSCOs. All TAL metals in the deeper (27-29 ft. bgs) soil sample were either non-detectable or present at low concentrations well within their respective RSCOs.

Based on this data, it has been determined that several metals are present in the shallow soils directly beneath the bottom of the leaching pool at concentrations exceeding their respective RSCOs. However, the concentrations detected do not constitute a significant source of contamination, and the depth extent is limited to the shallow soils within five to ten feet of the bottom of the leaching pool. As a result, no further remedial action is warranted.

## 4.4 Groundwater Investigations

Groundwater quality investigations at the Böwe site were initiated in late 1989 as part of an environmental assessment of the property, and expanded in 1991 as part of an IRM with the installation and sampling of additional on-site monitoring wells. During the Phase I RI, two additional rounds of groundwater monitoring were conducted. This included the installation and sampling of two additional on-site monitoring wells. During the Phase II RI, two off-site exploratory well programs were conducted. Subsequent to completing the off-site exploratory well programs, a permanent off-site monitoring well (OW-1) was installed and sampled. The following sections of the RI Report discuss both historical on-site groundwater monitoring results from pre-RI site investigations, and the on-site and off-site groundwater quality data developed during the Phase I and II RI.

### 4.4.1 Historical Groundwater Quality

The groundwater quality in the geographic area surrounding the Böwe property has been extensively studied by the NCDH as a result of numerous documented releases of VOCs from other sources. The Böwe site is within the boundaries of the area identified by NCDH as a contaminated aquifer segment in a June 1986 report entitled "Investigation of Contaminated Aquifer Segments, Nassau County, New York". Groundwater underlying this area is documented as being impacted primarily by 1,1,1-TCA and TCE, with concentrations in excess of 1,000 ug/l. NCDH records indicate significant concentrations migrating into the Magothy Aquifer to depths of up to 265 ft. bgs. The primary VOC present at depth within the Magothy is TCE.

Initial groundwater sampling performed at the Böwe property in November and December 1989 by Soil Mechanics Drilling Corp., revealed elevated concentrations of PCE in two of the four original monitoring wells. Monitoring wells MW-3 and MW-4 contained 130 ug/l and 8,100 ug/l of PCE respectively. Both of these wells are located downgradient of the suspected source areas (i.e., stormwater drywells, former spray booth area and sanitary disposal system). Monitoring wells MW-1 and MW-2 are located on the north side of the property (upgradient of the suspected source areas) and did not contain any detectable concentrations of VOCs. Lab reports are provided in Appendix B.

In June 1991, three additional on-site monitoring wells (MW-5, MW-6 and MW-7) were installed adjacent to monitoring well MW-4 to further delineate the VOC plume. The new monitoring wells were sampled on June 7, 1991. These wells are generally cross gradient to monitoring well MW-4 and were intended to provide additional coverage of the area downgradient of the potential source areas. The sampling results indicated PCE concentrations which were generally lower than those reported during the previous sampling event. Analysis of groundwater samples from monitoring wells MW-5, MW-6 and MW-7 indicated PCE concentrations of 556 ug/l, 31.5 ug/l and 18.1 ug/l, respectively. Lab reports are provided in Appendix B.

In July 1991, monitoring wells MW-4, MW-5, MW-6 and MW-7 were re-sampled by Fenley & Nicol to assess the effectiveness of the IRM. Split samples were obtained and analyzed independently by the NYSDEC. Monitoring well MW-4 still contained the highest concentration of PCE with 379 ug/l (320J ug/l NYSDEC). PCE was detected in monitoring well MW-5 at 5.2 ug/l (47 ug/l NYSDEC). This was significantly less than the 556 ug/l PCE reported in June 1991. Monitoring wells MW-6 and MW-7 revealed increases in PCE concentrations between sampling events with 256 ug/l and 101 ug/l (180 ug/l and 110 ug/l NYSDEC), respectively. Lab reports are provided in Appendix B.

In June 1992, three temporary monitoring wells were installed as part of the SSI to aid in gathering groundwater quality data in conjunction with the sampling of four of the existing wells on site (MW-1, MW-3, MW-6 and MW-7). Temporary well T-1 was installed approximately 25 feet west of MW-5. Temporary well T-2 was installed approximately 50 feet east of MW-6. Temporary well T-3 was installed through the center of reactivated drywell DW-1. The location of each temporary well in relation to the existing on-site wells is shown in Figure 2.1.1. Analytical results indicated temporary wells T-1, T-2 and T-3 contained 45 ug/l, 110 ug/l and 270 ug/l of PCE, respectively. The presence of PCE in T-1 indicates the possibility of VOCs migrating from an off-site source (e.g., recharge basin) since this temporary well is cross/upgradient with respect to the existing monitoring well network. PCE was non-detectable (<3 ug/l) in upgradient monitoring well MW-1 Monitoring wells MW-3, MW-6 and MW-7 contained 19 ug/l, 430 ug/l and 130 ug/l of PCE respectively during this sampling event. PCE concentrations in MW-6 and MW-7 increased since last sampled in July 1991. Low concentrations of 1,1-DCA, cis-1,2-DCE, 1,1,1-TCA and TCE were detected in one or more of the groundwater samples, except MW-1 which revealed no detectable VOCs. Lab reports are provided in Appendix B.

Groundwater sampling results from downgradient wells MW-6, T-1 and T-2 in June 1992, indicate a VOC plume (primarily PCE) at the southern boundary of the site. The presence of other VOCs indicates the breakdown of PCE by natural degradation over time. However, the presence of 1,1,1-TCA and 1,1-DCA indicate another off-site source of VOC contamination that may be migrating beneath the west-southwest portion of the Böwe property. Groundwater flow direction and water quality testing, indicate this off-site source to be north/northwest of the Böwe site. Based on the groundwater sampling results and position of temporary wells T-1 and T-2, the PCE plume can be estimated to be limited in horizontal extent to within the property width (in the east-west direction). A summary of the historical PCE levels in the on-site monitoring wells is presented in Table 4.4.1.

### 4.4.2 On-Site Groundwater Quality

In November 1992 as part of the Phase I RI, two additional on-site monitoring wells (MW-8 and MW-9) were installed. Monitoring well MW-8 was installed to provide additional data on groundwater quality entering the northwest corner of the site. Monitoring well MW-9 was installed cross gradient to the downgradient wells, approximately 65 feet east of MW-3 to provide data on the southeast portion of the site.

The first round of groundwater samples collected during the Phase I RI were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs and TAL metals. All appropriated QA/QC samples (i.e., trip and field blanks, blind duplicates and matrix spike/matrix spike duplicates) as specified in the RI Work Plan were collected and analyzed. All analyses were conducted in accordance with CLP procedures and all lab data was independently validated.

#### 4.4.2.1 TCL VOCs

TCL VOC analytical results are presented in Table 4.4.2.1. Also included in Table 4.4.2.1 are the NYSDEC Class GA Water Quality Standards. PCE was detected in wells MW-3, MW-5, MW-6 and MW-20 (a blind duplicate of MW-3) at 95 ug/l, 130 ug/l, 430 ug/l and 120 ug/l, respectively. TCE was detected in wells MW-3, MW-5, MW-6 and MW-20 at 4J ug/l, 14 ug/l, 7J ug/l and 4J ug/l, respectively. 1,2-DCE was detected in MW-3 at 2J ug/l. All other TCL VOCs were non-detectable. Tentatively identified compounds (TICs) were detected in MW-1, MW-9 and MW-20 (a blind duplicate of MW-3), and in the trip blank. In MW-1 detected TICs included dihydro indene isomer (70J ug/l), methyl benzeneacetaldehyde I (6J ug/l), dihydro methyl indene isomer (20J ug/l) and an unknown (7 ug/l). In MW-9 an unknown (6J ug/l) was detected. In MW-20 the detected TICs included methyl propenyl benzene isomers (500 ug/l), methane oxybis (70J ug/l), cyclotetrasiloxane, octameth (500J ug/l), silanol, trimethyl (6J ug/l) and unknowns (110J ug/l). In the trip blank an unknown (40J ug/l) was detected.

This data, together with the results of previous investigations, indicates a PCE plume in the shallow groundwater beneath the Böwe site, with concentrations in the plume ranging from 95 ug/l to 450 ug/l. Based on the location of monitoring wells in which PCE was detected, the plume is relatively narrow and limited in area extent.

#### 4.4.2.2 TCL SVOCs

TCL SVOC analytical data are presented in Table 4.4.2.2. Only those SVOCs which were detected in one or more groundwater samples are included in Table 4.4.2.2. Also included in Table 4.4.2.2 are semi-volatile organic TICs and the NYSDEC Class GA Water Quality Standards. Bis(2-ethylhexyl)phthalate was the only TCL SVOC present at concentrations exceeding its Class GA Water Quality Standard. Although this contaminant was detected in all seven groundwater samples, its highest reported concentration and the only well where it exceeded its Class GA Water Quality Standard was in MW-1, an upgradient monitoring well.

Based on this data, it has been determined that SVOCs are not contaminants of concern in the groundwater beneath the Böwe site.

#### 4.4.2.3 TCL Pesticides and PCBs

TCL pesticides and PCBs analytical data are presented in Table 4.4.2.3. Pesticides and PCBs were non-detectable in all groundwater and QA/QC samples. Based on this data, it has been determined that pesticides and PCBs are not contaminants of concern in the groundwater beneath the Böwe site.

#### 4.4.2.4 TAL Metals

TAL metals analytical data are presented in Table 4.4.2.4. Barium, cadmium, chromium, copper, iron, manganese, sodium and zinc were detected in one or more monitoring wells at concentrations exceeding their respective Class GA Waster Quality Standards. However, with the exception of barium and zinc, these same metals also exceeded their respective Class GA Water Quality Standards in one or both upgradient monitoring wells. Based on this data, it has been determined that metals are not contaminants of concern in the groundwater beneath the Böwe site.

### 4.4.3 Phase II RI Groundwater Monitoring

As part of the Phase II RI, three additional rounds of groundwater monitoring were conducted at selected on-site wells in January 1994, November 1995 and April 1997. The April 1997 sampling also included a newly installed off-site monitoring well (see Section 4.4.5). Groundwater samples collected during the Phase II RI were analyzed non-CLP for VOCs only. A summary of PCE concentrations during these four monitoring events is provided in Table 4.4.3. Also included in Table 4.4.3 are data from the Phase I RI and pre-RI investigations, together with the NYSDEC's sampling results.

As indicated in Table 4.4.3, monitoring wells MW-4 and MW-6 located directly downgradient of the principal source area (i.e., drywells DW-1, DW-2 and DW-3) have historically shown the highest concentrations of PCE. The highest PCE concentrations in MW-6 were reported during the June 1992 and November 1992 sampling events, with concentrations of approximately 400 to 500 ug/l. Data from subsequent sampling events indicate that the PCE concentrations have dropped and stabilized at approximately 200 to 250 ug/l. The absence of PCE in monitoring well MW-9 and relatively low concentrations of PCE in well MW-3, indicates the eastern extent of the plume to be just east of well MW-3. The data from monitoring well MW-5 would indicate the western extent of the PCE plume to be just west of MW-5. Given the proximity of well MW-6 to the south property line, the data would also indicate that the a low level PCE plume is potentially migrating off-site to the south-southeast with the general groundwater flow.

### 4.4.4 Site-Specific Hydrogeology

As part of the Phase I and II RI, eight rounds of groundwater elevation measurements were conducted. Three rounds of measurements were obtained in January 1993, three rounds in February 1993 and one round each in November 1995 and July

1997. The July 1997 groundwater elevation measurements included data from a recently installed off-site monitoring well (see Section 4.4.5). Groundwater contour maps for each of the eight monitoring events are depicted in Figures 4.4.4.1 through 4.4.4.8.

Regional groundwater flow direction in the central Hicksville area is generally toward the south/south-southeast. Based on the groundwater elevation contour maps developed for the site, local groundwater flow direction is consistent with regional flow direction, with a slight localized influence from the recharge basin located immediately west of the southern portion of the site. Based on the south/southeast groundwater flow direction, the groundwater sampling points selected in the November 1992 sampling event provided a representative upgradient and downgradient coverage of the areas of concern on site.

As part of the Phase I RI, H2M attempted to perform slug tests as specified in the RI Work Plan. However, the hydraulic conductivity was too high for adequate calculation and accuracy. As an alternative to slug tests, single point pump tests were conducted at monitoring wells MW-5 and MW-8 to measure response to pumping and rate of recovery. In addition, two soil samples were collected from the saturated zone while drilling MW-8 (55 ft.-57 ft. bgs) and MW-9 (55 ft. -57 ft. bgs) and retained for grain size analysis in order to estimate permeability values for the aquifer.

Single point pump tests were conducted using a decontaminated submersible pump and a pumping rate of five gallons per minute (gpm). The rate of drawdown and rate of recovery were measured and recorded using a pressure transducer and data logger, with the results plotted on semi-logarithmic graph paper. The equations used for calculations and estimates of transmissivity and hydraulic conductivity were applied by use of the Modified Theis (or Cooper and Jacob Approximation).

Results of the single point pump tests were assessed by application of well drawdown and recovery data. Based on the data, the average aquifer transmissivity was calculated to be approximately 100,000 gallons per day per foot (gpd/ft). The average hydraulic conductivity was calculated to be approximately 1,000 gpd/ft. Given an estimate of 0.35 as an effective porosity for the aquifer and an average groundwater flow gradient of approximately 0.001 foot per foot (ft/ft), the average groundwater (Darcy) velocity is estimated to be 0.5 feet per day (ft/day) in a south-southeast direction.

### 4.4.5 Off-Site Groundwater Quality

As part of the Phase II RI, two off-site exploratory well programs were conducted. Locations for the first group of off-site exploratory wells, EW-2, EW-3 and EW-4 (see Figure 2.3.1), were selected based upon the results of computer models, predicting the possible downgradient extent of the potential PCE plume. Five groundwater samples at varying depths were obtained from each exploratory well. Samples were collected from just below the water table (55-60 ft. bgs) and at twenty foot intervals deeper into the aquifer (80-85 ft., 105-110 ft., 130-135 and 155-160 ft. bgs). Exploratory well EW-1 was positioned in the southwest corner of the Böwe property, and was intended to assess potential VOC contamination from the recharge basin immediately west of the site. A single groundwater sample at EW-1 was collected from just below the water table (55-60 ft. bgs). Each groundwater sample was analyzed non-CLP for VOCs (EPA Method 601/602). Split samples were collected by the NYSDEC for independent analyses.

Analytical results from the first round of exploratory wells are summarized in Table 4.4.5.1. The table includes only those VOCs detected in one or more samples. Analytical results from the NYSDEC's split samples are also included in Table 4.4.5.1 Lab reports are provided in Appendix B. Low concentrations of TCE were detected in both the shallow and deeper zones in the aquifer off-site. Also, the presence of trace concentrations of 1,1,1-TCA and 1,1-DCA indicate a sources other than the Böwe site. The absence of PCE in any of the off-site groundwater samples indicates that the plume evidenced along Böwe's southern property line has not migrated as the computer models predicted.

Based upon the data obtained from the first set of off-site exploratory wells, five additional temporary wells, EW-5, EW-6, EW-7, EW-8 and EW-9, were installed downgradient of the site. The location of each exploratory well is shown in Figure 2.3.2. At each exploratory well one groundwater sample was collected from just below the water table (55-60 ft. bgs) and one approximately 20 to 30 feet below the water table (83 ft. to 90 ft. bgs). Because the new exploratory wells were located much closer to the Böwe site, deeper samples were not warranted. Each groundwater sample was analyzed non-CLP for VOCs (EPA Method 601/602).

The second phase of off-site exploratory wells was conducted over a two day period in July 1995. During the first day, wells EW-5 and EW-7 were installed along a straight line directly downgradient of monitoring wells MW-4 and MW-6. These wells were to establish the southern extent of the PCE plume, if any, downgradient of the site. Lab results from the first day's sampling were reported the next day, and used to select locations for additional wells. Based on the lab results from EW-5 and EW-7, wells EW-8 and EW-9 were set approximately 60 feet east and west of EW-7. These well were intended to establish the horizontal extent of the PCE plume in an east west direction. Based on the lab results from the first day's sampling, well EW-6 located directly between EW-5 and EW-7, was not sampled.

Analytical results from the second round of exploratory wells are summarized in Table 4.4.5.2. The table includes only those VOCs detected in one or more samples. Lab reports are provided in Appendix B. PCE was detected in the shallow samples from exploratory wells EW-5 and EW-7 at 20 ug/l and 15 ug/l, respectively. Concentrations of PCE were generally lower in the deeper samples from each well. TCE was detected at 3 ug/l in both samples from EW-7, but non-detectable in both samples from EW-5. PCE was detected in the shallow samples from exploratory wells EW-8 and EW-9 at 12 ug/l and 4 ug/l, respectively, and in the deeper samples at 5 ug/l in both wells. TCE was detected in all four samples from well EW-8 and EW-9. The highest reported TCE concentration was 17 ug/l in the deeper sample from EW-9.

Data from the second phase exploratory wells, indicate that both the horizontal and vertical extent of the low level PCE plume in groundwater downgradient of the Böwe site is very limited. Based upon the data from the two exploratory well programs, the southern extent of the PCE plume (greater than 5 ug/l) is limited to within approximately 450 feet from the site's property line. The depth extent of the plume is estimated to be no greater than 100 feet bgs, or approximately 40 feet thick. Trace amounts of 1,1,1-TCA detected in EW-9, the western-most exploratory well, again indicates a possible contaminant plume from a source other than Böwe.

Based upon the results of the second phase exploratory wells, a permanent off-site monitoring well (OW-1) was installed approximately 75 feet south (downgradient) of the Böwe site's south property line (see Figure 2.3.2). While installing the off-site well, the borehole was advanced approximately 40 feet below the water table, and groundwater samples were obtained at depths of 92 ft. and 77 ft. bgs. These two samples were analyzed non-CLP for VOCs (EPA Method 601/602). After collecting the deeper groundwater samples, the monitoring well was completed with the screened interval set 47 ft. to 62 ft. bgs (i.e., 15 foot screen, 5 feet above the water table and 10 feet below).

Following installation, the off-site monitoring well was developed, allowed to stabilize for one week, and then sampled. On-site monitoring wells, MW-4, MW-5, MW-6 and MW-8 were also sampled. Each groundwater sample was analyzed non-CLP for VOCs (EPA Method 601/602).

PCE concentrations from OW-1 are presented in Table 4.4.5.3. All other VOCs were non-detectable (less than 10 ug/l). Lab reports are provided in Appendix B. Lab results from the on-site monitoring wells are included in Table 4.4.3. PCE was detected at 34 ug/l and 24 ug/l at depths of 52-62 ft. bgs and 77 ft. bgs, respectively. PCE was non-detectable in OW-1 at the deeper (92 ft. bgs) sampling interval.

This data, together with the results from the second phase exploratory wells, indicate a low concentration PCE plume migrating from the Böwe site with groundwater flow. However, the data also indicates that PCE concentrations drop dramatically as the plume moves off-site. While PCE concentrations in the groundwater on-site range from 100 ug/l (MW-4) to 250 ug/l (MW-6) 20 feet north of Böwe's south property line, less than 100 feet south of the property line PCE concentrations drop to levels below 50 ug/l. This reduction in PCE concentrations is attributed to successfully removing the source areas during the IRMs conducted in 1991 and 1992, and natural dilution and attenuation in groundwater.

# 5.0 QA/QC, DATA VALIDATION AND DATA USABILITY

This section of the RI Report discusses various quality assurance/quality control (QA/QC) procedures utilized during the RI to ensure that the data collected was of the highest quality as necessary to support the feasibility study.

## 5.1 QA/QC

Project-specific QA/QC procedures for both the field investigation activities and laboratory analyses were developed and presented in the NYSDEC approved Phase I and II RI Work Plans (H2M, September 1992, September 1993). The purpose of establishing and following strict field and laboratory-specific procedures was to ensure that the data collected were precise, accurate, representative, complete and comparable.

### 5.1.1 Field QA/QC

Field QA/QC procedures included the use of specially developed forms and logs for the collection and recording of repetitive data such as soil sampling and logging, well development and groundwater sampling. Additionally, all other site-specific observations were recorded in field log books. Specific information recorded in the field log books and forms were those required by the RI Work Plans. Additionally, all QA/QC procedures stipulated in the Work Plans such as Chain-of-Custody procedures, field measurement requirements, etc., were followed.

H2M's Quality Assurance Officers (QAOs) conducted periodic audits of the field activities to observe field procedures and ensure that the QA/QC protocols were being followed. The QAOs field audit reports are included in Appendix C. As indicated in the QAOs' field audit reports, no significant concerns were noted during any of the audits.

### 5.1.2 Field Blanks and Duplicates

In order to meet project-specific Data Quality Objectives (DQOs), a variety of QA/QC blanks and duplicate samples were collected and analyzed. These QA/QC samples included trip blanks, field blanks, blind duplicates, and matrix spike/matrix spike duplicates (MS/MSDs).

*Trip Blanks*

A total of eleven trip blanks containing analyte-free water were transported to the site and returned without opening to the laboratory during days that samples for VOC analyses were collected. The trip blanks served as a check for contamination attributable to transport, shipping and from site conditions. Analytical results for the trip blanks are included in Tables 4.1.1/4.1.1A (drywell samples), 4.2.1 (former spray booth samples), 4.3.1 (sanitary disposal system samples), 4.4.2.1 (November 1992 groundwater samples), 4.4.3 (historical groundwater sampling), 4.4.5.1 (first phase exploratory wells) and 4.4.5.2 (second phase exploratory wells). Low concentration TICs were detected in a trip blank analyzed in conjunction with the drywell sampling (see Table 4.1.1A), and methylene chloride was detected at 1 ug/l in a trip blank analyzed in conjunction with the second phase exploratory well program. VOCs were non-detectable in all other trip blanks analyzed during the RI. Based on this data, it has been determined that none of the soil or groundwater samples were impacted by sample transport.

*Field Blanks*

Field (equipment) blanks were utilized throughout the field investigation activities to assess the effectiveness of decontamination procedures on field sampling equipment (i.e., split spoon samplers, hand augers, bailers). A minimum of one field blank was collected per every twenty samples per matrix sampled. Field blanks were collected by pouring analyte-free water through or across the sampling device and into the appropriate sample containers. Field blanks were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs and TAL metals.

Analytical results for the field blanks are included in Tables 4.1.1 through 4.1.4 (drywell samples), Tables 4.2.1 and 4.2.2 (former spray booth samples), Tables 4.3.1 through 4.3.3 (sanitary disposal system samples), Tables 4.4.2.1 through 4.4.2.4 (November 1992 groundwater samples), Table 4.4.3 (historical groundwater sampling), Table 4.4.5.1 (first phase exploratory wells) and Table 4.4.5.2 (second phase exploratory wells). An unknown (TIC) VOC was detected at an estimated concentration of 26J ug/l in the field blank associated with the drywell soil samples. All other VOCs in this sample were non-detectable. Bis(2-ethylhexyl)phthalate was detected in the same field blank at an estimated concentration of 2J ug/l. All other SVOCs in this sample were non-detectable. Bis(2-ethylhexyl)phthalate was also detected at an estimated concentration of 2J ug/l in the field blank associated with the November 1992 groundwater sampling. VOCs and SVOCs were non-detectable in all other field blanks. Pesticides and PCBs were all non-detectable in all of the field blanks. Zinc was detected at 27.5 ug/l in the field blank associated with the drywell soil samples. All other TAL metals were non-detectable or present at concentrations below the contract required detection limits (CRDLs). TAL metals in all other field blanks were either non-detectable or present at concentrations below the CRDLs.

### *Blind Duplicate Samples*

A blind duplicate sample was collected during the November 1992 groundwater sampling event during the Phase I RI. The blind duplicate was collected from MW-3 and identified as MW-20. The sample was analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs and TAL metals as were the other groundwater samples. Analytical results are shown in Tables 4.4.2.1 through 4.4.2.4. The only VOCs detected in MW-3 and MW-20 were TCE and PCE, and both were present in each sample at similar concentrations. Bis(2-ethylhexyl)phthalate was the only TCL SVOC detected in either MW-3 or MW-20, and both were detected at similar concentrations. Pesticides and PCBs were non-detectable in both samples. The same TAL metals were detected in both MW-

3 and the blind duplicate (MW-20) at similar concentrations. These data indicate that the analytical data for the groundwater samples were precise, accurate, representative and comparable.

In addition to blind duplicate samples, the NYSDEC collected split samples for independent laboratory analysis during the groundwater sampling events of July 1991, November 1992, February 1993, January 1994, November 1995 (Phase I Exploratory Well Program) and April 1997. TCL VOC data from these split samples is presented in Tables 4.4.3 and 4.4.5.1. With the exception of the June 1991 sampling event which was conducted by others (i.e., sampled by Fenley & Nicol, analyzed by Pedneault Associates, Inc.), the NYSDEC's data was generally consistent with the results reported by H2M.

#### *MS/MSD Samples*

In accordance with the RI Work Plans, one MS/MSD sample was collected for every twenty samples per matrix. Upon receipt at the laboratory, the MS/MSD samples were spiked with the appropriate analytes and then analyzed. The purpose in spiking the and analyzing the MS/MSD samples was to evaluate any site-specific matrix interference on the analytical results. MS/MSD samples were collected from the soil boring at drywell DW-5 (17-19 ft. bgs) and from the groundwater sample at monitoring well MW-5 during the November 1992 sampling event. Results from the MS/MSD samples are discussed in Section 5.2.

### 5.1.3 Laboratory QA/QC

All soil and groundwater samples collected at part of the RI were analyzed by H2M Labs, Inc. (H2M Labs) in Melville, New York. H2M Labs is a New York State Department of Health (NYSDEC) Environmental Laboratory Approval Program (ELAP) certified laboratory, proficient in all aspects of the 1991 Analytical Services Protocol (ASP), including the ability to perform continuous liquid-liquid extraction. The Laboratory Director, John J. Molloy, P.E., has overall responsibility for all operational activities. The Laboratory QA Manager, Joann M. Slavin, reviewed all data and was responsible for laboratory reporting and quality control.

All NYSDOH ELAP ASP CLP procedures and protocols presented in the RI Work Plans were followed. The specific procedures and results are provided in the CLP Data Summary Packages (see RI/FS Report, Volume II-separate documents).

## 5.2 Data Validation

In accordance with the RI Work Plans, all CLP analytical packages and results generated by H2M Labs underwent independent data validation by Ms. Judy Harry of Data Validation Services (DVS). Methodologies utilized were those of the 1991 NYSDEC ASP. Analyses for the project were conducted under Sample Data Groups (SDGs) BSM001-003, BSM004 and BSM005. DVS's summary report for the SDGs is provided in Appendix D. A summary of the data validation results is presented as follows:

*Volatile Analyses*

- Holding times and surrogate recoveries were met.
- Recovery values for matrix spike blanks and matrix spikes were within recommended/required ranges.
- All precision correlation values were acceptable.
- Method blank and instrumental tune criteria were met.
- Initial calibration responses were within required limits. The continuing calibration standard processed on 11/3/92, associated with the three field and one trip blank, produced non-compliant responses. Four compounds exceeded the defined 25% difference criteria, whereas only two are permitted the exceedance. Internal standard areas (exception DW-6 12-14 ft. bgs) and retention times were acceptable.
- The trip blank received on 10/28/92 showed low levels of four hydrocarbon

TICs also present in a sample from DW-6 (12-14 ft. bgs), although it was received on a different day. The TIC at 2.91 in the trip blank associated with the aqueous sample may be a carbon dioxide peak, rather than a sample component.

- Due to a computer reboot error, the date of 10/29/92 appears as 9/29/92 in the summary and raw data. It was manually edited by the lab on some of the data.

*Semi-Volatile Analyses*

- All aqueous surrogate recoveries, matrix spike recoveries and matrix spike blank recoveries were within recommended/required limits. The matrix spikes of acid compounds in MW-5 were performed at a level twice that required of protocol. Report Forms 1 and 3 for these spikes should reflect the true determined level and true spike level of the acid compounds, rather than an artificial correction of level. The percent recovery is the same, and is correct as noted on the Form 3.
- Soil surrogate recoveries, and the matrix spike recoveries/precision values of DW-5 (17-17 ft. bgs) were all within recommended/required limits. The associated matrix spike blank was within required limits.
- The matrix spikes of S-2 (17-19 ft. bgs) produced inconsistent recoveries for 4-nitrophenol (0 and 83%) and pyrene (10 and 59%, the lower recovery level is 35%; 115% RPD). Pyrene was detected in the unspiked sample, and non-homogeneous levels of the compound may account for that variance. 4-nitrophenol was not picked up by the software in the matrix spike. Inspection of the chromatograms for 4-nitrophenol is inconclusive due to coelution with another component. The associated matrix spike blank produced an elevated recovery for 4-nitrophenol at 92% (upper limit of 80%).
- Method blank, instrumental tune, and initial and continuing calibration criteria were met.
- Many chromatograms were submitted with only the first 22 minutes of the 37 minute analyses shown. The integrated chromatograms used for TIC

determination were present for these samples.

- The raw data for S-2 (27-29 ft. bgs) incorrectly denotes the sample as S-2 (27-19 ft. bgs).
- The determined pHs for the samples should appear on the report Forms 1.

*Pesticides/PCB Analyses*

- Holding times were met for sample initial extractions and re-extractions.
- Surrogate recoveries indicated numerous low recoveries. The field blank and MW-1 were re-extracted, with improved recoveries.
- Preparation blanks and matrix spike blanks showed low recoveries for the aqueous media, with TCX recoveries slightly low, and DCB recoveries significantly low (0-24%). These were also re-extracted, with improved recovery.
- Preparation blanks and matrix spike blanks associated with the soil samples produced better surrogate values. All soil samples had one or more surrogate value below 60%. Documentation was present in the data package to show that the spike solution used for surrogate spiking was low in DCB concentration, explaining some of the low DCB recoveries.
- Matrix spikes of aqueous sample MW-5 produced good recoveries and RPD values. The initial matrix spike blank extracted with these spikes (which had depressed surrogate recovery) showed low recovery for dieldrin and endrin, at three to five percentage points below the required limit. The re-extracted aqueous matrix spike blank had acceptable recoveries.
- Soil matrix spikes of DW-5 (17-19 ft. bgs) produced recovery and RPD values within recommended criteria. The initial matrix spike blank associated with these spikes produced a value for endrin, at 32%, below the required lower limit of 42%. Upon re-extraction, all recoveries of the matrix spike blanks were within limits.
- Method blanks met protocol requirements
- All criteria pertaining to standard/system analyses were met.

- Re-analysis of the field blank associated with the soil samples produced an outlying retention time for surrogate DCB. Sample reported results are unaffected.
- Reported results for the samples are supported by the raw data. Detected compounds in DW-5 (17-19 ft. bgs) produced poor correlation in quantitative values in some cases, as indicated by the "P" flag (for >25% difference). A-BHC in this sample had very poor correlation at 204% D. Alpha and gamma-chlordane correlations were also poor, at 100% and 125% D, respectively. These values indicate matrix interferences, possibly even contributing to false identification.
- Detected pesticides in DW-6 (12-14 ft. bgs) have been flagged "X" by the laboratory as contribution from interference. This is true, in that all detected components except 4,4-DDD in the sample elute with isomers of the reported Aroclor mixture, and reported values of the pesticides reflect PCB contribution. The 4,4-DDD should not have been flagged, as it does not coelute with the PCB, and has a good quantitative correlation (16% D). The correlation of the other detected pesticides in that sample ranged from 35% to 116% D.

*Metals Analyses*

- Holding times were met for sample processing.
- Matrix spike/duplicate analyses were performed on aqueous sample MW-5 and soil sample DW-5 (17-19 ft. bgs). An outlying recovery for antimony (73%) was shown in the aqueous spike, and for manganese (69%) in the soil spike. Duplicate correlation for MW-5 was within the recommended limits. Duplicate correlation of DW-5 (17-19 ft. bgs) produced RPD values above 25% for calcium (78%), chromium (23%) and manganese (42%).
- Two lead standards at CRDL, associated with the soil samples, produced elevated recoveries of 150% and 130%. The soil lead values are already considered estimated due to spike recoveries.

- The lead determination for DW-7 (16-19 ft. bgs) was made by MSA, and should have been noted on the Form 8. MSA determinations were performed by addition of a set concentration spike, rather than adding spikes at the levels proportional to sample concentrations as required by protocol.

As per NYSDEC CLP procedures, the reported concentrations and data qualifiers shown in the analytical data summary tables in Section 4.0 have been edited to reflect the recommendations made by DVS. Therefore the CLP analytical results presented in the data tables report validated data which are applicable for use in health-based risk assessments. The complete DVS summary report is provided in Appendix D.

## 5.3 Data Usability

As part of the RI process, usable data is that which may be used for the health-based risk assessment. NYSDEC CLP SOW protocols provide strict guidelines as to which data are considered usable. Although bis(2-ethylhexyl)phthalate was present in the field blank samples, because it was detected in the soil and groundwater samples at concentrations greater than ten times the concentration in the field blanks, the data was considered reliable for inclusion in the risk assessment (see Section 7.0).

## 6.0 CONTAMINANT FATE AND TRANSPORT

In order to estimate potential future exposures, contaminant fate and transport parameters were evaluated for indicator chemicals selected in the risk assessment. The selection of indicator chemicals is discussed in the risk assessment (see Section 7.0). Where appropriate, computer models were utilized to quantify contaminant migration predictions. Contaminant fate and transport processes were evaluated for the following migration pathways:

- Contaminant migration in soil.
- Contaminant volatilization from soil into air.
- Contaminant migration in air.
- Contaminant leaching from soil to groundwater.
- Contaminant migration in groundwater.

### 6.1 Contaminant Fate and Transport in Soil

Contaminant migration through soils is dependent upon several factors, including the chemical and physical characteristics of the contaminant, the physical characteristics of the soil, climatological conditions and the site's topography. The primary contaminant characteristics of importance include chemical partitioning coefficients, solubilities, Henry's Law constants, vapor pressures, diffusivities, bioconcentration factors and biodegradation rates (half lives). The primary contaminant characteristics affecting fate and transport in soil, groundwater and air for the selected indicator chemicals at the Böwe site are summarized in Table 6.1.1.

In general, contaminants with relatively high partitioning coefficients ($K_{oc}$-organic carbon/water partitioning and $K_{ow}$-octanol/water partitioning) and low solubilities will tend to bind to soil and not enter the water phase of the transport media. Review of the data from Table 6.1.1 indicates that PCE is likely to leach from the soil to groundwater due to its relatively low $K_{ow}$ value and relatively high solubility. Conversely, benzo(k)fluoranthene and benzo(a)pyrene, with higher K values and low solubilities, are more likely to bind to soils and not leach into groundwater.

PCE is also more likely to volatilize from soil to air than the other chemicals of concern at the site, due to its relatively high vapor pressure and Henry's Law constant. Benzo(a)pyrene and benzo(k)fluoranthene will likely persist in the soils because of their relatively low rates of leaching and volatilization (i.e., higher K values and low vapor pressures). Since contaminants are present in the subsurface soils and not in the surface soils, dust generation will not play a significant role in soil contaminant transport.

In order to predict contaminant fate in soil, the USEPA SESOIL, vadose zone soil model was utilized under the framework of the RISKPRO risk assessment modeling system. In general, the SESOIL model is based on a soil column theory that incorporates seasonal climatological data to simulate contaminant fate and transport in unsaturated soils. A schematic illustration of the soil compartment modeled at Böwe is presented in Figure 6.1.1. The assumptions used in running the model are provided in Table 6.1.2.

While most of the assumptions used in the model are published in the SESOIL guidance manual, the precipitation loading data used for modeling at Böwe warrants further explanation. Since the SESOIL model was not designed to directly input stormwater runoff rates over paved areas, the precipitation data from the LaGuardia Airport weather station was modified to simulate runoff into the drywells. The amount of water actually entering the drywells will consist of direct precipitation and stormwater runoff directed to the drywells by the slope of the paved areas. In order of accurately model leaching rates the additional water load from stormwater runoff had to be added to the natural precipitation already accounted for in the SESOIL model. Review of the Böwe site plan indicated that approximately 22,000 square feet (2.04E+07 $cm^2$) of paved areas receive rainwater that runs into five active on-site drywells with a total leaching area of 3.645E+05 $cm^2$. Assuming a pavement runoff coefficient of 0.85, the runoff volume into the drywells is estimated to be:

$$PPT_{runoff\ in} = (0.85)(PPT_{direct\ in})(A_{paved}) = (1.74E+07)(PPT_{direct\ in})$$

Distributing the precipitation into the drywells due to surface runoff over the SESOIL compartment area (total contaminated soil area) yields a modeled precipitation entering the contaminated soil area equal to:

$$PPT_{\text{modeled runoff}} = (1.74E{+}07)(PPT_{\text{direct in}})/(A_{\text{total contam. area}}) = (27.7)(PPT_{\text{direct in}})$$

In order to check the modification to the precipitation value used in the Böwe SESOIL model, a typical month's precipitation of 7 cm/month (from the LaGuardia weather station data) was assumed to fall. Using a runoff coefficient of 0.85, it was determined that the volume of water entering each of the five drywells would be roughly 2.24E+07 cubic centimeters ($cm^3$). Dividing this volume by the leaching area of the individual drywells yielded a height of water in each drywell of approximately 307 cm (10 feet). Engineering experience indicates that this value is a reasonable prediction of stormwater runoff rates. It should be noted that a formal validation of the modified precipitation was not performed.

Using the assumptions noted in Table 6.1.2, and the compound specific physical and chemical properties, the SESOIL model was run for each of the indicator chemicals to predict contaminant fate in vadose zone soils. Pollutant depth versus time and/or concentrations versus time profiles for each of the indicator chemicals are presented in Figures 6.1.2 through 6.1.6. Due to the infinite number of ways data may be presented from SESOIL outputs, focus was placed on the soil and contaminant characteristics at the groundwater interface. Contaminant depth was plotted over time to predict the rate and extent of contaminant migration over a 30 year model period. If the contaminant depth versus time profiles indicated that the leading edge of the contaminants would reach the groundwater interface (approximately 65 ft. bgs) during the model period, the contaminant concentrations at the groundwater interface over time was plotted to predict when the worst case impacts to groundwater are anticipated. If contaminant depth versus time modeling indicated that the contaminants were relatively immobile and would not reach the groundwater interface, only contaminant depth profiles are presented to indicate the worst case migration of contaminants in soil. It should be noted that since groundwater is the ultimate receptor of soil contaminants, the model was designed to remain conservative by enhancing leaching rates. This was accomplished by ignoring biodegradation, increasing organic contents in soils, and by modifying the precipitation rates as previously discussed.

SESOIL results for benzo(a)pyrene and benzo(k)fluoranthene indicate that these contaminants are relatively immobile in soils. As indicated in Figures 6.1.2 and 6.1.3, the leading edge of contaminants absorbed in soils is present at approximately 1,350 cm (44 ft.) below grade, and remains relatively constant over the 30 year model period. The SESOIL model predicts that neither benzo(a)pyrene nor benzo(k)fluoranthene will reach the water table. This was confirmed by on-site groundwater monitoring conducted in 1992 (i.e., the first year of the model), wherein benzo(a)pyrene and benzo(k)fluoranthene were both non-detectable in downgradient wells (see Section 4.4.2).

As indicated in Figure 6.1.4, bis(2-ethylhexyl)phthalate was modeled to present in soil at the groundwater interface immediately following the sampling period. This result should be treated cautiously for several reasons. The primary reason is that the SESOIL model uses soil layers (see Figure 6.1.1) to predict leaching and contaminant migration. For the Böwe site, four layers were used and the maximum detected contaminant concentration at each layer was used to estimate contaminant loading in the model. Since the fourth (deepest) layer ranged from 22 to 65 feet bgs, the SESOIL model used the maximum concentration detected over that range and distributed the concentration over the entire fourth layer. In reality, the maximum contaminant concentrations were detected much closer to 22 feet bgs than 65 feet bgs. A comparison of the model outputs for absorbed soil concentration versus time to the input contaminant loads for the fourth layer indicates that the predicted absorbed soil concentration at the groundwater interface was approximately equal to the initial contaminant load in the fourth layer (representative of the 22 to 25 ft. bgs concentrations), thus confirming that the model may be extremely conservative.

Based on the SESOIL model predictions, the contaminants with the greatest migration potential in the vadose zone soils are PCE and TCE. SESOIL model results predict that PCE has already leached through the vadose zone soils and has impacted soils at the groundwater interface. The model further predicts that absorbed PCE concentrations in soil at the groundwater interface will peak approximately three years after the 1992 sampling (1995) and will be present at roughly 45 ug/kg. Of all the contaminants modeled, the confidence in the PCE model is the greatest due to the amount of information available. The SESOIL model used at Böwe was validated using PCE data from past studies and comparing the model outputs to present data. While the exact soil concentrations were not duplicated, predicted concentrations were of the same order of magnitude of actual concentrations detected and were considered acceptable for use in quantifying PCE risks. As indicated in Figure 6.1.5, after peaking in 1995, the model predicts that PCE soil concentrations at the groundwater interface will diminish exponentially.

Similar to PCE modeling results, the SESOIL model predicts TCE to impact groundwater immediately. Unlike PCE however, the TCE concentration is predicted to be at peak levels currently (12 ug/kg) and will diminish quickly over the next two to ten years to non-detectable concentrations. This result makes sense qualitatively because TCE was present in only a few soil samples at very low concentrations. Therefore, continued leaching of TCE is not anticipated.

## 6.2 Contaminant Fate and Transport in Groundwater

As with contaminant fate and transport in soils, transport in groundwater is also dependent on many factors. Among the more significant factors are solubilities, Henry's Law constants, diffusivities, partitioning coefficients, hydraulic gradients, dispersivities and contaminant loading rates. In general, contaminants with high solubilities, low Henry's Law constants and low partitioning coefficients are more likely to leach into and migrate in groundwater.

To predict the fate of contaminants in groundwater at the Böwe site, two approaches were utilized. The first approach used direct groundwater concentration data from on-site monitoring well sampling to predict migration of the groundwater plume from the site. The second approach used vadose zone soil modeling results to predict possible future leaching of contaminants to groundwater and groundwater plume migration. With all contaminants, actual groundwater data modeling yielded more conservative (i.e., higher concentration and dispersion) predictions of groundwater fate and transport than did vadose zone soil modeling predictions. Accordingly, only modeling of actual groundwater results will be discussed to predict future migration of contaminants in groundwater.

Review of groundwater monitoring data from the November 1992 sampling event indicates that of the five indicator chemicals (see Section 7.1), bis(2-ethylhexyl)phthalate, PCE and TCE were detected in one or more downgradient wells. Benzo(a)pyrene and benzo(k)fluoranthene were non-detectable. In order to remain conservative, it was assumed that benzo(a)pyrene and benzo(k)fluoranthene were present in groundwater at their detection limits in all modeling. The USEPA AT123D groundwater model was utilized in conjunction with the RISKPRO modeling package to predict groundwater contaminant fate and transport. All groundwater models were run for a 30 year period to predict future plume concentrations and extent. In general, the AT123D model is a user-friendly model that predicts the transport and migration of contaminants under numerous types of contaminant loading in groundwater. The assumptions and input parameters used in running the model are presented in Table 6.2.1.

Using the input parameters specified in Table 6.2.1 and the compound specific physical and chemical properties (see Table 6.1.1), the AT123D model was run using two dimensions for each of the five indicator chemicals. To remain conservative, a two dimensional model was run in place of a three dimensional model. For the purpose of risk characterization, it was assumed that the two dimensional model result is consistent over all depths. In general, it was determined that the contaminant plume from Böwe will migrate off site within the first year. Long term modeling indicates that the nearest existing public water supply wells (Hicksville Water District wells N-7561 and N-9212), located approximately 1,100 meters downgradient of the Böwe site, would be impacted approximately eight years after the November 1992 sampling event (year 2000) at extremely low concentrations (less than 0.1 ug/l). The modeling predicts maximum contaminant concentrations from the plume would reach these wells approximately twenty years from the sampling date (year 2012). A detailed description of the modeling results for each indicator chemical follows. Contaminant contours from the model representing worst case contaminant concentrations at the public water supply wells for each indicator chemical are presented in Figures 6.2.1 through 6.2.5.

Bis(2-ethylhexyl)phthalate was the only semi-volatile organic indicator chemical detected in downgradient monitoring wells at the Böwe site. Benzo(k)fluoranthene and benzo(a)pyrene were non-detectable in all groundwater samples. The groundwater fate analysis for these two SVOCs was therefore conducted using the method detection limit for the source concentrations. This method provided a very conservative groundwater fate analysis for benzo(a)pyrene and benzo(k)fluoranthene.

As shown in Figure 6.2.1, bis(2-ethylhexyl)phthalate was predicted to impact the downgradient public water supply wells at a maximum concentration of 0.01 ug/l in the year 2012 (twenty years from the sampling date). Since bis(2-ethylhexyl)phthalate was detected in the field blank associated with the November 1992 groundwater sampling, it is possible that the source concentration used in modeling may be erroneous on the conservative side. For this reason, the level of confidence in using the model results quantitatively in risk assessment is relatively high. The same is true for the remaining two semi-volatile organic indicator chemicals, because the source concentrations used in the model were extremely conservative. For both benzo(a)pyrene and benzo(k)fluoranthene (Figures 6.2.2 and 6.2.3, respectively), the detection limit of 10 ug/l was used for the initial source concentration. For each of these compounds, the modeled maximum concentration at the downgradient public water supply wells was predicted to be less than 0.005 ug/l in the year 2012.

The indicator chemical with the greatest potential impact to the downgradient public water supply wells was predicted to be PCE due to its relatively high source concentration and high migration potential. As indicated in Figure 6.2.4, worst case PCE concentrations at downgradient supply wells are estimated to be approximately 0.2 ug/l, and are expected to occur in the year 2012. Confidence level in the PCE groundwater model results is high because the model was calibrated using PCE data from previous site investigations. A sensitivity analysis, which varied dispersivities, contaminant release rates and 2-D versus 3-D modeling was also conducted for PCE. The only parameter that had a significant effect on the predicted concentration at downgradient water supply wells was variation of the contaminant release rate. In order to remain conservative, the maximum concentration of PCE detected in downgradient on-site monitoring wells was used as the source concentration.

As indicated in Figure 6.2.5, the maximum concentration of trichloroethene in the downgradient supply wells was predicted to be 0.005 ug/l in the year 2012. Since the maximum source TCE concentration of 14 ug/l was used in the groundwater fate modeling, even though it was quantified in only one downgradient on-site monitoring well, the confidence level in using model results in the quantitative risk assessment is relatively high.

## 6.3 Contaminant Fate and Transport in Air

Contaminant fate and transport in air is primarily the result of volatilization of contaminants from impacted soils and dispersion of contaminants in ambient air. To predict the fate of contaminants in air, estimates of contaminant volatilization rates were developed from SESOIL outputs, and then used as the source load in dispersion modeling.

As part of the SESOIL model outputs, total masses of contaminants volatilized are estimated using the Farmer equation (1980) as modified by Shen (1981) and Farino (1983):

$$E_i = D_i C_{si} A (P_t)^{0.75} M_i / d_{sc}$$

Where: $E_i$: Emission rate of component ‘i’ (g/sec)
$D_i$: Diffusion coefficient of component ‘i’ in air ($cm^2$)
$C_{si}$: Saturation vapor composition of ‘i” ($cm^3$)
$A$: Exposed surface area ($cm^2$)
$P_t$: Total soil porosity (dimensionless)

$M_i$: Mole fraction of 'i' in the waste stream (g mole i/g mole waste)
$d_{sc}$: Depth of soil cover (cm)

The maximum mass volatilized as predicted by the SESOIL model was used to calculate a source loading rate for input to the USEPA approved Industrial Source Complex-Long Term (ISCLT) model to predict contaminant fates in air. The maximum contaminant mass volatilized in any given year (worst case corresponds to the first year after sampling to remain conservative) was divided by the contaminant area and the averaging time (one year) to provide a source load for ISCLT according to the following equation:

Emission Rate = Mass Volatilized/(Contaminant Area) (Averaging Time)

A summary of the estimated source loads in grams per square meter-second (g/m$^2$-sec) for the five indicator chemicals is provided below:

| | |
|---|---|
| Benzo(a)pyrene | 2.73E-20 g/m$^2$-sec |
| Benzo(k)fluoranthene | 2.40E-15 g/m$^2$-sec |
| Bis(2-ethylhexyl)phthalate | 4.65E-16 g/m$^2$-sec |
| Tetrachloroethene | 1.00E-09 g/m$^2$-sec |
| Trichloroethene | 6.91E-11 g/m$^2$-sec |

The above source loads were used as inputs to the ISCLT dispersion model. The ISCLT model is a sector averaged model that utilizes climatological data and plume rise formulas to estimate particle and contaminant dispersion. Climate data used in the model was obtained from LaGuardia Airport weather station records and averaged to represent typical wind conditions at the Böwe site. To remain conservative, USEPA regulatory defaults were used in the dispersion modeling. Specifically, the following assumptions and model input parameters were used:

- Final plume rise is used at all downwind receptors.
- Buoyancy induced dispersion effects are parameterized.
- Rural source wind coefficients used: 0.07, 0.10, 0.15, 0.35 and 0.55.
- Default vertical potential temperature gradients used: A through D: 0.0 K/m, E: 0.02 K/m and F: 0.035 K/m.
- No decay is assumed.
- Flat terrain is assumed.
- Source height: 0 meters (soil volatilization).
- Receptor height: 1.5 meters (typical adult breathing zone).

- Width of area source: 6.04 meters (corresponds to average side of drywell area if drywell was assumed to be a square source area).

Results of the ISCLT dispersion model for PCE and TCE are presented graphically in Figures 6.3.1 and 6.3.2, respectively. As indicated in the Figures, the prevailing winds from the south and west will cause contaminants to migrate primarily from the Böwe site to the north and east. Maximum PCE and TCE concentrations within 5 kilometers of the site were predicted to be less than 2.0E-8 microgram per cubic meter ($ug/m^3$). Air dispersion modeling indicates that air emissions from the most volatile indicator chemicals at the site would have no impact on ambient air quality. As expected, air dispersion modeling for benzo(a)pyrene, benzo(k)fluoranthene and bis(2-ethylhexyl)phthalate resulted in maximum receptor concentrations orders of magnitude less than those predicted for PCE and TCE.

## 7.0 RISK ASSESSMENT

This baseline risk assessment was conducted to characterize risk to human health as a result of soil, groundwater and air contamination at the Böwe site. The intent of the risk assessment is to provide information necessary to support and justify a selected remedy for contamination at the site.

The baseline risk assessment was conducted in accordance with the RI Work Plan (September 1992) and included the following elements:

1. Selection of Indicator Chemicals.
2. Exposure Assessment.
3. Toxicity Assessment.
4. Risk Characterization.

## 7.1 Data Evaluation

Section 2.0 of this report described the sampling methods and parameters analyzed during the RI. Section 4.0 presented the results of the field investigation. This section of the report will concentrate on data usability as it pertains to completion of the quantitative baseline human health evaluation. In general, the following types of data were evaluated for use in the quantitative risk assessment:

| | |
|---|---|
| Source Characteristics: | Geography, topography, population distributions, area land uses, availability of public utilities, emission/release rates, continuous versus one-time contaminant releases, climate data, precipitation, etc. |
| Soil Data: | Particle size, pH, organic carbon content, soil porosity, soil permeabilities, bulk density, contaminant concentrations, contaminant depths, location of "hot spots", contaminant degradation, etc. |

| | |
|---|---|
| Groundwater Data: | Hydraulic conductivity, head measurements, pH, hydraulic gradients, dispersivities, flow velocities, contaminant concentrations, contaminant migration, contaminant degradation, etc. |
| Air Data: | Volatilization rates, prevailing wind direction, wind speeds, contaminant migration, etc. |

Wherever possible, site-specific data was used in the risk assessment. In the absence of site-specific data, regulatory default values were utilized after engineering review to determine their applicability to the Böwe site.

### 7.1.1 Source Characteristics

The Phase I RI focused on three principal source areas at the Böwe site, namely, the stormwater drywell system in the rear of the facility, the area near a former spray booth off the southwest corner of the facility and the former subsurface sanitary disposal system located off the north side of the facility. A compete description of the three source areas, including their history, previous investigations and the interim remedial measures conducted is provided in Section 1.2 of this report.

#### 7.1.1.1 Soils

Two types of soil data were evaluated for use in the quantitative risk assessment, contaminant data and physical/chemical soil characteristics data. All contaminant data was independently validated (see Section 5.2) prior to use in the baseline risk assessment. Although a background soil sample was collected and analyzed as part of the Phase I RI, this sample was not included in the quantitative risk assessment because no statistical analysis was performed to determine if the single sample was truly representative of background soil quality. The background soil sample was only used to a very limited degree in assessing which contaminants would be selected for the quantitative assessment (i.e., indicator chemical selection process).

In addition to the background soil sample, a total of sixteen soil samples were collected and analyzed as part of the Phase I RI. To ensure that any error introduced was conservative, either maximum concentrations or 95% Upper Confidence Limits (95% UCL) on the arithmetic mean soil concentrations were used in the assessment. Non-detectable concentrations were carried throughout the risk assessment to ensure that the assessment did not exclude relatively low contaminant concentrations that may impact human health. All sample results with laboratory qualifiers were reviewed before inclusion in the quantitative risk assessment. "J" qualifiers on organics data were included in the risk assessment without reservation. Wherever blank contamination was evidenced ("B" qualifiers in organics data), the CLP SOW (USEPA 1988) was consulted to determine if the blank contaminants were common laboratory contaminants. Results with blank contamination were only considered positive results for use in the human health evaluation if the concentrations in the sample exceeded ten times the maximum concentration detected in the blank for common laboratory contaminants, or the sample concentration exceeded five times the maximum concentration in the blanks for non-common laboratory contaminants.

While it is recognized that no sampling protocol can ensure totally unbiased results, all possible efforts were taken to minimize the impacts of sampling protocols on the quantification of risks. All field investigation activities were conducted under the guidance of experienced geologists or hydrogeologists and monitored by a designated quality assurance officer to ensure that the protocols of the NYSDEC approved Phase I RI Work Plan were followed. NYSDEC personnel were also present in the field to oversee the sampling activities. Sample data sheets and boring logs were completed on a daily basis to document all site conditions that might impact the risk assessment. Prior to using any field data, field record sheets were reviewed to determine the validity of the data collected. Other considerations with the available soil data include the depth of samples collected and the biased nature of the sampling program. Since the sampling program was designed to delineate source areas and "hot spot", the average contaminant concentrations detected in the soils is biased on the high side. In addition, the samples collected were taken at depths that were determined in the field to be likely "hot spots" based on PID screening. This bias in sampling depth also introduced a conservative error into the quantitative risk analysis.

Soil characteristics, both physical and chemical, were noted during the soil sampling program by the field geologist/hydrogeologist. Sieve testing was conducted to determine accurate particle sizes for use in predictive modeling. Permeabilities used were estimated from grain size analysis, the nature of the soils encountered, and review of aquifer test data. Whenever possible, site-specific data which was considered imprecise was modified to ensure that a conservative quantitative risk assessment was performed.

#### 7.1.1.2 Groundwater

All contaminant data in groundwater samples was independently validated prior to use in the baseline risk assessment. To ensure that any error introduced was conservative, either maximum concentrations or 95% UCL on the arithmetic mean downgradient groundwater concentrations were used in the assessment. Non-detectable concentrations were carried throughout the risk assessment to ensure that the assessment did not exclude any low contaminant concentrations that might impact human health. All sample results with laboratory qualifiers were reviewed before inclusion in the quantitative risk assessment. "J" qualifiers on organics data were included in the risk assessment without reservation. Whenever blank contamination was evidenced ("B" qualifier in organics data), the CLP SOW was consulted to determine if the blank contaminants were common laboratory contaminants. Results with blank contamination were only considered positive results for use in the human health evaluation if the concentrations in the sample exceeded ten times the maximum concentration detected in the blank for common laboratory contaminants, or the sample concentration exceeded five times the maximum concentration in the blanks for non-common laboratory contaminants.

All possible efforts were taken to minimize the impacts of sampling protocols on the quantitative risks. Monitoring wells were developed and purged in accordance with the NYSDEC approved Phase I RI Work Plan prior to sample collection. All groundwater sampling was conducted under the guidance of experienced hydrogeologists and monitored by a designated quality assurance officer to ensure that the protocols of the NYSDEC approved Phase I RI Work Plan were followed. In addition, a NYSDEC representative was present during all groundwater sampling at the site. Sample data sheets and well logs were completed on a daily basis to document all site conditions which might impact the risk assessment. Prior to using any groundwater data, field record sheets were reviewed to determine the validity of the data collected.

Aquifer characteristics were determined through an aquifer test program which was approved by the NYSDEC prior to implementation. Site-specific data generated during aquifer testing (i.e., hydraulic conductivity, gradients, head measurements, etc.) was used in predictive models in place of regulatory default values whenever the confidence level in the field data was high. In cases where the confidence in field generated data was low, the more conservative of the field data and the regulatory default values were used in the quantitative estimates of exposure point concentrations. A complete description of the aquifer test procedures and results are included in Section 4.4.4 of this report.

#### 7.1.1.3 Air

Although no laboratory analysis of air samples was performed at the Böwe site, an air monitoring program consisting of PID screening was conducted as part of the Phase I RI. The on-site PID air screening did not indicate any significant impacts to ambient air quality. Air data used in the quantitative risk assessment was generated from soil volatilization models using USEPA regulatory defaults to estimate contaminant emission rates. A complete description of the procedures used to estimate exposure point concentrations is included in Section 7.3.3 of this report.

In addition to contaminant release rates, ambient air data was also evaluated for use in estimating air dispersion rates and the impacts on potentially exposed populations. Weather station data from LaGuardia Airport was used to determine prevailing wind direction and wind speeds. While it is possible that the lack of site-specific air data may introduce error into the evaluation of air inhalation exposure pathways, care was taken to ensure conservative analysis by using worst case volatilization rates as opposed to average emission rates. It was also assumed that volatilization rates remained constant infinitely (i.e., volatilization rates do not decrease as contaminant concentrations in the soils decrease) to provide a significantly conservative estimate of chronic and carcinogenic risks that should overcome any non-conservative estimates of climatological factors.

## 7.2 Selection of Indicator Chemicals

Approximately fifty chemicals and compounds were detected at the Böwe site in one or more soil or groundwater samples. In order to provide a detailed review of potential health impacts resulting form the site, it was necessary to minimize the number of compounds included in the quantitative health evaluation. The USEPA Risk Assessment Guidance for Superfund Volume I (RAGS Vol. I) was followed to select representative compounds that would yield a conservative estimate of the potential risks to human health.

In selecting specific contaminants for inclusion in the quantitative risk assessment several criteria were used. The most important criteria evaluated included:

- Frequency of detection and confidence in lab data.
- Use of concentration-toxicity screening.
- Comparison of soil and groundwater quality data to ARARs.
- Review of background data and site history.
- Review of available toxicity information.
- Review of contaminant migration and persistence.
- Engineering judgment.

As a first cut, any parameters in which all sample concentrations were non-detectable (and where the detection limit was sufficient to confirm that there were no adverse affects at the detection limit) were eliminated from consideration as indicator chemicals. This criteria eliminated many of the TCL VOCs, TCL SVOCs and TCL pesticides and PCBs, however, fifty compounds still remained for consideration. Table 7.2.1, Soil Analytical Data and Table 7.2.2, Groundwater Analytical Data summarize the statistical information regarding the remaining compounds which were detected in at least one soil or groundwater sample. Only independently validated CLP laboratory data were utilized. In summary four TCL VOCs, seventeen TCL SVOCs, seven TCL pesticides/PCBs and twenty-two TAL metals, remained for inclusion as indicator chemicals.

Toxicity data for the remaining compounds was reviewed and a concentration-toxicity screening was performed to determine which compounds will have a significant impact on the quantitative risk assessment. In general the concentration-toxicity screening estimates a quantitative risk for each specific compound and then compares the contaminant-specific risk to the total site risk to estimate a contaminant risk ratio. Contaminants with a higher risk ratio are more likely to have a significant impact on the quantitative risk assessment. As an initial screening, all contaminants with either a carcinogenic or non-carcinogenic risk ratio greater than 0.001 were included for selection as indicator contaminants. These compounds are estimated to comprise over 99.9% of the total risk at the Böwe site. A summary of the risk ratios developed in the concentration-toxicity screening is included in Tables 7.2.3 and 7.2.4, Selection of Indicator Chemicals, Carcinogenic and Non-Carcinogenic Effects, respectively.

It is important to note that the concentration-toxicity screening was not used alone to either include or eliminate compounds in the quantitative risk assessment. There are several drawbacks with the screening procedure that preclude its use as the sole method of selecting indicator chemicals. The major drawbacks include the lack of toxicity constants for all compounds, the failure to assess impacts to sensitive populations and the use of maximum concentrations instead of statistically averaged concentrations. In addition, the toxicity constants used in the screening were obtained from several sources. In order of preference, the sources of toxicity constants were: USEPA IRIS Database, USEPA HEAST Database and 1986 Superfund Public Health Evaluation Manual*.

Based upon the determination of risk ratios, the following compounds were selected as preliminary indicator chemicals:

Carcinogenic Effects:
- Tetrachloroethene
- Trichloroethene
- Benzo(a)pyrene
- Bis(2-ethylhexyl)phthalate
- Chlordane
- Heptachlor Epoxide
- Aroclor 1248 (PCB)
- Arsenic
- Beryllium

Non-Carcinogenic Effects:
- Tetrachloroethene
- Acetone
- Fluoranthene
- Pyrene
- Fluorene
- Acenaphthene
- Bis(2-ethylhexyl)phthalate
- Antimony
- Nickel

Analytical data from blank samples and laboratory qualifiers were reviewed to determine if the data used in the concentration-toxicity screening was reliable. Of the above listed preliminary indicator chemicals, only bis(2-ethylhexyl)phthalate was detected in any of the blank samples. Since bis(2-ethylhexyl)phthalate was detected in soil and groundwater samples at concentrations greater than ten times the concentration

* It is acknowledge that the 1986 Superfund Public Health Evaluation Manual (SPHEM) is no longer used in performing quantitative risk assessments. Use of SPHEM in this assessment was strictly limited to the selection of indicator chemicals only when toxicity values were not available in IRIS or HEAST, or after discussions with USEPA, NYSDEC or NYSDOH. SPHEM was not used in any other context in any part of the Böwe risk assessment.

in the blank samples, the data was considered reliable for inclusion in the risk assessment.

To further refine the preliminary list of indicator chemicals, all detected compounds were compared against the selected ARARs (i.e., NYSDEC Recommended Soil Cleanup Objectives and Class GA Water Quality Standards). Any detected compounds exceeding their respective ARAR were added to the list of indicator chemicals. Contaminants which were detected infrequently and at concentrations below their ARARs were eliminated from consideration as indicator chemicals. A summary of the ARARs comparison is presented in Table 7.2.5. Based on the ARAR comparison, the following compounds were added as preliminary indicator chemicals:

- Benzo(b)fluoranthene
- Benzo(k)fluoranthene
- Cadmium
- Chromium
- Lead

Due to a low frequency of detection , relatively low concentrations and compliance with ARARs, the following compounds were eliminated as chemicals of concern:

- Acetone
- Pyrene
- Fluoranthene
- Acenaphthene
- Heptachlor Epoxide
- Chlordane
- Aroclor 1248 (PCBs)
- Arsenic

A subjective engineering review was conducted to determine whether additional compounds should be added or deleted from the list of indicator chemicals. The USEPA, NYSDOH and NYSDEC were contacted to determine if any of the preliminary indicator chemicals should not be included in the quantitative risk evaluation due to low confidence in toxicological studies or due to their knowledge of the Böwe site. Discussions with the USEPA and NYSDOH indicated that lead was not recommended for use in the quantitative assessment because of low confidence in studies reporting a threshold response. Additionally, discussions with NYSDEC personnel familiar with the site indicated that metals were not a significant concern compared to VOCs detected during past studies. The only other compound eliminated from the quantitative assessment was benzo(b)fluoranthene. This contaminant was eliminated because benzo(k)fluoranthene and benzo(a)pyrene will be used to represent the class of polyaromatic hydrocarbons detected at the site.

After evaluation of all criteria and completing an engineering review, the following compounds were selected as final indicator chemicals for the quantitative risk evaluation:

- Tetrachloroethene
- Trichloroethene
- Benzo(a)pyrene
- Benzo(k)fluoranthene
- Bis(2-ethylhexyl)phthalate

## 7.3 Exposure Assessment

The objective of the exposure assessment was to estimate the type and magnitude of exposures to the selected indicator chemicals that are present at or migrating from the Böwe site. This objective was accomplished by analyzing the exposure setting, identifying potential exposure pathways, predicting contaminant fate and transport, determining exposure point concentrations, and estimating intakes of contaminants at the exposure points. In general, three types of exposures were assessed, namely, sub-chronic exposure (short-term, non-carcinogenic effects), chronic exposure (long-term, non-carcinogenic effects) and carcinogenic exposure (long-term cancer causing effects).

### 7.3.1 Characterization of the Exposure Setting

Characterization of the exposure setting encompasses evaluation of two different types of data, namely, physical site data and exposed population data. Each of these data is discussed below.

The Böwe site is situated on the west side of Frank Road in Hicksville, New York in an area comprised of a mix of industrial, commercial and residential properties. Industrial facilities lie adjacent to the Böwe site on the north, east and west, while residential homes and commercial properties are present to the south. The Böwe site is approximately 2.1 acres in size and contains a single story masonry building of roughly 25,000 square feet. Review of USGS Topographic Maps indicate the site is approximately 125 feet above mean sea level. The site is generally level with paved area located to the east and south of the building. Groundwater is encountered at approximately 80 feet above mean sea level, or 55 feet below grade. Based on groundwater elevation data collected during the RI, groundwater flow direction is from the north toward the south, with minor south-southeast and south-southwest variations.

LaGuardia Airport weather station data was used to estimate climatological and meteorological setting at Böwe. Regional temperatures are varied throughout the year with lower temperatures in the winter months (December, January, February and March) and higher temperatures during the summer months (June, July , August and September). The mean air temperatures during the winter months is 1.3 degrees Celsius (°C). During summer months the mean air temperature is 21.7°C. Precipitation in the area also varies throughout the year with the greatest precipitation present in the spring (March, April and May) and the late summer (August and September). Maximum monthly precipitation during the spring and late summer are typically near 9 to 10 cm. Wind direction and average wind speeds at Böwe were estimated using LaGuardia Airport Weather Station data. Wind direction and average wind speed wind roses are presented in Figures 7.3.1 and 7.3.2, respectively. As indicated in the wind roses, the predominant wind direction is out of the south, with west-northwesterly winds also present at a relatively high frequency. There is little variation in average wind speeds with direction, however, winds out of the west-northwest are typically the strongest with average speeds of 5.9 to 6.0 meters per second (roughly 13 miles per hour).

A review of potentially exposed populations was conducted with the aid of the 1990 US Census data. Census data within a three kilometer (approximately 2 miles) radius of the Böwe site was reviewed to determine the most probable potentially exposed populations. Based upon the Census data, the potentially exposed population within a three kilometer radius of the site totals approximately 63,000 people. However, only a portion of this potentially exposed population is located hydraulically downgradient of the site.

In addition to the general population, potentially significant sub-populations were also investigated. It was determined that there are twenty schools located within a three kilometer radius of the site. Of these, only three are located hydraulically downgradient of the site. Although these schools represent a potential sub-population of concern because of the children in attendance, none of the schools should be adversely impacted by the Böwe site, because all of the schools are connected to the public water supply, and air emissions from the Böwe site are not anticipated to be significant.

A well survey conducted as part of the Phase I RI failed to identify any properties within a three kilometer radius of the site which were not connected to the public water supply. In total, approximately 48,000 people are potentially exposed to groundwater via the Hicksville Water District. It should be noted that these populations are estimates only and do not reflect the most recent census data available.

For the purposes of this human health evaluation, it was assumed that future residential land use in the immediately adjacent areas is possible. This assumption is conservative because current zoning at the site is industrial, however the presence of residential areas immediately southeast of the site would make future residential expansion a potentially realistic scenario in the long term (chronic, over 30 years). For short-term (sub chronic) exposure, it was assumed that only industrial land use is possible on-site. This assumption is considered realistic because it is highly unlikely that the industrial areas immediately north, west and east of the site will become residential in the next several years.

## 7.3.2 Identification of Exposure Pathways

In general, an exposure pathway consists of four elements:

1☐ A source and mechanism of chemical release (i.e., spill, leak, discharge, etc.).
2☐ A retention and/or transport medium (i.e., soil, groundwater, etc.).
3☐ An exposure point (i.e., dermal contact with soils, groundwater supply, etc.).
4☐ An exposure route (i.e., ingestion, inhalation, absorption).

Each of these elements is discussed in detail in the following sections. The more common exposure pathways are illustrated schematically in Figure 7.3.1. It should be noted that the exposure pathways illustrated in Figure 7.3.1 are for a "typical" site and are presented solely to provide an overview of the potential exposure pathways. The figure is not intended to reflect actual exposure pathways present at the Böwe site.

### 7.3.2.1 Sources and Exposure Points

Based upon the results of the Phase I RI and previous site studies, it has been determined that there are several possible sources of contamination at the Böwe site. Specifically, limited soil contamination has been confirmed in drywell sediments and in soils adjacent to the former spray booth. In addition, confirmed groundwater contamination is also present beneath the Böwe site. While it is probable that the groundwater contamination evidenced beneath the site was caused by leaching of contaminants from the soils, for the purposes of the human health evaluation it was assumed that the groundwater is an independent source of contamination, and groundwater monitoring well concentrations were used as the basis of the quantitative groundwater risk assessment. In order to ensure that the observed groundwater monitoring well concentrations represent the worst case groundwater concentrations over the 30 year period of the risk assessment, vadose zone soil modeling (USEPA SESOIL) was performed to confirm that future leaching from on-site soil sources will not impact groundwater quality to a greater degree than the contamination observed during the RI.

A complete description of the models used and the assumptions made in modeling are presented in Sections 6.1 and 6.2.

Review of the exposure setting at Böwe indicates that there are several potential exposure points which should be included in the human health evaluation, namely, drywell sediments, excavated soils, ambient air after volatilization from soils, and groundwater used for potable water. Since all soils with residual low level contaminants have been found in the subsurface soils (i.e., greater than 5 feet below grade), there are no contaminated surface soils to be evaluated in the quantitative risk assessment. Although its is unlikely that dermal contact or ingestion of drywell sediments or subsurface soils will occur, discussions with NYSDEC and NYSDOH have indicated that it should be assumed that future site work may unearth these sources and thereby allow exposure. This assumption ensures an extremely conservative analysis of the exposure pathway for drywell sediments and subsurface soils. For the purposes of the risk assessment, it was assumed that the exposure routes include dermal contact with soils (absorption) and ingestion of soil. Inhalation of fugitive dusts was not evaluated quantitatively due to the difficulty and large degree of error in estimating dust generation from subsurface soils from future excavation that has yet to occur. Inhalation of fugitive dusts is discussed qualitatively in Section 7.5.2.3.

Potential volatilization of contaminants make ambient air another potential exposure point. However, because all remaining soil contamination is limited to the subsurface (i.e., deeper than 5 feet below grade), and the surface of the Böwe site is paved, volatilization of residual contaminants will be minimal unless future site work unearths the impacted soils. To provide a conservative analysis, the soil volatilization pathway was assumed complete and was evaluated to assess impacts at the air exposure point. Due to the lack of toxicity information, quantification of the dermal contact with airborne volatile contaminants (absorption) was not performed. On the basis of preliminary estimates of volatilization rates (see Section 6.3), the concentrations of contaminants in air are so low that absorption of airborne volatile contaminants is an extremely minor route of exposure when compared to the other pathways.

The final potential exposure point which was evaluated is groundwater. Since local groundwater is used by the Hicksville Water District for potable water supply, human exposure to contaminated groundwater is possible and was therefore evaluated in the quantitative risk assessment. Both present groundwater concentrations and modeled groundwater concentrations were used in the risk assessment. Ingestion of groundwater and dermal contact with groundwater were evaluated as possible routes of exposure.

Since there are no surface waters in the vicinity of the Böwe site, and groundwater does not discharge to any local surface waters, there are no surface water exposure points that required evaluation. It is acknowledged that swimming pools may be filled with groundwater from the public water supply, thus creating a possible surface water exposure point. However this exposure point will be evaluated as a groundwater dermal exposure and not a surface water exposure.

A summary of the sources, transport media, exposure points and routes of exposure quantitatively evaluated at the Böwe site is provided in Table 7.3.1.

#### 7.3.2.2 Fate and Transport Modeling

The fate and transport of selected indicator chemicals is discussed in Section 6.0 of this report. Media for which fate and transport modeling were conducted included soil, groundwater and air.

#### 7.3.2.3 Summary of Completed Exposure Pathways

On the basis of contaminant fate and transport modeling and a qualitative review of potential exposure pathways, it was determined that the soil, groundwater and air pathways are complete and must be included in the baseline human health evaluation. Due to the site's location and layout, all three potential exposure pathways are relatively remote. The soil pathway is complete, but because all residual impacted soils are in the subsurface and the site is located in an industrialized area, the likelihood of an actual human exposure to contaminated soils will be minimal, unless future subsurface site work is proposed. The groundwater pathway is complete and there are two public water supply wells located approximately 1,100 meters downgradient of the site. Preliminary modeling results indicates that contaminant concentrations at these wells would be very low. Since the site is entirely paved, the only emission point for contaminants to air is through grated manhole covers set atop the drywells. The remaining source areas are entirely paved and the likelihood of significant volatilization of contaminants into the air is remote.

In order to present an extremely conservative baseline human health evaluation, it was assumed that worst case scenarios will occur (i.e., soil excavation will take place and maximum soil concentrations will prevail, groundwater supply wells can be installed anywhere downgradient of the site for public use, and workers will directly breath emissions from drywell sediments during site activities). It was further assumed that all potential exposure pathways are complete with a contaminant source, a transfer medium, an exposure point and a route of exposure.

### 7.3.3 Quantification of Exposures

Wherever possible, direct field measurements were used in quantifying exposures. In the absence of site-specific data or where exposures need to be predicted, the models discussed in Section 6.0 were used to estimate exposures. In general, the quantification of exposures involves quantifying the magnitude, frequency and duration of exposure events for all completed exposure pathways. Soil, groundwater and air exposure pathways are discussed the following sections.

#### 7.3.3.1 Soils

The exposure concentration used for the soil ingestion and soil dermal contact pathway was 95% UCL on the arithmetic average of all soil sample results. To remain conservative, the detection limit was used for all non-detectable sample results, and it was assumed that soil concentrations will remain constant over time (i.e., leaching, volatilization or degradation of contaminants do not take place). Since the Phase I RI sampling program was designed to delineate "hot spots", the 95% UCL on the arithmetic average concentration of the soil samples analyzed provided conservatively high contaminant concentrations for use in the quantitative risk evaluation. The calculated sub-chronic and chronic indicator chemical soil exposure point concentrations for soil ingestion and dermal contact are summarized in Table 7.3.3.1.

For soil ingestion and dermal contact, it was assumed that the exposure frequency is 365 days per year. Since there is no proposed site work which would exposed impacted subsurface soils, this estimate should provide a very conservative exposure frequency. To further remain conservative, the exposure frequencies was assumed continuous for the entire risk assessment period (i.e., 4 years for sub-chronic and 70 years for carcinogenic and chronic).

#### 7.3.3.2 Groundwater

Since contaminants are relatively more mobile in groundwater than in soil, the assumption that groundwater concentrations remain constant at any given location over time would introduce significant error into the quantitative risk analysis. On the basis of discussions with NYSDEC and NYSDOH, it was determined that the groundwater exposure point concentration should be estimated assuming that groundwater can be drawn from any point in the aquifer at any given time. Accordingly, the groundwater modeling results discussed in Section 6.2 were reviewed and the maximum groundwater concentrations at any point in the aquifer were tabulated for every year over the 30 year model. The 95% UCL on the arithmetic average of the maximum concentrations at each modeled year was then calculated for sub-chronic (4 years), chronic (70 years) and carcinogenic (70 years) exposures. This approach is consistent with USEPA recommended procedures as outlined in "Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual".

In order to remain conservative, the 95% UCL on the arithmetic average of the maximum groundwater concentrations was calculated over 20 years instead of 70 years. It was assumed that the 20 year concentration would not decrease any further. While it is acknowledged that under actual conditions contaminant concentrations will continue to decrease, this assumption greatly simplified modeling and still enabled a conservative estimation of exposure point concentrations. The calculated chronic and sub-chronic exposure point concentration for groundwater are summarized in Table 7.3.3.1

Exposure frequencies for both ingestion and dermal contact with groundwater were assumed to be 365 days per year. For dermal contact, it was assumed that a person takes a 30 minute shower every day of the year. Each of these assumptions will yield a conservative estimate of exposure point concentrations and total contact times.

### 7.3.3.3 Air

Results from air emission and dispersion modeling (see Section 6.3) were reviewed to determine the maximum contaminant concentrations in air at any time or location. It was assumed that these maximum concentrations will be constant at all receptor points for the entire risk period. This assumption provided an extremely conservative estimate of contaminant exposure point concentrations in air. As discussed previously, only volatilization of contaminants was considered for the quantitative risk assessment, due to the relatively low probability of dust generation form subsurface soils. Dust generation and inhalation of airborne contaminants is discussed qualitatively in Section 7.5.2.3. The sub-chronic and chronic exposure point concentrations used in quantifying air inhalation risks are summarized in Table 7.3.3.1. Because the contaminant concentrations in air were assumed to be constant over the entire risk period, the same exposure point concentrations were used in assessing both sub-chronic and chronic exposures.

## 7.3.4 Estimation of Contaminant Intakes

After exposure point concentrations were developed, chemical specific intakes were estimated for each completed pathway, as outlined in USEPA "Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual". Site-specific values were used as inputs whenever available. In the absence of site-specific data, USEPA defaults were utilized to ensure a conservative analysis. It should be noted that the contaminant intakes for all exposure pathways have been adjusted to measure the absorbed dose. In the absence of absorption coefficients, it was assumed that 100% of the contaminants are absorbed to the target tissues or organs. This assumption ensures conservative estimates of daily intakes. Soil, groundwater and air intake estimates are discussed in the following sections.

### 7.3.4.1 Soils

Two routes of exposure for soils were included in the quantitative human health evaluation for the Böwe site, namely, ingestion and dermal contact. Soil ingestion intakes were estimated using the following equation:

Intake (mg/kg-day) = (CS)(IR)(CF)(FI)(EF)(ED)/(BW)(AT)

Where:
CS: Chemical Concentration in Soil (mg/kg) as defined in Table 7.3.3.1.
IR: Ingestion Rate (mg soil/day) = 100 mg/soil/day (estimate for adults)
CF: 1.0E-06 kg/mg conversion factor
FI: Fraction Ingested = 0.5 (assumes 50% ingested because over 50% of site is paved)
EF: Exposure Frequency = 365 days/year
ED: Exposure Duration = 4 years sub-chronic, 70 years chronic and carcinogenic
BW: Body Weight = 70 kg (adult male assumed)
AT: Averaging Time = 1,460 days sub-chronic, 25,550 days chronic and carcinogenic

In general, each of the input parameters used in the soil ingestion equation were selected to present a maximum (conservative) chemical intake with the exception of using a 70 kg adult body weight instead of a 16 kg body weight for a child. The less conservative body weight of 70 kg is much more realistic because the site is in an industrial area where access by children is limited by fencing and gates.

The chronic and carcinogenic daily intakes are also extremely conservative because it was assumed that the present soil concentrations at the Böwe site will remain constant over the entire risk assessment period of 70 years. In reality, leaching, volatilization and biodegradation will reduce contaminant concentration over time. Daily sub-chronic, and chronic and carcinogenic intakes by soil ingestion are summarized in Tables 7.3.4.1.1 and 7.3.4.1.2, respectively.

