# SUPPLEMENTAL INVESTIGATION REPORT

**EAC Glendale Site**
**Glendale, New York**

**June 23, 1997**

*Prepared for:*

**Morgan, Lewis & Bockius, L.L.P.**
101 Park Avenue
New York, New York 10173

*Prepared by:*

ROUX ASSOCIATES, INC.
1377 Motor Parkway
Islandia, New York 11788

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## 1.0 INTRODUCTION

Roux Associates, Inc. (Roux Associates) was retained by Morgan, Lewis & Bockius, L.L.P. (ML&B), to provide environmental consulting services on behalf of EAC USA, Inc. (EAC), owner of contiguous properties located at 90-30 Metropolitan Avenue and 73-25 Woodhaven Boulevard in Glendale (Queens), New York (Site). At the request of ML&B and under the supervision of the New York State Department of Environmental Conservation (NYSDEC), Roux Associates conducted a supplemental investigation (SI) of subsurface conditions at the Site. The SI augments the data presented in the Voluntary Cleanup Site Assessment Report (SAR) issued by Roux Associates on January 7, 1997.

The Site is currently pending sale and redevelopment as part of a major urban renewal project. In order to streamline the sale and redevelopment process, EAC has pursued a Voluntary Cleanup Agreement with the NYSDEC specifically to demonstrate that the volatile organic compounds (VOCs) detected in ground water beneath the Site are attributable to an off-site source and to secure the NYSDEC's concurrence that no further investigation or remediation is necessary at the Site. The NYSDEC, ML&B and Roux Associates have worked closely together during the SI to address all of the NYSDEC's remaining concerns regarding environmental conditions at the Site.

The scope of the SI was determined based upon discussions with the NYSDEC, NYSDEC's April 3, 1997 proposal to ML&B and ML&B's responding correspondence to the NYSDEC dated April 8, 1997. The SI was conducted in accordance with Roux Associates' SI Work Plan dated April 14, 1997, as amended per the NYSDEC's comment letter dated April 22, 1997 and Roux Associates' response letter to the NYSDEC dated April 28, 1997.

The ground-water and soil quality data collected during the SI support the conclusion of the SAR that the VOCs detected in ground water beneath the Site are from an upgradient, off-site source. The SI, along with previous investigation reports submitted to the NYSDEC provide the NYSDEC with adequate information to conclude that no further investigation or remediation is required at the Site.

## 2.0 INVESTIGATION METHODS

A total of seven borings were drilled at the Site in locations selected and approved by the NYSDEC. In addition, also at the NYSDEC's request, six existing ground-water monitoring wells at the Site were sampled. Finally, a synoptic round of water-level measurements was collected from the existing on-site wells.

### 2.1 Soil and Ground-Water Sampling

From May 8 through May 16, 1997, a total of seven borings were drilled at the Site. From these borings, a total of 90 soil samples were field screened for VOCs using a photo-ionization detector (PID) and 17 soil samples, representing a total of 13 discrete depth intervals, were analyzed for chlorinated VOCs using United States Environmental Protection Agency (USEPA) Method 8010.

In addition to the soil samples described above, ground-water samples were also collected from six of these seven soil borings and analyzed for chlorinated VOCs using USEPA Method 8010. Ground-water samples could not be collected from one of the borings because that boring did not extend to the water table due to shallow refusal. Also, on May 6, 1997 six existing monitoring wells were sampled. These ground-water samples were analyzed for chlorinated VOCs using USEPA Method 8010.

#### 2.1.1 Soil Borings

During the soil boring work, three soil borings (GB-1 through GB-3) were drilled outside of the Metropolitan Avenue building at the locations shown in Figure 1. At the request of the NYSDEC, soil boring GB-1 was moved from the location originally proposed in the April 14, 1997 SI Work Plan (along the northern side of the Metropolitan Avenue building) to the loading dock area along the eastern side of the Metropolitan Avenue building. A conventional Geoprobe™ drill rig was used for the borings, and soil samples were continuously collected from land surface to the water table. The soil samples were field screened for VOCs with a photo-ionization detector (PID).

In addition to the borings outside the building, four borings (SL-1, SL-2, SL-3 and SL-4) were drilled inside of the Metropolitan Avenue building at the locations shown in Figure 1. The April 14, 1997 SI Work Plan originally proposed three borings at an angle from locations outside of the building; however, this "slant drilling" methodology proved to be infeasible with the Geoprobe™ drill rig. Rather, a specialized, track-mounted Geoprobe™ rig was brought inside the building to complete the four borings shown in Figure 1. The methodology and the revised locations of the borings were discussed with and approved by the NYSDEC in the field. The NYSDEC agreed that the revised boring locations better satisfied the SI objectives for investigating soil and ground-water quality beneath the building. At each boring, soil samples were continuously collected from land surface to the water table or the point of refusal, and field screened for VOCs with a PID calibrated with a 100 parts per million (ppm) isobutylene standard.

In each boring, other than boring SL-1 (which did not extend to the water table due to shallow refusal), the soil sample collected immediately above the water table (i.e., within 5 feet of the encountered water table) was submitted for laboratory analysis. In addition, the soil sample collected from the overlying depth interval (approximately 5 to 10 feet above the water table) was also submitted to the laboratory. As required by the SI Work Plan, the laboratory held the samples from the overlying depth interval pending analysis of the samples collected immediately above the water table. The samples from the overlying depth interval were collected to verify that any chlorinated VOCs detected in the samples collected immediately above the water table are not from overlying soils but are attributable to contaminants absorbed onto soil particles as a result of water-table fluctuations (i.e., "smear zone"). The samples collected from immediately above the water table were analyzed on an expedited basis in order to meet the sample holding times for the other samples. The samples collected from the overlying depth interval were analyzed only when levels of chlorinated VOCs were detected in the underlying, deeper samples collected immediately above the water table.

In addition to the soil samples described above, one sample from soil boring GB-1 that exhibited elevated PID readings (i.e., above ambient measured levels) was retained for laboratory analysis. Also, one sample was collected for laboratory analysis from the deepest interval sampled from boring SL-1 (8'-12').

With the exception of boring SL-1, each boring was advanced an additional five feet to penetrate the water table, located approximately 42 feet below land surface at the Site. The water table was not penetrated and a ground-water sample could not be collected at boring SL-1 because the Geoprobe™ encountered refusal at three different locations, and the deepest penetration reached at boring SL-1 was 15 feet below land surface. Ground-water samples were collected from each of the six completed borings and submitted for laboratory analysis. The samples were collected with new disposable polyethylene tubing inserted through the hollow Geoprobe™ rods. Approximately one gallon of ground water was purged from each boring several minutes before each sample was collected.

After completing the soil and ground-water sampling, each of the borings was backfilled to grade with hydrated bentonite pellets and residual soils not retained for analysis.

### 2.1.2 Monitoring Well Sampling

Six existing monitoring wells (WH-11, WH-12, WH-13, WMW-8, WMW-9 and WMW-10) on the Site were sampled to further assess ground-water quality at the Site. Originally, the April 14, 1997 SI Work Plan submitted to the NYSDEC proposed sampling of well WH-1; however, at the request of the NYSDEC, well WMW-8 was sampled instead.

Prior to sampling, each well was purged a minimum of three casing volumes. The wells were purged using a manufacturer-wrapped, single-use, disposable Teflon™ bailer dedicated to the well. Using the same dedicated bailers, a ground-water sample was collected from each of the five monitoring wells following completion of the purging. The following field parameters were measured after each well was sampled: pH, conductivity, temperature and dissolved oxygen.