Daily intakes for dermal contact with soils were calculated using the following formula as recommended in USEPA "Risk Assessment Guidance for Superfund, Volume I - Human Health Evaluation Manual":

Absorbed Dose (mg/kg-day) = (CS)(CF)(SA)(AF)(ABS)(EF)(ED)/(BW)(AT)

Where:
CS: Chemical Concentration in Soil (mg/kg) as defined in Table 7.3.3.1.
CF: 1.0E-06 kg/mg conversion factor
SA: Skin Surface Area for Contact = 5,300 $cm^2$/event (assumes adult male hands, arms and lower legs)
AF: Soil to Skin Adherence Factor = 1.45 mg/ (EPA potting soil default)
ABS: Absorption Factor = 1 (conservative assumption assumes all contaminants are absorbed across the skin surface)
EF: Exposure Frequency = 365 days/year
ED: Exposure Duration = 4 years sub-chronic, 70 years chronic and carcinogenic
BW: Body Weight = 70 kg (adult male assumed)
AT: Averaging Time = 1,460 days sub-chronic, 25,550 days chronic and carcinogenic

All inputs to the soil dermal contact equation were selected to yield a conservatively high estimate of daily intakes. Sub-chronic, and chronic and carcinogenic intakes by dermal contact are summarized in Tables 7.3.4.1.3 and 7.3.4.1.4, respectively.

### 7.3.4.2 Groundwater

Exposure to groundwater was quantified for two potential exposure routes, namely, ingestion of drinking water from a groundwater supply well and dermal contact with groundwater. Intakes of groundwater through ingestion were estimated using the following formula:

Intake (mg/kg-day) = (CW)(IR)(EF)(ED)/(BW)(AT)

Where:
CW: Chemical Concentration in Groundwater as defined in Table 7.3.3.1.
IR: Ingestion Rate = 2 liters/day (conservative USEPA default)
EF: Exposure Frequency = 365 days/year
ED: Exposure Duration = 4 years sub-chronic, 70 years chronic and carcinogenic
BW: Body Weight = 70 kg (adult male assumed)
AT: Averaging Time = 1,460 days sub-chronic, 25,550 days chronic and carcinogenic

All inputs and assumptions used to calculate groundwater ingestion rates were selected to provide conservatively high daily intakes. The 2 liters/day ingestion rate is the upper 90th percentile value provided by the USEPA. The concentrations used assume that water can be drawn from the center of the contaminant plume at any given time. Sub-chronic, and chronic and carcinogenic intakes by groundwater ingestion are summarized in Tables 7.3.4.2.1 and 7.3.4.2.2, respectively.

Dermal contact with groundwater can result from normal household activities (e.g., showering, washing etc.) and swimming in pools filed with groundwater. Daily intakes from dermal contact with groundwater were estimated using the following equation:

Absorbed Dose (mg/kg-day) = (CW)(SA)(PC)(ET)(EF)(ED)(CF)/(BW)(AT)

Where:
CW: Chemical Concentration in Groundwater (mg/kg) as

defined in Table 7.3.3.1.

SA: Skin Surface Area for Contact = 19,400 $cm^2$/event (assumes adult male total body, most conservative estimate)

PC: Dermal Permeability Constant = 8.4E-04 cm/hr (value for water assumed for all contaminants)

ET: Exposure Time = 0.5 hr/day (this assumption assumes 20 to 30 minutes per day in the shower. Dermal contact during swimming is assumed to be included in this estimate)

EF: Exposure Frequency = 365 days/year

ED: Exposure Duration = 4 years sub-chronic, 70 years chronic and carcinogenic

CF: 1 liter/1000 cc conversion factor

BW: Body Weight = 70 kg (adult male assumed)

AT: Averaging Time = 1,460 days sub-chronic, 25,550 days chronic and carcinogenic

Due to the limited amount of available data on dermal permeability constants for the indicator chemicals, it was assumed that the dermal permeability constant for each chemical will be the same as the dermal permeability constant for water. While this assumption may yield conservative absorption estimates for some contaminants, non-conservative estimates may be obtained for others.

The estimated exposure time of 0.5 hours per day is an assumption based upon engineering judgment. While it is anticipated that this value is a conservative estimate because it assumes contact 365 days per year, it is possible that contact times may be greater for certain sub-populations who shower more frequently or swim often. Care should be taken in evaluating the quantitative results of the groundwater dermal contact exposure pathway. Results of the sub-chronic, and chronic and carcinogenic absorbed doses from dermal contact with groundwater are summarized in Table 7.3.4.2.3 and 7.3.4.2.4, respectively.

### 7.3.4.3 Air

Intake of contaminants through air inhalation were estimated using the following equation:

Intake (mg/kg-day) = (CA)(IR)(ET)(EF)(ED)/(BW)(AT)

Where: CA: Chemical Concentration in Air (mg/ $m^3$) as defined in Table 7.3.3.1.
IR: Inhalation Rate = 30 $m^3$/day = 1.25 $m^3$/hr(USEPA upper bound default)
ET: Exposure Time = 24 hr/day (worst case assumption)
EF: Exposure Frequency = 365 days/year
ED: Exposure Duration = 4 years sub-chronic, 70 years chronic and carcinogenic
BW: Body Weight = 70 kg (adult male assumed)
AT: Averaging Time = 1,460 days sub-chronic, 25,550 days chronic and carcinogenic

All assumptions used in the air inhalation intake estimates are conservative and provide a reasonable worst case estimate of inhalation intake rates. Due to the lack of toxicity information for non-carcinogenic effects, only carcinogenic intakes were estimated for use in the quantitative human health evaluation. A summary of the estimated carcinogenic/chronic air inhalation intake rates are provided in Table 7.3.4.3.

## 7.4 Toxicity Assessment

The toxicity assessment was designed to quantitatively and qualitatively evaluate the potential for contaminants at the Böwe site to cause adverse effects in potentially exposed populations. The scope of the Böwe site toxicity assessment was limited to the review of toxicity studies and information developed by others. No dose-response studies were performed specifically for the site. Whenever possible, quantitative values for reference doses and carcinogenic slope factors were used in the quantitative baseline human health evaluation. In the absence of quantitative date, available dose response studies were reviewed to present a qualitative discussion of potential carcinogenic and non-carcinogenic effects.

### 7.4.1 Assessment of Toxicity Information

Available non-carcinogenic and carcinogenic data was reviewed as part of the Böwe risk assessment. Several sources of toxicity data were reviewed to obtain the most up-to-date information regarding contaminant-specific toxic effects. A brief description of each source used is presented below:

USEPA Integrated Risk Information System (IRIS)
IRIS is a USEPA database containing EPA regulatory information and the most recent toxicological information for numerous chemicals and compounds. The IRIS database is typically updated quarterly and is considered to be the best source of toxicological information because of the high level of review that the data is subjected to before being included in the database. IRIS was the primary source of toxicological data used in the Böwe risk assessment. Only in the absence of IRIS data, were the remaining sources used.

Health Effects Assessment Summary Tables (HEAST)
HEAST is a tabular presentation of toxicity information for which toxicological documents have been prepared. HEAST provides much of the same data presented in IRIS and some information not on record with IRIS. It should be noted that some data in HEAST has not been validated, and therefore, IRIS data is preferred.

USEPA Environmental Criteria and Assessment Office (ECAO)
ECAO is a USEPA sponsored help line related to Superfund related health issues. ECAO was used to confirm information presented in IRIS and to derive quantitative toxicity values for contaminants from other known sources of information. Specifically, ECAO was helpful in performing the PCE and TCE toxicity assessments.

NYSDOH - Bureau of Toxic Substances Assessment
NYSDOH was consulted for guidance whenever IRIS, HEAST or ECAO data was not available. NYSDOH literature used in toxicity assessment includes Ambient Air Criteria Documents and epidemiological study summaries.

Each of the above referenced sources compile data on many different types of studies, including human studies, animal studies and metabolic and pharmacokinetic studies. Human data was always evaluated as the primary choice for use in the risk assessment followed by animal data and laboratory/theoretical studies. The confidence in the quantitative values of reference doses and slope factors used in the risk assessment will be discussed for each indicator chemical in Sections 7.4.2 and 7.4.3.

### 7.4.2 Non-Carcinogenic Effects

Non-carcinogenic effects consist of both sub-chronic (short term) and chronic (long term) effects. For the purposes of this risk assessment, sub-chronic effects were considered effects related to an exposure duration of 4 years. The 4 year period was selected to represent the duration of site work that would be most likely to occur at the site and would result in possible exposures to residual site contaminants. The use of 4 years instead of the USEPA recommended 7 years will provide a conservative estimate of the risk because estimated sub-chronic intakes are higher for the 4 year exposure duration that for the 7 year exposure duration. Chronic effects will be based upon a 70 year duration. A 70 year duration has been chosen in place of the USEPA approved 30 year duration to remain conservative.

Non-carcinogenic effects are measured quantitatively as referenced doses (RfDs). The RfD is defined as an estimate of a daily exposure level for the human population, including sensitive sub-populations, that is likely to be without appreciable risk of deleterious effects during the exposure duration. Other quantitative measurements used in the toxicity assessment include lowest observed adverse effect levels (LOAELs), no observed adverse effect level (NOAELs) and dose-response measurements. A discussion of the quantitative and qualitative data used in the non-carcinogenic risk assessment for Böwe for each indicator chemical is presented below:

Tetrachloroethene:

The IRIS database contained both qualitative and quantitative toxicity information on PCE, and was used as the primary reference. A chronic oral RfD for PCE of 1.0E-02 mg/kg-day was derived from six week mice studies. The RfD was calculated from a NOAEL of 14 mg/kg-day and an uncertainty factor of 1,000 to account for intra and interspecies variation and extrapolation of a sub-chronic RfD to its chronic equivalent. The confidence level in the PCE oral RfD is considered medium due to lack of study encompassing all necessary factors for the proper derivation of a RfD. Reference concentrations (RfCs) for chronic inhalation exposures are not currently available for PCE.

Trichloroethene:

The IRIS database and HEAST contained neither qualitative nor quantitative toxicity information on TCE. Discussions with ECAO provided carcinogenic data but no non-carcinogenic data. In order to evaluate non-carcinogenic effects quantitatively, the value for PCE was used as a surrogate. An additional modifying factor of 10 was used to estimate and oral RfD of 1.0E-03 mg/kg-day for TCE. The confidence level in the TCE oral RfD is considered extremely low due to the use of a surrogate RfD. Reference concentrations (RfCs) for chronic inhalation exposures are not currently available for TCE.

Benzo(a)pyrene:

The IRIS database and HEAST did not contain any data on the non-carcinogenic effects of benzo(a)pyrene. NYSDEC and NYSDOH were contacted for assistance, and it was recommended that the NYSDOH "Ambient Air Criteria Document (AACD) - Polynuclear Aromatic Hydrocarbons", November 1989 be used for guidance in deriving an oral RfD for benzo(a)pyrene. The NYSDOH AACD indicates that reproductive effects have been observed following oral exposures to benzo(a)pyrene of 10 mg/kg-day, however, there is only limited discussion of the details of the study. For the purposes of the Böwe risk assessment, an uncertainty factor of 1,000 was used to account for sensitive sub-populations, interspecies variation between human and animals, and uncertainty in extrapolating from NOAELs. Use of the 10 mg/kg-day NOAEL and the 1,000 uncertainty factor yields an approximate chronic oral RfD of 1.0E-04 mg/kg-day. The confidence level in the benzo(a)pyrene oral RfD is considered extremely low because of the lack of available information regarding oral toxicity studies. Reference concentrations (RfCs) for chronic inhalation exposures are not currently available for benzo(a)pyrene.

Benzo(k)fluoranthene:

The IRIS database and HEAST did not contain any data on the non-carcinogenic effects of benzo(k)fluoranthene. NYSDEC and NYSDOH were contacted for assistance, and it was recommended that the NYSDOH "Ambient Air Criteria Document (AACD) - Polynuclear Aromatic Hydrocarbons", November 1989 be used for guidance in deriving an oral RfD for benzo(k)fluoranthene. The RfD on benzo(a)pyrene was used as a surrogate for benzo(k)fluoranthene to quantify potential risks. The same assumptions and derivations discussed for benzo(a)pyrene also apply to the oral RfD for benzo(k)fluoranthene. Reference concentrations (RfCs) for chronic inhalation exposures are not currently available for benzo(k)fluoranthene.

Bis(2-ethylhexyl)phthalate:

The IRIS database contained both qualitative and quantitative toxicity information for bis(2-ethylhexyl)phthalate, and was used as the primary reference. A chronic oral RfD for bis(2-ethylhexyl)phthalate of 2.0E-02 mg/kg-day was derived from guinea pig sub-chronic to chronic oral bioassays. The RfD was calculated from a LOAEL of 19 mg/kg-day and an uncertainty factor of 1,000 to account for interspecies variation, protection of sensitive sub-populations and extrapolation from sub-chronic to chronic doses. The confidence level in the oral RfD for bis(2-ethylhexyl)phthalate is considered medium due to the use of a sufficient number of guinea pigs and measured end points. The fact that only two concentrations of bis(2-ethylhexyl)phthalate were tested precludes a higher confidence level. Reference concentrations (RfCs) for chronic inhalation exposures are not currently available for bis(2-ethylhexyl)phthalate.

Due to the lack of dermal exposure toxicity reference values for the indicator chemicals at the Böwe site, dermal toxicity values were estimated from oral RfDs suing an assumed absorption efficiency of 20%. Use of a 20% oral absorption efficiency is a relatively conservative estimate that should yield conservative dermal toxicity values in the form of an absorbed RfD.

Dermal (absorbed dose) RfDs were calculated for each indicator chemical using the following equation:

Absorbed (dermal) RfD = Oral Absorption Efficiency(Oral RfD)

All values presented in the discussion are chronic RfDs. The IRIS database only provides information on chronic, not sub-chronic RfDs. When available, sub-chronic RfDs provided in HEAST were used in the toxicity assessment. In most cases, however, the sub-chronic RfDs provided in HEAST were developed using chronic RfDs and are therefore not truly independent. A summary of the toxicity values used in the non-carcinogenic risk assessment are provided in Table 7.4.2.

### 7.4.3 Carcinogenic Effects

For the purposes of this risk assessment, carcinogenic effects were considered effects related to an exposure duration of 70 years. This assumes the exposed population will be in contact, either directly or indirectly, for a period of 70 years. Since most populations will not remain in one area consistently for 70 years, this exposure duration will yield a conservative estimate of exposures.

Carcinogenic effects are measured both qualitatively and quantitatively. The qualitative phase of the carcinogenic evaluation consists primarily of assigning a weight of evidence, which is an indicator of the amount of study performed, the type of study and the confidence in the study procedures and results. Weight of evidence classifications for carcinogenicity as summarized in Table 7.4.3.1.

Carcinogenic effects are measured quantitatively as slope factors. The slope factor is defined as the plausible upper bound estimate of the probability of a response per unit intake of a chemical over a lifetime. The slope factor is used to estimate an upper bound probability of an individual developing cancer as a result of a lifetime of exposure to a particular level of a carcinogen. Whenever available, human data should be used to generate slope factors in place of animal or laboratory data. As with the non-carcinogenic toxicity assessment, no dose-response or other studies were performed directly for the Böwe site. The carcinogenic toxicity assessment was limited to review of available information obtained and compiled by others (i.e., USEPA, NYSDOH, etc.). A discussion of the quantitative and qualitative data used in the carcinogenic risk assessment for each indicator chemical at the Böwe site is presented below.

Tetrachloroethene:

The IRIS database is currently being updated to include PCE. ECAO provided quantitative and qualitative information to be used in this risk assessment. PCE classification is currently being modified and will either be a class C or class B2 after USEPA finalizes its review. Oral and inhalation slope factors and unit risks have been developed by USEPA but have not yet been validated by the IRIS-CRAVE work group. The propose oral slope factor is 5.20E-02 $(mg/kg\text{-}day)^{-1}$. The proposed drinking water unit risk is estimated at 1.50E-06 $(ug/l)^{-1}$. The proposed inhalation slope factor for PCE was calculated to be 2.00E-03 $(mg/kg\text{-}day)^{-1}$. A final determination as to the confidence of both human and animal study data is not yet available.

Trichloroethene:

The IRIS database is currently being updated to include TCE studies performed recently. ECAO provided quantitative and qualitative information to be incorporated in the risk assessment. TCE classification is currently being modified and will either be a class C or class B2 after USEPA finalizes its review. Oral and inhalation slope factors and unit risks have been developed by USEPA but have not been validated by the IRIS-CRAVE work group. The propose oral slope factor for TCE is 1.10E-02 (mg/kg-day)$^{-1}$. The proposed drinking water unit risk is estimated at 3.20-07 (ug/l)$^{-1}$. The proposed inhalation slope factor for TCE was calculated to be 6.00E-03 (mg/kg-day)$^{-1}$. A final determination as to the confidence of both human and animal study data is not yet available.

Benzo(a)pyrene:

The IRIS database contained both qualitative and quantitative toxicity information on benzo(a)pyrene, and was used as the primary reference. Benzo(a)pyrene is classified as a B2 carcinogen because lung cancer has been shown to be induced in humans by varying mixtures of polynuclear aromatic hydrocarbons (PAHs) known to contain benzo(a)pyrene. It is not possible to conclude that benzo(a)pyrene was directly responsible for the documented responses. The oral slope factor was calculated to be 7.30E+00 (mg/kg-day)$^{-1}$. The drinking water unit risk was estimated at 2.10E-04 (ug/l)$^{-1}$. An inhalation slope factor of 2.10E+00 (mg/kg-day)$^{-1}$ determined by NYSDOH during study performed as part of ambient air criteria development. The amount and confidence level of animal carcinogenic data is considered sufficient due to the presence of numerous studies with proper procedures and validated results. Human data is considered inadequate because studies specifically on benzo(a)pyrene (as opposed to PAHs in general) have not been validated.

Benzo(k)fluoranthene:

The IRIS database contained qualitative but not quantitative toxicity information on benzo(k)fluoranthene. Discussions with NYSDOH have indicated that benzo(a)pyrene data may be used as a surrogate for quantitative assessment. Benzo(k)fluoranthene is classified as a B2 carcinogen and has been shown to produce tumors after lung implantation in mice and when administered with a promoting agent in skin painting studies. The oral slope factors, inhalation slope factors and unit risks for benzo(a)pyrene were used for quantitative analysis. The amount and confidence level of animal carcinogenic data for benzo(k)fluoranthene is considered sufficient. Human data is available for PAHs but not for benzo(k)fluoranthene specifically.

Bis(2-ethylhexyl)phthalate:

The IRIS database contained both qualitative and quantitative toxicity information for bis(2-ethylhexyl)phthalate, and was used as the primary reference in the carcinogenic risk assessment. Bis(2-ethylhexyl)phthalate is classified as a B2 carcinogen because dose related increases in liver tumors have been observed in rats and mice. The oral slope factor was calculated to be 1.40E-02 $(mg/kg\text{-}day)^{-1}$. The drinking water unit risk is estimated at 4.00E-07 $(ug/l)^{-1}$. A unit inhalation risk for bis(2-ethylhexyl)phthalate is currently not available. The amount and confidence level of animal carcinogenic data is considered sufficient. Human data is inadequate because only short term studies with unqualified exposures were performed.

Due to the lack of dermal exposure slope factors for the indicator chemicals at the Böwe site, dermal toxicity values were estimated from oral RfDs using an assumed absorption efficiency of 20%. Use of a 20% oral absorption efficiency is a relatively conservative estimate that should yield conservative dermal toxicity values in the form of an absorbed slope factor.

Dermal (absorbed dose) slope factors were calculated for each indicator chemical using the following equation:

Absorbed (dermal) Slope Factor = Oral Slope Factor/(Oral Absorption Efficiency)

The toxicity values used at the Böwe site in the carcinogenic risk assessment are summarized in Table 7.4.3.2.

## 7.5 Risk Characterization

The following sections discuss the quantification characterization and/or qualitative characterization of the risks associated with the selected indicator chemicals.

### 7.5.1 Quantification of Risk

Quantification of non-carcinogenic risks are reported as hazard quotients by comparing predicted contaminant intakes directly to toxicity values in the form of reference doses. Hazard quotients for non-carcinogenic risks for soil ingestion and dermal contact pathways were estimated by dividing the exposure level (sub-chronic and chronic daily intakes) by the reference dose (RfDs or RfCs) for each indicator chemical according to the following equation:

$\text{Hazard Quotient}_{\text{sub-chronic}} = \text{Exposure Level}_{\text{sdi}}/\text{Toxicity Value}_{\text{sub-chronic}}$

$\text{Hazard Quotient}_{\text{chronic}} = \text{Exposure Level}_{\text{cdi}}/\ \text{Toxicity Value}_{\text{chronic}}$

Where:
$\text{Exposure Level}_{\text{sdi}}$ = Sub-chronic daily intakes (SDI)
$\text{Exposure Level}_{\text{cdi}}$ = Chronic daily intakes (CDI)
$\text{Toxicity Value}_{\text{sub-chronic}}$ = Sub-chronic RfDs or RfCs
$\text{Toxicity Value}_{\text{chronic}}$ = Chronic RfDs or RfCs

The hazard quotients for each indicator chemical (over each exposure period) are then summarized to yield a total pathway hazard index for the given pathway and time period being analyzed.

Contaminants (or exposure pathways) with a hazard quotient (or hazard index) of 1.0 or greater are considered to have a potential to cause adverse effects in potentially exposed populations. It is stressed that the non-carcinogenic hazard quotient is not a measure of statistical probability, but a comparison of daily intakes to reference doses where adverse effects have been evidenced during validated studies.

Carcinogenic risks are expressed as the probability that an individual will develop cancer over a lifetime of exposure to a particular contaminant or a mixture of contaminants. As with non-carcinogenic risk characterization, carcinogenic risk characterization utilizes contaminant intakes and toxicity values (in the form of slope factors) to quantify risks. The carcinogenic risk (unitless probability) was calculated using the low-dose cancer risk equation by multiplying the carcinogenic daily intakes developed in Section 7.3.4 by the slope factors discussed in Section 7.4.3 according to the following equation:

$$Risk_i = \text{Exposure Intake } (CDI_i) \times \text{Slope Factor } (SF_i)$$

If the risk levels calculated using the low-dose cancer risk equation were found to be greater than 0.01, the one-hit equation for high carcinogenic risk levels as also calculated according to the following equation:

$$Risk_i = 1 - \exp^{(-CDI_i \times Sf_i)}$$

Contaminants with cancer a probability (risk) of 1.0E-04 (one in ten thousand) to 1.0E-06 (one in one million) were considered acceptable risks. The reason for this range of acceptable risks instead of a single value is to allow a qualitative review of the individual contaminant risks based upon non-quantitative factors such as weight of evidence data, confidence of slope factors, etc.

Quantification of risks was performed for all potential exposure pathways where validated toxicity values are available and approved by federal and/or state agencies. In some cases, unit risks were used in place of toxicity values (RfDs and Slope Factors) to quantify potential risks. Quantified risks for the soil, groundwater and air exposure pathways are summarized in the following sections.

#### 7.5.1.1 Soils

Risks were calculated for six different scenarios involving soil contaminants at the Böwe site. Specifically, the following potential risks were quantified:

- Non-carcinogenic, sub-chronic risk - soil ingestion pathway
- Non-carcinogenic, chronic risk - soil ingestion pathway
- Carcinogenic risk - soil ingestion pathway
- Non-carcinogenic, sub-chronic risk - soil dermal contact pathway
- Non-carcinogenic, chronic risk - soil dermal contact pathway
- Carcinogenic risk - soil dermal contact pathway

In order to remain conservative, soil concentrations were assumed to remain constant over the 70 year risk assessment period, with both on-site workers and nearby residents assumed to be in contact with on-site soils. Although this assumption is unrealistic, it will assure that the potentially exposed residential populations risk analysis will be very conservative. It was further assumed that the site is unpaved with 95% upper confidence level concentration on the arithmetic mean available at the surface for ingestion and dermal contact. Since the site is currently paved and residual contaminant concentrations are present only in the subsurface soils, this assumption will again yield conservative estimates of risk.

Using the sub-chronic and chronic daily intakes developed in Section 7.3.4.1 and the toxicity values derived in Sections 7.4.2 and 7.4.3, non-carcinogenic hazard quotients for the soil ingestion and soil dermal contact pathways were calculated, and are summarized in Tables 7.5.1.1.1 and 7.5.1.1.2, respectively.

As indicated in Table 7.5.1.1.1, non-carcinogenic hazard quotients for all contaminants by the soil ingestion pathway were well within the acceptable limit of 1.0. In addition, the total pathway hazard index was also well below 1.0, indicating that there is no significant non-carcinogenic risk associated with the soil ingestion pathway. Carcinogenic risks associated with the individual contaminants by the soil ingestion pathway were within the USEPA acceptable range of 1.0E-04 to 1.0E-06. The total pathway risk was calculated to be 4.0E-06, which is also within the USEPA acceptable range.

Review of the individual contaminant hazard quotients indicate that benzo(a)pyrene and benzo(k)fluoranthene are the major contributors to the total non-carcinogenic hazard index for soil ingestion. The hazard quotients for these contaminants should be very conservative because the RfDs used were derived from NOAELs using worst case uncertainty factors (see Section 7.4.2). The primary contaminants contributing to the total carcinogenic pathway risks were benzo(a)pyrene and benzo(k)fluoranthene. Contaminants with the least contribution to the total pathway risk for soil were PCE and TCE.

As indicated in Table 7.5.1.1.2, non-carcinogenic hazard quotients by the soil dermal contact pathway for all individual contaminants except benzo(a)pyrene and benzo(k)fluoranthene are below 1.0. The total dermal contact pathway hazard index for both the sub-chronic and chronic affects was estimated to be 4.4E+00. This indicates that there are potential risks associated with dermal contact with soils. The contaminants contributing to the pathway hazard index to the greatest degree were benzo(a)pyrene and benzo(k)fluoranthene. Contaminants contributing the least were PCE and TCE.

Carcinogenic risks by dermal contact with soils were within the USEPA accepted range for all individual contaminants except benzo(a)pyrene and benzo(k)fluoranthene. The total soil dermal contact pathway risk was outside the acceptable range. The exceedance of the total pathway risk was again due primarily to benzo(a)pyrene and benzo(k)fluoranthene. PCE and TCE were determined to have the least impact on the total dermal contact pathway risks in soil.

#### 7.5.1.2 Groundwater

Risks were calculated for six different scenarios involving groundwater at the Böwe site. Specifically, the following potential risks were quantified:

- Non-carcinogenic, sub-chronic risk - groundwater ingestion pathway
- Non-carcinogenic, chronic risk - groundwater ingestion pathway
- Carcinogenic risk - groundwater ingestion pathway
- Non-carcinogenic, sub-chronic risk - groundwater dermal contact pathway
- Non-carcinogenic, chronic risk - groundwater dermal contact pathway
- Carcinogenic risk - groundwater dermal contact pathway

Sub-chronic daily intakes used in risk characterization were based on 95% upper confidence level mean groundwater concentrations over a four year period. Chronic daily intakes used in chronic and carcinogenic risk characterization were estimated assuming a 70 year exposure period. Groundwater concentrations used in calculating chronic daily intakes (CDIs) were developed from groundwater modeling results (see Section 7.3.3.2). In order to remain conservative, it was assumed that groundwater can be drawn from any where in the aquifer system (including the Böwe site) at any given time. This essentially assumes that a supply well can be continually relocated so that is placed in the center of a migrating plume at the depth where the greatest contaminant concentrations are present. This assumption was made after discussions with NYSDEC and NYSDOH to guarantee an extremely conservative analysis. The toxicity constants discussed in Sections 7.4.2 and 7.4.3 were used for risk characterization. Use of this "continually moving supply well" assumption will always yield worst case estimates of exposures so that differentiation between on-site workers and local exposed populations are not necessary.

Using the sub-chronic and chronic daily intakes developed in Section 7.3.4.2 and the toxicity values derived in Sections 7.4.2 and 7.4.3, non-carcinogenic hazard quotients for the groundwater ingestion and dermal contact with groundwater pathways were calculated, and are summarized in Tables 7.5.1.2.1 and 7.5.1.2.2, respectively.

As indicated in Table 7.5.1.2.1, non-carcinogenic hazard quotients by the groundwater ingestion pathway for benzo(a)pyrene and benzo(k)fluoranthene exceeded the acceptable limit of 1.0 for sub-chronic exposures. It should be noted that the exposure point concentrations used in the assessment for benzo(a)pyrene and benzo(k)fluoranthene were the detection limits because neither contaminant was detected in groundwater. For this reason, the benzo(a)pyrene and benzo(k)fluoranthene hazard quotients for the groundwater ingestion pathway are greatly over estimated, and in fact may be as low as zero, indicating that there is no benzo(a)pyrene and benzo(k)fluoranthene risks associated with groundwater ingestion. If benzo(a)pyrene and benzo(k)fluoranthene hazard quotients are eliminated from the non-carcinogenic assessment of groundwater ingestion, the total sub-chronic pathway hazard index would be 0.27, well below the acceptable limit of 1.0, indicating that there are no significant non-carcinogenic risks associated with the groundwater ingestion pathway.

Although chronic risks from groundwater ingestion were acceptable for all individual contaminants, the total groundwater pathway hazard of 1.4 exceeds USEPA acceptable risk guidelines. As with sub-chronic risk, the primary contaminants contributing to the chronic risk were benzo(a)pyrene and benzo(k)fluoranthene. Since the chronic daily intakes (CDIs) for benzo(a)pyrene and benzo(k)fluoranthene were estimated using the contaminant detection limits as exposure point concentrations, the actual risks are greatly over estimated. If benzo(a)pyrene and benzo(k)fluoranthene are eliminated from the assessment, the total chronic pathway hazard index decreases to an acceptable risk level of less than 0.4.

Carcinogenic risks associated with groundwater ingestion were within acceptable USEPA risk ranges for all individual contaminants, and just within the acceptable risk range for the total groundwater ingestion pathway. The primary contaminants contributing to the total pathway risk were benzo(a)pyrene, benzo(k)fluoranthene and PCE. Once again it should be noted that neither benzo(a)pyrene nor benzo(k)fluoranthene were detected in groundwater, and that the risks associated with these contaminants are greatly over estimated.

As indicated in Table 7.5.1.2.2, the sub-chronic and chronic non-carcinogenic hazard quotients for all individual contaminants and the total pathway hazard index were less than 1.0, indicating that there are no significant risks associated with non-carcinogenic effects related to the groundwater dermal contact pathway. Carcinogenic risks associated with dermal contact with groundwater were within the acceptable USEPA risk ranges for all individual contaminants and for the total exposure pathway.

#### 7.5.1.3 Air

Due to the lack of quantitative data on inhalation exposure for the volatile compounds at the Böwe site, and the fact that the only source of airborne contamination would be subsurface soils beneath paved areas where the escape of airborne contaminants would be extremely unlikely, air inhalation risks were not quantified as part of the risk assessment. Air risks will be discussed qualitatively in Section 7.5.2.3.

### 7.5.2 Qualitative Characterization of Risk

This section of the risk assessment includes a review of the quantified risks discussed in the previous sections and a discussion of the site-specific and chemical-specific factors that will determine the actual risks at the Böwe site. Whereas the quantitative risk assessment is designed to be extremely conservative and estimate worst possible case scenarios, the qualitative risk assessment will present more realistic estimates of risks based upon site characteristics and proposed site and neighboring land uses.

#### 7.5.2.1 Soils

As indicated in Table 7.5.1.1.1, even under a worst case scenario where the site is exposed to the public, all subsurface soils are brought to grade where direct contact occurs and maximum contaminant concentrations in the soils remain constant (i.e., no biodegradation, leaching or volatilization occurs), there are no significant non-carcinogenic or carcinogenic risks to exposed populations by the soil ingestion pathway. Since ingestion of soils was determined to not be a significant risk using unrealistic, extremely conservative assumptions, it can be stated with great confidence that the soil ingestion pathway at the Böwe site will have no significant associated risks under realistic conditions where the site zoning remains industrial, the site remains paved, access to children is strictly limited, and natural migration, volatilization and biodegradation processes decrease soil concentrations with time.

As indicated in Table 7.5.1.1.2, the quantitative risk assessment revealed that the dermal contact with soils exposure pathway may pose non-carcinogenic and carcinogenic risks due primarily to benzo(a)pyrene and benzo(k)fluoranthene, which represented over 97% of the non-carcinogenic total pathway indices and over 99% of the carcinogenic total pathway risk. The calculated risks for benzo(a)pyrene and benzo(k)fluoranthene are extremely conservative for several reasons and are most likely not indicative of the actual risks at the Böwe site. Due to the absence of federal IRIS or HEAST data, the reference doses used for benzo(a)pyrene and benzo(k)fluoranthene were derived from a NYSDOH study performed to develop Ambient Air Criteria (AACs) for polyaromatic hydrocarbons. The NYSDOH study stated that reproductive effects were noted following oral exposure to benzo(a)pyrene doses of 10 mg/kg-day. However, no details of the study were available. For this reason a relatively high uncertainty factor of 1,000 was used to estimate an oral RfD of 1.0E-04. The oral RfD was further modified for absorption by assuming an oral absorption efficiency of 0.2 to yield a conservative dermal RfD of 2.0E-05. This value was also used as a surrogate for benzo(k)fluoranthene. Since confidence levels in the RfDs for benzo(a)pyrene and benzo(k)fluoranthene were extremely low and significant uncertainties were applied to yield very conservative results, the actual hazard quotients for these compounds are most likely much lower than the hazard quotients presented in Section 7.5.1.1.

In conclusion, the scenario for dermal exposure to soils used in the quantitative risk assessment assumed that all subsurface soils are exposed on the surface (unrealistic), the site has unlimited access to the public (unrealistic) and that soil concentrations remain at the 95% upper confidence level on the arithmetic mean forever (highly improbable). Since none of these situations is actually in effect or anticipated to be in effect at the Böwe site, the analysis performed is extremely conservative, and in all likelihood is not representative of the actual risks associated with the site. Based on our knowledge of the site and discussions with NYSDEC and NYSDOH, the soil exposure pathways (ingestion and dermal contact) are not considered significant risks to potentially exposed populations.

#### 7.5.2.2 Groundwater

Based upon the results of the quantitative risk assessment, ingestion of groundwater represents the exposure pathway with the greatest potential risks to exposed populations. Both non-carcinogenic (sub-chronic and chronic) and carcinogenic risks are estimated to be present for potentially exposed populations. In actuality, the groundwater ingestion and dermal contact pathways analyzed in the risk assessment were the most conservative of all those assessed and represent unrealistic worst case exposures. If those contaminants which were non-detectable in groundwater (i.e., benzo(a)pyrene and benzo(k)fluoranthene) are eliminated from the quantitative assessment, all groundwater ingestion risks fall within USEPA acceptable guidelines for the sub-chronic, chronic and carcinogenic scenarios.

Sub-chronic exposures to groundwater assumed that a potable water supply well could be installed anywhere in the aquifer at any given time during the four year exposure period, including at the fence line of the Böwe site. Since the subject property is zoned for industrial use, the probability that a public water supply well will be installed at the fence line, where the highest contaminant concentrations were detected, is extremely remote. For this reason, the risks presented for sub-chronic exposures related to ingestion of groundwater are extremely unrealistic. In all likelihood, there is not even a completed pathway for the ingestion of groundwater during the sub-chronic exposure period because no groundwater supply wells are proposed at Böwe, and the groundwater model results predict that the contaminant plume will not reach any existing public water supply wells in the four year period.

The groundwater risk assessment for chronic and carcinogenic exposures was based upon a "movable well" assumption in which it was assumed that groundwater could be drawn for potable use anywhere in the aquifer at any given time over the 70 year exposure period. Discussions with NYSDOH indicate that this assumption should be used for the future land scenario to represent worst case risks in the future. In order to quantify exposures, the AT123D groundwater model was used to predict groundwater plume migration over the next 30 years. Worst case concentrations for each contaminant (at any point in the aquifer) were tabulated and a 95% upper confidence level on the arithmetic mean concentration was calculated for the maximum modeled concentrations. These worst case contaminant concentrations were then used as the exposure point concentrations. In reality, public water supply wells would never be installed in the center of a contaminant plume and then relocated continually so that the wells would always be located at the point of highest contaminant concentrations. This assumption is totally unrealistic and will yield overly conservative results that will not be indicative of even worst case future risks.

Results of the AT123D model were reviewed to estimate realistic worst case exposure point concentrations. The model results indicate that the maximum contaminant concentrations at currently existing public water supply wells will occur roughly 15 years from now. It has further been determined through discussions with regulatory agencies that there are no plans to install new public water supply wells downgradient of the Böwe site in the path of the plume. Contaminant concentrations at the time when existing downgradient supply wells are modeled to be impacted will be several orders of magnitude lower than the present on-site groundwater concentrations. Maximum contaminant concentrations at existing downgradient supply wells were predicted to be well within groundwater quality standards when the plume eventually reach well field. For this reason, no significant risks are expected by the groundwater ingestion pathway under realistic scenarios of future land use at the site and on neighboring properties.

The risks predicted for ingestion of groundwater contaminated with PCE are considered to be the most realistic due to the large amount of groundwater quality data available on PCE and the fact that groundwater models used for predicting future concentrations were validated using historical and current PCE data. In addition, the PCE toxicity data used is the most recent available and the degree of confidence in the data is very high. For these reasons, it is our opinion that PCE will be the most realistic potential contaminant of concern as it pertains to potential risks to human health by ingestion of groundwater.

Since dermal contact with groundwater was not predicted to posses a significant risk, even under the extremely conservative scenarios discussed above, it is not anticipated that risks associated with dermal contact with groundwater will be significant under realistic conditions.

### 7.5.2.3 Air

Due to the relative lack of toxicity values for the air inhalation exposure pathway compared to the soil and groundwater exposure pathways, the bulk of the air risk assessment was performed qualitatively. In general, the results of the limited quantitative evaluation revealed that air risks were negligible, with intake rates predicted to be in the range of 1.1E-10 to 0.3E-21 mg/kg-day. PCE and TCE represented greater risks than the SVOCs. Qualitatively, this is what would be expected due to the fact that VOCs are more likely to volatilize from soil than SVOCs.

Quantitative analysis of fugitive dust emissions was not performed for the Böwe site due to the extremely low probability of significant dust generation. All soils impacted with residual levels of contaminants are located in the subsurface beneath paved areas, with no driving force to generate dusts. Since it is impossible to accurately predict the exact type of future land use and how it might impact fugitive dust emissions, it was determined that any quantitative assessment would contain such a large degree of potential error that it would not yield assessable results.

Given the history of the Böwe site, it is probable that the deeper soils where the residual levels of contaminants are present would only be excavated as part of a remedial action, and the site would not be converted to a use where soils are exposed at the surface. Under any remedial action, precautions would be taken to minimize releases of dust and to protect workers from inhalation exposures, thereby eliminating, or at the very least minimizing the air inhalation exposure pathway. For these reasons, it is not expected that air inhalation of fugitive dusts would pose a significant threat to potentially exposed populations. In addition, the results of the risk assessment indicate that there are no significant risks associated with either soil ingestion or dermal contact with soils, so a no action alternative as relates to soil remediation is likely. In the case of no action, soil contact with ambient air would be eliminated and an exposure pathway for the inhalation of wind blown contaminants would not exist.

## 7.6 Human Health Evaluation Summary

Results from the Phase I RI and other past studies at the Böwe site were utilized to perform both a quantitative and qualitative evaluation of present and future risks to human health from potential exposures on and off-site. The quantitative assessment was designed to present a worst case estimate of risks due to contaminants in soil, groundwater and air at the Böwe site and at off-site potentially exposed populations.

In summary, it was determined that potentially exposed populations are situated in all directions surrounding the site, with the greatest locally exposed population (within 1 kilometer) located to the southeast.

The quantitative risk assessment indicated that under a worst case scenario in which future unrestricted land use was allowed to occur, unacceptable risks to human health may be present via the soil dermal contact and groundwater ingestion exposure pathways. Risks by all other exposure pathways (i.e., soil ingestion and groundwater dermal contact) were within USEPA acceptable risk guidelines for both non-carcinogenic and carcinogenic effects.

In the case of the sub-chronic and chronic soil dermal contact pathways, chemical specific hazard quotients for benzo(a)pyrene and benzo(k)fluoranthene, and the total pathway hazard indices exceeded the maximum acceptable guidance value of 1.0. These exceedances were caused primarily by the extremely low level of confidence and high level of uncertainty used in the derivation of toxicity values for benzo(a)pyrene and benzo(k)fluoranthene. These two contaminants accounted for approximately 98% of the total pathway risk for soil dermal contact. Realistically, significant risks by dermal contact with soils are not expected due to site characteristics and over conservative estimates of risks associated with benzo(a)pyrene and benzo(k)fluoranthene.

In the case of the quantitative evaluation of non-carcinogenic risks associated with ingestion of groundwater, unacceptable risks were estimated for benzo(a)pyrene and benzo(k)fluoranthene. The risks for these two contaminants are not considered significant because all hazard quotients and chemical specific risks were calculated using the compounds' detection limits as the worst case groundwater concentrations. In actuality, benzo(a)pyrene and benzo(k)fluoranthene were non-detectable in all groundwater samples analyzed. Therefore the actual risks associated with the ingestion of groundwater for benzo(a)pyrene and benzo(k)fluoranthene may be nonexistent.

Risks associated with carcinogenic effects by the groundwater ingestion pathway were at acceptable levels for all individual contaminants, however, the total pathway risk exceeded the most conservative acceptable range of 1.0E-04. Other than benzo(a)pyrene and benzo(k)fluoranthene, which can be dismissed due to the reasons stated above, the most significant contributor to the total pathway risk was PCE. Based upon the large quantity of data available and the relatively high level of confidence in the derived toxicity values, it is probable that PCE will present the greatest risk to human health by the ingestion of groundwater.

After competing the quantitative risk assessment, a qualitative review of risks was performed to determine what risks if any were most likely to occur under more realistic present and future scenarios. The soil dermal contact pathway will most likely not present significant risks to human health because all soils with residual contaminant concentrations are located beneath paved areas in the subsurface at depths ranging from 5 to 25 feet below grade. The only way that subsurface soils would be brought to the surface where dermal contact could be possible would be during future soil remediation activities. It was also assumed that soil concentrations would remain constant forever and that no decrease in concentrations would occur due to leaching, volatilization or natural biodegradation. This assumption provides a worst case estimate of soil concentrations and will cause an overly conservative estimate of exposure point concentrations and daily intakes. For these reasons, it is probable that actual risks associated with dermal contact with soils will not present a significant or unacceptable risk to human health.

The qualitative review of the groundwater ingestion exposure pathway indicated that of all the exposure pathways assessed, the quantitative assessment of groundwater exposures was by far the most conservative and unrealistic. Groundwater risk assessment for chronic and carcinogenic exposures was based on a "movable well" assumption in which it was assumed that groundwater can be drawn for potable use from anywhere in the aquifer at any given time over the 70 exposure period, and that the wells would always be located in the most contaminated portion of the aquifer. In reality, public water supply wells would never be installed in the center of a known contaminant plume without substantial treatment. This assumption increased the predicted level of risk by several orders of magnitude over the 70 year carcinogenic assessment period. The "movable well" assumption, coupled with detection limit concentrations for benzo(a)pyrene and benzo(k)fluoranthene, when these contaminants were in fact non-detectable in all groundwater samples, would resulted in unrealistic, overly conservative estimates of risk.

Although PCE would be affected by the "movable well" assumption, based upon the fact that PCE was used to validate the groundwater model, it is our opinion that the PCE risks predicted in the quantitative risk assessment for exposure by groundwater ingestion are most representative of the risks to human health likely to occur over the realistic duration of the risk assessment period.

# 8.0 SUMMARY AND CONCLUSIONS

This section of the RI Report provides a summary of the nature and extent of contamination; fate and transport modeling; and the health-based risk assessment at the Böwe site.

## 8.1 Summary of Nature and Extent of Contamination

The nature and extent of contamination at the Böwe site was investigated by media, including on-site soils, on-site groundwater and off-site groundwater. On-site soils were investigated by suspected source areas.

### 8.1.1 On-Site Soils

Soils were investigated in three areas of the site which were suspected as potential sources of VOC contamination, namely, the stormwater drywell system, the former spray booth area and the former subsurface sanitary wastewater disposal system.

#### 8.1.1.1 Drywell System Soils

As part of the Phase I RI, soil borings were conducted in five (DW-4, DW-5, DW-6, DW-7 and DW-8) of the eight on-site stormwater drywells. The remaining three drywells (DW-1, DW-2 and DW-3) were investigated and remediated to the satisfaction of the NYSDEC during the initial response action, the results of which are documented in an April 1991 Soil Excavation Report prepared by Fenley & Nicol.

Two soil samples, one shallow (within 2 feet of the drywell bottom) and one deep (between 22 and 49 ft. bgs), were obtained from each the five drywells for analysis. All five drywells contained non-detectable to trace levels of TCL VOCs. None of the detected VOCs exceeded their respective RSCOs. In particular, PCE, the primary contaminant of concern at the Böwe site, was detected at a maximum concentration orders of magnitude below its RSCO. TCL SVOCs, pesticides and PCBs where either non-detectable or present at concentrations well below RSCOs. Beryllium, calcium, copper, lead, mercury, vanadium and zinc were detected in one or more drywell at concentrations exceeding their respective RSCO or site background levels. In all cases, the higher metal concentrations were detected in the shallow soil samples (within 2 feet of the drywell bottom). All other TAL metals were either non-detectable or present at concentrations below their respective RSCOs.

#### 8.1.1.2 Former Spray Booth Area

As part of the Phase I RI, six soil samples from the former spray booth area were collected for analysis. Four samples were collected from soil borings conducted in an area just south of the former spray booth, where VOC impacted soils had been removed as part of an IRM in September 1992. A soil vapor survey (SVS) was conducted, and the soil borings were positioned at locations where the highest PID responses were obtained. Soil samples from depths of 5 to 7 ft. bgs and 15 to 17 ft. bgs were retained for analysis. A second SVS was conducted in the area around a concrete pad located north of the former spray booth. Two additional soil samples were collected within 3 feet of the ground surface at locations where the highest PID responses were obtained.

TCL VOCs were detected at trace amounts in the shallower soil samples, and where non-detectable in the deeper samples. All detected VOCs were well below their respective RSCOs. PCE, the principal contaminant of concern at the Böwe site, was detected at a maximum concentration orders of magnitude below its RSCO. Potassium was detected in one of the six samples at a concentration above the site-specific background level. All other TAL metals were either non-detectable of present at concentrations below their respective RSCOs.

#### 8.1.1.3 Sanitary Disposal System

Located off the north side of the Böwe facility, the former subsurface sanitary disposal system consisted of a septic tank and three leaching pools. The disposal system was investigated as part of the 1992 Site Screening Investigation (SSI), and subsequently underwent an IRM involving the pumping and cleaning of the septic tank and leaching pools. As part of the Phase I RI, an additional soil boring was conducted through the center of leaching pool S-2. Two soil samples, one shallow (within 2 feet of the leaching pool bottom) and one deep (27-29 ft. bgs), were obtained from the leaching pool for analysis. TCL VOCs were detected at trace concentrations in the shallower of the two samples. Detected VOCs were all present at concentrations orders of magnitude below their respective RSCOs. TCL VOCs were non-detectable in the deeper sample. Five TCL SVOCs were detected in the shallow soil sample and one in the deeper sample. All detected TCL SVOCs were present at concentrations below their respective RSCOs. Beryllium, calcium, copper, magnesium, potassium and zinc were detected in the shallow soil sample at concentrations above the site-specific background levels. All other TAL metals in this sample, and all TAL metals in the deeper soil sample were either non-detectable or present at low concentrations well below their respective RSCOs.

### 8.1.2 On-Site Groundwater

As part of the Phase I RI, two additional on-site groundwater monitoring wells were installed, and together with four existing wells, used to characterize the shallow groundwater beneath the site. One round of groundwater sampling was conducted during the Phase I RI, with the groundwater samples analyzed for TCL VOCs, TCL SVOCs, TCL pesticides/PCBs and TAL metals. As part of the Phase II RI, four additional rounds of groundwater monitoring were conducted at selected on-site wells. During the Phase II RI, groundwater analyses were limited to VOCs (EPA Method 601/602) only.

During the November 1992 Phase I RI groundwater monitoring event, PCE and TCE were the only significant TCL VOCs detected in the on-site wells (1,2-DCE was detected at an estimated concentration of 2J ug/l in MW-6). PCE was detected in the downgradient wells at concentrations ranging from non-detectable to 430D ug/l. TCE was detected in the downgradient wells at concentrations ranging from non-detectable to 14 ug/l. Both PCE and TCE were non-detectable in the upgradient wells. Five specific TCL SVOCs were detected in one or more on-site wells. Of these SVOCs, only bis(2-

ethylhexyl)phthalate, was detected in the downgradient wells. Bis(2-ethylhexyl)phthalate exceeded its Class GA Water Quality Standard only in upgradient well MW-1. TCL pesticides/PCBs were non-detectable in all on-site wells. Barium, cadmium, chromium, copper, iron, lead, manganese, sodium and zinc were detected in one or more on-site monitoring wells at concentrations exceeding their respective Class GA Water Quality Standards. However, with the exception of barium and zinc, these same metals also exceeded the Class GA Water Quality Standards in one or both upgradient wells.

During the Phase II RI, four additional rounds of on-site groundwater monitoring were conducted over an approximate four year period. During that time PCE concentrations in the downgradient wells have decreased significantly. Historically, the most highly impacted downgradient wells have been MW-4 and MW-6. PCE concentrations in MW-4 decreased from 280 ug/l to approximately 115 ug/l between November 1995 and April 1997. In MW-6, PCE concentrations decreased from roughly 460 ug/l to approximately 205 ug/l between November 1992 and April 1997.

### 8.1.3 Off-Site Groundwater

Two off-site exploratory well programs were conducted during the Phase II RI. Using temporary well points set downgradient of the site, groundwater samples were collected from five depths in the shallow aquifer and analyzed for VOCs (EPA Method 601/602). During the first round of off-site monitoring, three exploratory wells were positioned at distances of approximately 525, 1,075 and 1,100 feet downgradient of the site. PCE, the principal contaminant of concern at the Böwe site, was non-detectable in all three exploratory wells. TCE was detected at concentrations ranging from non-detectable to 24 ug/l.

During the second round of off-site groundwater monitoring, four exploratory wells were positioned at distances of approximately 120, 250 and 390 feet downgradient of the site. Samples were collected at two depths from each temporary well point and analyzed for VOCs (EPA Method 601/602). PCE was detected in all three wells at concentrations ranging from 4 to 20 ug/l. In general, PCE concentrations were higher in the shallow samples (13 ug/l average) than in the deeper samples (6 ug/l average). Based upon the results of the exploratory well programs, a permanent off-site monitoring well (OW-1) was installed approximately 75 feet downgradient of the site. Using hydropunch sampling techniques, groundwater samples were collected from depths of 77 and 92 feet below grade (20 and 35 feet below the groundwater interface) during the well installation. The well was screened at the groundwater interface. After development, the well was sampled in conjunction with select on-site wells. PCE was detected in OW-1 at concentrations of 34 ug/l at the groundwater interface and 24 ug/l, 20 feet below the groundwater interface. PCE was non-detectable at a depth of 35 feet below the water table.

## 8.2 Summary of Fate and Transport Modeling

As part of the RI, the fate and transport of indicator chemicals selected for the Risk Assessment were modeled for soil, groundwater and air. A summary of the fate and transport modeling results are discussed for each route of migration.

### 8.2.1 Summary of Fate and Transport in Soils

H2M utilized the USEPA SESOIL, vadose zone soil model under the framework of the RISKPRO risk assessment modeling system to assess the downward migration of contaminants in the unsaturated zone. As indicated in Section 6.1, the SESOIL model was modified to simulate stormwater runoff into the drywells. Modeling results predict that PCE and TCE, with relatively low partitioning coefficients and relatively high solubilities, have already leached through the vadose zone and have impacted soils at the groundwater interface. Modeling results predict that the SVOCs, with higher partitioning coefficients and lower solubilities, will remain relatively immobile in the soils. This was confirmed by on-site groundwater monitoring, which indicate the SVOCs, except bis(2-ethylhexyl)phthalate, were non-detectable in the downgradient wells.

### 8.2.2 Summary of Fate and Transport in Groundwater

H2M utilized the USEPA AT123D groundwater model in conjunction with the RISKPRO modeling package to predict groundwater contaminant fate and transport. In general, the model predicted that the contaminant plume will migrate from the Böwe site within the first modeled year (i.e., 1992/1993). Long term modeling predicts that the nearest public water supply wells (Hicksville Water District wells N-7561 and N-9212), located approximately 1,100 meters downgradient of the Böwe site, would be impacted approximately eight years after the November 1992 sampling event (i.e., year 2000) at extremely low concentrations (less than 0.1 ug/l). Worst case PCE concentrations at the downgradient public water supply wells are estimated to be 0.2 ug/l and are predicted to occur in the year 2012.

It should be noted that while the fate and transport modeling would indicate that PCE will readily migrate with groundwater flow, actual data from seven temporary off-site well points and one permanent off-site monitoring well positioned downgradient of the Böwe site indicate that the PCE plume is rapidly decreasing in concentration as it migrates. The significant decreases in PCE concentrations downgradient of the site are attributable to Böwe's having successfully removed the source areas (i.e., IRMs), and to dilution and natural attenuation not accounted for in the computer model.

### 8.2.3 Summary of Fate and Transport in Air

In predicting the fate and transport of contaminants in air, H2M utilized the SESOIL model outputs to estimate contaminant volatilization rates, and the USEPA approved Industrial Source Complex-Long Term (ISCLT) air dispersion model to predict contaminant fate. Maximum PCE and TCE concentrations within five kilometers of the site were predicted to be less than 2.0 E-8 mg/m$^3$. As expected, air dispersion modeling for SVOCs resulted in maximum receptor concentrations orders of magnitude less than those for PCE and TCE.

## 8.3 Summary of Fish and Wildlife Assessment

A fish and wildlife impact assessment at the Böwe site was performed during the Phase I RI. As part of the assessment, appropriate regulatory agencies were contacted to evaluate the presence of potentially impacted plants, animals and habitats. In addition, a site inspection was conducted to evaluate on-site and nearby protected plants, animals and habitats. In summary, there were no protected plants, animals or habitats identified that would be impacted by the Böwe site.

## 8.4 Summary of Risk Assessment

A health based risk assessment was performed to characterize potential risks to human health as a result of soil, groundwater and air contamination at the Böwe site. The risk assessment was performed utilizing data from the RI, and included both a quantitative and qualitative evaluation of present and future risks from potential exposures on and off-site.

### 8.4.1 Summary of Quantitative Risk Assessment

The quantitative risk assessment was designed to present a worst case estimate of risks associated with contaminated soils and groundwater by ingestion and dermal contact. Due to the lack of quantitative data on inhalation exposure for the volatile compounds at the site, and the fact that the only sources of airborne contamination would be subsurface soils located beneath paved areas where the escape of airborne contaminants would be extremely unlikely, air inhalation risks were not quantified.

Results of the quantitative assessment indicate that under worst case scenarios, unacceptable risk to human health may be present via the soil dermal contact and groundwater ingestion exposure pathways. Risks by all other exposure pathways (i.e., soil ingestion and groundwater dermal contact) were within USEPA acceptable risk guidelines for both carcinogenic and non-carcinogenic effects. Unacceptable risk via the soil dermal contact exposure pathway was due primarily to benzo(a)pyrene and benzo(k)fluoranthene, which accounted for over 97% of the non-carcinogenic total pathway hazards, and over 99% of the carcinogenic total pathway risk. Non-carcinogenic hazard quotients and the carcinogenic chemical risk for PCE, the primary contaminant of at the Böwe site, were all well within acceptable risk guidelines.

Unacceptable risk by the groundwater ingestion exposure pathway was also due principally to benzo(a)pyrene and benzo(k)fluoranthene, which accounted for over 94% of the non-carcinogenic total pathway hazards, and over 85% of the carcinogenic total pathway risk. The risks for these two contaminants are not considered significant because all hazard quotients and chemical specific risks were calculated using the compounds' detection limits as the worst case concentrations in groundwater. In actuality, benzo(a)pyrene and benzo(k)fluoranthene were non-detectable in all groundwater samples analyzed. Therefore the actual risks associated with the ingestion of groundwater for benzo(a)pyrene and benzo(k)fluoranthene may be nonexistent.

Chronic and sub-chronic non-carcinogenic hazard quotients for PCE were within the USEPA acceptable guidelines. The carcinogenic chemical risk for PCE was just outside the upper acceptable risk of 1.0E-04. However, it should be noted that the groundwater exposure pathways were extremely conservative. It was assumed that a public water supply well could be positioned in the Upper Glacial aquifer, and move with the plume such that the well is always in the location of highest contaminant concentrations.

### 8.4.2 Summary of Qualitative Risk Assessment

While the quantitative risk assessment was designed to present a worst case estimate of risk, the qualitative assessment evaluated risk under more realistic present and future scenarios. The qualitative assessment determined that the soil dermal contact pathway will likely not present a significant risk to human health because all soils with residual contaminant concentrations are located beneath paved areas in the subsurface at depths ranging from 5 to 25 feet below grade. In the quantitative assessment, it was assumed that contaminant concentrations would remain constant over time, and that no decrease in concentration would occur from leaching, volatilization or natural biodegradation. For these reasons, it is probable that dermal contact with soils at the Böwe site will not present a significant or unacceptable risk to human health.

Of the indicator chemicals evaluated as part of the quantitative risk assessment, benzo(a)pyrene and benzo(k)fluoranthene were determined to pose the most significant risk via the groundwater ingestion exposure pathway, accounting for over 94% of the non-carcinogenic total pathway hazards, and over 85% of the carcinogenic total pathway risk. However, neither benzo(a)pyrene nor benzo(k)fluoranthene were actually detected in any groundwater samples. Chronic and carcinogenic exposures were also based on a "movable well" assumption in which groundwater could be drawn for potable use from anywhere in the shallow aquifer at any given time during the exposure period, and that the well would always be located in the most contaminated portion of the aquifer. In reality, public water supply wells would never be located in the center of a known contaminant plume. While fate and transport modeling predict PCE will ultimately migrate approximately 1,100 meters downgradient toward two existing public water supply wells operated by the Hicksville Water District, maximum PCE concentrations are predicted to be well within Class GA Water Quality Standards.

Once again, it should also be noted that while the fate and transport modeling would indicate that PCE will readily migrate with groundwater flow, actual data from seven temporary off-site well points and one permanent off-site monitoring well positioned downgradient of the Böwe site indicate that the PCE plume is rapidly decreasing in concentration as it migrates.

## 8.5 Conclusions

The investigations conducted during the RI, including sampling and analysis of soils and groundwater, fish and wildlife assessment, fate and transport modeling, and risk assessment, were sufficient to fully characterize the nature and extent of contamination at the Böwe site and assess the impact of contamination on the environment and human health. Based upon the results of the RI, we draw the following conclusions:

1□ Subsurface soils beneath the four of the eight stormwater drywells, namely, DW-1, DW-2, DW-3 and DW-4, were found to be impacted with VOCs. The most highly impacted drywells were DW-1, DW-2 and DW-3. Two IRMs were implemented and the four drywells were remediated to the satisfaction of the NYSDEC prior to the RI. Trace to low level concentrations of VOCs, SVOCs and/or metals are present in first few feet of soil beneath drywells DW-4, DW-5, DW-6, DW-7 and DW-8, with contaminant concentrations dropping significantly with depth. PCE, the primary contaminant of concern at the Böwe site, was detected at maximum concentrations orders of magnitude below its RSCO. No further action is warranted at the drywell system.

2□ Shallow soils in the area immediately south of the former spray booth were found to be impacted with VOCs, primarily PCE, and an IRM removing the impacted soils was instituted prior to the RI. Data developed during the RI, indicate trace to low level residual VOCs present in the subsurface soils at concentrations well within the NYSDEC RSCOs. PCE, the primary contaminant of concern at the Böwe site, was detected at maximum concentrations orders of magnitude below its RSCO. No further action is warranted in this area.

3□ The former subsurface sanitary disposal system was found to contain low level VOCs (dichlorobenzenes), and an IRM was instituted prior to the RI. Data developed during the RI indicate that the IRM was successful in removing the impacted soils. No further action is warranted.

4□ Shallow groundwater beneath the site has been impacted by VOCs, primarily PCE with lesser amounts of TCE. Groundwater monitoring over the past six years, indicate PCE concentrations decreasing in the downgradient wells, with the most recent data showing PCE levels of between 30 and 200 ug/l in the on-site downgradient wells.

5□ Shallow groundwater downgradient of the site has been impacted due to the off-site migration of the PCE plume. However, PCE concentrations immediately downgradient of the site are dramatically lower than on-site, with concentrations of less than 50 ug/l.

### 8.5.1 Data Limitations and Recommendations for Future Work

The information and data developed during the RI was sufficient to characterize the nature and extent of contamination at the Böwe site and assess the impact of the contamination on the environment and human health. Based upon the data validation results, none of the analytical data generated during the RI was rejected. Therefore, the analyses performed as part of the RI yielded usable data, and there are no additional data needs to complete the Feasibility Study.

### 8.5.2 Recommended Remedial Action Objective

In general, the remedial action objective for the Böwe site should eliminate or mitigate all significant threats to the public health and the environment presented by the hazardous wastes disposed of at the site. Specifically, the recommended remedial action objective is to provide for the attainment of ARARs (i.e., Class GA Water Quality Standards) at the limits of the area of concern (i.e., downgradient public water supply wells) to the extant practical.

## 9.0 FEASIBILITY STUDY

The objective of the Böwe Feasibility Study (FS) is to develop, screen and evaluate appropriate remedial actions, which will achieve the remedial objective established for the site. Based on the nature and extent of contamination at the Böwe site as determined during the RI, results of fate and transport modeling and human health risk assessment, the recommended remedial action objective for the site is to provide for the attainment of ARARs at the limits of the area of concern (i.e., public water supply wells downgradient of the site) to the extent practical.

### 9.1 Identification and Screening of Remedial Action Alternatives

Based upon the results of the RI and pre-RI investigations, the IRMs conducted in 1991 and 1992 were successful in removing soils impacted with PCE, thereby eliminating any continuing sources of groundwater contamination at the site. The RI also established the nature and extent of low level residual contamination remaining in the deeper subsurface soils and, relatively low PCE concentrations in groundwater on-site and off-site. Although low levels of residual PCE are present in the subsurface soils (5 to 20 ft. bgs), the concentrations were orders of magnitude lower than the established ARARs (NYSDEC Recommended Soil Cleanup Objectives). PCE concentrations in groundwater on-site and downgradient of the source areas have decreased significantly over the past five years. This decrease has been attributed to primarily to the removal of the PCE source areas (i.e., IRMs conducted in the drywell system, former spray booth area and former sanitary disposal system). PCE was also detected in the groundwater off-site and downgradient of the source areas. However, the PCE concentrations were an order of magnitude lower than those observed on-site. This dramatic drop in PCE concentrations between the on-site groundwater and off-site groundwater within 400 feet downgradient of the site has been attributed to eliminating all on-site source areas, and natural attenuation and dilution.

Based upon the nature and extent of contamination, and results of fate and transport modeling and risk assessment, it has been determined that additional remediation of on-site subsurface soils is not warranted, and remedial alternatives would be considered for on-site groundwater only.

### 9.1.1 General Response Actions

Both soils and groundwater at the Böwe site were shown to be affected by VOCs. However, IRMs conducted in 1991 and 1992 were successful in removing those soils which were most heavily impacted with PCE. Residual PCE concentrations in the remaining subsurface soils were determined to be well within the ARARs established for the site (i.e., NYSDEC RSCOs). Accordingly, no additional remedial actions were considered for the on-site soils. General response actions for on-site groundwater include containment, in-situ treatment, collection and treatment and no further action.

## 9.2 Identification of Remedial Technologies

This section of the FS evaluates potentially feasible remedial technology alternatives for their implementability, and for their ability to meet ARARs and/or provide overall protection of human health and the environment within a reasonable time frame. Those alternatives, which may not be effective in meeting remedial action objectives, and/or prove difficult to implement based on site conditions, or rely on unproven technologies will be eliminated from further consideration. Those alternatives still determined to be applicable will be further evaluated in a more detailed analysis, using the following criteria:

- Compliance with ARARs
- Overall protection of human health and the environment
- Short-term effectiveness
- Long-term effectiveness and permanence
- Reduction in toxicity, mobility or volume
- Implementability
- Cost

As indicated previously, the general response actions to be considered for groundwater will include containment, in-situ treatment, collection and treatment and no further action. A general description of each general response action, and the alternatives associated with each is provided in the following sections.

### 9.2.1 Containment

Containment of impacted groundwater at the Böwe site would require either the construction of impermeable slurry walls or sheet piling.

- Slurry Walls: Containment of the PCE plume by the use of slurry walls would require the installation of a network of trenches to surround the contaminant plume. The trenches would then be backfilled with an impermeable slurry in order to prevent further migration of the plume. Based on the area extent of the PCE plume, this option was deemed not feasible.
- Sheet Piling: As with the slurry walls, this method would require surrounding the PCE plume with impermeable sheet piling to prevent the further migration of the plume. Based on the area extent of the plume, this option would not be feasible.

Containment of the PCE plume was deemed unfeasible and eliminated from further evaluation.

### 9.2.2 In-Situ Treatment

In situ treatment is the process by which contaminants are remediated at their present location. In-situ treatment technologies for groundwater remediation include biological, chemical and physical treatment.

- In-Situ Biological Treatment: Biological treatment requires the development of microorganisms capable of decomposing specific organic contaminants. Generally this process requires the addition of oxygen and nutrients to promote the growth of microorganisms, and is most effective in the treatment of groundwater containing moderate to high levels of organic compounds. Because PCE levels in the groundwater at the Böwe site are relatively low, bioremediation would not be effective.

- In-Situ Chemical Treatment: In-situ chemical treatment of groundwater would require the introduction of chemicals to degrade, immobilize or flush out the contaminants. Because introducing chemicals into the aquifer was deemed undesirable, this alternative was eliminated from further consideration.
- In-Situ Physical Treatment: In-situ physical treatment attempts to immobilize, detoxify or transfer the contaminants to another media where they are more readily collected/treated. Methods currently used include heating for thermal decomposition, and air sparging. Air sparging is a process where air is introduced under pressure below the water table to increase the rate of volatilization of VOCs in the saturated zone. Air sparging is generally used in conjunction with vapor extraction to effectively capture VOCs volatilized from the saturated zone as well as reduce VOC levels in the unsaturated soils

In-situ treatment of groundwater via air sparging in combination with vapor extraction was considered feasible, and will be further evaluated as part of the detailed alternative analysis.

### 9.2.3 Collection and Treatment

This option would require the construction of recovery wells of sufficient size and number to create a hydraulic boundary to intercept the on-site groundwater plume. The collected groundwater could be treated and discharged on-site (i.e., recharge to groundwater), pretreated on-site and discharged to the publicly owned treatment works (POTW) or discharged directly to the POTW for off-site treatment.

- Pump and Treat: Through the use of recovery wells, contaminated groundwater would be collected for on-site treatment. Treated groundwater would be recharged back to groundwater on-site or discharged to the POTW. Local POTWs are typically hesitant to accept treated groundwater into the sewer because of the low contaminant loading and relatively high flow rates, and the additional hydraulic loading the discharge would place on their systems. Discharge to a POTW was therefore eliminated from further evaluation. Pump and treat technology with various treatment options is a technically viable option and will be retained for further analysis. Alternative groundwater treatment technologies are discussed in the following sections.

#### 9.2.3.1 Biological Treatment

Biological treatment, using activated sludge systems, trickling filters or rotating biological contactors, attempt to create a controlled environment which maximizes the growth of the microorganisms required for the breakdown of organic material. Biological treatment processes produce a sludge that might require additional treatment.

- Activated Sludge Systems: Activated sludge systems rely on microorganisms that oxidize VOCs to carbon dioxide and water in the presence of oxygen. This process would require the addition of oxygen and a relatively high and steady influent of organics. This option is not feasible due to the historically low levels of VOCs in the on-site groundwater.
- Trickling Filters: This process involves the growth of biological systems on a media through which the contaminated water is passed, resulting in the oxidation of the organic material in the water stream. Trickling filters are sensitive to seasonal variations, and are susceptible to clogging due to build-up and subsequent sloughing off of excessive biological material. Similar to the activated sludge systems, trickling filers also require a relatively high and steady influent of organics for effective long-term treatment. This option was removed from further considerations.
- Rotating Biological Contactors: Rotating Biological Contactors (RBCs) are

conceptually similar to trickling filters. Microorganisms attach to media which is rotated through the groundwater discharge stream. As with the other biological treatment alternatives, limitations include a steady source of organic material required. This process was also eliminated from further consideration.

Treatment of groundwater by biological means was deemed impractical and the process eliminated from further consideration.

### 9.2.3.2 Chemical Treatment

Chemical treatment processes include oxidation reactions, chemical precipitation and ultraviolet (UV) oxidation.

- Chemical Oxidation-Reduction Reactions: This process is effective in reducing the toxicity or solubility of a contaminant. The oxidation process is useful in the treatment of dilute organic solutions via the addition of a strong oxidizing chemical (ozone, hydrogen peroxide, potassium permanganate, etc.). Limiting factors include the necessity of hazardous chemicals to perform the oxidation process, and the possibility of toxic by-products if the oxidation reaction is not brought to completion. Because of these limiting factors, this process option was eliminated from further consideration.
- Chemical Precipitation: Chemical precipitation is primarily used in the treatment of solutions containing dissolved metals. Chemicals are added to the water stream to react with dissolved contaminants to form a precipitate, which is then settled out of the liquid. This process combines the chemical process by which a suspended particles' charge is satisfied (coagulation) with the mechanical process of mixing. Mixing increases the interaction between particles, producing an easier to settle floc (flocculation). Common reagents introduced to promote settling include

lime, sulfide and calcium or sodium carbonate. Because VOCs would not be effectively treated using this process, chemical precipitation was eliminated from further consideration.

- Ultraviolet (UV) Oxidation: UV oxidation is a chemical oxidation process, utilizing ultraviolet light as a catalyst, which provides for the reaction of dissolved VOCs to produce carbon dioxide and water. Non-hydrocarbon dissolved contaminants, including naturally occurring metals and minerals, will also be subject to the oxidation reaction. Common sources of oxygen utilized include hydrogen peroxide, air, chlorine, ozone and permanganate. The effectiveness of UV oxidation is dependent upon organic and inorganic contaminant loading, pH and the ability of the groundwater to transmit light. This alternative is feasible and was therefore retained for further consideration.

#### 9.2.3.3 Physical Treatment

Physical treatment techniques include reverse osmosis, sedimentation, ion exchange, filtration, carbon absorption and air stripping.

- Reverse Osmosis: A contaminated stream is pressurized and subsequently fed through a membrane from which the water and the contaminant are segregated. Membranes utilized in the reverse osmosis process are characterized either as natural or synthetic. Synthetic membranes are generally used during desalination processes. Natural membranes can be utilized in the removal of dissolved organics and inorganics. Reverse osmosis requires pretreatment to prevent solids loading across the membrane, temperature variations, or the coating of the membrane. The residual contaminant flow and spent membranes require disposal. Due to the extensive pretreatment processes required to ensure proper operation, and the wastes associated with the operation, this alternative was removed from further consideration.

- Sedimentation: Sedimentation is the removal of particulate matter through the use of gravity. Groundwater is transferred to a basin or tank, in which gravitational settling is allowed to occur with sufficient detention time. This process can be enhanced through the addition of chemical coagulants to settle out the suspended solids. Sedimentation is effective in the removal of inorganic material, but not effective in the removal of VOCs. For this reason, sedimentation was eliminated from further consideration.
- Ion Exchange: Ion exchange is the process by which a substitution of ions occurs between the waste stream and an ion exchange resin. Resins are generally "charged" with $H^+$ or $OH^-$ ions and can be divided into four groups. Cation exchange resins containing strong acids are generally used in the treatment of heavy metals; cation exchange resins containing weak acids are generally used in the treatment of simple and complex organic bases. Strong base anion resins are utilized in the removal of weak mineral acids; strong mineral acids are best removed with weak base anion resins. The process is reversed during regeneration of the resin, with discharge of the wasted ions and replenishment of original ions transferred from a regeneration solution to the resin. The waste regeneration solution requires disposal. Ion exchange units must not be loaded with waste streams containing suspended solids, and may be sensitive to temperature and pH, depending on the type of resin required. Ion exchange technology is not selective in the contaminants being removed, and therefore removes all ions in solution. As a result, large ion exchange columns are typically required to achieve the desired removal. Use of this treatment technology is not feasible due to space considerations and the amount of waste materials (i.e., regeneration wastes) requiring management after treatment.
- Filtration: Filtration is the process by which suspended matter is removed from water. It is accomplished by passing a water stream through a porous media of appropriate size. Filtration is utilized in pretreatment systems for a variety of treatment alternatives, but is not effective in the removal of VOCs. Filtration was therefore eliminated from further

consideration.

- Carbon Adsorption: Carbon adsorption treatment is accomplished by passing the affected groundwater through a vessel containing activated carbon. Consideration of temperature and contact time is required for complete treatment. The carbon used in this process is available in two forms, granular activated carbon (GAC) and powdered activated carbon (PAC). The adsorption of the organic material to the carbon particles is a three-stage process. The first stage is the movement of the organic material through the water to the solid-liquid interface by advection and diffusion. The second stage is the movement of the organic material within the carbon system to adsorption sites located on the carbon particles. The actual chemical adsorption between the carbon particle and the organic material is minimal. The third stage, physical attraction, completes the adsorption process. Breakthrough of contaminants occurs when the carbon adsorption sites are at full capacity. When this occurs, the carbon must be sent off-site for regeneration. This technology has been proven effective in many groundwater remediation projects, and was therefore retained for further consideration.
- Air Stripping: Air stripping involves the intimate contact between the contaminated groundwater and air, resulting in a transfer of VOCs within the groundwater from the liquid phase to the air phase. This process would require the construction of a tower filled with an inert plastic media designed to maximize the volume of liquid in contact with air. Additional air treatment may be required at the point of air discharge. Because air stripping has been proven effective in the remediation of VOC contaminated groundwater, air stripping was retained for further analysis.

### 9.2.4 No Further Action

The no further action alternative is evaluated as a procedural requirement and as a basis for comparison with other alternatives. The no further action alternative may or may not require continued groundwater monitoring. The RI and baseline risk assessment demonstrated that the IRMs implemented by Böwe in 1991 and 1992 were effective in removing the contaminant source areas and that no risks to public health or the environment are posed by the relatively low levels of contaminants in groundwater. Additionally, the level of contamination is naturally attenuating over time. This alternative is feasible and was therefore retained for further evaluation.

## 9.3 Development and Screening of Alternatives

The primary purpose of this section is to develop an appropriate range of site management options that will be analyzed more fully in the detailed analysis phase of the FS. The alternatives addressed in the preliminary screening include those process options of the technology types discussed in Section 9.2 which have been chosen to represent general response actions. The alternatives that pass this screening will be subjected to a more detailed analysis.

Table 9.3 presents the potential remedial alternatives and process options retained from the initial screening of groundwater remediation technologies. The alternatives have been assembled based on their ability to meet the remedial action objective (i.e., attainment of ARARs at downgradient public water supply wells). Process options within each of the alternatives have been retained based on the ease with which the options can be compared with respect to effectiveness, implementability, and in the detailed analysis, cost.

### 9.3.1 Alternative No. 1: Groundwater Extraction and Treatment

Under this alternative, groundwater beneath the site would be collected via extraction wells and treated to remove VOCs, specifically PCE, to levels in compliance with NYSDEC standards. The treated water would then be discharged on-site as recharge to groundwater. 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. The following sections briefly describe the process options associated with this alternative.

#### 9.3.1.1 Groundwater Collection

Effectiveness - It is anticipated that the use of groundwater extraction wells will be effective in recovering contaminated groundwater for treatment. Two pumping wells would be required to ensure that the well capture zone covers the width of the plume in an east-west direction. One pumping well would be located in the vicinity of MW-6, where the highest PCE concentrations have been observed. A second pumping well would be located somewhere to the east of MW-6. Pump tests would be conducted during the remedial design phase to better determine aquifer characteristics, optimum extraction well locations and pumping rates.

Implementability - This technology uses conventional well installation techniques and pump equipment, and contractors and materials are readily available. From this standpoint, the technology is easily implemented.

Recommendation - This process option is the most feasible for groundwater collection at the site. The collection technology is potentially applicable, and will be retained for detailed analysis.

### 9.3.1.2 Groundwater Treatment

Process options to treat groundwater for VOCs removal include air stripping, granular activated carbon (GAC) adsorption and UV-oxidation. Groundwater treatment by air stripping is generally implemented by pumping untreated groundwater to the top of a packed-column, which contains 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, hence the term "counter-current packed column air stripping". Counter-current packed towers have been utilized in the chemical process industry for decades as a standard unit operation to affect mass transfer, both in adsorption (e.g., air pollution control) and desorption (e.g., groundwater treatment via stripping). The adsorption process is typified by the mass transfer of material from the air phase to the liquid phase, where desorption involves the mass transfer of material from the liquid phase to the air phase. The packed tower promotes intimate contact between a gas phase and a liquid phase so as to enhance the establishment of equilibrium between phases. Air stripping removes VOCs from the untreated groundwater by transferring them to the air phase.

Activated carbon is an excellent adsorbent due to the large degree of surface area contained within the carbon particle that is accessible for the adsorption process. Adsorption is a natural process in which molecules of a liquid or gas are attracted to and then held at the surface of a solid. In addition to the "outer" surface area on the carbon particle, "inner" cavities allow for significant surface area per mass of particle. Contaminants in the untreated water adsorb onto the granular activated carbon (GAC). The adsorptive capacity of the carbon varies with the nature and concentration of the contaminants. As the contaminant loading on the carbon reaches the adsorptive capacity of the carbon near the top of the filter, the interface between the saturated and the "clean" carbon moves downward through the carbon bed inside the pressure vessel. When the carbon in the filter vessel is fully loaded with contaminants (i.e., at its adsorptive capacity), no further removal will take place and contaminants will begin to be found in the filter effluent. Effluent monitoring and estimates of the adsorptive capacity of the carbon enable the carbon in the filter to be replaced prior to contaminant breakthrough. The GAC removed from the pressure vessel, after adsorptive capacities have been reached, can be regenerated by heating at high temperatures. On-site carbon regeneration facilities only prove economical for a facility having a very high rate of GAC consumption. Off-site carbon regeneration is usually preferred. The frequency with which the carbon must be regenerated or replaced depends on several factors, including the nature and concentration of the contaminants to be removed, the total flow through the pressure vessel, and the total amount of carbon contained within the pressure vessel.

UV-oxidation utilizes a combination of ultraviolet ("UV") light and a chemical oxidant, such as ozone or hydrogen peroxide, to break down VOCs by photochemical oxidation. A typical UV-ozone/hydrogen peroxide system consists of a hydrogen peroxide feed system or an ozone generator in conjunction with an oxygen or air source, and a UV-oxidation reactor. The reactor provides controlled, simultaneous UV-oxidant contact. The ultimate end products of UV oxidation treatment are trace salts, carbon dioxide and water or non toxic intermediates. Unlike air stripping with vapor phase carbon or GAC, no toxics are introduced to the atmosphere or adsorbed onto media which requires disposal or regeneration. UV lamps lose efficiency and must be properly maintained to prevent the release of toxic intermediate products into the atmosphere resulting from incomplete oxidation.

Effectiveness - Air stripping GAC adsorption and UV-oxidation are effective and proven methods by which to remove VOCs from groundwater. By-products from these process options might include spent carbon if GAC adsorption is used or is required for vapor phase emission controls in conjunction with air stripping. All treatment methods described here should be effective in producing an aqueous effluent of suitable quality for discharge to groundwater.

Implementability - Air stripping, GAC adsorption and UV-oxidation all require the purchase and construction of commonly available equipment. There are little to no inherent difficulties in the site-specific design of these treatment units. A program to monitor the units is easily accomplished.

Recommendation - All process options described here are potentially applicable for the site, and will be retained for detailed analysis.

### 9.3.2 Alternative No. 2: Groundwater Treatment by In-Situ Air Sparging

Under this alternative, groundwater beneath the site would be treated using a series of air sparge points and vapor extraction wells. Air sparging is a process where air is introduced under pressure below the water table to increase the rate of volatilization of VOCs in the saturated zone. Air sparging is more commonly used at sites with unconsolidated materials such as sand and gravel, or relatively permeable formations, and is generally used in conjunction with vapor extraction to effectively capture VOCs volatilized from the saturated zone as well as reduce VOC levels in the unsaturated soils. Air sparging can also be used as a delivery mechanism for nutrients to promote biodegradation. As with the pump and treat alternative, periodic groundwater monitoring would be conducted to monitor treatment performance.