Water purged from the wells has been temporarily stored on site in labeled 55-gallon drums pending the review of the ground-water sample results, after which the water will be properly disposed.

### 2.1.3 Quality Assurance Samples

During the soil boring program, various replicate soil samples were collected. Replicate soil sample GB-1R and replicate ground-water sample GB-1R were collected from soil boring GB-1. Furthermore, replicates of three soil samples (SL-3/42'-44', SL-4/36'-38', and SL-4/42'-44') and two ground-water samples (SL-3 and SL-4) from soil borings SL-3 and SL-4 were submitted to EcoTest Laboratories, Inc. (EcoTest) for independent analysis. Independent analysis of the replicate samples was conducted to audit the analytical results from the primary laboratory, AnaLab, Inc. (AnaLab), which reported conformance problems with respect to methylene chloride, a common laboratory contaminant.

During the sampling of the existing monitoring wells, one replicate sample (WH-21) was collected from monitoring well WH-12. However, a field blank was not collected as proposed in the SI Work Plan because as an alternate state accepted method, only manufacturer-wrapped, single-use, sampling equipment was used.

A trip blank accompanied each cooler of bottles or samples to and from the laboratories. Five trip blanks were analyzed for VOCs using USEPA Method 601 by the primary laboratory (AnaLab) during the course of the investigation. Two trip blanks were analyzed by the secondary laboratory (EcoTest) using the same analytical method.

## 2.2 Water-Level Measurements

Prior to purging and sampling the aforementioned monitoring wells, Roux Associates collected a synoptic round of water-level measurements from the 29 monitoring wells shown in Figure 1 using an electronic water-level indicator (i.e., m-scope) capable of measuring to an accuracy of within 0.01 feet. The measurements were collected from a designated location of known elevation on each of the polyvinyl chloride (PVC) well casings. The designated measuring locations on each well were surveyed relative to an established elevation marker to an accuracy of 0.01 feet by a New York State licensed surveyor, Sydney Bowne & Son.

## 3.0 RESULTS OF SUPPLEMENTAL INVESTIGATION

The SI field work included the following tasks:

- soil sampling;
- ground-water sampling;
- water-level measurements; and
- data validation.

The results of the SI field investigation are presented below. A discussion of overall soil and ground-water quality conditions, based upon the results from the SI, as well as previous investigations conducted at the Site, is provided in Section 4.0.

### 3.1 Soil Sampling

Data collected from the soil samples includes geologic descriptions of the material, PID screening results and laboratory analysis for VOCs.

#### 3.1.1 Lithology

Geologic data collected during continuous soil sampling of the seven borings during the SI indicate that lithology beneath the southern portion of the Metropolitan Avenue property is comprised predominantly of brown silt, underlain by brown to tan sand. This finding is consistent with results of previous Site investigations. In general, the silt was present from land surface to depths of between 12 feet (GB-3) and 28 feet (SL-4) below grade, and included varying amounts of clay, sand, gravel and cobbles. Beneath the silt, fine to medium sand was the predominant lithology down to the water table, which was encountered approximately 42 feet below grade. Soil sampling was not conducted below the water table.

The boring logs in Appendix A provide geologic descriptions of the soil samples.

### 3.1.2 PID Readings

Soil samples collected from the borings were screened for VOCs with a Photovac™ 2020, a calibrated PID with a response factor for tetrachloroethene (PCE) of 0.5. The detection limit of the PID is 0.5 ppm; thus, the PID is capable of detecting concentrations of PCE, if present, as low as 0.25 ppm or 250 parts per billion. The PID will also detect a variety of organic compounds such as volatile aromatic and aliphatic hydrocarbons, phenols, ketones, aldehydes and amines in addition to any PCE in the sample. The PID will therefore provide only a rough estimate of all VOCs present in a sample.

Elevated PID readings were detected in five of the 90 screened soil samples collected from the borings during the SI. The five elevated PID readings were detected at three isolated depth intervals in soil boring GB-1 (0-8, 32-34 and 42-46) and ranged from not detected to 56.4 ppm. Elevated PID readings were detected in samples collected from land surface to 8 feet below in soil boring GB-1. A sample of the 0-to-4 foot interval (PID readings of 56.4 ppm) could not be collected for laboratory analysis due to inadequate sample recovery. In accordance with the SI work plan, a sample was collected and submitted to the laboratory for analysis from the 4-to-8 foot interval (PID readings of 24.7 ppm), where staining was also noted. As discussed in Section 3.1.3, and as shown on Table 2, laboratory analysis of the sample collected at 4 to 8 feet from boring GB-1 did not indicate the presence of PCE. PID readings from the eleven soil samples collected from boring GB-1 at depths between 8 and 42 feet below land surface showed no detections of VOCs, with the exception of a level of 10 ppm detected in the sample collected from the 32-to-34 foot depth interval. In accordance with the SI Work Plan, a soil sample was collected from boring GB-1 at the 32 to 34 foot depth interval, and laboratory analysis of this sample did not indicate the presence of PCE. Not unexpectedly, elevated PID readings were also detected in the samples collected from the 42-to-44 foot and the 44-to-46 foot depth intervals which are immediately above and below the water table surface, respectively, in an area of known ground-water contamination.

Table 1 provides a summary of the PID readings collected from soil samples screened during the SI.

### 3.1.3 Analytical Results

Nineteen soil samples were collected during the SI and submitted to either the primary laboratory, AnaLab (15 samples) or the secondary laboratory, EcoTest (4 samples). In accordance with the SI Work Plan, the sample and replicate collected from the shallower depth interval of boring SL-2 (36-38 feet) were not analyzed because chlorinated VOCs of concern were not detected in the deeper sample (42-44 feet) collected from that boring. Consequently, a total of 17 soil samples, representing 13 discrete sample intervals and four replicate samples, were analyzed as a part of this investigation.

Five VOCs, methylene chloride, chloroform, chloromethane, tetrachloroethene (PCE) and vinyl chloride, were detected in the soil samples collected during the SI. As discussed in Section 3.4, methylene chloride detections are considered to be due to laboratory contamination, and methylene chloride is not a contaminant of concern at the Site. Chloroform and vinyl chloride were detected at levels below NYSDEC Recommended Soil Cleanup Objectives (RSCOs) and do not appear to be contaminants of concern. Similarly, chloromethane was detected at a low level in only one sample, and there is no NYSDEC RSCO for chloromethane. Finally, PCE was detected in three of the seven borings. PCE concentrations in these three borings were far lower than concentrations detected in ground water, and PCE concentrations decreased in shallower samples, indicating that PCE was present in soil only due to volatilization from the underlying ground-water plume.

Chloroform and chloromethane were only detected at one soil boring location, SL-3. Chloroform was detected in the shallower (36-38 feet) and the deeper (42-44 feet) sample collected from boring SL-3 at a level of 3.5 micrograms per kilogram (µg/kg) and 5.5 µg/kg, respectively. Chloromethane was detected in only the deeper (42-44 feet) sample from boring SL-3 at a concentration of 27 µg/kg. Neither chloroform nor chloromethane were detected in the replicate, deeper (42-44 feet) soil sample collected from SL-3 which was submitted to the secondary laboratory. However, chloromethane was detected by the primary laboratory in the ground-water sample collected from boring SL-3, but was not detected in the replicate sample analyzed by the

secondary laboratory. Regardless of whether these compounds are actually present in soils beneath the Site, the levels of chloroform detected are significantly below the NYSDEC RSCO of 300 µg/kg, and there is no NYSDEC RSCO for chloromethane.