Effectiveness - Air sparging in combination with vapor extraction has proven to be an effective method for removing VOCs from groundwater. Pilot tests would be conducted during the remedial design to establish the number and spacing of air sparge points and vapor extraction wells required.

Implementability - This treatment alternative uses conventional installation techniques and equipment (i.e., air compressors, vacuum blowers, etc.), and there are little to no inherent difficulties in the site-specific design. A program to monitor the process is easily accomplished.

Recommendation - This alternative is potentially applicable for the site, and will be retained for detailed analysis.

### 9.3.3 Alternative No. 3: No Further Action

Under the no further action alternative, no active groundwater remediation would be undertaken at the site. Groundwater affected by PCE would be allowed to remain on-site and off-site with continued dilution and natural attenuation as groundwater migrates downgradient of the site. Periodic sampling of selected monitoring wells which adequately define the plume would be performed to assess contaminant levels and migration.

Effectiveness - This alternative poses no significant short or long-term risks to the community or environment. The concentrations of PCE in the groundwater were determined during the risk assessment to pose no risk to public health or the environment, because even under the most conservative transport modeling scenarios, contaminant concentrations are predicted to be well within drinking water standards by the time the plume reaches the public water supply wells operated by the Hicksville Water District, if ever. Groundwater monitoring would be effective in documenting changes in groundwater quality.

Implementability - This alternative would require periodic sampling and laboratory analysis of groundwater from selected on-site and off-site monitoring wells. This alternative is very easily implemented.

Recommendation - This alternative will be retained for detailed analysis, as no further action with continued monitoring is potentially applicable to the Böwe site, and as required under the National Contingency Plan (NCP).

## 9.4 Detailed Analysis of Alternatives

This section of the FS presents the detailed qualitative and quantitative analysis of remedial alternatives which were developed and evaluated in the previous section. Under NYS Superfund guidance (NYSDEC TAGM No. HWR-90-4030), each remedial alternative must be evaluated using the seven criteria listed below:

- Compliance with New York State Standards, Criteria, and Guidelines (SCGs).
- Overall protection of human health and the environment.
- Short-term effectiveness.
- Long-term effectiveness and permanence.
- Reduction of toxicity, mobility, and volume of contaminants.
- Implementability.
- Cost.

These evaluation criteria are consistent with those outlined in the NCP, and presented in the USEPA Superfund guidance documents. Under the NYS Superfund guidance, each criteria must be evaluated qualitatively, and then rated quantitatively. A scoring system, developed by NYSDEC and presented in the TAGM, is used to evaluate the remedial alternatives, relative to each other, and provide a basis for selecting the recommended remedial action for the site. The seven evaluation criteria for remedial action selection address the following concerns:

- Compliance with New York State Standards, Criteria, and Guidelines (SCGs) - This criterion describes how the alternative complies with ARARs, and appropriate New York State SCGs. The remedial action alternatives will be evaluated relative to their ability to comply with the previously established ARARs.
- Overall Protection of Human Health and the Environment - This assessment draws on the results the overall evaluations to describe whether, and how, each

alternative provides protection of human health and the environment.

- Short-Term Effectiveness - The effectiveness of alternatives in protecting human health and the environment during implementation, construction and operation is evaluated using this criterion. Short-term effectiveness is assessed by protection of the community, protection of workers, environmental impacts, and the time frame until protection is achieved.
- Long-Term Effectiveness and Permanence - This criterion evaluates the long-term protection of human health and the environment, the potential risk remaining after completing the remedial action, and the permanence of the remedial alternative. It is measured by the magnitude of risk remaining from untreated waste or treatment residuals, by the adequacy of the controls in achieving clean-up criteria, and by the reliability of the controls against possible failure.
- Reduction of Toxicity, Mobility, and Volume of Contaminants - This criterion evaluates the anticipated performance of treatment alternatives. There is a statutory preference for selecting remedial actions with treatment technologies that permanently and significantly reduce toxicity, mobility or volume of the hazardous wastes as their principal element. Specific factors include: (1) the amount of hazardous materials that will be destroyed or treated; (2) the degree of expected reduction in toxicity, mobility or volume; (3) the degree to which the treatment will be irreversible; and (4) the type and quantity of treatment residuals that will remain following treatment.
- Implementability - This criterion evaluates the technical and administrative feasibility, and the availability of services and materials in implementing the remedial alternative. Factors used to assess technical feasibility include construction and operational considerations, reliability of technology, ease of implementing the remedial action and monitoring considerations.
- Cost - Order of magnitude cost estimates (-30% to +50%) inclusive of capital and operation and maintenance (O&M) costs are developed to help evaluate the overall cost-effectiveness of the remedial action alternatives. Capital costs

include equipment, construction/installation, engineering and associated administrative costs. O&M costs are post construction costs incurred to ensure effective operation (e.g., utilities, chemical stock, waste disposal, operation labor, etc.), and also include the monitoring costs associated with implementing the remedial action. All costs are developed (using 1998 dollars) to the same level of detail in order to provide for an even basis for comparison. Present worth calculations are used to compare the cost-effectiveness of these alternatives. Present worth values were calculated based on the estimated life span for each remedial action, using a five percent (5%) interest rate. Given the relatively low magnitude of PCE concentrations in the on-site groundwater, an estimated life span of ten years was used.

Subsections 9.4.1 through 9.4.3 present the individual analyses for each of the three remedial alternatives, and Subsection 9.5 presents the comparative analysis using the scoring system presented in TAGM-HWR-90-4030. Appendix E contains TAGM-HWR-90-4030 scoring results for each alternative.

### 9.4.1 Alternative No. 1 - Groundwater Extraction and Treatment

This alternative involves aquifer restoration through contaminant capture of the on-site groundwater for treatment. Groundwater extracted from on-site recovery wells would discharge to a centralized treatment system to be located at the Böwe facility. Alternatives 1A through 1C all consist of groundwater collection, groundwater monitoring and recharge of treated groundwater, but with different treatment technologies. Treatment technologies for VOCs removal include packed tower air stripping, adsorption with granular activated carbon (GAC) and UV oxidation. Treated groundwater would be recharged to the ground via a series of on-site leaching pools under all three alternatives. In addition to groundwater collection and treatment, a groundwater monitoring program would be implemented to monitor changes in groundwater quality and assess the effectiveness of the remediation system.

Groundwater recovery wells would be installed in the vicinity of MW-6, where the highest PCE concentrations have been observed, and to the east of MW-6, mid-way between drywells DW-4 and DW-5. Based upon the site-specific hydrogeologic conditions established during the RI, the pumping rates required at each groundwater recovery well were estimated at roughly 15 to 20 gpm.

On-site discharge of treated groundwater will require the installation of additional leaching pools. Based upon a maximum flow of approximately 57,600 gallons per day (gpd) and a water recharge rate of 8 gpd per square foot of sidewall leaching area (sandy soils, low suspended solids content), approximately six to eight ten-foot diameter by twenty foot deep leaching pools would be required to supplement the existing drywell system.

### Alternative No. 1A - Groundwater Treatment by Air Stripping

Groundwater treatment would be provided by a counter-current packed tower air stripper. Based upon the estimated pumping rates and projected VOC loading, the stripping tower would be approximately 2-feet in diameter by 24-feet tall, with an air flow rate of roughly 560 cubic feet per minute (cfm). This technology has proven to be very effective in removal of VOCs from groundwater, and is capable of meeting groundwater discharge criteria. Removal efficiencies of greater than 95% are typical for air strippers. The primary disadvantages associated with air stripping are relatively high energy consumption and potential fouling of the packed media within the air stripper. Although air strippers often require additional controls to reduce air emissions, based on the anticipated contaminant mass loading rates at the Böwe site, no air emission controls should be required.

Alternative 1A would comply with applicable ARARs and SCGs for groundwater. The remedial action objectives would be achieved through short-term effectiveness of plume migration control and a permanent long-term reduction in contaminant toxicity, mobility and volume. Remedial effectiveness would be evaluated through a groundwater monitoring program.

### Alternative No. 1B - Groundwater Treatment by Carbon Adsorption

Groundwater treatment would be provided by a series of granular activated carbon (GAC) adsorption units. Based upon the estimated pumping rates and projected VOC loading, three 1,000 pound carbon filters would be required. Two carbon units set in series would be on line at any given time. A third unit would be in a standby mode until the first unit requires regeneration. This technology has proven very effective in the removal of VOCs from groundwater, and is capable of meeting groundwater discharge standards. Removal efficiencies of 95% and greater are typical. The primary disadvantage associated with carbon absorption is the need for periodic carbon regeneration.

Alternative 1B would comply with the applicable ARARs and SCGs for groundwater. The remedial action objectives would be achieved through short-term effectiveness of plume migration control and a permanent long-term reduction in contaminant toxicity, mobility and volume. Remedial effectiveness would be evaluated through a groundwater monitoring program.

### Alternative No. 1C - Groundwater Treatment by UV Oxidation

Using UV oxidation, the groundwater treatment system would consist of a hydrogen peroxide feed system and UV oxidation reactor. Based upon the estimated pumping rates and VOC loading, a single U V lamp 30 KW unit would be required. Pilot testing would be required during the design to determine the exact equipment sizing and whether any pretreatment will be required to remove naturally occurring metals which might impede the transmission of the UV radiation. This technology has proven effective in the removal of VOCs from groundwater, and is capable of meeting groundwater discharge standards. Removal efficiencies of 95% and greater are typical. The advantages of UV oxidation include complete destruction of VOCs with no air emissions.

The primary disadvantages associated with UV oxidation are the chemical requirements (i.e., hydrogen peroxide) and high energy requirements.

Alternative 1C would comply with the applicable ARARs and SCGs for groundwater. The remedial action objectives would be achieved through short-term effectiveness of plume migration control and a permanent long-term reduction in contaminant toxicity, mobility and volume. Remedial effectiveness would be evaluated through a groundwater monitoring program.

- <u>Compliance with New York State Standards, Criteria, and Guidelines (SCGs)</u> - Collection and treatment of the on-site groundwater plume will achieve ARARs for on-site groundwater, and off-site groundwater would eventually achieve ARARs via further dilution and natural attenuation. The treatment options evaluated are all capable of reducing VOC concentrations to meet groundwater discharge standards. Groundwater remediation for the purpose of aquifer rehabilitation is consistent with federal and NYS groundwater protection strategies.

In order to discharge the treated wastewater to the ground, a State Pollutant Discharge Elimination System (SPDES) permit must be obtained. Groundwater discharge limits under the SPDES permit will be established based on the groundwater effluent standards stipulated in 6 NYCRR Part 703.6. At a minimum, monthly monitoring and reporting will be required for the discharged of treated effluent to groundwater.

This remedial action alternative, regardless of which treatment option is used would be effective in reducing the concentrations of VOCs in the on-site groundwater to meet NYS groundwater discharge standards, and will prevent continued migration of contaminated groundwater off-site.

- <u>Overall Protection of Human Health and the Environment</u> - This alternative provides an additional level of protection to human health and the environment thorough aquifer rehabilitation. The only route of potential exposure for contaminated groundwater is via two existing public water supply wells located approximately three-quarters of a mile downgradient of the Böwe site. Based upon the results of the fate and transport modeling and baseline risk assessment, the groundwater plume does not present a threat to public health. With the implementation of groundwater remediation, the residual level of risk will only provide for additional protection beyond what is already considered acceptable by the USEPA.

- Short-Term Effectiveness - Implementing groundwater collection and treatment would pose no short-term risk to the public or environment, and would be effective in establishing control of plume migration.

All three treatment options (air stripping, carbon adsorption and UV oxidation) can be operated relatively safely. Chemical usage (i.e., hydrogen peroxide) is required for UV Oxidation. Concerns associated with chemical storage (i.e., secondary spill containment, ventilation, etc.) would be addressed during system design. In addition, high voltage electrical power is required for the operation of the UV oxidation equipment.

Operation of the air stripper will generate a vapor phase emission to the atmosphere. However, it is not expected that vapor phase controls would be required. VOC emission rates from the air stripper will be relatively low and should not impact air quality in the surrounding community.

- Long-Term Effectiveness and Permanence - Under existing conditions with no further remediation, the magnitude of risk to the public based on ingestion of groundwater was determined to be within EPA's acceptable range. With the implementation of a groundwater remediation program, the risk level will be further reduced.

Groundwater collection and treatment offers long range protection to public health against contaminated groundwater consumption by preventing contaminated groundwater from migrating off-site. However, based upon the results of the baseline risk assessment, the groundwater plume does not present a threat to public health. Because the on-site contaminated groundwater would be remediated, the dilute portion of the plume downgradient of the Böwe site will undergo further dilution, thereby presenting an even smaller relative risk to public health.

Groundwater would be treated to effluent concentrations of less than 5 ug/l for individual VOCs. Influent and effluent sampling would be performed at the treatment system to monitor system performance. A long term groundwater monitoring program would also be implemented over the life of the groundwater remediation program (estimated at 10 years).

This remedial alternative and the three treatment options provide for additional protection to the public beyond what is already considered acceptable, as well as protection to the environment through aquifer rehabilitation. All three treatment technology alternatives (air stripping, carbon adsorption and UV oxidation) are considered permanent solutions since contaminants will be removed from the groundwater media.

- <u>Reduction of Toxicity, Mobility, and Volume of Contaminants</u> - Capture of contaminated groundwater would reduce the overall mobility of contaminants in the environment. With active aquifer rehabilitation (i.e., treatment), the concentrations of contaminants in the groundwater will decrease.

Use of GAC will generate a waste stream requiring additional treatment and/or disposal. Spent activated carbon would require periodic regeneration or off-site disposal as a hazardous waste. Use of UV oxidation will not generate a waste stream, with the exception of residuals resulting from the periodic cleaning of the UV lamps. The waste is generated from the oxidation of dissolved metals or minerals which coat the surface of the UV lamp. No other waste is generated from the operation of the UV oxidation treatment process. Because air emission control is not anticipated, air stripping would generate no wastes (e.g., spent vapor phase carbon) requiring further treatment or disposal.

- <u>Implementability</u> - This alternative involves the installation of extraction wells, underground piping, and additional leaching pools on the Böwe property. Installation of the groundwater collection and disposal systems would utilize conventional well drilling and construction methods. Contractors and materials are readily available.

Similarly, process equipment for the various treatment technologies are also readily available and easily installed. Air stripping, carbon adsorption and UV oxidation are all effective in reducing VOCs in water. UV oxidation is a newer technology, with a limited number of vendors who manufacture this type of equipment. The UV oxidation equipment also requires significantly higher electrical demand.

Operation of the treatment technologies vary in terms of the level of maintenance required. Use of GAC would require frequent testing of the effluent stream to monitor for carbon breakthrough and replacement. UV oxidation also requires a higher level of maintenance due to the sensitivity of the treatment equipment to changes in water quality. Programmable logic controls can be incorporated into the UV oxidation system design. Of the three treatment options, air stripping requires the least amount of maintenance.

The air stripping and UV oxidation treatment processes generally do not generate a waste stream, whereas, carbon adsorption produces spent activated carbon. The activated carbon, after reaching its adsorptive capacity, would need to be regenerated. Because on-site carbon regeneration is not cost effective for the Böwe site, off-site carbon regeneration would be necessary. This requires handling and transporting of the spent carbon, as a hazardous waste.

- Cost - Order of magnitude cost estimates for air stripping, carbon adsorption and UV oxidation are presented in Tables 9.4.1A through 9.4.1C, respectively The present worth (assuming 10 years of operation, at 5%) for these three treatment alternatives range from approximately $900,000 to $1,620,000. These costs includes capital costs associated with the installation of the groundwater collection system and treatment equipment, and construction of an on-site disposal system (i.e., additional leaching pools). Annual O&M costs include maintenance and upkeep of the treatment system, utilities, operating labor and groundwater monitoring, which reflects quarterly sampling, analysis and reporting over a ten year period.

### 9.4.2 Alternative No. 2 - Groundwater Treatment by In-Situ Air Sparging

As with Alternatives 1A through 1C, groundwater treatment by in-situ air stripping in combination with a vapor extraction would comply with the applicable ARARs and SCGs for groundwater. The remedial action objectives would be achieved through a permanent long-term reduction in contaminant toxicity, mobility and volume. Remedial effectiveness would be evaluated through a groundwater monitoring program.

- Compliance with New York State Standards, Criteria, and Guidelines (SCGs) - Air sparging of the on-site groundwater plume in combination with vapor extraction will achieve ARARs for on-site groundwater, and off-site groundwater would eventually achieve ARARs via further dilution and natural attenuation. The in-situ treatment technology is capable of reducing VOC concentrations to meet groundwater quality standards. Groundwater remediation for the purpose of aquifer rehabilitation is also consistent with federal and NYS groundwater protection strategies.

- Overall Protection of Human Health and the Environment - This alternative provides an additional level of protection to human health and the environment thorough aquifer rehabilitation. The only route of potential exposure for contaminated groundwater is via two existing public water supply wells located approximately three-quarters of a mile downgradient of the Böwe site. Based upon the results of the baseline risk assessment, the groundwater plume does not present a threat to public health. With the implementation of groundwater remediation, the residual level of risk will only provide for additional protection beyond what is already considered acceptable by the USEPA.

- Short-Term Effectiveness - In-situ groundwater treatment by air sparging would involve the installation of on-site air sparge points and vapor extraction wells, but would pose no short-term risk to the public or environment during construction. VOC emission rates from the vapor extraction system will be relatively low and should not impact air quality in the surrounding community.

- Long-Term Effectiveness and Permanence - Under existing conditions with no further remediation, the magnitude of risk to the public based on ingestion of groundwater was determined to be within EPA's acceptable range. With the implementation of an in-situ groundwater remediation program, the risk level will be further reduced.

In-situ groundwater treatment offers long range protection to public health against contaminated groundwater consumption by preventing contaminated groundwater from migrating off-site. However, based upon the results of the baseline risk assessment, the groundwater plume does not present a threat to public health. Because the on-site groundwater would be remediated, the dilute portion of the plume downgradient of the Böwe site will undergo further dilution, thereby presenting an even smaller relative risk to public health. A groundwater monitoring program would also be implemented over the life of the groundwater remediation program (10 years).

This remedial alternative provides for additional protection to the public beyond what is already considered acceptable, as well as protection to the environment through aquifer rehabilitation.

- Reduction of Toxicity, Mobility, and Volume of Contaminants - With active aquifer rehabilitation (i.e., in-situ air sparging), the concentrations of contaminants in the groundwater will decrease. This alternative is considered a permanent solution, will provide long-term protection to the public and the environment through aquifer rehabilitation, and is consistent with the remedial action objective.

Air sparging with vapor extraction generates no significant residual waste steams which require additional treatment or off-site disposal. A relatively small amount of wastewater in the form of excess moisture removed from the extracted vapors would be collected and disposed of off-site.

- Implementability - This alternative involves the installation of multiple air sparge points and vapor extraction wells, underground piping, and mechanical equipment (e.g., air compressor and vacuum blower). Installation of the air sparge points and vapor extraction wells would utilize conventional well drilling and construction methods. Contractors and materials are readily available. Similarly, process equipment such as the air compressor and vacuum blower are readily available and easily installed.

Operation of an air sparge/vapor extraction system is relatively simple in terms of the level of maintenance required. Air sparge points and vapor extraction wells may be cycled on and off to optimize system performance over time.

Air sparge/vapor extraction systems generally do not generate significant waste streams. A small amount of wastewater in the form of excess moisture removed from the extracted vapors will have to be collected and disposed of off-site. Waste analysis will be required to determine whether the wastewater exhibits any hazardous characteristics.

Cost - An order of magnitude cost estimate for an air sparge/vapor extraction system is presented in Table 9.4.2 The present worth (assuming 10 years of operation, at 5%) for this treatment alternative is estimated at just over $500,000. This includes capital costs associated with the installation of the air sparge/vapor extraction system and annual costs to operate and maintain and monitor the treatment system. Annual O&M costs include maintenance and upkeep of the treatment system, utilities, operating labor and groundwater monitoring, which reflects quarterly sampling, analysis and reporting over a ten year period.

### 9.4.3 Alternative No. 3 - No Further Action

The no further action alternative does not provide for active clean-up of the on-site groundwater at the site, and additional remedial measures beyond the IRMs already completed would not be implemented. Residual levels of PCE in the groundwater would continue to naturally degrade, dilute and attenuate.

Based on the baseline risk assessment conducted for the site, there are no human receptors for the groundwater exposure route until the plume reaches two public water supply wells located approximately three quarters of a mile downgradient of the site. According to public records and available information, all homes in the affected area of the groundwater plume are currently connected to a public water supply. Groundwater modeling results predict that the dilute PCE plume will not reach the public water supply wells until the year 2000. PCE concentrations were predicted to be approximately 0.2 ug/l, well within the Class GA Water Quality Standard, by the time the maximum contaminant concentrations reached the wells. Actual data from off-site groundwater monitoring indicate that PCE concentrations are decreasing much more rapidly than the computer model predicted. Because there is no significant risk to the public associated with the groundwater contaminant plume, the no further action alternative is consistent with the remedial action objective for this site.

The no further action alternative could be implemented with or without continued groundwater monitoring. On-site and off-site groundwater monitoring data conducted during the RI have already documented the dramatic improvements in the on-site groundwater as a result of the IRMs conducted in 1991 and 1992, and have demonstrated that the PCE plume is dissipating rapidly as it moves off-site. If continued groundwater monitoring is required, select on-site and off-site monitoring wells would be sampled on a quarterly basis to confirm the continued trend of lower PCE concentrations.

- Compliance with New York State Standards, Criteria, and Guidelines (SCGs) - Under the no further action alternative, PCE concentrations will continue to exceed the New York State Groundwater Quality Standard for Class GA Groundwaters, and the New York State Department of Health Drinking Water Standards (MCLs). However, having effectively eliminated the source areas during IRMs previously implemented by Böwe, PCE concentrations in groundwater will continue to decrease as a result of dilution, plume dispersion, and natural degradation and attenuation.

- Overall Protection of Human Health and the Environment - The no further action alternative is protective of human health and the environment. The risk assessment demonstrated that even under the most unrealistic worse case scenarios, there are no significant short-term or long-term risks to the public via groundwater ingestion. The no further action alternative provides sufficient protection to the public and the environment, and is consistent with the remedial action objective.

- Short-Term Effectiveness - The no further action alternative for groundwater would not pose any short-term risks to the public or environment. A dilute groundwater contaminant plume would continue to naturally degrade, dilute and attenuate as groundwater migrates toward the south. As determined from the baseline risk assessment, there are no significant impacts to the public via the groundwater. Since no remedial actions are taken under this alternative, there will be no short-term effects to the community, to workers, or to the environment associated with implementation of an action.

- Long-Term Effectiveness and Permanence - Since the no further action alternative would not involve active remediation, no efforts would be needed to maintain this remedy. Assuming no additional contributions of contaminants enter the groundwater, the contaminant plume would eventually achieve remedial objectives relative to ARARs through natural attenuation processes (contaminant degradation, dilution and dispersion).

The magnitude of risk remaining associated with the no action alternative is within the USEPA acceptable range of 1.0E-06 to 1.0E-04 (one in a million to one in ten thousand) for carcinogenic risks, and does not exceed the reference hazard index value of 1.0E+00 for non-carcinogenic risks. Risk characterization for the Böwe site therefore indicates that there are no increased sub-chronic non-carcinogenic, chronic non-carcinogenic or chronic carcinogenic risks associated with the groundwater exposure pathway. The long-term effectiveness of this remedial alternative meets the remedial action objective of being protective of human health and the environment.

- Reduction of Toxicity, Mobility, and Volume of Contaminants - Under the no further action alternative, contaminant destruction would only occur through passive, natural degradation processes. As such, the volume, toxicity and mobility of the contaminants would be relatively unaffected initially. However, having eliminated any contributing source areas, over time the already dilute groundwater plume will exhibit a further decrease in PCE concentrations as a result of dilution, natural degradation and plume dispersion.

- Implementability - The no further action alternative is readily implemented since no remedial actions would be undertaken.

- Cost – There are no capital costs associated with the no further action alternative. Similarly, there are also no O&M costs associated with this alternative unless continued groundwater monitoring is required. For purposes of comparison, O&M costs were developed for continued monitoring of PCE levels in groundwater. The cost reflects quarterly groundwater monitoring over a ten year period and includes sampling approximately six wells for VOCs. The present worth cost for this alternative was developed based on a ten year monitoring period, to be consistent with the time frame estimated for the active groundwater remediation alternatives. The present worth O&M

costs associated with groundwater monitoring is estimated at $83,000, as presented in Table 9.4.3.

## 9.5 Comparisons of Remedial Action Alternatives

This section of the Böwe FS presents a summary of the positive and negative aspects of each remedial alternative and a comparative analysis by the TAGM-HWR-90-4030 scoring system. Remedial action alternatives for on-site groundwater included groundwater pump and treat, in-situ air sparging/vapor extraction and no further action. Within the groundwater pump and treat alternative, three treatment technology options were evaluated. A summary of the remedial alternatives evaluation is presented in Table 9.5.1.

The five remedial action alternatives were scored using the criteria established in TAGM-HWR-90-4030. Table 9.5.2 presents a summary of the scoring results. The individual scoring worksheets for each alternative are provided in Appendix E. TAGM-HWR-90-4030 suggests that the cost scores be developed based upon a proportionality approach. The cost score for each alternative was determined by summing the present worth cost of all five alternatives, and dividing the total cost by the present worth cost of each alternative. The remedial alternatives are ranked in descending order as follows:

| | |
|---|---|
| Alternative 3 - No Further Action | 116.1 |
| Alternative 2 - In-Situ Air Sparge Vapor Extraction | 88.4 |
| Alternative 1A - Pump and Treat with Air Stripping | 83.7 |
| Alternative 1B - Pump and Treat with Carbon Adsorption | 82.7 |
| Alternative 1C - Pump and Treat with U V Oxidation | 81.6 |

As the remedial alternative scoring summary in Table 9.5.2 indicates, scoring for the TAGM-HWR-90-4030 criteria was very similar for each remedial alternative, with the exception of cost. This is not surprising, since the basis for each alternative is similar and each alternative is capable of meeting applicable ARARs and SCGs.

Active treatment of groundwater on-site, by either pump and treat or in-situ air sparging and vapor extraction would be more effective in reducing the toxicity and mobility of the PCE in groundwater than the no further action alternative. In evaluating the long term and short term effectiveness and implementability of the pump and treat technologies, all three treatment options (air stripping, carbon adsorption and UV oxidation) can readily achieve the desired groundwater and wastewater effluent quality. UV oxidation, which is considered an innovative technology, is capable of chemical destruction, whereas air stripping and carbon adsorption transfer the VOCs from the aqueous stream and to another media (i.e., air, carbon). Other factors such as water chemistry (e.g., presence of dissolved minerals, etc.) affects the performance and efficiency of the UV oxidation treatment, and can provide limitations in terms of treatment capability or increased maintenance. Use of air stripping for VOC removal is preferred over UV oxidation or carbon adsorption when evaluating potential long and short-term effects. An air stripper does not utilize any chemical feeds (as does UV oxidation), and does not generate a potentially hazardous waste requiring handling and disposal (as would carbon adsorption). Although air stripping will result in an air emission, based on the calculated VOC loading to the atmosphere, the concentrations emitted would be relatively low and would not produce any adverse affects to the surrounding air quality. Therefore, although all three technologies are capable of achieving the desired effluent quality and same relative removal efficiencies, use of an air stripper is the preferred treatment method because this technology poses the least risk to workers and the community relative to chemical safety concerns, requires the least maintenance for long term operation, does not generate a waste stream requiring further treatment or off-site disposal, and is a reliable and proven VOC treatment technology.

Both the no further action and groundwater remediation alternatives are consistent with the remedial action objective for Böwe site since they all provide protection to human health and the environment. There are no significant differences in short term or long term effectiveness between these remedial alternatives because the risk to the public, even without any groundwater remediation, is already minimal. It was determined during the RI that PCE concentrations are dropping steadily in the on-site groundwater are and are decreasing by order of magnitude as the low level plume migrates off-site with groundwater flow. All homes in the area downgradient of the site are connected to a public water supply. The risk assessment, which was performed using conservative assumptions and worst-case scenarios, estimated that the magnitude of cumulative risk to the public from ingestion of impacted groundwater is within the EPA's guidelines for excess lifetime cancer risk. Therefore, even without any additional remedial actions (i.e., no further action), it has already been demonstrated through the baseline risk assessment that the site exposure risk to the public is below levels which warrant concern. With implementation of a groundwater remediation program, the risk level will only be reduced beyond what is already considered to be an acceptable risk level by the EPA.

The pump and treat and in-situ treatment remedial alternatives are both capable of reducing VOC concentrations in groundwater to within Class GA water quality standards. Therefore, active groundwater remediation would achieve ARARs for groundwater. Under the no further action alternative, PCE concentrations will continue to exceed Class GA water quality standards at some locations. Having successfully removed the source areas, thereby preventing additional contaminant from entering the groundwater, the PCE plume will continue to naturally degrade, attenuate and disperse to within acceptable levels.

The no further action alternative can be justified even if the groundwater ARARs are not being met at this time because this remedy is sufficiently protective of public health. Groundwater modeling predicted a maximum PCE concentration of 0.2 ug/l at the public water supply wells located three quarters of a mile downgradient of the site This is well within the Class GA water quality standard of 5 ug/l. As such, there are no increased risk to the public associated with contaminated groundwater from the site. The no action alternative will attain an equivalent standard (i.e., acceptable degree of protection to human health), as would be achieved using alternate remedial methods (i.e., groundwater pump and treat, in-situ treatment alternatives). Therefore, the no action alternative is consistent with the remedial action objective for this site.

If under the no further action alternative, groundwater monitoring for PCE is required, it would be performed at select on-site and off-site wells on a quarterly basis to demonstrate that groundwater quality has either improved, or has remained relatively unchanged. If routine monitoring demonstrates that the levels of PCE continue to fall as expected, Böwe would petition the NYSDEC to discontinue groundwater monitoring. A petition to discontinue the monitoring program would be made when four consecutive rounds of groundwater sampling indicate that PCE concentrations have reached asymptotic levels, or are within the Class GA Water Quality Standard.

The present worth capital and O&M cost to implement active groundwater treatment using various groundwater remediation alternatives (i.e., pump and treat or in-situ treatment), assuming 10 years of operation and maintenance, will range from approximately $500,000 (for in-situ air sparging/vapor extraction), up to $1,620,000 (for pump and treat with UV oxidation). The no further action alternative, which does not include active remediation beyond the IRMs already implemented, may involve periodic groundwater monitoring. The present worth cost, assuming 10 years of quarterly groundwater monitoring, is estimated at $83,000. A 10 year period was used for developing the cost of groundwater monitoring solely for the purpose of allowing for a consistent comparison of remedial costs between the no further action alternative and the groundwater treatment alternatives.

In evaluating cost benefits between the no action alternative and the active groundwater remediation alternatives, there is an added cost of roughly $417,000 to 1,537,000 associated with the implementing a groundwater remediation alternative which would only provide an incremental higher level of protection to the public, beyond a risk level which is already considered sufficiently protective of human health.

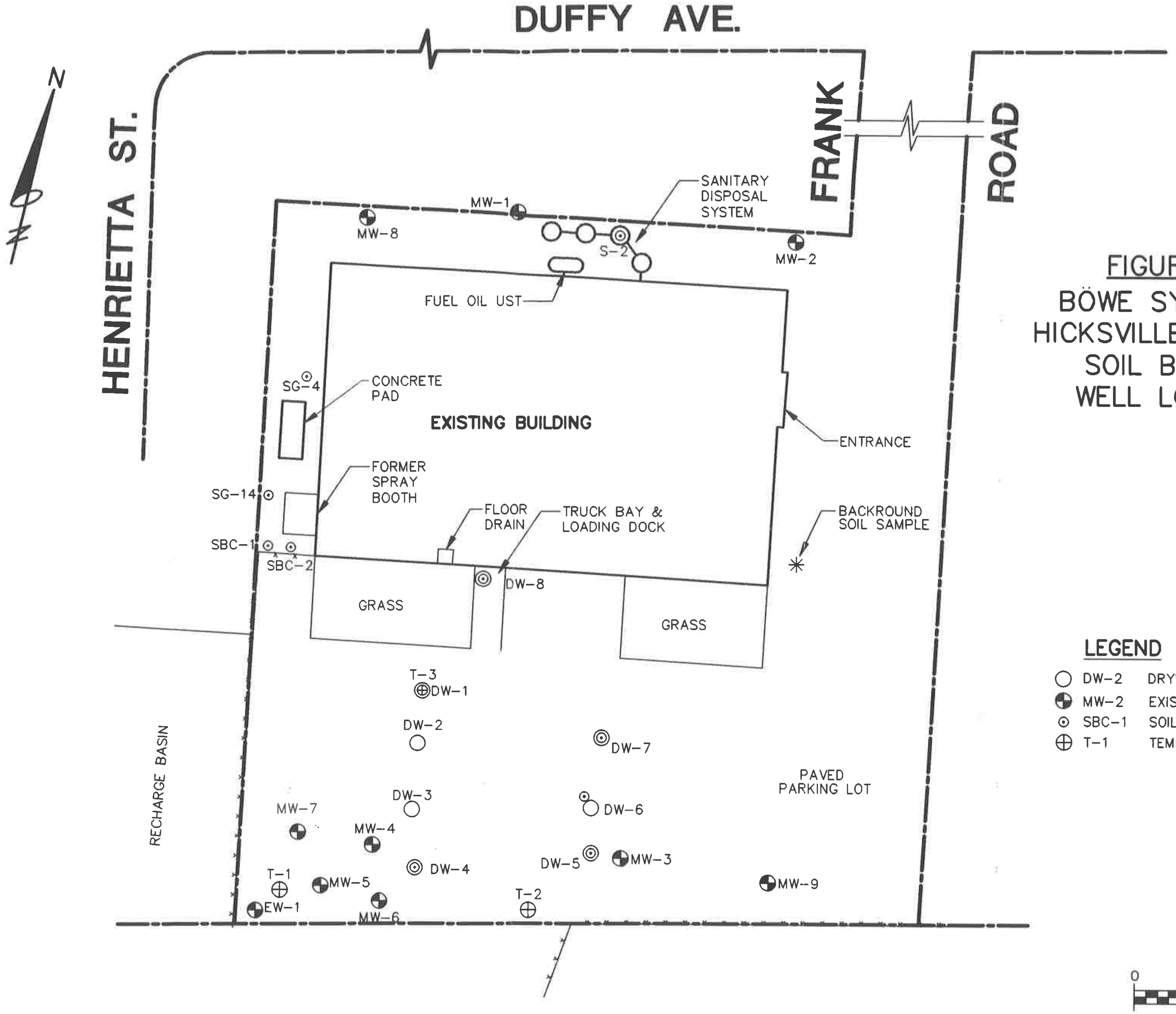
## 9.6 Recommendations for Remedial Action

As stated previously, the purpose of this FS was to identify, evaluate and select a remedial alternative that is protective to human health and the environment, through the reduction of contaminant toxicity, volume and mobility. Actions to attain this objective have already been taken by Böwe in the form of IRMs.

Based on the cost for active groundwater treatment, and taking into consideration the success of previously implemented IRMs and the fact that the no further action alternative is sufficiently protective of human health and the environment and therefore meets the remedial action objective for this site, no further action is the recommended alternative for the Böwe site.

Although the no further action alternative as discussed in the FS included provisions for quarterly groundwater monitoring, it is our opinion that the site has been properly remediated by the IRMs conducted by Böwe in 1991 and 1992, and that the site no longer constitutes a significant threat to human health or the environment. This is documented by the data developed during the RI, including seven rounds of on-site and/or off-site groundwater monitoring data. Accordingly, it is also our opinion that additional groundwater monitoring is not warranted. We therefore recommend that Böwe petition the NYSDEC pursuant to 6 NYCRR Part 375.19 to have the site deleted from the registry of Inactive Hazardous Waste Disposal Sites or reclassified to a Class 5 site.

# TABLES



# FIGURE 2.1.1

## BÖWE SYSTEC, INC.
## HICKSVILLE, NEW YORK
## SOIL BORING &
## WELL LOCATIONS

### LEGEND

| | | |
|---|---|---|
| ○ | DW-2 | DRYWELL |
| ◐ | MW-2 | EXISTING MONITORING WELL |
| ⊙ | SBC-1 | SOIL BORING |
| ⊕ | T-1 | TEMPORARY WELL POINT |

0 50

SCALE: 1" = 50'

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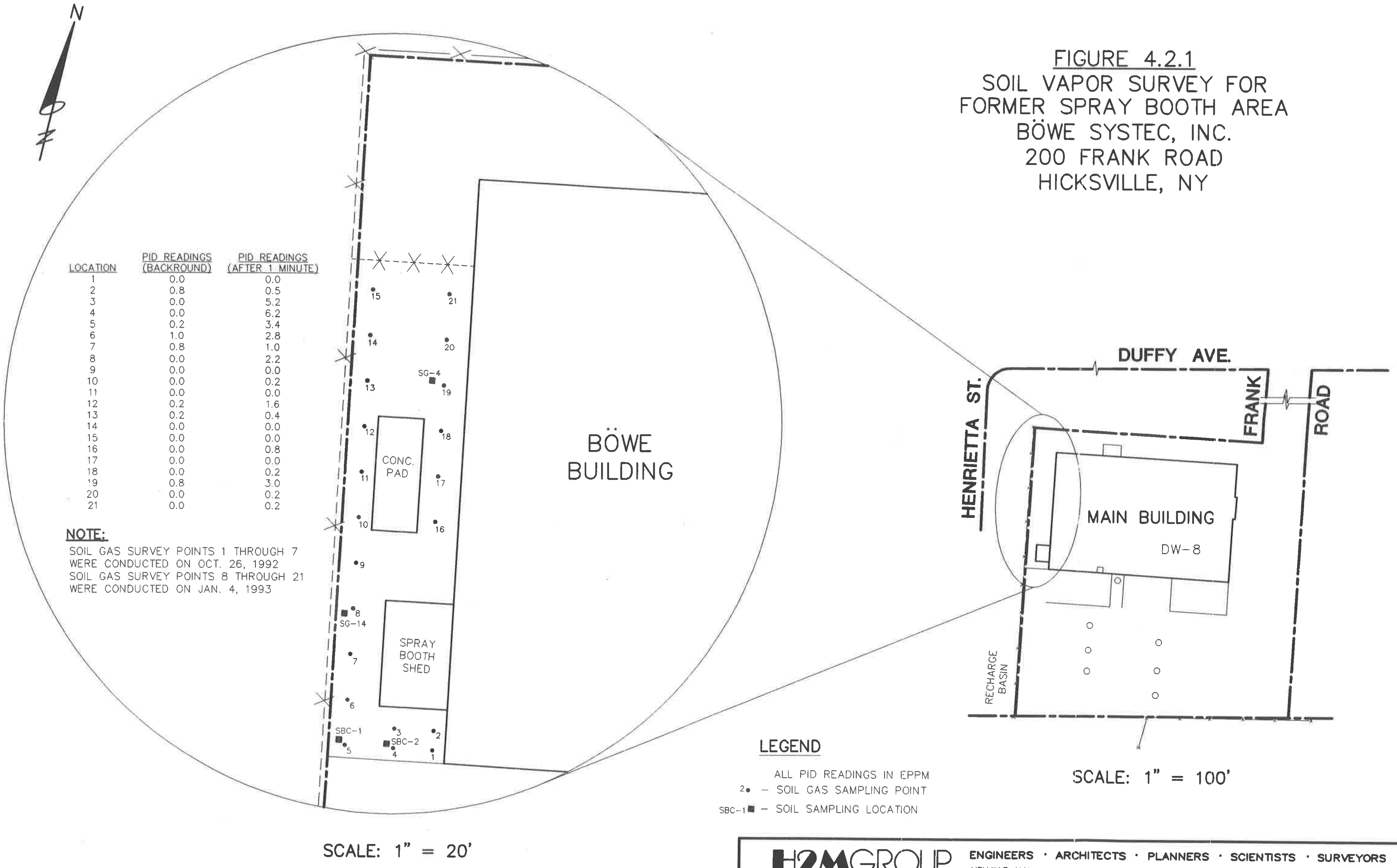
FIG2-1-1.DWG 1-12-98 2:04:06 pm EST

# FIGURE 4.2.1
## SOIL VAPOR SURVEY FOR FORMER SPRAY BOOTH AREA
## BÖWE SYSTEC, INC.
## 200 FRANK ROAD
## HICKSVILLE, NY



| LOCATION | PID READINGS (BACKROUND) | PID READINGS (AFTER 1 MINUTE) |
|---|---|---|
| 1 | 0.0 | 0.0 |
| 2 | 0.8 | 0.5 |
| 3 | 0.0 | 5.2 |
| 4 | 0.0 | 6.2 |
| 5 | 0.2 | 3.4 |
| 6 | 1.0 | 2.8 |
| 7 | 0.8 | 1.0 |
| 8 | 0.0 | 2.2 |
| 9 | 0.0 | 0.0 |
| 10 | 0.0 | 0.2 |
| 11 | 0.0 | 0.0 |
| 12 | 0.2 | 1.6 |
| 13 | 0.2 | 0.4 |
| 14 | 0.0 | 0.0 |
| 15 | 0.0 | 0.0 |
| 16 | 0.0 | 0.8 |
| 17 | 0.0 | 0.0 |
| 18 | 0.0 | 0.2 |
| 19 | 0.8 | 3.0 |
| 20 | 0.0 | 0.2 |
| 21 | 0.0 | 0.2 |

**NOTE:**
SOIL GAS SURVEY POINTS 1 THROUGH 7 WERE CONDUCTED ON OCT. 26, 1992
SOIL GAS SURVEY POINTS 8 THROUGH 21 WERE CONDUCTED ON JAN. 4, 1993

SCALE: 1" = 20'

SCALE: 1" = 100'

**LEGEND**

ALL PID READINGS IN EPPM
2● – SOIL GAS SAMPLING POINT
SBC-1■ – SOIL SAMPLING LOCATION

BOWEFIG3.DWG 1-13-98 3:15:06 pm EST

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## SITE LEGEND

| NO. | IDENTIFICATION |
|---|---|
| 1 | GENERAL INSTRUMENT CORP. |
| 2 | ANCHOR LITH KEM CO. |
| 3 | ALSEY MANUFACTURING |
| 4 | MEGNUSONICS DEVICES |
| 5 | AIR TECHNIQUES, INC. |
| 6 | ATLAS GRAPHICS |
| 7 | TISHCON CORP. |
| 8 | ARKWIN INDUSTRIES |
| 9 | TISHCON CORP. |
| 10 | UTILITY MANUFACTURING |
| 11 | AUTOLINE AUTOMOTIVE CORP. |
| 12 | LAKA INDUSTRIES INC. |
| 13 | 89 FROST ST. SITE |
| 14 | APPLIED FLUIDICS |
| 15 | AMPEREX ELECTRONIC CORP. |
| 16 | METPAR STEEL PRODUCTS CORP. |
| 17 | SKELTON SCREW MACHINE CORP. |
| 18 | KLEAR TONE TRANSPARENT PDTS. |
| 19 | S & B MACHINE WORKS |
| 20 | PERMAFUSE CORP. |
| 21 | ARKWIN INDUSTRIES |
| 22 | PRECISION MECHANISMS CORP. |
| 23 | ADCHEM CORP. |
| 24 | LITTON APPLIED TECHNOLOGY |
| 25 | NATHEN LAGIN CO., INC. |
| 26 | STOKVIS MULTITON CORP. |
| 27 | METCO INC. |
| 28 | JOHN HASSALL INC. |
| 29 | MICRO CONTACTS INC. |

▼ CERCLIS SITE

■ OTHER POTENTIAL CONTAMINATION SOURCES

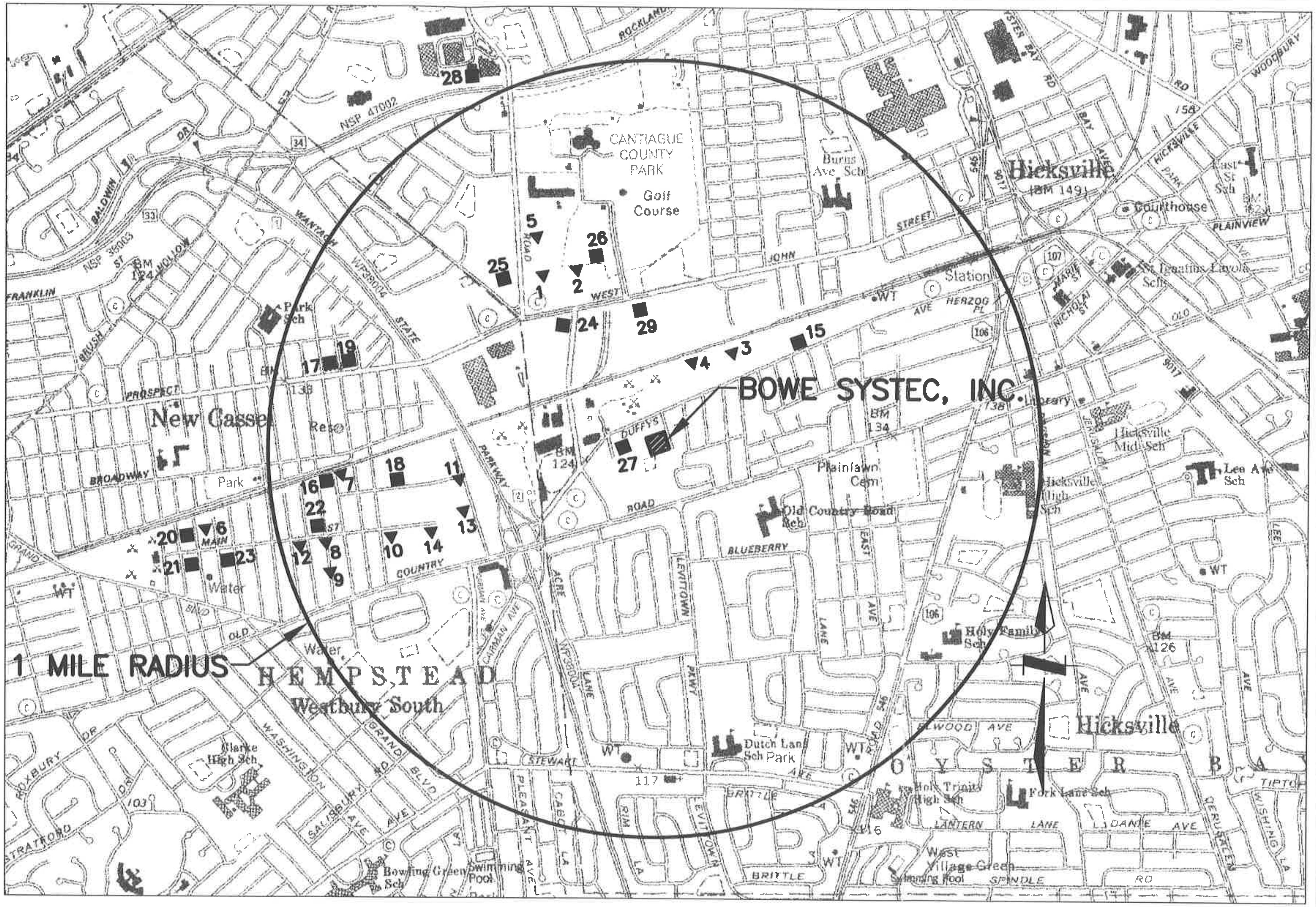

FIGURE 3.3.1

POTENTIAL CONTAMINANT SOURCES WITHIN ONE MILE OF BOWE SITE

SCALE: 1" = 1500'

FIG3-3-1.DWG 1-13-98 3:17:34 pm EST

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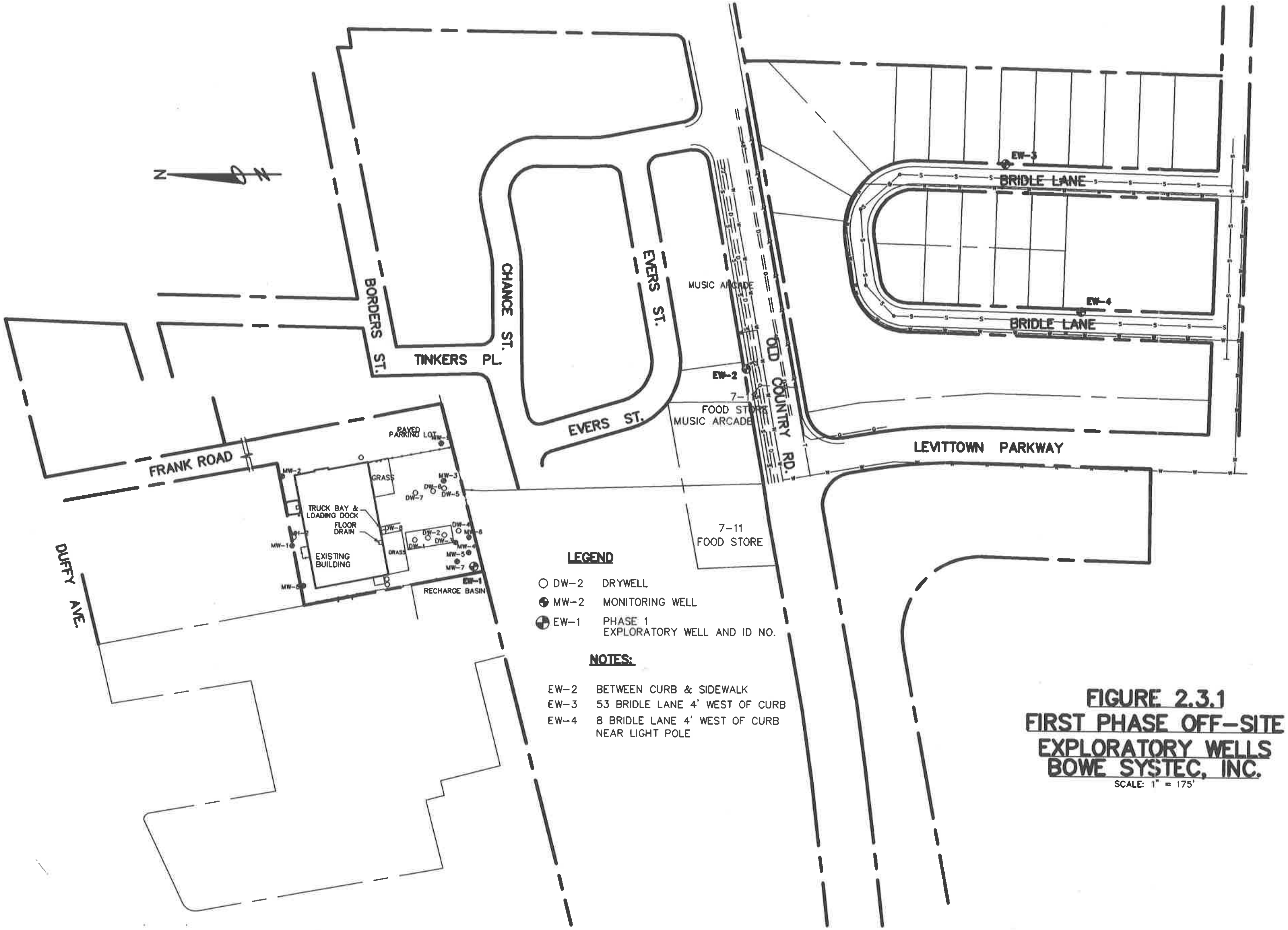
BOWEW.DWG 12-9-97 12:41:17 pm EST



**LEGEND**

| | | |
|---|---|---|
| ○ | DW-2 | DRYWELL |
| ● | MW-2 | MONITORING WELL |
| ⊕ | EW-1 | PHASE 1 EXPLORATORY WELL AND ID NO. |

**NOTES:**

| | |
|---|---|
| EW-2 | BETWEEN CURB & SIDEWALK |
| EW-3 | 53 BRIDLE LANE 4' WEST OF CURB |
| EW-4 | 8 BRIDLE LANE 4' WEST OF CURB NEAR LIGHT POLE |

FIGURE 2.3.1
FIRST PHASE OFF-SITE
EXPLORATORY WELLS
BOWE SYSTEC, INC.
SCALE: 1" = 175'

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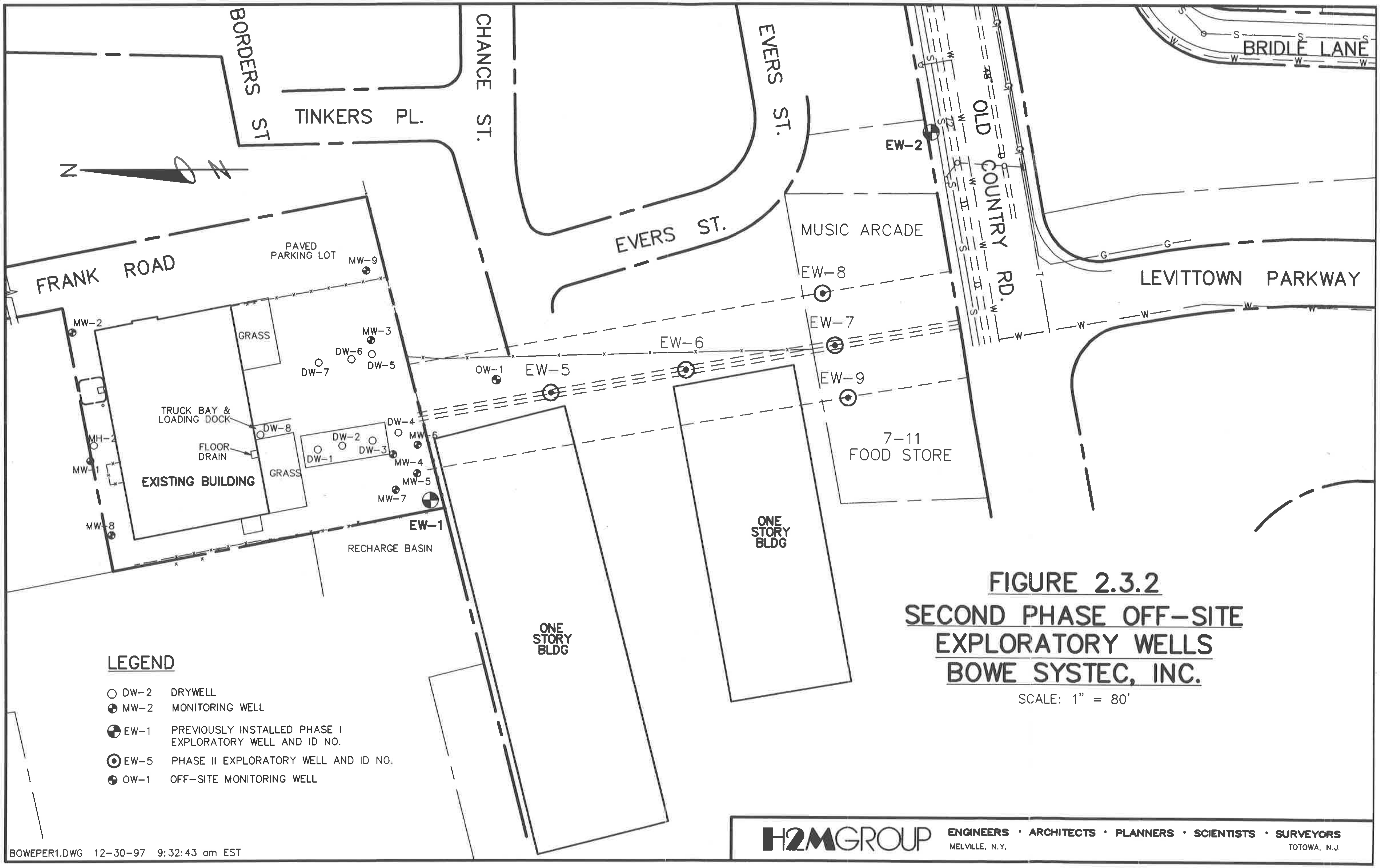

## FIGURE 2.3.2
## SECOND PHASE OFF-SITE EXPLORATORY WELLS BOWE SYSTEC, INC.

SCALE: 1" = 80'

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**FIGURE 3.5.1**

## LOCATION OF WELLS
## WITHIN 3 MILE RADIUS DOWN GRADIENT
## OF BÖWE SYSTEC, INC.

SCALE: 1" = 2000'

INFORMATION SOURCE:
-NCDH
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# TABLE 4.1.2A
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# DRYWELL SAMPLING
# TENTATIVELY IDENTIFIED SVOCs[1]

| SAMPLE LOCATION<br>SAMPLE DEPTH | DW-4<br>(16-20 ft.) | DW-4<br>(26-28 ft.) | DW-5<br>(17-19 ft.) | DW-5<br>(47-49 ft.) | DW-6<br>(12-14 ft.) | DW-6<br>(22-24 ft.) | DW-7<br>(16-18 ft.) | DW-7<br>(26-28 ft.) | DW-8<br>(10-12 ft.) | DW-8<br>(25-27 ft.) |
|---|---|---|---|---|---|---|---|---|---|---|
| **TENTATIVELY IDENTIFIED COMPOUNDS** | | | | | | | | | | |
| Phenol,2,6-Bis(1,1-Dimethylethyl) | ND | ND | 90 J | ND | ND | ND | ND | ND | ND | ND |
| Tetrahydromethylnaphthalene | ND | ND | ND | ND | 2,000 J | ND | 400 J | ND | ND | ND |
| Naphthalene,1-Methyl | ND | ND | ND | ND | 600 J | ND | ND | ND | ND | ND |
| Dihydrotrimethylindene Isomer | ND | ND | ND | ND | 300 J | ND | ND | ND | ND | ND |
| Dimethylnaphthalene Isomers | ND | ND | ND | ND | 3,000 J | ND | ND | ND | ND | ND |
| Trimethylnaphthalene Isomers | ND | ND | ND | ND | 2,400 J | ND | 400 J | ND | ND | ND |
| Naphthalene, 1-(2-Propenyl) | ND | ND | ND | ND | 700 J | ND | ND | ND | ND | ND |
| Methylfluorene Isomers | ND | ND | ND | ND | 1,300 J | ND | ND | ND | ND | ND |
| Dimethylbiphenyl Isomer | ND | ND | ND | ND | 500 J | ND | ND | ND | ND | ND |
| Trimethylbutylphenol Isomer | ND | ND | ND | ND | ND | ND | ND | ND | 100 J | ND |
| Unknown Cyclohexane Subs. | ND | ND | ND | ND | ND | ND | 700 J | ND | ND | ND |
| Unknown Cyclic CPD | ND | ND | ND | ND | ND | ND | 200 J | ND | ND | ND |
| Unknown Hydrocarbons | ND | ND | 500 J | ND | 1,000 J | ND | 6,900 J | ND | ND | ND |
| Unknowns | 900 J | ND | 740 J | 90 J | 3,400 J | 100 J | 800 J | ND | ND | ND |
| Total SVOC TICs | 900 J | ND | 1,300 J | 90 J | 15,200 J | 100 J | 9,400 J | ND | 100 J | ND |

***NOTES*:**
- [1] All results reported in ug/kg
- ND - Not Applicable
- J - Estimated Value

# TABLE 4.1.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# DRYWELL SAMPLING
# TCL SVOC RESULTS [(1)]

| *SAMPLE LOCATION* | *DW-4* | *DW-4* | *DW-5* | *DW-5* | *DW-6* | *DW-6* | *DW-7* | *DW-7* | *DW-8* | *DW-8* | *FB* | *RSCO* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *SAMPLE DEPTH* | *(16-20 ft.)* | *(26-28 ft.)* | *(17-19 ft.)* | *(47-49 ft.)* | *(12-14 ft.)* | *(22-24 ft.)* | *(16-18 ft.)* | *(26-28 ft.)* | *(10-12 ft.)* | *(25-27 ft.)* | *(NA)* | |
| **PARAMETER** | | | | | | | | | | | | |
| 2-Methylnaphthalene | 360 U | 340 U | 360 U | 340 U | 1,100 | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | 36,400 |
| Acenaphthene | 360 U | 340 U | 360 U | 340 U | 200 J | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | 50,000 |
| Dibenzofuran | 360 U | 340 U | 360 U | 340 U | 320 J | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | 6,200 |
| Fluorene | 360 U | 340 U | 360 U | 340 U | 540 | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | 50,000 |
| Phenanthrene | 150 J | 340 U | 360 U | 340 U | 910 | 350 U | 200 J | 340 U | 340 U | 340 U | 10 U | 50,000 |
| Anthracene | 360 U | 340 U | 360 U | 340 U | 410 U | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | 50,000 |
| Carbazole | 360 U | 340 U | 360 U | 340 U | 410 U | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | NA |
| Fluoranthene | 250 J | 340 U | 360 U | 340 U | 380 J | 350 U | 240 J | 340 U | 340 U | 340 U | 10 U | 50,000 |
| Pyrene | 260 J | 340 U | 360 U | 340 U | 730 | 350 U | 360 J | 340 U | 340 U | 340 U | 10 U | 50,000 |
| Benzo(a)Anthracene | 100 J | 340 U | 360 U | 340 U | 150 J | 350 U | 100 J | 340 U | 340 U | 340 U | 10 U | 224 or MDL |
| Chrysene | 170 J | 340 U | 360 U | 340 U | 340 J | 350 U | 210 J | 340 U | 340 U | 340 U | 10 U | 400 |
| bis(2-Ethylhexyl)Phthalate | 710 | 130 J | 880 | 220 J | 2,300 | 650 | 970 B | 380 B | 410 | 310 J | 2 J | 50,000 |
| Benzo(b)Fluoranthene | 230 J | 340 U | 360 U | 340 U | 410 U | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | 224 or MDL |
| Benzo(k)Fluoranthene | 100 J | 340 U | 360 U | 340 U | 410 U | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | 224 or MDL |
| Benzo(a)Pyrene | 120 J | 340 U | 360 U | 340 U | 190 J | 350 U | 170 J | 340 U | 340 U | 340 U | 10 U | 61 or MDL |
| Indeno(1,2,3-cd)Pyrene | 360 U | 340 U | 360 U | 340 U | 410 U | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | 3,200 |
| Benzo(g,h,i)Perylene | 360 U | 340 U | 360 U | 340 U | 410 U | 350 U | 360 U | 340 U | 340 U | 340 U | 10 U | 50,000 |

***NOTES*:**
- [(1)] All results reported in ug/kg
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- RSCO NYSDEC TAGM HWR 94-4046 Recommended Soil Cleanup Objectives
- NA - Not Applicable
- U - Analyte was not detected
- J - Estimated Value
- B - Analyte was detected in field blank
- MDL - Method Detection Limit

# TABLE 4.1.1A
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# DRYWELL SAMPLING
# TENTATIVELY IDENTIFIED VOCS[1]

| *SAMPLE LOCATION*<br>*SAMPLE DEPTH* | *DW-6*<br>*(12-14 ft.)* | *DW-7*<br>*(26-28 ft.)* | *FB*<br>*(NA)* | *TB*<br>*(NA)* |
|---|---|---|---|---|
| **TENTATIVELY IDENTIFIED COMPOUND** | | | | |
| Trichlorotrifluoro Ethane Isomer | 70 J | ND | ND | ND |
| Dimethyl Heptane Isomers | 26 J | ND | ND | ND |
| Dimethyl Octane Isomers | 502 J | ND | ND | 30 J |
| Dimethyl Decane Isomer | ND | ND | ND | 6 J |
| Methyl Nonane Isomer | 120 J | ND | ND | ND |
| Ethane,1,1,2-Trichloro-1,2 | ND | 40 J | ND | ND |
| Unknown Cyclic | 530 J | ND | ND | ND |
| Unknowns | 89 J | ND | 26 J | 80 J |
| Total VOC TICs | 1,337 J | 40 J | 26 J | 116 J |

***NOTES*:**

- [1] All results reported in ug/kg
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- TB - Sample was trip blank - Reported in ug/l
- NA - Not Applicable
- ND - Not Detected

# TABLE 4.1.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# DRYWELL SAMPLING
# TCL VOC RESULTS [1]

| *SAMPLE LOCATION*<br>*SAMPLE DEPTH* | *DW-4*<br>*(18-20 ft.)* | *DW-4*<br>*(26-28 ft.)* | *DW-5*<br>*(17-19 ft.)* | *DW-5*<br>*(47-49 ft.)* | *DW-6*<br>*(12-14 ft.)* | *DW-6*<br>*(22-24 ft.)* | *DW-7*<br>*(16-18 ft.)* | *DW-7*<br>*(26-28 ft.)* | *DW-8*<br>*(10-12 ft.)* | *DW-8*<br>*(25-27 ft.)* | *FB*<br>*10-27-92*<br>*(NA)* | *FB*<br>*10-28-92*<br>*(NA)* | *TB*<br>*10-27-92*<br>*(NA)* | *TB*<br>*10-28-92*<br>*(NA)* | *RSCO* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | | | | | | | | | | | | | | | |
| Chloromethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Bromoethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Vinyl Chloride | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 200 |
| Chloroethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,900 |
| Methylene Chloride | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 100 |
| Acetone | 11 U | 10 U | 11 U | 10 U | 48 | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 200 |
| Carbon Disulfide | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 2,700 |
| 1,1-Dichloroethene | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 400 |
| 1,1-Dichloroethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 200 |
| 1,2-Dichloroethene (total) | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Chloroform | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 300 |
| 1,2-Dichloroethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 100 |
| 2-Butanone | 11 U | 10 U | 11 U | 10 U | 16 | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 300 |
| 1,1,1-Trichloroethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 800 |
| Carbon Tetrachloride | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 600 |
| Bromodichloromethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 1,2-Dichloropropane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| cis-1,3-Dichloropropene | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Trichloroethene | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 700 |
| Dibromochloromethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 1,1,2-Trichloroethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Benzene | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 60 |
| trans-1,3-Dichloropropene | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Bromoform | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 4-Methyl-2-Pentanone | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,000 |
| 2-Hexanone | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Tetrachloroethene | 140 | 10 U | 31 | 5 J | 12 U | 11 U | 12 | 10 U | 10 | 10 U | 10 U | 10 U | 10 U | 10 U | 1,400 |
| 1,1,2,2-Tetrachloroethane | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 600 |
| Toluene | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,500 |
| Chlorobenzene | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,700 |
| Ethylbenzene | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5,500 |
| Styrene | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Xylene (total) | 11 U | 10 U | 11 U | 10 U | 12 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,200 |

***NOTES*:**
- [1] All results reported in ug/kg
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- TB - Sample was trip blank - Reported in ug/l
- RSCO NYSDEC TAGM HWR 94-4046 Recommended Soil Cleanup Objectives
- NA - Not Applicable
- U - Analyte was not detected
- J - Estimated Value

# TABLE 3.6.5
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## TRICHLOROETHENE, TETRACHLOROETHENE AND 1,1,1-TRICHLOROETHANE IN WELL N-7561 (1989 TO 1992)

| *SAMPLE DATE* | *TCE* | *PCE* | *1,1,1-TCA* |
|---|---|---|---|
| 03/14/89 | 2.4 | 6.5 | MD |
| 06/16/89 | 3.7 | 7.6 | 0.9 |
| 09/28/89 | 5.9 | 10.0 | 1.1 |
| 11/20/89 | ND | 8.0 | 0.6 |
| 06/21/90 | 4.4 | 4.5 | ND |
| 06/21/90(1) | 1.5 | 1.2 | ND |
| 05/06/92 | 12 | ND | ND |
| 06/30/92 | 14 | 2.6 | ND |
| 09/23/92 | 15 | 2.3 | ND |

***Notes*:**

- All results in ug/l
- (1) Treated Water (Granular Activated Carbon)
- ND - Not Detected
- Well Depth = 550 ft. bgs
- Screen Depth = 463 ft. bgs

# TABLE 3.6.4
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# TRICHLOROETHENE, TETRACHLOROETHENE AND 1,1,1-TRICHLOROETHANE IN WELL N-9212 (1989 TO 1992)(1)

| SAMPLE DATE | TCE | PCE | 1,1,1-TCA |
|---|---|---|---|
| 06/16/89 | 0.8 | 0.7 | ND |
| 09/08/89 | 0.9 | 0.7 | ND |
| 11/20/89 | 1.4 | 1.2 | ND |
| 03/21/91 | 1.3 | ND | ND |
| 06/26/91 | 4.4 | 1.0 | ND |
| 06/30/91 | 14.0 | 2.6 | ND |
| 07/26/91 | 4.1 | 0.9 | ND |
| 09/24/91 | 5.1 | 1.0 | ND |
| 10/22/91 | 4.3 | 0.9 | ND |
| 12/05/91 | 1.3 | ND | ND |
| 12/19/91 | 3.7 | 1.1 | ND |
| 09/03/92 | 3.7 | ND | 0.7 |
| 09/23/92 | 3.7 | ND | 0.7 |

***Notes:***

- All results in ug/l
- (1) Lab Reports do not indicate whether water is raw or treated
- ND - Not Detected
- Well Depth = 604 ft. bgs
- Screen Depth = 538 ft. bgs

# TABLE 3.6.3
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# TRICHLOROETHENE AND TETRACHLOROETHENE
# IN WELLS N-10313, N-10314 AND N-10317 (1984 TO 1990)

| *WELL* | *DATE* | *TRICHLOROETHENE* | *TETRACHLOROETHENE* |
|---|---|---|---|
| N-10313 | 11/13/90 | ND | 3 |
| N-10314 | 12/05/84 | 5 | 17 |
| | 04/01/85 | 64 | 13 |
| | 12/18/85 | 900 | 23 |
| | 11/13/90 | 1 | 2 |
| | 07/08/91 | 5 | 4 |
| N-10317 | 10/19/84 | 96 | 8 |
| | 04/02/85 | 35 | 7 |
| | 12/18/85 | 80 | 9 |
| | 10/30/89 | 100 | 4 |

***Notes*:**

- All results in ug/l
- ND - Not Detected
- Well Depth = N-10313 = 63 ft. bgs
  N-10314 and N-10317 53 ft. bgs
- Screen Depth = N-10313 = 64 ft. bgs
  N-10314 and N-10317 = 54 ft. bgs

# TABLE 3.6.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# VOCs IN WELL N-8880 (1978 TO 1984)

| ***SAMPLE DATE***<br>***PARAMETER*** | ***04/14/78*** | ***09/24/79*** | ***11/05/79*** | ***03/10/80*** | ***02/04/81*** | ***03/01/82*** | ***03/11/82*** | ***04/12/83*** | ***09/23/83*** | ***03/20/84*** |
|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene | 200 | 205 | 270 | 350 | ND | 199 | 210 | 140 | 100 | 150 |
| 1,1,1-Trichloroethane | 11 | 20 | 19 | ND | 7 | 14 | 14 | 18 | 17 | ND |
| Tetrachloroethene | 10 | 9 | 10 | 6 | 7 | 4 | 4 | 3 | 2 | 3 |
| 1,1-Dichloroethene | ND | ND | ND | ND | ND | ND | 3 | 4 | 4 | ND |
| Toluene | ND | ND | ND | 10 | ND | ND | ND | ND | ND | ND |
| Benzene | ND | ND | ND | 7 | ND | ND | ND | ND | ND | ND |

***Notes*:**

- All results in ug/l
- ND - Not Detected
- Well Depth = 247 ft. bgs
- Screen Depth = 221 ft. bgs

# TABLE 3.6.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# VOCs IN WELL N-1197 (1978 TO 1990)

| ***SAMPLE DATE*** ***PARAMETER*** | ***09/13/78*** | ***08/15/79*** | ***10/04/82*** | ***05/03/84*** | ***03/01/85*** | ***08/08/86*** | ***03/19/90*** |
|---|---|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 137 | 3,119 | 85 | 57 | 55 | 18 | 3 |
| Trichloroethene | ND | 1,770 | 68 | 52 | 31 | 8 | 3 |
| Tetrachloroethene | 6 | 4 | 4 | 4 | 3 | ND | 180 |
| 1,1-Dichloroethane | ND | ND | 89 | ND | ND | ND | 1 |
| Methylene Chloride | 47 | ND | 6 | ND | ND | ND | ND |
| 1,1-Dichloroethane | ND | ND | 10 | ND | ND | ND | ND |
| *cis*-1,2-Dichloroethene | ND | ND | ND | ND | ND | ND | 4 |
| Chloroform | ND | ND | 1 | 4 | ND | ND | ND |

***Notes*:**
- All results in ug/l
- ND - Not Detected
- Well Depth = 69 ft. bgs
- Screen Depth = 64 ft. bgs

# TABLE 3.3.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# CERCLIS SITES WITHIN A 1 MILE RADIUS

| SITE | LOCATION | DISTANCE FROM BOWE SITE |
|---|---|---|
| General Instrument Corp. | 600 W. John Street Hicksville, New York | 3,000 ft. Northwest |
| Anchor Lithkem Co. (Anchor Chemicals) | 500 W. John Street Hicksville, New York | 2,700 ft. Northwest |
| Alsy Manufacturing, Inc. | 270 Duffy Avenue Hicksville, New York | 1,500 ft. Northeast |
| Megnusonics Devices | 290 Duffy Avenue Hicksville, New York | 1,000 ft. Northeast |
| Air Techniques, Inc. (Old Sylvania Site) | 70 Cantiague Rock Road Hicksville, New York | 3,200 ft. Northwest |
| Atlas Graphics | 567 Main Street Westbury, New York | 6,000 ft. West |
| Tishcon Corp. | 125 State Street Westbury, New York | 4,000 ft. West |
| Arkwin Industries | 648-656, 662-670 Main St. Westbury, New York | 4,600 ft. West |
| Tishcon Corp. | 31-33 Brooklyn Avenue Westbury, New York | 4,700 ft. West |
| Utility Manufacturing/ Wonder King | 700-712 Main Street Westbury, New York | 3,600 ft. West |
| Former Autoline Automotives Corp. | 101 Frost Street Westbury, New York | 2,800 ft. West |
| Former LAKA Industries,Inc. | 62 Kinkel Street Westbury, New York | 5,000 ft. West |
| Eighty-Nine Frost Street Site | 89 Frost Street Westbury, New York | 2,800 ft. West |
| Former Applied Fluidics | 770 Main Street Westbury, New York | 3,300 ft. West |

# TABLE 4.1.3
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# DRYWELL SAMPLING
# TCL PESTICIDES AND PCB RESULTS$^{(1)}$

| *SAMPLE LOCATION*<br>*SAMPLE DEPTH* | *DW-5*<br>*(17-19 ft.)* | *DW-6*<br>*(12-14 ft.)* | *FB*<br>*(NA)* | *RSCO* |
|---|---|---|---|---|
| **PARAMETER** | | | | |
| alpha-BHC | 2.7 P | 2.1 U | 0.050 U | 110 |
| beta-BHC | 1.8 U | 2.1 U | 0.050 U | 200 |
| delta-BHC | 1.8 U | 2.1 U | 0.050 U | 300 |
| gamma-BHC (Lindane) | 1.8 U | 2.1 U | 0.050 U | NA |
| Heptachlor | 1.8 U | 2.1 U | 0.050 U | 100 |
| Aldrin | 1.8 U | 2.1 U | 0.050 U | 41 |
| Heptachlor epoxide | 1.8 U | 1.9 JP | 0.050 U | 20 |
| Endosulfan I | 1.8 U | 2.1 U | 0.050 U | 900 |
| Dieldrin | 3.6 U | 4.1 U | 0.10 U | 44 |
| 4,4'-DDE | 3.6 U | 2.7 JP | 0.10 U | 2,100 |
| Endrin | 3.6 U | 4.1 U | 0.10 U | 100 |
| Endosulfan II | 3.6 U | 4.1 U | 0.10 U | 900 |
| 4,4'-DDD | 3.6 U | 9.5 | 0.10 U | 2,900 |
| Endosulfan sulfate | 3.6 U | 4.1 U | 0.10 U | 1,000 |
| 4,4'-DDT | 3.6 U | 4.1 U | 0.10 U | 2,100 |
| Methoxychlor | 18 U | 21 U | 0.50 U | NA |
| Endrin ketone | 3.6 U | 4.1 U | 0.10 U | NA |
| Endrin aldehyde | 3. 6U | 4.1 U | 0.10 U | NA |
| alpha-Chlordane | 1.0 JP | 4.9 P | 0.050 U | NA |
| gamma-Chlordane | 1.2 JP | 6. 8 P | 0.050 U | 540 |
| Toxaphene | 180 U | 210 U | 5.0 U | NA |
| Aroclor-1016 | 36 U | 41 U | 1.0 U | 10,000 |
| Aroclor-1221 | 73 U | 83 U | 2.0 U | 10,000 |
| Aroclor-1232 | 36 U | 41 U | 1.0 U | 10,000 |
| Aroclor-1242 | 36 U | 41 U | 1.0 U | 10,000 |
| Aroclor-1248 | 36 U | 50 P | 1.0 U | 10,000 |
| Aroclor-1254 | 36 U | 41 U | 1.0 U | 10,000 |
| Aroclor-1260 | 36 U | 41 U | 1.0 U | 10,000 |

***NOTES*:**

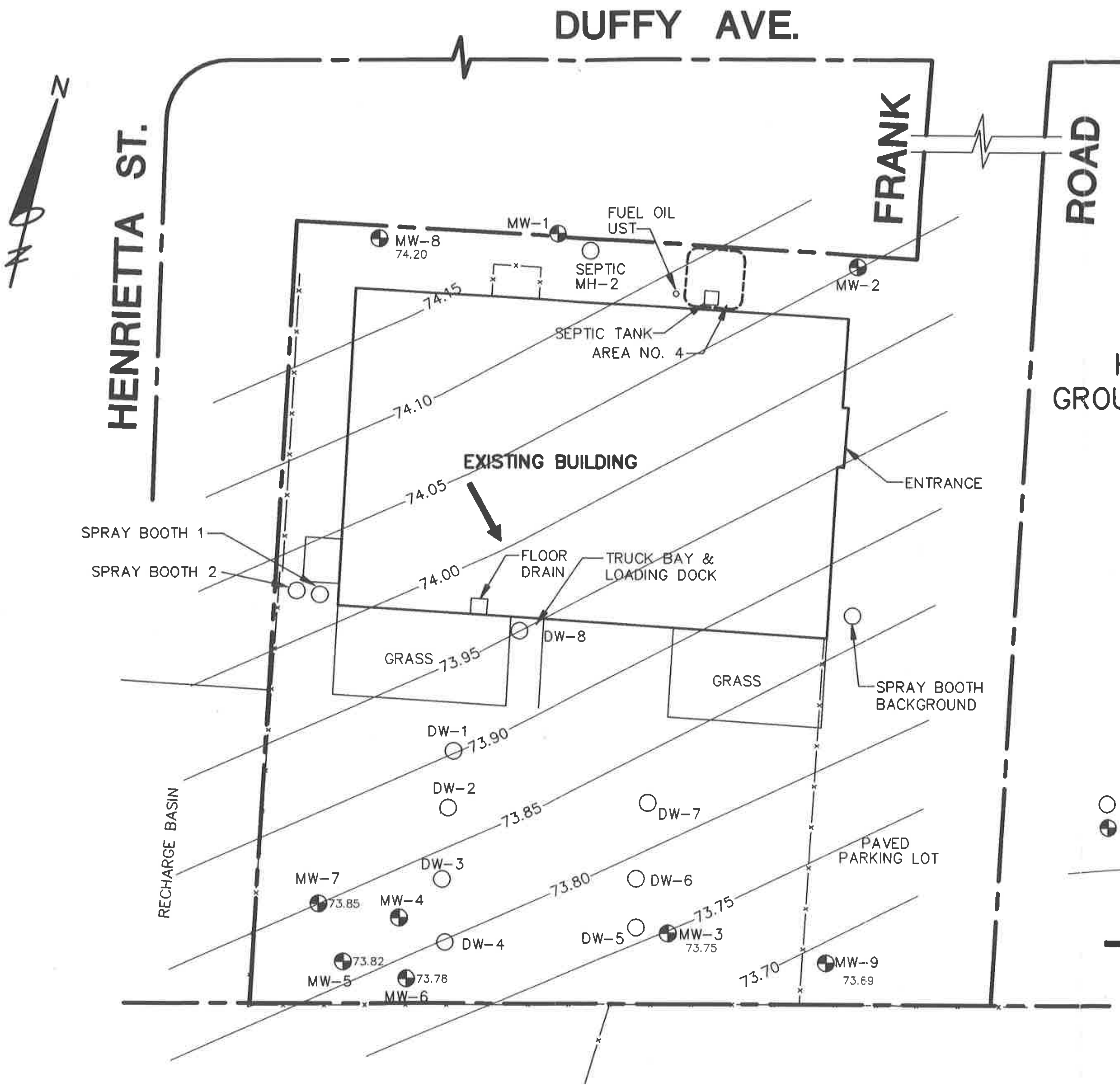
- $^{(1)}$ All results reported in ug/kg
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- RSCO NYSDEC TAGM HWR 94-4046 Recommended Soil Cleanup Objectives
- NA - Not Applicable
- U - Analyte was not detected
- J - Estimated Value