PCE was not detected in any of the soil samples collected from four (GB-1, GB-2, SL-1 and SL-2) of the seven borings drilled during the SI. The results for PCE from the six soil samples collected from the other three borings (GB-3, SL-3 and SL-4) ranged from not detected to 40 µg/kg. The highest concentrations of PCE (22 µg/kg and 40 µg/kg) were detected in two deeper soil samples (42-44 feet) collected within 5 feet of the water table at location SL-4, which overlies the most highly concentrated portion of the ground-water plume where volatilization and vapor-phase transport of VOCs is most likely (Swallow or Gschwend, 1983). These VOC detections are almost certainly due to volatilization of contaminants from the underlying ground-water plume and contaminants adsorbed on to soil particles during high water-table fluctuations. The lower levels of PCE detected in the shallower samples (i.e., within 5 to 10 feet of the water table) at locations GB-3, SL-3 and SL-4 are also likely caused by volatilization of VOCs from the underlying ground-water contaminant plume. Regardless, the highest level of PCE detected in soil beneath the Site is 35 times lower than the NYSDEC RSCO of 1,400 µg/kg and more than 800 times lower than the highest concentration detected in ground water (33,000 µg/L).

Vinyl chloride, a breakdown product of PCE (Vogel, et al., 1987), was detected in two soil samples at levels of 3.1 µg/kg (SL-4/42-44) and 3.9 µg/kg (SL-3/36-38). PCE was also present in both of the samples where vinyl chloride was detected. The presence of vinyl chloride in these samples is attributed to reductive dechlorination facilitated by the biodegradation of the PCE present in the ground-water contaminant plume. The NYSDEC RSCO for vinyl chloride is 200 µg/kg, significantly above the levels detected in these two soil samples.

The analytical results for the soil samples are summarized in Table 2 and Figure 2. The laboratory analytical reports, including the conformance summaries, are presented in Appendix B.

### 3.2 Ground-Water Sampling

Ground-water samples were collected from six existing monitoring wells (WMW-8 through WMW-10 and WH-11 through WH-13) and from the six soil borings (GB-1 through GB-3 and SL-2 through SL-4) which penetrated the water table.

Chlorinated VOCs were detected in all of the ground-water samples collected from the six soil borings and in five of the six existing monitoring wells sampled during the SI. No chlorinated VOCs were detected in the sample collected from well WH-11, and the sample from well WMW-8 contained a concentration of 3.2 micrograms per liter (µg/L) of methylene chloride, a known laboratory contaminant. Methylene chloride was also detected in the majority of the other ground-water samples collected during the SI, again indicating its presence as a laboratory contaminant.

As expected based upon past Site investigations, the predominant compound detected in ground water beneath the Site was PCE. The concentrations of PCE detected in ground-water samples collected during the SI ranged from 2.8 µg/L (replicate from boring GB-1) to 10,000 µg/L (boring GB-3). Methylene chloride aside, PCE was detected in every ground-water sample in which the presence of other chlorinated VOCs were detected.

Moreover, PCE was consistently detected at a concentration higher than any other compound besides methylene chloride in each ground-water sample. Trichloroethene (TCE), 1,2-dichloroethene and vinyl chloride, which are all breakdown products of PCE (Vogel, et al., 1987), were detected at much lower levels than PCE. In addition to PCE and its breakdown products, minor levels (less than 2 µg/L) of 1,1,1-trichloroethane, also a possible breakdown product of PCE, were also detected in two of the ground-water sampling locations (well WMW-10 and boring GB-1).

Chloromethane, was detected at a concentration of 86 µg/l in the ground-water sample collected from boring SL-3. Chloromethane was also detected in the deeper, but not the shallower soil sample collected from boring SL-3. Chloromethane was not detected in any of the other ground-water or soil samples collected during the SI or the previous Site investigations.

Ground-water analytical results are summarized in Table 3 and PCE levels in ground water are shown in Figure 3. The laboratory analytical reports, including conformance summaries, are presented in Appendix B.

### 3.3 Water-Level Measurements

Depth to water measurements collected during the SI ranged from 41.22 feet (ME-12) to 44.22 feet (WH-2) below land surface (Table 4). Using these data and the corresponding surveyed well elevations, calculated ground-water elevations ranged from 16.44 feet (ME-2) to 14.72 feet (WH-2) above the common vertical datum used for the Site (Queensborough geodetic marker).

Roux Associates developed the ground-water contour map presented as Figure 4 using the ground-water elevation data collected during the SI. The contoured elevation data indicate that ground water flows beneath the Site from northwest to southeast which concurs with the flow direction previously reported in the SAR. The water-table gradient is relatively flat across the Site, with the exception of a steep depression to the southeast of the Site.

### 3.4 Data Validation

Data validation of the laboratory analytical data was performed as proposed in the SI Work Plan. The results did not raise any concerns that would call into question the validity of the data. Specific results of the data validation review were as follows.

- The samples collected during the SI were all analyzed within the method-specific holding time.

- A review of replicate sample results demonstrates that acceptable precision was obtained in the soil sample (GB-1) where detectable concentrations of an analyte were found in both samples. For the ground-water samples, acceptable precision was obtained for detectable concentrations of analytes, with the exception of PCE in sample GB-1 and trichloroethene in WH-12. The comparisons of other replicate sample results were within tolerance limits for precision.

- There were no anomalous elevated detection limits identified that would distort the reporting of the analytical results.

- There were no contaminants detected in any of the trip blanks associated with the samples collected during the SI (Table 3).

- The analytical results were not qualified in any of the laboratory reports.

Methylene chloride was detected in a number of the ground-water and soil samples analyzed by the primary laboratory, AnaLab. As mentioned in AnaLab's case narrative, methylene chloride is a "common laboratory contaminant and its presence at the levels reported may be attributable to laboratory contribution." As a quality assurance test, several replicate ground-water and soil samples were submitted to a secondary laboratory, EcoTest. Methylene chloride was not detected by EcoTest in the replicate samples, further indicating that methylene chloride was present only as a laboratory contaminant.

## 4.0 EVALUATION OF SUBSURFACE CONDITIONS

The results of the SI support the conclusion of previous Site investigations that PCE contamination in ground water beneath the Site has migrated onto the Site from an off-site source. Roux Associates' Voluntary Cleanup SAR dated January 7, 1997 provides details regarding prior Site investigations. This section provides a description of overall site conditions based upon the results of the SI and previous investigations conducted at the Site.

### 4.1 Hydrogeology

Water levels at the Site have been measured from the existing monitoring wells on three separate occasions. The water-level data consistently show that ground-water generally flows in a southeastern direction. This finding is in agreement with published references for the region (e.g., U.S. Geological Survey, 1981 and 1986) and ES&E's drilling records (ES&E, 1992). Moreover, the orientation and migration route of the PCE contaminant plume beneath the Site supports the conclusion that ground-water flow is toward the southeast.

### 4.2 Soil Quality

The evaluation of soil quality beneath the Site is based upon the results of sampling 114 soil-gas survey points, field screening 306 soil samples, and the laboratory analysis of soil samples collected from 39 locations. Supporting documentation regarding data collected prior to the SI is included in the Voluntary Cleanup SAR dated January 7, 1997.

As described in the Voluntary Cleanup SAR, Target Environmental Services of Columbia, Maryland conducted a soil-gas survey in September 1995, where PCE was detected in 18 of the 114 soil-gas samples collected at the Site, at trace concentrations of 5 µg/L or less. All 18 sampling points where PCE was detected were located beneath the southern half of the Metropolitan Avenue building, where PCE concentrations in ground water exceed 10,000 µg/L. Accordingly, the Voluntary Cleanup SAR attributed the soil-gas PCE detections beneath the Metropolitan Avenue building to volatilization of PCE from the underlying ground-water

contaminant plume. As described below, subsequent soil sampling performed at locations where PCE was detected in the soil-gas, did not reveal PCE at levels indicative of soil contamination other than that attributable to volatilization of the PCE plume.

PID readings, which indicate the presence of VOCs (not simply PCE), were below instrument detection capabilities in 271 of the 306 soil samples collected at the Site on various occasions from 1992 to the present. The majority of the 35 locations where elevated PID readings were detected are located near or below the water table, where significant concentrations of VOCs (greater than 33,000 µg/L) have been detected. The depth intervals where elevated PID readings were detected were sporadic and not indicative of a continuous downward trail of residual solvents, as would be expected if PCE had been released from the Site. The PID will detect a wide variety of organic compounds, many of which can be produced naturally during the decay of organic matter present in soil and aquifer materials. These naturally occurring compounds include volatile aromatic and aliphatic hydrocarbons, phenols, ketones, aldehydes, and amines. It is likely, therefore, that sporadic PID readings, such as those observed at the Site but not confirmed through VOC laboratory analysis, represent detections of naturally occurring organic compounds and are not attributable to a release at the Site.

On various occasions from 1992 to the present, soil samples have been collected and analyzed from 39 locations across the Site (12 locations on the Woodhaven Boulevard building property and 27 locations on the Metropolitan Avenue building property). PCE was not detected in samples collected at any of the nine locations sampled on the Woodhaven Boulevard building property. As shown in Figure 2, PCE has been detected at four soil sample locations collected beneath the Metropolitan Avenue building property. Moreover, PCE was only detected in deep soil samples (greater than 36 feet below grade), at a maximum level of 40 µg/L. This level of PCE is, again, considered to be attributable to water-table fluctuations which has created a "smear zone" of PCE-contaminated soil, and the volatilization of the ground-water contaminant plume. PCE was not detected in the 14 shallow (less than 12 feet below grade) soil samples collected at the Site. The fact that (1) ground-water samples contained PCE at levels that were orders of magnitude greater than PCE levels detected in soil samples at the same locations; (2) the soil

samples with the highest PCE levels were collected at the greatest depth (within 5 feet of the ground-water table); and (3) soil samples in which PCE was detected were collected over the center of the ground-water plume all support the conclusion that PCE detected in soil samples is attributable to the underlying ground-water plume.

### 4.3 Ground-Water Quality

Ground-water quality data indicate that a plume of PCE is present beneath the central portion of the Site. As shown in Figure 3, the axis of the plume is oriented in a northwest-southeast direction. Ground water beneath the Site flows toward the southeast, which indicates that the PCE plume is migrating from the northwest, toward the southeast. Significant concentrations (2,200 µg/L to 17,000 µg/L) of PCE are present in ground water along the upgradient boundary of the Site, which abuts the property occupied by the Woodhaven Lanes Bowling Alley. Based upon the ground-water flow direction, migration of the PCE plume and the low, infrequent detections of PCE in soil samples collected at the Site, the origin or source area of the PCE plume migrating beneath the Site is located offsite and upgradient (to the northwest) of the Site.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the SI, along with the findings of previous investigations, support Roux Associates' conclusions that PCE detected in ground water beneath the Site is attributable to an off-site source. Specifically,

- there is no indication that PCE was ever used at the Site;
- PCE has been consistently detected in five upgradient monitoring wells at the Site (ME-9, ME-16, ME-11, ME-15 and ME-7) with concentrations exceeding 1,000 µg/L and ranging as high as 17,000 µg/L;
- ground-water elevation data consistently reveal that ground water beneath the Site flows to the southeast, and ground-water quality data indicate that a substantial plume of PCE is migrating in a southeasterly direction beneath the Site;
- PCE was not detected in 84 percent of the 114 soil-gas samples collected at the Site, and was detected at only trace levels (less than 5 µg/L) in the 18 samples where it was found attributed to volatilization of PCE from the underlying ground-water plume of PCE;
- PID readings, which indicate the presence of VOCs, were below instrument detection capabilities in 89 percent of the 306 soil samples collected at the Site, and the majority of the 35 locations where elevated PID readings were detected were located near or below the water table where significant concentrations of VOCs (greater than 33,000 µg/L) have been detected; and
- neither PCE nor its breakdown products were detected in 35 of the 39 soil sample locations at the Site where soil samples were collected and analyzed by a laboratory, and the four sample locations where PCE and its breakdown products were detected were located more than 35 feet below land surface, overlying the "core" of the ground-water plume. The highest detection of PCE in soil samples was 40 µg/kg, which is more than 800 times lower than the highest concentration detected in ground water (33,000 µg/L). Thus, PCE detections in Site soils can be attributed to the "smear zone" caused by water table and the volatilization of PCE and its breakdown products from the plume.

Since the PCE detected in ground water beneath the Site is attributable to an off-site, upgradient source, no further investigation or remedial action by EAC is necessary at the Site. This SI report should fully address the NYSDEC's remaining concerns regarding the VOC plume beneath the Site and, together with previous investigation reports submitted to the NYSDEC, provides the NYSDEC with a sound basis to support issuance of a "no further action" letter for the Site.

## 6.0 REFERENCES

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Respectfully Submitted,

ROUX ASSOCIATES, INC.

Jeffrey S. Day
Senior Hydrogeologist/
Project Manager

Peter J. Gerbasi, P.E.
Principal Engineer

Table 1 Summary of PID Readings Collected From Soil Samples Collected by Roux Associates, Inc., May 1997, EAC Property, Glendale, New York.

| Depth Interval | Boring Designation | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | GB-1 | GB-2 | GB-3 | SL-1 | SL-2 | SL-3 | SL-4 | |
| 0-4 | 56.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 4-8 | 24.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 8-12 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| 12-16 | 0.0 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | |
| 16-20 | 0.0 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | |
| 20-24 | 0.0 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | |
| 24-28 | 0.0 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | |
| 28-30 | 0.0 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | |
| 30-32 | CFA | CFA | 0.0 | NS | CFA | CFA | CFA | |
| 32-34 | 10.0 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | |
| 34-36 | 0.0 | 0.0 | 0.0 | NS | 0.0 | CFA | CFA | |
| 36-38 | 0.0 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | |
| 38-40 | 0.0 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | |
| 40-42 | 0.0 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | |
| 42-44 | 47.5 | 0.0 | 0.0 | NS | 0.0 | 0.0 | 0.0 | Approximate Depth of Water Table |
| 44-46 | 20.6 | NS | NS | NS | 0.0 | 0.0 | 0.0 | |

Notes:

ppm - All measurements presented are in parts per million (ppm) as detected by the PID.
CFA - Continued from above, indicates PID reading collected from sample 4 feet in length.
NS - Not sampled.
PID - Photoionization Detector calibrated with 100 ppm isobutylene.
[ ] - Sample collected for laboratory analysis.