# TABLE 4.1.4
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## DRYWELL SAMPLING
## TAL METALS RESULTS(1)

| SAMPLE LOCATION | DW-4 | DW-4 DUP(2) | DW-4 | DW-5 | DW-5 | DW-6 | DW-6 | DW-7 | DW-7 | DW-8 | DW-8 | FB | LEVELS OF CONCERN | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE DEPTH | (16-20 ft.) | (16-20 ft.) | (26-28 ft.) | (17-19 ft.) | (47-49 ft.) | (12-14 ft.) | (22-24 ft.) | (16-18 ft.) | (26-28 ft.) | (10-12 ft.) | (25-27 ft.) | (NA) | SB(3) | RSCO | EUS BG |
| PARAMETER | | | | | | | | | | | | | | | |
| Aluminum | 2,470 | 1,880 | 1,940 | 1,700 | 1,150 | 2,680 | 1,490 | 4,660 | 1,310 | 1,150 | 1,330 | 43.9 B | 11,700 | SB | 33,000 |
| Antimony | 7.9 B | 5.6 U | 5.3 U | 5.6 U | 5.3 U | 6.4 U | 5.6 B | 5.6 B | 5.3 U | 5.3 U | 5.3 U | 25.9 U | 8.9 B | SB | NA |
| Arsenic | 3.1 B | 2.2 | 0.23 U | 1.8 B | 0.54 B | 7.4 B | 0.31 B | 9.1 B | 0.57 B | 0.98 B | 0.23 U | 1.1 U | 10.9 | 7.5 or SB | 3 - 12 |
| Barium | 19.3 B | 16.7 B | 5.5 B | 10.9 B | 3.9 B | 14.6 B | 3.7 B | 28.7 B | 4.6 B | 5.5 B | 3.9 B | 1.5 U | 36.3 B | 300 or SB | 15 - 600 |
| Beryllium | 0.43 B | 0.22 B | 0.12 B | 0.13 B | 0.10 B | 0.25 B | 0.08 U | 0.26 B | 0.08 B | 0.10 B | 0.08 B | 0.40 U | 0.39 B | 0.16 or SB | 0 - 1.75 |
| Cadmium | 2.8 | 2.6 | 0.68 B | 2.1 | 1.1 | 2.5 | 0.56 U | 3.9 | 0.63 B | 0.76 B | 0.55 U | 2.7 U | 2.2 | 10 | 0.1 - 1.0 |
| Calcium | 13,200 | 5,080 | 37.5 B | 1,250 | 27.0 B | 7,890 | 36.6 B | 3,170 | 28.6 B | 77.3 B | 30.6 B | 110 B | 2,290 | SB | 130 - 35,000 |
| Chromium | 28.9 | 30.4 | 1.8 B | 17.3 | 6.4 | 17.2 | 2.4 | 23.5 | 1.7 U | 4.8 | 2.8 | 8.4 U | 21.2 | 50 | 1.5 - 40 |
| Cobalt | 5.6 B | 4.6 B | 1.1 U | 3.9 B | 1.0 U | 5.0 B | 1.6 B | 5.2 B | 1.0 U | 1.9 B | 1.1 B | 5.1 U | 3.4 B | 30 or SB | 2.5 - 60 |
| Copper | 32.7 | 24.9 | 3.3 B | 11.7 | 1.4 B | 82.6 | 2.0 B | 77.4 | 3.7 B | 15.4 | 3.8 B | 2.3 B | 35.8 | 25 or SB | 1 -50 |
| Iron | 7,810 | 6,810 | 2,490 | 8,240 | 4,650 | 5,910 | 1,720 | 8,560 | 1,930 | 3,990 | 2,050 | 57.1 B | 12,700 | 2,000 or SB | 2,000 - 550,000 |
| Lead | 58.6 N | 55.5 N | 0.97 N | 12.8 N | 0.8 N | 423 N | 1.2 N | 331 N | 1.7 N | 1.6 N | 0.84 N | 1.9 U | 45.7 N | SB | 200 - 500 |
| Magnesium | 6,690 | 2,750 | 191 B | 872 B | 91.2 B | 4,310 | 123 B | 2,470 | 114 B | 226 B | 121 B | 14.6 U | 1,360 | SB | 100 - 5,000 |
| Manganese | 131 | 80.0 | 29.4 | 77.1 | 33.5 | 49.0 | 32.3 | 128 | 40.0 | 40.1 | 53.6 | 1.4 B | 246 | SB | 50 - 5,000 |
| Mercury | 0.06 U | 0.06 U | 0.05 U | 0.06 U | 0.05 U | 0.07 B | 0.07 B | 0.17 | 0.05 U | 0.06 U | 0.05 U | 0.10 U | 0.43 | 0.1 | 0.001 - 0.2 |
| Nickel | 14.6 | 11.7 | 3.7 B | 10.3 | 3.2 B | 14.5 | 3.6 B | 18.7 | 1.7 B | 3.6 B | 2.4 B | 9.6 B | 9.2 B | 13 or SB | 0.5 - 25 |
| Potassium | 207 B | 136 B | 111 B | 130 B | 56.6 B | 161 B | 91.8 B | 329 B | 73.1 B | 137 B | 74.6 B | 84.1 B | 298 B | SB | 8,500 - 43,000 |
| Selenium | 0.25 B | 0.22 B | 0.19 U | 0.43 B | 0.22 B | 0.30 B | 0.19 U | 0.29 B | 0.18 U | 0.19 B | 0.18 U | 1.0 B | 0.57 B | 2 or SB | 0.1 - 3.9 |
| Silver | 0.71 B | 0.47 U | 0.45 U | 0.48 U | 0.45 U | 0.54 U | 0.46 U | 0.63 B | 0.45 U | 0.45 U | 0.45 U | 2.2 U | 0.51 U | SB | NA |
| Sodium | 74.8 B | 72.2 B | 29.2 B | 38.2 B | 19.8 B | 153 B | 27.4 B | 131 B | 34.4 B | 23.2 B | 24.8 B | 102 B | 68.3 B | SB | 6,000 - 8,000 |
| Thallium | 0.19 U | 0.19 U | 0.19 U | 0.20 U | 0.19 U | 0.22 U | 0.19 U | 0.19 U | 0.18 U | 0.18 U | 0.18 U | 0.90 U | 0.21 U | SB | NA |
| Vanadium | 13.5 | 11.3 | 2.8 B | 11.4 | 5.4 B | 24.7 | 2.4 B | 28.8 | 2.3 B | 3.2 B | 1.6 B | 2.9 U | 24.1 | 150 or SB | 1 - 300 |
| Zinc | 477 | 110 | 8.8 | 67.0 | 10.2 | 144 | 3.8 B | 200 | 4.1 | 11.6 | 3.4 B | 27.5 | 52.1 | 20 or SB | 9 - 50 |

***NOTES*:**

- (1) All results reported in mg/kg
- (2) Sample was a blind duplicate
- (3) Site Background Sample
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- SB - Site Background
- RSCO NYSDEC TAGM HWR 94-4046 Recommended Soil Cleanup Objectives
- NA - Not Applicable
- U - Analyte was not detected
- B - Reported concentrations was less than the CRDL, but greater than the IDL
- EUS BG - Eastern USA Background
- N - Estimated value (matrix spike recovery not within control limits)



# FIGURE 4.4.4.1

## BÖWE SYSTEC, INC.
## HICKSVILLE, NEW YORK
## GROUNDWATER ELEVATION MAP
## JANUARY 12, 1993

| WELL | REFERENCE ELEVATION |
|---|---|
| 1 | 129.73 |
| 2 | 130.34 |
| 3 | 128.93 |
| 4 | 128.50 |
| 5 | 129.11 |
| 6 | 129.38 |
| 7 | 128.94 |
| 8 | 129.76 |
| 9 | 129.90 |

**LEGEND**

| | | |
|---|---|---|
| ○ | DW-2 | DRYWELL |
| ⊕ | MW-2 | MONITORING WELL |
| — | | EXISTING GROUNDWATER CONTOUR IN FEET ABOVE MEAN SEA LEVEL (AMSL) 0.05 FF. CONTOUR INTERVAL |
| ➡ | | DIRECTION OF GROUNDWATER FLOW |

0 50

SCALE: 1" = 50'

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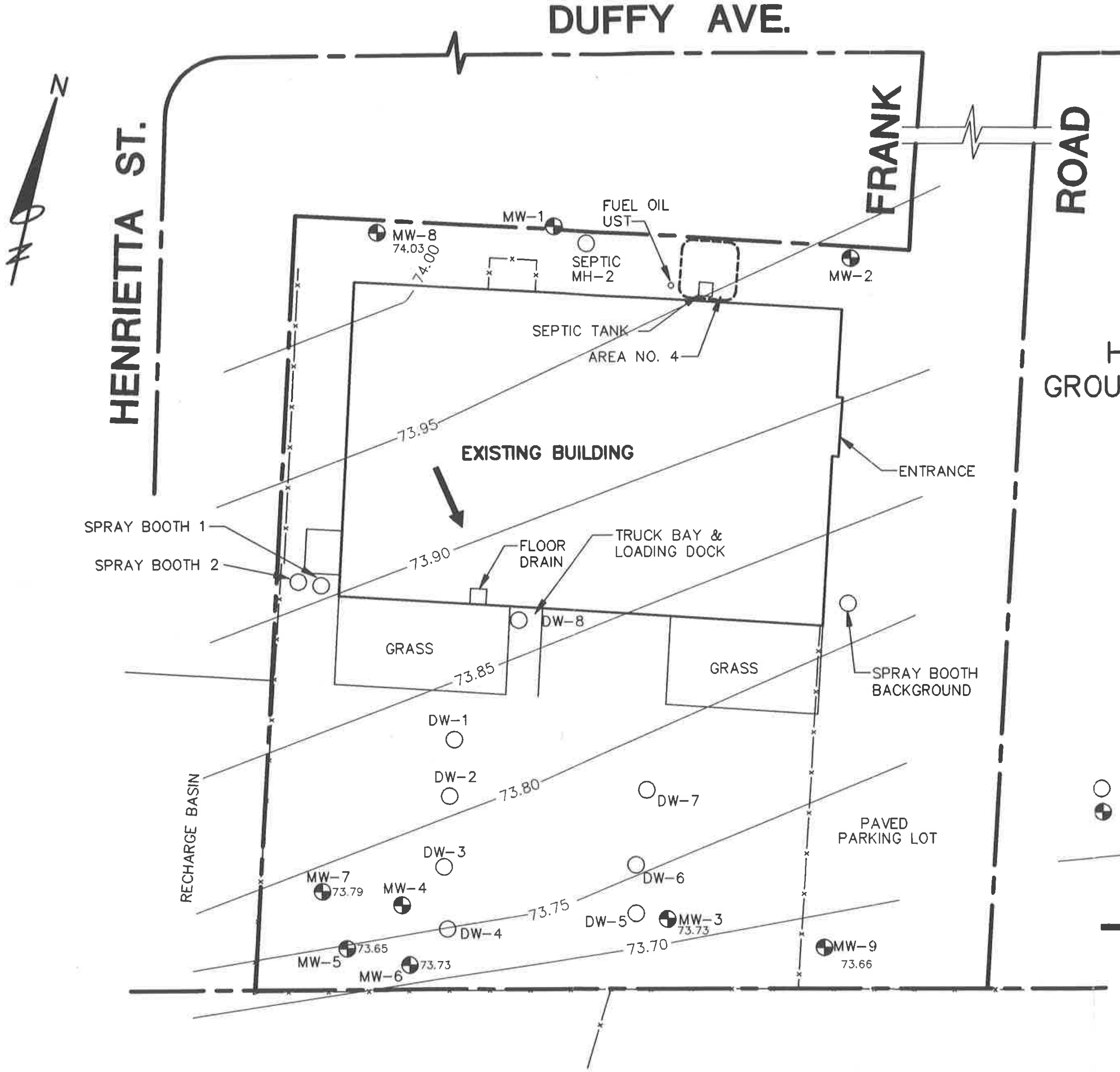
BOWE1-12.DWG 1-12-98 1:19:10 pm EST



## FIGURE 4.4.4.2
## BÖWE SYSTEC, INC.
## HICKSVILLE, NEW YORK
## GROUNDWATER ELEVATION MAP
## JANUARY 21, 1993

| WELL | REFERENCE ELEVATION |
|---|---|
| 1 | 129.73 |
| 2 | 130.34 |
| 3 | 128.93 |
| 4 | 128.50 |
| 5 | 129.11 |
| 6 | 129.38 |
| 7 | 128.94 |
| 8 | 129.76 |
| 9 | 129.90 |

**LEGEND**

| | |
|---|---|
| ○ DW-2 | DRYWELL |
| ● MW-2 | MONITORING WELL |
| — | EXISTING GROUNDWATER CONTOUR IN FEET ABOVE MEAN SEA LEVEL (AMSL) 0.05 FF. CONTOUR INTERVAL |
| ➞ | DIRECTION OF GROUNDWATER FLOW |

0 50
SCALE: 1" = 50'

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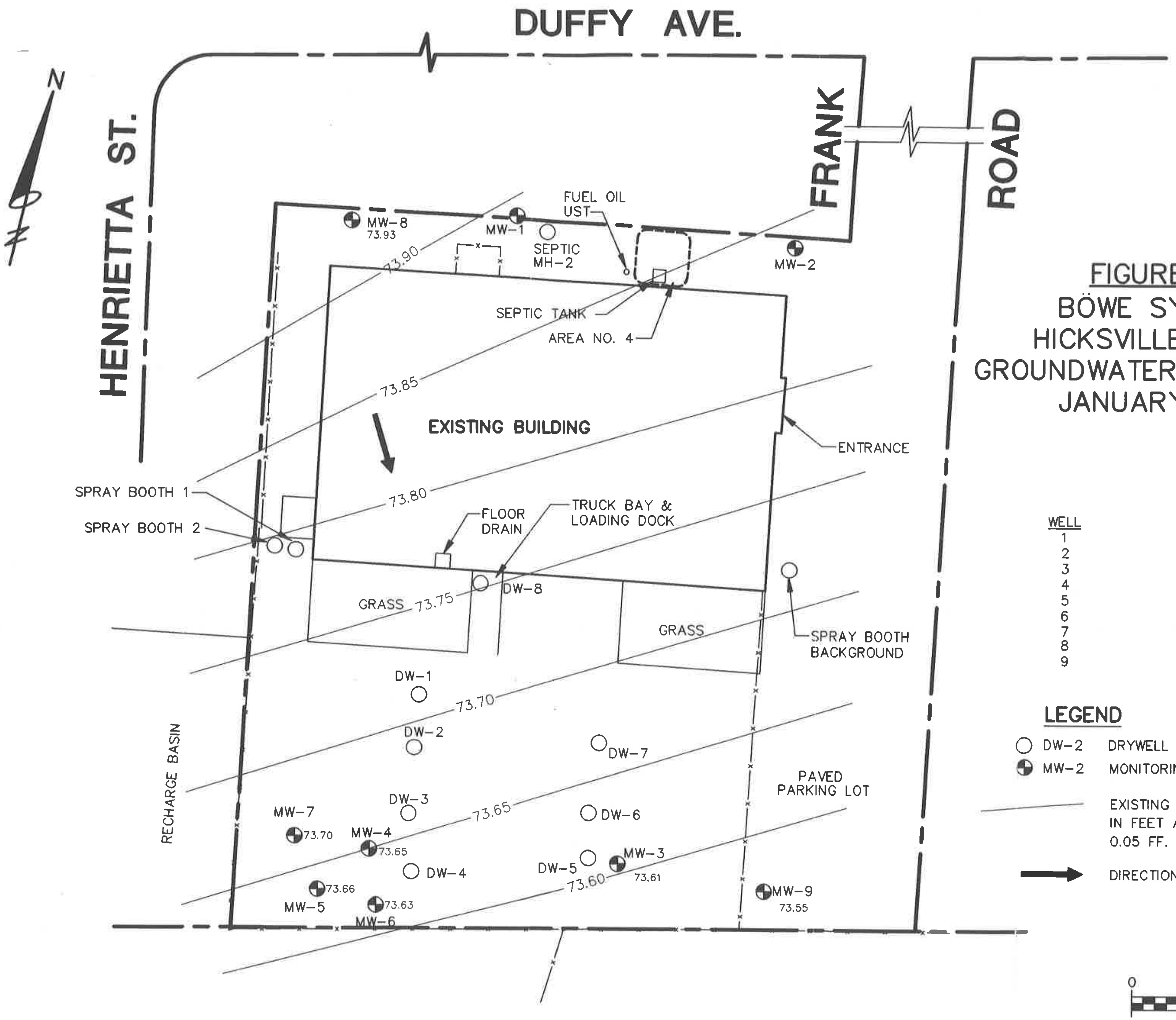

## FIGURE 4.4.4.3
## BÖWE SYSTEC, INC.
## HICKSVILLE, NEW YORK
## GROUNDWATER ELEVATION MAP
## JANUARY 28, 1993

| WELL | REFERENCE ELEVATION |
|---|---|
| 1 | 129.73 |
| 2 | 130.34 |
| 3 | 128.93 |
| 4 | 128.50 |
| 5 | 129.11 |
| 6 | 129.38 |
| 7 | 128.94 |
| 8 | 129.76 |
| 9 | 129.90 |

**LEGEND**

| | | |
|---|---|---|
| ○ | DW-2 | DRYWELL |
| ◒ | MW-2 | MONITORING WELL |
| — | | EXISTING GROUNDWATER CONTOUR IN FEET ABOVE MEAN SEA LEVEL (AMSL) 0.05 FF. CONTOUR INTERVAL |
| → | | DIRECTION OF GROUNDWATER FLOW |

0 50

SCALE: 1" = 50'

BOWE1-28.DWG 1-12-98 1:29:02 pm EST

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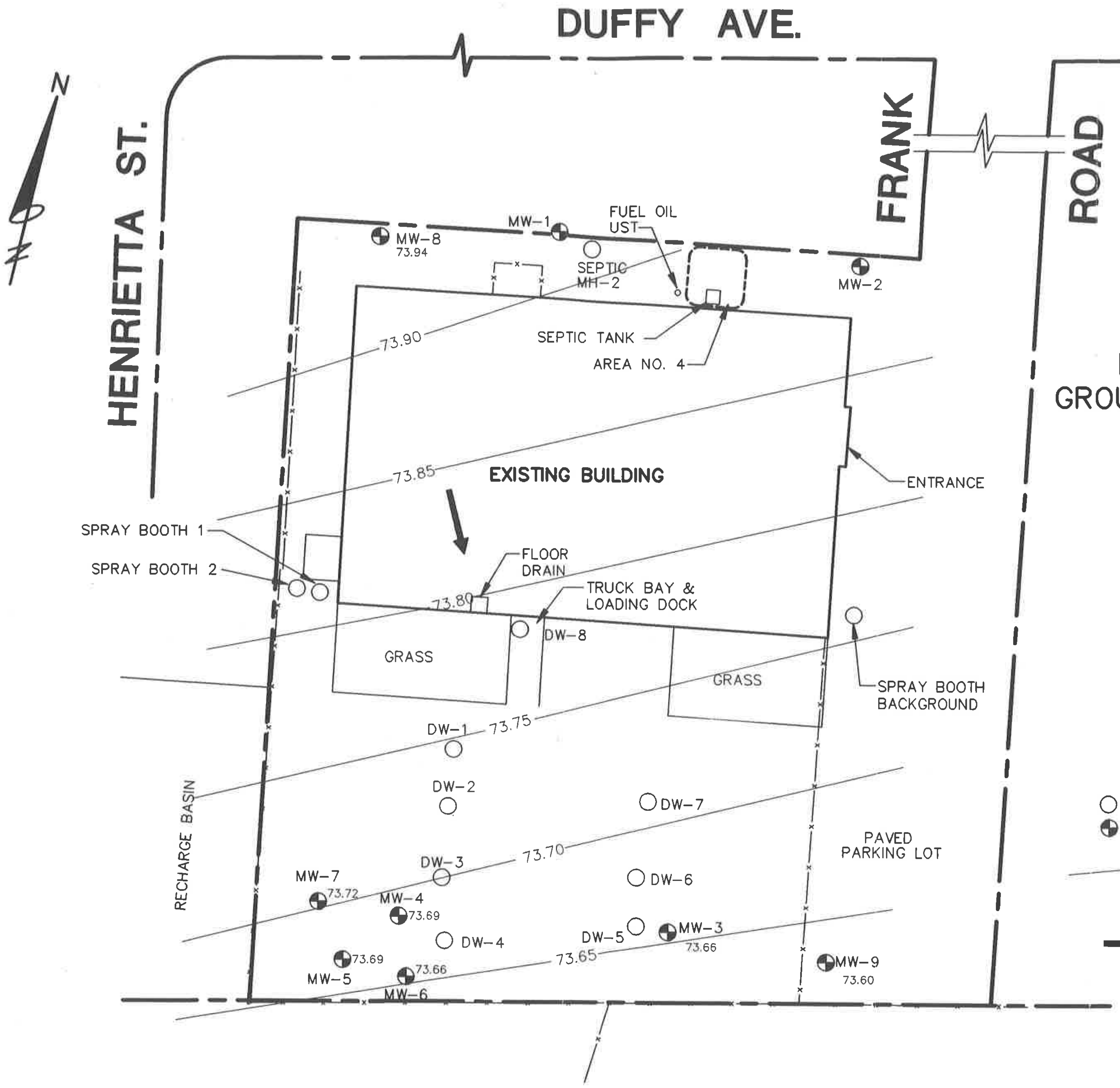

## FIGURE 4.4.4.4
## BÖWE SYSTEC, INC.
## HICKSVILLE, NEW YORK
## GROUNDWATER ELEVATION MAP
## FEBRUARY 5, 1993

| WELL | REFERENCE ELEVATION |
|---|---|
| 1 | 129.73 |
| 2 | 130.34 |
| 3 | 128.93 |
| 4 | 128.50 |
| 5 | 129.11 |
| 6 | 129.38 |
| 7 | 128.94 |
| 8 | 129.76 |
| 9 | 129.90 |

**LEGEND**

| | |
|---|---|
| ○ DW-2 | DRYWELL |
| ⊕ MW-2 | MONITORING WELL |
| — | EXISTING GROUNDWATER CONTOUR IN FEET ABOVE MEAN SEA LEVEL (AMSL) 0.05 FF. CONTOUR INTERVAL |
| ➞ | DIRECTION OF GROUNDWATER FLOW |

0 50

SCALE: 1" = 50'

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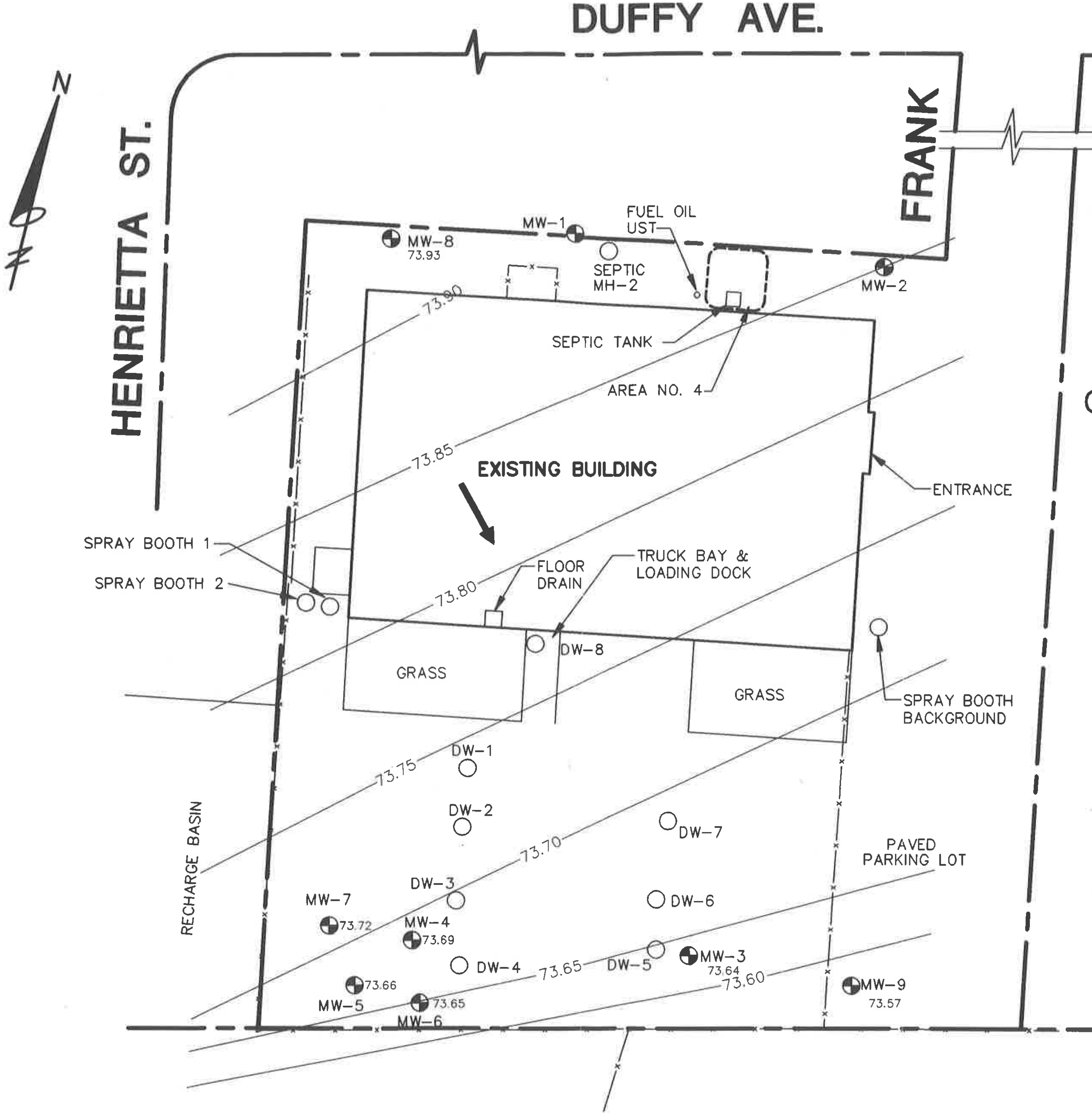
BOWE2-5.DWG 1-12-98 1:30:48 pm EST



## FIGURE 4.4.4.6

## BÖWE SYSTEC, INC.
## HICKSVILLE, NEW YORK
## GROUNDWATER ELEVATION MAP
## FEBRUARY 19, 1993

| WELL | REFERENCE ELEVATION |
|---|---|
| 1 | 129.73 |
| 2 | 130.34 |
| 3 | 128.93 |
| 4 | 128.50 |
| 5 | 129.11 |
| 6 | 129.38 |
| 7 | 128.94 |
| 8 | 129.76 |
| 9 | 129.90 |

**LEGEND**

○ DW-2 DRYWELL

● MW-2 MONITORING WELL

— EXISTING GROUNDWATER CONTOUR IN FEET ABOVE MEAN SEA LEVEL (AMSL) 0.05 FF. CONTOUR INTERVAL

→ DIRECTION OF GROUNDWATER FLOW

0 50

SCALE: 1" = 50'

BOWE2-19.DWG 1-12-98 1:51:22 pm EST

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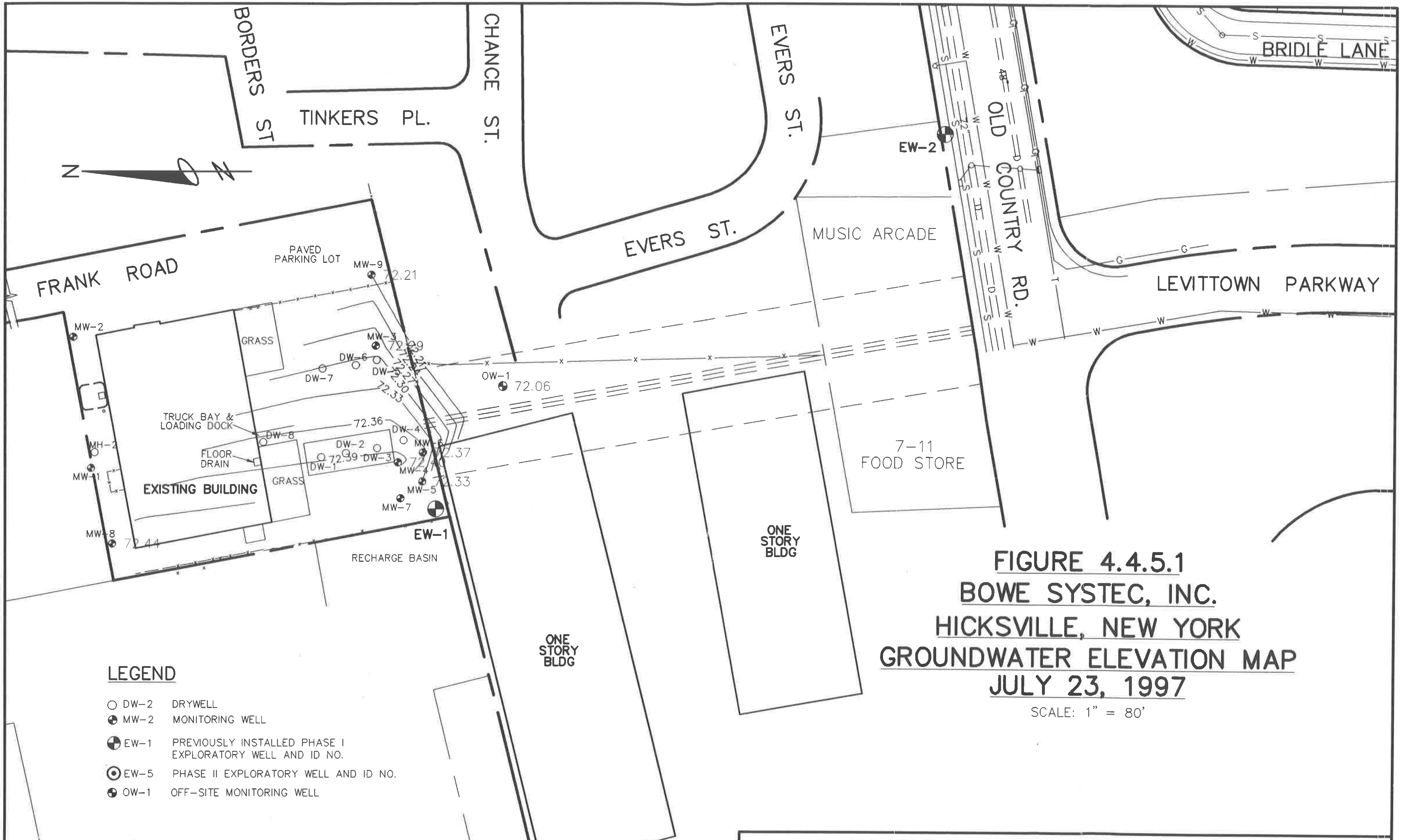


# FIGURE 4.4.5.1
# BOWE SYSTEC, INC.
# HICKSVILLE, NEW YORK
# GROUNDWATER ELEVATION MAP
# JULY 23, 1997

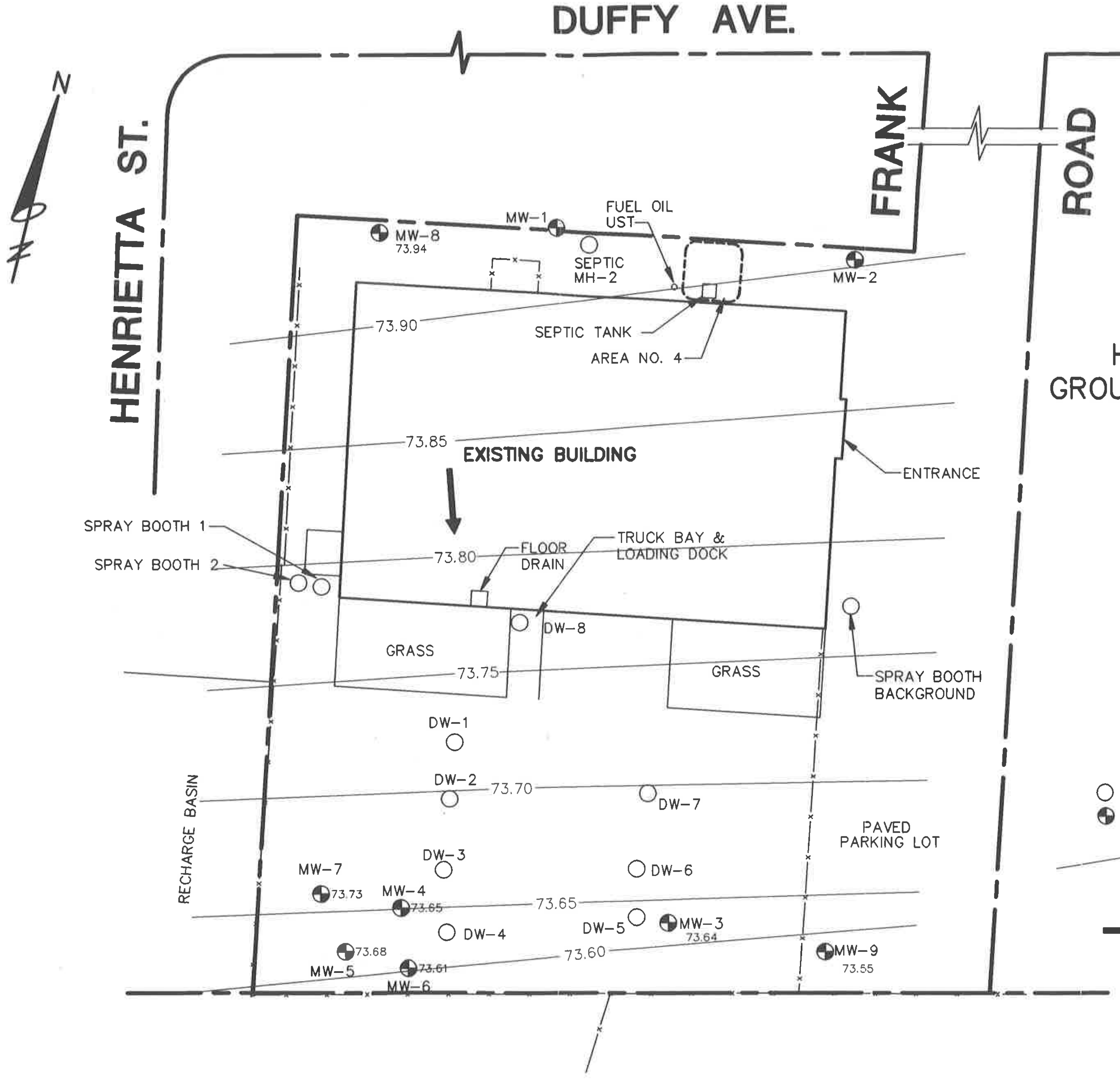
SCALE: 1" = 80'

## LEGEND

| | |
|---|---|
| ○ DW-2 | DRYWELL |
| ● MW-2 | MONITORING WELL |
| ● EW-1 | PREVIOUSLY INSTALLED PHASE I EXPLORATORY WELL AND ID NO. |
| ⊙ EW-5 | PHASE II EXPLORATORY WELL AND ID NO. |
| ● OW-1 | OFF-SITE MONITORING WELL |

BOWEPER1.DWG 2-5-98 11:10:48 am EST

H2MGROUP ENGINEERS · ARCHITECTS · PLANNERS · SCIENTISTS · SURVEYORS
MELVILLE, N.Y. TOTOWA, N.J.



## FIGURE 4.4.4.5
## BÖWE SYSTEC, INC.
## HICKSVILLE, NEW YORK
## GROUNDWATER ELEVATION MAP
## FEBRUARY 12, 1993

| WELL | REFERENCE ELEVATION |
|---|---|
| 1 | 129.73 |
| 2 | 130.34 |
| 3 | 128.93 |
| 4 | 128.50 |
| 5 | 129.11 |
| 6 | 129.38 |
| 7 | 128.94 |
| 8 | 129.76 |
| 9 | 129.90 |

**LEGEND**

○ DW-2 DRYWELL

⊕ MW-2 MONITORING WELL

— EXISTING GROUNDWATER CONTOUR IN FEET ABOVE MEAN SEA LEVEL (AMSL) 0.05 FF. CONTOUR INTERVAL

➡ DIRECTION OF GROUNDWATER FLOW

0 50

SCALE: 1" = 50'

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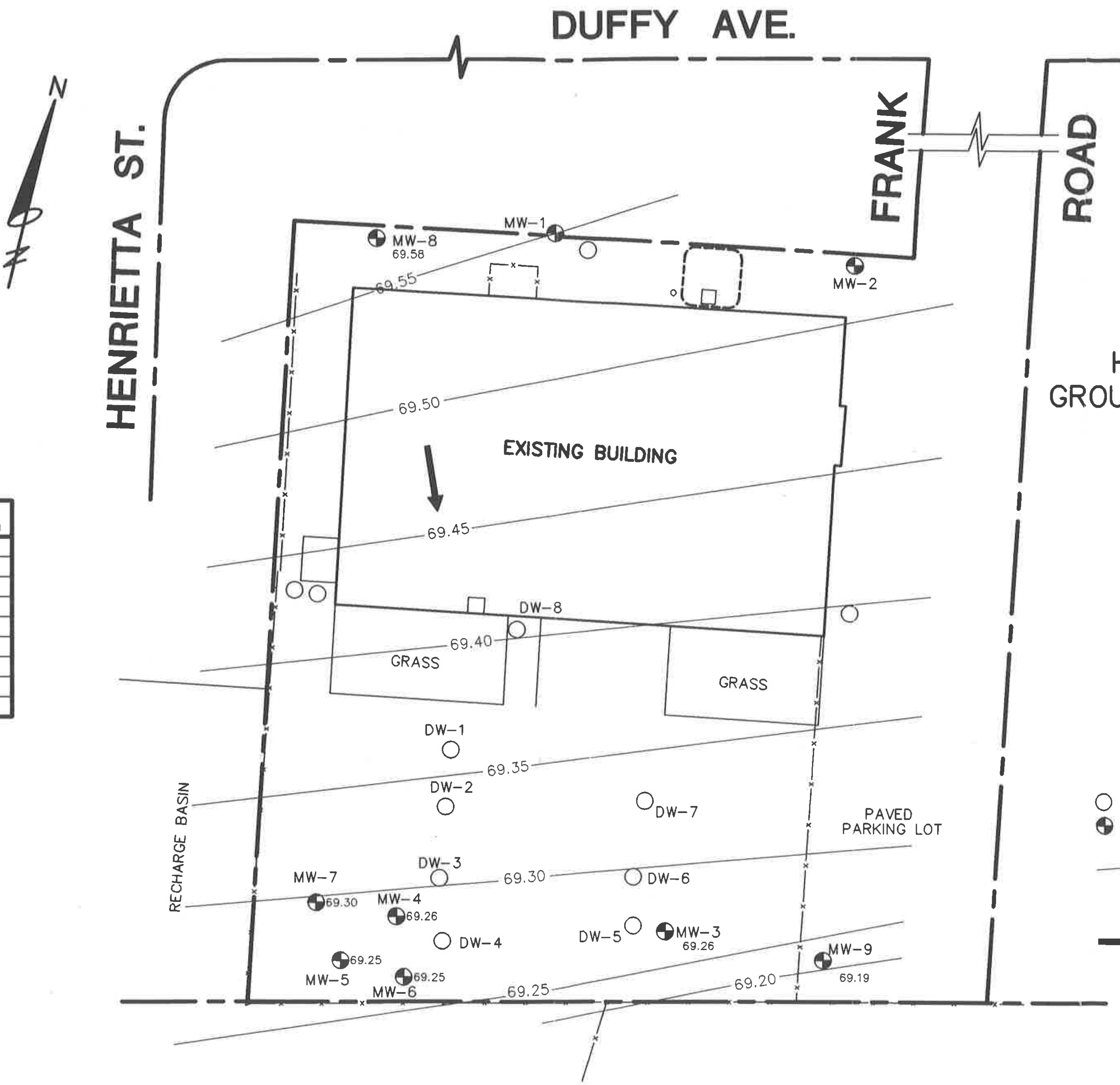
BOWE2-12.DWG 1-12-98 1:47:37 pm EST



## FIGURE 4.4.4.7

## BÖWE SYSTEC, INC.
## HICKSVILLE, NEW YORK
## GROUNDWATER ELEVATION MAP
## NOVEMBER 28, 1995

| Well # | Reference Elevation | Depth to Water | Groundwater Table Elevation |
|---|---|---|---|
| 1 | 129.73 | NA | NA |
| 2 | 130.34 | NA | NA |
| 3 | 128.93 | 59.67 | 69.26 |
| 4 | 128.50 | 59.24 | 69.26 |
| 5 | 129.11 | 59.86 | 69.25 |
| 6 | 129.38 | 60.13 | 69.25 |
| 7 | 128.94 | 59.64 | 69.30 |
| 8 | 129.76 | 60.18 | 69.58 |
| 9 | 129.90 | 60.78 | 69.19 |

**LEGEND**

| | | |
|---|---|---|
| ○ | DW-2 | DRYWELL |
| ⊕ | MW-2 | MONITORING WELL |
| — | | EXISTING GROUNDWATER CONTOUR IN FEET ABOVE MEAN SEA LEVEL (AMSL) 0.05 FF. CONTOUR INTERVAL |
| → | | DIRECTION OF GROUNDWATER FLOW |

0 50

SCALE: 1" = 50'

FIG4447.DWG 1-12-98 1:55:22 pm EST

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## TABLE 6.1.2
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## SESOIL MODEL ASSUMPTIONS AND INPUT PARAMETERS

| | |
|---|---|
| Soil Bulk Density: | 1.35 g/cm3 (Literature value for sand) |
| Hydraulic Conductivity: | 4.72E-02 cm/sec. (Site-specific aquifer test result) |
| Intrinsic Permeability: | 4.27E-07 cm2 (Calculated from aquifer test data) |
| Soil Disconnectiveness: | 4.28 [Calculated from Tellers & Eagleson (1980)] |
| Effective Porosity: | 0.30 (SESOIL default for sand, literature value) |
| Organic Carbon Content: | 2.5% (NYSDEC Petroleum Cleanup Guidance default) |
| Cation Exchange Capacity: | 0 (Assumes no cation exchange in soil, SESOIL default) |
| Freundlich Isotherm: | 1 (Assumes linear freundlich exponent, SESOIL default) |
| Surface Volatilization: | 0.58 (Assumes 58% of area is available to allow volatilization. This number was estimated by dividing the surface area of the drywells exposed to the surface for volatilization by the total contaminated site area which includes paved areas impermeable for volatilization.) |
| Sub-surface Volatilization: | 1.00 (Assumes that subsurface volatilization toward the surface is unrestricted and will occur) |
| Modeled Precipitation: | PPT model = (27.7 * PPT actual) This formula was determined by adding surface runoff to the actual precipitation measured at the LaGuardia Airport weather station. This modified precipitation is more representative of the actual water loads to the soil column than use of measured precipitation data alone. It also ensures a conservative model that maximizes leaching to groundwater. A complete description of the quantification of stormwater runoff rates is presented in the text.) |
| Depth to Groundwater: | 65 ft. |
| Biodegredation Rates: | None (Assumed no biodegredation takes place) |

# TABLE 6.1.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# CHEMICAL CHARACTERISTICS AFFECTING SOIL FATE AND TRANSPORT

| *CHEMICAL NAME* | *LOG $K_{ow}$* | *SOLUB. (mg/l)* | *VP (mmHg)* | *HENRY CONST. (atm-m3/mol)* | *T1/2 (days)* |
|---|---|---|---|---|---|
| Benzo(a)pyrene[1] | 5.01 | 4.36E-02 | 2.76E-12 | 1.55E-06 | 420 |
| Benzo(k)fluoranthene[2] | 6.06 | 4.30E-03 | 5.10E-07 | 3.94E-05 | NA |
| Bis(2-ethylhexyl)phthalate[1,2] | NA | NA | 1.50E-10 | NA | NA |
| Tetrachloroethene[1] | 3.15 | 231 | 6.04 | 5.71E-03 | NA |
| Trichloroethene[1] | 2.40 | 1290 | 20.73 | 2.78E-03 | NA |

NA - Data not available or no consensus on quantification.

---

[1] Data obtained from RISKPRO database (VP from Watson or Antoine Method, Log Kow from Ghose et. al, Solubility from literature or calculated from Kow and melting point data, Henry Constant from literature or calculated from vapor pressure and solubility ratios) and SPHEM (half life data).

[2] Data obtained from SPHEM

## TABLE 4.4.5.3
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## PCE IN OFF-SITE MONITORING WELL OW-1

| *SAMPLE DEPTH* | *TETRACHLOROETHENE* |
|---|---|
| 52-62 ft. | 34 |
| 77 ft. | 24 |
| 92 ft. | <10 |
| Trip Blank | <10 |

***NOTES*:**

- All results in ug/l

# TABLE 4.4.5.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SECOND PHASE OFF-SITE EXPLORATORY WELLS
# VOCs IN GROUNDWATER

| *PARAMETERS* | *EW-5 60-65 ft.* | *EW-5 84-89 ft.* | *EW-7 65-70 ft.* | *EW-7 83-88 ft.* |
|---|---|---|---|---|
| Methylene Chloride | <1 | <1 | <1 | <1 |
| *cis*-1,2-Dichloroethene | <1 | <1 | <1 | <1 |
| 1,1,1-Trichloroethane | <1 | <1 | <1 | <1 |
| Trichloroethene | <1 | <1 | 3 | 3 |
| Tetrachloroethene | 20 | 8 | 15 | 10 |
| Bromoform | <1 | 1 | <1 | <1 |

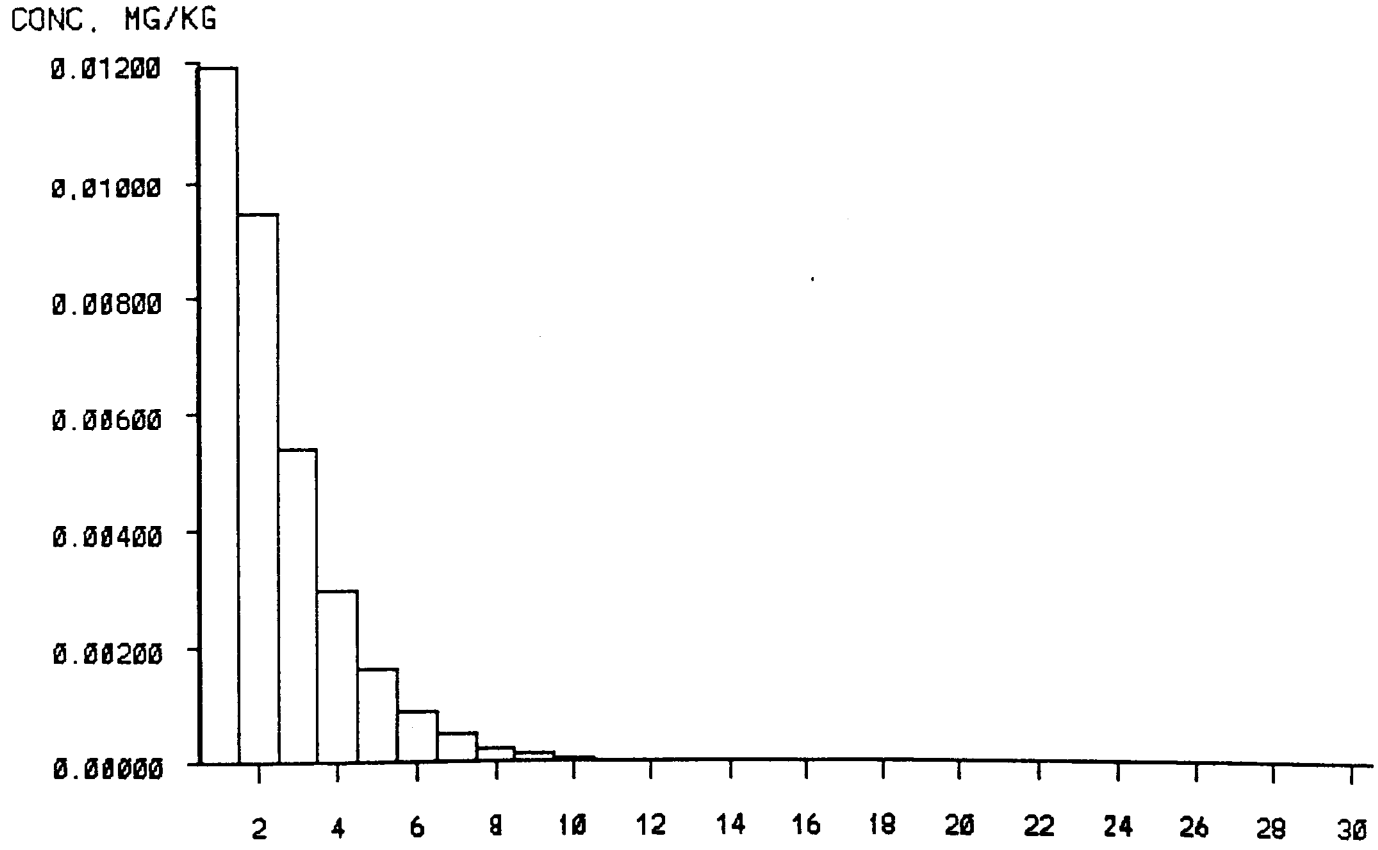
| *PARAMETERS* | *EW-8 60-65 ft.* | *EW-8 84-89 ft.* | *EW-9 60-65 ft.* | *EW-9 85-90 ft.* |
|---|---|---|---|---|
| Methylene Chloride | <1 | <1 | <1 | <1 |
| *cis*-1,2-Dichloroethene | <1 | <1 | 2 | 8 |
| 1,1,1-Trichloroethane | <1 | <1 | <1 | 1 |
| Trichloroethene | 5 | 4 | 6 | 17 |
| Tetrachloroethene | 12 | 5 | 4 | 5 |
| Bromoform | <1 | <1 | <1 | <1 |

| *PARAMETERS* | *FIELD BLANK 07-19-95* | *TRIP BLANK 07-19-95* | *FIELD BLANK 07-20-95* | *TRIP BLANK 07-20-95* |
|---|---|---|---|---|
| Methylene Chloride | <1 | <1 | <1 | 1 |
| *cis*-1,2-Dichloroethene | <1 | <1 | <1 | <1 |
| 1,1,1-Trichloroethane | <1 | <1 | <1 | <1 |
| Trichloroethene | <1 | <1 | <1 | <1 |
| Tetrachloroethene | <1 | <1 | <1 | <1 |
| Bromoform | <1 | <1 | <1 | <1 |

***NOTES*:**

- All results in ug/l

# FIGURE 6.1.6
# BOWE SYSTEC, INC.
# TRICHLOROETHENE SOIL TRANSPORT
# ABSORBED SOIL CONCENTRATION VS. TIME



(DEPTH CORRESPONDS TO 65 FT. BELOW GRADE - GROUNDWATER INTERFACE)

FIG616.DWG 1-6-98 4:49:13 pm EST

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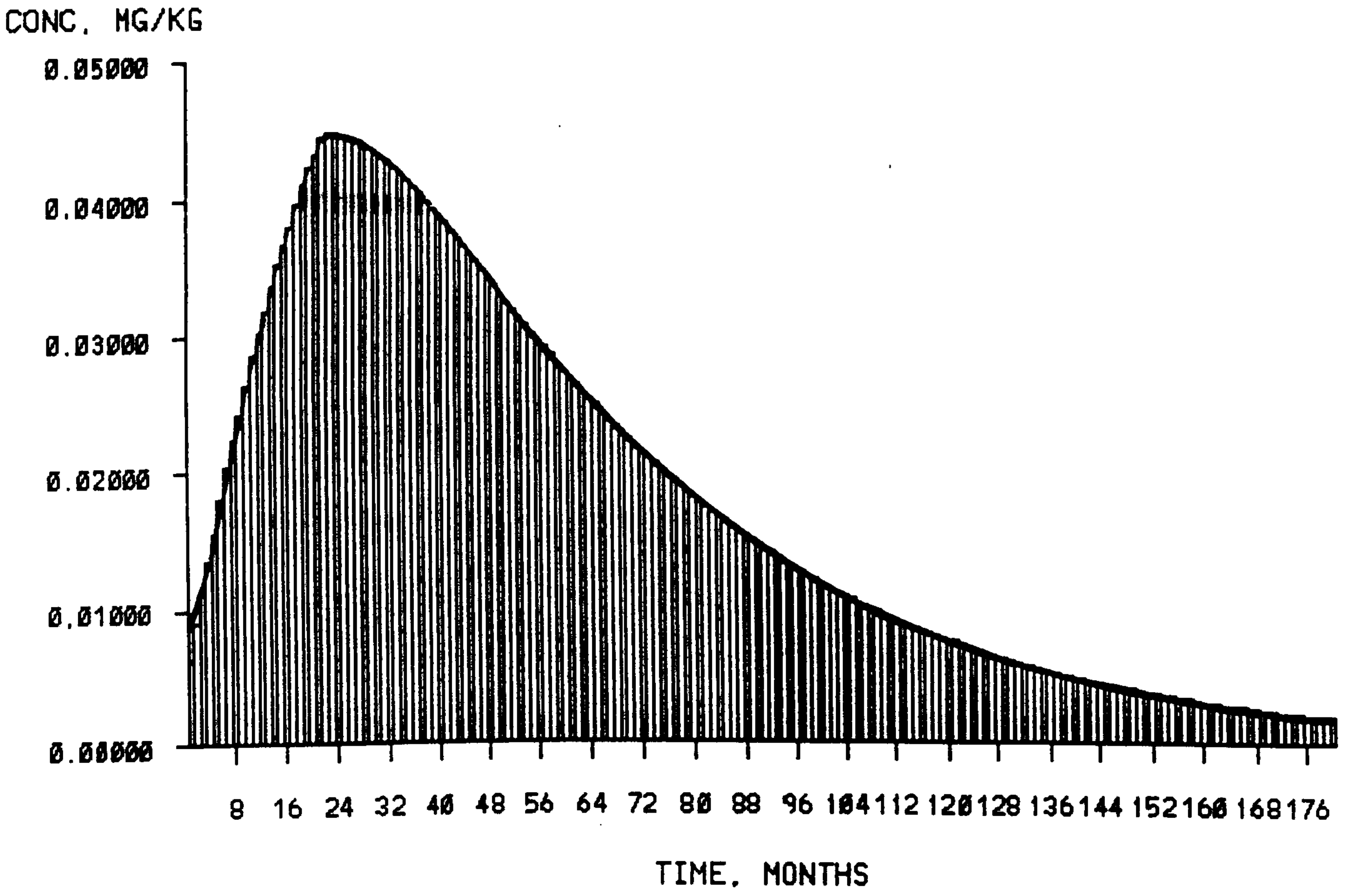
# FIGURE 6.1.5
# BOWE SYSTEC, INC.
# TETRACHLOROETHENE SOIL TRANSPORT
# ABSORBED SOIL CONCENTRATION VS. TIME



(DEPTH CORRESPONDS TO 65 FT. BELOW GRADE - GROUNDWATER INTERFACE)

FIG615.DWG 1-6-98 4:51:59 pm EST

# FIGURE 6.3.1
# BOWE SYSTEC, INC.
# TETRACHLOROETHENE AIR DISPERSION

(BASED ON SESOIL VOLATILIZATION RATES)

Dataset: ISCLT001

Source : TOTAL

| ISO. # | VALUE. (ug/m3) |
|---|---|
| 1 | 1.12E-08 |
| 2 | 1.00E-08 |
| 3 | 5.00E-09 |
| 4 | 1.00E-09 |
| 5 | 5.00E-10 |
| 6 | 2.07E-10 |

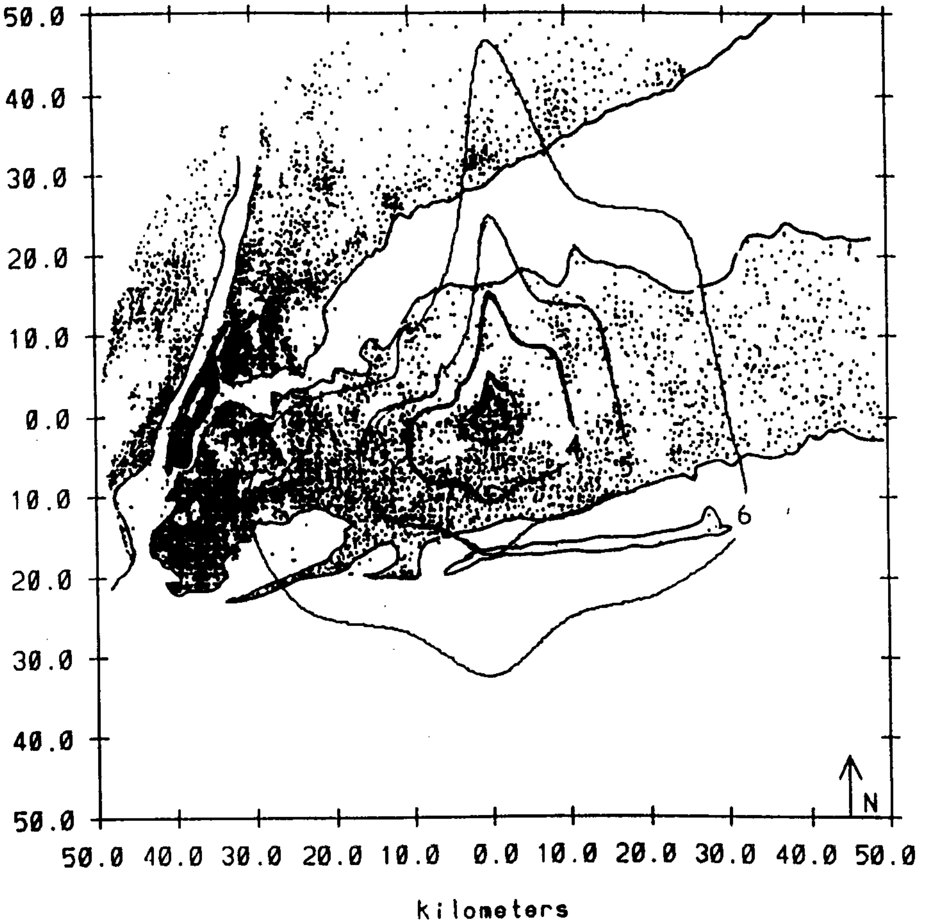
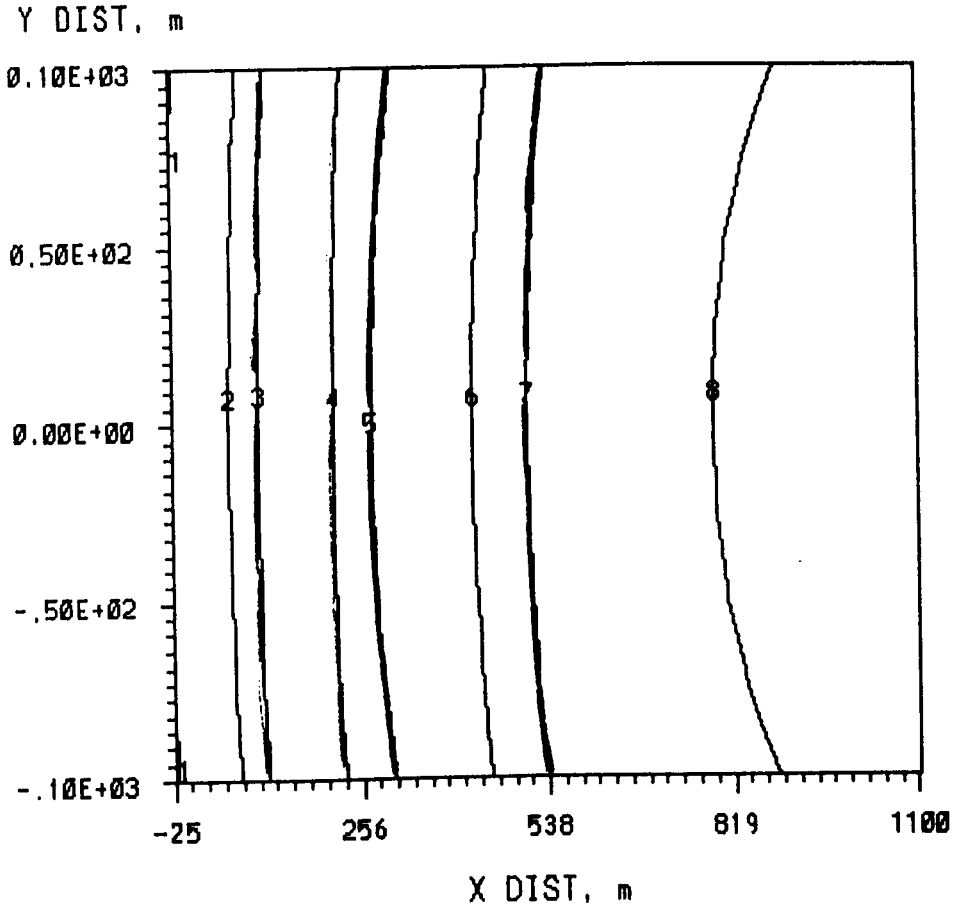


FIG631.DWG 1-6-98 4:54:14 pm EST

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

# FIGURE 6.2.5
# BOWE SYSTEC, INC.
# TRICHLOROETHENE GROUNDWATER TRANSPORT

YEAR 2012, MAX CONC. AT DOWNGRAD. WELLS



ISOLINES

| LABEL | VALUE N*QE | P |
|---|---|---|
| 1 | 0.10E-08 | |
| 2 | 0.50E-08 | |
| 3 | 0.10E-07 | |
| 4 | 0.50E-07 | |
| 5 | 0.10E-06 | |
| 6 | 0.50E-06 | |
| 7 | 0.10E-05 | |
| 8 | 0.50E-05 | |

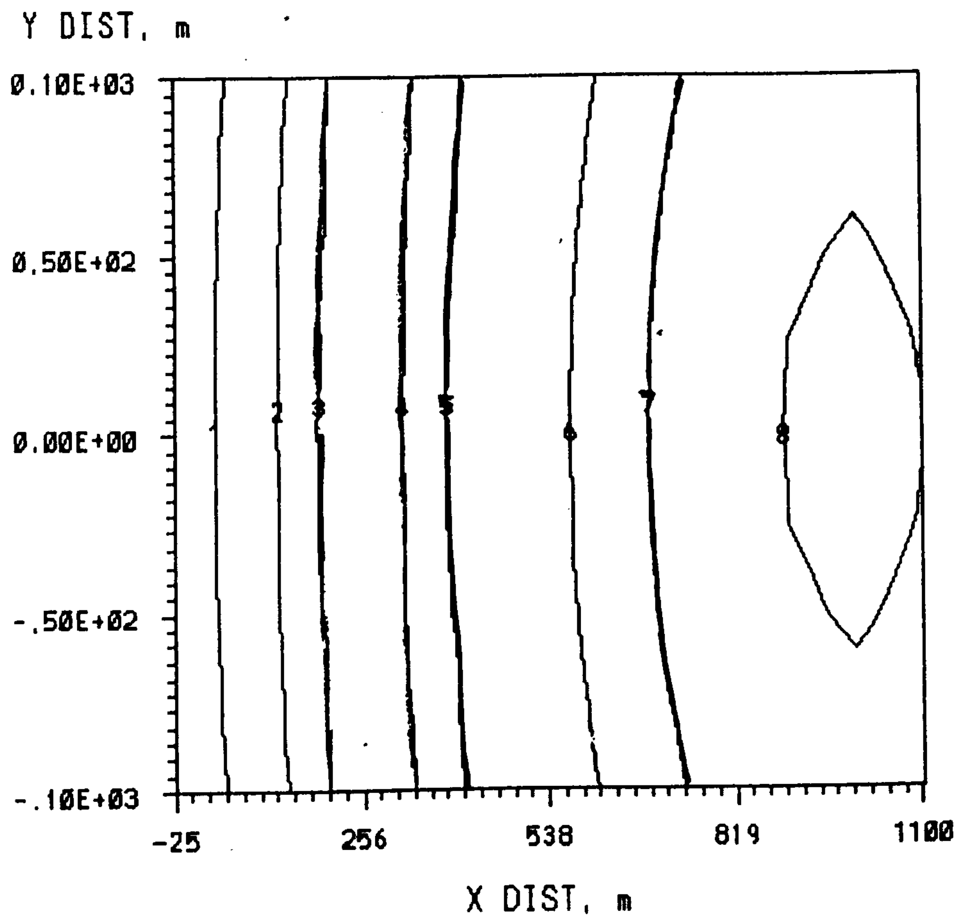
ISOLINE CONCENTRATIONS IN UNITS OF MG/L

FIG625.DWG 1-6-98 4:25:31 pm EST

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

# FIGURE 6.2.4
# BOWE SYSTEC, INC.
# TETRACHLOROETHENE GROUNDWATER TRANSPORT

YEAR 2012 (MAX. CONC. AT DOWNGRAD.WELLS)



ISOLINES

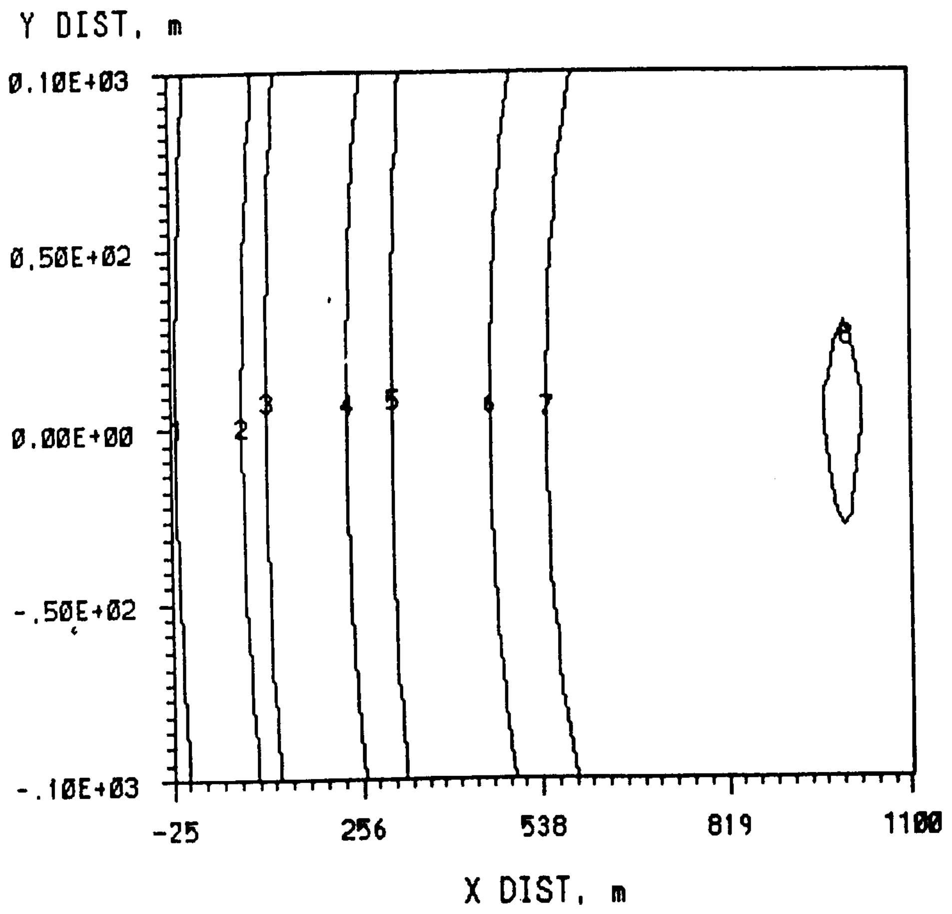
| LABEL | VALUE N*QE P |
|---|---|
| 1 | 0.10E-06 |
| 2 | 0.50E-06 |
| 3 | 0.10E-05 |
| 4 | 0.50E-05 |
| 5 | 0.10E-04 |
| 6 | 0.50E-04 |
| 7 | 0.10E-03 |
| 8 | 0.20E-03 |

ISOLINE CONCENTRATIONS IN UNITS OF MG/L

FIG624.DWG 1-6-98 4:24:16 pm EST

# FIGURE 6.2.3
# BOWE SYSTEC, INC.
# BENZO (K) FLUORANTHENE GROUNDWATER TRANSPORT

Year 2012, Max. Conc. at Downgrad. Wells



ISOLINES

| LABEL | VALUE N* ! P |
|---|---|
| 1 | 0.10E-08 |
| 2 | 0.50E-08 |
| 3 | 0.10E-07 |
| 4 | 0.50E-07 |
| 5 | 0.10E-06 |
| 6 | 0.50E-06 |
| 7 | 0.10E-05 |
| 8 | 0.50E-05 |

ISOLINE CONCENTRATIONS IN UNITS OF mg/l

# FIGURE 6.3.2
# BOWE SYSTEC, INC.
# TRICHLOROETHENE AIR DISPERSION

(BASED ON SESOIL VOLATILIZATION DATA)

Dataset: ISCLT004
Source : TOTAL

| ISO. # | VALUE. (ug/m3) |
|---|---|
| 1 | 7.65E-10 |
| 2 | 5.00E-10 |
| 3 | 1.00E-10 |
| 4 | 5.00E-11 |
| 5 | 1.41E-11 |

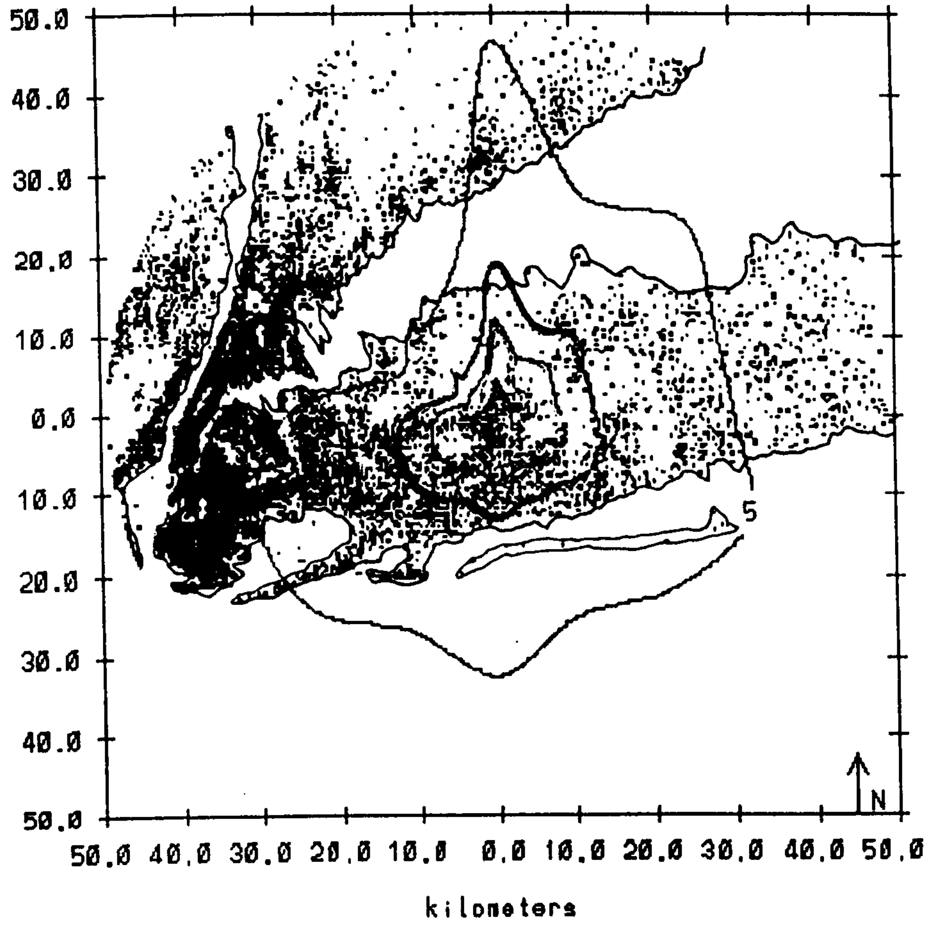


FIG632.DWG 1-6-98 6:08:46 pm EST

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

# FIGURE 7.3.1
# BOWE SYSTEC, INC.
# ILLUSTRATION OF EXPOSURE PATHWAYS

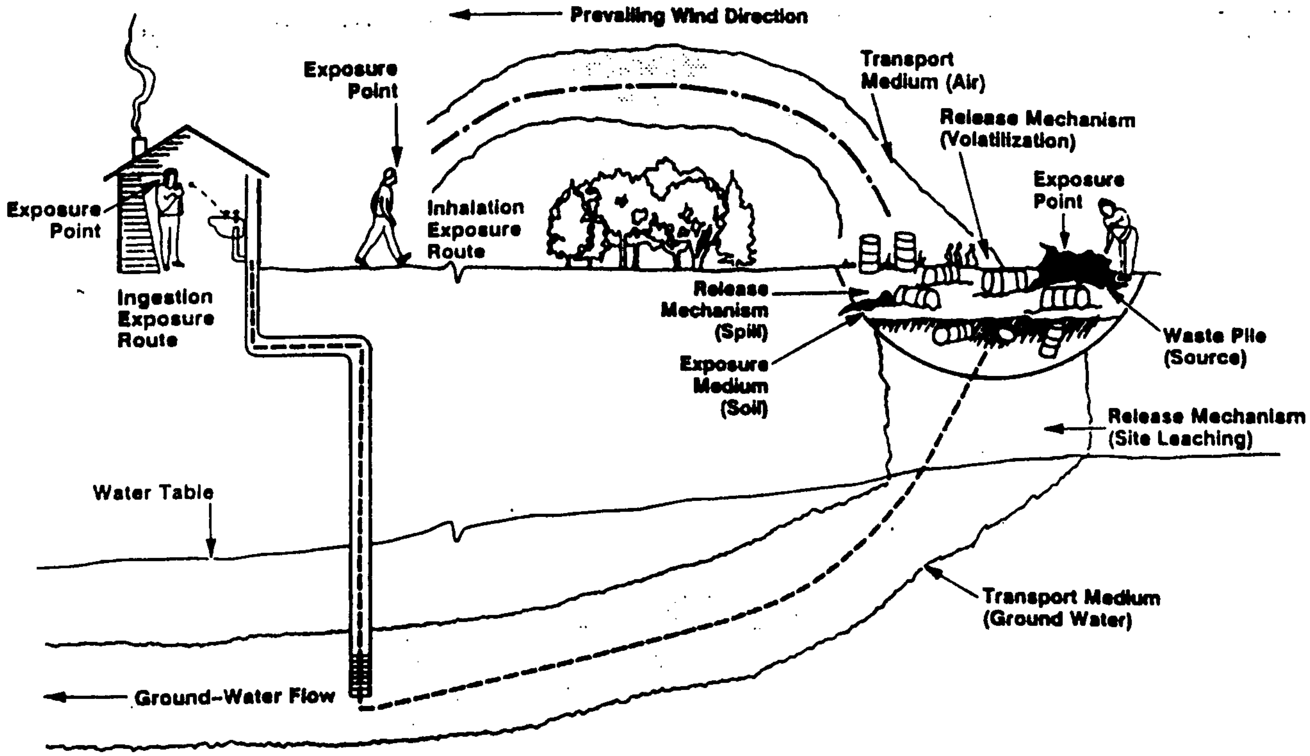


FIG731.DWG 1-6-98 4:58:42 pm EST

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

# FIGURE 7.3.2
# BOWE SYSTEC, INC.
# WIND DIRECTION DISTRIBUTION

WBAN NUMBER 14732 NEW YORK/LAGUARDIA N 1965-1970

PLOT TYPE = WIND DIRECTION

| SECTOR | FREQUENCY |
|---|---|
| N | 7.054E-02 |
| NNE | 4.711E-02 |
| NE | 7.610E-02 |
| ENE | 7.900E-02 |
| E | 3.978E-02 |
| ESE | 1.449E-02 |
| SE | 1.948E-02 |
| SSE | 2.450E-02 |
| S | 1.207E-01 |
| SSW | 4.484E-02 |
| SW | 7.219E-02 |
| WSW | 6.297E-02 |
| W | 7.988E-02 |
| WNW | 9.304E-02 |
| NW | 8.517E-02 |
| NNW | 7.023E-02 |

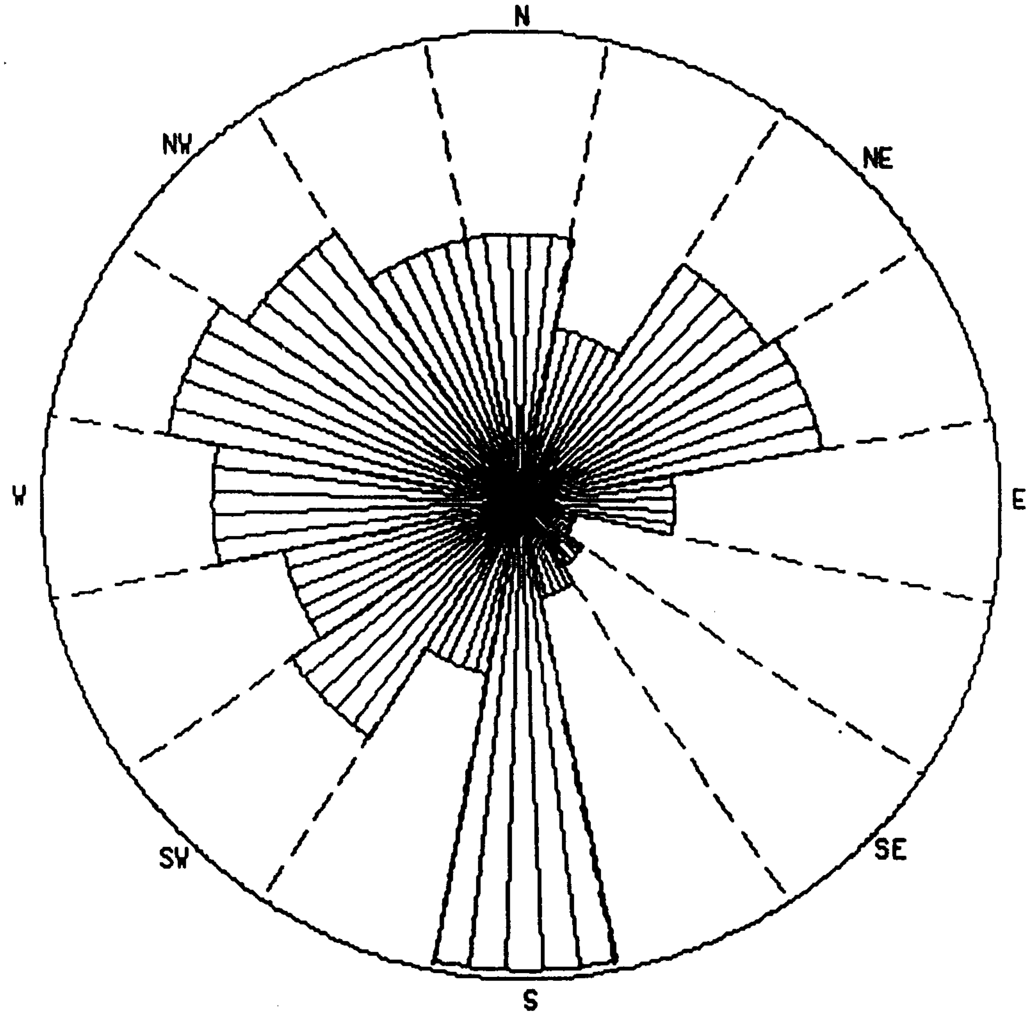


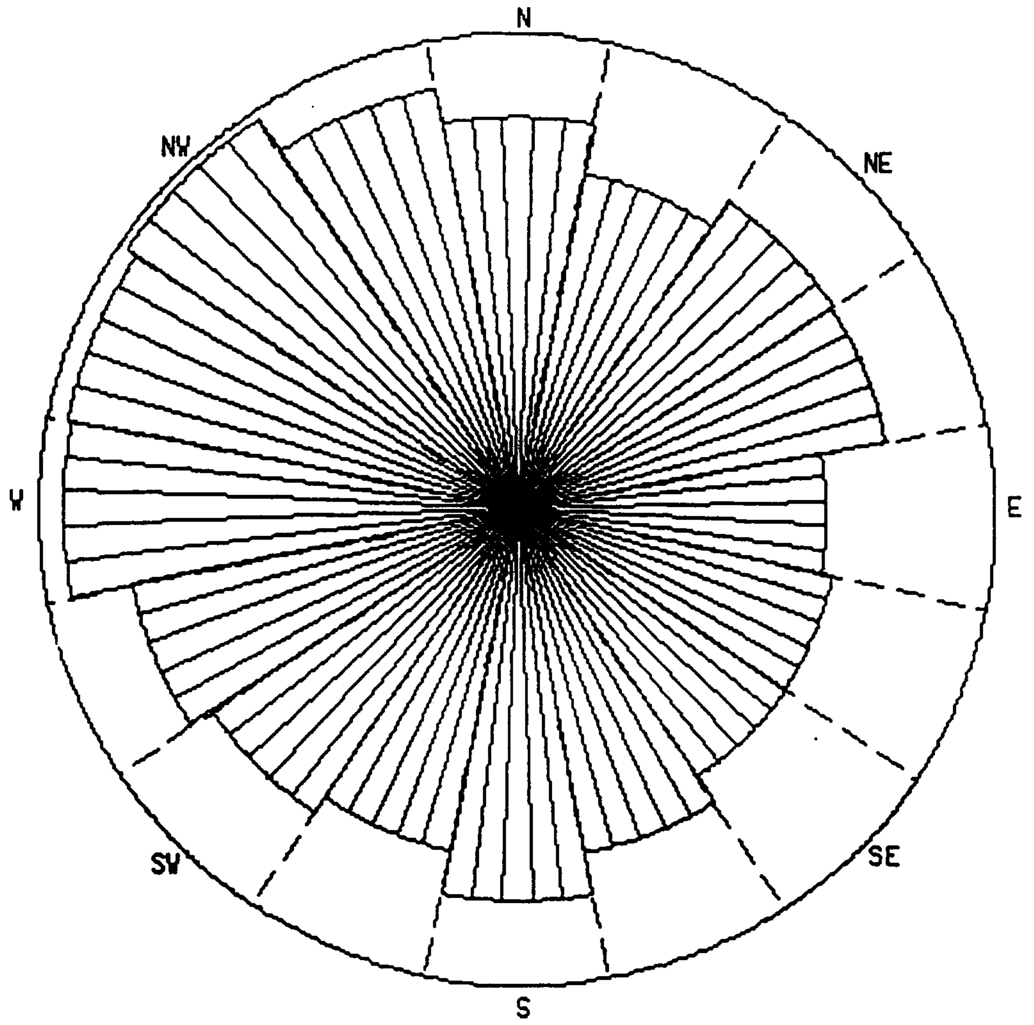
FIG732.DWG 1-6-98 5:56:16 pm EST

# FIGURE 7.3.3
# BOWE SYSTEC, INC.
# WIND SPEED DISTRIBUTION

WBAN NUMBER 14732 NEW YORK/LAGUARDIA N 1965-1970

PLOT TYPE = AVERAGE WIND SPEED

| SECTOR | METERS/SEC |
|---|---|
| N | 5.090E+00 |
| NNE | 4.450E+00 |
| NE | 4.840E+00 |
| ENE | 4.810E+00 |
| E | 3.950E+00 |
| ESE | 4.100E+00 |
| SE | 4.120E+00 |
| SSE | 4.510E+00 |
| S | 5.060E+00 |
| SSW | 4.490E+00 |
| SW | 4.730E+00 |
| WSW | 5.050E+00 |
| W | 5.840E+00 |
| WNW | 5.900E+00 |
| NW | 6.040E+00 |
| NNW | 5.550E+00 |



# TABLE 7.3.4.2.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SUB-CHRONIC GROUNDWATER INGESTION INTAKES

| CHEMICAL | CHEMICAL CONC. (MG/L) [1] | INGESTION RATE (L/DAY) [2] | EXPOSURE FREQ. (DAY/YR) [3] | EXPOSURE DURATION (YRS) [4] | BODY WT. (KG) [5] | CHEMICAL INTAKE (MG/KG-DAY) |
|---|---|---|---|---|---|---|
| Tetrachloroethene | 4.24E-01 | 2 | 365 | 4 | 70 | 1.21E-02 |
| Trichloroethene | 1.38E-02 | 2 | 365 | 4 | 70 | 3.94E-04 |
| Benzo(a)Pyrene | 9.87E-03 | 2 | 365 | 4 | 70 | 2.82E-04 |
| Benzo(k)Fluoranthene | 9.87E-03 | 2 | 365 | 4 | 70 | 2.82E-04 |
| Bis(2-ethylhexyl)Phthalate | 7.80E-02 | 2 | 365 | 4 | 70 | 2.23E-03 |

**NOTES:**

1 - 95% UCL on arithmetic average of maximum concentrations for each modeled year
2 - 2 liters/day (EPA recommended value for adults, 90th percentile, epa 1989b)
3 - Assumed 365 days per year exposure is possible (worst cast assumption)
6 - Sub-chronic exposure based on 4 years, Chronic and Carcinogenic exposure based on 70 years
7 - Weight of an average adult (realistic assumption accepted by EPA 1989a)

## TABLE 7.3.4.2.2
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## CARCINOGENIC/CHRONIC GROUNDWATER INGESTION INTAKES

| CHEMICAL | CHEMICAL CONC. (MG/L) [1] | INGESTION RATE (L/DAY) [2] | EXPOSURE FREQ. (DAY/YR) [3] | EXPOSURE DURATION (YRS) [4] | BODY WT. (KG) [5] | CHEMICAL INTAKE (MG/KG-DAY) |
|---|---|---|---|---|---|---|
| Tetrachloroethene | 8.00E-02 | 2 | 365 | 70 | 70 | 2.28E-03 |
| Trichloroethene | 2.61E-03 | 2 | 365 | 70 | 70 | 7.46E-05 |
| Benzo(a)Pyrene | 1.86E-03 | 2 | 365 | 70 | 70 | 5.31E-05 |
| Benzo(k)Fluoranthene | 1.86E-03 | 2 | 365 | 70 | 70 | 5.31E-05 |
| Bis(2-ethylhexyl)Phthalate | 1.47E-02 | 2 | 365 | 70 | 70 | 4.20E-04 |

**NOTES:**

1 - 95% UCL on arithmetic average of maximum concentrations over 20 modeled years.
2 - 2 liters/day (EPA recommended value for adults, 90th percentile, epa 1989b).
3 - Assumed 365 days per year exposure is possible (worst cast assumption).
4 - Sub-chronic exposure based on 4 years, Chronic and Carcinogenic exposure based on 70 years.
5 - Weight of an average adult (realistic assumption accepted by EPA 1989a).