Table 3 Summary of Soil Quality Data Generated by Roux Associates, Inc., May 1997, EAC Property, Glendale, New York.

| Analyte | NYSDEC RSCOs | Soil Boring Designation: GB-1 | GB-1 | GB-1 | GB-1R | GB-2 | GB-2 | GB-3 | GB-3 | SL-1 | SL-2 | SL-3 | SL-3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Depth (feet): 4-8 | 32-34 | 40-42 | 40-42 | 34-36 | 40-42 | 34-36 | 40-42 | 8-12 | 42-44 | 36-38 | 42-44 |
| | | Sample Date: 5/9/97 | 5/9/97 | 5/9/97 | 5/9/97 | 5/8/97 | 5/8/97 | 5/13/97 | 5/13/97 | 5/13/97 | 5/14/97 | 5/14/97 | 5/14/97 |
| | | Laboratory: AnaLab | AnaLab | AnaLab | AnaLab | AnaLab | AnaLab | AnaLab | AnaLab | AnaLab | AnaLab | AnaLab | AnaLab |
| Volatile Organic Compounds* (ug/kg) | | | | | | | | | | | | | |
| 1,2-Dichloroethene | 250 | < 2.8 | < 2.1 | < 2.1 | < 2.2 | < 2.1 | < 2.1 | < 2.1 | < 2.0 | < 2.1 | < 2.1 | < 2.1 | < 2.4 |
| Methylene chloride | 100 | 29 | 39 | 24 | 24 | 39 | 17 | < 2.1 | 7.3 | 6.9 | 9.2 | 7.3 | 11 |
| Tetrachloroethene | 1,400 | < 2.8 | < 2.1 | < 2.1 | < 2.2 | < 2.1 | < 2.1 | < 2.1 | 4.2 | < 2.1 | < 2.1 | 2.3 | < 2.4 |
| 1,1,1-Trichloroethane | 800 | < 2.8 | < 2.1 | < 2.1 | < 2.2 | < 2.1 | < 2.1 | < 2.1 | < 2.0 | < 2.1 | < 2.1 | < 2.1 | < 2.4 |
| Trichloroethene | 700 | < 2.8 | < 2.1 | < 2.1 | < 2.2 | < 2.1 | < 2.1 | < 2.1 | < 2.0 | < 2.1 | < 2.1 | < 2.1 | < 2.4 |
| Chloroform | 300 | < 2.8 | < 2.1 | < 2.1 | < 2.2 | < 2.1 | < 2.1 | < 2.1 | < 2.0 | < 2.1 | < 2.1 | 3.5 | 5.5 |
| Chloromethane | NA | < 2.8 | < 2.1 | < 2.1 | < 2.2 | < 2.1 | < 2.1 | < 2.1 | < 2.0 | < 2.1 | < 2.1 | < 2.1 | 27 |
| Vinyl Chloride | 200 | < 2.8 | < 2.1 | < 2.1 | < 2.2 | < 2.1 | < 2.1 | < 2.1 | < 2.0 | < 2.1 | < 2.1 | 3.9 | < 2.4 |

NA - No RSCO listed by NYSDEC for this compound.
ug/kg - Concentrations in micrograms per kilogram
R - Replicate sample analyzed by AnaLab
* - Analyzed by USEPA Method 8010
NYSDEC RSCOs - New York State Department of Environmental Conservation Recommended Soil Cleanup Objectives, Technical and Administrative Guidance Memorandum, April 1995.

Table 1 Summary of Soil Quality Data Generated by Roux Associates, Inc., May 1997, EAC Property, Glendale, New York.

| Analyte | NYSDEC RSCOs | Soil Boring Designation: SL-3 | SL-4 | SL-4 | SL-4 | SL-4 |
|---|---|---|---|---|---|---|
| | | Sample Depth (feet): 42-44 | 36-38 | 36-38 | 42-44 | 42-44 |
| | | Sample Date: 5/14/97 | 5/16/97 | 5/16/97 | 5/16/97 | 5/16/97 |
| | | Laboratory: Ecotest | AnaLab | Ecotest | AnaLab | Ecotest |
| Volatile Organic Compounds* (ug/kg) | | | | | | |
| 1,2-Dichloroethene | 250 | < 5 | < 2.0 | < 5 | < 2.0 | < 5 |
| Methylene chloride | 100 | < 5 | 3.2 | < 5 | 8.7 | < 5 |
| Tetrachloroethene | 1,400 | < 5 | < 2.0 | 10 | 22 | 40 |
| 1,1,1-Trichloroethane | 800 | < 5 | < 2.0 | < 5 | < 2.0 | < 5 |
| Trichloroethene | 700 | < 5 | < 2.0 | < 5 | < 2.0 | < 5 |
| Chloroform | 300 | < 5 | < 2.0 | < 5 | < 2.0 | < 5 |
| Chloromethane | NA | < 5 | < 2.0 | < 5 | < 2.0 | < 5 |
| Vinyl Chloride | 200 | < 5 | < 2.0 | < 5 | 3.1 | < 5 |

NA - No RSCO listed by NYSDEC for this compound.
ug/kg - Concentrations in micrograms per kilogram
R - Replicate sample analyzed by AnaLab
* - Analyzed by USEPA Method 8010
NYSDEC RSCOs - New York State Department of Environmental Conservation Recommended Soil Cleanup Objectives, Technical and Administrative Guidance Memorandum, April 1995.

Table Summary of Ground-Water Quality Data and Quality Assurance Data Generated by Roux Associates, Inc., May 1997, EAC Property, Glendale, New York.

| Analyte | Soil Boring/Monitoring Well Designation: / Date Sampled: / Laboratory: | WMW-8 5/6/97 AnaLab | WMW-9 5/6/97 AnaLab | WMW-10 5/6/97 AnaLab | WH-11 5/6/97 AnaLab | WH-12 5/6/97 AnaLab | WH-13 5/6/97 AnaLab | WH-21 5/6/97 AnaLab | GB-1 5/9/97 AnaLab | GB-1R 5/9/97 AnaLab |
|---|---|---|---|---|---|---|---|---|---|---|
| Volatile Organic Compounds* (ug/L) | | | | | | | | | | |
| Chloromethane | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Vinyl Chloride | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethene | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,1-Trichloroethane | | < 1.0 | < 1.0 | 1.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 1.6 | 1.3 |
| Tetrachloroethene | | < 1.0 | 240 | 1,500 | < 1.0 | 2,800 | 880 | 2,300 | 48 | 2.8 |
| Trichloroethene | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 2.6 | < 1.0 | 1.5 | < 1.0 | < 1.0 |
| Methylene Chloride | | 3.2 | 3.1 | 2.7 | < 1.0 | 2.8 | 3.0 | 3.4 | 6.5 | 7.6 |

* - Analyzed by USEPA Method 601
ug/L - Concentrations in micrograms per liter
R - Replicate sample

Table 1 Summary of Ground-Water Quality Data and Quality Assurance Data Generated by Roux Associates, Inc., May 1997, EAC Property, Glendale, New York.

| Soil Boring/Monitoring Well Designation: / Date Sampled: / Laboratory: / Analyte | GB-2 5/8/97 AnaLab | GB-3 5/15/97 AnaLab | SL-2 5/15/97 AnaLab | SL-3 5/14/97 AnaLab | SL-3 5/14/97 EcoTest | SL-4 5/16/97 AnaLab | SL-4 5/16/97 EcoTest | TRIP BLANK 5/5/97 AnaLab | TRIP BLANK 5/16/97 EcoTest |
|---|---|---|---|---|---|---|---|---|---|
| Volatile Organic Compounds* (ug/L) | | | | | | | | | |
| Chloromethane | < 1.0 | < 1.0 | < 1.0 | 86 | < 1.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 |
| Chloroform | < 1.0 | < 1.0 | < 1.0 | < 10.0 | < 10.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 |
| Vinyl Chloride | < 1.0 | < 1.0 | < 1.0 | < 10.0 | < 10.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethene | < 1.0 | < 1.0 | < 1.0 | < 10.0 | 1 | < 5.0 | < 5.0 | < 1.0 | < 1.0 |
| 1,1,1-Trichloroethane | < 1.0 | < 1.0 | < 1.0 | < 10.0 | < 10.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | 2,200 | 10,000 | 270 | 280 | 760 | 6,900 | 5,900 | < 1.0 | < 1.0 |
| Trichloroethene | 2.7 | 9.2 | < 1.0 | < 10.0 | < 10.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 |
| Methylene Chloride | 9.4 | < 1.0 | < 1.0 | 41 | < 10.0 | 19 | < 5.0 | < 1.0 | < 1.0 |