# TABLE 7.3.4.1.3
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## SUB-CHRONIC DERMAL CONTACT WITH SOILS

| CHEMICAL | CHEMICAL CONC. (MG/KG) [1] | SKIN AREA FOR CONTACT CM2/EVENT) [2] | SOIL TO SKIN ADHERENCE (MG/CM2) [3] | ABSORBTION FACTOR (UNITLESS) [4] | EXPOSURE FREQUENCY (EVENT/YR) [5] | EXPOSURE DURATION (YRS) [6] | BODY WT. (KG) [7] | CHEMICAL INTAKE (MG/KG-DAY) |
|---|---|---|---|---|---|---|---|---|
| Tetrachloroethene | 0.054 | 5300 | 1.45 | 1 | 365 | 4 | 70 | 5.93E-06 |
| Trichloroethene | 0.011 | 5300 | 1.45 | 1 | 365 | 4 | 70 | 1.21E-06 |
| Benzo(a)Pyrene | 0.381 | 5300 | 1.45 | 1 | 365 | 4 | 70 | 4.18E-05 |
| Benzo(k)Fluoranthene | 0.399 | 5300 | 1.45 | 1 | 365 | 4 | 70 | 4.38E-05 |
| Bis(2-ethylhexyl)Phthalate | 3.216 | 5300 | 1.45 | 1 | 365 | 4 | 70 | 3.53E-04 |

**NOTES:**

1 - 95% UCL on arithmetic average used, based on RI data
2 - Assumed exposed individual will wear short-sleeve shirt, shorts, and shoes (reasonable worst case, EPA 1989a)
3 - Assumed value for commercial potting soil (EPA 1989a)
4 - Assumed worst case value of 1.0 due to lack of chemical specific data
5 - Assumed 365 days per year exposure is possible (worst cast assumption)
6 - Sub-chronic exposure based on 4 years, Chronic and Carcinogenic exposure based on 70 years
7 - Weight of an average adult (realistic assumption accepted by EPA 1989a)

# TABLE 7.3.4.1.4
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## CARCINOGENIC/CHRONIC DERMAL CONTACT WITH SOILS

| CHEMICAL | CHEMICAL CONC. (MG/KG) [1] | SKIN AREA FOR CONTACT CM2/EVENT) [2] | SOIL TO SKIN ADHERENCE (MG/CM2) [3] | ABSORBTION FACTOR (UNITLESS) [4] | EXPOSURE FREQUENCY (EVENT/YR) [5] | EXPOSURE DURATION (YRS) [6] | BODY WT. (KG) [7] | CHEMICAL INTAKE (MG/KG-DAY) |
|---|---|---|---|---|---|---|---|---|
| Tetrachloroethene | 0.054 | 5300 | 1.45 | 1 | 365 | 70 | 70 | 5.93E-06 |
| Trichloroethene | 0.011 | 5300 | 1.45 | 1 | 365 | 70 | 70 | 1.21E-06 |
| Benzo(a)Pyrene | 0.381 | 5300 | 1.45 | 1 | 365 | 70 | 70 | 4.18E-05 |
| Benzo(k)Fluoranthene | 0.399 | 5300 | 1.45 | 1 | 365 | 70 | 70 | 4.38E-05 |
| Bis(2-ethylhexyl)Phthalate | 3.216 | 5300 | 1.45 | 1 | 365 | 70 | 70 | 3.53E-04 |

**NOTES:**

1 - 95% UCL on arithmetic average used, based on RI data
2 - Assumed exposed individual will wear short-sleeve shirt, shorts, and shoes (reasonable worst case, EPA 1989a)
3 - Assumed value for commercial potting soil (EPA 1989a)
4 - Assumed worst case value of 1.0 due to lack of chemical specific data
5 - Assumed 365 days per year exposure is possible (worst cast assumption)
6 - Sub-chronic exposure based on 4 years, Chronic and Carcinogenic exposure based on 70 years
7 - Weight of an average adult (realistic assumption accepted by EPA 1989a)

# TABLE 7.3.4.1.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# CARCINOGENIC/CHRONIC SOIL INGESTION INTAKES

| *CHEMICAL* | *CHEMICAL CONC. (MG/KG)* [1] | *INGESTION RATE (MG SOIL/DAY)* [2] | *FRACTION OF SOIL INGESTED* [3] | *EXPOSURE FREQ. (DAY/YR.)* [4] | *EXPOSURE DURATION (YRS.)* [5] | *BODY WT. (KG)* [6] | *CHEMICAL INTAKE (MG/KG-DAY)* |
|---|---|---|---|---|---|---|---|
| Tetrachloroethene | 0.054 | 100 | 0.5 | 365 | 70 | 70 | 3.86E-08 |
| Trichloroethene | 0.011 | 100 | 0.5 | 365 | 70 | 70 | 7.86E-09 |
| Benzo(a)Pyrene | 0.381 | 100 | 0.5 | 365 | 70 | 70 | 2.72E-07 |
| Benzo(k)Fluoranthene | 0.399 | 100 | 0.5 | 365 | 70 | 70 | 2.85E-07 |
| Bis(2-ethylhexyl)Phthalate | 3.216 | 100 | 0.5 | 365 | 70 | 70 | 2.30E-06 |

**NOTES:**

1 - 95% UCL on arithmetic average used, based on RI data, assumed sub-chronic conc. Remains constant (very conservative)
2 - 100 mg/day (EPA recommended factor for adults, EPA 1989b)
3 - Assumed 50% ingestion fraction because over 50% of soil containing chemicals is inaccessible below grade and ingestion is highly unlikely.
4 - Assumed 365 days per year exposure is possible (worst case assumption)
5 - Sub-chronic exposure based on 4 years, Chronic and Carcinogenic exposure based on 70 years.
6 - Weight of an average adult (realistic assumption accepted by EPA 1989a)

# TABLE 7.3.4.1.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SUB-CHRONIC SOIL INGESTION INTAKES

| CHEMICAL | CHEMICAL CONC. (MG/KG) [1] | INGESTION RATE (MG SOIL/DAY) [2] | FRACTION OF SOIL INGESTED [3] | EXPOSURE FREQ. (DAY/YR.) [4] | EXPOSURE DURATION (YRS.) [5] | BODY WT. (KG) [6] | CHEMICAL INTAKE (MG/KG-DAY) |
|---|---|---|---|---|---|---|---|
| Tetrachloroethene | 0.054 | 100 | 0.5 | 365 | 4 | 70 | 3.86E-08 |
| Trichloroethene | 0.011 | 100 | 0.5 | 365 | 4 | 70 | 7.86E-09 |
| Benzo(a)Pyrene | 0.381 | 100 | 0.5 | 365 | 4 | 70 | 2.72E-07 |
| Benzo(k)Fluoranthene | 0.399 | 100 | 0.5 | 365 | 4 | 70 | 2.85E-07 |
| Bis(2-ethylhexyl)Phthalate | 3.216 | 100 | 0.5 | 365 | 4 | 70 | 2.30E-06 |

**NOTES:**

1 - 95% UCL on arithmetic average used, based on RI data.
2 - 100 mg/day (EPA recommended factor for adults, EPA 1989b)
3 - Assumed 50% ingestion fraction because over 50% of soil containing chemicals is inaccessible below grade and ingestion is highly unlikely.
4 - Assumed 365 days per year exposure is possible (worst case assumption)
5 - Sub-chronic exposure based on 4 years, Chronic and Carcinogenic exposure based on 70 years.
6 - Weight of an average adult (realistic assumption accepted by EPA 1989a)

# TABLE 7.3.3.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SUMMARY OF EXPOSURE POINT CONCENTRATIONS

| **CHEMICAL** | **SOIL** | | **GROUNDWATER** | | **AIR** | |
|---|---|---|---|---|---|---|
| | ***SUB-CHRONIC CONC. (MG/KG)*** | ***CHRONIC CONC. (MG/KG)*** | ***SUB-CHRONIC CONC. (UG/L)*** | ***CHRONIC CONC. (UG/L)*** | ***SUB-CHRONIC CONC. (UG/M3)*** | ***CHRONIC CONC. (UG/M3)*** |
| Tetrachloroethene | 0.054 | 0.054 | 4.24E-01 | 8.00E-02 | 2.56E-07 | 2.56E-07 |
| Trichloroethene | 0.011 | 0.011 | 1.38E-02 | 2.61E-03 | 1.74E-08 | 1.74E-08 |
| Benzo(a)Pyrene | 0.381 | 0.381 | 9.87E-03 | 1.86E-03 | 6.98E-18 | 6.98E-18 |
| Benzo(k)Fluoranthene | 0.399 | 0.399 | 9.87E-03 | 1.86E-03 | 6.14E-13 | 6.14E-13 |
| Bis(2-ethylhexyl)Phthalate | 3.216 | 3.216 | 7.80E-02 | 1.47E-02 | 1.19E-13 | 1.19E-13 |

## TABLE 7.3.1
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## SUMMARY OF SOURCES AND EXPOSURE POINTS

| *SOURCE* | *RELEASE MECHANISM* | *MEDIA* | *EXPOSURE POINT* | *EXPOSURE ROUTE* |
|---|---|---|---|---|
| Sub-surface soils | Discharge to drywells | Soil | Surface soils after future site work and excavations | Dermal contact and ingestion |
| Sub-surface soils | Volatilization | Soil/Air | Ambient air | Inhalation |
| Sub-surface soils | Leaching | Soil/Groundwater | Potable water supply, local wells | Dermal contact and ingestion |
| Groundwater | Direct discharge and possible migration from off site | Groundwater | Potable water supply, local wells | Dermal contact and ingestion |

## TABLE 7.2.6
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## INDICATOR CHEMICAL SELECTION DATA
## (ARAR COMPARISON)

| | SOIL DATA | | | GROUNDWATER DATA | | |
|---|---|---|---|---|---|---|
| PARAMETER | SOIL CONC. UNITS | SOIL MAX. CONC. | NYSDEC RSCO | GW. CONC. UNITS | GW. MAX. CONC. | CLASS GA GW. QUALITY STD. |
| Aluminum | MG/KG | 4880 | SB | UG/L | 268,000 | NA |
| Antimony | MG/KG | 7.9 | SB | UG/L | 32.9 | 3 |
| Arsenic | MG/KG | 9.1 | 7.5 OR SB | UG/L | 19.4 | 25 |
| Barium | MG/KG | 28.7 | 300 OR SB | UG/L | 1450 | 1,000 |
| Beryllium | MG/KG | 0.76 | 0.16 OR SB | UG/L | 13.9 | 3 |
| Cadmium | MG/KG | 3.9 | 10 | UG/L | 35 | 10 |
| Calcium | MG/KG | 32,700 | SB | UG/L | 54,200 | NA |
| Chromium | MG/KG | 30.4 | 50 | UG/L | 1320 | 50 |
| Cobalt | MG/KG | 5.2 | 30 OR SB | UG/L | 123 | NA |
| Copper | MG/KG | 82.6 | 25 OR SB | UG/L | 638 | 200 |
| Iron | MG/KG | 8560 | 2,000 OR S | UG/L | 241,000 | 300 |
| Lead | MG/KG | 423 | SB | UG/L | 71.5 | 25 |
| Magnesium | MG/KG | 6690 | SB | UG/L | 13,700 | 35,000 |
| Manganese | MG/KG | 169 | SB | UG/L | 10,400 | 300 |
| Nickel | MG/KG | 18.7 | 13 OR SB | UG/L | 489 | NA |
| Potassium | MG/KG | 423 | SB | UG/L | 17,300 | NA |
| Selenium | MG/KG | 0.43 | 2 OR SB | UG/L | 1.4 | 10 |
| Silver | MG/KG | 0.71 | SB | UG/L | 8.3 | 50 |
| Sodium | MG/KG | 131 | SB | UG/L | 35,900 | 20,000 |
| Vanadium | UG/KG | 28.8 | 150 OR SB | UG/L | 371 | NA |
| Zinc | MG/KG | 200 | 20 OR SB | UG/L | 351 | 300 |
| Mercury | MG/KG | 0.17 | 0.1 | UG/L | 2 | 2 |
| Trichloroethene | UG/KG | 9 | 700 | UG/L | 14 | 5 |
| Tetrachloroethene | UG/KG | 140 | 1,400 | UG/L | 450 | 5 |
| Acetone | UG/KG | 48 | 200 | UG/L | ND | 5 |
| 2-Butanone | UG/KG | 16 | 300 | UG/L | ND | 5 |
| Acenaphthene | UG/KG | 200 | 50,000 | UG/L | 3 | NA |
| Dibenzofuran | UG/KG | 320 | 6,200 | UG/L | 2 | NA |
| Fluorene | UG/KG | 540 | 50,000 | UG/L | 5 | NA |
| Carbazole | UG/KG | 190 | NA | UG/L | 3 | NA |
| Bis(2 ethylhexyl)phthalate | UG/KG | 2300 | 50,000 | UG/L | 79 | NA |
| Phenanthrene | UG/KG | 940 | 50,000 | UG/L | ND | NA |
| Fluoranthene | UG/KG | 1300 | 50,000 | UG/L | ND | NA |
| Pyrene | UG/KG | 1200 | 50,000 | UG/L | ND | NA |
| Benzo(a)Anthracene | UG/KG | 520 | 224 OR MDL | UG/L | ND | NA |
| Chrysene | UG/KG | 700 | 400 | UG/L | ND | NA |
| Benzo(b)Fluoranthene | UG/KG | 810 | 224 OR MDL | UG/L | ND | NA |
| Benzo(k)Fluoranthene | UG/KG | 520 | 224 OR MDL | UG/L | ND | NA |
| Benzo(a)Pyrene | UG/KG | 550 | 61 OR MDL | UG/L | ND | ND |
| 2-Methyl Naphthalene | UG/KG | 1100 | 36,400 | UG/L | ND | NA |
| Indeno (1,2,3-CD) Pyrene | UG/KG | 160 | 3,200 | UG/L | ND | NA |
| Benzo(g,h,i)Perylene | UG/KG | 150 | 50,000 | UG/L | ND | NA |
| Anthracene | UG/KG | 180 | 50,000 | UG/L | ND | NA |
| Alpha BHC | UG/KG | 2.7 | 110 | UG/L | ND | NA |
| Heptachlor Epoxide | UG/KG | 1.9 | 20 | UG/L | ND | ND |
| 4-4'-DDD | UG/KG | 9.5 | 2,900 | UG/L | ND | ND |
| 4-4'-DDE | UG/KG | 2.7 | 2,100 | UG/L | ND | ND |
| Alpha Chlordane | UG/KG | 4.9 | NA | UG/L | ND | 0.10 |
| Gamma Chlordane | UG/KG | 6.8 | 540 | UG/L | ND | 0.10 |
| Aroclor 1248 | UG/KG | 50 | 10,000 | UG/L | ND | 0.10 |

**NOTES:**

NA - Not Available
SB - Soil Background
MDL - Method Detection Limit

# TABLE 7.2.4
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# RISK RATIO CALCULATION - NON-CARCINOGENIC AFFECTS

| | SOIL DATA | | | | GROUNDWATER DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PARAMETER | MAX. SOIL CONC. (MG/KG) | SOIL TOX. CONST. (KG/MG) | SOIL RISK FACTOR | SOIL RISK RATIO | MAX. GW. CONC. (MG/L) | GW. TOX. CONST. (L/MG) | GW. RISK FACTOR | GW. RISK RATIO | TOTAL RISK FACTOR | TOTAL RISK RATIO |
| Aluminum | 4880 | NA | NA | NA | 268.00000 | NA | NA | NA | NA | NA |
| Calcium | 32,700 | NA | NA | NA | 54.20000 | NA | NA | NA | NA | NA |
| Cobalt | 5.2 | NA | NA | NA | 0.12300 | NA | NA | NA | NA | NA |
| Iron | 8560 | NA | NA | NA | 241.00000 | NA | NA | NA | NA | NA |
| Lead | 423 | NA | NA | NA | 0.07150 | NA | NA | NA | NA | NA |
| Magnesium | 6690 | NA | NA | NA | 13.70000 | NA | NA | NA | NA | NA |
| Manganese | 169 | NA | NA | NA | 10.40000 | NA | NA | NA | NA | NA |
| Potassium | 423 | NA | NA | NA | 17.30000 | NA | NA | NA | NA | NA |
| Sodium | 131 | NA | NA | NA | 35.90000 | NA | NA | NA | NA | NA |
| 2-Butanone | 0.016 | NA | NA | NA | <0.01100 | NA | NA | NA | NA | NA |
| Dibenzofuran | 0.32 | NA | NA | NA | 0.00200 | NA | NA | NA | NA | NA |
| Carbazole | 0.19 | NA | NA | NA | 0.00300 | NA | NA | NA | NA | NA |
| Phenanthrene | 0.94 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Benzo(a)Anthracene | 0.52 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Chrysene | 0.7 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Benzo(b)Fluoranthene | 0.81 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Benzo(k)Fluoranthene | 0.52 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Benzo(a)Pyrene | 0.55 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| 2-Methyl Naphthalene | 1.1 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Indeno (1,2,3-CD) Pyrene | 0.16 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Benzo(g,h,i)Perylene | 0.15 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Alpha BHC | 0.0027 | NA | NA | NA | <0.00005 | NA | NA | NA | NA | NA |
| 4-4'-DDD | 0.0095 | NA | NA | NA | <0.00005 | NA | NA | NA | NA | NA |
| 4-4'-DDE | 0.0027 | NA | NA | NA | <0.00005 | NA | NA | NA | NA | NA |
| Aroclor 1248 | 0.05 | NA | NA | NA | <0.00100 | NA | NA | NA | NA | NA |
| Fluoranthene | 1.3 | 3.75E+05 | 4.88E+05 | 4.25E-01 | <0.01000 | 375E+05 | <3.75E+03 | <1.96E-01 | <4.91E+05 | <4.21E-01 |
| Pyrene | 1.2 | 2.25E+05 | 2.70E+05 | 2.35E-01 | <0.01000 | 2.25E+05 | <2.25E+03 | <1.18E-01 | <2.72E+05 | <2.34E-01 |
| Fluorene | 0.54 | 3.75E+05 | 2.03E+05 | 1.77E-01 | 0.00500 | 3.75E+05 | 1.88E+03 | 9.81E-02 | 2.04E+05 | 1.75E-01 |
| Acenaphthene | 0.2 | 5.25E+05 | 1.05E+05 | 9.16E-02 | 0.00300 | 5.25E+05 | 1.58E+03 | 8.24E-02 | 1.07E+05 | 9.14E-02 |
| Bis(2 ethylhexyl)phthalate | 2.3 | 1.90E+04 | 4.37E+04 | 3.81E-02 | 0.07900 | 1.90E+04 | 1.50E+03 | 7.86E-02 | 4.52E+04 | 3.88E-02 |
| Nickel | 18.7 | 1.50E+03 | 2.81E+04 | 2.45E-02 | 0.48900 | 1.50E+03 | 7.34E+02 | 3.84E-02 | 2.88E+04 | 2.47E-02 |
| Tetrachloroethene | 0.14 | 1.40E+04 | 1.96E+03 | 1.71E-03 | 0.43000 | 1.40E+04 | 6.30E+03 | 3.30E-01 | 8.26E+03 | 7.09E-03 |
| Acetone | 0.048 | 1.00E+05 | 4.80E+03 | 4.19E-03 | <0.01100 | 1.00E+05 | <1.10E+03 | <5.76E-02 | <5.90E+03 | <5.06E-03 |
| Antimony | 7.9 | 3.50E+02 | 1.96E+03 | 1.71E-03 | 0.03290 | 3.50E+02 | 1.15E+01 | 6.03E-04 | 1.97E+03 | 1.69E-03 |
| Zinc | 200 | 3.0E+00 | 6.00E+02 | 5.23E-04 | 0.35100 | 3.00E+00 | 1.05E+00 | 5.51E-05 | 6.01E+02 | 5.16E-04 |
| Heptachlor Epoxide | 0.0019 | 7.69E+04 | 1.46E+02 | 1.27E-04 | <0.00005 | 7.69E+04 | <3.85E+00 | <2.01E-04 | <1.50E+02 | <1.29E-04 |
| Gamma Chlordane | 0.0068 | 1.67E+04 | 1.14E+02 | 9.90E-05 | <0.00005 | 1.67E+04 | <8.35E-01 | <4.37E-05 | <1.14E+02 | <9.81E-05 |
| Alpha Chlordane | 0.0049 | 1.67E+04 | 8.18E+01 | 7.14E-05 | <0.00005 | 1.67E+04 | <8.35E-01 | <4.37E-05 | <8.27E+01 | <7.09E-05 |
| Beryllium | 0.76 | 5.40E+01 | 4.10E+01 | 3.58E-05 | 0.01390 | 5.40E+01 | 7.51E-01 | 3.93E-05 | 4.18E+01 | 3.59E-05 |
| Chromium | 30.4 | 1.00E+00 | 3.04E+01 | 2.65E-05 | 1.32000 | 1.00E+00 | 1.32E+00 | 6.91E-05 | 3.17E+01 | 2.72E-05 |
| Barium | 28.7 | 6.30E-01 | 1.81E+01 | 1.58E-04 | 1.45000 | 6.30E-01 | 9.14E-01 | 4.78E-05 | 1.90E+01 | 1.63E-05 |
| Anthracene | 0.18 | 3.33E+00 | 5.99E-01 | 5.23E-07 | <0.01000 | 3.33E+00 | <3.33E-02 | <1.74E-06 | <6.33E-01 | <5.43E-07 |
| Arsenic | 9.1 | 4.20E-02 | 3.82E-01 | 3.33E-07 | 0.01940 | 4.20E-02 | 8.15E-04 | 4.26E-08 | 3.83E-01 | 3.29E-07 |
| Cadmium | 3.9 | 5.00E-2 | 1.95E-01 | 1.70E-07 | 0.03500 | 5.00E-02 | 1.75E-03 | 9.16E-08 | 1.97E-01 | 1.69E-07 |
| Silver | 0.71 | 4.20E-02 | 2.65E-02 | 2.31E-08 | 0.00830 | 4.20E-02 | 3.49E-04 | 1.82E-08 | 2.68E-02 | 2.30E-09 |
| Copper | 82.6 | 3.57E-05 | 2.95E-03 | 2.57E-09 | 0.63800 | 3.57E-05 | 2.28E-05 | 1.19E-09 | 2.97E-03 | 2.55E-09 |
| Selenium | 0.43 | 5.26E-03 | 2.26E-03 | 1.97E-09 | 0.00140 | 5.26E-03 | 7.36E-06 | 3.85E-10 | 2.27E-03 | 1.95E09 |
| Vanadium | 28.8 | 7.14E-06 | 2.06E-04 | 1.79E-10 | 0.37100 | 7.14E-06 | 2.65E-06 | 1.39E-10 | 2.08E-04 | 1.79E-10 |
| Mercury | 0.17 | 9.21E-04 | 1.57E-04 | 1.37E-10 | 0.00200 | 9.21E-04 | 1.84E-06 | 9.64E-11 | 1.58E-04 | 1.35E-10 |
| Trichloroethene | 0.009 | 5.26E-07 | 4.73E-07 | 4.13E-13 | 0.01400 | 5.26E-05 | 7.36E-07 | 3.85E-11 | 1.21E-06 | 1.04E-12 |
| TOTALS | | | 1.15E+06 | 1.00E+00 | | | 1.91E+04 | 1.00E+00 | 1.17E+06 | 1.00E+00 |

**NOTES:**

Toxicity constants in (L/MG) were estimated from (KG/MG) data assuming the solvent was water. In some studies the solvent was corn oil with a density less than water, so using water instead of corn oil will yield a conservative estimate of th toxicity constant in (L/MG).

# TABLE 7.2.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# GROUNDWATER MEDIA ANALYTICAL DATA SUMMARY

| CHEMICAL | NUMBER OF SAMPLES WITH DETEC. CONC. | CONC. UNITS | RANGE OF DETECT. CONC. | MAX. CONC. | LOCATION OF MAX. CONC. |
|---|---|---|---|---|---|
| Aluminum | 6 of 6 | ug/l | 20,000 - 268,000 | 268,000 | MW-9 |
| Antimony | 2 of 6 | ug/l | 30.1 - 32.9 | 32.9 | MW-9 |
| Arsenic | 5 of 6 | ug/l | 5.1 - 19.4 | 19.4 | MW-8 |
| Barium | 6 of 6 | ug/l | 298 - 1450 | 1450 | MW-5 |
| Beryllium | 6 of 6 | ug/l | 2.2 - 13.9 | 13.9 | MW-9 |
| Cadmium | 6 of 6 | ug/l | 5.0 - 35.0 | 35 | MW-5 |
| Calcium | 6 of 6 | ug/l | 14,600 - 54,200 | 54,200 | MW-8 |
| Chromium | 5 of 6 | ug/l | 31.7 - 1320 | 1320 | MW-5 |
| Cobalt | 6 of 6 | ug/l | 5.7 - 123 | 123 | MW-9 |
| Copper | 6 of 6 | ug/l | 32.3 - 638 | 638 | MW-5 |
| Iron | 6 of 6 | ug/l | 35,800 - 241,000 | 241,000 | MW-9 |
| Lead | 6 of 6 | ug/l | 9.2 - 71.5 | 71.5 | MW-9 |
| Magnesium | 6 of 6 | ug/l | 4020 - 13,700 | 13,700 | MW-9 |
| Manganese | 6 of 6 | ug/l | 1310 - 10,400 | 10,400 | MW-9 |
| Nickel | 6 of 6 | ug/l | 10.5 - 489 | 489 | MW-5 |
| Potassium | 6 of 6 | ug/l | 4280 - 17,300 | 17,300 | MW-8 |
| Selenium | 1 of 6 | ug/l | 1.4 | 1.4 | MW-3 |
| Silver | 2 of 6 | ug/l | 2.3 - 8.3 | 8.3 | MW-5 |
| Sodium | 6 of 6 | ug/l | 12,100 - 35,900 | 35,900 | MW-9 |
| Vanadium | 6 of 6 | ug/l | 44.4 - 371 | 371 | MW-9 |
| Zinc | 6 of 6 | ug/l | 86.6 - 351 | 351 | MW-5 |
| Mercury | 6 of 6 | ug/l | 0.11 - 2.0 | 2 | MW-8 |
| Trichloroethene | 3 of 6 | ug/l | 4.0 - 14.0 | 14 | MW-5 |
| Tetrachloroethene | 3 of 6 | ug/l | 95 - 430 | 430 | MW-6 |
| Acenaphthene | 1 of 6 | ug/l | 3 | 3 | MW-1 |
| Dibenzofuran | 1 of 6 | ug/l | 2 | 2 | MW-1 |
| Fluorene | 1 of 6 | ug/l | 5 | 5 | MW-1 |
| Carbazole | 1 of 6 | ug/l | 3 | 3 | MW-1 |
| Bis(2 ethylhexyl)phthalate | 6 of 6 | ug/l | 3.0 - 79.0 | 79 | MW-1 |

**NOTES:**

1 - Mean concentration includes non-detectable concentrations and uses 1/2 instrument detection limit for non-detectable values. This may cause the mean to exceed the maximum reported value if the detection IDL is elevated.

# TABLE 7.2.3
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## SELECTION OF INDICATOR CHEMICALS
## RISK RATIO CALCULATION - CARCINOGENIC AFFECTS

| | SOIL DATA | | | | GROUNDWATER DATA | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PARAMETER | MAX. SOIL CONC. (MG/KG) | SOIL TOX. CONST. (KG/MG) | SOIL RISK FACTOR | SOIL RISK RATIO | MAX. GW. CONC. (MG/L) | GW. TOX. CONST. (L/MG) | GW. RISK FACTOR | GW. RISK RATIO | TOTAL RISK FACTOR | TOTAL RISK RATIO |
| Aluminum | 4880 | NA | NA | NA | 268.00000 | NA | NA | NA | NA | NA |
| Calcium | 32,700 | NA | NA | NA | 54.20000 | NA | NA | NA | NA | NA |
| Cobalt | 5.2 | NA | NA | NA | 0.12300 | NA | NA | NA | NA | NA |
| Iron | 8560 | NA | NA | NA | 241.00000 | NA | NA | NA | NA | NA |
| Lead | 423 | NA | NA | NA | 0.07150 | NA | NA | NA | NA | NA |
| Magnesium | 6690 | NA | NA | NA | 13.70000 | NA | NA | NA | NA | NA |
| Manganese | 169 | NA | NA | NA | 10.40000 | NA | NA | NA | NA | NA |
| Potassium | 423 | NA | NA | NA | 17.30000 | NA | NA | NA | NA | NA |
| Sodium | 131 | NA | NA | NA | 35.90000 | NA | NA | NA | NA | NA |
| 2-Butanone | 0.016 | NA | NA | NA | <0.01100 | NA | NA | NA | NA | NA |
| Dibenzofuran | 0.32 | NA | NA | NA | 0.00200 | NA | NA | NA | NA | NA |
| Carbazole | 0.19 | NA | NA | NA | 0.00300 | NA | NA | NA | NA | NA |
| Phenanthrene | 0.94 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Chrysene | 0.7 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Benzo(b)Fluoranthene | 0.81 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Benzo(k)Fluoranthene | 0.52 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| 2-Methyl Naphthalene | 1.1 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Indeno (1,2,3-CD) Pyrene | 0.16 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Benzo(g,h,i)Perylene | 0.15 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Alpha BHC | 0.0027 | NA | NA | NA | <0.00005 | NA | NA | NA | NA | NA |
| Fluoranthene | 1.3 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Pyrene | 1.2 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Fluorene | 0.54 | NA | NA | NA | 0.00500 | NA | NA | NA | NA | NA |
| Acenaphthene | 0.2 | NA | NA | NA | 0.00300 | NA | NA | NA | NA | NA |
| Nickel | 18.7 | NA | NA | NA | 0.48900 | NA | NA | NA | NA | NA |
| Acetone | 0.048 | NA | NA | NA | <0.01100 | NA | NA | NA | NA | NA |
| Antimony | 7.9 | NA | NA | NA | 0.03290 | NA | NA | NA | NA | NA |
| Zinc | 200 | NA | NA | NA | 0.35100 | NA | NA | NA | NA | NA |
| Chromium | 30.4 | NA | NA | NA | 1.32000 | NA | NA | NA | NA | NA |
| Barium | 28.7 | NA | NA | NA | 1.45000 | NA | NA | NA | NA | NA |
| Anthracene | 0.18 | NA | NA | NA | <0.01000 | NA | NA | NA | NA | NA |
| Cadmium | 3.9 | NA | NA | NA | 0.03500 | NA | NA | NA | NA | NA |
| Silver | 0.71 | NA | NA | NA | 0.00830 | NA | NA | NA | NA | NA |
| Copper | 82.6 | NA | NA | NA | 0.63800 | NA | NA | NA | NA | NA |
| Selenium | 0.43 | NA | NA | NA | 0.00140 | NA | NA | NA | NA | NA |
| Vanadium | 28.8 | NA | NA | NA | 0.37100 | NA | NA | NA | NA | NA |
| Mercury | 0.17 | NA | NA | NA | 0.00200 | NA | NA | NA | NA | NA |
| Benzo(a)Pyrene | 0.55 | 7.30E+00 | 4.02E+00 | 5.19E-01 | <0.01000 | 2.10E-04 | <2.10E-06 | <2.36E-05 | <4.02E+00 | <5.13E-01 |
| Beryllium | 0.76 | 4.30E+00 | 3.27E+00 | 4.23E-01 | 0.01390 | 1.20E-04 | 1.67E-06 | 1.88E-05 | 3.27E+00 | 4.18E-01 |
| Aroclor 1248 | 0.05 | 7.70E+00 | 3.85E-01 | 4.98E-02 | <0.00100 | 2.20E-04 | <2.20E-07 | <2.48E-06 | <3.85E-01 | <4.92E-02 |
| Arsenic** | 9.1 | 2.03E-04 | 1.85E-03 | 2.39E-04 | 0.01940 | 4.07E+00 | 7.90E-02 | 8.89E-01 | 8.08E-02 | 1.03E-02 |
| Bis(2 ethylhexyl)phthalate | 2.3 | 1.40E-02 | 3.22E-02 | 4.16E-03 | 0.07900 | 4.00E-07 | 3.16E-08 | 3.56E-07 | 3.22E-02 | 4.12E-03 |
| Heptachlor Epoxide | 0.0019 | 9.10E+00 | 1.73E-02 | 2.24E-03 | <0.00005 | 2.60E-04 | <1.30E-08 | <1.46E-07 | <1.73E-02 | <2.21E-03 |
| Gamma Chlordane | 0.0068 | 1.30E+00 | 8.84E-03 | 1.14E-03 | <0.00005 | 3.70E-05 | <1.85E-09 | <2.08E-08 | <8.84E-03 | <1.13E-03 |
| Alpha Chlordane | 0.0049 | 1.30E+00 | 6.37E-03 | 8.24E-04 | <0.00005 | 3.70E-05 | <1.85E-09 | <2.08E-08 | <6.37E-03 | <8.14E-04 |
| Benz(a)Anthracene** | 0.52 | 2.91E-05 | 4.37E-06 | 5.64E-07 | <0.01000 | 5.81E-01 | <5.81E-03 | <6.54E-02 | <5.81E-03 | <7.43E-04 |
| Tetrachloroethene** | 0.14 | 4.43E-07 | 6.20E-06 | 8.02E-09 | 0.43000 | 8.86E-03 | 3.99E-03 | 4.49E-02 | 3.99E-03 | 5.10E-04 |
| Trichloroethene** | 0.009 | 2.14E-07 | 1.93E-09 | 2.49E-10 | 0.01400 | 4.29E-03 | 6.01E-05 | 6.76E-04 | 6.01E-05 | 7.68E-06 |
| 4-4'-DDE** | 0.0027 | 5.64E-06 | 1.52E-08 | 1.97E-09 | <0.00005 | 1.13E-01 | <5.65E-06 | <6.36E-05 | <5.67E-06 | <7.24E-07 |
| 4-4'-DDD** | 0.0095 | 1.86E-06 | 1.77E-08 | 2.28E-09 | <0.00005 | 3.71E-02 | <1.86E-06 | <2.09E-05 | <1.87E-06 | <2.39E-07 |
| TOTALS | | | 7.73E+00 | 1.00E+00 | | | 8.88E-02 | 1.00E+00 | 7.82E+00 | 1.00E+00 |

**NOTES:**

All Toxicity Constants obtained from EPA IRIS database except as noted.

** - In the absence of IRIS data, EPA Superfund Public Health Evaluation Manual (10/86) toxicity constant data is used.

# TABLE 7.2.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SOIL MEDIA ANALYTICAL DATA SUMMARY

| CHEMICAL | NUMBER OF SAMPLES WITH DETEC. CONC. | CONC. UNITS | RANGE OF DETECT. CONC. | MEAN CONC. | MAX. CONC. | LOCATION OF MAX. CONC. | DEPTH OF MAX. CONC. | BKGD. SAMPLE CONC. |
|---|---|---|---|---|---|---|---|---|
| Aluminum | 16 of 16 | mg/kg | 1070 - 4880 | 2307 | 4880 | SBC-2 | 5' - 7' | 11,700 |
| Antimony | 3 of 16 | mg/kg | 5.6 - 7.9 | 3.1 | 7.9 | DW-6, DW-7 | 16' - 24' | 8.9 |
| Arsenic | 14 of 16 | mg/kg | 0.31 - 9.1 | 2.1 | 9.1 | DW-7 | 16' - 18' | 10.9 |
| Barium | 16 of 16 | mg/kg | 2.1 - 28.7 | 10.1 | 28.7 | DW-7 | 16' - 18' | 36.3 |
| Beryllium | 14 of 16 | mg/kg | 0.08 - 0.76 | 0.18 | 0.76 | S-2 | 17' - 19' | 0.39 |
| Cadmium | 14 of 16 | mg/kg | 0.16 - 3.9 | 1.32 | 3.9 | DW-7 | 16' - 18' | 2.2 |
| Calcium | 16 of 16 | mg/kg | 30.6 - 32,700 | 3192 | 32,700 | S-2 | 17' - 19' | 2290 |
| Chromium | 15 of 16 | mg/kg | 1.8 - 30.4 | 9.1 | 30.4 | DW-4 | 16' - 20' | 21.2 |
| Cobalt | 13 of 16 | mg/kg | 1.1 - 5.2 | 2.5 | 5.2 | DW-7 | 16' - 18' | 3.4 |
| Copper | 16 of 16 | mg/kg | 2.0 - 82.6 | 19.6 | 82.6 | DW-6 | 12' - 14' | 35.8 |
| Iron | 16 of 16 | mg/kg | 1720 - 8560 | 4966 | 8560 | DW-7 | 16' - 18' | 12,700 |
| Lead | 16 of 16 | mg/kg | 0.8 - 423 | 55.8 | 423 | DW-6 | 12' - 14' | 45.7 |
| Magnesium | 16 of 16 | mg/kg | 91 - 6690 | 1170 | 6690 | DW-4 | 16' - 20' | 1360 |
| Manganese | 16 of 16 | mg/kg | 14.4 - 169 | 62.5 | 169 | S-2 | 17' - 19' | 246 |
| Nickel | 16 of 16 | mg/kg | 1.7 - 18.7 | 6.6 | 18.7 | DW-7 | 16' - 18' | 9.2 |
| Potassium | 16 of 16 | mg/kg | 56.6 - 423 | 171 | 423 | SBC-1 | 5' - 7' | 298 |
| Selenium | 6 of 16 | mg/kg | 0.19 - 0.43 | 0.16 | 0.43 | DW-5 | 17' - 19' | 0.57 |
| Silver | 3 of 16 | mg/kg | 0.51 - 0.71 | 0.27 | 0.71 | DW-4 | 16' - 20' | 0.51 |
| Sodium | 16 of 16 | mg/kg | 19.8 - 131 | 61.2 | 131 | DW-6 | 16' - 18' | 68.3 |
| Vanadium | 16 of 16 | mg/kg | 1.6 - 28.8 | 8.2 | 28.8 | DW-7 | 16' - 18' | 24.1 |
| Zinc | 16 of 16 | mg/kg | 3.4 - 200 | 50.2 | 200 | DW-7 | 16' - 18' | 52.1 |
| Mercury | 3 of 16 | mg/kg | 0.07 - 0.17 | 0.04 | 0.17 | DW-7 | 16' - 18' | 0.43 |
| Trichloroethene | 3 of 16 | ug/kg | 5 - 9 | 5.37 | 9 | SBC-2 | 5' - 7' | <11 |
| Tetrachloroethene | 10 of 16 | ug/kg | 5 - 140 | 25.8 | 140 | DW-4 | 16' - 20' | <11 |
| Acetone | 1 of 16 | ug/kg | 48 | 7.68 | 48 | DW-6 | 12' - 14' | <11 |
| 2-Butanone | 1 of 16 | ug/kg | 16 | 5.68 | 16 | DW-6 | 12' - 14' | <11 |
| Acenaphthene | 2 of 12 | ug/kg | 140 - 200 | 173 | 200 | DW-6 | 12' - 14' | Not Available |
| Dibenzofuran | 1 of 12 | ug/kg | 320 | 187 | 320 | DW-6 | 12' - 14' | Not Available |
| Fluorene | 2 of 12 | ug/kg | 120 - 540 | 201 | 540 | DW-6 | 12' - 14' | Not Available |
| Carbazole | 1 of 12 | ug/kg | 190 | 176 | 190 | S-2 | 17' - 19' | Not Available |
| Bis(2 ethylhexyl)phthalate | 12 of 12 | ug/kg | 130 - 2300 | 671 | 2300 | DW-6 | 12' - 14' | Not Available |
| Phenanthrene | 4 of 12 | ug/kg | 150 - 940 | 300 | 940 | S-2 | 17' - 19' | Not Available |
| Fluoranthene | 4 of 12 | ug/kg | 240 - 1300 | 298 | 1300 | S-2 | 17' - 19' | Not Available |
| Pyrene | 4 of 12 | ug/kg | 260 - 1200 | 328 | 1200 | S-2 | 17' - 19' | Not Available |
| Benzo(b)Anthracene | 4 of 12 | ug/kg | 100 - 520 | 160 | 520 | S-2 | 17' - 19' | Not Available |
| Chrysene | 4 of 12 | ug/kg | 170 - 700 | 234 | 700 | S-2 | 17' - 19' | Not Available |
| Benzo(b)Fluoranthene | 2 of 12 | ug/kg | 230 - 810 | 233 | 810 | S-2 | 17' - 19' | Not Available |
| Benzo(k)Fluoranthene | 2 of 12 | ug/kg | 100 - 520 | 197 | 520 | S-2 | 17' - 19' | Not Available |
| Benzo(a)Pyrene | 4 of 12 | ug/kg | 120 - 550 | 203 | 550 | S-2 | 17' - 19' | Not Available |
| 2-Methyl Naphthalene | 1 of 12 | ug/kg | 1100 | 252 | 1100 | DW-6 | 12' - 14' | Not Available |
| Indeno (1,2,3-CD) Pyrene | 1 of 12 | ug/kg | 160 | 173 | 160 | S-2 | 17' - 19' | Not Available |
| Benzo (g,h,i) Perylene | 1 of 12 | ug/kg | 150 | 173 | 150 | S-2 | 17' - 19' | Not Available |
| Anthracene | 1 of 12 | ug/kg | 180 | 175 | 180 | S-2 | 17' - 19' | Not Available |
| Alpha BHC | 1 of 2 | ug/kg | 2.7 | 1.9 | 2.7 | DW-5 | 17' - 19' | Not Available |
| Heptachlor Epoxide | 1 of 2 | ug/kg | 1.9 | 1.4 | 1.9 | DW-6 | 12' - 14' | Not Available |
| 4-4'-DDD | 1 of 2 | ug/kg | 9.5 | 5.6 | 9.5 | DW-6 | 12' - 14' | Not Available |
| 4-4'-DDE | 1 of 2 | ug/kg | 2.7 | 2.3 | 2.7 | DW-6 | 12' - 14' | Not Available |
| Alpha Chlordane | 2 of 2 | ug/kg | 1.0 - 4.9 | 3.0 | 4.9 | DW-5 | 17' - 19' | Not Available |
| Gamma Chlordane | 2 of 2 | ug/kg | 1.2 - 6.8 | 4.0 | 6.8 | DW-5 | 17' - 19' | Not Available |
| Aroclor 1248 | 1 of 2 | ug/kg | 50 | 34 | 50 | DW-6 | 12' - 14' | Not Available |

**NOTES:**

1 - Mean concentration includes non-detectable concentrations and uses 1/2 instrument detection limit (IDL) for non-detectable values. This may cause the mean to exceed the maximum reported value if the IDL is elevated.

# TABLE 6.2.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# AT123D MODEL ASSUMPTIONS AND INPUT PARAMETERS

| | |
|---|---|
| Soil Bulk Density: | 1.35 g/cm3 (Literature value for sand) |
| Hydraulic Conductivity: | 4.72E-02 cm/sec. (Site-specific aquifer test result) |
| Model Period: | 30 year |
| Release Type: | Instantaneous, simulated with MW concentrations |
| Effective Porosity: | 0.30 (AT123D default for sand, literature value) |
| Aquifer Width: | Assumed Infinite (AT123D default, approx. site condition) |
| Aquifer Depth: | 30 meters (Site data, well elevation surveys) |
| Source Area: | Assumed a one drywell source area. Area was modeled as a square source with the same surface area of a single drywell. In actuality the source would be the surface area at the monitoring well because monitoring well data was used to simulate the pollutant load to groundwater. Sensitivity analysis was performed to ensure that a one drywell source area yields conservative results. |

# TABLE 4.4.2.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# TCL SVOCs AND TICs IN GROUNDWATER - NOVEMBER 1992[1]

| *SAMPLE LOCATION* | *MW-1* | *MW-3* | *MW-5* | *MW-6* | *MW-8* | *MW-9* | *MW-20*[2] | *FIELD BLANK* | *NYSDEC GA STANDARDS* |
|---|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | | | | | | | | | |
| Acenaphthene | 3 J | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Dibenzofuran | 2 J | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Fluorene | 5 J | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Carbazole | 3 J | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| bis-(2-Ethylhexyl)Phthlate | 79 B | 4 BJ | 20 B | 3 BJ | 9 BJ | 4 BJ | 7 BJ | 2 BJ | 50 |
| **TICs** | | | | | | | | | |
| Tetramethylbenzene Isomer | 9 J | ND | ND | ND | ND | ND | ND | ND | NA |
| Dihydromethylindene Isomers | 27 J | ND | ND | ND | ND | ND | ND | ND | NA |
| Dihydrodimethylindene Isomers | 7 J | ND | ND | ND | ND | ND | ND | ND | NA |
| Tetrahydromethylnaphthalene | 18 J | ND | ND | ND | ND | ND | ND | ND | NA |
| Dimethylnaphthalene Isomers | 11 J | ND | ND | ND | ND | ND | ND | ND | NA |
| Naphthalene,1-(2-Propenyl) | 7 J | ND | ND | ND | ND | ND | ND | ND | NA |
| Methyl-9H-Carbazol Isomer | 3 J | ND | ND | ND | ND | ND | ND | ND | NA |
| Phenylethenylbenzamine Isomer | 5 J | ND | ND | ND | ND | ND | ND | ND | NA |
| Tetrahydrodimethylnaphthalene | 16 J | ND | ND | ND | ND | ND | ND | ND | NA |
| Hexanoic Acid, 2-Ethyl | ND | ND | ND | 50 J | 40 J | 30 J | ND | ND | NA |
| Dimethylethylphenol Isomer | ND | ND | ND | ND | 3 J | ND | ND | ND | NA |
| Phosphonic Acid, Dioctadecyl | ND | ND | ND | ND | ND | ND | 2J | ND | NA |
| Unknown Phthalate | ND | ND | 2 J | ND | ND | ND | ND | ND | NA |
| Unknown Hydrocarbons | 56 J | ND | ND | 516 J | 208 J | 183 J | ND | ND | NA |
| Unknowns | 17 J | ND | ND | 72 J | 14 J | 5J | 9J | ND | NA |

***NOTES*:**
- [1] All results reported in ug/kg
- [2] Sample is Blind Duplicate of MW-3
- NA - Not Applicable
- ND - Not Detected
- J - Estimated Value
- B - Analyte was detected in blank
- U - Analyte not detected

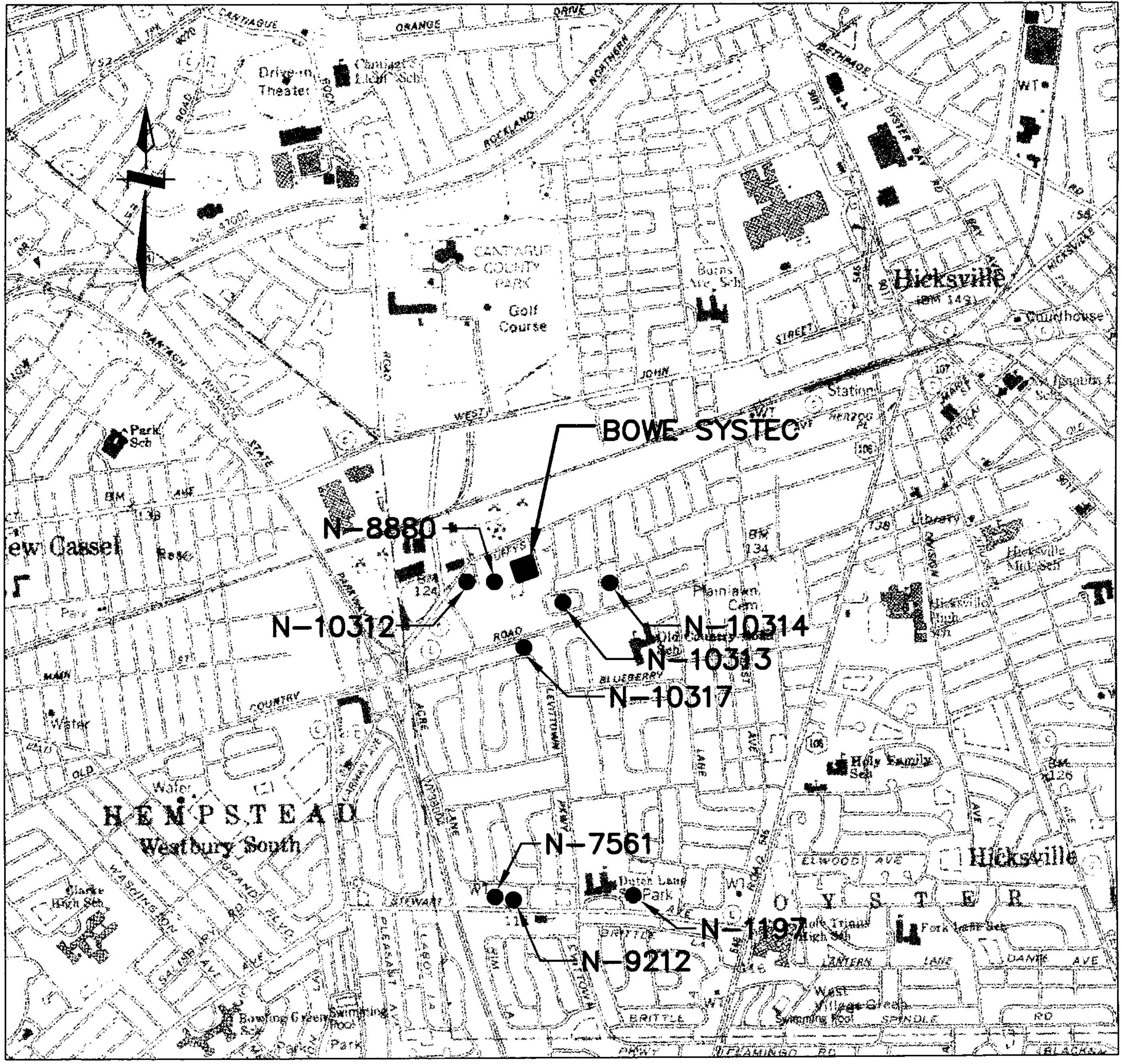
## TABLE 4.4.2.1
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## TCL VOCs IN GROUNDWATER - NOVEMBER 1992 (1)

| *SAMPLE LOCATION* | *MW-1* | *MW-3* | *MW-5* | *MW-6* | *MW-6DL* | *MW-8* | *MW-9* | *MW-20 (2)* | *FIELD BLANK* | *TRIP BLANK* | *NYSDEC GA STANDARDS* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | | | | | | | | | | | |
| Chloromethane | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Bromoethane | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Vinyl Chloride | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 2 |
| Chloroethane | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Methylene Chloride | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Acetone | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Carbon Disulfide | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 1,1-Dichloroethene | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| 1,1-Dichloroethane | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| 1,2-Dichloroethene (total) | 10 U | 10 U | 10 U | 2 J | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Chloroform | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 7 |
| 1,2-Dichloroethane | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| 2-Butanone | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 1,1,1-Trichloroethane | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Carbon Tetrachloride | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Bromodichloromethane | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 1,2-Dichloropropane | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| cis-1,3-Dichloropropene | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Trichloroethene | 10 U | 4 J | 14 | 7 J | 6 J | 10 U | 10 U | 4 J | 10 U | 10 U | 5 |
| Dibromochloromethane | 10 U | 10 U | 10 U | 10 U | 30U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 1,1,2-Trichloroethane | 10 U | 10 U | 10 U | 10 U | 30U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Benzene | 10 U | 10 U | 10 U | 10 U | 30U | 10 U | 10 U | 10 U | 10 U | 10 U | 0.7 |
| trans-1,3-Dichloropropene | 10 U | 10 U | 10 U | 10 U | 30U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Bromoform | 10 U | 10 U | 10 U | 10 U | 30U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 4-Methyl-2-Pentanone | 10 U | 10 U | 10 U | 10 U | 30U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 2-Hexanone | 10 U | 10 U | 10 U | 10 U | 30U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Tetrachloroethene | 10 U | 95 | 130 | 450 E | 430 D | 10 U | 10 U | 120 | 10 U | 10 U | 5 |
| 1,1,2,2-Tetrachloroethane | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Toluene | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Chlorobenzene | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Ethylbenzene | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Styrene | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |
| Xylene (total) | 10 U | 10 U | 10 U | 10 U | 30 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5 |

***NOTES*:**

- (1) All results reported in ug/kg
- (2) Sample is a Blind Duplicate of MW-3
- NA - Not Applicable
- U - Analyte was not detected
- J - Estimated Value
- D - Diluted sample analysis

FIGURE 3.5.2



# LOCATION OF ALL WELLS FOR WHICH H2M RECEIVED WATER QUALITY INFORMATION

SCALE: 1" = 2000'

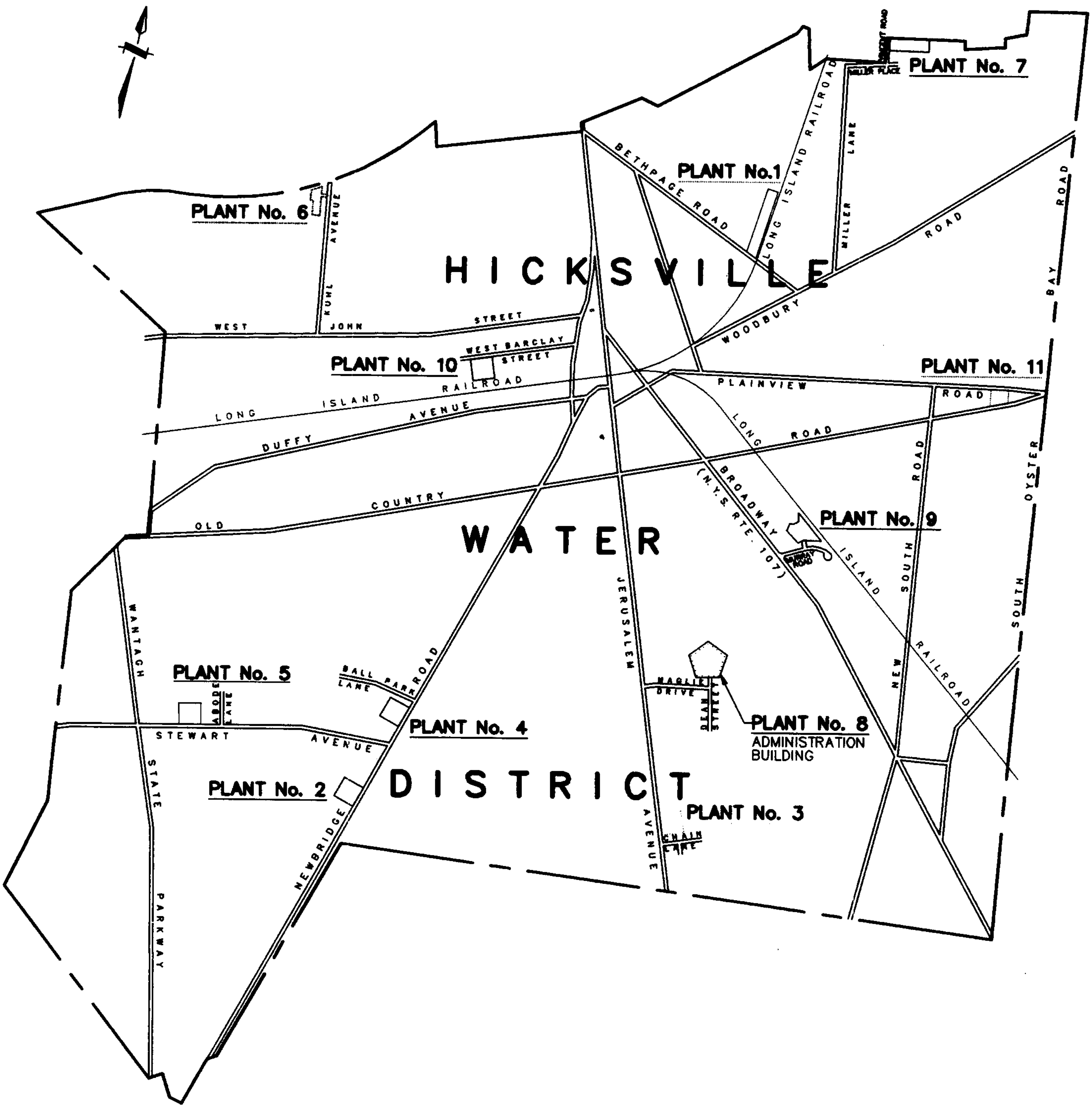
SOURCE: N.Y.S. PLANIMETRIC MAP DIGITAL RASTER 1992 AND
CONTAMINATED AQUIFER SEGMENT STUDY-WEST HICKSVILLE: NCDH

FIGURE 3.5.2 IN BOWE\9301\FIG3-3-1.DWG

H2MGROUP

ENGINEERS · ARCHITECTS · PLANNERS · SCIENTISTS · SURVEYORS

MELVILLE, N.Y. SHELTON, CT. TOTOWA, N.J.



# HICKSVILLE WATER DISTRICT

## PLANT SITE LOCATION MAP

NO SCALE

/DLOC.DWG 12-1-97 11:13:00 am EST

# TABLE 1.2.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# PREVIOUS CHEMICAL INVENTORY

| |
|---|
| 1/4 55 GAL. DRUM PERC SLUDGE, THINNER, ETC. |
| 20 GAL. "OPYSAT FX" ANTI-FOAM |
| 7 GAL. URATHANE PAINT PART A (PAINT SUPPLIES) |
| 6 GAL. (ACRYLIC LACQUER (PAINT SUPPLIES) |
| 1 GAL. AC REDUCER (PAINT SUPPLIES) |
| 10 GAL. LACQUER THINNER (PAINT SUPPLIES) |
| 4 QTS. TEXTURE ADDITIVE (PAINT SUPPLIES) |
| 5 GAL. "DRY TOUCH" RUST PREVENTATIVE (OIL) |
| 5 GAL. MILES "CUMULUS 75" OIL |
| 2-1/2 GAL. CUTTING OIL |
| 1 GAL. GREASE |
| 1 GAL. INDUSTRIAL DETERGENT |
| 30 GAL. DRY SIZING (FOR DRY CLEANING) |
| 1/4 55 GAL. DRUM ESO "ESSTIC 150" |
| 1/2 55 GAL. DRUM UKNOWN (DEGREASER) |
| 1/5 55 GAL. DRUM UNKOWN (DEGREASER) |

## TABLE 3.3.1
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## INDUSTRIAL PROFILE OF WEST HICKSVILLE(1)

| *NAME* | *LOCATION* | *ORGANIC CHEMICALS USED* | *AMOUNT USED STORED, DISPOSED, ETC. SINCE 1977* |
|---|---|---|---|
| Amperex Electronic Co. | 230 Duffy Avenue | Benzene<br>1,1,1 trichloroethane | 20 gals/yr<br>5,375 gals/yr |
| Four Star Association | 260 Duffy Avenue | Methylene chloride | 55 gals/yr |
| MHI Knitware Ltd. | 270 Duffy Avenue | 1,1,1 trichloroethane | 55 gals/yr |
| Maganosinic Devices, Inc. | 290 Duffy Avenue | 1,1,1 trichloroethane | 660 gals/yr |
| Depew Mfg. Corp. | 359 Duffy Avenue | Benzene<br>Toluene | NR |
| Model Communication | 307 W. John Street | Trichloroethylene | 10 gals/yr |
| Nestor Systems, Inc. | 489 W. John Street | Trichloroethylene | 10 gals/yr |
| Universal Shallac and Supply Co. | 495 W. John Street | Trichloroethylene | 325 gals/yr |
| General Instrument Corp. | 600 W. John Street | Trichloroethylene | 3,600 gals/yr |
| Micro Contacts, Inc. | 62 Alpha Place | 1,1,1 trichloroethane | 1,920 gals/yr |
| Anchor Lithkemko | 500 W. John Street | Methylene chloride<br>1,1,1 trichloroethane | NR |
| Metco | 325 Duffy Avenue | Trichloroethylene<br>PCE<br>Methylene chloride<br>Trichlorotrifluoroethane | Varying quantities<br>50-400 gals/yr |

***NOTES*:**

- (1) Source NCDH Industrial Survey Program
- NR - Not Represented

# TABLE 4.3.3
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SANITARY DISPOSAL SYSTEM SAMPLING
# TAL METALS RESULTS(1)

| SAMPLE LOCATION | S-2 | S-2 | FB | LEVELS OF CONCERN | | |
|---|---|---|---|---|---|---|
| SAMPLE DEPTH | (17-19 ft.) | (27-29 ft.) | (NA) | SB(2) | RSCO | EUS BG |
| **PARAMETER** | | | | | | |
| Aluminum | 4,030 | 1,370 | 51.4 B | 11,700 | SB | 33,000 |
| Antimony | 5.8 U | 5.5 U | 25.9 U | 8.9 B | SB | NA |
| Arsenic | 5.3 | 0.86 B | 1.1 U | 10.9 | 7.5 or SB | 3 - 12 |
| Barium | 22.0 B | 2.1 B | 1.5 U | 36.3 B | 300 or SB | 15 - 600 |
| Beryllium | 0.76 B | 0.08 U | 0.40 U | 0.39 B | 0.16 or SB | 0 - 1.75 |
| Cadmium | 2.0 | 0.82 B | 2.7 U | 2.2 | 10 | 0.1 - 1.0 |
| Calcium | 32,700 | 31.2 B | 227 B | 2,290 | SB | 130 - 35,000 |
| Chromium | 11.9 | 2.7 | 8.4 U | 21.2 | 50 | 1.5 - 40 |
| Cobalt | 4.3 B | 1.6 B | 5.1 U | 3.4 B | 30 or SB | 2.5 - 60 |
| Copper | 65.8 | 4.5 B | 3.0 B | 35.8 | 25 or SB | 1 -50 |
| Iron | 8,520 | 4,670 | 69.1 B | 12,700 | 2,000 or SB | 2,000 - 550,000 |
| Lead | 32.4 | 0.82 | 1.9 U | 45.7 | SB | 200 - 500 |
| Magnesium | 5,150 | 121 B | 17.1 B | 1,360 | SB | 100 - 5,000 |
| Manganese | 169 | 14.4 | 1.3 B | 246 | SB | 50 - 5,000 |
| Mercury | 0.05 U | 0.06 U | 0.10 U | 0.43 | 0.1 | 0.001 - 0.2 |
| Nickel | 11.5 | 2.7 B | 9.0 B | 9.2 B | 13 or SB | 0.5 - 25 |
| Potassium | 393 B | 80.8 B | 31.0 B | 298 B | SB | 8,500 - 43,000 |
| Selenium | 0.20 U | 0.19 U | 0.90 U | 0.57 B | 2 or SB | 0.1 - 3.9 |
| Silver | 0.51 B | 0.46 U | 2.2 U | 0.51 U | SB | NA |
| Sodium | 53.1 B | 24.0 B | 181 B | 68.3 B | SB | 6,000 - 8,000 |
| Thallium | 0.20 U | 0.19 U | 0.90 U | 0.21 U | SB | NA |
| Vanadium | 10.8 B | 2.9 B | 2.9 U | 24.1 | 150 or SB | 1 - 300 |
| Zinc | 156 | 4.6 | 6.1 B | 52.1 | 20 or SB | 9 - 50 |

***NOTES*:**
- (1) All results reported in mg/kg
- (2) Site Background Sample
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- RSCO NYSDEC TAGM HWR 94-4046 Recommended Soil Cleanup Objectives
- NA - Not Applicable
- U - Analyte was not detected
- B - Reported concentrations was less than the CRDL, but greater than the IDL
- EUS BG - Eastern USA Background
- SB - Site Background

## TABLE 4.4.1
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## PCE IN GROUNDWATER THROUGH JUNE 1992(1)

| ***DATE*** | ***MW-1*** | ***MW-2*** | ***MW-3*** | ***MW-4*** | ***MW-5*** | ***MW-6*** | ***MW-7*** | ***FIELD BLANK*** | ***FIELD BLANK*** |
|---|---|---|---|---|---|---|---|---|---|
| November/December 1990[2] | <1 | 130 | 8,100 | <1 | NS | NS | NS | NS | NS |
| June 1991[3] | NS | NS | NS | NS | 556 | 31.5 | 18.1 | NS | NS |
| July 1991[3] | NS | NS | NS | 379 | 5.2 | 256 | 101 | <0.5 | <0.5 |
| July 1991[4] | NS | NS | NS | 320J | 47 | 180 | 110 | NS | NS |
| June 1992[5] | <3 | NS | 19 | NS | NS | 430 | 130 | <1 | NS |

Notes:
- (1) All Results Reported in ug/l
- (2) Samples collected by Soil Mechanics Corp. and analyzed by EcoTest Laboratories, Inc.
- (3) Samples collected by Fenley & Nicol Co., Inc. and analyzed by Pedneault Associates, Inc.
- (4) NYSDEC Split Samples
- (5) Sample collected and analyzed by H2M
- ND - Not Detected
- NS - Not Sampled
- J - Estimated Value

# TABLE 4.3.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SANITARY DISPOSAL SYSTEM SAMPLING
# TCL VOC RESULTS (1)

| *SAMPLE LOCATION*<br>*SAMPLE DEPTH* | *S-2*<br>*(17-19 ft.)* | *S-2*<br>*(27-29 ft.)* | *FB*<br>*(NA)* | *TB*<br>*(NA)* | *RSCO* |
|---|---|---|---|---|---|
| **PARAMETER** | | | | | |
| Chloromethane | 11 U | 11 U | 10 U | 10 U | NA |
| Bromoethane | 11 U | 11 U | 10 U | 10 U | NA |
| Vinyl Chloride | 11 U | 11 U | 10 U | 10 U | 200 |
| Chloroethane | 11 U | 11 U | 10 U | 10 U | 1,900 |
| Methylene Chloride | 11 U | 11 U | 10 U | 10 U | 100 |
| Acetone | 11 U | 11 U | 10 U | 10 U | 200 |
| Carbon Disulfide | 11 U | 11 U | 10 U | 10 U | 2,700 |
| 1,1-Dichloroethene | 11 U | 11 U | 10 U | 10 U | 400 |
| 1,1-Dichloroethane | 11 U | 11 U | 10 U | 10 U | 200 |
| 1,2-Dichloroethene (total) | 11 U | 11 U | 10 U | 10 U | NA |
| Chloroform | 11 U | 11 U | 10 U | 10 U | 300 |
| 1,2-Dichloroethane | 11 U | 11 U | 10 U | 10 U | 100 |
| 2-Butanone | 11 U | 11 U | 10 U | 10 U | 300 |
| 1,1,1-Trichloroethane | 11 U | 11 U | 10 U | 10 U | 800 |
| Carbon Tetrachloride | 11 U | 11 U | 10 U | 10 U | 600 |
| Bromodichloromethane | 11 U | 11 U | 10 U | 10 U | NA |
| 1,2-Dichloropropane | 11 U | 11 U | 10 U | 10 U | NA |
| cis-1,3-Dichloropropene | 11 U | 11 U | 10 U | 10 U | NA |
| Trichloroethene | 7 J | 11 U | 10 U | 10 U | 700 |
| Dibromochloromethane | 11 U | 11 U | 10 U | 10 U | NA |
| 1,1,2-Trichloroethane | 11 U | 11 U | 10 U | 10 U | NA |
| Benzene | 11 U | 11 U | 10 U | 10 U | 60 |
| trans-1,3-Dichloropropene | 11 U | 11 U | 10 U | 10 U | NA |
| Bromoform | 11 U | 11 U | 10 U | 10 U | NA |
| 4-Methyl-2-Pentanone | 11 U | 11 U | 10 U | 10 U | 1,000 |
| 2-Hexanone | 11 U | 11 U | 10 U | 10 U | NA |
| Tetrachloroethene | 8 J | 11 U | 10 U | 10 U | 1,400 |
| 1,1,2,2-Tetrachloroethane | 11 U | 11 U | 10 U | 10 U | 600 |
| Toluene | 11 U | 11 U | 10 U | 10 U | 1,500 |
| Chlorobenzene | 11 U | 11 U | 10 U | 10 U | 1,700 |
| Ethylbenzene | 11 U | 11 U | 10 U | 10 U | 5,500 |
| Styrene | 11 U | 11 U | 10 U | 10 U | NA |
| Xylene (total) | 11 U | 11 U | 10 U | 10 U | 1,200 |

***NOTES*:**

- (1) All results reported in ug/kg
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- TB - Sample was trip blank - Reported in ug/l
- RSCO NYSDEC TAGM HWR 94-4046 Recommended Soil Cleanup Objectives
- NA - Not Applicable
- U - Analyte was not detected
- J - Estimated Value

# TABLE 4.3.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SANITARY DISPOSAL SYSTEM SAMPLING
# TCL SVOC RESULTS (1)

| *SAMPLE LOCATION*<br>*SAMPLE DEPTH* | *S-2*<br>*(17-19 ft.)* | *S-2*<br>*(27-29 ft.)* | *FB*<br>*(NA)* | *RSCO* |
|---|---|---|---|---|
| **PARAMETER** | | | | |
| 2-Methylnaphthalene | 370 U | 350 U | 10 U | 36,400 |
| Acenaphthene | 140 J | 350 U | 10 U | 50,000 |
| Dibenzofuran | 370 U | 350 U | 10 U | 6,200 |
| Fluorene | 120 J | 350 U | 10 U | 50,000 |
| Phenanthrene | 940 | 350 U | 10 U | 50,000 |
| Anthracene | 180 J | 350 U | 10 U | 50,000 |
| Carbazole | 190 J | 350 U | 10 U | NA |
| Fluoranthene | 1,300 | 350 U | 10 U | 50,000 |
| Pyrene | 1200 J | 350 U | 10 U | 50,000 |
| Benzo(a)Anthracene | 520 | 350 U | 10 U | 224 or MDL |
| Chrysene | 700 | 350 U | 10 U | 400 |
| bis(2-Ethylhexyl)Phthalate | 780 B | 310 BJ | 2 J | 50,000 |
| Benzo(b)Fluoranthene | 810 | 350 U | 10 U | 224 or MDL |
| Benzo(k)Fluoranthene | 520 | 350 U | 10 U | 224 or MDL |
| Benzo(a)Pyrene | 550 | 350 U | 10 U | 61 or MDL |
| Indeno(1,2,3-cd)Pyrene | 160 J | 350 U | 10 U | 3,200 |
| Benzo(g,h,i)Perylene | 150 J | 350 U | 10 U | 50,000 |

*__NOTES__:*

- (1) All results reported in ug/kg
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- RSCO NYSDEC TAGM HWR 94-4046 Recommended Soil Cleanup Objectives
- NA - Not Applicable
- U - Analyte was not detected
- J - Estimated Value
- B - Analyte was detected in field blank
- MDL - Method Detection Limit

## TABLE 4.2.2
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## FORMER SPRAY BOOTH SAMPLING
## TAL METALS RESULTS$^{(1)}$

| SAMPLE LOCATION | SBC -1 | SBC-1 | SBC-2 | SBC-2 | FB | LEVELS OF CONCERN | | |
|---|---|---|---|---|---|---|---|---|
| SAMPLE DEPTH | (5-7 ft.) | (15-17 ft.) | (5-7 ft.) | (15-17 ft.) | (NA) | SB$^{(2)}$ | RSCO | EUS BG |
| PARAMETER | | | | | | | | |
| Aluminum | 4,330 | 1,070 | 4,880 | 1,210 | 51.4 B | 11,700 | SB | 33,000 |
| Antimony | 5.4 U | 5.3 U | 5.6 U | 5.3 U | 25.9 U | 8.9 B | SB | NA |
| Arsenic | 1.1 B | 0.62 B | 1.5 B | 1.5 B | 1.1 U | 10.9 | 7.5 or SB | 3 - 12 |
| Barium | 15.8 B | 4.3 B | 13.7 B | 5.2 B | 1.5 U | 36.3 B | 300 or SB | 15 - 600 |
| Beryllium | 0.19 B | 0.16 B | 0.19 B | 0.12 B | 0.40 U | 0.39 B | 0.16 or SB | 0 - 1.75 |
| Cadmium | 0.80 B | 0.89 B | 0.58 B | 1.2 | 2.7 U | 2.2 | 10 | 0.1 - 1.0 |
| Calcium | 298 B | 46.1 B | 314 B | 70.7 B | 227 B | 2,290 | SB | 130 - 35,000 |
| Chromium | 6.2 | 2.9 | 8.1 | 6.2 | 8.4 U | 21.2 | 50 | 1.5 - 40 |
| Cobalt | 3.2 B | 1.8 B | 3.0 B | 1.5 B | 5.1 U | 3.4 B | 30 or SB | 2.5 - 60 |
| Copper | 5.5 | 2.3 B | 9.8 | 2.8 B | 3.0 B | 35.8 | 25 or SB | 1 -50 |
| Iron | 5,750 | 4,340 | 6,000 | 3,820 | 69.1 B | 12,700 | 2,000 or SB | 2,000 - 550,000 |
| Lead | 4.2 | 1.5 | 5.1 | 20.2 | 1.9 U | 45.7 | SB | 200 - 500 |
| Magnesium | 894 B | 224 B | 828 B | 243 B | 17.1 B | 1,360 | SB | 100 - 5,000 |
| Manganese | 82.5 | 52.2 | 98.6 | 69.7 | 1.3 B | 246 | SB | 50 - 5,000 |
| Mercury | 0.06 U | 0.06 U | 0.06 U | 0.06 U | 0.10 U | 0.43 | 0.1 | 0.001 - 0.2 |
| Nickel | 5.3 B | 3.9 B | 6.2 B | 3.3 B | 9.0 B | 9.2 B | 13 or SB | 0.5 - 25 |
| Potassium | 423 B | 120 B | 296 B | 122 B | 31.0 B | 298 B | SB | 8,500 - 43,000 |
| Selenium | 0.19 U | 0.19 U | 0.19 U | 0.18 U | 0.90 U | 0.57 B | 2 or SB | 0.1 - 3.9 |
| Silver | 0.46 U | 0.45 U | 0.47 U | 0.45 U | 2.2 U | 0.51 U | SB | NA |
| Sodium | 44.1 B | 26.3 B | 37.5 B | 32.2 B | 181 B | 68.3 B | SB | 6,000 - 8,000 |
| Thallium | 0.19 U | 0.19 U | 0.19 U | 0.18 U | 0.90 U | 0.21 U | SB | NA |
| Vanadium | 8.2 B | 3.4 B | 8.5 B | 2.9 B | 2.9 U | 24.1 | 150 or SB | 1 - 300 |
| Zinc | 14.8 | 5.5 | 47.6 | 11.7 | 6.1 B | 52.1 | 20 or SB | 9 - 50 |

***NOTES*:**

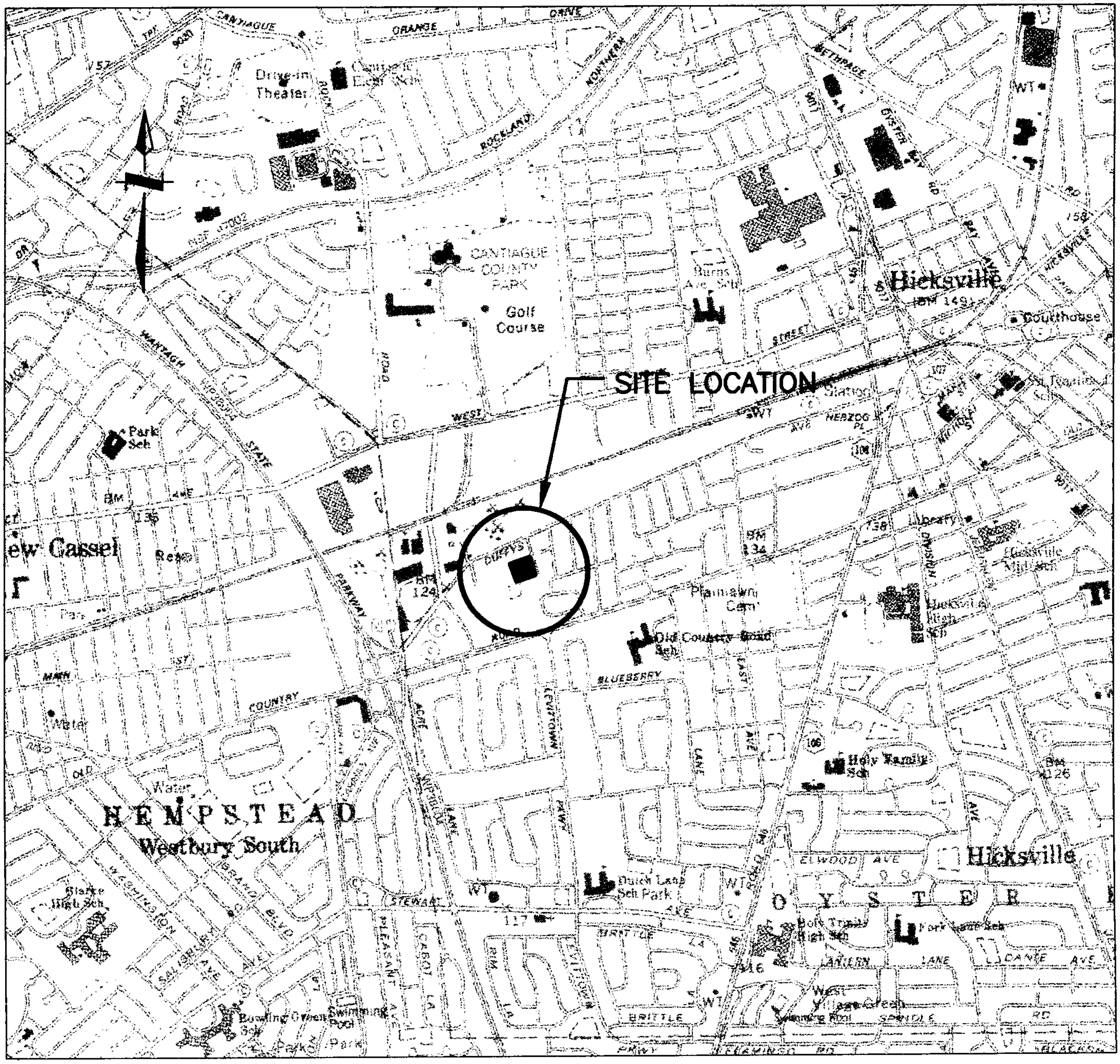
- $^{(1)}$ All results reported in mg/kg
- $^{(2)}$ Site Background Sample
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- RSCO NYSDEC TAGM HWR 94-4046 Recommended Soil Cleanup Objectives
- NA - Not Applicable
- U - Analyte was not detected
- B - Reported concentrations was less than the CRDL, but greater than the IDL
- EUS BG - Eastern USA Background
- SB - Site Background

# TABLE 4.2.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# FORMER SPRAY BOOTH SAMPLING
# TCL VOC RESULTS (1)

| *SAMPLE LOCATION*<br>*SAMPLE DEPTH* | *SBC-1*<br>*(5-7 ft.)* | *SBC-1*<br>*(15-17 ft.)* | *SBC-2*<br>*(5-7 ft.)* | *SBC-2*<br>*(15-17 ft.)* | *SG-4*<br>*(1-3 ft.)* | *SG-14*<br>*(1-3 ft.)* | *FB*<br>*(NA)* | *TB*<br>*(NA)* | *RSCO* |
|---|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | | | | | | | | | |
| Chloromethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Bromoethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Vinyl Chloride | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 200 |
| Chloroethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,900 |
| Methylene Chloride | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 100 |
| Acetone | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 200 |
| Carbon Disulfide | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 2,700 |
| 1,1-Dichloroethene | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 400 |
| 1,1-Dichloroethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 200 |
| 1,2-Dichloroethene (total) | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Chloroform | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 300 |
| 1,2-Dichloroethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 100 |
| 2-Butanone | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 300 |
| 1,1,1-Trichloroethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 800 |
| Carbon Tetrachloride | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 600 |
| Bromodichloromethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 1,2-Dichloropropane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| cis-1,3-Dichloropropene | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Trichloroethene | 5 J | 11 U | 9 J | 10 U | 10 U | 10 U | 10 U | 10 U | 700 |
| Dibromochloromethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 1,1,2-Trichloroethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Benzene | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 60 |
| trans-1,3-Dichloropropene | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Bromoform | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| 4-Methyl-2-Pentanone | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,000 |
| 2-Hexanone | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Tetrachloroethene | 140 | 11 U | 31 | 10 U | 5 J | 9 J | 10 U | 10 U | 1,400 |
| 1,1,2,2-Tetrachloroethane | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 600 |
| Toluene | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,500 |
| Chlorobenzene | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,700 |
| Ethylbenzene | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 5,500 |
| Styrene | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | NA |
| Xylene (total) | 11 U | 11 U | 11 U | 10 U | 10 U | 10 U | 10 U | 10 U | 1,200 |

***NOTES*:**
- (1) All results reported in ug/kg
- FB - Sample was an equipment rinsate blank (field blank) - Reported in ug/l
- TB - Sample was trip blank - Reported in ug/l
- RSCO NYSDEC TAGM HWR 94-4046 Recommended Soil Cleanup Objectives
- NA - Not Applicable
- U - Analyte was not detected
- J - Estimated Value

FIGURE 1.2.1



# LOCATION MAP

SCALE: 1" = 2000'

# BOWE SYSTEC. INC.
# 200 FRANK ROAD
# HICKSVILLE, NEW YORK

SOURCE: N.Y.S. PLANIMETRIC MAP DIGITAL RASTER 1992

FIGURE 1.2.1 IN BOWE\9301\FIG3-3-1.DWG

**H2MGROUP** ENGINEERS · ARCHITECTS · PLANNERS · SCIENTISTS · SURVEYORS

MELVILLE, N.Y. SHELTON, CT. TOTOWA, N.J.