* - Analyzed by USEPA Method 601
ug/L - Concentrations in micrograms per liter
R - Replicate sample

Table 3 Summary of Ground-Water Quality Data and Quality Assurance Data Generated by Roux Associates, Inc., May 1997, EAC Property, Glendale, New York.

| Analyte | Soil Boring/Monitoring Well Designation: / Date Sampled: / Laboratory: | TRIP BLANK 5/15/97 EcoTest | TRIP BLANK 5/16/97 AnaLab | TRIP BLANK 5/13/97 AnaLab | TRIP BLANK 5/14/97 AnaLab | TRIP BLANK 5/9/97 AnaLab |
|---|---|---|---|---|---|---|
| Volatile Organic Compounds* (ug/L) | | | | | | |
| Chloromethane | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Chloroform | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Vinyl Chloride | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,2-Dichloroethene | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| 1,1,1-Trichloroethane | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Tetrachloroethene | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Trichloroethene | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Methylene Chloride | | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |

* - Analyzed by USEPA Method 601
ug/L - Concentrations in micrograms per liter
R - Replicate sample

Table 4. Water-Level Elevations, EAC Property, Glendale, New York.

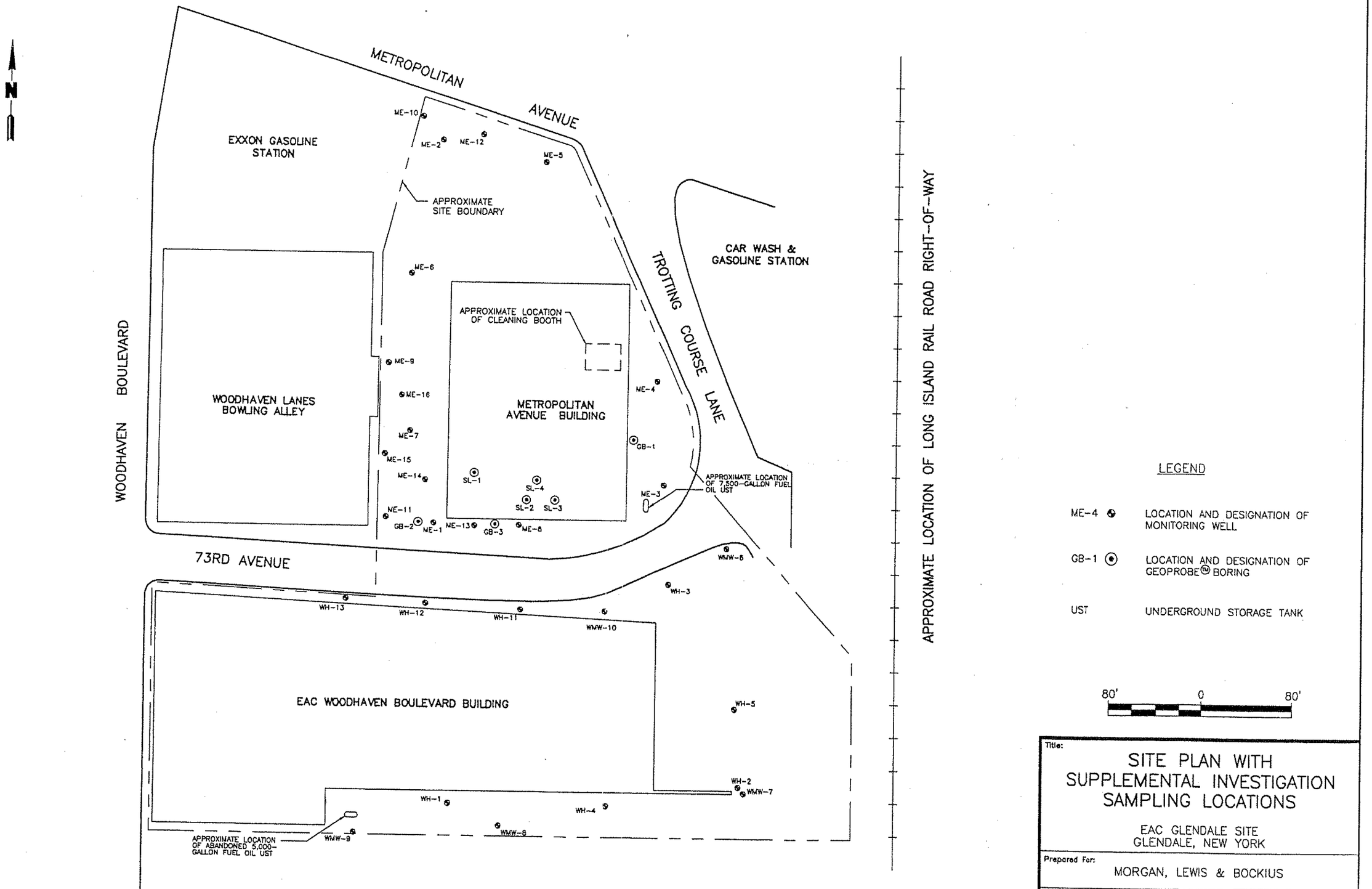
| Well Designation | Measuring Point Elevation (feet above Queens-borough vertical datum) | July 27, 1995 | | November 11, 1996 | |
|---|---|---|---|---|---|
| | | Depth to Water (feet below measuring point) | Water-Level Elevation (feet above Queens-borough vertical datum) | Depth to Water (feet below measuring point) | Water-Level Elevation (feet above Queens-borough vertical datum) |
| ME-1 | 60.14 | 45.55 | 14.59 | 44.51 | 15.63 |
| ME-2 | 58.40 | 43.70 | 14.70 | 42.60 | 15.80 |
| ME-3 | 59.02 | NM | -- | 43.55 | 15.47 |
| ME-4 | 58.60 | 44.05 | 14.55 | 43.03 | 15.57 |
| ME-5 | 57.67 | 43.07 | 14.60 | 42.02 | 15.65 |
| ME-6 | 58.76 | 44.10 | 14.66 | 43.03 | 15.73 |
| ME-7 | 59.56 | 44.99 | 14.57 | 43.92 | 15.64 |
| ME-8 | 59.56 | 44.97 | 14.59 | 44.00 | 15.56 |
| ME-9 | 58.97 | 44.35 | 14.62 | 43.28 | 15.69 |
| ME-10 | 58.22 | 43.57 | 14.65 | 42.46 | 15.76 |
| ME-11 | 59.54 | 44.91 | 14.63 | 43.86 | 15.68 |
| ME-12 | 57.62 | 43.97 | 13.65 | 41.90 | 15.72 |
| ME-13 | 59.64 | NM | -- | 44.04 | 15.60 |
| ME-14 | 59.54 | NM | -- | 43.89 | 15.65 |
| ME-15 | 59.51 | NM | -- | 43.81 | 15.70 |
| ME-16 | 59.14 | NM | -- | 43.46 | 15.68 |
| WH-1 | 59.21 | 44.64 | 14.57 | 43.62 | 15.59 |
| WH-2 | 58.94 | 46.10 | 12.84 | 45.06 | 13.88 |
| WH-3 | 58.25 | 43.89 | 14.36 | 42.91 | 15.34 |
| WH-4 | 59.22 | 44.98 | 14.24 | 43.89 | 15.33 |
| WH-5 | 58.50 | 45.65 | 12.85 | 44.63 | 13.87 |
| WMW-6 | 58.36 | 43.99 | 14.37 | 43.02 | 15.34 |
| WMW-7 | 59.00 | NM | -- | 45.07 | 13.93 |
| WMW-8 | 58.49 | NM | -- | 43.03 | 15.46 |
| WMW-9 | 59.02 | NM | -- | 43.35 | 15.67 |
| WMW-10 | 59.20 | NM | -- | 43.71 | 15.49 |
| WH-11 | 59.07 | NM | -- | 43.51 | 15.56 |
| WH-12 | 59.52 | NM | -- | 43.96 | 15.56 |
| WH-13 | 58.89 | NM | -- | 43.35 | 15.54 |