## TABLE 4.4.2.4
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## TAL METALS IN GROUNDWATER - NOVEMBER 1992[1]

| SAMPLE LOCATION | MW-1 | MW-3 | MW-5 | MW-6 | MW-8 | MW-9 | MW-20[2] | FIELD BLANK | NYSDEC GA STANDARDS |
|---|---|---|---|---|---|---|---|---|---|
| PARAMETER | | | | | | | | | |
| Aluminum | 20,000 | 41,800 | 156,000 | 89,000 | 231,000 | 268,000 | 45,200 | 56.9 B | NA |
| Antimony | 25.9 UN | 25.9 U | 25.9 U | 25.9 U | 30.1 B | 32.9 B | 25.9 U | 25.9 U | NA |
| Arsenic | 1.1 U | 6.3 B | 18.2 | 10.4 | 19.4 | 5.1 B | 4.5 B | 1.1 U | 25 |
| Barium | 600 | 298 | 1,450 | 554 | 858 | 1,080 | 249 | 1.5 U | 1,000 |
| Beryllium | 2.2 B | 2.6 B | 6.7 | 3.1 B | 10.9 | 13.9 | 2.4 B | 0.40 U | NA |
| Cadmium | 26.8 | 5.0 | 35.0 | 16.3 | 27.0 | 31.7 | 4.1 B | 2.7 U | 10 |
| Calcium | 44,500 | 21,300 | 25,400 | 14,600 | 54,200 | 47,200 | 19,000 | 25.3 B | NA |
| Chromium | 8.4 U | 31.7 | 1,320 | 522 | 160 | 173 | 32.7 | 8.4 U | 50 |
| Cobalt | 5.7 B | 12.8 B | 97.4 | 32.9 B | 109 | 123 | 15.4 B | 5.1 U | NA |
| Copper | 36.5 | 32.3 | 638 | 234 | 382 | 174 | 32.0 | 1.3 B | 200 |
| Iron | 115,000 | 35,800 | 115,000 | 60,600 | 204,000 | 241,000 | 36,600 | 58.0 B | 500 |
| Lead | 9.2 | 14.5 | 52.3 | 17.8 | 46.5 | 71.5 | 12.0 | 1.9 U | 25 |
| Magnesium | 6,220 | 4,020 B | 12,000 | 4,920 B | 13,200 | 13,700 | 3,980 B | 14.6 U | NA |
| Manganese | 1,430 | 1,310 | 4,890 | 1,440 | 6,310 | 10,400 | 1,290 | 1.6 B | 500 |
| Mercury | 0.11 B | 0.34 | 0.56 | 0.23 | 2.0 | 0.38 | 0.22 | 0.10 U | 2 |
| Nickel | 10.5 B | 46.2 | 489 | 351 | 152 | 127 | 56.5 | 6.9 U | NA |
| Potassium | 6,970 | 5,330 | 7,980 | 4,280 B | 17,300 | 14,800 | 5,220 | 28.0 U | NA |
| Selenium | 0.90 UN | 1.4 BN | 4.5 UN | 0.90 UN | 4.5 UN | 4.5 UN | 0.90 UN | 0.90 UN | 10 |
| Silver | 2.2 U | 2.2 U | 8.3 B | 2.3 B | 2.2 U | 2.2 U | 2.2 U | 2.2 U | 50 |
| Sodium | 33,900 | 14,900 | 21,100 | 12,100 | 33,100 | 35,900 | 14,900 | 7.9 U | 20,000 |
| Thallium | 0.90 U | 0.90 U | 2.7 B | 1.4 B | 2.5 B | 5.4 B | 2.9 B | 3.3 B | NA |
| Vanadium | 44.4 B | 52.4 | 130 | 92.9 | 352 | 371 | 54.9 | 2.9 U | NA |
| Zinc | 129 | 86.6 | 351 | 256 | 281 | 256 | 75.9 | 4.9 U | 300 |

***NOTES*:**

- [1] All results reported in mg/kg
- [2] Sample was a blind duplicate of MW-3
- NA - Not Applicable
- U - Analyte was not detected
- B - Reported concentrations was less than the CRDL, but greater than the IDL
- N - Estimated value (matrix spike recovery not within control limits)

# TABLE 4.4.2.3
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## TCL PESTICIDES AND PCB IN GROUNDWATER - NOVEMBER 1992[1]

| *SAMPLE LOCATION* | *MW-1* | *MW-3* | *MW-5* | *MW-6* | *MW-8* | *MW-9* | *MW-20[2]* | *FIELD BLANK* | *NYSDEC GA STANDARDS* |
|---|---|---|---|---|---|---|---|---|---|
| **PARAMETER** | | | | | | | | | |
| alpha-BHC | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | NA |
| beta-BHC | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | NA |
| delta-BHC | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | NA |
| gamma-BHC (Lindane) | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | NA |
| Heptachlor | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | ND |
| Aldrin | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | ND |
| Heptachlor epoxide | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | ND |
| Endosulfan I | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | NA |
| Dieldrin | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | ND |
| 4,4'-DDE | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | ND |
| Endrin | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | ND |
| Endosulfan II | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | NA |
| 4,4'-DDD | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | ND |
| Endosulfan sulfate | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | NA |
| 4,4'-DDT | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | ND |
| Methoxychlor | 0.52 U | 0.50 U | 0.52 U | 0.51 U | 0.50 U | 0.50 U | 0.51 U | 0.50 U | 35 |
| Endrin ketone | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | NA |
| Endrin aldehyde | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | 0.10 U | NA |
| alpha-Chlordane | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | 0.1 |
| gamma-Chlordane | 0.052 U | 0.050 U | 0.052 U | 0.051 U | 0.050 U | 0.050 U | 0.051 U | 0.050 U | 0.1 |
| Toxaphene | 5.2 U | 5.0 U | 5.2 U | 5.1 U | 5.0 U | 5.0 U | 5.1 U | 5.0 U | ND |
| Aroclor-1016 | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.1 |
| Aroclor-1221 | 2.1 U | 2.0 U | 2.1 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 2.0 U | 0.1 |
| Aroclor-1232 | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.1 |
| Aroclor-1242 | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.1 |
| Aroclor-1248 | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.1 |
| Aroclor-1254 | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.1 |
| Aroclor-1260 | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.1 |

***NOTES:***

- [1] All results reported in ug/kg
- [2] Sample is a Blind Duplicate of MW-3
- NA - Not Applicable
- ND - Not Detected
- U - Analyte was not detected

# TABLE 4.4.5.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# FIRST PHASE OFF-SITE EXPLORATORY WELLS
# VOCs IN GROUNDWATER

| *EW-2* | *55-60 ft.* | *80-85 ft.* | *105-110 ft.* | *130-135 ft.* | *155-160 ft.* |
|---|---|---|---|---|---|
| Chloroform | <3 (2 J) | <3 (10 U) | <3 (10 U) | <3 | <3 |
| 1,1-Dichloroethane | <3 (10 U) | <3 (10 U) | <3 (10 U) | <3 | 4 |
| *cis*-1,2-Dichloroethene | <3 (10 U) | <3 (10 U) | <3 (10 U) | <3 | <3 |
| Trichloroethene | <3 (10 U) | <3 (10 U) | <3 (10 U) | <3 | 6 |
| 1,1,1-Trichloroethane | <3 (10 U) | <3 (10 U) | <3 (10 U) | <3 | <3 |
| Tetrachloroethene | <3 (10 U) | <3 (10 U) | <3 (10 U) | <3 | <3 |

| *EW-3* | *55-60 ft.* | *80-85 ft.* | *105-110 ft.* | *130-135 ft.* | *155-160 ft.* |
|---|---|---|---|---|---|
| Chloroform | <3 | <3 | <3 | <3 | <3 |
| 1,1-Dichloroethane | <3 | <3 | <3 | <3 | <3 |
| *cis*-1,2-Dichloroethene | <3 | <3 | <3 | <3 | <3 |
| Trichloroethene | 21 | 24 | 23 | 8 | 10 |
| 1,1,1-Trichloroethane | <3 | 3 | <3 | <3 | <3 |
| Tetrachloroethene | <3 | <3 | <3 | <3 | <3 |

| *EW-4* | *55-60 ft.* | *80-85 ft.* | *105-110 ft.* | *130-135 ft.* | *155-160 ft.* |
|---|---|---|---|---|---|
| Chloroform | 4 (4 J) | 4 (4 J) | <3 (10 U) | <3 (10 U) | 3 (3 J) |
| 1,1-Dichloroethane | <3 (10 U) | <3 (10 U) | <3 (10 U) | <3 (4 J) | <3 (10 U) |
| *cis*-1,2-Dichloroethene | <3 (2 J) | <3 (10 U) | 5 (6 J) | <3 (10 U) | <3 (2 J) |
| Trichloroethene | <3 (2 J) | <3 (2 J) | 8 (6 J) | <3 (3 J) | <3 (2 J) |
| 1,1,1-Trichloroethane | <3 (10 U) | <3 (10 U) | <3 (10 U) | <3 (10 U) | <3 (10 U) |
| Tetrachloroethene | <3 (10 U) | <3 (1 J) | <3 (10 U) | <3 (10 U) | <3 (10 U) |

| *EW-1* | *55-60 ft.* | *FIELD BLANK* | *TRIP BLANK* |
|---|---|---|---|
| Chloroform | <3 (10 U) | <1 | <1 |
| 1,1-Dichloroethane | <3 (1 J) | <1 | <1 |
| *cis*-1,2-Dichloroethene | <3 (10 U) | <1 | <1 |
| Trichloroethene | 6 (7 J) | <1 | <1 |
| 1,1,1-Trichloroethane | <3 (10 U) | <1 | <1 |
| Tetrachloroethene | 110 (100) | <1 | <1 |

***NOTES*:**

- All results in ug/l
- NYSDEC Split Sample results are shown in parentheses
- U - Analyte not detected
- J - Estimated Value

# TABLE 4.4.3
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# PCE IN GROUNDWATER THROUGH APRIL 1997(1)

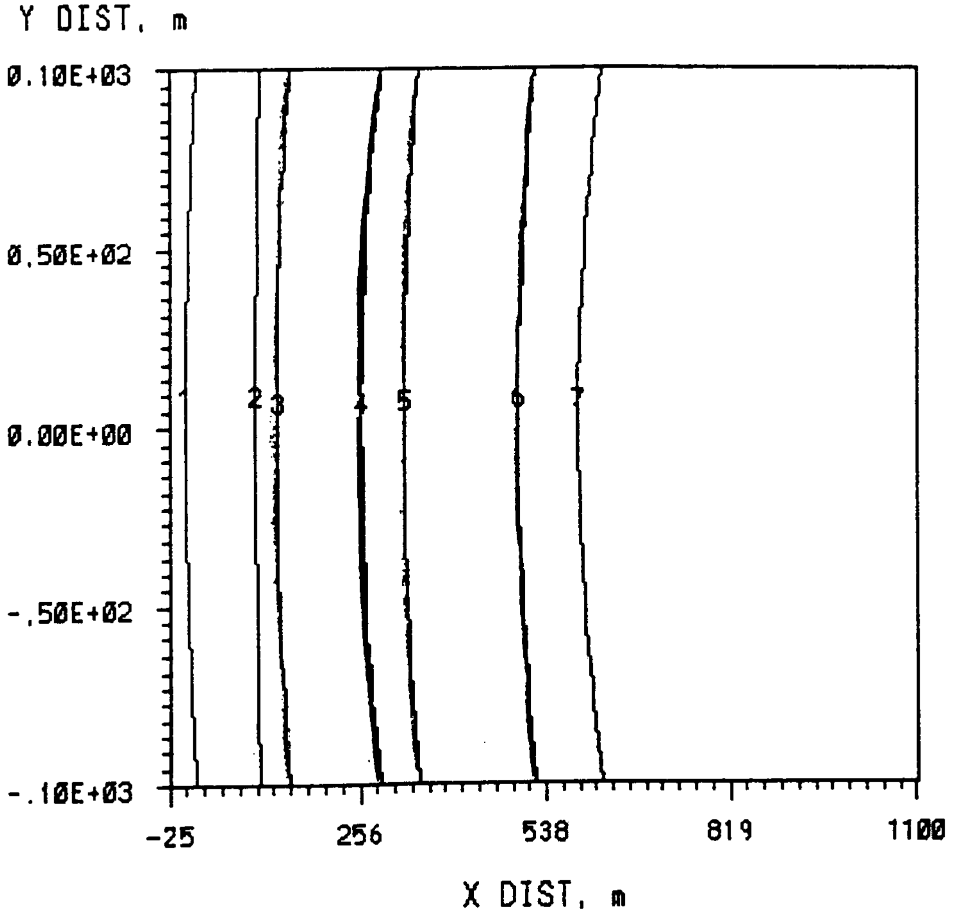
| DATE | MW-1 | MW-2 | MW-3 | MW-4 | MW-5 | MW-6 | MW-7 | MW-8 | MW-9 | FIELD BLANK | TRIP BLANK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| November/December 1989(2) | <1 | 130 | 8,100 | <1 | NS | NS | NS | NS | NS | NS | NS |
| June 1991(3) | NS | NS | NS | NS | 556 | 31.5 | 18.1 | NS | NS | NS | NS |
| July 1991(3) | NS | NS | NS | 379 | 5.2 | 256 | 101 | NS | NS | <.05 | <0.5 |
| July 1991(5) | NS | NS | NS | 320E | 47 | 180 | 110 | NS | NS | NS | NS |
| June 1992(4) | <3 | NS | 19 | NS | NS | 430 | 130 | NS | NS | <1 | NS |
| November 1992(4) | <10 | NS | 95 | NS | 130(120 BD) | 450 E (430 D) | NS | 10U | 10U | 10U | 10U |
| November 1992(5) | NS | NS | NS | NS | NS | 450 E (510 D) | 1J | 2J | 10U | NS | NS |
| February 1993(4) | NS | NS | 3 | NS | 27 | 62 | NS | 1 | <0.5 | <0.5 | <0.5 |
| February 1993(5) | NS | NS | 340 E (25 U) | NS | 5U | 270 E (370 D) | NS | 5U | 5U | NS | NS |
| January 1994(4) | NS | NS | <3 | NS | NS | 260 | NS | <3 | <3 | <1 | <1 |
| January 1994(5) | NS | NS | 2J | NS | NS | 200 E | NS | 10U | 10U | NS | NS |
| November 1995(4) | NS | NS | NS | NS | NS | 230 E (170 D) | NS | NS | NS | <10 | <10 |
| November 1995(5) | NS | NS | NS | 360 E (280D) | 90 | 200 | NS | NS | NS | NS | NS |
| April 1997(4) | NS | NS | NS | 130 | 40 | 220E (250 D) | NS | <10 | NS | NS | <10 |
| April 1997(5) | NS | NS | 10U | 100 | 30 | 160 | NS | 2J | NS | NS | NS |

Notes:

- (1) All Results in ug/l
- (2) Samples collected by Soil Mechanics Drilling Corp. and analyzed by EcoTest Laboratories, Inc.
- (3) Samples collected by Fenley & Nicol Co., Inc. and analyzed by Pedneault Associates, Inc.
- (4) Samples collected and analyzed by H2M
- (5) NYSDEC Split Samples
- ND - Not Detected
- NS - Not Sampled
- J - Estimated Value
- E - Estimated Value
- D - Sample Diluted and Re-Analyzed
- U - Analyte was not detected
- BD - Blind Duplicate

# FIGURE 6.2.1
# BOWE SYSTEC, INC.
# BIS (2-ETHYLHEXYL) PHTHALATE GROUNDWATER TRANSPORT

YEAR 2012, MAX CONC. IN DOWNGRAD. WELLS



ISOLINES

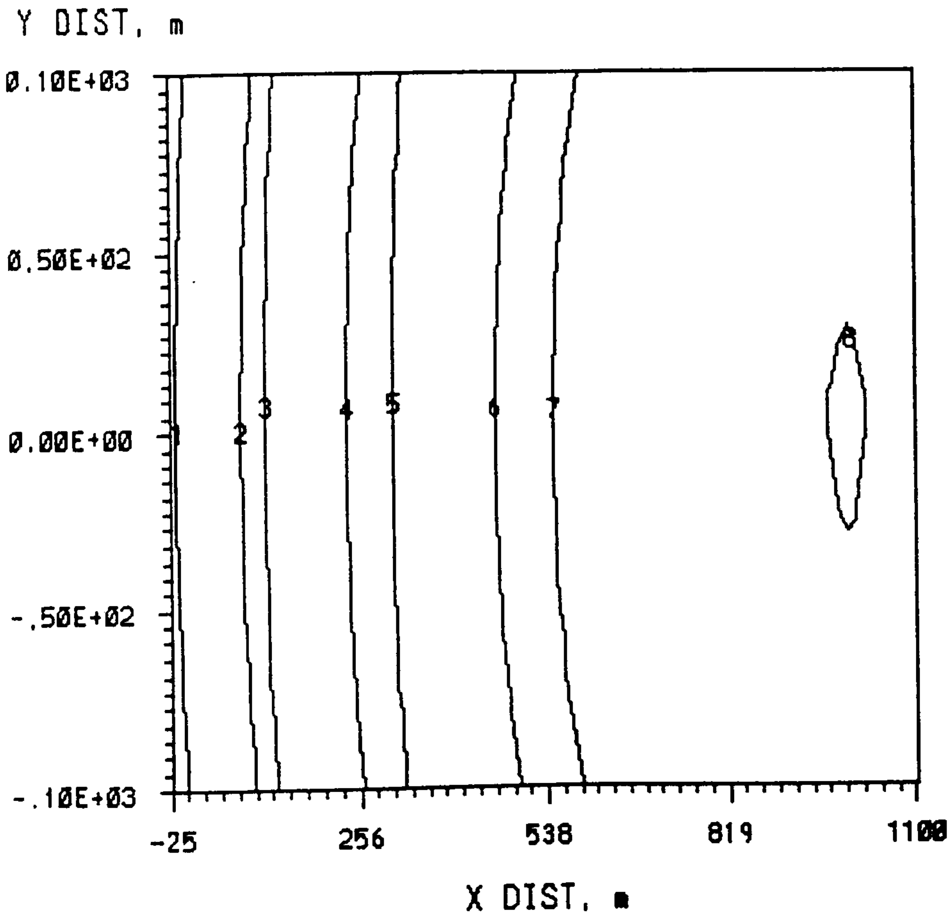
| LABEL | VALUE N*QE | P |
|---|---|---|
| 1 | 0.10E-07 | |
| 2 | 0.50E-07 | |
| 3 | 0.10E-06 | |
| 4 | 0.50E-06 | |
| 5 | 0.10E-05 | |
| 6 | 0.50E-05 | |
| 7 | 0.10E-04 | |

ISOLINE CONCENTRATIONS IN UNITS OF MG/L

FIG621.DWG 1-6-98 4:21:37 pm EST

# FIGURE 6.2.2
# BOWE SYSTEC, INC.
# BENZO (A) PYRENE GROUNDWATER TRANSPORT

YEAR 2012, MAX. CONC. AT DOWNGRAD. WELLS

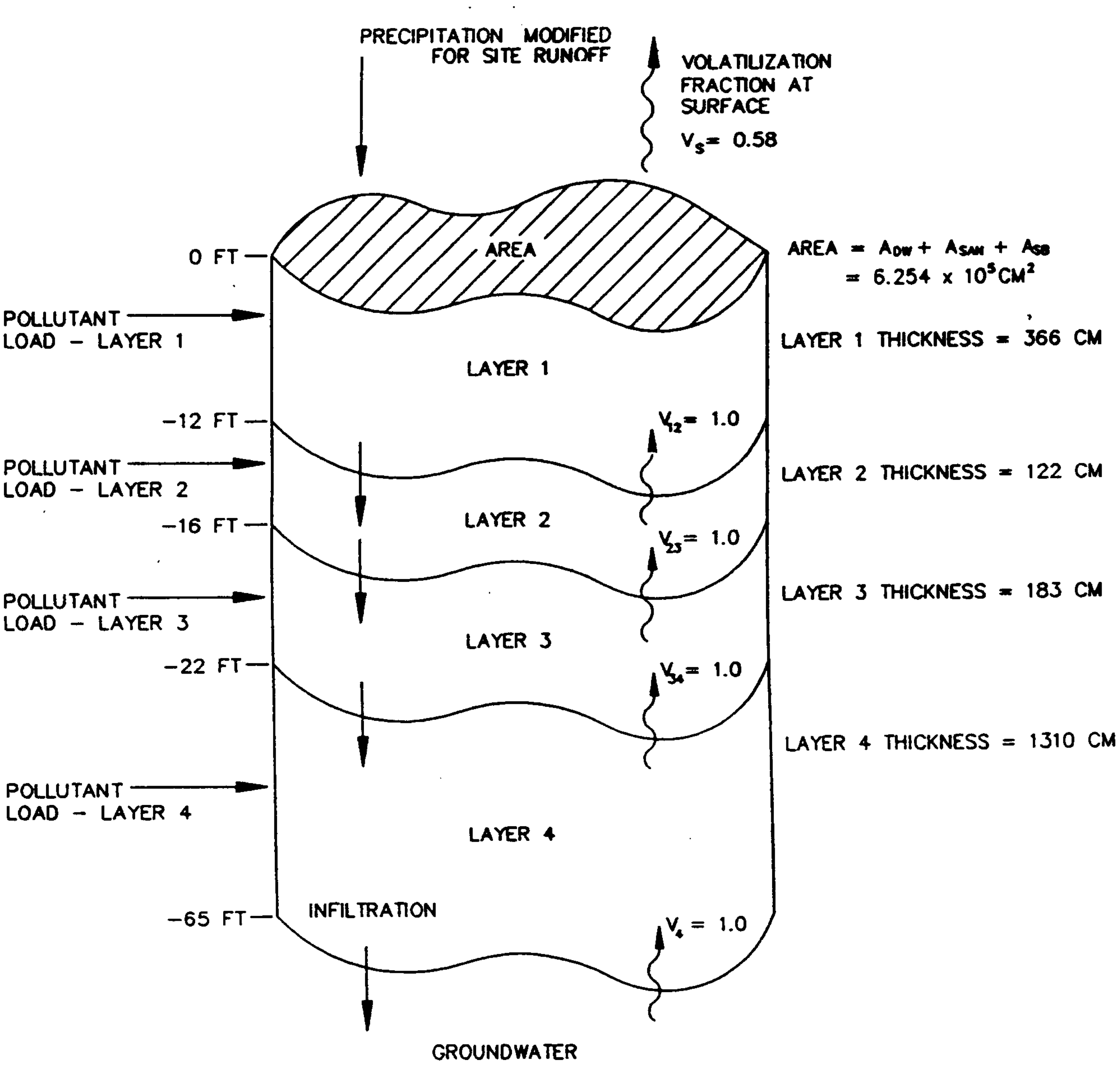


ISOLINES

| LABEL | VALUE N* ! P |
|---|---|
| 1 | 0.10E-08 |
| 2 | 0.50E-08 |
| 3 | 0.10E-07 |
| 4 | 0.50E-07 |
| 5 | 0.10E-06 |
| 6 | 0.50E-06 |
| 7 | 0.10E-05 |
| 8 | 0.50E-05 |

ISOLINE CONCENTRATIONS IN UNITS OF MG/L

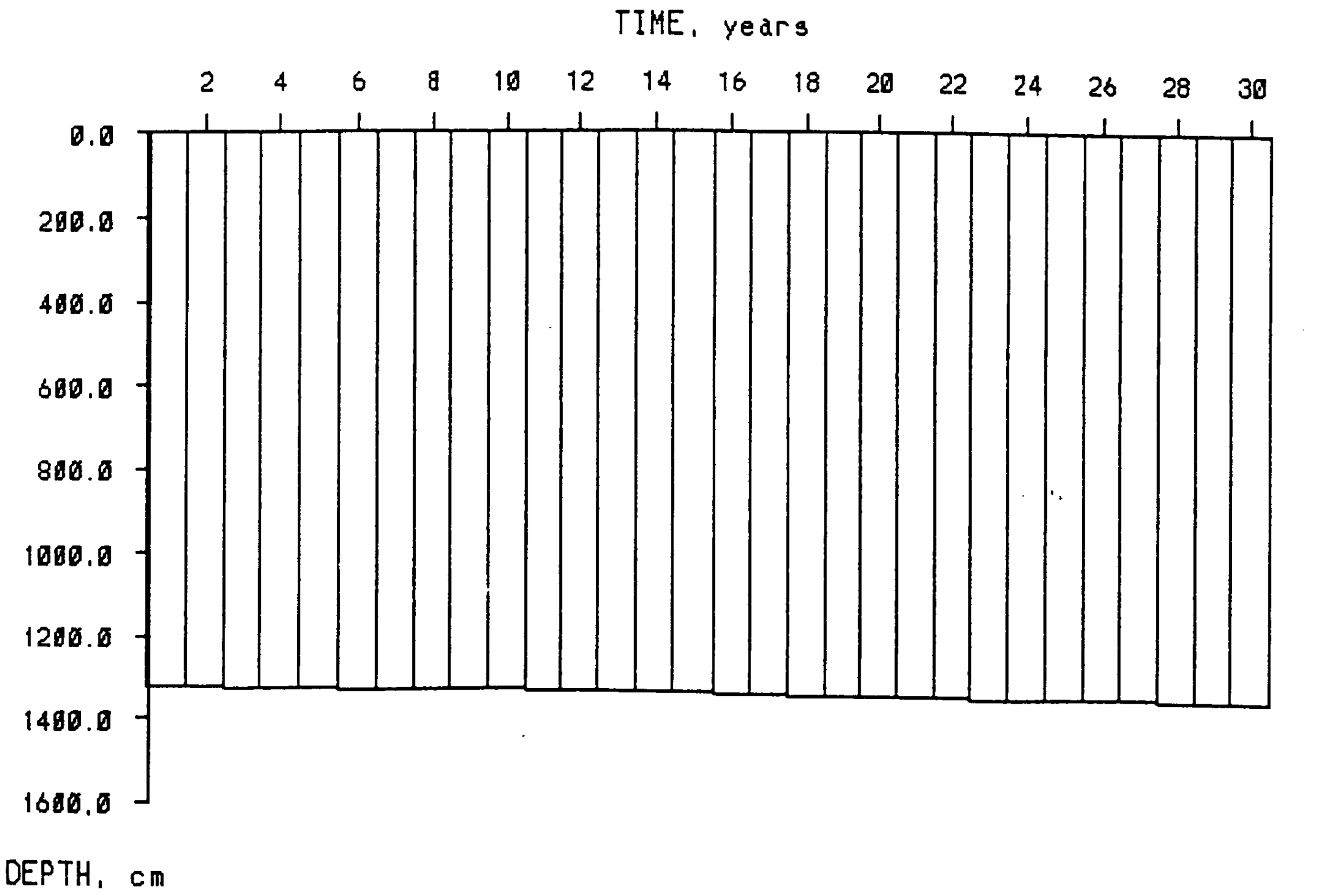
# FIGURE 6.1.1
# CONCEPTUAL SESOIL MODEL OF BOWE SYSTEC SITE



POLLUTANT LOADS = MAX. CONC. DETECTED IN LAYER ($^{MK}/_{KG}$) x THICKNESS (CM) x SOIL DENSITY ($\frac{G}{CM}$)

FIG611.DWG 1–6–98 4:32:40 pm EST

# FIGURE 6.1.2
# BOWE SYSTEC, INC.
# BENZO (A) PYRENE SOIL TRANSPORT
# CONTAMINANT DEPTH VS. TIME

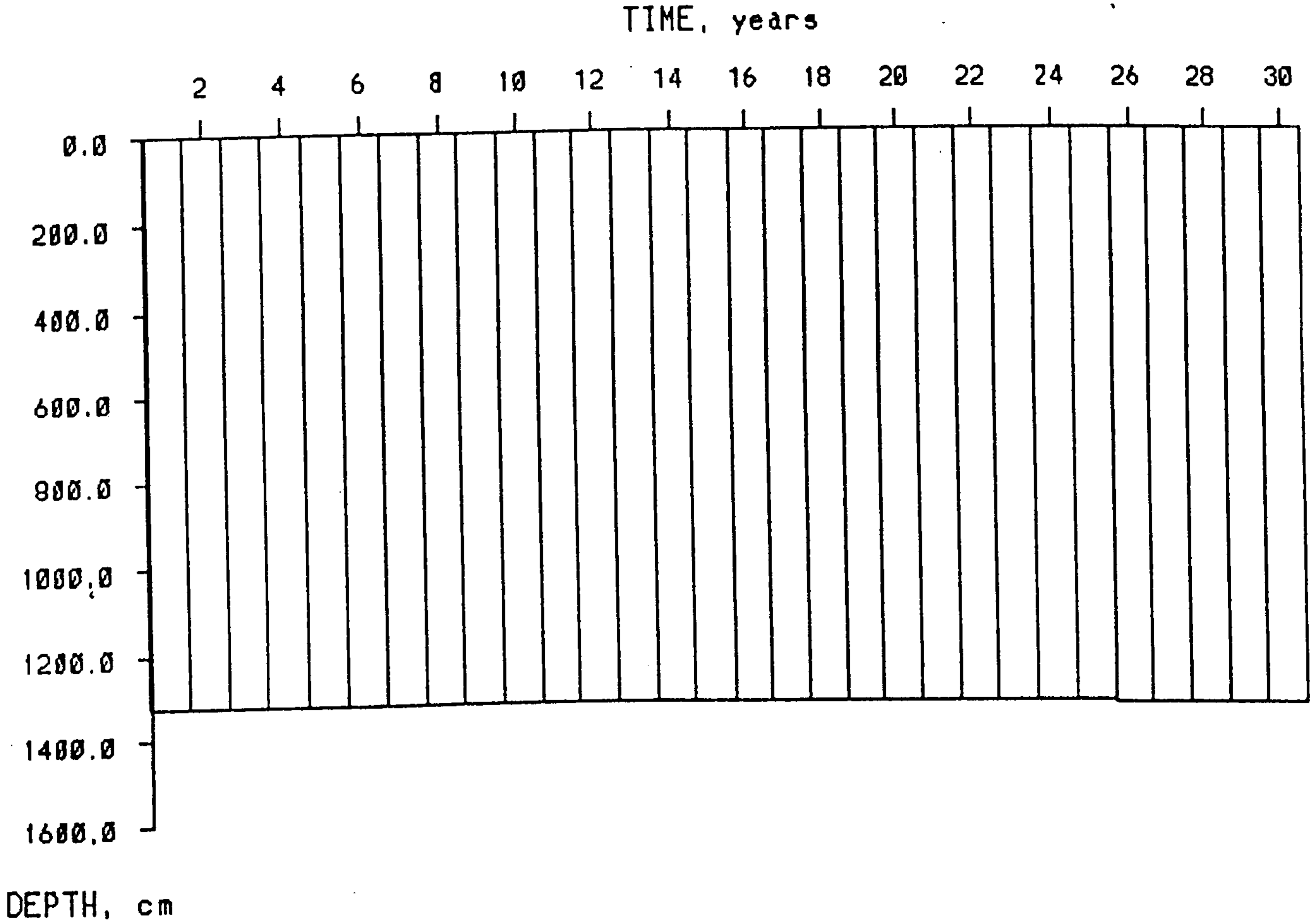


CONC. CORRESPONDS TO LEADING EDGE OF CONTAMINANT

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

FIG612.DWG 1-6-98 4:41:22 pm EST

# FIGURE 6.1.3
## BOWE SYSTEC, INC.
## BENZO (K) FLUORANTHENE SOIL TRANSPORT
## CONTAMINANT DEPTH VS. TIME



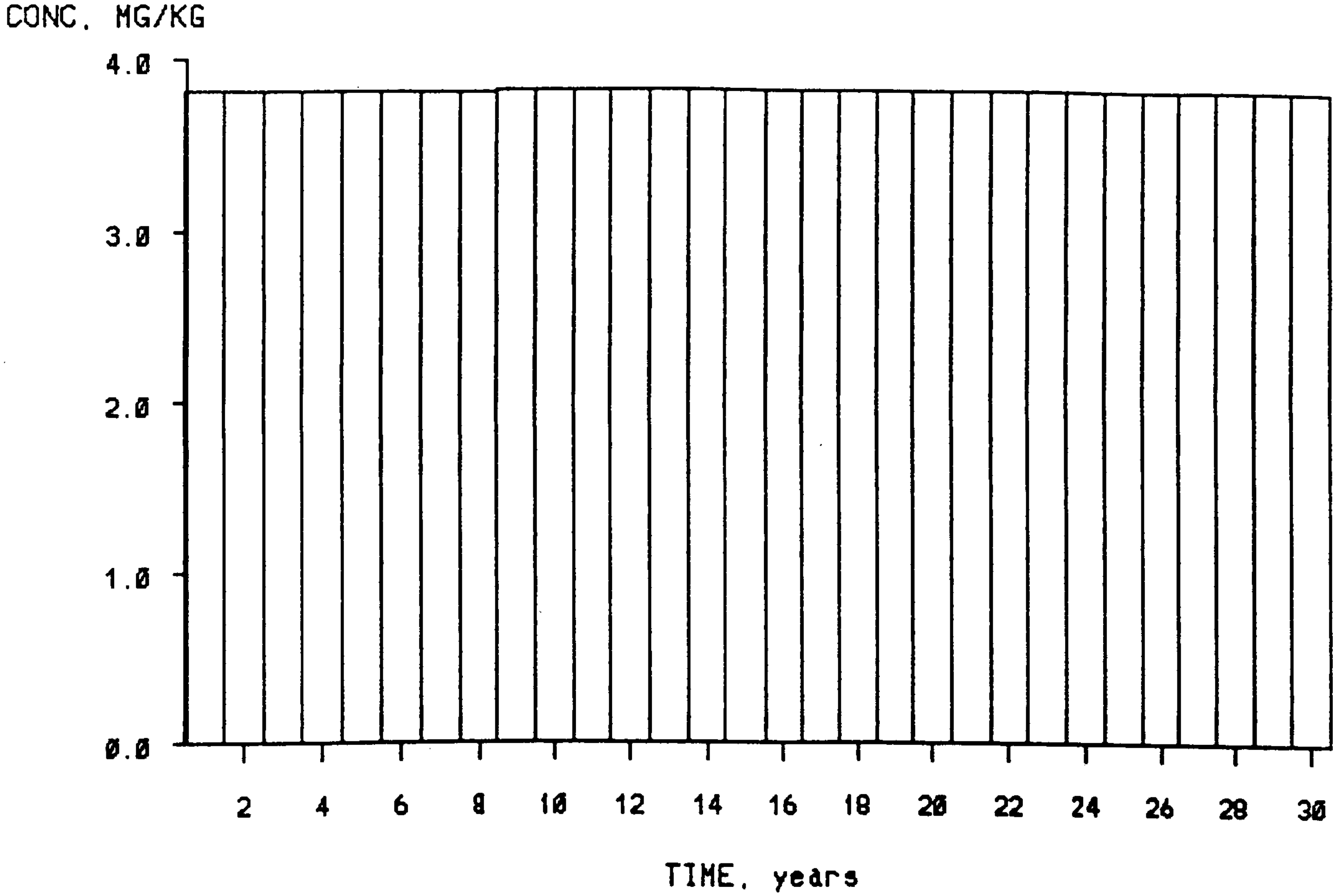
CONCENTRATION = LEADING EDGE OF CONTAMINANT

FIG613.DWG 1-13-98 2:59:16 pm EST

**H2MGROUP** ENGINEERS · ARCHITECTS · PLANNERS · SCIENTISTS · SURVEYORS

MELVILLE, N.Y. SHELTON, CT. TOTOWA, N.J.

# FIGURE 6.1.4
# BOWE SYSTEC, INC.
# BIS (2-ETHYLHEXYL) PHTHALATE SOIL TRANSPORT
# ABSORBED SOIL CONCENTRATION VS. TIME



(DEPTH CORRESPONDS TO 65 FT. BELOW GRADE - GROUNDWATER INTERFACE)

FIG614.DWG 1-6-98 6:00:50 pm EST

# FIGURES

# TABLE 9.5.2

## REMEDIAL ALTERNATIVES SCORING SUMMARY
## BOWE SYSTEC, INC.

|  | ***ALTERNATIVE 1A<br>PUMP AND TREAT<br>AIR STRIPPING*** | ***ALTERNATIVE 1B<br>PUMP AND TREAT<br>CARBON ADSORPTION*** | ***ALTERNATIVE 1C<br>PUMP AND TREAT<br>UV OXIDATION*** | ***ALTERNATIVE 2<br>IN-SITU AIR SPARGE<br>VAPOR EXTRACTION*** | ***ALTERNATIVE 3<br>NO FURTHER ACTION<br>MONITORING ONLY*** |
|---|---|---|---|---|---|
| COMPLIANCE WITH SCGs | 10 | 10 | 10 | 10 | 6 |
| PROTECTION OF HUMAN HEALTH AND ENVIRONMENT | 20 | 20 | 20 | 20 | 18 |
| SHORT-TERM EFFECTIVENESS | 10 | 10 | 10 | 10 | 10 |
| LONG-TERM EFFECTIVENESS | 14 | 14 | 14 | 15 | 12 |
| REDUCTION OF TOXICITY, MOBILITY AND VOLUME | 11 | 11 | 11 | 11 | 7 |
| IMPLEMENTABILITY | 14 | 14 | 14 | 14 | 12 |
| COST | 4.7 | 3.7 | 2.6 | 8.4 | 51.1 |
| TOTAL SCORE | 83.7 | 82.7 | 81.6 | 88.4 | 116.1 |

## TABLE 9.5.1 CONT'D

## EVALUATION OF REMEDIAL ACTION ALTERNATIVES
## BOWE SYSTEC, INC.

| *EVALUATION CRITERIA* | *ALTERNATIVE 1A PUMP AND TREAT AIR STRIPPING* | *ALTERNATIVE 1B PUMP AND TREAT CARBON ADSORPTION* | *ALTERNATIVE 1C PUMP AND TREAT UV OXIDATION* | *ALTERNATIVE 2 IN-SITU TREATMENT AIR SPARGE/VAPOR EXTRACTION* | *ALTERNATIVE 3 NO FURTHER ACTION* |
|---|---|---|---|---|---|
| **Long-Term Effectiveness and Permanence** | | | | | |
| | Provides for added level of protection to public health beyond that which is already within EPA accetable guidelines. | Provides for added level of protection to public health beyond that which is already within EPA accetable guidelines. | Provides for added level of protection to public health beyond that which is already within EPA accetable guidelines. | Provides for added level of protection to public health beyond that which is already within EPA accetable guidelines. | The magnitude of risk to the public from ingestion of groundwater fis within EPA acceptable risk guidelines. This alternative is protective of human health, and therefore, meets the remedial action objective. |
| **Reduction of Toxicity, Mobility and Volume of Contaminants** | | | | | |
| Volume of Hazardous Waste Destroyed or Treated | Capture at treat up to 80% of on-site plume with 2 15-20 gpm recovery wells. | Capture at treat up to 80% of on-site plume with 2 15-20 gpm recovery wells. | Capture at treat up to 80% of on-site plume with 2 15-20 gpm recovery wells. | Treat up to 80% of on-site plume. | None. |
| Degree of Expected Reductions in Toxicity, Mobility and Volume | Greater than 95% | Greater than 95% | Greater than 95% | Greater than 95% | None. |
| Degree of Irreversibility | Irreversible | Irreversible | Irreversible | Irreversible | Not applicable. |
| Type and Quantity of Residuals Remaining | Trace levels of PCE less than Class GA Water Quality Standards | Trace levels of PCE less than Class GA Water Quality Standards | Trace levels of PCE less than Class GA Water Quality Standards | Trace levels of PCE less than Class GA Water Quality Standards | Not applicable. |
| **Implementability** | | | | | |
| Ability to Construct and Operate | Readily installed, low O&M requirements. | Readily installed. Requires periodic replacement of carbon. | Readily installed, high electrical demand, sensitive to water quality. | Readily installed, low O&M requirements. | Not applicable. |
| Ability to Monitor Effectivenes | Sampling of influent and effluent to monitor system performance. Groundwater monitoring. | Frequent sampling of effluent required to monitor for carbon breakthrough. Groundwater monitoring. | Sampling of influent and effluent to monitor system performance. Groundwater monitoring. | Sampling of vapor stream to monitor system performance. Groundwater monitoring. | Groundwater monitoring to detect and track changes in groundwater quality. |
| Availability of Materials | Readily available | Readily available | UV oxidation is an innovative technology, number of equipment vendors may be limited. | Readily available. | Not applicable. |
| Permits and Approvals | Requires SPDES, well and air permits. | Requires SPDES and well permits. | Requires SPDES and well permits. | Requires air emission permit. | Not applicable. |
| **COST** | | | | | |
| Capital Cost | $175,925 | $196,075 | $334,025 | $137,020 | Not applicable |
| Annual O&M Cost (10 yrs.) | $93,690 | $123,200 | $166,340 | $47,190 | $10,750 |
| Present Worth | $899,370 | $1,147,390 | $1,618,450 | $501,410 | $83,010 |

## TABLE 9.5.1

### EVALUATION OF REMEDIAL ACTION ALTERNATIVES
### BOWE SYSTEC, INC.

| *EVALUATION CRITERIA* | *ALTERNATIVE 1A PUMP AND TREAT AIR STRIPPING* | *ALTERNATIVE 1B PUMP AND TREAT CARBON ADSORPTION* | *ALTERNATIVE 1C PUMP AND TREAT UV OXIDATION* | *ALTERNATIVE 2 IN-SITU TREATMENT AIR SPARGE/VAPOR EXTRACTION* | *ALTERNATIVE 3 NO FURTHER ACTION (MONITORING ONLY)* |
|---|---|---|---|---|---|
| **Compliance with NYS Standards, Criteria and Guidelines** | | | | | |
| Chemical Specific ARARs | Groundwater treatment would achieve ARARs. (Treated groundwater would meet Class GA Water Quality Standards). | Groundwater treatment would achieve ARARs. (Treated groundwater would meet Class GA Water Quality Standards). | Groundwater treatment would achieve ARARs. (Treated groundwater would meet Class GA Water Quality Standards). | Groundwater treatment would achieve ARARs. (Treated groundwater would meet Class GA Water Quality Standards). | PCE would continue to exceed Class GA Water Quality Standards in the on-site, and to a lesser degree, off-site groundwater. |
| Action-Specific ARARs | Would meet action-specific ARARs. | Would meet action-specific ARARs. | Would meet action-specific ARARs. | Not applicable | Not applicable |
| Location-Specific ARARs | Not applicable | Not applicable | Not applicable | Not applicable | Not applicable |
| **Overall Protection of Human Health and the Environment** | Protective of human health since this alternative provides for added level of risk protection beyond a level already considered protective by EPA. Prevents further migration of PCE in groundwater. | Protective of human health since this alternative provides for added level of risk protection beyond a level already considered protective by EPA. Prevents further migration of PCE in groundwater. | Protective of human health since this alternative provides for added level of risk protection beyond a level already considered protective by EPA. Prevents further migration of PCE in groundwater. | Protective of human health since this alternative provides for added level of risk protection beyond a level already considered protective by EPA. Prevents further migration of PCE in groundwater. | Exposure via groundwater ingestion is within EPA risk guidelines. PCE will continue to undergo natural biodegradation, dilution and attenuation. |
| **Short-Term Effectiveness** | | | | | |
| Protection of Workers | Construction activities would not be disruptive to the community. Health risks to workers would be minimal. | Construction activities would not be disruptive to the community. Health risks to workers would be minimal. | Construction activities would not be disruptive to the community. Health risks to workers would be minimal. | Construction activities would not be disruptive to the community. Health risks to workers would be minimal. | There would be no construction acitivities to disrupt the community. Health rsisks to workers during monitoring would be minimal. |
| Protection of the Environment | Would prevent further migration of PCE plume. | Would prevent further migration of PCE plume. | Would prevent further migration of PCE plume. | Would prevent further migration of PCE plume. | PCE in groundwater will continue to undergo natural dilution, biodegradation and attenuation. |

# TABLE 9.4.3
# COST ANALYSIS
# ALTERNATIVE 3 - NO FURTHER ACTION
# BOWE SYSTEC, INC.

## ANNUAL OPERATING COSTS:

| | |
|---|---|
| Groundwater Monitoring | $10,750 |
| **Total Estimated Annual Operating Cost** | **$10,750** |
| **Present Worth (10 yrs., 5%)** | **$83,010** |

# TABLE 9.4.2
# COST ANALYSIS
# ALTERNATIVE 2 - IN-SITU AIR SPARGE/VAPOR EXTRACTION
# BOWE SYSTEC, INC.

## CAPITAL & INSTALLATION COSTS:

| | Unit Cost | Quantity | Cost |
|---|---|---|---|
| **Extraction** | | | |
| Air Sparge Wells | $2,000 | 6 | $12,000 |
| Vapor Extraction Wells | $4,000 | 4 | $16,000 |
| Transmission Piping | $35/ft. | 400 ft. | $14,000 |
| | | | $42,000 |
| **Treatment** | | | |
| Eqpt. Housing | $10,000 | 1 | $10,000 |
| Vacuum Blower | $3,600 | 1 | $3,600 |
| Air Compressor | $2,800 | 1 | $2,800 |
| Power Source | $8,000 | 1 | $8,000 |
| Process Piping & Valves | $16,000 | 1 | $16,000 |
| System Controls | $6,000 | 1 | $6,000 |
| | | | $46,400 |
| Sub Total | | | $88,400 |
| Contingency (20%) | | | $17,680 |
| Engineering (15%) | | | $13,260 |
| Admin./Constr. Mgmt. | | | $17,680 |
| **Total Estimated Capital Cost** | | | **$137,020** |

## ANNUAL OPERATING COSTS:

| | |
|---|---|
| Electricity | $5,000 |
| Maintenance-Materials | $4,000 |
| System Monitoring | $12,620 |
| Groundwater Monitoring | $10,750 |
| System Operator | $14,820 |
| **Total Estimated Annual Operating Cost** | **$47,190** |
| **Present Worth (10 yrs., 5%)** | **$501,410** |

# TABLE 9.4.1C
# COST ANALYSIS
# ALTERNATIVE 1C - PUMP & TREAT/U V OXIDATION
# BOWE SYSTEC, INC.

## CAPITAL & INSTALLATION COSTS:

| | Unit Cost | Quantity | Cost |
|---|---|---|---|
| **Extraction** | | | |
| Extraction Wells | $5,000 | 2 | $10,000 |
| Pump System | $8,000 | 2 | $16,000 |
| Transmission Piping | $20/ft. | 400 ft. | $8,000 |
| | | | $34,000 |
| **Treatment** | | | |
| Eqpt. Housing | $20,000 | 1 | $20,000 |
| U V Oxidation Unit | $97,000 | 1 | $97,000 |
| Power Source | $10,000 | 1 | $10,000 |
| Process Piping & Valves | $15,000 | 1 | $15,000 |
| System Controls | $15,000 | 1 | $15,000 |
| | | | $157,000 |
| **Recharge** | | | |
| Leaching Pools | $2,000 | 6 | $12,000 |
| Drainage Piping | $25/ft. | 500 ft. | $12,500 |
| | | | $24,500 |
| Sub Total | | | $215,500 |
| Contingency (20%) | | | $43,100 |
| Engineering (15%) | | | $32,325 |
| Admin./Constr. Mgmt. (20%) | | | $43,100 |
| **Total Estimated Capital Cost** | | | **$334,025** |

## ANNUAL OPERATING COSTS:

| | |
|---|---|
| Electricity | $50,750 |
| Treatment Chemicals | $5,000 |
| Maintenance-Materials | $8,000 |
| System Monitoring | $25,800 |
| Groundwater Monitoring | $10,750 |
| System Operation | $66,040 |
| **Total Estimated Annual Operating Cost** | **$166,340** |
| **Present Worth (10 yrs., 5%)** | **$1,618,450** |

# TABLE 9.4.1B
# COST ANALYSIS
# ALTERNATIVE 1B - PUMP & TREAT/CARBON ADSORPTION
# BOWE SYSTEC, INC.

## CAPITAL & INSTALLATION COSTS:

| | Unit Cost | Quantity | Cost |
|---|---|---|---|
| **Extraction** | | | |
| Extraction Wells | $5,000 | 2 | $10,000 |
| Pump System | $8,000 | 2 | $16,000 |
| Transmission Piping | $20/ft. | 400 ft. | $8,000 |
| | | | $34,000 |
| **Treatment** | | | |
| Eqpt. Foundation | $10,000 | 1 | $10,000 |
| Carbon Unit | $6,500 | 3 | $19,500 |
| Power Source | $8,000 | 1 | $8,000 |
| Process Piping & Valves | $15,000 | 1 | $18,000 |
| System Controls | $12,500 | 1 | $12,500 |
| | | | $68,000 |
| **Recharge** | | | |
| Leaching Pools | $2,000 | 6 | $12,000 |
| Drainage Piping | $25/ft. | 500 ft. | $12,500 |
| | | | $24,500 |
| Sub Total | | | $126,500 |
| Contingency (20%) | | | $25,300 |
| Engineering (15%) | | | $18,975 |
| Admin./Constr. Mgmt. (20%) | | | $25,300 |
| **Total Estimated Capital Cost** | | | **$196,075** |
| Electricity | | | $15,000 |
| Carbon Replacement | | | $18,000 |
| Maintenance-Materials | | | $7,000 |
| System Monitoring | | | $28,250 |
| Groundwater Monitoring | | | $10,750 |
| System Operation | | | $44,200 |
| **Total Estimated Annual Operating Cost** | | | **$123,200** |
| **Present Worth (15 yrs., 5%)** | | | **$1,147,390** |

# TABLE 9.4.1A
# COST ANALYSIS
# ALTERNATIVE 1A - PUMP & TREAT/AIR STRIPPING
# BOWE SYSTEC, INC.

## CAPITAL & INSTALLATION COSTS:

| | Unit Cost | Quantity | Cost |
|---|---|---|---|
| **Extraction** | | | |
| Extraction Wells | $5,000 | 2 | $10,000 |
| Pump System | $8,000 | 2 | $16,000 |
| Transmission Piping | $20/ft. | 400 ft. | $8,000 |
| | | | $34,000 |
| **Treatment** | | | |
| Eqpt. Foundation | $4,000 | 1 | $4,000 |
| Air Stripping Unit | $25,000 | 1 | $25,000 |
| Power Source | $8,000 | 1 | $8,000 |
| Process Piping & Valves | $10,000 | 1 | $6,000 |
| System Controls | $12,500 | 1 | $12,000 |
| | | | $55,000 |
| **Recharge** | | | |
| Leaching Pools | $2,000 | 6 | $12,000 |
| Drainage Piping | $25/ft. | 500 ft. | $12,500 |
| | | | $24,500 |
| Sub Total | | | $113,500 |
| Contingency (20%) | | | $22,700 |
| Engineering (15%) | | | $17,025 |
| Admin./Constr. Mgmt. (20%) | | | $22,700 |
| **Total Estimated Capital Cost** | | | **$175,925** |

## ANNUAL OPERATING COSTS:

| | |
|---|---|
| Electricity | $22,500 |
| Maintenance-Materials | $5,000 |
| System Monitoring | $25,800 |
| Groundwater Monitoring | $10,750 |
| System Operation | $29,640 |
| **Total Estimated Annual Operating Cost** | **$93,690** |
| **Present Worth (10 yrs., 5%)** | **$899,370** |

## TABLE 9.3

## TECHNOLOGY AND PROCESS OPTIONS FOR GROUNDWATER REMEDIATION
PRELIMINARY ANALYSIS OF ALTERNATIVES
BOWE SYSTEC, INC.

| ALTERNATIVE | REMEDIAL TECHNOLOGY | PROCESS OPTIONS | RETAIN OR ELIMINATE |
|---|---|---|---|
| CONTAINMENT | SLURRY WALLS | - | ELIMINATE |
| | SHEET PILING | - | ELIMINATE |
| IN-SITU TREATMENT | BIOLOGICAL | - | ELIMINATE |
| | CHEMICAL | - | ELIMINATE |
| | PHYSICAL | AIR SPARGING/VAPOR EXTRACTION | RETAIN |
| COLLECTION & TREATMENT | BIOLOGICAL | ACTIVIATED SLUDGE | ELIMINATE |
| | | TRICKLING FILTERS | ELIMINATE |
| | | ROTATING CONTACTORS | ELIMINATE |
| | CHEMICAL | OXIDATION-REDUCTION | ELIMINATE |
| | | CHEMICAL PRECIPITATION | ELIMINATE |
| | | UV OXIDATION | RETAIN |
| | PHYSICAL | REVERSE OSMOSIS | ELIMINATE |
| | | SEDIMENTATION | ELIMINATE |
| | | ION EXCHANGE | ELIMINATE |
| | | CARBON ADSORPTION | RETAIN |
| | | AIR STRIPPING | RETAIN |
| NO FURTHER ACTION | GROUNDWATER MONITORING | - | RETAIN |

# TABLE 7.5.1.2.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# RISK CHARACTERIZATION FOR THE GROUNDWATER DERMAL CONTACT PATHWAY

## SUB-CHRONIC RISKS:

| *Chemical Name* | *SDI (mg/kg-day)* | *RfD (mg/kg-day)* | *Hazard Quotient* | *Pathway Hazard Index* |
|---|---|---|---|---|
| Tetrachloroethene | 4.9E-05 | 2.0E-02 | 2.4E-03 | |
| Trichloroethene | 1.6E-06 | 2.0E-03 | 6.0E-04 | |
| Benzo(a)Pyrene | 1.2E-06 | 2.0E-05 | 6.0E-02 | |
| Benzo(k)Fluoranthene | 1.2E-06 | 2.0E-05 | 6.0E-02 | |
| Bis(2-ethylhexyl)Phthalate | 9.1E-06 | 4.0E-03 | 2.3E-03 | |
| | | | | 1.2E-01 |

## CHRONIC RISKS:

| *Chemical Name* | *CDI (mg/kg-day)* | *RfD (mg/kg-day)* | *Hazard Quotient* | *Pathway Hazard Index* |
|---|---|---|---|---|
| Tetrachloroethene | 9.3E-06 | 2.0E-03 | 4.6E-03 | |
| Trichloroethene | 3.0E-07 | 2.0E-04 | 1.5E-03 | |
| Benzo(a)Pyrene | 2.2E-07 | 2.0E-05 | 1.1E-02 | |
| Benzo(k)Fluoranthene | 2.2E-07 | 2.0E-05 | 1.1E-02 | |
| Bis(2-ethylhexyl)Phthalate | 1.7E-06 | 4.0E-03 | 4.2E-04 | |
| | | | | 2.8E-2 |

## CARCINOGENIC RISKS:

| *Chemical Name* | *CDI (mg/kg-day)* | *Slope Factor 1/(mg/kg-day)* | *Chemical Risk* | *Total Pathway Index* |
|---|---|---|---|---|
| Tetrachloroethene | 9.3E-06 | 2.6E-01 | 2.4E-06 | |
| Trichloroethene | 3.0E-07 | 5.5E-02 | 1.6E-08 | |
| Benzo(a)Pyrene | 2.2E-07 | E.6E+01 | 7.9E-06 | |
| Benzo(k)Fluoranthene | 2.2E-07 | 3.6E+01 | 7.9E-06 | |
| Bis(2-ethylhexyl)Phthalate | 1.7E-06 | 7.0E-02 | 1.2E-07 | |
| | | | | 1.8E-5 |

**NOTES:**

Sub-chronic daily intakes (SDIs) and chronic daily intakes (CDIs) calculated in Section 7.3.4.2.
Toxicity values used were derived as discussed in Sections 7.4.2 and 7.4.3.
Low-dose cancer risk equation was used to calculate carcinogenic risks.
Intakes and toxicity values were adjusted for adsorbtion where appropriate.
Exposures were assumed to be on site to ensure a conservative assessment of risks.

# TABLE 7.5.1.2.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# RISK CHARACTERIZATION FOR THE GROUNDWATER INGESTION PATHWAY

## SUB-CHRONIC RISKS:

| Chemical Name | SDI (mg/kg-day) | RfD (mg/kg-day) | Hazard Quotient | Pathway Hazard Index |
|---|---|---|---|---|
| Tetrachloroethene | 1.2E-02 | 1.0E01 | 1.2E-01 | |
| Trichloroethene | 3.9E-04 | 1.0E-02 | 3.9E-02 | |
| Benzo(a)Pyrene | 2.8E-04 | 1.0E-04 | 2.8E+00 | |
| Benzo(k)Fluoranthene | 2.8E-04 | 1.0E-04 | 2.8E+00 | |
| Bis(2-ethylhexyl)Phthalate | 2.2E-03 | 2.0E-02 | 1.1E-01 | |
| | | | | 5.9E+00 |

## CHRONIC RISKS:

| Chemical Name | CDI (mg/kg-day) | RfD (mg/kg-day) | Hazard Quotient | Pathway Hazard Index |
|---|---|---|---|---|
| Tetrachloroethene | 2.3E-03 | 1.0E-02 | 2.3E-01 | |
| Trichloroethene | 7.5E-05 | 1.0E-03 | 7.5E-02 | |
| Benzo(a)Pyrene | 5.3E-05 | 1.0E-04 | 5.3E-01 | |
| Benzo(k)Fluoranthene | 5.3E-05 | 1.0E-04 | 5.3E-01 | |
| Bis(2-ethylhexyl)Phthalate | 4.2E-04 | 2.0E-02 | 2.1E-02 | |
| | | | | 1.4E+00 |

## CARCINOGENIC RISKS:

| Chemical Name | CDI (mg/kg-day) | Slope Factor 1/(mg/kg-day) | Chemical Risk | Total Pathway Risk |
|---|---|---|---|---|
| Tetrachloroethene | 2.3E-03 | 5.2E-02 | 1.2E-04 | |
| Trichloroethene | 7.5E-05 | 1.1E-02 | 8.3E-07 | |
| Benzo(a)Pyrene | 5.3E-05 | 7.3E+00 | 3.9E-04 | |
| Benzo(k)Fluoranthene | 5.3E-05 | 7.3E+00 | 3.9E-04 | |
| Bis(2-ethylhexyl)Phthalate | 4.2E-04 | 1.4E-02 | 5.9E-06 | |
| | | | | 9.1E-04 |

**NOTES:**

Sub-chronic daily intakes (SDIs) and chronic daily intakes (CDIs) calculated in Section 7.3.4.2.
Toxicity values used were derived as discussed in Sections 7.4.2 and 7.4.3.
Low-dose cancer risk equation was used to calculate carcinogenic risks.
Intakes and toxicity values were adjusted for adsorbtion where appropriate.
Exposures were assumed to be on site to ensure a conservative assessment of risks.

# TABLE 7.5.1.1.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# RISK CHARACTERIZATION FOR THE SOIL DERMAL CONTACT PATHWAY

## SUB-CHRONIC RISKS:

| Chemical Name | SDI (mg/kg-day) | RfD (mg/kg-day) | Hazard Quotient | Pathway Hazard Index |
|---|---|---|---|---|
| Tetrachloroethene | 5.9E-06 | 2.0E-02 | 3.0E-04 | |
| Trichloroethene | 1.2E-06 | 2.0E-03 | 6.0E-04 | |
| Benzo(a)Pyrene | 4.2E-05 | 2.0E-05 | 2.1E+00 | |
| Benzo(k)Fluoranthene | 4.4E-05 | 2.0E-05 | 2.2E+00 | |
| Bis(2-ethylhexyl)Phthalate | 3.5E-04 | 4.0E-03 | 8.8E-02 | |
| | | | | 4.4E+00 |

## CHRONIC RISKS:

| Chemical Name | CDI (mg/kg-day) | RfD (mg/kg-day) | Hazard Quotient | Pathway Hazard Index |
|---|---|---|---|---|
| Tetrachloroethene | 5.9E-06 | 2.0E-03 | 3.0E-03 | |
| Trichloroethene | 1.2E-06 | 2.0E-04 | 6.0E-03 | |
| Benzo(a)Pyrene | 4.2E-05 | 2.0E-05 | 2.1E+00 | |
| Benzo(k)Fluoranthene | 4.4E-05 | 2.0E-05 | 2.2E+00 | |
| Bis(2-ethylhexyl)Phthalate | 3.5E-04 | 4.0E-03 | 8.8E-02 | |
| | | | | 4.4E+00 |

## CARCINOGENIC RISKS:

| Chemical Name | CDI (mg/kg-day) | Slope Factor 1/(mg/kg-day) | Chemical Risk | Total Pathway Risk |
|---|---|---|---|---|
| Tetrachloroethene | 5.9E-06 | 2.6E-01 | 1.5E-06 | |
| Trichloroethene | 1.2E-06 | 5.5E-02 | 6.6E-08 | |
| Benzo(a)Pyrene | 4.2E-05 | 3.6E+01 | 1.5E-03 | |
| Benzo(k)Fluoranthene | 4.4E-05 | 3.6E+01 | 1.6E-03 | |
| Bis(2-ethylhexyl)Phthalate | 3.5E-04 | 7.0E-02 | 2.4E-05 | |
| | | | | 3.1E-03 |

**NOTES:**

Sub-chronic daily intakes (SDIs) and chronic daily intakes (CDIs) calculated in Section 7.3.4.1.
Toxicity values used were derived as discussed in Sections 7.4.2 and 7.4.3.
Low-dose cancer risk equation was used to calculate carcinogenic risks.
Intakes and toxicity values were adjusted for adsorbtion where appropriate.
Exposures were assumed to be on site to ensure a conservative assessment of risks.

# TABLE 7.5.1.1.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# RISK CHARACTERIZATION FOR THE SOIL INGESTION PATHWAY

**SUB-CHRONIC RISKS:**

| Chemical Name | SDI (mg/kg-day) | RfD (mg/kg-day) | Hazard Quotient | Pathway Hazard Index |
|---|---|---|---|---|
| Tetrachloroethene | 3.9E-08 | 1.0E-01 | 3.9E-07 | |
| Trichloroethene | 7.9E-09 | 1.0E-02 | 7.9E-07 | |
| Benzo(a)Pyrene | 2.7E-07 | 1.0E-04 | 2.7E-03 | |
| Benzo(k)Fluoranthene | 2.8E-07 | 1.0E-04 | 2.8E-03 | |
| Bis(2-ethylhexyl)Phthalate | 2.3E-06 | 2.0E-02 | 1.2E-04 | |
| | | | | 5.6E-03 |

**CHRONIC RISKS:**

| Chemical Name | CDI (mg/kg-day) | RfD (mg/kg-day) | Hazard Quotient | Pathway Hazard Index |
|---|---|---|---|---|
| Tetrachloroethene | 3.9E-08 | 1.0E-02 | 3.9E-06 | |
| Trichloroethene | 7.9E-09 | 1.0E-03 | 7.9E-06 | |
| Benzo(a)Pyrene | 2.7E-07 | 1.0E-04 | 2.7E-03 | |
| Benzo(k)Fluoranthene | 2.8E-07 | 1.0E-04 | 2.8E-03 | |
| Bis(2-ethylhexyl)Phthalate | 2.3E-06 | 2.0E-02 | 1.2E-04 | |
| | | | | 5.6E-03 |

**CARCINOGENIC RISKS:**

| Chemical Name | CDI (mg/kg-day) | Slope Factor 1/(mg/kg-day) | Chemical Risk | Total Pathway Risk |
|---|---|---|---|---|
| Tetrachloroethene | 3.9E-08 | 5.2E-02 | 2.0E-09 | |
| Trichloroethene | 7.9E-09 | 1.1E-02 | 8.73-11 | |
| Benzo(a)Pyrene | 2.7E-07 | 7.3E+00 | 2.0E-06 | |
| Benzo(k)Fluoranthene | 2.8E-07 | 7.3E+00 | 2.0E-06 | |
| Bis(2-ethylhexyl)Phthalate | 2.3E-06 | 1.4E-02 | 3.2E-08 | |
| | | | | 4.0E-06 |

**NOTES:**

Sub-chronic daily intakes (SDIs) and chronic daily intakes (CDIs) calculated in Section 7.3.4.1.
Toxicity values used were derived as discussed in Sections 7.4.2 and 7.4.3.
Low-dose cancer risk equation was used to calculate carcinogenic risks.
Intakes and toxicity values were adjusted for adsorbtion where appropriate.
Exposures were assumed to be on site to ensure a conservative assessment of risks.

## TABLE 7.4.3.2
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## SUMMARY OF CARCINOGENIC TOXICITY VALUES

| ***CONTAMINANT NAME*** | ***SLOPE FACTORS*** | | | ***UNIT RISKS*** | |
|---|---|---|---|---|---|
| | ***ORAL*** *per (mg/kg-day)* | ***DERMAL*** *per (mg/kg-day)* | ***INHALATION*** *per (mg/kg-day)* | ***DRINKING WATER*** *per (ug/l)* | ***INHALATION*** *per (ug/m3)* |
| Tetrachloroethene | 5.20E-02 | 2.60E-01 | 2.00E-03 | 1.50E-06 | Not Available |
| Trichloroethene | 1.10E-02 | 5.50E-02 | 6.00E-03 | 3.20E-7 | Not Available |
| Benzo(a)Pyrene | 7.30E+00 | 3.65E+01 | 2.1E+00 | 2.10E-04 | Not Available |
| Benzo(k)Fluoranthene | 7.30E+00 | 3.65E+01 | 2.10E+00 | 2.10E-04 | Not Available |
| Bis(2-ethylhexyl)Phthalate | 1.40E-02 | 7.00E-02 | Not Available | 4.00E-07 | Not Available |

**NOTES:**

See text for description of determination of oral and inhalation slope factors.
Dermal slope factor calculated assuming a 20% oral adsorption efficiency.

# TABLE 7.4.3.1
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# EPA WEIGHT OF EVIDENCE SYSTEM FOR CARCINOGENICITY

| *WEIGHT OF EVIDENCE GROUP* | *DESCRIPTION* |
|---|---|
| A | Human Carcinogen |
| B1 | Probable Human Carcinogen - limited human data available |
| B2 | Probable Human Carcinogen - sufficient evidence in animals, inadequate or no evidence in humans |
| C | Possible Human Carcinogen |
| D | Not classifiable as to human carinogenicity |
| E | Evidence of non-carcinogenicity in humans |

# TABLE 7.4.2
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SUMMARY OF NON-CARCINOGENIC TOXICITY VALUES

| *CONTAMINANT NAME* | *SUB-CHRONIC EFFECTS* | | | *CHRONIC EFFECTS* | | |
|---|---|---|---|---|---|---|
| | *ORAL RfD (mg/kg-day)* | *DERMAL RfD (mg/kg-day)* | *INHAL. RfC (ug/cubic meter)* | *ORAL RfD (mg/kg-day)* | *DERMAL RfD (mg/kg-day)* | *INHAL. RfC (ug/cubic meter)* |
| Tetrachloroethene | 1.00E-01 | 2.00E-02 | Not Available | 1.00E-02 | 2.00E-03 | Not Available |
| Trichloroethene | 1.00E-02 | 2.00E-03 | Not Available | 1.00E-03 | 2.00E-04 | Not Available |
| Benzo(a)Pyrene | 1.00E-04 | 2.00E-05 | Not Available | 1.00E-04 | 2.00E-05 | Not Available |
| Benzo(k)Fluoranthene | 1.00E-04 | 2.00E-05 | Not Available | 1.00E-04 | 2.00E-05 | Not Available |
| Bis(2-ethylhexyl)Phthalate | 2.00E-02 | 4.00E-03 | Not Available | 2.00E-02 | 4.00E-03 | Not Available |

**NOTES:**

Chronic oral RfDs from IRIS except Benzo(a)pyrene and Benzo(k)fluoranthene from NYSDOH AACD.
Sub-chronic oral RfDs derived from chronic oral RfDs in IRIS except Tetrachloroethene obtained directly from HEAST.
Trichloroethene toxicity values derived from Terachloroethene values, see text for discussion.
Dermal RfDs estimated from oral RfDs assuming a 20% oral absorption efficiency.
Inhalation RfCs from NYSDOH AACDs - see text for discussion.