NM - Not measured (well not yet installed or not located)

Table 4. Water-Level Elevations, EAC Property, Glendale, New York.

| Well Designation | Measuring Point Elevation (feet above Queens-borough vertical datum) | May 5, 1997 Depth to Water (feet below measuring point) | May 5, 1997 Water-Level Elevation (feet above Queens-borough vertical datum) |
|---|---|---|---|
| ME-1 | 60.14 | 43.86 | 16.28 |
| ME-2 | 58.40 | 41.96 | 16.44 |
| ME-3 | 59.02 | 42.79 | 16.23 |
| ME-4 | 58.60 | 42.35 | 16.25 |
| ME-5 | 57.67 | 41.32 | 16.35 |
| ME-6 | 58.76 | 42.40 | 16.36 |
| ME-7 | 59.56 | 43.33 | 16.23 |
| ME-8 | 59.56 | 43.30 | 16.26 |
| ME-9 | 58.97 | 42.63 | 16.34 |
| ME-10 | 58.22 | 41.82 | 16.40 |
| ME-11 | 59.54 | 43.22 | 16.32 |
| ME-12 | 57.62 | 41.22 | 16.40 |
| ME-13 | 59.64 | 43.37 | 16.27 |
| ME-14 | 59.54 | 43.26 | 16.28 |
| ME-15 | 59.51 | 43.20 | 16.31 |
| ME-16 | 59.14 | 42.83 | 16.31 |
| WH-1 | 59.21 | 42.95 | 16.26 |
| WH-2 | 58.94 | 44.22 | 14.72 |
| WH-3 | 58.25 | 42.14 | 16.11 |
| WH-4 | 59.22 | 43.19 | 16.03 |
| WH-5 | 58.50 | 43.69 | 14.81 |
| WMW-6 | 58.36 | 42.22 | 16.14 |
| WMW-7 | 59.00 | 44.18 | 14.82 |
| WMW-8 | 58.49 | 42.38 | 16.11 |
| WMW-9 | 59.02 | 42.88 | 16.14 |
| WMW-10 | 59.20 | 42.98 | 16.22 |
| WH-11 | 59.07 | 42.84 | 16.23 |
| WH-12 | 59.52 | 43.27 | 16.25 |
| WH-13 | 58.89 | 42.67 | 16.22 |

NM - Not measured (well not yet installed or not located)




LEGEND

| | |
|---|---|
| ME-4 ⊕ | LOCATION AND DESIGNATION OF MONITORING WELL |
| GB-1 ⊙ | LOCATION AND DESIGNATION OF GEOPROBE(TM) BORING |
| UST | UNDERGROUND STORAGE TANK |

80' 0 80'

Title:

# SITE PLAN WITH SUPPLEMENTAL INVESTIGATION SAMPLING LOCATIONS

EAC GLENDALE SITE
GLENDALE, NEW YORK

Prepared For:
MORGAN, LEWIS & BOCKIUS

ROUX ASSOCIATES INC
Environmental Consulting & Management

| | | | |
|---|---|---|---|
| Compiled by: A.M. | Date: 12/96 | FIGURE |
| Prepared by: R.K. | Scale: As Shown | 1 |
| Project Mgr: L.M. | Status: FINAL | |
| File No: 04118014 | Project: 15204Y02 | |

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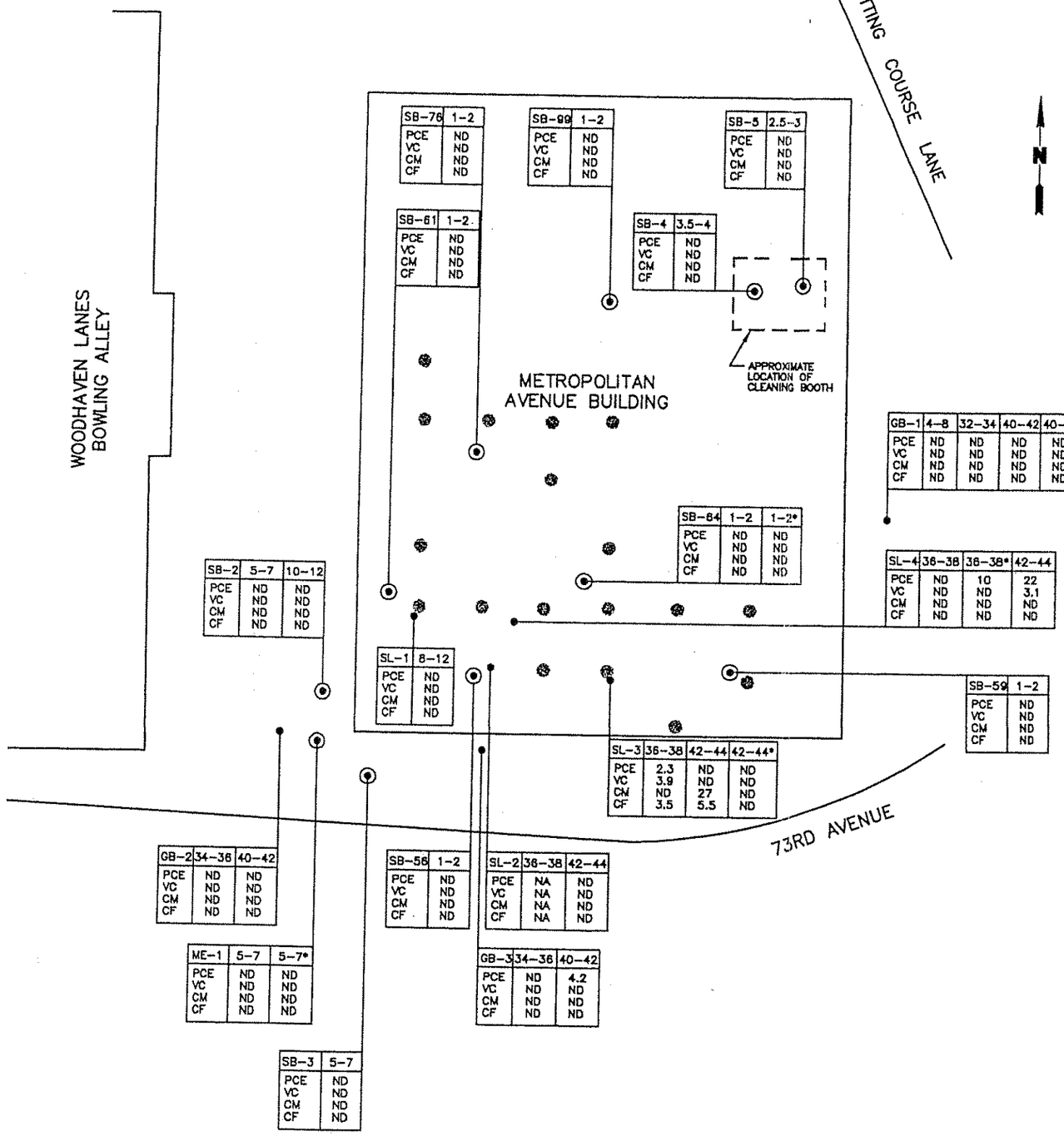