# TABLE 7.3.4.3
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# CARCINOGENIC/CHRONIC INHALATION OF CHEMICALS

| *CHEMICAL* | *CHEMICAL CONC. (MG/M3)* [1] | *INHALATION RATE (M3/HR)* [2] | *EXPOSURE TIME (HR/DAY)* [3] | *EXPOSURE FREQ. (DAY/YR)* [4] | *EXPOSURE DURATION (YRS)* [5] | *BODY WT. (KG)* [6] | *CHEMICAL INTAKE (MG/KG-DAY)* |
|---|---|---|---|---|---|---|---|
| Tetrachloroethene | 2.56E-10 | 30 | 24 | 365 | 70 | 70 | 1.10E-10 |
| Trichloroethene | 1.74E-11 | 30 | 24 | 365 | 70 | 70 | 7.46E-12 |
| Benzo(a)Pyrene | 6.98E-21 | 30 | 24 | 365 | 70 | 70 | 2.99E-21 |
| Benzo(k)Fluoranthene | 6.14E-16 | 30 | 24 | 365 | 70 | 70 | 2.63E-16 |
| Bis(2-ethylhexyl)Phthalate | 1.19E-16 | 30 | 24 | 365 | 70 | 70 | 5.10E-17 |

**NOTES:**

1 - Based on maximum concentrations from ISCLT model (assumed constant over time)
2 - 30 m3/hr (EPA recommended value for adults, upper bound, EPA 1989b)
3 - Assumed 24 hr/day exposure (worst case assumption)
4 - Assumed 365 days per year exposure is possible (worst case assumption)
5 - Carcinogenic exposure based on 70 years.
6 - Weight of an average adult (realistic assumption accepted by EPA 1989a)

# TABLE 7.3.4.2.4
## BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
## CARCINOGENIC/CHRONIC DERMAL CONTACT WITH GROUNDWATER

| CHEMICAL | CHEMICAL CONC. (MG/L) [1] | SKIN AREA FOR CONTACT CM2/EVENT) [2] | DERMAL PERMEABILITY (CM/HR) [3] | EXPOSURE TIME (HR/DAY) [4] | EXPOSURE FREQUENCY (DAY/YR) [5] | EXPOSURE DURATION (YRS) [6] | BODY WT. (KG) [7] | CHEMICAL INTAKE (MG/KG-DAY) |
|---|---|---|---|---|---|---|---|---|
| Tetrachloroethene | 8.00E-02 | 19400 | 0.00084 | 0.5 | 365 | 70 | 70 | 9.31E-06 |
| Trichloroethene | 2.61E-03 | 19400 | 0.00084 | 0.5 | 365 | 70 | 70 | 3.04E-07 |
| Benzo(a)Pyrene | 1.85E-03 | 19400 | 0.00084 | 0.5 | 365 | 70 | 70 | 2.16E-07 |
| Benzo(k)Fluoranthene | 1.86E-03 | 19400 | 0.00084 | 0.5 | 365 | 70 | 70 | 2.16E-07 |
| Bis(2-ethylhexyl)Phthalate | 1.47E-02 | 19400 | 0.00084 | 0.5 | 365 | 70 | 70 | 1.71E-06 |

**NOTES:**

1 - 95% UCL on arithmetic average of maximum concentrations over 20 modeled years.
2 - Assumed exposed individual will be unclothed during showering, EPA 1989a.
3 - Assumed equivalent to water due to lack of chemical specific information, see text for discussion.
4 - Assumed 0.5 hr. day for showering and washing.
5 - Assumed 365 days per year exposure is possible (worst cast assumption)
6 - Sub-chronic exposure based on 4 years, Chronic and Carcinogenic exposure based on 70 years
7 - Weight of an average adult (realistic assumption accepted by EPA 1989a)

# TABLE 7.3.4.2.3
# BOWE SYSTEC, INC. REMEDIAL INVESTIGATION
# SUB-CHRONIC DERMAL CONTACT WITH GROUNDWATER

| CHEMICAL | CHEMICAL CONC. (MG/L) [1] | SKIN AREA FOR CONTACT CM2/EVENT) [2] | DERMAL PERMEABILITY (CM/HR)) [3] | EXPOSURE TIME (HR/DAY) [4] | EXPOSURE FREQUENCY DAY/YR) [5] | EXPOSURE DURATION (YRS) [6] | BODY WT. (KG) [7] | CHEMICAL INTAKE (MG/KG-DAY) |
|---|---|---|---|---|---|---|---|---|
| Tetrachloroethene | 4.24E-01 | 19400 | 0.00084 | 0.5 | 365 | 4 | 70 | 4.94E-05 |
| Trichloroethene | 1.38E-02 | 19400 | 0.00084 | 0.5 | 365 | 4 | 70 | 1.61E-06 |
| Benzo(a)Pyrene | 9.87E-03 | 19400 | 0.00084 | 0.5 | 365 | 4 | 70 | 1.15E-06 |
| Benzo(k)Fluoranthene | 9.87E-03 | 19400 | 0.00084 | 0.5 | 365 | 4 | 70 | 1.15E-06 |
| Bis(2-ethylhexyl)Phthalate | 7.80E-02 | 19400 | 0.00084 | 0.5 | 365 | 4 | 70 | 9.08E-06 |

**NOTES:**

1 - 95% UCL on arithmetic average of maximum concentrations for each modeled year
2 - Assumed exposed individual will be unclothed during showering, EPA 1989a
3 - Assumed equivalent to water due to lack of chemical specific information, see text for discussion.
4 - Assumed 0.5 hr. day for showering and washing.
5 - Assumed 365 days per year exposure is possible (worst cast assumption)
6 - Sub-chronic exposure based on 4 years, Chronic and Carcinogenic exposure based on 70 years
7 - Weight of an average adult (realistic assumption accepted by EPA 1989a)

# APPENDIX A
# SOIL BORING LOGS

PAGE 1 of 1 **H2M GEOLOGIC LOG** JOB NO. BowE92C1

Borehole Location: DW-1
Elevation: N/A Ref Point: N/A
Completion Depth: 25'
Logged by: msc Checked by:

Depth to Groundwater: Date: Time: Aquifer:

| Sample Depth | Sampl No. | Blows 6" | Hnu Res | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|
| 16'-18' | | 7/8 | 1.2 | 6" | Medium yellow, gravelly, poorly | GW |
| | | 10/12 | Back 1.0 | | sorted, medium to coarse | |
| | | | | | grained sand. | |
| | | | | | | |
| | | | | | | |
| 23'-25' | | 11/7 | 1.0 | 3" | Medium yellow, gravelly, poorly | GW |
| | | 4/3 | Back 1.0 | | sorted, medium to coarse | |
| | | | | | grained sand. | |

SIGNATURE: DATE:

[redacted]

PAGE 1 of 1 **H2M GEOLOGIC LOG** JOB NO. BowE 92C1

Borehole Location: DW-2
Elevation: N/A Ref Point: N/A
Completion Depth: 25'
Logged by: msc Checked by:

Depth to Groundwater: Date: Time: Aquifer:

| Sample Depth | Sampl No. | Blows 6" | Hnu Res | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|
| 14'-16' | | 7/7 | 0.8 | 6" | Medium yellow, gravelly, poorly | GW |
| | | 7/12 | Back 0.8 | | sorted, medium to coarse | |
| | | | | | grained sand. | |
| | | | | | | |
| | | | | | | |
| 23'-25' | | 12/11 | 0.8 | 1' | Medium yellow, gravelly, | GW |
| | | 15/16 | Back 0.8 | | poorly sorted, medium to | |
| | | | | | coarse grained sand | |

SIGNATURE: DATE:

[redacted]

PAGE 1 of 1 H2M GEOLOGIC LOG JOB NO. BowE92C1

Borehole Location: DW-3
Elevation: N/A Ref Point: N/A

Completion Depth: 25'
Logged by: msc Checked by:

Depth to Groundwater: Date: Time: Aquifer:

| Sample Depth | Sampl No. | Blows 6" | Hnu Res | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|
| 17'-19' | | 10/12 | 0.8 | 4" | First 1/4" asphalt. Dark | GW |
| | | 11/16 | Back 0.6 | | yellow, gravelly, poorly sorted, | |
| | | | | | medium to coarse grained | |
| | | | | | sand. Sample is moist. | |
| | | | | | | |
| | | | | | | |
| 23'-25' | | 17/21 | 0.9 | 1' | Medium yellow, gravelly, | GW |
| | | 23/19 | Back 0.6 | | poorly sorted, coarse to | |
| | | | | | medium grained sand. Moist. | |

SIGNATURE: DATE:

PAGE 1 of 1

# H2M GEOLOGIC LOG

JOB NO. BowE92C1

Borehole Location: DW-8
Elevation: N/A Ref Point: N/A

Completion Depth: 25'
Logged by: msc Checked by:

Depth to Groundwater: Date: Time: Aquifer:

| Sample Depth | Sampl No. | Blows 6" | Hnu Res | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|
| 10'-12' | | 30 total | 4.2 | 1.0' | Dark Brown, gravelly, poorly sorted | |
| | | | | | medium to coarse grained sand, | |
| | | | | | Moist. | |
| | | | | | | |
| | | | | | | |
| 23' to 25' | | 50 total | 1.0 | 6" | Medium Yellow, gravelly, poorly sorted | |
| | | | | | medium to coarse grained sand. | |
| | | | | | Moist. | |

SIGNATURE:

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PAGE 1 of 1

# H2M GEOLOGIC LOG

JOB NO. BowE 9201

Borehole Location: SB-2
Elevation: N/A Ref Point: N/A
Completion Depth: 10'
Logged by: CJF Checked by: ____

Depth to Groundwater: ____ Date: ________ Time: ____ Aquifer: ____________

| Sample Depth | Sampl No. | Blows 6" | Hnu Res | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|
| 2'-4' | | 15/15 | 0.2 | | loam, medium coarse, | SW |
| | | 10/8 | background<br>0.2 | | light brown sand and | |
| | | | | | gravel, trace silt | |
| | | | | | | |
| 8'-10' | | 8/8, | 0.2 | | medium coarse, light | SW |
| | | 11/13 | background<br>0.2 | | brown sand and gravel, | |
| | | | | | trace silt | |

SIGNATURE:

DATE:

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PAGE 1 of 1 **H2M GEOLOGIC LOG** JOB NO. BowE92C1

Borehole Location: SB-1
Elevation: N/A Ref Point: N/A
Completion Depth: 10'
Logged by: CJF Checked by:

Depth to Groundwater: ____ Date: 6/23/92 Time: ____ Aquifer: ____

| Sample Depth | Sampl No. | Blows 6" | Hnu Res | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|
| 2'-4' | | 6/6 | 0.2 | | loam, medium coarse, | SW |
| | | 8/3 | background 0.2 | | light brown sand and | |
| | | | | | gravel, trace silt | |
| | | | | | | |
| | | | | | | |
| 8'-10' | | 15/21 | 0.2 | | medium coarse, light | SW |
| | | 23/24 | background 0.2 | | brown sand and gravel, | |
| | | | | | trace silt | |
| | | | | | | |
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SIGNATURE: DATE:

H2M GEOLOGIC LOG JOB NO. Bowe 9203 03

WELL DATA: HOLE DIAM.: 8" TD 66.5' SCREEN SETTING: 51'-66' SLOT 0.010"
CASING DIAM. 4" LENGTH ____ WELL STATUS Complete

Borehole Location: MW-8
Contractor: Fenley & Nicol Environmental
Driller: Jimmy Omuletz
Elevation: ____ Ref Point: ____
Completion Depth: 67'
Date Started: 10/29/92 Finished: 11/2/92
Weather: P. Cloudy ~ 50°
Logged by: DWO Checked by: MNG

Type of Rig: Truck ✓ Trailer Mounted ___ Tripod ___ Other ___
Drilling Method: Hollow Stem Bit type: Carbide
Sampler Hammer Weight: 140 (lbs).
Average Hammer Fall (inches): 30 * 0.2 ppm Background - HNu

Depth to Groundwater: 56.08' Date: 11/2/92 Time: 0900 Aquifer: Upper Glacial

| Sample Depth | No | Blows 6" | Env Res | Color | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|---|
| 0-3" | - DRILL CUTTINGS — | | | | | Dk. brown-black Organic silt | OL |
| 3"-6" | | | | | | Asphalt base | - |
| 6"-1' | | | Back-ground | Dark brown | | Gravelly, well graded fine-med SAND w/ little silt | SW |
| 1'-3' | | | | Tan-Orange | | Well graded fine-med SAND w/ some gravel little silt and trace cobbles | SW |
| 3'-6' | | | Back-ground | Lt. brown | | Well graded GRAVEL with med. sand with little silt and trace cobbles | GW |
| 6'-9' | | | Back-ground | Brown | | Poorly graded GRAVEL with med. sand and little silt | GP |
| 9'-11' | | | Back-ground | Brown | | Poorly graded GRAVEL with little well graded sand and trace cobbles, silt | GP |
| 11'-13' | | | Back-ground | Brown | | Well graded GRAVEL with med.-course sand with little silt and cobbles | GW |
| 13'-16' | | | Back-ground | Lt. brown-orange | | Well graded fine-coarse SAND w/ some gravel, silt | SW |
| 16'-22' | | | Back-ground | Brown | | Well graded med.-coarse SAND w/ some gravel, silt | SW |
| 22'-30' | | | Back-ground | Orange-brown | | Gravelly (fine) well graded fine-coarse SAND w/ little silt | SW |
| 30'-35' | | | Back-ground | Tan-lt brown | | Well graded med.-coarse SAND w/ some gravel, little silt | SW |

SIGNATURE: David Obradovich DATE: 11/16/92

PAGE 2 of 2 **H2M GEOLOGIC LOG (CONTINUED)** JOB NO. BOWE9203

Borehole Location: MW-8 Completion Depth: 67'
Elevation: ____ Ref Point: ____ Logged by: DWO Checked by: ____

Depth to Groundwater: 56.08' Date: 11/2/92 Time: 0900 Aquifer: Upper Glacial

| Sample Depth | Sampl No. | Blows 6" | Hnu Res | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|
| 35'-40' | — | DRILL | CUTT | INGS — | Orange-lt. brown well graded fine-med. SAND w/ little silt and gravel | SW |
| | | | Back-ground | | trace cobbles; moist | |
| 40'-50' | | | Back-ground | | Lt. brown well graded fine-med. SAND w/ little silt and gravel, moist | SW |
| 50'-52' | ① | 13/15 | 0.3ppm Back- | 20 | 50'4"-51'6" Tan fine poorly graded SAND w/ little silt and trace | SM |
| | | 15/22 | ground 0.3 actual | | gravel, medium dense, v. moist 51'6"-52' Red - lt. brown poorly | SM |
| | | | | | graded fine SAND w/ some silt, medium dense, v. moist | |
| 52'-55' | — DRILL | CUTTINGS — | | | Lt. brown-orange well graded fine-coarse SAND w/ some silt trace | SW |
| | | | Back-ground | | gravel | |
| 55'-57' | ② | 4/4 | 0.3ppm Back- | | 55'6"-56'6" Tan well graded med SAND w/ some silt and trace | SW |
| | | 18/20 | ground 0.3 actual | 18 | gravel, loose, wet 56'6"-57' Tan well graded med- | SW |
| | | | | | coarse SAND w/ little silt and gravel, med. dense, wet | |
| 57'-67' | — DRILL | CUTTINGS — | | | Bright orange-brown well graded med- SAND w/ little gravel trace | SW |
| | | | Back-ground | | silt, wet | |
| | | | | | END OF BORING | |

SIGNATURE: David Obradovich DATE: 11/16/92

H2M GEOLOGIC LOG JOB NO. BOWE 920303

WELL DATA: HOLE DIAM.: 8" TD 67' SCREEN SETTING: 51'-66' SLOT 0.010"
CASING DIAM. 4" LENGTH 67' WELL STATUS Complete

Borehole Location: MW-9
Contractor: Fenley & Nicol Environmental
Driller: Jimmy Omuletz
Elevation: ______ Ref Point: ______

Completion Depth: 67'
Date Started: 10/30/92 Finished: 11/2/92
Weather: Cloudy ~45°
Logged by: DWO Checked by: MNG

Type of Rig: Truck ✓ Trailer Mounted ___ Tripod ___ Other ___
Drilling Method: Hollow Stem Bit type: Carbide
Sampler Hammer Weight: 140 (lbs).
Average Hammer Fall (inches): 30 *0.5 ppm Background - HNu

Depth to Groundwater: 56.61' Date: 11/2/92 Time: 1000 Aquifer: Upper Glacial

| Sample Depth | No | Blows 6" | Hnu Res | Color | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|---|
| 0-4" | — DRILL CUTTINGS — | | | | | DK. brown-black organic silt | OL |
| 4"-2' | | | Background | Brown | | Gravelly well graded med. SAND w/ little silt | SW |
| 2'-6' | | | Background | Brown-orange | | Gravelly well graded med. SAND w/ little silt | SW |
| 6'-9' | | | Background | Lt. brown orange | | Well graded GRAVEL w/ med sand and little silt trace cobbles | GW |
| 9'-11' | | | Background | Brown | | Well graded GRAVEL w/ med. Sand and little silt | GW |
| 11'-16' | | | Background | Lt. brown-orange | | Well graded GRAVEL w/ med. Sand and little silt | GW |
| 16'-24' | | | Background | Lt. brown-orange | | Gravelly well graded med SAND with little silt | SW |
| 24'-30' | | | Background | Orange | | Gravelly well graded fine-med. SAND w/ little silt | SW |
| 30'-50' | | | Background | Orange-lt. brown | | Well graded med. SAND w/ some gravel and little silt | SW |
| 50'-52' | ① | 4/4 | 0.0 Background | | 15 | 50'9"-51' Orange-brown well graded SAND w/ | SW |
| | | 12/25 | 0.0 actual | | | little silt and trace gravel; loose, sl. moist | |

SIGNATURE: David Obradovich DATE: 11/16/92

|  |  |  |
|---|---|---|
| **PAGE** 2 **of** 2 | **H2M GEOLOGIC LOG (CONTINUED)** | **JOB NO.** BOWE9203 |

|  |  |
|---|---|
| **Borehole Location:** MW-9<br>**Elevation:** ____ **Ref Point:** ____ | **Completion Depth:** 67'<br>**Logged by:** DWO **Checked by:** ____ |

**Depth to Groundwater:** 56.61' **Date:** 11/2/92 **Time:** 1000 **Aquifer:** Upper Glacial

| Sample Depth | Sampl No. | Blows 6" | Hnu Res | Recov (in) | Sample Description | Lithology |
|---|---|---|---|---|---|---|
|  | ① |  |  |  | 51'-52' Tan well graded med. SAND w/ little silt and trace gravel, medium dense, sl. moist | SW |
| 52'-55' | DRILL CUTTINGS |  | Back-ground |  | Lt. brown-orange well graded fine-coarse SAND w/ some silt, trace gravel | SW |
| 55'-57' | ② | 4/8<br>12/15 | 0.0 Back-ground<br>8.0 actual | 18 | 55'6"-56' Tan-orange poorly graded med. SAND w/ little silt and trace gravel, loose, wet | SM |
|  |  |  |  |  | 56'-56'8" Tan-orange well graded med.-coarse SAND w/ little silt, trace gravel, loose-med. dense, wet | SW |
|  |  |  |  |  | 56'8"-57' Tan-lt. orange well graded med.-coarse SAND w/ little silt and trace gravel medium dense, wet | SW |
| 57'-68' |  |  | Back-ground |  | Bright orange-brown well graded med. SAND w/ little silt and few-little gravel, wet | SW |
|  |  |  |  |  | END OF BORING |  |

SIGNATURE: David Obradovich DATE: 11/16/92

# APPENDIX B
# LABORATORY REPORTS

# LABORATORY REPORTS
# NOVEMBER/DECEMBER 1990 GROUNDWATER SAMPLING

**ECOTEST LABORATORIES, INC.** *ENVIRONMENTAL TESTING*

**377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777**

LAB NO.C893267/1 11/17/89

Soil Mechanics
3770 Merrick Road
Seaford, NY 11783
ATTN: Robert Cardinale PO#2676

SOURCE OF SAMPLE: Hicksville Project 89-806
COLLECTED BY: Client DATE COL'D:11/01/89 RECEIVED:11/02/89

SAMPLE: Water sample,MW-1 Upgradient 10:00

| ANALYTICAL PARAMETERS | | |
|---|---|---|
| Chloromethane | ug/L | <1 |
| Bromomethane | ug/L | <1 |
| Dichlordifluomethane | ug/L | <1 |
| Vinyl Chloride | ug/L | <1 |
| Chloroethane | ug/L | <1 |
| Methylene Chloride | ug/L | <2 |
| Trichlorofluomethane | ug/L | <2 |
| 11 Dichloroethene | ug/L | <2 |
| 11 Dichloroethane | ug/L | <2 |
| 12 Dichloroethene | ug/L | <2 |
| Chloroform | ug/L | <1 |
| 12 Dichloroethane | ug/L | <2 |
| 111 Trichloroethane | ug/L | <1 |
| Carbon Tetrachloride | ug/L | <1 |
| Bromodichloromethane | ug/L | <1 |
| 12 Dichloropropane | ug/L | <2 |
| t 13 Dichloropropene | ug/L | <2 |
| Trichloroethylene | ug/L | <1 |
| Chlorodibromomethane | ug/L | <1 |
| 112 Trichloroethane | ug/L | <2 |
| c 13 Dichloropropene | ug/L | <2 |
| 2chloroethvinylether | ug/L | <2 |
| Bromoform | ug/L | <2 |
| 1122Tetrachloroethan | ug/L | <2 |
| Tetrachloroethene | ug/L | <1 |

| ANALYTICAL PARAMETERS | | |
|---|---|---|
| Chlorobenzene | ug/L | <1 |
| 13 Dichlorobenzene | ug/L | <2 |
| 12 Dichlorobenzene | ug/L | <2 |
| 14 Dichlorobenzene | ug/L | <2 |
| Benzene | ug/L | <1 |
| Toluene | ug/L | <2 |
| Ethyl Benzene | ug/L | 2 |
| m Xylene | ug/L | <2 |
| o+p Xylene | ug/L | <4 |

cc:

REMARKS:

Page 1 of 2.

DIRECTOR______________________________

rn= 14461 NYSDOH ID# 10320

**ECOTEST LABORATORIES, INC.** *ENVIRONMENTAL TESTING*

**377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777**

LAB NO. C893267/2 01/09/90

Soil Mechanics
3770 Merrick Road
Seaford, NY 11783
ATTN: Robert Cardinale

SOURCE OF SAMPLE: Hicksville Project 89-806
COLLECTED BY: Client DATE COL'D: 11/01/89 RECEIVED: 11/02/89

SAMPLE: Water sample, MW-2 Downgradient 11:00

| ANALYTICAL PARAMETERS | | |
|---|---|---|
| Chloromethane | ug/L | <1 |
| Bromomethane | ug/L | <1 |
| Dichlordifluomethane | ug/L | <1 |
| Vinyl Chloride | ug/L | <1 |
| Chloroethane | ug/L | <1 |
| Methylene Chloride | ug/L | <2 |
| Trichlorofluomethane | ug/L | <2 |
| 11 Dichloroethene | ug/L | <2 |
| 11 Dichloroethane | ug/L | <2 |
| 12 Dichloroethene | ug/L | <2 |
| Chloroform | ug/L | <1 |
| 12 Dichloroethane | ug/L | <2 |
| 111 Trichloroethane | ug/L | <1 |
| Carbon Tetrachloride | ug/L | <1 |
| Bromodichloromethane | ug/L | <1 |
| 12 Dichloropropane | ug/L | <2 |
| t 13 Dichloropropene | ug/L | <2 |
| Trichloroethylene | ug/L | <1 |
| Chlorodibromomethane | ug/L | <1 |
| 112 Trichloroethane | ug/L | <2 |
| c 13 Dichloropropene | ug/L | <2 |
| 2chloroethvinylether | ug/L | <2 |
| Bromoform | ug/L | <2 |
| 1122Tetrachloroethan | ug/L | <2 |
| Tetrachloroethene | ug/L | 130 |

| ANALYTICAL PARAMETERS | | |
|---|---|---|
| Chlorobenzene | ug/L | <1 |
| 13 Dichlorobenzene | ug/L | <2 |
| 12 Dichlorobenzene | ug/L | <2 |
| 14 Dichlorobenzene | ug/L | <2 |
| Benzene | ug/L | <1 |
| Toluene | ug/L | <2 |
| Ethyl Benzene | ug/L | <1 |
| m Xylene | ug/L | <2 |
| o+p Xylene | ug/L | <4 |

cc:

REMARKS: Ammended report.

Page 1 of 2.

DIRECTOR______________________

rn* 14463 NYSDOH ID# 10320

**ECOTEST LABORATORIES, INC.** ENVIRONMENTAL TESTING

**377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777**

LAB NO.C893805/1 01/04/90

Soil Mechanics
3770 Merrick Road
Seaford, NY 11783
ATTN: Robert Cardinale PO #2701

OURCE OF SAMPLE: Hicksville, Project #89-806
COLLECTED BY: Client DATE COL'D:12/27/89 RECEIVED:12/27/89

SAMPLE: Water sample, MW-3, 1300

| ANALYTICAL PARAMETERS | | |
|---|---|---|
| Chloromethane | ug/L | <1 |
| Bromomethane | ug/L | <1 |
| Dichlordifluomethane | ug/L | <1 |
| Vinyl Chloride | ug/L | <1 |
| Chloroethane | ug/L | <1 |
| Methylene Chloride | ug/L | <2 |
| Trichlorofluomethane | ug/L | <2 |
| 11 Dichloroethene | ug/L | <2 |
| 11 Dichloroethane | ug/L | 3 |
| 12 Dichloroethene | ug/L | 550 |
| Chloroform | ug/L | <1 |
| 12 Dichloroethane | ug/L | <2 |
| 111 Trichloroethane | ug/L | 3 |
| Carbon Tetrachloride | ug/L | <1 |
| Bromodichloromethane | ug/L | <1 |
| 12 Dichloropropane | ug/L | <2 |
| t 13 Dichloropropene | ug/L | <2 |
| Trichloroethylene | ug/L | 64 |
| Chlorodibromomethane | ug/L | <1 |
| 112 Trichloroethane | ug/L | <2 |
| c 13 Dichloropropene | ug/L | <2 |
| 2chloroethvinylether | ug/L | <2 |
| Bromoform | ug/L | <2 |
| 1122Tetrachloroethan | ug/L | <2 |
| Tetrachloroethene | ug/L | 8100 |

| ANALYTICAL PARAMETERS | | |
|---|---|---|
| Chlorobenzene | ug/L | <1 |
| 13 Dichlorobenzene | ug/L | <2 |
| 12 Dichlorobenzene | ug/L | <2 |
| 14 Dichlorobenzene | ug/L | <2 |
| Benzene | ug/L | <1 |
| Toluene | ug/L | <2 |
| Ethyl Benzene | ug/L | <1 |
| m Xylene | ug/L | <2 |
| o+p Xylene | ug/L | <4 |
| Acetone | ug/Kg | <20 |
| Methyl Ethyl Ketone | ug/Kg | <20 |
| methylisobutylketone | ug/Kg | <20 |

cc:

REMARKS:

Page 1 of 2.

DIRECTOR

·n= 16806 NYSDOH ID# 10320

**ECOTEST LABORATORIES, INC.** *ENVIRONMENTAL TESTING*

**377 SHEFFIELD AVE. ● N. BABYLON, N.Y. 11703 ● (516) 422-5777**

LAB NO.C893805/2 01/04/90

Soil Mechanics
3770 Merrick Road
Seaford, NY 11783
ATTN: Robert Cardinale PO #2701

SOURCE OF SAMPLE: Hicksville, Project #89-806
COLLECTED BY: Client DATE COL'D:12/27/89 RECEIVED:12/27/89

SAMPLE: Water sample, MW-4, 1300

| ANALYTICAL PARAMETERS | | |
|---|---|---|
| Chloromethane | ug/L | <1 |
| Bromomethane | ug/L | <1 |
| Dichlordifluomethane | ug/L | <1 |
| Vinyl Chloride | ug/L | <1 |
| Chloroethane | ug/L | <1 |
| Methylene Chloride | ug/L | <2 |
| Trichlorofluomethane | ug/L | <2 |
| 11 Dichloroethene | ug/L | <2 |
| 11 Dichloroethane | ug/L | <2 |
| 12 Dichloroethene | ug/L | <2 |
| Chloroform | ug/L | <1 |
| 12 Dichloroethane | ug/L | <2 |
| 111 Trichloroethane | ug/L | <1 |
| Carbon Tetrachloride | ug/L | <1 |
| Bromodichloromethane | ug/L | <1 |
| 12 Dichloropropane | ug/L | <2 |
| t 13 Dichloropropene | ug/L | <2 |
| Trichloroethylene | ug/L | <1 |
| Chlorodibromomethane | ug/L | <1 |
| 112 Trichloroethane | ug/L | <2 |
| c 13 Dichloropropene | ug/L | <2 |
| 2chloroethvinylether | ug/L | <2 |
| Bromoform | ug/L | <2 |
| 1122Tetrachloroethan | ug/L | <2 |
| Tetrachloroethene | ug/L | <1 |

| ANALYTICAL PARAMETERS | | |
|---|---|---|
| Chlorobenzene | ug/L | <1 |
| 13 Dichlorobenzene | ug/L | <2 |
| 12 Dichlorobenzene | ug/L | <2 |
| 14 Dichlorobenzene | ug/L | <2 |
| Benzene | ug/L | <1 |
| Toluene | ug/L | <2 |
| Ethyl Benzene | ug/L | <1 |
| m Xylene | ug/L | <2 |
| o+p Xylene | ug/L | <4 |
| Acetone | ug/Kg | <20 |
| Methyl Ethyl Ketone | ug/Kg | <20 |
| methylisobutylketone | ug/Kg | <20 |

cc:

REMARKS:

Page 1 of 2.

DIRECTOR________________

rn= 16808 NYSDOH ID# 10320

# LABORATORY REPORTS
# JUNE 1991 GROUNDWATER SAMPLING

**PEDNEAULT ASSOCIATES, INC.** TESTING LABORATORIES
1615 NINTH AVENUE · P.O. BOX 205 · BOHEMIA, N.Y. 11716 · (516) 467-8477
AFTER 5 P.M. (516) 567-5579

June 10, 1991

TO: Fenley and Nicol Company, Inc.
445 Brook Avenue
Deer Park, NY 11729

**Date: Collected** 6/7/91 **Analyzed** 6/7/91 **Report** 6/10/91

**Sampling Point**

1. Bowe Systems, 200 Frank Street, Hicksville, NY - FN-5
2. Bowe Systems, 200 Frank Street, Hicksville, NY - FN-6
3. Bowe Systems, 200 Frank Street, Hicksville, NY - FN-7
4.
5.

| **Parameters** | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Tetrachloroethylene | ug/l | 556 | 31.5 | 18.1 | | |

Job No. 60523

Purchase Order No. 39926

**JOHN PEDNEAULT**
Lab Director

Lab Number 71783

m

# LABORATORY REPORTS
# JULY 1991 GROUNDWATER SAMPLING

PEDNEAULT ASSOCIATES, INC. TESTING LABORATORIES
1615 NINTH AVENUE P.O. BOX 205 BOHEMIA, N.Y 11716 (516)467-8[illegible]77
AFTER 5 PM (516)5[illegible]

5 1991
FENLEY & NICOL CO. I

August 2, 1991

TO: Fenley and Nicol Company, Inc.
445 Brook Avenue
Deer Park, NY 11729

RE: Bowe Systems
200 Frank Road, Hicksville, NY

ate: Collected 7/31/91 Analyzed 7/31-8/2/91 Report 8/2/91

**Sampling Point**

Well #4

Well #5

Well #6

Well #7

| Parameters | | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| Tetrachloroethulene | ppb | 379 | 5.2 | 256 | 101 | |
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**JOHN PEDNEAULT**
Lab Director

b Number 73206

Method 502.2

jm

**PEDNEAULT ASSOCIATES, INC.** TESTING LABORATORIES
1615 NINTH AVENUE P.O. BOX 205 BOHEMIA, N.Y. 11716 (516) 467-8477
AFTER 5 PM. (516) 567-5579

August 2, 1991

TO: Fenley and Nicol Company, Inc.
445 Brook Avenue
Deer Park, NY 11729

RE: Bowe Systems
200 Frank Road, Hicksville, NY

**ate: Collected** 7/31/91 **Analyzed** 7/31-8/2/91 **Report** 8/2/91

**Sampling Point**

Trip Blank

Field Blank - Wash Water

Field Blank - Wash Water off pump between Wells 6 & 5

Field Blank - Wash Water off pump between Wells 5 & 4

Field Blank - Wash Water off pump between Wells 7 & 6

| **Parameters** | | **1** | **2** | **3** | **4** | **5** |
|---|---|---|---|---|---|---|
| etrachloroethylene | ppb | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
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Method 502.2

ab Number 73206

**JOHN PEDNEAULT**
Lab Director

m

[redacted]

1A
# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

4

[redacted]

Lab Name: NYTEST ENV INC Contract: 9118233

Lab Code: 10195 Case No.: RH191 SAS No.: ______ SDG No.: 0731

Matrix: (soil/water) WATER Lab Sample ID: 9218006

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C4326

Level: (low/med) LOW Date Received: 08/01/91

% Moisture: not dec. ____ Date Analyzed: 08/05/91

Column: (pack/cap) PACK Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | U |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 2 | J |
| 540-59-0 | 1,2-Dichloroethene (total) | 3 | J |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 5 | U |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 12 | |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 320 | E → * |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylenes (total) | 5 | U |

[redacted]

[redacted]

# 1A
# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

5

Lab Name: NYTEST ENV INC  Contract: 9118233

Lab Code: 10195  Case No.: RH191  SAS No.: ______  SDG No.: 0731

Matrix: (soil/water) WATER  Lab Sample ID: 9218005

Sample wt/vol: 5.0 (g/mL) ML  Lab File ID: C4329

Level: (low/med) LOW  Date Received: 08/01/91

% Moisture: not dec. ____  Date Analyzed: 08/05/91

Column: (pack/cap) PACK  Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | B |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 4 | J |
| 540-59-0 | 1,2-Dichloroethene (total) | 1 | J |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | J |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 19 | |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 47 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylenes (total) | 5 | U |

1A

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. [redacted]

6 [redacted]

Lab Name: NYTEST ENV INC    Contract: 9118233

Lab Code: 10195    Case No.: RH191    SAS No.: ____    SDG No.: 0731

Matrix: (soil/water) WATER    Lab Sample ID: 9218001

Sample wt/vol: 5.0 (g/mL) ML    Lab File ID: C4330

Level: (low/med) LOW    Date Received: 08/01/91

% Moisture: not dec. ____    Date Analyzed: 08/05/91

Column: (pack/cap) PACK    Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 2 | BJ |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 2 | J |
| 540-59-0 | 1,2-Dichloroethene (total) | 3 | J |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | J |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 13 | |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 180 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylenes (total) | 5 | U |

# 1A
# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

[redacted]

7

[redacted]

Lab Name: NYTEST ENV INC Contract: 9118233

Lab Code: 10195 Case No.: RH191 SAS No.: ______ SDG No.: 0731

Matrix: (soil/water) WATER Lab Sample ID: 9218007

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C4325

Level: (low/med) LOW Date Received: 08/01/91

% Moisture: not dec. ____ Date Analyzed: 08/05/91

Column: (pack/cap) PACK Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 1 | BJ |
| 67-64-1 | Acetone | 16 | |
| 75-15-0 | Carbon Disulfide | 5 | U |
| 75-35-4 | 1,1-Dichloroethene | 5 | U |
| 75-34-3 | 1,1-Dichloroethane | 3 | J |
| 540-59-0 | 1,2-Dichloroethene (total) | 1 | J |
| 67-66-3 | Chloroform | 5 | U |
| 107-06-2 | 1,2-Dichloroethane | 5 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 1 | J |
| 56-23-5 | Carbon Tetrachloride | 5 | U |
| 108-05-4 | Vinyl Acetate | 10 | U |
| 75-27-4 | Bromodichloromethane | 5 | U |
| 78-87-5 | 1,2-Dichloropropane | 5 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 5 | U |
| 79-01-6 | Trichloroethene | 19 | |
| 124-48-1 | Dibromochloromethane | 5 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 5 | U |
| 71-43-2 | Benzene | 5 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 5 | U |
| 75-25-2 | Bromoform | 5 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 110 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 5 | U |
| 108-88-3 | Toluene | 5 | U |
| 108-90-7 | Chlorobenzene | 5 | U |
| 100-41-4 | Ethylbenzene | 5 | U |
| 100-42-5 | Styrene | 5 | U |
| 1330-20-7 | Xylenes (total) | 5 | U |

# LABORATORY REPORTS
# JUNE 1992 GROUNDWATER SAMPLING

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9220698

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 06/24/92
DATE RECEIVED.. 06/24/92
COLLECTED BY... MSC03
PROJECT NO..... BOWE9201

POINT NO:
LOCATION: T-1

REMARKS:

---

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | 4 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | 3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 23 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | 45 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

---

COPIES TO: SFB/MOK

DATE RUN....... 06/25/92
DATE REPORTED.. 06/26/92

DATE ISSUED 06/29/92

LABORATORY DIRECTOR

**H2M LABS, INC.** 575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9220699

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

| | | | |
|---|---|---|---|
| DATE COLLECTED. | 06/24/92 | POINT NO: | |
| DATE RECEIVED.. | 06/24/92 | LOCATION: | T-2 |
| COLLECTED BY... | MSC03 | | |
| PROJECT NO..... | BOWE9201 | REMARKS: | |

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | 110 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: SFB/MOK

DATE ISSUED 06/29/92

DATE RUN....... 06/25/92
DATE REPORTED.. 06/26/92

LABORATORY DIRECTOR

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

**LAB NO: 9220700**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 06/24/92
DATE RECEIVED.. 06/24/92
COLLECTED BY... MSC03
PROJECT NO..... BOWE9201

POINT NO:
LOCATION: T-3

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | 3 | | |
| CIS-1,2-DICHLOROETHENE | 3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 20 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | 270 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: SFB/MOK

DATE ISSUED 06/29/92

DATE RUN....... 06/25/92
DATE REPORTED.. 06/26/92

LABORATORY DIRECTOR

**H2M LABS, INC.** 575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

**LAB NO: 9220704**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 06/24/92
DATE RECEIVED.. 06/24/92
COLLECTED BY... MSC03
PROJECT NO..... BOWE9201

POINT NO:
LOCATION: MW-1
REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: SFB/MOK

DATE ISSUED 06/29/92

DATE RUN....... 06/25/92
DATE REPORTED.. 06/29/92

Stanley Isaacson
LABORATORY DIRECTOR

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9220703

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 06/24/92
DATE RECEIVED.. 06/24/92
COLLECTED BY... MSC03
PROJECT NO..... BOWE9201

POINT NO:
LOCATION: MW-3

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | 19 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: SFB/MOK

DATE RUN....... 06/25/92
DATE REPORTED.. 06/26/92

DATE ISSUED 06/29/92

Stanley Isaacson
LABORATORY DIRECTOR

**H2M LABS, INC.** 575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

**LAB NO: 9220702**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 06/24/92
DATE RECEIVED.. 06/24/92
COLLECTED BY... MSC03
PROJECT NO..... BOWE9201

POINT NO:
LOCATION: MW-6

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 11 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | 430 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: SFB/MOK

DATE ISSUED 06/29/92

DATE RUN....... 06/25/92
DATE REPORTED.. 06/26/92

LABORATORY DIRECTOR

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9220701

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 06/24/92
DATE RECEIVED.. 06/24/92
COLLECTED BY... MSC03
PROJECT NO..... BOWE9201

POINT NO:
LOCATION: MW-7

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | 3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 17 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | 130 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: SFB/MOK

DATE ISSUED 06/29/92

DATE RUN....... 06/25/92
DATE REPORTED.. 06/26/92

LABORATORY DIRECTOR

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

**LAB NO: 9220709**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... BLANK
ROUTINE

DATE COLLECTED. 06/24/92
DATE RECEIVED.. 06/24/92
COLLECTED BY... MSC03
PROJECT NO..... BOWE9201

POINT NO:
LOCATION: FIELD BLANK

REMARKS:

## VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | <1 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

COPIES TO: MOK/SFB

DATE RUN....... 06/25/92
DATE REPORTED.. 06/29/92

DATE ISSUED 06/29/92

Stanley Isaacson
LABORATORY DIRECTOR

# LABORATORY REPORTS
# NOVEMBER 1992 GROUNDWATER SAMPLING

U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. [redacted]

B17909 [redacted]

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473605

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: K4711

Level: (low/med) LOW Date Received: 11/10/92

% Moisture: not dec. ____ Date Analyzed: 11/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 2 | BJ |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 3 | J |
| 67-66-3 | Chloroform | 2 | J |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 8 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 450 | E |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1E

# VOLATILE ORGANICS ANALYSIS DATA SHEET
# TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B17909

Lab Name: NYTEST ENV INC    Contract: 9219528

Lab Code: NYTEST    Case No.: SH192    SAS No.: ______    SDG No.: 1110

Matrix: (soil/water) WATER    Lab Sample ID: 1473605

Sample wt/vol: 5.00 (g/mL) ML    Lab File ID: K4711

Level: (low/med) LOW    Date Received: 11/10/92

% Moisture: not dec. ____    Date Analyzed: 11/18/92

GC Column: CAP    ID: 0.530 (mm)    Dilution Factor: 1.0

Soil Extract Volume: ________ (uL)    Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 29.61 | 9 | J |

U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

[redacted]

B17909DL

[redacted]

[redacted]

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473605

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: K4724

Level: (low/med) LOW Date Received: 11/12/92

% Moisture: not dec. ____ Date Analyzed: 11/19/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 5.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 50 | U |
| 74-83-9 | Bromomethane | 50 | U |
| 75-01-4 | Vinyl Chloride | 50 | U |
| 75-00-3 | Chloroethane | 50 | U |
| 75-09-2 | Methylene Chloride | 35 | BDJ |
| 67-64-1 | Acetone | 42 | BDJ |
| 75-15-0 | Carbon Disulfide | 50 | U |
| 75-35-4 | 1,1-Dichloroethene | 50 | U |
| 75-34-3 | 1,1-Dichloroethane | 50 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 50 | U |
| 67-66-3 | Chloroform | 50 | U |
| 107-06-2 | 1,2-Dichloroethane | 50 | U |
| 78-93-3 | 2-Butanone | 50 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | U |
| 56-23-5 | Carbon Tetrachloride | 50 | U |
| 75-27-4 | Bromodichloromethane | 50 | U |
| 78-87-5 | 1,2-Dichloropropane | 50 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | U |
| 79-01-6 | Trichloroethene | 50 | U |
| 124-48-1 | Dibromochloromethane | 50 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | U |
| 71-43-2 | Benzene | 50 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | U |
| 75-25-2 | Bromoform | 50 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 50 | U |
| 591-78-6 | 2-Hexanone | 50 | U |
| 127-18-4 | Tetrachloroethene | 510 | D |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | U |
| 108-88-3 | Toluene | 50 | U |
| 108-90-7 | Chlorobenzene | 50 | U |
| 100-41-4 | Ethylbenzene | 50 | U |
| 100-42-5 | Styrene | 50 | U |
| 1330-20-7 | Xylene (total) | 50 | U |

1B

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17909

Lab Name: NYTEST ENV INC     Contract: 9219528

Lab Code: NYTEST     Case No.: SH192     SAS No.: ______     SDG No.: 1110

Matrix: (soil/water) WATER     Lab Sample ID: 1473605

Sample wt/vol: 1000 (g/mL) ML     Lab File ID: B1066

Level: (low/med) LOW     Date Received: 11/12/92

% Moisture: _____ decanted: (Y/N) ___     Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL)     Date Analyzed: 11/21/92

Injection Volume: 2.0(uL)     Dilution Factor: 1.0

GPC Cleanup: (Y/N) N     pH: 7.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 10 | U |
| 111-44-4 | bis(2-Chloroethyl)Ether | 10 | U |
| 95-57-8 | 2-Chlorophenol | 10 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 10 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 10 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 10 | U |
| 95-48-7 | 2-Methylphenol | 10 | U |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | 10 | U |
| 106-44-5 | 4-Methylphenol | 10 | U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 10 | U |
| 67-72-1 | Hexachloroethane | 10 | U |
| 98-95-3 | Nitrobenzene | 10 | U |
| 78-59-1 | Isophorone | 10 | U |
| 88-75-5 | 2-Nitrophenol | 10 | U |
| 105-67-9 | 2,4-Dimethylphenol | 10 | U |
| 111-91-1 | bis(2-Chloroethoxy)Methane | 10 | U |
| 120-83-2 | 2,4-Dichlorophenol | 10 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 10 | U |
| 91-20-3 | Naphthalene | 10 | U |
| 106-47-8 | 4-Chloroaniline | 10 | U |
| 87-68-3 | Hexachlorobutadiene | 10 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 10 | U |
| 91-57-6 | 2-Methylnaphthalene | 10 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 10 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 10 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 50 | U |
| 91-58-7 | 2-Chloronaphthalene | 10 | U |
| 88-74-4 | 2-Nitroaniline | 50 | U |
| 131-11-3 | Dimethylphthalate | 10 | U |
| 208-96-8 | Acenaphthylene | 10 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 10 | U |
| 99-09-2 | 3-Nitroaniline | 50 | U |
| 83-32-9 | Acenaphthene | 10 | U |

1C

## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17909

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473605

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B1066

Level: (low/med) LOW Date Received: 11/12/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/21/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | 25 | U |
| 100-02-7 | 4-Nitrophenol | 25 | U |
| 132-64-9 | Dibenzofuran | 10 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 10 | U |
| 84-66-2 | Diethylphthalate | 10 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 10 | U |
| 86-73-7 | Fluorene | 10 | U |
| 100-01-6 | 4-Nitroaniline | 25 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 25 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 10 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 10 | U |
| 118-74-1 | Hexachlorobenzene | 10 | U |
| 87-86-5 | Pentachlorophenol | 25 | U |
| 85-01-8 | Phenanthrene | 10 | U |
| 120-12-7 | Anthracene | 10 | U |
| 86-74-8 | Carbazole | 10 | U |
| 84-74-2 | Di-n-Butylphthalate | 10 | U |
| 206-44-0 | Fluoranthene | 10 | U |
| 129-00-0 | Pyrene | 10 | U |
| 85-68-7 | Butylbenzylphthalate | 10 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 10 | U |
| 56-55-3 | Benzo(a)anthracene | 10 | U |
| 218-01-9 | Chrysene | 10 | U |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 10 | U |
| 117-84-0 | Di-n-octylphthalate | 10 | U |
| 205-99-2 | Benzo(b)fluoranthene | 10 | U |
| 207-08-9 | Benzo(k)fluoranthene | 10 | U |
| 50-32-8 | Benzo(a)pyrene | 10 | U |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 10 | U |
| 53-70-3 | Dibenz(a,h)anthracene | 10 | U |
| 191-24-2 | Benzo(g,h,i)perylene | 10 | U |

## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

B17909

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473605

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B1066

Level: (low/med) LOW Date Received: 11/12/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/21/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 20

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 5.38 | 9 | J |
| 2. | UNKNOWN | 5.53 | 10 | J |
| 3. | UNKNOWN | 7.78 | 10 | J |
| 4. | UNKNOWN | 10.17 | 5 | J |
| 5. | UNKNOWN | 12.67 | 28 | J |
| 6. | UNKNOWN ALKANE | 13.62 | 27 | J |
| 7. | UNKNOWN | 15.48 | 3 | J |
| 8. | UNKNOWN | 16.60 | 2 | J |
| 9. | UNKNOWN | 16.69 | 33 | J |
| 10. | UNKNOWN | 17.18 | 4 | J |
| 11. | UNKNOWN ALKANE | 17.52 | 4 | J |
| 12. | UNKNOWN | 17.70 | 29 | J |
| 13. | UNKNOWN | 18.28 | 96 | J |
| 14. | UNKNOWN | 19.23 | 3 | J |
| 15. | UNKNOWN | 19.32 | 79 | J |
| 16. | UNKNOWN | 19.93 | 5 | J |
| 17. | UNKNOWN | 20.47 | 9 | J |
| 18. | UNKNOWN | 20.67 | 18 | J |
| 19. | UNKNOWN | 21.58 | 110 | J |
| 20. | UNKNOWN | 25.73 | 33 | J |

# 1D
# PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17909

Lab Name: NYTEST ENV INC    Contract: 9219528

Lab Code: NYTEST    Case No.: 14736    SAS No.: ______    SDG No.: ______

Matrix: (soil/water) WATER    Lab Sample ID: 1473605

Sample wt/vol: 1000 (g/mL) ML    Lab File ID: ______

% Moisture: ______ decanted: (Y/N) ___    Date Received: 11/12/92

Extraction: (SepF/Cont/Sonc) SEPF    Date Extracted: 11/16/92

Concentrated Extract Volume: 10000 (uL)    Date Analyzed: 12/01/92

Injection Volume: 1.00 (uL)    Dilution Factor: 1.00

GPC Cleanup: (Y/N) N    pH: 6.0    Sulfur Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 0.050 | U |
| 319-85-7 | beta-BHC | 0.050 | U |
| 319-86-8 | delta-BHC | 0.050 | U |
| 58-89-9 | gamma-BHC (Lindane) | 0.050 | U |
| 76-44-8 | Heptachlor | 0.050 | U |
| 309-00-2 | Aldrin | 0.050 | U |
| 1024-57-3 | Heptachlor epoxide | 0.050 | U |
| 959-98-8 | Endosulfan I | 0.050 | U |
| 60-57-1 | Dieldrin | 0.10 | U |
| 72-55-9 | 4,4'-DDE | 0.10 | U |
| 72-20-8 | Endrin | 0.10 | U |
| 33213-65-9 | Endosulfan II | 0.10 | U |
| 72-54-8 | 4,4'-DDD | 0.10 | U |
| 1031-07-8 | Endosulfan sulfate | 0.10 | U |
| 50-29-3 | 4,4'-DDT | 0.10 | U |
| 72-43-5 | Methoxychlor | 0.50 | U |
| 53494-70-5 | Endrin ketone | 0.10 | U |
| 7421-36-3 | Endrin aldehyde | 0.10 | U |
| 5103-71-9 | alpha-Chlordane | 0.050 | U |
| 5103-74-2 | gamma-Chlordane | 0.050 | U |
| 8001-35-2 | Toxaphene | 5.0 | U |
| 12674-11-2 | Aroclor-1016 | 1.0 | U |
| 11104-28-2 | Aroclor-1221 | 2.0 | U |
| 11141-16-5 | Aroclor-1232 | 1.0 | U |
| 53469-21-9 | Aroclor-1242 | 1.0 | U |
| 12672-29-6 | Aroclor-1248 | 1.0 | U |
| 11097-69-1 | Aroclor-1254 | 1.0 | U |
| 11096-82-5 | Aroclor-1260 | 1.0 | U |

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# INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B17909

Lab Name: NYTEST_ENVIRONMENTAL_INC.    Contract: 9219528___

Lab Code: 10195_    Case No.: SH192_    SAS No.: ______    SDG No.: SDG111

Matrix (soil/water): WATER    Lab Sample ID: 473605____

Level (low/med): LOW__    Date Received: 11/12/92

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 32200 | | | P |
| 7440-36-0 | Antimony | 39.0 | U | N | P |
| 7440-38-2 | Arsenic | 5.0 | U | N | F |
| 7440-39-3 | Barium | 455 | | * | P |
| 7440-41-7 | Beryllium | 1.0 | U | | P |
| 7440-43-9 | Cadmium | 7.9 | | | P |
| 7440-70-2 | Calcium | 13200 | | | P |
| 7440-47-3 | Chromium | 435 | | | P |
| 7440-48-4 | Cobalt | 21.1 | B | | P |
| 7440-50-8 | Copper | 153 | | | P |
| 7439-89-6 | Iron | 25900 | | * | P |
| 7439-92-1 | Lead | 14.2 | | N* | F |
| 7439-95-4 | Magnesium | 3370 | B | | P |
| 7439-96-5 | Manganese | 1190 | | | P |
| 7439-97-6 | Mercury | 0.26 | | N* | CV |
| 7440-02-0 | Nickel | 228 | | | P |
| 7440-09-7 | Potassium | 2280 | B | | P |
| 7782-49-2 | Selenium | 5.0 | U | N | F |
| 7440-22-4 | Silver | 4.0 | U | | P |
| 7440-23-5 | Sodium | 10500 | | | P |
| 7440-28-0 | Thallium | 5.0 | U | | F |
| 7440-62-2 | Vanadium | 26.4 | B | | P |
| 7440-66-6 | Zinc | 186 | | * | P |
| 5955-70-0 | Cyanide | 10.0 | U | | AS |

Color Before: ORANGE___    Clarity Before: CLOUDY    Texture: ______

Color After: COLORLESS    Clarity After: CLEAR_    Artifacts: ______

Comments:

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1A

## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. [redacted]

B17907 [redacted]

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473601

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: K4707

Level: (low/med) LOW Date Received: 11/10/92

% Moisture: not dec. ____ Date Analyzed: 11/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 2 | BJ |
| 67-64-1 | Acetone | 11 | |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 1 | J |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1E

# VOLATILE ORGANICS ANALYSIS DATA SHEET
# TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B17907

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473601

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: K4707

Level: (low/med) LOW Date Received: 11/10/92

% Moisture: not dec. ____ Date Analyzed: 11/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 0

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| | | | | |

1C

## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

B17907

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473601

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B1062

Level: (low/med) LOW Date Received: 11/12/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/21/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | 50 | U |
| 100-02-7 | 4-Nitrophenol | 50 | U |
| 132-64-9 | Dibenzofuran | 10 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 10 | U |
| 84-66-2 | Diethylphthalate | 10 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 10 | U |
| 86-73-7 | Fluorene | 10 | U |
| 100-10-6 | 4-Nitroaniline | 50 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 50 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 10 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 10 | U |
| 118-74-1 | Hexachlorobenzene | 10 | U |
| 87-86-5 | Pentachlorophenol | 50 | U |
| 85-01-8 | Phenanthrene | 10 | U |
| 120-12-7 | Anthracene | 10 | U |
| 86-74-8 | Carbazole | 10 | U |
| 84-74-2 | Di-n-Butylphthalate | 10 | U |
| 206-44-0 | Fluoranthene | 10 | U |
| 129-00-0 | Pyrene | 10 | U |
| 85-68-7 | Butylbenzylphthalate | 10 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 20 | U |
| 56-55-3 | Benzo(a)Anthracene | 10 | U |
| 218-01-9 | Chrysene | 10 | U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 2 | J |
| 117-84-0 | Di-n-Octyl Phthalate | 10 | U |
| 205-99-2 | Benzo(b)Fluoranthene | 10 | U |
| 207-08-9 | Benzo(k)Fluoranthene | 10 | U |
| 50-32-8 | Benzo(a)Pyrene | 10 | U |
| 193-39-5 | Indeno(1,2,3-cd)Pyrene | 10 | U |
| 53-70-3 | Dibenz(a,h)Anthracene | 10 | U |
| 191-24-2 | Benzo(g,h,i)Perylene | 10 | U |

(1) - Cannot be separated from Diphenylamine

1B

## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17907

Lab Name: NYTEST ENV INC    Contract: 9219528

Lab Code: NYTEST    Case No.: SH192    SAS No.: ______    SDG No.: 1110

Matrix: (soil/water) WATER    Lab Sample ID: 1473601

Sample wt/vol: 1000 (g/mL) ML    Lab File ID: B1062

Level: (low/med) LOW    Date Received: 11/12/92

% Moisture: ______ decanted: (Y/N) ___    Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL)    Date Analyzed: 11/21/92

Injection Volume: 2.0(uL)    Dilution Factor: 1.0

GPC Cleanup: (Y/N) N    pH: 7.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 10 | U |
| 111-44-4 | bis(2-Chloroethyl)Ether | 10 | U |
| 95-57-8 | 2-Chlorophenol | 10 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 10 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 1 | J |
| 95-50-1 | 1,2-Dichlorobenzene | 10 | U |
| 95-48-7 | 2-Methylphenol | 10 | U |
| 108-60-1 | 2,2′-oxybis(1-Chloropropane) | 10 | U |
| 106-44-5 | 4-Methylphenol | 10 | U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 10 | U |
| 67-72-1 | Hexachloroethane | 10 | U |
| 98-95-3 | Nitrobenzene | 10 | U |
| 78-59-1 | Isophorone | 10 | U |
| 88-75-5 | 2-Nitrophenol | 10 | U |
| 105-67-9 | 2,4-Dimethylphenol | 10 | U |
| 111-91-1 | bis(2-Chloroethoxy)Methane | 10 | U |
| 120-83-2 | 2,4-Dichlorophenol | 10 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 10 | U |
| 91-20-3 | Naphthalene | 10 | U |
| 106-47-8 | 4-Chloroaniline | 10 | U |
| 87-68-3 | Hexachlorobutadiene | 10 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 10 | U |
| 91-57-6 | 2-Methylnaphthalene | 10 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 10 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 10 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 50 | U |
| 91-58-7 | 2-Chloronaphthalene | 10 | U |
| 88-74-4 | 2-Nitroaniline | 50 | U |
| 131-11-3 | Dimethylphthalate | 10 | U |
| 208-96-8 | Acenaphthylene | 10 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 10 | U |
| 99-09-2 | 3-Nitroaniline | 50 | U |
| 83-32-9 | Acenaphthene | 10 | U |

1F

## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B17907

Lab Name: NYTEST ENV INC  Contract: 9219528

Lab Code: NYTEST  Case No.: SH192  SAS No.: ______  SDG No.: 1110

Matrix: (soil/water) WATER  Lab Sample ID: 1473601

Sample wt/vol: 1000 (g/mL) ML  Lab File ID: B1062

Level: (low/med) LOW  Date Received: 11/12/92

% Moisture: _____ decanted: (Y/N) ___  Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL)  Date Analyzed: 11/21/92

Injection Volume: 2.0(uL)  Dilution Factor: 1.0

GPC Cleanup: (Y/N) N  pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 14  (ug/L or ug/Kg) UG/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 3.75 | 4 | J |
| 2. | UNKNOWN | 7.82 | 8 | J |
| 3. | UNKNOWN | 10.18 | 3 | J |
| 4. | UNKNOWN | 12.67 | 8 | J |
| 5. | UNKNOWN ALKANE | 13.62 | 45 | J |
| 6. | UNKNOWN | 16.72 | 51 | J |
| 7. | UNKNOWN | 17.63 | 3 | J |
| 8. | UNKNOWN | 17.82 | 6 | J |
| 9. | UNKNOWN | 18.27 | 24 | J |
| 10. | UNKNOWN | 20.65 | 3 | J |
| 11. | UNKNOWN | 21.67 | 24 | J |
| 12. | UNKNOWN | 21.88 | 8 | J |
| 13. | UNKNOWN | 24.53 | 3 | J |
| 14. | UNKNOWN | 24.68 | 14 | J |

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17907

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: 14736 SAS No.: ______ SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: 1473601

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ______

% Moisture: ______ decanted: (Y/N) ___ Date Received: 11/12/92

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/16/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/01/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 0.050 | U |
| 319-85-7 | beta-BHC | 0.050 | U |
| 319-86-8 | delta-BHC | 0.050 | U |
| 58-89-9 | gamma-BHC (Lindane) | 0.050 | U |
| 76-44-8 | Heptachlor | 0.050 | U |
| 309-00-2 | Aldrin | 0.050 | U |
| 1024-57-3 | Heptachlor epoxide | 0.050 | U |
| 959-98-8 | Endosulfan I | 0.050 | U |
| 60-57-1 | Dieldrin | 0.10 | U |
| 72-55-9 | 4,4'-DDE | 0.10 | U |
| 72-20-8 | Endrin | 0.10 | U |
| 33213-65-9 | Endosulfan II | 0.10 | U |
| 72-54-8 | 4,4'-DDD | 0.10 | U |
| 1031-07-8 | Endosulfan sulfate | 0.10 | U |
| 50-29-3 | 4,4'-DDT | 0.10 | U |
| 72-43-5 | Methoxychlor | 0.50 | U |
| 53494-70-5 | Endrin ketone | 0.10 | U |
| 7421-36-3 | Endrin aldehyde | 0.10 | U |
| 5103-71-9 | alpha-Chlordane | 0.050 | U |
| 5103-74-2 | gamma-Chlordane | 0.050 | U |
| 8001-35-2 | Toxaphene | 5.0 | U |
| 12674-11-2 | Aroclor-1016 | 1.0 | U |
| 11104-28-2 | Aroclor-1221 | 2.0 | U |
| 11141-16-5 | Aroclor-1232 | 1.0 | U |
| 53469-21-9 | Aroclor-1242 | 1.0 | U |
| 12672-29-6 | Aroclor-1248 | 1.0 | U |
| 11097-69-1 | Aroclor-1254 | 1.0 | U |
| 11096-82-5 | Aroclor-1260 | 1.0 | U |

MW 8

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B17907

Lab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9219528___

Lab Code: 10195_ Case No.: SH192_ SAS No.: ______ SDG No.: SDG111

Matrix (soil/water): WATER Lab Sample ID: 473601____

Level (low/med): LOW__ Date Received: 11/12/92

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 48300 | | | P |
| 7440-36-0 | Antimony | 39.0 | U | N | P |
| 7440-38-2 | Arsenic | 11.1 | | N | F |
| 7440-39-3 | Barium | 746 | | * | P |
| 7440-41-7 | Beryllium | 6.2 | | | P |
| 7440-43-9 | Cadmium | 3.0 | U | | P |
| 7440-70-2 | Calcium | 49700 | | | P |
| 7440-47-3 | Chromium | 54.4 | | | P |
| 7440-48-4 | Cobalt | 96.7 | | | P |
| 7440-50-8 | Copper | 43.6 | | | P |
| 7439-89-6 | Iron | 89600 | | * | P |
| 7439-92-1 | Lead | 50.5 | | N* | F |
| 7439-95-4 | Magnesium | 9960 | | | P |
| 7439-96-5 | Manganese | 6270 | | | P |
| 7439-97-6 | Mercury | 1.3 | | N* | CV |
| 7440-02-0 | Nickel | 60.4 | | | P |
| 7440-09-7 | Potassium | 12100 | | | P |
| 7782-49-2 | Selenium | 5.0 | U | N | F |
| 7440-22-4 | Silver | 4.0 | U | | P |
| 7440-23-5 | Sodium | 30900 | | | P |
| 7440-28-0 | Thallium | 5.0 | U | | F |
| 7440-62-2 | Vanadium | 112 | | | P |
| 7440-66-6 | Zinc | 121 | | * | P |
| 5955-70-0 | Cyanide | 10.0 | U | | AS |

Color Before: ORANGE___ Clarity Before: CLOUDY Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

FORM I - IN

U

1A

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

[redacted]

B17908

[redacted]

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473604

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: K4710

Level: (low/med) LOW Date Received: 11/10/92

% Moisture: not dec. ____ Date Analyzed: 11/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 2 | BJ |
| 67-64-1 | Acetone | 12 | |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 1 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 2 | J |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1A

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17908

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ____ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473604

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: K4710

Level: (low/med) LOW Date Received: 11/10/92

% Moisture: not dec. ____ Date Analyzed: 11/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ____ (uL) Soil Aliquot Volume: ____ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 2 | BJ |
| 67-64-1 | Acetone | 12 | |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 1 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 2 | J |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

FORM I VOA 3/90

## 1B
## SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17908

Lab Name: NYTEST ENV INC
Contract: 9219528

Lab Code: NYTEST
Case No.: SH192
SAS No.: ______
SDG No.: 1110

Matrix: (soil/water) WATER
Lab Sample ID: 1473604

Sample wt/vol: 1000 (g/mL) ML
Lab File ID: B1065

Level: (low/med) LOW
Date Received: 11/12/92

% Moisture: _____
decanted: (Y/N) ___
Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL)
Date Analyzed: 11/21/92

Injection Volume: 2.0(uL)
Dilution Factor: 1.0

GPC Cleanup: (Y/N) N
pH: 7.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 10 | U |
| 111-44-4 | bis(2-Chloroethyl)Ether | 10 | U |
| 95-57-8 | 2-Chlorophenol | 10 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 10 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 10 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 10 | U |
| 95-48-7 | 2-Methylphenol | 10 | U |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | 10 | U |
| 106-44-5 | 4-Methylphenol | 10 | U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 10 | U |
| 67-72-1 | Hexachloroethane | 10 | U |
| 98-95-3 | Nitrobenzene | 10 | U |
| 78-59-1 | Isophorone | 10 | U |
| 88-75-5 | 2-Nitrophenol | 10 | U |
| 105-67-9 | 2,4-Dimethylphenol | 10 | U |
| 111-91-1 | bis(2-Chloroethoxy)Methane | 10 | U |
| 120-83-2 | 2,4-Dichlorophenol | 10 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 10 | U |
| 91-20-3 | Naphthalene | 10 | U |
| 106-47-8 | 4-Chloroaniline | 10 | U |
| 87-68-3 | Hexachlorobutadiene | 10 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 10 | U |
| 91-57-6 | 2-Methylnaphthalene | 10 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 10 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 10 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 50 | U |
| 91-58-7 | 2-Chloronaphthalene | 10 | U |
| 88-74-4 | 2-Nitroaniline | 50 | U |
| 131-11-3 | Dimethylphthalate | 10 | U |
| 208-96-8 | Acenaphthylene | 10 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 10 | U |
| 99-09-2 | 3-Nitroaniline | 50 | U |
| 83-32-9 | Acenaphthene | 10 | U |

# 1C
# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17908

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473604

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B1065

Level: (low/med) LOW Date Received: 11/12/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/21/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | 50 | U |
| 100-02-7 | 4-Nitrophenol | 50 | U |
| 132-64-9 | Dibenzofuran | 10 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 10 | U |
| 84-66-2 | Diethylphthalate | 10 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 10 | U |
| 86-73-7 | Fluorene | 10 | U |
| 100-10-6 | 4-Nitroaniline | 50 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 50 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 10 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 10 | U |
| 118-74-1 | Hexachlorobenzene | 10 | U |
| 87-86-5 | Pentachlorophenol | 50 | U |
| 85-01-8 | Phenanthrene | 10 | U |
| 120-12-7 | Anthracene | 10 | U |
| 86-74-8 | Carbazole | 10 | U |
| 84-74-2 | Di-n-Butylphthalate | 10 | U |
| 206-44-0 | Fluoranthene | 10 | U |
| 129-00-0 | Pyrene | 10 | U |
| 85-68-7 | Butylbenzylphthalate | 10 | U |
| 91-94-1 | 3,3′-Dichlorobenzidine | 20 | U |
| 56-55-3 | Benzo(a)Anthracene | 10 | U |
| 218-01-9 | Chrysene | 10 | U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 1 | J |
| 117-84-0 | Di-n-Octyl Phthalate | 10 | U |
| 205-99-2 | Benzo(b)Fluoranthene | 10 | U |
| 207-08-9 | Benzo(k)Fluoranthene | 10 | U |
| 50-32-8 | Benzo(a)Pyrene | 10 | U |
| 193-39-5 | Indeno(1,2,3-cd)Pyrene | 10 | U |
| 53-70-3 | Dibenz(a,h)Anthracene | 10 | U |
| 191-24-2 | Benzo(g,h,i)Perylene | 10 | U |

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
## TENTATIVELY IDENTIFIED COMPOUNDS

B17908

Lab Name: NYTEST ENV INC    Contract: 9219528

Lab Code: NYTEST    Case No.: SH192    SAS No.: ______    SDG No.: 1110

Matrix: (soil/water) WATER    Lab Sample ID: 1473604

Sample wt/vol: 1000 (g/mL) ML    Lab File ID: B1065

Level: (low/med) LOW    Date Received: 11/12/92

% Moisture: _____    decanted: (Y/N) ___    Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL)    Date Analyzed: 11/21/92

Injection Volume: 2.0(uL)    Dilution Factor: 1.0

GPC Cleanup: (Y/N) N    pH: 7.0

CONCENTRATION UNITS:

Number TICs found: 17    (ug/L or ug/Kg) UG/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 7.85 | 5 | J |
| 2. | UNKNOWN | 10.18 | 3 | J |
| 3. | UNKNOWN | 12.67 | 19 | J |
| 4. | UNKNOWN | 13.58 | 23 | J |
| 5. | UNKNOWN | 16.62 | 2 | J |
| 6. | UNKNOWN | 16.68 | 22 | J |
| 7. | UNKNOWN | 17.63 | 4 | J |
| 8. | UNKNOWN | 17.74 | 12 | J |
| 9. | UNKNOWN | 18.12 | 3 | J |
| 10. | UNKNOWN | 18.27 | 34 | J |
| 11. | UNKNOWN | 19.27 | 2 | J |
| 12. | UNKNOWN | 19.33 | 25 | J |
| 13. | UNKNOWN | 20.63 | 5 | J |
| 14. | UNKNOWN | 21.50 | 3 | J |
| 15. | UNKNOWN | 21.60 | 33 | J |
| 16. | UNKNOWN | 21.87 | 10 | J |
| 17. | UNKNOWN | 25.67 | 31 | J |

1D

# PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17908

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: 14736 SAS No.: ______ SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: 1473604

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ______

% Moisture: ______ decanted: (Y/N) ___ Date Received: 11/12/92

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/16/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/02/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 0.050 | U |
| 319-85-7 | beta-BHC | 0.050 | U |
| 319-86-8 | delta-BHC | 0.050 | U |
| 58-89-9 | gamma-BHC (Lindane) | 0.050 | U |
| 76-44-8 | Heptachlor | 0.050 | U |
| 309-00-2 | Aldrin | 0.050 | U |
| 1024-57-3 | Heptachlor epoxide | 0.050 | U |
| 959-98-8 | Endosulfan I | 0.050 | U |
| 60-57-1 | Dieldrin | 0.10 | U |
| 72-55-9 | 4,4'-DDE | 0.10 | U |
| 72-20-8 | Endrin | 0.10 | U |
| 33213-65-9 | Endosulfan II | 0.10 | U |
| 72-54-8 | 4,4'-DDD | 0.10 | U |
| 1031-07-8 | Endosulfan sulfate | 0.10 | U |
| 50-29-3 | 4,4'-DDT | 0.10 | U |
| 72-43-5 | Methoxychlor | 0.50 | U |
| 53494-70-5 | Endrin ketone | 0.10 | U |
| 7421-36-3 | Endrin aldehyde | 0.10 | U |
| 5103-71-9 | alpha-Chlordane | 0.050 | U |
| 5103-74-2 | gamma-Chlordane | 0.050 | U |
| 8001-35-2 | Toxaphene | 5.0 | U |
| 12674-11-2 | Aroclor-1016 | 1.0 | U |
| 11104-28-2 | Aroclor-1221 | 2.0 | U |
| 11141-16-5 | Aroclor-1232 | 1.0 | U |
| 53469-21-9 | Aroclor-1242 | 1.0 | U |
| 12672-29-6 | Aroclor-1248 | 1.0 | U |
| 11097-69-1 | Aroclor-1254 | 1.0 | U |
| 11096-82-5 | Aroclor-1260 | 1.0 | U |

U.S. EPA - CLP

Dup. MW8

1

# INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B17908

Lab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9219528___

Lab Code: 10195_ Case No.: SH192_ SAS No.: ______ SDG No.: SDG111

Matrix (soil/water): WATER Lab Sample ID: 473604____

Level (low/med): LOW__ Date Received: 11/12/92

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 32900 | | | P |
| 7440-36-0 | Antimony | 39.0 | U | N | P |
| 7440-38-2 | Arsenic | 7.5 | B | N | F |
| 7440-39-3 | Barium | 386 | | * | P |
| 7440-41-7 | Beryllium | 2.8 | B | | P |
| 7440-43-9 | Cadmium | 3.0 | U | | P |
| 7440-70-2 | Calcium | 47600 | | | P |
| 7440-47-3 | Chromium | 33.9 | | | P |
| 7440-48-4 | Cobalt | 60.6 | | | P |
| 7440-50-8 | Copper | 28.8 | | | P |
| 7439-89-6 | Iron | 58900 | | * | P |
| 7439-92-1 | Lead | 23.2 | | N* | F |
| 7439-95-4 | Magnesium | 8810 | | | P |
| 7439-96-5 | Manganese | 4660 | | | P |
| 7439-97-6 | Mercury | 0.56 | | N* | CV |
| 7440-02-0 | Nickel | 45.3 | | | P |
| 7440-09-7 | Potassium | 10400 | | | P |
| 7782-49-2 | Selenium | 5.0 | U | N | F |
| 7440-22-4 | Silver | 4.0 | U | | P |
| 7440-23-5 | Sodium | 30200 | | | P |
| 7440-28-0 | Thallium | 5.0 | U | | F |
| 7440-62-2 | Vanadium | 79.3 | | | P |
| 7440-66-6 | Zinc | 76.3 | | * | P |
| 5955-70-0 | Cyanide | 10.0 | U | | AS |

Color Before: ORANGE___ Clarity Before: CLOUDY Texture: ______

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: ______

Comments:

U

1A

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. [redacted]

B17910 [redacted]

Lab Name: NYTEST ENV INC  Contract: 9219528

Lab Code: NYTEST  Case No.: SH192  SAS No.: ______  SDG No.: 1110

Matrix: (soil/water) WATER  Lab Sample ID: 1473606

Sample wt/vol: 5.00 (g/mL) ML  Lab File ID: K4712

Level: (low/med) LOW  Date Received: 11/10/92

% Moisture: not dec. ____  Date Analyzed: 11/18/92

GC Column: CAP  ID: 0.530 (mm)  Dilution Factor: 1.0

Soil Extract Volume: ________ (uL)  Soil Aliquot Volume: _____(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 1 | BJ |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 1 | J |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 2 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET

TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B17910

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473606

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: K4712

Level: (low/med) LOW Date Received: 11/10/92

% Moisture: not dec. ____ Date Analyzed: 11/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____(uL)

CONCENTRATION UNITS:

Number TICs found: 0 (ug/L or ug/Kg) UG/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| | | | | |

0000023

EPA SAMPLE NO.

B17910

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473606

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B1067

Level: (low/med) LOW Date Received: 11/12/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/21/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 108-95-2 | Phenol | 10 | U |
| 111-44-4 | bis(2-Chloroethyl)Ether | 10 | U |
| 95-57-8 | 2-Chlorophenol | 10 | U |
| 541-73-1 | 1,3-Dichlorobenzene | 10 | U |
| 106-46-7 | 1,4-Dichlorobenzene | 10 | U |
| 95-50-1 | 1,2-Dichlorobenzene | 10 | U |
| 95-48-7 | 2-Methylphenol | 10 | U |
| 108-60-1 | 2,2'-oxybis(1-Chloropropane) | 10 | U |
| 106-44-5 | 4-Methylphenol | 10 | U |
| 621-64-7 | N-Nitroso-Di-n-Propylamine | 10 | U |
| 67-72-1 | Hexachloroethane | 10 | U |
| 98-95-3 | Nitrobenzene | 10 | U |
| 78-59-1 | Isophorone | 10 | U |
| 88-75-5 | 2-Nitrophenol | 10 | U |
| 105-67-9 | 2,4-Dimethylphenol | 10 | U |
| 111-91-1 | bis(2-Chloroethoxy)Methane | 10 | U |
| 120-83-2 | 2,4-Dichlorophenol | 10 | U |
| 120-82-1 | 1,2,4-Trichlorobenzene | 10 | U |
| 91-20-3 | Naphthalene | 10 | U |
| 106-47-8 | 4-Chloroaniline | 10 | U |
| 87-68-3 | Hexachlorobutadiene | 10 | U |
| 59-50-7 | 4-Chloro-3-Methylphenol | 10 | U |
| 91-57-6 | 2-Methylnaphthalene | 10 | U |
| 77-47-4 | Hexachlorocyclopentadiene | 10 | U |
| 88-06-2 | 2,4,6-Trichlorophenol | 10 | U |
| 95-95-4 | 2,4,5-Trichlorophenol | 50 | U |
| 91-58-7 | 2-Chloronaphthalene | 10 | U |
| 88-74-4 | 2-Nitroaniline | 50 | U |
| 131-11-3 | Dimethylphthalate | 10 | U |
| 208-96-8 | Acenaphthylene | 10 | U |
| 606-20-2 | 2,6-Dinitrotoluene | 10 | U |
| 99-09-2 | 3-Nitroaniline | 50 | U |
| 83-32-9 | Acenaphthene | 10 | U |

FORM I SV-1 3/90

1C

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17910

Lab Name: NYTEST ENV INC  Contract: 9219528

Lab Code: NYTEST  Case No.: SH192  SAS No.: ______  SDG No.: 1110

Matrix: (soil/water) WATER  Lab Sample ID: 1473606

Sample wt/vol: 1000 (g/mL) ML  Lab File ID: B1067

Level: (low/med) LOW  Date Received: 11/12/92

% Moisture: _____ decanted: (Y/N) ___  Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL)  Date Analyzed: 11/21/92

Injection Volume: 2.0(uL)  Dilution Factor: 1.0

GPC Cleanup: (Y/N) N  pH: 7.0

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 51-28-5 | 2,4-Dinitrophenol | 50 | U |
| 100-02-7 | 4-Nitrophenol | 50 | U |
| 132-64-9 | Dibenzofuran | 10 | U |
| 121-14-2 | 2,4-Dinitrotoluene | 10 | U |
| 84-66-2 | Diethylphthalate | 10 | U |
| 7005-72-3 | 4-Chlorophenyl-phenylether | 10 | U |
| 86-73-7 | Fluorene | 10 | U |
| 100-10-6 | 4-Nitroaniline | 50 | U |
| 534-52-1 | 4,6-Dinitro-2-methylphenol | 50 | U |
| 86-30-6 | N-Nitrosodiphenylamine (1) | 10 | U |
| 101-55-3 | 4-Bromophenyl-phenylether | 10 | U |
| 118-74-1 | Hexachlorobenzene | 10 | U |
| 87-86-5 | Pentachlorophenol | 50 | U |
| 85-01-8 | Phenanthrene | 10 | U |
| 120-12-7 | Anthracene | 10 | U |
| 86-74-8 | Carbazole | 10 | U |
| 84-74-2 | Di-n-Butylphthalate | 10 | U |
| 206-44-0 | Fluoranthene | 10 | U |
| 129-00-0 | Pyrene | 10 | U |
| 85-68-7 | Butylbenzylphthalate | 10 | U |
| 91-94-1 | 3,3'-Dichlorobenzidine | 20 | U |
| 56-55-3 | Benzo(a)Anthracene | 10 | U |
| 218-01-9 | Chrysene | 10 | U |
| 117-81-7 | bis(2-Ethylhexyl)Phthalate | 1 | J |
| 117-84-0 | Di-n-Octyl Phthalate | 10 | U |
| 205-99-2 | Benzo(b)Fluoranthene | 10 | U |
| 207-08-9 | Benzo(k)Fluoranthene | 10 | U |
| 50-32-8 | Benzo(a)Pyrene | 10 | U |
| 193-39-5 | Indeno(1,2,3-cd)Pyrene | 10 | U |
| 53-70-3 | Dibenz(a,h)Anthracene | 10 | U |
| 191-24-2 | Benzo(g,h,i)Perylene | 10 | U |

(1) - Cannot be separated from Diphenylamine

1F

EPA SAMPLE NO.

# SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
# TENTATIVELY IDENTIFIED COMPOUNDS

B17910

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: SH192 SAS No.: ______ SDG No.: 1110

Matrix: (soil/water) WATER Lab Sample ID: 1473606

Sample wt/vol: 1000 (g/mL) ML Lab File ID: B1067

Level: (low/med) LOW Date Received: 11/12/92

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 11/16/92

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 11/21/92

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 20

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 5.37 | 8 | J |
| 2. | UNKNOWN | 5.52 | 9 | J |
| 3. | UNKNOWN | 7.77 | 11 | J |
| 4. | UNKNOWN | 10.22 | 8 | J |
| 5. | UNKNOWN | 12.67 | 45 | J |
| 6. | UNKNOWN ALKANE | 13.63 | 61 | J |
| 7. | UNKNOWN | 14.78 | 4 | J |
| 8. | UNKNOWN | 15.72 | 22 | J |
| 9. | UNKNOWN ALKANE | 16.13 | 3 | J |
| 10. | UNKNOWN | 16.72 | 71 | J |
| 11. | UNKNOWN | 17.18 | 4 | J |
| 12. | UNKNOWN | 17.70 | 39 | J |
| 13. | UNKNOWN | 18.32 | 120 | J |
| 14. | UNKNOWN | 18.37 | 3 | J |
| 15. | UNKNOWN | 19.33 | 100 | J |
| 16. | UNKNOWN | 19.95 | 6 | J |
| 17. | UNKNOWN | 20.47 | 11 | J |
| 18. | UNKNOWN | 20.68 | 29 | J |
| 19. | UNKNOWN | 21.58 | 170 | J |
| 20. | UNKNOWN | 25.72 | 47 | J |

## 1D
## PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17910

Lab Name: NYTEST ENV INC Contract: 9219528

Lab Code: NYTEST Case No.: 14736 SAS No.: ______ SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: 1473606

Sample wt/vol: 1000 (g/mL) ML Lab File ID: ______

% Moisture: ______ decanted: (Y/N) ___ Date Received: 11/12/92

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 11/16/92

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 12/02/92

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 319-84-6 | alpha-BHC | 0.050 | U |
| 319-85-7 | beta-BHC | 0.050 | U |
| 319-86-8 | delta-BHC | 0.050 | U |
| 58-89-9 | gamma-BHC (Lindane) | 0.050 | U |
| 76-44-8 | Heptachlor | 0.050 | U |
| 309-00-2 | Aldrin | 0.050 | U |
| 1024-57-3 | Heptachlor epoxide | 0.050 | U |
| 959-98-8 | Endosulfan I | 0.050 | U |
| 60-57-1 | Dieldrin | 0.10 | U |
| 72-55-9 | 4,4'-DDE | 0.10 | U |
| 72-20-8 | Endrin | 0.10 | U |
| 33213-65-9 | Endosulfan II | 0.10 | U |
| 72-54-8 | 4,4'-DDD | 0.10 | U |
| 1031-07-8 | Endosulfan sulfate | 0.10 | U |
| 50-29-3 | 4,4'-DDT | 0.10 | U |
| 72-43-5 | Methoxychlor | 0.50 | U |
| 53494-70-5 | Endrin ketone | 0.10 | U |
| 7421-36-3 | Endrin aldehyde | 0.10 | U |
| 5103-71-9 | alpha-Chlordane | 0.050 | U |
| 5103-74-2 | gamma-Chlordane | 0.050 | U |
| 8001-35-2 | Toxaphene | 5.0 | U |
| 12674-11-2 | Aroclor-1016 | 1.0 | U |
| 11104-28-2 | Aroclor-1221 | 2.0 | U |
| 11141-16-5 | Aroclor-1232 | 1.0 | U |
| 53469-21-9 | Aroclor-1242 | 1.0 | U |
| 12672-29-6 | Aroclor-1248 | 1.0 | U |
| 11097-69-1 | Aroclor-1254 | 1.0 | U |
| 11096-82-5 | Aroclor-1260 | 1.0 | U |

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# INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

B17910

Lab Name: NYTEST_ENVIRONMENTAL_INC.   Contract: 9219528___

ab Code: 10195_   Case No.: SH192_   SAS No.: ______   SDG No.: SDG111

Matrix (soil/water): WATER   Lab Sample ID: 473606____

evel (low/med): LOW__   Date Received: 11/12/92

% Solids: __0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L_

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 81100 | | | P |
| 7440-36-0 | Antimony | 39.0 | U | N | P |
| 7440-38-2 | Arsenic | 5.2 | B | N | F |
| 7440-39-3 | Barium | 1110 | | * | P |
| 7440-41-7 | Beryllium | 8.6 | | | P |
| 7440-43-9 | Cadmium | 3.0 | U | | P |
| 7440-70-2 | Calcium | 43000 | | | P |
| 7440-47-3 | Chromium | 72.3 | | | P |
| 7440-48-4 | Cobalt | 100 | | | P |
| 7440-50-8 | Copper | 61.9 | | | P |
| 7439-89-6 | Iron | 120000 | | * | P |
| 7439-92-1 | Lead | 75.7 | | SN* | F |
| 7439-95-4 | Magnesium | 11300 | | | P |
| 7439-96-5 | Manganese | 8910 | | | P |
| 7439-97-6 | Mercury | 0.87 | | N* | CV |
| 7440-02-0 | Nickel | 26.4 | B | | P |
| 7440-09-7 | Potassium | 11600 | | | P |
| 7782-49-2 | Selenium | 5.0 | U | N | F |
| 7440-22-4 | Silver | 4.0 | U | | P |
| 7440-23-5 | Sodium | 33500 | | | P |
| 7440-28-0 | Thallium | 5.0 | U | | F |
| 7440-62-2 | Vanadium | 134 | | | P |
| 7440-66-6 | Zinc | 151 | | * | P |
| 5955-70-0 | Cyanide | 10.0 | U | | AS |

Color Before: ORANGE___   Clarity Before: CLOUDY   Texture: _______

olor After: COLORLESS   Clarity After: CLEAR_   Artifacts: _______

Comments:

_______PB AT A 4X DILUTION.

FORM I - IN

# LABORATORY REPORTS
# FEBRUARY 1993 GROUNDWATER SAMPLING

**H2M LABS, INC.** 575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9304718

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
RESAMPLE

DATE COLLECTED. 02/09/93
DATE RECEIVED.. 02/09/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: MW-3
REMARKS:

TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <0.5 | | |
| BROMOMETHANE | <0.5 | | |
| VINYL CHLORIDE | <0.5 | | |
| CHLOROETHANE | <0.5 | | |
| METHYLENE CHLORIDE | <0.5 | | |
| 1,1-DICHLOROETHENE | <0.5 | | |
| 1,1-DICHLOROETHANE | <0.5 | | |
| C/T-1/2-DICHLOROETHENE | 0.6 | | |
| CHLOROFORM | <0.5 | | |
| 1,2-DICHLOROETHANE | <0.5 | | |
| 1,1,1-TRICHLOROETHANE | <0.5 | | |
| CARBON TETRACHLORIDE | <0.5 | | |
| BROMODICHLOROMETHANE | <0.5 | | |
| 1,2-DICHLOROPROPANE | <0.5 | | |
| TRANS-1,3-DICHLOROPROPENE | <0.5 | | |
| TRICHLOROETHENE | <0.5 | | |
| DIBROMOCHLOROMETHANE | <0.5 | | |
| 1,1,2-TRICHLOROETHANE | <0.5 | | |
| CIS-1,3-DICHLOROPROPENE | <0.5 | | |
| BENZENE | <0.5 | | |
| BROMOFORM | <0.5 | | |
| 1,1,2,2-TETRACHLOROETHANE | <0.5 | | |
| TETRACHLOROETHENE | 3 | | |
| TOLUENE | <0.5 | | |
| CHLOROBENZENE | <0.5 | | |
| ETHYLBENZENE | <0.5 | | |
| XYLENES (TOTAL) | <0.5 | | |
| ACETONE | <0.5 | | |
| 2-BUTANONE (MEK) | <0.5 | | |
| 4-METHYL-2PENTANONE(MIBK) | <0.5 | | |
| CARBON DISULFIDE | <0.5 | | |
| 2-HEXANONE | <0.5 | | |
| STYRENE | <0.5 | | |

COPIES TO: MOK/MNG

DATE ISSUED 02/18/93

DATE RUN....... 02/16/93
DATE REPORTED.. 02/17/93

LABORATORY DIRECTOR

ORIGINAL

# H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9304719

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
RESAMPLE

DATE COLLECTED. 02/09/93
DATE RECEIVED.. 02/09/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: MW-5

REMARKS:

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## TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <0.5 | | |
| BROMOMETHANE | <0.5 | | |
| VINYL CHLORIDE | <0.5 | | |
| CHLOROETHANE | <0.5 | | |
| METHYLENE CHLORIDE | <0.5 | | |
| 1,1-DICHLOROETHENE | <0.5 | | |
| 1,1-DICHLOROETHANE | 0.6 | | |
| C/T-1/2-DICHLOROETHENE | 3 | | |
| CHLOROFORM | <0.5 | | |
| 1,2-DICHLOROETHANE | <0.5 | | |
| 1,1,1-TRICHLOROETHANE | 0.6 | | |
| CARBON TETRACHLORIDE | <0.5 | | |
| BROMODICHLOROMETHANE | <0.5 | | |
| 1,2-DICHLOROPROPANE | <0.5 | | |
| TRANS-1,3-DICHLOROPROPENE | <0.5 | | |
| TRICHLOROETHENE | 6 | | |
| DIBROMOCHLOROMETHANE | <0.5 | | |
| 1,1,2-TRICHLOROETHANE | <0.5 | | |
| CIS-1,3-DICHLOROPROPENE | <0.5 | | |
| BENZENE | <0.5 | | |
| BROMOFORM | <0.5 | | |
| 1,1,2,2-TETRACHLOROETHANE | <0.5 | | |
| TETRACHLOROETHENE | 27 | | |
| TOLUENE | <0.5 | | |
| CHLOROBENZENE | <0.5 | | |
| ETHYLBENZENE | <0.5 | | |
| XYLENES (TOTAL) | <0.5 | | |
| ACETONE | 2B | | |
| 2-BUTANONE (MEK) | <0.5 | | |
| 4-METHYL-2PENTANONE(MIBK) | <0.5 | | |
| CARBON DISULFIDE | <0.5 | | |
| 2-HEXANONE | <0.5 | | |
| STYRENE | <0.5 | | |

B=Analyte Detected in Method Blank at 1 ug/l

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COPIES TO: MOK/MNG

DATE ISSUED 02/18/93

DATE RUN....... 02/16/93
DATE REPORTED.. 02/17/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9304720

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
RESAMPLE

DATE COLLECTED. 02/09/93
DATE RECEIVED.. 02/09/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: MW-6

REMARKS:

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TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <0.5 | | |
| BROMOMETHANE | <0.5 | | |
| VINYL CHLORIDE | <0.5 | | |
| CHLOROETHANE | <0.5 | | |
| METHYLENE CHLORIDE | <0.5 | | |
| 1,1-DICHLOROETHENE | <0.5 | | |
| 1,1-DICHLOROETHANE | <0.5 | | |
| C/T-1/2-DICHLOROETHENE | 2 | | |
| CHLOROFORM | <0.5 | | |
| 1,2-DICHLOROETHANE | <0.5 | | |
| 1,1,1-TRICHLOROETHANE | 0.6 | | |
| CARBON TETRACHLORIDE | <0.5 | | |
| BROMODICHLOROMETHANE | <0.5 | | |
| 1,2-DICHLOROPROPANE | <0.5 | | |
| TRANS-1,3-DICHLOROPROPENE | <0.5 | | |
| TRICHLOROETHENE | 4 | | |
| DIBROMOCHLOROMETHANE | <0.5 | | |
| 1,1,2-TRICHLOROETHANE | <0.5 | | |
| CIS-1,3-DICHLOROPROPENE | <0.5 | | |
| BENZENE | <0.5 | | |
| BROMOFORM | <0.5 | | |
| 1,1,2,2-TETRACHLOROETHANE | <0.5 | | |
| TETRACHLOROETHENE | 62 | | |
| TOLUENE | <0.5 | | |
| CHLOROBENZENE | <0.5 | | |
| ETHYLBENZENE | <0.5 | | |
| XYLENES (TOTAL) | <0.5 | | |
| ACETONE | 3B | | |
| 2-BUTANONE (MEK) | <0.5 | | |
| 4-METHYL-2PENTANONE(MIBK) | <0.5 | | |
| CARBON DISULFIDE | <0.5 | | |
| 2-HEXANONE | <0.5 | | |
| STYRENE | <0.5 | | |

B=Analyte Detected in Method Blank at 1 ug/l

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COPIES TO: MOK/MNG

DATE ISSUED 02/18/93

DATE RUN....... 02/16/93
DATE REPORTED.. 02/17/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.** 575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9304721

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
RESAMPLE

DATE COLLECTED. 02/09/93
DATE RECEIVED.. 02/09/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: MW-8

REMARKS:

---

TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <0.5 | | |
| BROMOMETHANE | <0.5 | | |
| VINYL CHLORIDE | <0.5 | | |
| CHLOROETHANE | <0.5 | | |
| METHYLENE CHLORIDE | <0.5 | | |
| 1,1-DICHLOROETHENE | <0.5 | | |
| 1,1-DICHLOROETHANE | <0.5 | | |
| C/T-1/2-DICHLOROETHENE | <0.5 | | |
| CHLOROFORM | <0.5 | | |
| 1,2-DICHLOROETHANE | <0.5 | | |
| 1,1,1-TRICHLOROETHANE | <0.5 | | |
| CARBON TETRACHLORIDE | <0.5 | | |
| BROMODICHLOROMETHANE | <0.5 | | |
| 1,2-DICHLOROPROPANE | <0.5 | | |
| TRANS-1,3-DICHLOROPROPENE | <0.5 | | |
| TRICHLOROETHENE | 0.6 | | |
| DIBROMOCHLOROMETHANE | <0.5 | | |
| 1,1,2-TRICHLOROETHANE | <0.5 | | |
| CIS-1,3-DICHLOROPROPENE | <0.5 | | |
| BENZENE | <0.5 | | |
| BROMOFORM | <0.5 | | |
| 1,1,2,2-TETRACHLOROETHANE | <0.5 | | |
| TETRACHLOROETHENE | 1.0 | | |
| TOLUENE | <0.5 | | |
| CHLOROBENZENE | <0.5 | | |
| ETHYLBENZENE | <0.5 | | |
| XYLENES (TOTAL) | <0.5 | | |
| ACETONE | 2B | | |
| 2-BUTANONE (MEK) | <0.5 | | |
| 4-METHYL-2PENTANONE(MIBK) | <0.5 | | |
| CARBON DISULFIDE | <0.5 | | |
| 2-HEXANONE | <0.5 | | |
| STYRENE | <0.5 | | |

B=Analyte Detected in Method Blank at 1 ug/l

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COPIES TO: MOK/MNG

DATE ISSUED 02/18/93

DATE RUN....... 02/16/93
DATE REPORTED.. 02/17/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

**LAB NO: 9304722**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
RESAMPLE

DATE COLLECTED. 02/09/93
DATE RECEIVED.. 02/09/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: MW-9

REMARKS:

---

TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <0.5 | | |
| BROMOMETHANE | <0.5 | | |
| VINYL CHLORIDE | <0.5 | | |
| CHLOROETHANE | <0.5 | | |
| METHYLENE CHLORIDE | <0.5 | | |
| 1,1-DICHLOROETHENE | <0.5 | | |
| 1,1-DICHLOROETHANE | <0.5 | | |
| C/T-1/2-DICHLOROETHENE | 2 | | |
| CHLOROFORM | <0.5 | | |
| 1,2-DICHLOROETHANE | <0.5 | | |
| 1,1,1-TRICHLOROETHANE | <0.5 | | |
| CARBON TETRACHLORIDE | <0.5 | | |
| BROMODICHLOROMETHANE | <0.5 | | |
| 1,2-DICHLOROPROPANE | <0.5 | | |
| TRANS-1,3-DICHLOROPROPENE | <0.5 | | |
| TRICHLOROETHENE | 1 | | |
| DIBROMOCHLOROMETHANE | <0.5 | | |
| 1,1,2-TRICHLOROETHANE | <0.5 | | |
| CIS-1,3-DICHLOROPROPENE | <0.5 | | |
| BENZENE | <0.5 | | |
| BROMOFORM | <0.5 | | |
| 1,1,2,2-TETRACHLOROETHANE | <0.5 | | |
| TETRACHLOROETHENE | <0.5 | | |
| TOLUENE | <0.5 | | |
| CHLOROBENZENE | <0.5 | | |
| ETHYLBENZENE | <0.5 | | |
| XYLENES (TOTAL) | <0.5 | | |
| ACETONE | 4B | | |
| 2-BUTANONE (MEK) | <0.5 | | |
| 4-METHYL-2PENTANONE(MIBK) | <0.5 | | |
| CARBON DISULFIDE | <0.5 | | |
| 2-HEXANONE | <0.5 | | |
| STYRENE | <0.5 | | |

B=Analyte Detected in Method Blank at 1 ug/l

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COPIES TO: MOK/MNG

DATE ISSUED 02/18/93

DATE RUN....... 02/16/93
DATE REPORTED.. 02/17/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9304723

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... BLANK
RESAMPLE

DATE COLLECTED. 02/09/93
DATE RECEIVED.. 02/09/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: FIELD BLANK

REMARKS:

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TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <0.5 | | |
| BROMOMETHANE | <0.5 | | |
| VINYL CHLORIDE | <0.5 | | |
| CHLOROETHANE | <0.5 | | |
| METHYLENE CHLORIDE | 23 | | |
| 1,1-DICHLOROETHENE | <0.5 | | |
| 1,1-DICHLOROETHANE | <0.5 | | |
| C/T-1/2-DICHLOROETHENE | <0.5 | | |
| CHLOROFORM | <0.5 | | |
| 1,2-DICHLOROETHANE | <0.5 | | |
| 1,1,1-TRICHLOROETHANE | <0.5 | | |
| CARBON TETRACHLORIDE | <0.5 | | |
| BROMODICHLOROMETHANE | <0.5 | | |
| 1,2-DICHLOROPROPANE | <0.5 | | |
| TRANS-1,3-DICHLOROPROPENE | <0.5 | | |
| TRICHLOROETHENE | <0.5 | | |
| DIBROMOCHLOROMETHANE | <0.5 | | |
| 1,1,2-TRICHLOROETHANE | <0.5 | | |
| CIS-1,3-DICHLOROPROPENE | <0.5 | | |
| BENZENE | <0.5 | | |
| BROMOFORM | <0.5 | | |
| 1,1,2,2-TETRACHLOROETHANE | <0.5 | | |
| TETRACHLOROETHENE | <0.5 | | |
| TOLUENE | <0.5 | | |
| CHLOROBENZENE | <0.5 | | |
| ETHYLBENZENE | <0.5 | | |
| XYLENES (TOTAL) | <0.5 | | |
| ACETONE | 27B | | |
| 2-BUTANONE (MEK) | <0.5 | | |
| 4-METHYL-2PENTANONE(MIBK) | <0.5 | | |
| CARBON DISULFIDE | <0.5 | | |
| 2-HEXANONE | <0.5 | | |
| STYRENE | <0.5 | | |

B=Analyte Detected in Method Blank at 1 ug/l

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COPIES TO: MOK/MNG

DATE ISSUED 02/18/93

DATE RUN....... 02/16/93
DATE REPORTED.. 02/17/93

ORIGINAL

LABORATORY DIRECTOR

**H2M LABS, INC.** 575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9304724

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... BLANK
RESAMPLE

DATE COLLECTED. 02/09/93
DATE RECEIVED.. 02/09/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: TRIP BLANK

REMARKS:

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## TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <0.5 | | |
| BROMOMETHANE | <0.5 | | |
| VINYL CHLORIDE | <0.5 | | |
| CHLOROETHANE | <0.5 | | |
| METHYLENE CHLORIDE | <0.5 | | |
| 1,1-DICHLOROETHENE | <0.5 | | |
| 1,1-DICHLOROETHANE | <0.5 | | |
| C/T-1/2-DICHLOROETHENE | <0.5 | | |
| CHLOROFORM | <0.5 | | |
| 1,2-DICHLOROETHANE | <0.5 | | |
| 1,1,1-TRICHLOROETHANE | <0.5 | | |
| CARBON TETRACHLORIDE | <0.5 | | |
| BROMODICHLOROMETHANE | <0.5 | | |
| 1,2-DICHLOROPROPANE | <0.5 | | |
| TRANS-1,3-DICHLOROPROPENE | <0.5 | | |
| TRICHLOROETHENE | <0.5 | | |
| DIBROMOCHLOROMETHANE | <0.5 | | |
| 1,1,2-TRICHLOROETHANE | <0.5 | | |
| CIS-1,3-DICHLOROPROPENE | <0.5 | | |
| BENZENE | <0.5 | | |
| BROMOFORM | <0.5 | | |
| 1,1,2,2-TETRACHLOROETHANE | <0.5 | | |
| TETRACHLOROETHENE | <0.5 | | |
| TOLUENE | <0.5 | | |
| CHLOROBENZENE | <0.5 | | |
| ETHYLBENZENE | <0.5 | | |
| XYLENES (TOTAL) | <0.5 | | |
| ACETONE | 2B | | |
| 2-BUTANONE (MEK) | <0.5 | | |
| 4-METHYL-2PENTANONE(MIBK) | <0.5 | | |
| CARBON DISULFIDE | <0.5 | | |
| 2-HEXANONE | <0.5 | | |
| STYRENE | <0.5 | | |

B=Analyte Detected in Method Blank at 1 ug/l

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COPIES TO: MOK/MNG

DATE ISSUED 02/18/93

DATE RUN....... 02/16/93
DATE REPORTED.. 02/17/93

LABORATORY DIRECTOR

ORIGINAL

1 A-T

NYTEST ENVIRONMENTAL INC.

# TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 2/13/93

SAMPLE ID: 209933 MW3
LAB ID: 1574001
DIL FACTOR: 1.00
% MOISTURE: NA

| CMPD # | CAS Number | VOLATILE COMPOUNDS | UG/L |
|---|---|---|---|
| 1 | 74-87-3 | Chloromethane | 5.0 U |
| 2 | 74-83-9 | Bromomethane | 5.0 U |
| 3 | 75-01-4 | Vinyl Chloride | 5.0 U |
| 4 | 75-00-3 | Chloroethane | 5.0 U |
| 5 | 75-09-2 | Methylene Chloride | 5.0 B |
| 6 | 67-64-1 | 2-Propanone | 5.0 U |
| 7 | 75-15-0 | Carbon disulfide | 5.0 U |
| 8 | 75-35-4 | 1,1-Dichloroethene | 5.0 U |
| 9 | 75-34-3 | 1,1-Dichloroethane | 5.0 U |
| 10 | 540-59-0 | 1,2-Dichloroethene (total) | 2.0 J |
| 11 | 67-66-3 | Chloroform | 5.0 U |
| 12 | 107-06-2 | 1,2-Dichloroethane | 5.0 U |
| 13 | 78-93-3 | 2-Butanone | 5.0 U |
| 14 | 71-55-6 | 1,1,1-Trichloroethane | 5.0 U |
| 15 | 56-23-5 | Carbon Tetrachloride | 5.0 U |
| 16 | 108-05-4 | Vinyl Acetate | 5.0 U |
| 17 | 75-27-4 | Bromodichloromethane | 5.0 U |
| 18 | 78-87-5 | 1,2-Dichloropropene | 5.0 U |
| 19 | 10061-01-5 | cis-1,3-Dichloropropene | 5.0 U |
| 20 | 79-01-6 | Trichloroethene | 2.0 J |
| 21 | 124-48-1 | Dibromochloromethane | 5.0 U |
| 22 | 79-00-5 | 1,1,2-Trichloroethane | 5.0 U |
| 23 | 71-43-2 | Benzene | 5.0 U |
| 24 | 10061-02-6 | Trans-1,3-Dichloropropene | 5.0 U |
| 25 | 75-25-2 | Bromoform | 5.0 U |
| 26 | 108-10-1 | 4-Methyl-2-Pentanone | 5.0 U |
| 27 | 591-78-6 | 2-Hexanone | 5.0 U |
| 28 | 127-18-4 | Tetrachloroethene | 340.0 E |
| 29 | 79-34-5 | 1,1,2,2-Tetrachloroethene | 5.0 U |
| 30 | 108-88-3 | Toluene | 5.0 U |
| 31 | 108-90-7 | Chlorobenzene | 5.0 U |
| 32 | 100-41-4 | Ethylbenzene | 5.0 U |
| 33 | 100-42-5 | Styrene | 5.0 U |
| 34 | 1330-20-7 | Xylene (total) | 5.0 U |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | | | |
| 39 | | | |
| 40 | | | |
| 41 | | | |

1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

MW 3
5:1 Dilution

| | | | |
|---|---|---|---|
| SAMPLE MATRIX: | WATER | SAMPLE ID: | 209933DL |
| CONC. LEVEL: | LOW | LAB ID: | 74001DL |
| ANALYSIS DATE: | 2/13/93 | DIL FACTOR: | 5.00 |
| | | % MOISTURE: | NA |

| CMPD # | CAS Number | VOLATILE COMPOUNDS | UG/L |
|---|---|---|---|
| 1 | 74-87-3 | Chloromethane | 25.0 U |
| 2 | 74-83-9 | Bromomethane | 25.0 U |
| 3 | 75-01-4 | Vinyl Chloride | 25.0 U |
| 4 | 75-00-3 | Chloroethane | 25.0 U |
| 5 | 75-09-2 | Methylene Chloride | 46.0 BD |
| 6 | 67-64-1 | 2-Propanone | 25.0 U |
| 7 | 75-15-0 | Carbon disulfide | 25.0 U |
| 8 | 75-35-4 | 1,1-Dichloroethene | 25.0 U |
| 9 | 75-34-3 | 1,1-Dichloroethane | 25.0 U |
| 10 | 540-59-0 | 1,2-Dichloroethene (total) | 25.0 U |
| 11 | 67-66-3 | Chloroform | 25.0 U |
| 12 | 107-06-2 | 1,2-Dichloroethane | 25.0 U |
| 13 | 78-93-3 | 2-Butanone | 25.0 U |
| 14 | 71-55-6 | 1,1,1-Trichloroethane | 25.0 U |
| 15 | 56-23-5 | Carbon Tetrachloride | 25.0 U |
| 16 | 108-05-4 | Vinyl Acetate | 25.0 U |
| 17 | 75-27-4 | Bromodichloromethane | 25.0 U |
| 18 | 78-87-5 | 1,2-Dichloropropane | 25.0 U |
| 19 | 10061-01-5 | cis-1,3-Dichloropropene | 25.0 U |
| 20 | 79-01-6 | Trichloroethene | 25.0 U |
| 21 | 124-48-1 | Dibromochloromethane | 25.0 U |
| 22 | 79-00-5 | 1,1,2-Trichloroethane | 25.0 U |
| 23 | 71-43-2 | Benzene | 25.0 U |
| 24 | 10061-02-6 | Trans-1,3-Dichloropropene | 25.0 U |
| 25 | 75-25-2 | Bromoform | 25.0 U |
| 26 | 108-10-1 | 4-Methyl-2-Pentanone | 25.0 U |
| 27 | 591-78-6 | 2-Hexanone | 25.0 U |
| 28 | 127-18-4 | Tetrachloroethene | 25.0 U |
| 29 | 79-34-5 | 1,1,2,2-Tetrachloroethane | 25.0 U |
| 30 | 108-88-3 | Toluene | 25.0 U |
| 31 | 108-90-7 | Chlorobenzene | 25.0 U |
| 32 | 100-41-4 | Ethylbenzene | 25.0 U |
| 33 | 100-42-5 | Styrene | 25.0 U |
| 34 | 1330-20-7 | Xylene (total) | 25.0 U |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | | | |
| 39 | | | |
| 40 | | | |
| 41 | | | |

1 A-T

NYTEST ENVIRONMENTAL INC.

## TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

MW 5

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 2/13/93

SAMPLE ID: 209935
LAB ID: 1574003
DIL FACTOR: 1.00
% MOISTURE: NA

| CMPD # | CAS Number | VOLATILE COMPOUNDS | UG/L |
|---|---|---|---|
| 1 | 74-87-3 | Chloromethane | 5.0 U |
| 2 | 74-83-9 | Bromomethane | 5.0 U |
| 3 | 75-01-4 | Vinyl Chloride | 5.0 U |
| 4 | 75-00-3 | Chloroethane | 5.0 U |
| 5 | 75-09-2 | Methylene Chloride | 5.0 B |
| 6 | 67-64-1 | 2-Propanone | 5.0 U |
| 7 | 75-15-0 | Carbon disulfide | 5.0 U |
| 8 | 75-35-4 | 1,1-Dichloroethene | 5.0 U |
| 9 | 75-34-3 | 1,1-Dichloroethane | 5.0 U |
| 10 | 540-59-0 | 1,2-Dichloroethene (total) | 5.0 U |
| 11 | 67-66-3 | Chloroform | 5.0 U |
| 12 | 107-06-2 | 1,2-Dichloroethane | 5.0 U |
| 13 | 78-93-3 | 2-Butanone | 5.0 U |
| 14 | 71-55-6 | 1,1,1-Trichloroethane | 5.0 U |
| 15 | 56-23-5 | Carbon Tetrachloride | 5.0 U |
| 16 | 108-05-4 | Vinyl Acetate | 5.0 U |
| 17 | 75-27-4 | Bromodichloromethane | 5.0 U |
| 18 | 78-87-5 | 1,2-Dichloropropane | 5.0 U |
| 19 | 10061-01-5 | cis-1,3-Dichloropropene | 5.0 U |
| 20 | 79-01-6 | Trichloroethene | 5.0 U |
| 21 | 124-48-1 | Dibromochloromethane | 5.0 U |
| 22 | 79-00-5 | 1,1,2-Trichloroethane | 5.0 U |
| 23 | 71-43-2 | Benzene | 5.0 U |
| 24 | 10061-02-6 | Trans-1,3-Dichloropropene | 5.0 U |
| 25 | 75-25-2 | Bromoform | 5.0 U |
| 26 | 108-10-1 | 4-Methyl-2-Pentanone | 5.0 U |
| 27 | 591-78-6 | 2-Hexanone | 5.0 U |
| 28 | 127-18-4 | Tetrachloroethene | 5.0 U |
| 29 | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5.0 U |
| 30 | 108-88-3 | Toluene | 5.0 U |
| 31 | 108-90-7 | Chlorobenzene | 5.0 U |
| 32 | 100-41-4 | Ethylbenzene | 5.0 U |
| 33 | 100-42-5 | Styrene | 5.0 U |
| 34 | 1330-20-7 | Xylene (total) | 5.0 U |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | | | |
| 39 | | | |
| 40 | | | |
| 41 | | | |

1 A-T

NYTEST ENVIRONMENTAL INC.

# TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

MW 6

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 2/13/93

SAMPLE ID: 209936
LAB ID: 1574002
DIL FACTOR: 1.00
% MOISTURE: NA

| CMPD # | CAS Number | VOLATILE COMPOUNDS | UG/L |
|---|---|---|---|
| 1 | 74-87-3 | Chloromethane | 5.0 U |
| 2 | 74-83-9 | Bromomethane | 5.0 U |
| 3 | 75-01-4 | Vinyl Chloride | 5.0 U |
| 4 | 75-00-3 | Chloroethane | 5.0 U |
| 5 | 75-09-2 | Methylene Chloride | 5.0 B |
| 6 | 67-64-1 | 2-Propanone | 5.0 U |
| 7 | 75-15-0 | Carbon disulfide | 5.0 U |
| 8 | 75-35-4 | 1,1-Dichloroethene | 5.0 U |
| 9 | 75-34-3 | 1,1-Dichloroethane | 5.0 U |
| 10 | 540-59-0 | 1,2-Dichloroethene (total) | 4.0 J |
| 11 | 67-66-3 | Chloroform | 5.0 U |
| 12 | 107-06-2 | 1,2-Dichloroethane | 5.0 U |
| 13 | 78-93-3 | 2-Butanone | 5.0 U |
| 14 | 71-55-6 | 1,1,1-Trichloroethane | 5.0 U |
| 15 | 56-23-5 | Carbon Tetrachloride | 5.0 U |
| 16 | 108-05-4 | Vinyl Acetate | 5.0 U |
| 17 | 75-27-4 | Bromodichloromethane | 5.0 U |
| 18 | 78-87-5 | 1,2-Dichloropropane | 5.0 U |
| 19 | 10061-01-5 | cis-1,3-Dichloropropene | 5.0 U |
| 20 | 79-01-6 | Trichloroethene | 6.0 |
| 21 | 124-48-1 | Dibromochloromethane | 5.0 U |
| 22 | 79-00-5 | 1,1,2-Trichloroethane | 5.0 U |
| 23 | 71-43-2 | Benzene | 5.0 U |
| 24 | 10061-02-6 | Trans-1,3-Dichloropropene | 5.0 U |
| 25 | 75-25-2 | Bromoform | 5.0 U |
| 26 | 108-10-1 | 4-Methyl-2-Pentanone | 5.0 U |
| 27 | 591-78-6 | 2-Hexanone | 5.0 U |
| 28 | 127-18-4 | Tetrachloroethene | 270.0 E |
| 29 | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5.0 U |
| 30 | 108-88-3 | Toluene | 5.0 U |
| 31 | 108-90-7 | Chlorobenzene | 5.0 U |
| 32 | 100-41-4 | Ethylbenzene | 5.0 U |
| 33 | 100-42-5 | Styrene | 5.0 U |
| 34 | 1330-20-7 | Xylene (total) | 5.0 U |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | | | |
| 39 | | | |
| 40 | | | |
| 41 | | | |

1 A-T

NYTEST ENVIRONMENTAL INC.

## TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

MW6

5:1 Dilution

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 2/13/93

SAMPLE ID: 2099360L
LAB ID: 740020L
DIL FACTOR: 5.00
% MOISTURE: NA

| CMPD # | CAS Number | VOLATILE COMPOUNDS | UG/L |
|---|---|---|---|
| 1 | 74-87-3 | Chloromethane | 25.0 U |
| 2 | 74-83-9 | Bromomethane | 25.0 U |
| 3 | 75-01-4 | Vinyl Chloride | 25.0 U |
| 4 | 75-00-3 | Chloroethane | 25.0 U |
| 5 | 75-09-2 | Methylene Chloride | 41.0 BD |
| 6 | 67-64-1 | 2-Propanone | 25.0 U |
| 7 | 75-15-0 | Carbon disulfide | 25.0 U |
| 8 | 75-35-4 | 1,1-Dichloroethene | 25.0 U |
| 9 | 75-34-3 | 1,1-Dichloroethane | 25.0 U |
| 10 | 540-59-0 | 1,2-Dichloroethene (total) | 25.0 U |
| 11 | 67-66-3 | Chloroform | 25.0 U |
| 12 | 107-06-2 | 1,2-Dichloroethane | 25.0 U |
| 13 | 78-93-3 | 2-Butanone | 25.0 U |
| 14 | 71-55-6 | 1,1,1-Trichloroethane | 25.0 U |
| 15 | 56-23-5 | Carbon Tetrachloride | 25.0 U |
| 16 | 108-05-4 | Vinyl Acetate | 25.0 U |
| 17 | 75-27-4 | Bromodichloromethane | 25.0 U |
| 18 | 78-87-5 | 1,2-Dichloropropane | 25.0 U |
| 19 | 10061-01-5 | cis-1,3-Dichloropropene | 25.0 U |
| 20 | 79-01-6 | Trichloroethene | 25.0 U |
| 21 | 124-48-1 | Dibromochloromethane | 25.0 U |
| 22 | 79-00-5 | 1,1,2-Trichloroethane | 25.0 U |
| 23 | 71-43-2 | Benzene | 25.0 U |
| 24 | 10061-02-6 | Trans-1,3-Dichloropropene | 25.0 U |
| 25 | 75-25-2 | Bromoform | 25.0 U |
| 26 | 108-10-1 | 4-Methyl-2-Pentanone | 25.0 U |
| 27 | 591-78-6 | 2-Hexanone | 25.0 U |
| 28 | 127-18-4 | Tetrachloroethene | 370.0 D |
| 29 | 79-34-5 | 1,1,2,2-Tetrachloroethane | 25.0 U |
| 30 | 108-88-3 | Toluene | 25.0 U |
| 31 | 108-90-7 | Chlorobenzene | 25.0 U |
| 32 | 100-41-4 | Ethylbenzene | 25.0 U |
| 33 | 100-42-5 | Styrene | 25.0 U |
| 34 | 1330-20-7 | Xylene (total) | 25.0 U |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | | | |
| 39 | | | |
| 40 | | | |
| 41 | | | |

1 A-T

NYTEST ENVIRONMENTAL INC.

# TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

MW 8

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 2/13/93

SAMPLE ID: 209938
LAB ID. 1574005
DIL FACTOR. 1.00
% MOISTURE: NA

| CMPD # | CAS Number | VOLATILE COMPOUNDS | UG/L |
|---|---|---|---|
| 1 | 74-87-3 | Chloromethane | 5.0 U |
| 2 | 74-83-9 | Bromomethane | 5.0 U |
| 3 | 75-01-4 | Vinyl Chloride | 5.0 U |
| 4 | 75-00-3 | Chloroethane | 5.0 U |
| 5 | 75-09-2 | Methylene Chloride | 5.0 B |
| 6 | 67-64-1 | 2-Propanone | 5.0 U |
| 7 | 75-15-0 | Carbon disulfide | 5.0 U |
| 8 | 75-35-4 | 1,1-Dichloroethene | 5.0 U |
| 9 | 75-34-3 | 1,1-Dichloroethane | 5.0 U |
| 10 | 540-59-0 | 1,2-Dichloroethene (total) | 5.0 U |
| 11 | 67-66-3 | Chloroform | 5.0 U |
| 12 | 107-06-2 | 1,2-Dichloroethane | 5.0 U |
| 13 | 78-93-3 | 2-Butanone | 5.0 U |
| 14 | 71-55-6 | 1,1,1-Trichloroethane | 5.0 U |
| 15 | 56-23-5 | Carbon Tetrachloride | 5.0 U |
| 16 | 108-05-4 | Vinyl Acetate | 5.0 U |
| 17 | 75-27-4 | Bromodichloromethane | 5.0 U |
| 18 | 78-87-5 | 1,2-Dichloropropane | 5.0 U |
| 19 | 10061-01-5 | cis-1,3-Dichloropropene | 5.0 U |
| 20 | 79-01-6 | Trichloroethene | 5.0 U |
| 21 | 124-48-1 | Dibromochloromethane | 5.0 U |
| 22 | 79-00-5 | 1,1,2-Trichloroethane | 5.0 U |
| 23 | 71-43-2 | Benzene | 5.0 U |
| 24 | 10061-02-6 | Trans-1,3-Dichloropropene | 5.0 U |
| 25 | 75-25-2 | Bromoform | 5.0 U |
| 26 | 108-10-1 | 4-Methyl-2-Pentanone | 5.0 U |
| 27 | 591-78-6 | 2-Hexanone | 5.0 U |
| 28 | 127-18-4 | Tetrachloroethene | 5.0 U |
| 29 | 79-34-5 | 1,1,2,2-Tetrachloroethane | 5.0 U |
| 30 | 108-88-3 | Toluene | 5.0 U |
| 31 | 108-90-7 | Chlorobenzene | 5.0 U |
| 32 | 100-41-4 | Ethylbenzene | 5.0 U |
| 33 | 100-42-5 | Styrene | 5.0 U |
| 34 | 1330-20-7 | Xylene (total) | 5.0 U |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | | | |
| 39 | | | |
| 40 | | | |
| 41 | | | |

1 A-T

NYTEST ENVIRONMENTAL INC.

## TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

MW 9

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 2/13/93

SAMPLE ID: 209939
LAB ID: 1574004
DIL FACTOR: 1.00
% MOISTURE: NA

| CMPD # | CAS Number | VOLATILE COMPOUNDS | UG/L |
|---|---|---|---|
| 1 | 74-87-3 | Chloromethane | 5.0 U |
| 2 | 74-83-9 | Bromomethane | 5.0 U |
| 3 | 75-01-4 | Vinyl Chloride | 5.0 U |
| 4 | 75-00-3 | Chloroethane | 5.0 U |
| 5 | 75-09-2 | Methylene Chloride | 5.0 B |
| 6 | 67-64-1 | 2-Propanone | 5.0 U |
| 7 | 75-15-0 | Carbon disulfide | 5.0 U |
| 8 | 75-35-4 | 1,1-Dichloroethene | 5.0 U |
| 9 | 75-34-3 | 1,1-Dichloroethane | 5.0 U |
| 10 | 540-59-0 | 1,2-Dichloroethene (total) | 5.0 U |
| 11 | 67-66-3 | Chloroform | 5.0 U |
| 12 | 107-06-2 | 1,2-Dichloroethane | 5.0 U |
| 13 | 78-93-3 | 2-Butanone | 5.0 U |
| 14 | 71-55-6 | 1,1,1-Trichloroethane | 5.0 U |
| 15 | 56-23-5 | Carbon Tetrachloride | 5.0 U |
| 16 | 108-05-4 | Vinyl Acetate | 5.0 U |
| 17 | 75-27-4 | Bromodichloromethane | 5.0 U |
| 18 | 78-87-5 | 1,2-Dichloropropene | 5.0 U |
| 19 | 10061-01-5 | cis-1,3-Dichloropropene | 5.0 U |
| 20 | 79-01-6 | Trichloroethene | 5.0 U |
| 21 | 124-48-1 | Dibromochloromethane | 5.0 U |
| 22 | 79-00-5 | 1,1,2-Trichloroethane | 5.0 U |
| 23 | 71-43-2 | Benzene | 5.0 U |
| 24 | 10061-02-6 | Trans-1,3-Dichloropropene | 5.0 U |
| 25 | 75-25-2 | Bromoform | 5.0 U |
| 26 | 108-10-1 | 4-Methyl-2-Pentanone | 5.0 U |
| 27 | 591-78-6 | 2-Hexanone | 5.0 U |
| 28 | 127-18-4 | Tetrachloroethene | 5.0 U |
| 29 | 79-34-5 | 1,1,2,2-Tetrachloroethene | 5.0 U |
| 30 | 108-88-3 | Toluene | 5.0 U |
| 31 | 108-90-7 | Chlorobenzene | 5.0 U |
| 32 | 100-41-4 | Ethylbenzene | 5.0 U |
| 33 | 100-42-5 | Styrene | 5.0 U |
| 34 | 1330-20-7 | Xylene (total) | 5.0 U |
| 35 | | | |
| 36 | | | |
| 37 | | | |
| 38 | | | |
| 39 | | | |
| 40 | | | |
| 41 | | | |

# LABORATORY REPORTS
# JANUARY 1994 GROUNDWATER SAMPLING

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9402181**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 01/18/94
DATE RECEIVED.. 01/18/94
COLLECTED BY... MSC03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: MW-3

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

---

COPIES TO: GJM

DATE ISSUED 01/21/94

DATE RUN....... 01/20/94
DATE REPORTED.. 01/21/94

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9402182

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 01/18/94
DATE RECEIVED.. 01/18/94
COLLECTED BY... MSC03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: MW-6

REMARKS:

---

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | 260 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: GJM

DATE ISSUED 01/21/94

DATE RUN....... 01/20/94
DATE REPORTED.. 01/21/94

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9402183**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 01/18/94
DATE RECEIVED.. 01/18/94
COLLECTED BY... MSC03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: MW-8

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: GJM

DATE ISSUED 01/21/94

DATE RUN....... 01/20/94
DATE REPORTED.. 01/21/94

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9402184

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 01/18/94
DATE RECEIVED.. 01/18/94
COLLECTED BY... MSC03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: MW-9

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: GJM

DATE ISSUED 01/21/94

DATE RUN....... 01/20/94
DATE REPORTED.. 01/21/94

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9402185**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 01/18/94
DATE RECEIVED.. 01/18/94
COLLECTED BY... MSC03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: FIELD BLANK

REMARKS:

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | <1 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

COPIES TO: GJM

DATE ISSUED 01/21/94

DATE RUN....... 01/20/94
DATE REPORTED.. 01/21/94

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9402186**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 01/17/94
DATE RECEIVED.. 01/18/94
COLLECTED BY... MSC03
PROJECT NO..... BOWE9203

POINT NO:
LOCATION: TRIP BLANK

REMARKS:

---

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | <1 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

---

COPIES TO: GJM

DATE ISSUED 01/21/94

DATE RUN....... 01/20/94
DATE REPORTED.. 01/21/94

LABORATORY DIRECTOR

ORIGINAL

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. [redacted]

017903

[redacted]

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: ______ SDG No.: 0113

Matrix: (soil/water) WATER Lab Sample ID: [illegible]

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: [illegible]703

Level: (low/med) LOW Date Received: 01/[illegible]/94

% Moisture: not dec. ____ Date Analyzed: 0[illegible]/20/94

GC Column: CAP ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | BJ |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 2 | J |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. [redacted]

[redacted]

| |
|---|
| E17906 |

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: ______ SDG No.: 0118

Matrix: (soil/water) [illegible] Lab Sample ID: [illegible]

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: [illegible]698

Level: (low/med) LOW Date Received: 01/19/94

% Moisture: not dec. ___ Date Analyzed: 01/19/94

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 6 | BJ |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 2 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 200 | E |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

[illegible]

[redacted]

Lab Name: [illegible] Contract: [illegible]

Lab Code: [illegible] Case No.: [illegible] SAS No.: ______ SDG No.: 0110

Matrix: (soil/water) WATER Lab Sample ID: [illegible]

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: M5527

Level: (low/med) LOW Date Received: 01/19/[illegible]

% Moisture: not dec. ____ Date Analyzed: 01/19/[illegible]

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 6 | BJ |
| 67-64-1 | Acetone | 5 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

[redacted]

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B17[illegible]9

Lab Name: [illegible]  Contract: [illegible]

Lab Code: [illegible]  Case No.: [illegible]  SAS No.: ______  SDG No.: 0113

Matrix: (soil/water) WATER  Lab Sample ID: 1950693

Sample wt/vol: 5.0 (g/mL) ML  Lab File ID: M5699

Level: (low/med) LOW  Date Received: 01/19/94

% Moisture: not dec. ____  Date Analyzed: 01/19/94

GC Column: [illegible]  ID: 0.530 (mm)  Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)  Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 6 | BJ |
| 67-64-1 | Acetone | 5 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

# LABORATORY REPORTS
# NOVEMBER 1995 GROUNDWATER SAMPLING

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9533167

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/28/95
DATE RECEIVED.. 11/28/95
COLLECTED BY... CJF03
PROJECT NO..... BOWE9301EW

POINT NO:
LOCATION: MW-6
REMARKS:

---

TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | 230E | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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COPIES TO: GJM

DATE ISSUED 12/04/95

DATE RUN....... 11/29/95
DATE REPORTED.. 12/04/95

LABORATORY DIRECTOR

ORIGINAL

LAB NO: 9533167 /DL

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/28/95
DATE RECEIVED.. 11/28/95
COLLECTED BY... CJF03
PROJECT NO..... BOWE9301EW

POINT NO:
LOCATION: MW-6

REMARKS:

---

TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <20 | | |
| BROMOMETHANE | <20 | | |
| VINYL CHLORIDE | <20 | | |
| CHLOROETHANE | <20 | | |
| METHYLENE CHLORIDE | <20 | | |
| 1,1-DICHLOROETHENE | <20 | | |
| 1,1-DICHLOROETHANE | <20 | | |
| TOTAL-1,2-DICHLOROETHENE | <20 | | |
| CHLOROFORM | <20 | | |
| 1,2-DICHLOROETHANE | <20 | | |
| 1,1,1-TRICHLOROETHANE | <20 | | |
| CARBON TETRACHLORIDE | <20 | | |
| BROMODICHLOROMETHANE | <20 | | |
| 1,2-DICHLOROPROPANE | <20 | | |
| TRANS-1,3-DICHLOROPROPENE | <20 | | |
| TRICHLOROETHENE | <20 | | |
| DIBROMOCHLOROMETHANE | <20 | | |
| 1,1,2-TRICHLOROETHANE | <20 | | |
| CIS-1,3-DICHLOROPROPENE | <20 | | |
| BENZENE | <20 | | |
| BROMOFORM | <20 | | |
| 1,1,2,2-TETRACHLOROETHANE | <20 | | |
| TETRACHLOROETHENE | 170D | | |
| TOLUENE | <20 | | |
| CHLOROBENZENE | <20 | | |
| ETHYLBENZENE | <20 | | |
| XYLENES (TOTAL) | <20 | | |
| ACETONE | <20 | | |
| 2-BUTANONE (MEK) | <20 | | |
| 4-METHYL-2PENTANONE(MIBK) | <20 | | |
| CARBON DISULFIDE | <20 | | |
| 2-HEXANONE | <20 | | |
| STYRENE | <20 | | |

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COPIES TO: GJM

DATE ISSUED 12/04/95

DATE RUN....... 11/29/95
DATE REPORTED.. 12/04/95

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9533168**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/28/95
DATE RECEIVED.. 11/28/95
COLLECTED BY... CJF03
PROJECT NO..... BOWE9301EW

POINT NO:
LOCATION: FIELD BLANK
REMARKS:

---

TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | <10 | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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COPIES TO: GJM

DATE ISSUED 12/04/95

DATE RUN....... 11/29/95
DATE REPORTED.. 11/30/95

Stanley

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9533169**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/28/95
DATE RECEIVED.. 11/28/95
COLLECTED BY... CJF03
PROJECT NO..... BOWE9301EW

POINT NO:
LOCATION: TRIP BLANK
REMARKS:

---

TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | <10 | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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COPIES TO: GJM

DATE ISSUED 12/04/95

DATE RUN....... 11/29/95
DATE REPORTED.. 11/30/95

LABORATORY DIRECTOR

ORIGINAL

# 1A
# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B179-04 MW4

Lab Name: Roy F. Weston, Inc. Contract: 01667010001

Lab Code: WESTON Case No.: SH195 SAS No.: ______ SDG No.: 1128

Matrix: (soil/water) WATER Lab Sample ID: 9511L286-001

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: C120509

Level: (low/med) LOW Date Received: 11/30/95

% Moisture: not dec. ______ Date Analyzed: 12/05/95

GC Column: RTX624 ID: 0.32 (mm) Dilution Factor: 1.00

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 10 | U |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 360 | E |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

1A

# VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B179-04DL MW 4

Lab Name: Rov F. Weston, Inc. Contract: 01667010001

Lab Code: WESTON Case No.: SH195 SAS No.: ______ SDG No.: 1128

Matrix: (soil/water) WATER Lab Sample ID: 9511L286-001 DL

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: C120605

Level: (low/med) LOW Date Received: 11/30/95

% Moisture: not dec. _____ Date Analyzed: 12/06/95

GC Column: RTX624 ID: 0.32 (mm) Dilution Factor: 2.00

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 20 | U |
| 74-83-9 | Bromomethane | 20 | U |
| 75-01-4 | Vinyl Chloride | 20 | U |
| 75-00-3 | Chloroethane | 20 | U |
| 75-09-2 | Methylene Chloride | 20 | U |
| 67-64-1 | Acetone | 3 | JD |
| 75-15-0 | Carbon Disulfide | 20 | U |
| 75-35-4 | 1,1-Dichloroethene | 20 | U |
| 75-34-3 | 1,1-Dichloroethane | 20 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 20 | U |
| 67-66-3 | Chloroform | 20 | U |
| 107-06-2 | 1,2-Dichloroethane | 20 | U |
| 78-93-3 | 2-Butanone | 20 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 20 | U |
| 56-23-5 | Carbon Tetrachloride | 20 | U |
| 75-27-4 | Bromodichloromethane | 20 | U |
| 78-87-5 | 1,2-Dichloropropane | 20 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 20 | U |
| 79-01-6 | Trichloroethene | 20 | U |
| 124-48-1 | Dibromochloromethane | 20 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 20 | U |
| 71-43-2 | Benzene | 20 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 20 | U |
| 75-25-2 | Bromoform | 20 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 20 | U |
| 591-78-6 | 2-Hexanone | 20 | U |
| 127-18-4 | Tetrachloroethene | 280 | D |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 20 | U |
| 108-88-3 | Toluene | 20 | U |
| 108-90-7 | Chlorobenzene | 20 | U |
| 100-41-4 | Ethylbenzene | 20 | U |
| 100-42-5 | Styrene | 20 | U |
| 1330-20-7 | Xylene (total) | 20 | U |

## 1A
## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B179-05 MW 5

Lab Name: Roy F. Weston, Inc. Contract: 01667010001

Lab Code: WESTON Case No.: SH195 SAS No.: ______ SDG No.: 1128

Matrix: (soil/water) WATER

Lab Sample ID: 9511L286-002

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: C120510

Level: (low/med) LOW

Date Received: 11/30/95

% Moisture: not dec. _____

Date Analyzed: 12/05/95

GC Column: RTX624 ID: 0.32(mm)

Dilution Factor: 1.00

Soil Extract Volume: ________(uL)

Soil Aliquot Volume: ________(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 10 | U |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 90 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

## 1A
## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B179-06 MW 6

Lab Name: Roy F. Weston, Inc. Contract: 01667010001

Lab Code: WESTON Case No.: SH195 SAS No.: ______ SDG No.: 1128

Matrix: (soil/water) WATER Lab Sample ID: 9511L286-003

Sample wt/vol: 5.00 (g/mL) ML Lab File ID: C120511

Level: (low/med) LOW Date Received: 11/30/95

% Moisture: not dec. _____ Date Analyzed: 12/05/95

GC Column: RTX624 ID: 0.32 (mm) Dilution Factor: 1.00

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: ________ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 10 | U |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | Trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 200 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

# LABORATORY REPORTS
# PHASE I EXPLORATORY WELL PROGRAM

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9335808

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/17/93
DATE RECEIVED.. 11/17/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301EW

POINT NO:
LOCATION: EW-1
REMARKS:

---

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 6 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | 110 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9336014

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/19/93
DATE RECEIVED.. 11/19/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 55'-60'

REMARKS: EW-2

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

**LAB NO: 9336015**

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/19/93
DATE RECEIVED.. 11/19/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 80'-85'

REMARKS: EW-2

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.** 575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

**LAB NO: 9336016**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/19/93
DATE RECEIVED.. 11/19/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 105'-110'

REMARKS: EW-2

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

J M Alavin
LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.** 575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9336017

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/19/93
DATE RECEIVED.. 11/19/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 130'-135'

REMARKS: EW-2

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

---

COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9336018

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/19/93
DATE RECEIVED.. 11/19/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 155'-160'

REMARKS: EW-2

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | 4 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 6 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

---

COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

**LAB NO: 9336579**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 11/29/93
DATE RECEIVED.. 11/29/93
COLLECTED BY... MSC03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 55'-60'

REMARKS: EW-3

## VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 21 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

COPIES TO: MOK

DATE ISSUED 12/02/93

DATE RUN....... 11/30/93
DATE REPORTED.. 12/02/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9336578

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 11/29/93
DATE RECEIVED.. 11/29/93
COLLECTED BY... MSC03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 80'-85'

REMARKS: EW-3

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | 3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 24 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

---

COPIES TO: MOK

DATE ISSUED 12/02/93

DATE RUN....... 11/30/93
DATE REPORTED.. 12/02/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

**LAB NO: 9336577**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 11/29/93
DATE RECEIVED.. 11/29/93
COLLECTED BY... MSC03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 105'-110'

REMARKS: EW-3

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 23 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

COPIES TO: MOK

DATE ISSUED 12/02/93

DATE RUN....... 11/30/93
DATE REPORTED.. 12/02/93

LABORATORY DIRECTOR

ORIGINAL

# H2M LABS, INC.

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9336576

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 11/29/93
DATE RECEIVED.. 11/29/93
COLLECTED BY... MSC03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 130'-135'

REMARKS: EW-3

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## VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 8 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: MOK

DATE ISSUED 12/02/93

DATE RUN....... 11/30/93
DATE REPORTED.. 12/02/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9336575

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 11/29/93
DATE RECEIVED.. 11/29/93
COLLECTED BY... MSC03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: 155'-160'

REMARKS: EW-3

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 10 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

COPIES TO: MOK

DATE ISSUED 12/02/93

DATE RUN....... 11/30/93
DATE REPORTED.. 12/02/93

ORIGINAL

LABORATORY DIRECT

**H2M LABS, INC.**
575 Broad Hollow Road, Melvi N.Y. 11747
(516)694-3040 FAX:(51 -4122

LAB NO: 9336277

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/23/93
DATE RECEIVED.. 11/23/93
COLLECTED BY... MSC03

POINT NO:
LOCATION: 55'-60'

REMARKS: EW-4

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | 4 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

---

COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECT

MOK

# H2M LABS, INC.

575 Broad Hollow Road, Melvi N.Y. 11747
(516)694-3040 FAX:(51 -4122

LAB NO: 9336278

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/23/93
DATE RECEIVED.. 11/23/93
COLLECTED BY... MSC03

POINT NO:
LOCATION: 80'-85'

REMARKS: EW-4

---

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | 4 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

---

COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECTOR

MOK

**H2M LABS, INC.** 575 Broad Hollow Road, Melvi N.Y. 11747
(516)694-3040 FAX:(51 -4122

LAB NO: 9336279

BCWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/23/93
DATE RECEIVED.. 11/23/93
COLLECTED BY... MSC03

POINT NO:
LOCATION: 105'-110'

REMARKS: EW-4

---

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | 5 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | 8 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECTOR

MOK

# H2M LABS, INC.

575 Broad Hollow Road, Melvil N.Y. 11747
(516)694-3040 FAX:(51 -4122

LAB NO: 9336280

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/23/93
DATE RECEIVED.. 11/23/93
COLLECTED BY... MSC03

POINT NO:
LOCATION: 130'-135'

REMARKS: EW-4

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | <3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

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COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

J M

LABORATORY DIRECTOR

MOK

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9336281

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 11/23/93
DATE RECEIVED.. 11/23/93
COLLECTED BY... MSC03

POINT NO:
LOCATION: 155'-160'

REMARKS: EW-4

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <3 | 1,4-XYLENE | <3 |
| CHLOROMETHANE | <3 | 1,2-XYLENE | <3 |
| VINYL CHLORIDE | <3 | | |
| BROMOMETHANE | <3 | | |
| CHLOROETHANE | <3 | | |
| FLUOROTRICHLOROMETHANE | <3 | | |
| 1,1-DICHLOROETHENE | <3 | | |
| METHYLENE CHLORIDE | <3 | | |
| TRANS-1,2-DICHLOROETHENE | <3 | | |
| 1,1-DICHLOROETHANE | <3 | | |
| CIS-1,2-DICHLOROETHENE | <3 | | |
| CHLOROFORM | 3 | | |
| 1,1,1-TRICHLOROETHANE | <3 | | |
| CARBON TETRACHLORIDE | <3 | | |
| 1,2-DICHLOROETHANE | <3 | | |
| TRICHLOROETHENE | <3 | | |
| 1,2-DICHLOROPROPANE | <3 | | |
| BROMODICHLOROMETHANE | <3 | | |
| TRANS-1,3-DICHLOROPROPENE | <3 | | |
| CIS-1,3-DICHLOROPROPENE | <3 | | |
| 1,1,2-TRICHLOROETHANE | <3 | | |
| TETRACHLOROETHENE | <3 | | |
| CHLORODIBROMOMETHANE | <3 | | |
| CHLOROBENZENE | <3 | | |
| BROMOFORM | <3 | | |
| 1,1,2,2-TETRACHLOROETHANE | <3 | | |
| M-DICHLOROBENZENE | <3 | | |
| P-DICHLOROBENZENE | <3 | | |
| O-DICHLOROBENZENE | <3 | | |
| BENZENE | <3 | | |
| TOLUENE | <3 | | |
| ETHYLBENZENE | <3 | | |
| 1,3-XYLENE | <3 | | |

COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9336580

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 11/29/93
DATE RECEIVED.. 11/29/93
COLLECTED BY... MSC03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: FIELD BLANK

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | <1 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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COPIES TO: MOK

DATE ISSUED 12/02/93

DATE RUN....... 11/30/93
DATE REPORTED.. 12/02/93

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)694-4122

LAB NO: 9336019

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... BLANK
ROUTINE

DATE COLLECTED. 11/16/93
DATE RECEIVED.. 11/19/93
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: TRIP BLANK
REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | <1 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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COPIES TO: MOK

DATE ISSUED 12/01/93

DATE RUN....... 11/24/93
DATE REPORTED.. 11/26/93

LABORATORY DIRECTOR

ORIGINAL

EW 1

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B179E1

Lab Name: NYTEST ENV INC Contract: 9320566

Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1117

Matrix: (soil/water) WATER Lab Sample ID: 1901501

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: K7932

Level: (low/med) LOW Date Received: 11/19/93

% Moisture: not dec. ____ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ________ (uL) Soil Aliquot Volume: _____ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 3 | BJ |
| 67-64-1 | Acetone | 5 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 1 | J |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 7 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 100 | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

## 1A
## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B179EB

Lab Name: NYTEST ENV INC Contract: 9320569

Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1119

Matrix: (soil/water) WATER Lab Sample ID: 1902603

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: K7937

Level: (low/med) LOW Date Received: 11/19/93

% Moisture: not dec. ____ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______(uL) Soil Aliquot Volume: _____(uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 3 | BJ |
| 67-64-1 | Acetone | 3 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 2 | J |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

## 1A
## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B179EA

Lab Name: NYTEST ENV INC Contract: 9320569

Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1119

Matrix: (soil/water) WATER Lab Sample ID: 1902602

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: K7936

Level: (low/med) LOW Date Received: 11/19/93

% Moisture: not dec. ____ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 4 | BJ |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B179E2

Lab Name: NYTEST ENV INC Contract: 9320569

Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1119

Matrix: (soil/water) WATER Lab Sample ID: 1902601

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: K7935

Level: (low/med) LOW Date Received: 11/19/93

% Moisture: not dec. ______ Date Analyzed: 11/23/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 4 | BJ |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 10 | U |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

B1793G

Lab Name: NYTEST ENV INC Contract: 9320581

Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1123

Matrix: (soil/water) WATER Lab Sample ID: 1909405

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: M4910

Level: (low/med) LOW Date Received: 11/26/93

% Moisture: not dec. ____ Date Analyzed: 12/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 11 | |
| 67-64-1 | Acetone | 5 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 2 | J |
| 67-66-3 | Chloroform | 4 | J |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 2 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B1793F

Lab Name: NYTEST ENV INC Contract: 9320581

Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1123

Matrix: (soil/water) WATER Lab Sample ID: 1909406

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: M4911

Level: (low/med) LOW Date Received: 11/26/93

% Moisture: not dec. ____ Date Analyzed: 12/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 7 | J |
| 67-64-1 | Acetone | 6 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 1 | J |
| 67-66-3 | Chloroform | 4 | J |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 2 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 1 | J |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

## 1A
## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B1793E

Lab Name: NYTEST ENV INC Contract: 9320581

Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1123

Matrix: (soil/water) WATER Lab Sample ID: 1909403

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: M4908

Level: (low/med) LOW Date Received: 11/26/93

% Moisture: not dec. ____ Date Analyzed: 12/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 7 | J |
| 67-64-1 | Acetone | 5 | J |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 6 | J |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 6 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

## 1A
## VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B1793C

Lab Name: NYTEST ENV INC Contract: 9320581

Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1123

Matrix: (soil/water) WATER Lab Sample ID: 1909404

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: M4909

Level: (low/med) LOW Date Received: 11/26/93

% Moisture: not dec. ____ Date Analyzed: 12/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | J |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 4 | J |
| 67-66-3 | Chloroform | 10 | U |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 3 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

FW 4 [redacted]

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

B179E3

Lab Name: NYTEST ENV INC Contract: 9320581

Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1123

Matrix: (soil/water) WATER Lab Sample ID: 1909402

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: M4907

Level: (low/med) LOW Date Received: 11/26/93

% Moisture: not dec. ____ Date Analyzed: 12/03/93

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: _____ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 7 | J |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 2 | J |
| 67-66-3 | Chloroform | 3 | J |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 2 | J |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

[redacted]

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
B1793D

Lab Name: NYTEST ENV INC Contract: 9320581
Lab Code: NYTEST Case No.: SH193 SAS No.: ______ SDG No.: 1123
Matrix: (soil/water) WATER Lab Sample ID: 1909401
Sample wt/vol: 5.0 (g/mL) ML Lab File ID: M4906
Level: (low/med) LOW Date Received: 11/26/93
% Moisture: not dec. ____ Date Analyzed: 12/03/93
GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0
Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

| CAS NO. | COMPOUND | CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L | Q |
|---|---|---|---|
| 74-87-3 | Chloromethane | 10 | U |
| 74-83-9 | Bromomethane | 10 | U |
| 75-01-4 | Vinyl Chloride | 10 | U |
| 75-00-3 | Chloroethane | 10 | U |
| 75-09-2 | Methylene Chloride | 5 | J |
| 67-64-1 | Acetone | 10 | U |
| 75-15-0 | Carbon Disulfide | 10 | U |
| 75-35-4 | 1,1-Dichloroethene | 10 | U |
| 75-34-3 | 1,1-Dichloroethane | 10 | U |
| 540-59-0 | 1,2-Dichloroethene (total) | 2 | J |
| 67-66-3 | Chloroform | 3 | J |
| 107-06-2 | 1,2-Dichloroethane | 10 | U |
| 78-93-3 | 2-Butanone | 10 | U |
| 71-55-6 | 1,1,1-Trichloroethane | 10 | U |
| 56-23-5 | Carbon Tetrachloride | 10 | U |
| 75-27-4 | Bromodichloromethane | 10 | U |
| 78-87-5 | 1,2-Dichloropropane | 10 | U |
| 10061-01-5 | cis-1,3-Dichloropropene | 10 | U |
| 79-01-6 | Trichloroethene | 10 | U |
| 124-48-1 | Dibromochloromethane | 10 | U |
| 79-00-5 | 1,1,2-Trichloroethane | 10 | U |
| 71-43-2 | Benzene | 10 | U |
| 10061-02-6 | trans-1,3-Dichloropropene | 10 | U |
| 75-25-2 | Bromoform | 10 | U |
| 108-10-1 | 4-Methyl-2-Pentanone | 10 | U |
| 591-78-6 | 2-Hexanone | 10 | U |
| 127-18-4 | Tetrachloroethene | 10 | U |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 10 | U |
| 108-88-3 | Toluene | 10 | U |
| 108-90-7 | Chlorobenzene | 10 | U |
| 100-41-4 | Ethylbenzene | 10 | U |
| 100-42-5 | Styrene | 10 | U |
| 1330-20-7 | Xylene (total) | 10 | U |

# LABORATORY REPORTS
# PHASE II EXPLORATORY WELL PROGRAM

[illegible] (516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478 LAB NO: 9519681

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 07/19/95
TIME COLLECTED. 1230 HRS.
DATE RECEIVED.. 07/19/95
COLLECTED BY... BJB03

POINT NO:
LOCATION: EW-5 60'-65'
REMARKS:

---

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | 20 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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COPIES TO: GJM

DATE ISSUED 07/20/95

DATE RUN....... 07/19/95
DATE REPORTED.. 07/20/95

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9519683

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 07/19/95
TIME COLLECTED. 1200 HRS.
DATE RECEIVED.. 07/19/95
COLLECTED BY... BJB03

POINT NO:
LOCATION: EW-5 84'-89'

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | 8 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | 1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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COPIES TO: GJM

DATE ISSUED 07/20/95

DATE RUN....... 07/19/95
DATE REPORTED.. 07/20/95

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9519686**

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 07/19/95
TIME COLLECTED. 1535 HRS.
DATE RECEIVED.. 07/19/95
COLLECTED BY... BJB03

POINT NO:
LOCATION: EW-7 65'-70'

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | 3 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | 15 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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COPIES TO: GJM

DATE ISSUED 07/20/95

DATE RUN....... 07/19/95
DATE REPORTED.. 07/20/95

J M Slavin
LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9519685'

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 07/19/95
TIME COLLECTED. 1520 HRS.
DATE RECEIVED.. 07/19/95
COLLECTED BY... BJB03

POINT NO:
LOCATION: EW-7 83'-88'

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | 3 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | 10 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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DATE ISSUED 07/20/95

DATE RUN....... 07/19/95
DATE REPORTED.. 07/20/95

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9519902

**BOWE SYSTEM & MACHINE INC.**
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... MISCELLANEOUS LIQUID
ROUTINE

DATE COLLECTED. 07/20/95
DATE RECEIVED.. 07/20/95
COLLECTED BY... RJB03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: EW-8 60-65'

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | 5 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | 12 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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DATE ISSUED 07/27/95

DATE RUN....... 07/26/95
DATE REPORTED.. 07/27/95

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9519903**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... MISCELLANEOUS LIQUID
ROUTINE

DATE COLLECTED. 07/20/95
DATE RECEIVED.. 07/20/95
COLLECTED BY... RJB03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: EW-8 84-89'

REMARKS:

VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | 4 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | 5 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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DATE ISSUED 07/27/95

DATE RUN....... 07/26/95
DATE REPORTED.. 07/27/95

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9519904**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... MISCELLANEOUS LIQUID
ROUTINE

DATE COLLECTED. 07/20/95
DATE RECEIVED.. 07/20/95
COLLECTED BY... RJB03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: EW-9 60-65'

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | 2 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | 6 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | 4 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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DATE ISSUED 07/27/95

DATE RUN....... 07/26/95
DATE REPORTED.. 07/27/95

ORIGINAL

LABORATORY DIRECTOR

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9519905

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... MISCELLANEOUS LIQUID
ROUTINE

DATE COLLECTED. 07/20/95
DATE RECEIVED.. 07/20/95
COLLECTED BY... RJB03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: EW-9 85-90'

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | 8 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | 1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | 17 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | 5 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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DATE ISSUED 07/27/95

DATE RUN....... 07/26/95
DATE REPORTED.. 07/27/95

ORIGINAL

LABORATORY DIRECTOR

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9519687**

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... BLANK
SPECIAL

DATE COLLECTED. 07/19/95
TIME COLLECTED. 1600 HRS.
DATE RECEIVED.. 07/19/95
COLLECTED BY... BJB03

POINT NO:
LOCATION: FIELD BLANK

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | <1 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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DATE ISSUED 07/20/95

DATE RUN....... 07/19/95
DATE REPORTED.. 07/20/95

LABORATORY DIRECTOR

ORIGINAL

LAB NO: 9519688

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... BLANK
SPECIAL

DATE COLLECTED. 07/19/95
TIME COLLECTED. 1600 HRS.
DATE RECEIVED.. 07/19/95
COLLECTED BY... BJB03

POINT NO:
LOCATION: TRIP BLANK

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | <1 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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DATE ISSUED 07/20/95

DATE RUN....... 07/19/95
DATE REPORTED.. 07/20/95

ORIGINAL

LABORATORY DIRECTOR

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9519906**

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... MISCELLANEOUS LIQUID
ROUTINE

DATE COLLECTED. 07/20/95
DATE RECEIVED.. 07/20/95
COLLECTED BY... RJB03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: FIELD BLANK

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | <1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | <1 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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COPIES TO: GJM

DATE ISSUED 07/27/95

DATE RUN....... 07/26/95
DATE REPORTED.. 07/27/95

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9519907

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... MISCELLANEOUS LIQUID
ROUTINE

DATE COLLECTED. 07/20/95
DATE RECEIVED.. 07/20/95
COLLECTED BY... RJB03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: TRIP BLANK

REMARKS:

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VOL. ORGANICS(601/602 & XYLENES) - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| DICHLORODIFLUOROMETHANE | <1 | 1,4-XYLENE | <1 |
| CHLOROMETHANE | <1 | 1,2-XYLENE | <1 |
| VINYL CHLORIDE | <1 | | |
| BROMOMETHANE | <1 | | |
| CHLOROETHANE | <1 | | |
| FLUOROTRICHLOROMETHANE | <1 | | |
| 1,1-DICHLOROETHENE | <1 | | |
| METHYLENE CHLORIDE | 1 | | |
| TRANS-1,2-DICHLOROETHENE | <1 | | |
| 1,1-DICHLOROETHANE | <1 | | |
| CIS-1,2-DICHLOROETHENE | <1 | | |
| CHLOROFORM | <1 | | |
| 1,1,1-TRICHLOROETHANE | <1 | | |
| CARBON TETRACHLORIDE | <1 | | |
| 1,2-DICHLOROETHANE | <1 | | |
| TRICHLOROETHENE | <1 | | |
| 1,2-DICHLOROPROPANE | <1 | | |
| BROMODICHLOROMETHANE | <1 | | |
| TRANS-1,3-DICHLOROPROPENE | <1 | | |
| CIS-1,3-DICHLOROPROPENE | <1 | | |
| 1,1,2-TRICHLOROETHANE | <1 | | |
| TETRACHLOROETHENE | <1 | | |
| CHLORODIBROMOMETHANE | <1 | | |
| CHLOROBENZENE | <1 | | |
| BROMOFORM | <1 | | |
| 1,1,2,2-TETRACHLOROETHANE | <1 | | |
| M-DICHLOROBENZENE | <1 | | |
| P-DICHLOROBENZENE | <1 | | |
| O-DICHLOROBENZENE | <1 | | |
| BENZENE | <1 | | |
| TOLUENE | <1 | | |
| ETHYLBENZENE | <1 | | |
| 1,3-XYLENE | <1 | | |

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COPIES TO: GJM

DATE ISSUED 07/27/95

DATE RUN....... 07/26/95
DATE REPORTED.. 07/27/95

LABORATORY DIRECTOR

ORIGINAL

# LABORATORY REPORTS
# APRIL 1997 GROUNDWATER SAMPLING

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9711305

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 04/23/97
DATE RECEIVED.. 04/23/97
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: MW-4
REMARKS:

TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | 130 | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

COPIES TO: GJM

DATE ISSUED 04/29/97

DATE RUN....... 04/24/97
DATE REPORTED.. 04/25/97

J M Slavin
LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9711306

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 04/23/97
DATE RECEIVED.. 04/23/97
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: MW-5

REMARKS:

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TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | 40 | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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DATE ISSUED 04/29/97

DATE RUN....... 04/24/97
DATE REPORTED.. 04/25/97

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9711307

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 04/23/97
DATE RECEIVED.. 04/23/97
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: MW-6

REMARKS:

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TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | 220E | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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DATE ISSUED 04/29/97

DATE RUN....... 04/24/97
DATE REPORTED.. 04/25/97

ORIGINAL

LABORATORY DIRECTOR

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9711307 /DL

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 04/23/97
DATE RECEIVED.. 04/23/97
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: MW-6
REMARKS:

---

TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <25 | | |
| BROMOMETHANE | <25 | | |
| VINYL CHLORIDE | <25 | | |
| CHLOROETHANE | <25 | | |
| METHYLENE CHLORIDE | <25 | | |
| 1,1-DICHLOROETHENE | <25 | | |
| 1,1-DICHLOROETHANE | <25 | | |
| TOTAL-1,2-DICHLOROETHENE | <25 | | |
| CHLOROFORM | <25 | | |
| 1,2-DICHLOROETHANE | <25 | | |
| 1,1,1-TRICHLOROETHANE | <25 | | |
| CARBON TETRACHLORIDE | <25 | | |
| BROMODICHLOROMETHANE | <25 | | |
| 1,2-DICHLOROPROPANE | <25 | | |
| TRANS-1,3-DICHLOROPROPENE | <25 | | |
| TRICHLOROETHENE | <25 | | |
| DIBROMOCHLOROMETHANE | <25 | | |
| 1,1,2-TRICHLOROETHANE | <25 | | |
| CIS-1,3-DICHLOROPROPENE | <25 | | |
| BENZENE | <25 | | |
| BROMOFORM | <25 | | |
| 1,1,2,2-TETRACHLOROETHANE | <25 | | |
| TETRACHLOROETHENE | 250D | | |
| TOLUENE | <25 | | |
| CHLOROBENZENE | <25 | | |
| ETHYLBENZENE | <25 | | |
| XYLENES (TOTAL) | <25 | | |
| ACETONE | <25 | | |
| 2-BUTANONE (MEK) | <25 | | |
| 4-METHYL-2PENTANONE(MIBK) | <25 | | |
| CARBON DISULFIDE | <25 | | |
| 2-HEXANONE | <25 | | |
| STYRENE | <25 | | |

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DATE ISSUED 04/29/97

DATE RUN....... 04/25/97
DATE REPORTED.. 04/25/97

ORIGINAL

LABORATORY DIRECTOR

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9711308

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 04/23/97
DATE RECEIVED.. 04/23/97
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: MW-8

REMARKS:

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TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | <10 | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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DATE ISSUED 04/29/97

DATE RUN....... 04/24/97
DATE REPORTED.. 04/25/97

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.** 575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9711309

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
SPECIAL

DATE COLLECTED. 04/23/97
DATE RECEIVED.. 04/23/97
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: OW-1

REMARKS:

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TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | 34 | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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DATE ISSUED 04/29/97

DATE RUN....... 04/24/97
DATE REPORTED.. 04/25/97

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9709650

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 04/10/97
TIME COLLECTED. 1035 HRS.
DATE RECEIVED.. 04/10/97
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: OW-1 77'

REMARKS:

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## TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | 24 | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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DATE ISSUED 04/16/97

COPIES TO: GJM

DATE RUN....... 04/10/97
DATE REPORTED.. 04/16/97

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**
575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

**LAB NO: 9709651**

BOWE SYSTEM & MACHINE INC.
RICHARD REILLY
200 FRANK RD.
HICKSVILLE, NY 11803

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 04/10/97
TIME COLLECTED. 1120 HRS.
DATE RECEIVED.. 04/10/97
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: OW-1 92'

REMARKS:

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TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | <10 | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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DATE ISSUED 04/16/97

DATE RUN....... 04/10/97
DATE REPORTED.. 04/16/97

LABORATORY DIRECTOR

ORIGINAL

**H2M LABS, INC.**

575 Broad Hollow Road, Melville, N.Y. 11747
(516)694-3040 FAX:(516)420-8436 NYSDOH ID# 10478

LAB NO: 9709652

**BOWE SYSTEM & MACHINE INC.**
**RICHARD REILLY**
**200 FRANK RD.**
**HICKSVILLE, NY 11803**

TYPE...... GROUND WATER
ROUTINE

DATE COLLECTED. 04/10/97
TIME COLLECTED. 1115 HRS.
DATE RECEIVED.. 04/10/97
COLLECTED BY... MNG03
PROJECT NO..... BOWE9301

POINT NO:
LOCATION: TRIP BLANK

REMARKS:

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## TCL PURGEABLE ORGANICS - ( ug/l )

| PARAMETER (S) | RESULT | PARAMETER (S) | RESULT |
|---|---|---|---|
| CHLOROMETHANE | <10 | | |
| BROMOMETHANE | <10 | | |
| VINYL CHLORIDE | <10 | | |
| CHLOROETHANE | <10 | | |
| METHYLENE CHLORIDE | <10 | | |
| 1,1-DICHLOROETHENE | <10 | | |
| 1,1-DICHLOROETHANE | <10 | | |
| TOTAL-1,2-DICHLOROETHENE | <10 | | |
| CHLOROFORM | <10 | | |
| 1,2-DICHLOROETHANE | <10 | | |
| 1,1,1-TRICHLOROETHANE | <10 | | |
| CARBON TETRACHLORIDE | <10 | | |
| BROMODICHLOROMETHANE | <10 | | |
| 1,2-DICHLOROPROPANE | <10 | | |
| TRANS-1,3-DICHLOROPROPENE | <10 | | |
| TRICHLOROETHENE | <10 | | |
| DIBROMOCHLOROMETHANE | <10 | | |
| 1,1,2-TRICHLOROETHANE | <10 | | |
| CIS-1,3-DICHLOROPROPENE | <10 | | |
| BENZENE | <10 | | |
| BROMOFORM | <10 | | |
| 1,1,2,2-TETRACHLOROETHANE | <10 | | |
| TETRACHLOROETHENE | <10 | | |
| TOLUENE | <10 | | |
| CHLOROBENZENE | <10 | | |
| ETHYLBENZENE | <10 | | |
| XYLENES (TOTAL) | <10 | | |
| ACETONE | <10 | | |
| 2-BUTANONE (MEK) | <10 | | |
| 4-METHYL-2PENTANONE(MIBK) | <10 | | |
| CARBON DISULFIDE | <10 | | |
| 2-HEXANONE | <10 | | |
| STYRENE | <10 | | |

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COPIES TO: GJM

DATE ISSUED 04/16/97

DATE RUN....... 04/10/97
DATE REPORTED.. 04/16/97

LABORATORY DIRECTOR

ORIGINAL

Roy F. Weston, Inc. - Lionville Laboratory
Volatiles by GC/MS

Report Date: 05/19/97 09:01

RFW Batch Number: 9704L217 Client: NYSDEC Work Order: 01667010001 Page: 1a

| | | MW6 | | MW6 | | MW6 | | MW6 | | MW4 | | MW5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cust ID: | SH197-0423-B<br>1790A | | SH197-0423-B<br>17906 | | SH197-0423-B<br>17906 | | SH197-0423-B<br>17906 | | SH197-0423-B<br>17904 | | SH197-0423-B<br>17905 | |
| Sample Information | RFW#: | 001 | | 002 | | 002 MS | | 002 MSD | | 003 | | 004 | |
| | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | UG/L | | UG/L | | UG/L | | UG/L | | UG/L | | UG/L | |
| | Toluene-d8 | 98 | % | 101 | % | 102 | % | 100 | % | 101 | % | 99 | % |
| Surrogate | Bromofluorobenzene | 90 | % | 88 | % | 65 * | % | 87 | % | 97 | % | 91 | % |
| Recovery | 1,2-Dichloroethane-d4 | 102 | % | 102 | % | 95 | % | 98 | % | 104 | % | 102 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 2 | BJ | 3 | BJ | 0.9 | BJ | 2 | BJ | 2 | BJ | 2 | BJ |
| Acetone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Carbon Disulfide | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1-Dichloroethene | | 10 | U | 10 | U | 101 | % | 98 | % | 10 | U | 10 | U |
| 1,1-Dichloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,2-Dichloroethene (total) | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroform | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,2-Dichloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Carbon Tetrachloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,2-Dichloropropane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| cis-1,3-Dichloropropene | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Trichloroethene | | 10 | U | 10 | U | 94 | % | 96 | % | 10 | U | 2 | J |
| Dibromochloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,2-Trichloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Benzene | | 10 | U | 10 | U | 92 | % | 94 | % | 10 | U | 10 | U |
| Trans-1,3-Dichloropropene | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromoform | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 160 | | 150 | | 180 | | 170 | | 100 | | 30 | |
| 1,1,2,2-Tetrachloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Toluene | | 10 | U | 10 | U | 96 | % | 96 | % | 10 | U | 10 | U |

*= Outside of EPA CLP QC limits.

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MW 8 MW 3 Permanent off-site MW

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cust ID: | SH197-0423-B<br>17908 | | SH197-0423-B<br>17903 | | SH197-0423-B<br>1790W | | TRIP BLANK | | VBLKXR | | VBLKYE |
| Sample | RFW#: | 005 | | 006 | | 007 | | 008 | | 97LVC079-MB1 | | 97LVC083-MB1 |
| Information | Matrix: | WATER | | WATER | | WATER | | WATER | | WATER | | WATER |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 |
| | Units: | UG/L | | UG/L | | UG/L | | UG/L | | UG/L | | UG/L |
| | Toluene-d8 | 99 | % | 98 | % | 102 | % | 99 | % | 98 | % | 98 | % |
| Surrogate | Bromofluorobenzene | 92 | % | 93 | % | 98 | % | 94 | % | 94 | % | 92 | % |
| Recovery | 1,2-Dichloroethane-d4 | 101 | % | 103 | % | 104 | % | 102 | % | 103 | % | 98 | % |
| | | | fl | | fl | | fl | | fl | | fl | | fl |
| Chloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromomethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Vinyl Chloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Methylene Chloride | | 2 | BJ | 2 | BJ | 2 | BJ | 3 | BJ | 1 | J | 2 | J |
| Acetone | | 10 | U | 10 | U | 10 | U | 10 | U | 3 | J | 10 | U |
| Carbon Disulfide | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1-Dichloroethene | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1-Dichloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,2-Dichloroethene (total) | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Chloroform | | 10 | U | 10 | U | 2 | J | 10 | U | 10 | U | 10 | U |
| 1,2-Dichloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Butanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,1-Trichloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Carbon Tetrachloride | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromodichloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,2-Dichloropropane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| cis-1,3-Dichloropropene | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Trichloroethene | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Dibromochloromethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 1,1,2-Trichloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Benzene | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Trans-1,3-Dichloropropene | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Bromoform | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 4-Methyl-2-pentanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| 2-Hexanone | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Tetrachloroethene | | 2 | J | 10 | U | 26 | | 10 | U | 10 | U | 10 | U |
| 1,1,2,2-Tetrachloroethane | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |
| Toluene | | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U | 10 | U |

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