## LEGEND

- APPROXIMATE LOCATION OF SOIL BORING INSTALLED PRIOR TO MAY 1997
- APPROXIMATE LOCATION OF SOIL BORING INSTALLED DURING MAY 1997 SUPPLEMENTAL INVESTIGATION
- LOCATION OF SOIL GAS SURVEY POINT WHERE PCE WAS DETECTED

| GB-1 | 4-8 | 32-34 | 40-42 |
|---|---|---|---|
| PCE | ND | ND | ND |
| VC | ND | ND | ND |
| CM | ND | ND | ND |
| CF | ND | ND | ND |

← SOIL BORING DESIGNATION AND SAMPLED DEPTH INTERVAL

← SUMMARY OF COMPOUNDS DETECTED IN SOIL, CONCENTRATIONS IN MICROGRAMS PER KILOGRAM (UG/KG)

PCE – TETRACHLOROETHENE
VC – VINYL CHLORIDE
CM – CHLOROMETHANE
CF – CHLOROFORM

NA – NOT ANALYZED
ND – NOT DETECTED

## NOTES:

* INDICATES RESULTS OF REPLICATE SAMPLES

THE FOLLOWING 9 (NINE) SOIL SAMPLES ARE NOT SHOWN (NO VOCs WERE DETECTED IN THESE SOIL SAMPLES)

WH-1, WH-2, WH-2R, WH-3,
WB-1, WB-2, WB-3, WB-4, WB-5.

VOCs – VOLATILE ORGANIC COMPOUNDS

40' 0 40'

Title:

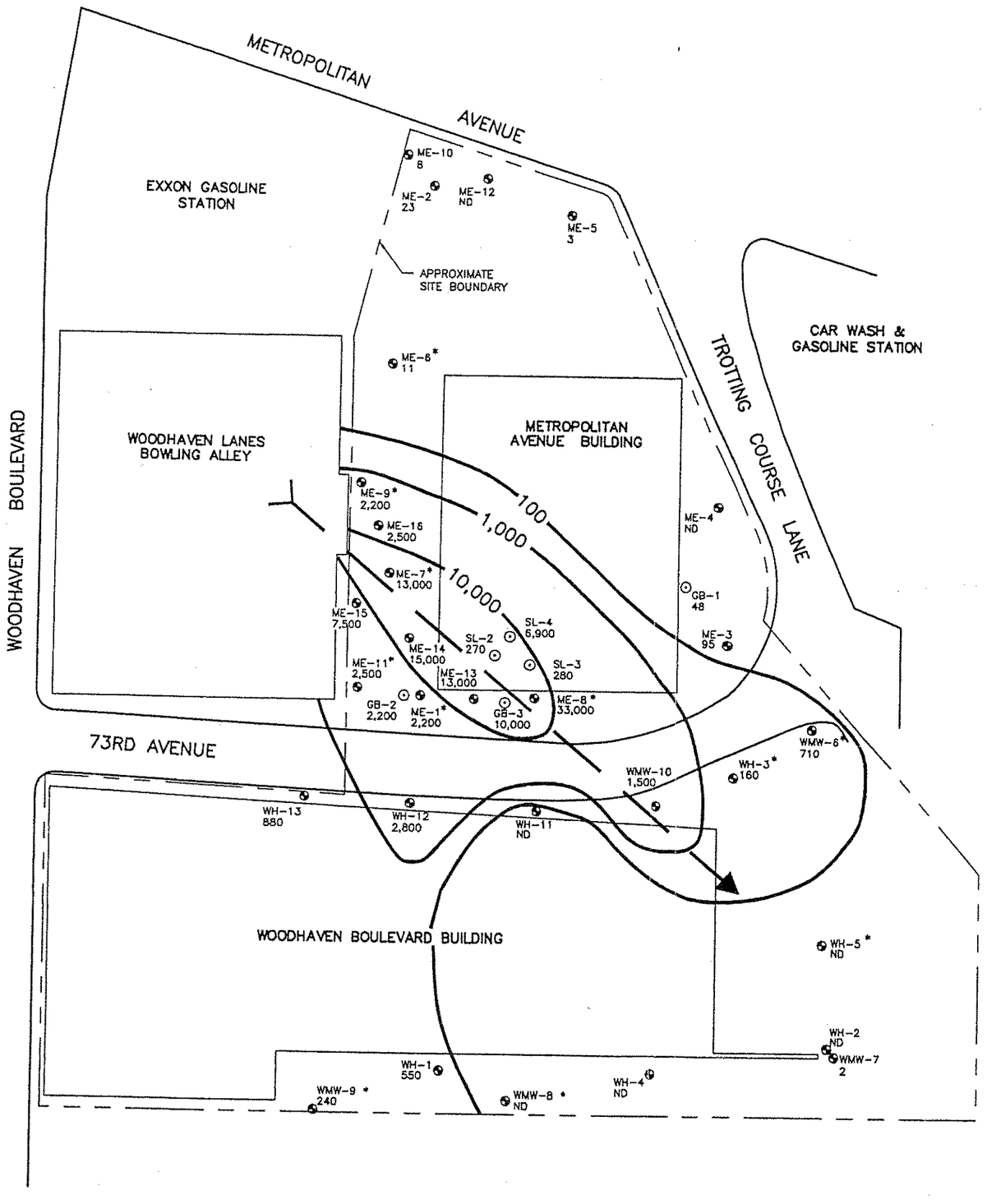
# SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS

EAC GLENDALE SITE
GLENDALE, NEW YORK

Prepared For:
MORGAN, LEWIS & BOCKIUS

ROUX ASSOCIATES INC
Environmental Consulting & Management

| | | |
|---|---|---|
| Compiled by: J.D. | Date: 5/97 | FIGURE |
| Prepared by: G.S. | Scale: AS SHOWN | 2 |
| Project Mgr: J.D. | Revision: FINAL | |
| File No: 04118012 | Proj. No: 15204Y02 | |




## LEGEND

- WMW-6 710 — LOCATION AND DESIGNATION OF MONITORING WELL; CONCENTRATION OF TETRACHLOROETHENE (PCE) DETECTED IN MOST RECENT GROUND-WATER SAMPLE (1992-1997), MEASURED IN MICROGRAMS PER LITER (ug/L)
- GB-1 ⊙ — LOCATION AND DESIGNATION OF GROUND-WATER SAMPLE COLLECTED FROM GEOPROBE® BORING
- 100 — LINE OF EQUAL PCE CONCENTRATION
- ND — NOT DETECTED
- APPARENT AXIS AND CURRENT FLOW DIRECTION OF PCE PLUME MIGRATING FROM UPGRADIENT OF METROPOLITAN BUILDING

NOTES:

1. ASTERISKS INDICATE THOSE WELLS SAMPLED MORE THAN ONCE (SEE VOLUNTARY CLEANUP SITE ASSESSMENT REPORT FOR OTHER RESULTS).
2. LINE OF EQUAL PCE CONCENTRATION DOES NOT TAKE INTO CONSIDERATION GEOPROBE® BORING SAMPLES COLLECTED AT DISCRETE DEPTH INTERVAL IMMEDIATELY BELOW WATER TABLE.

80' 0 80'

Title:

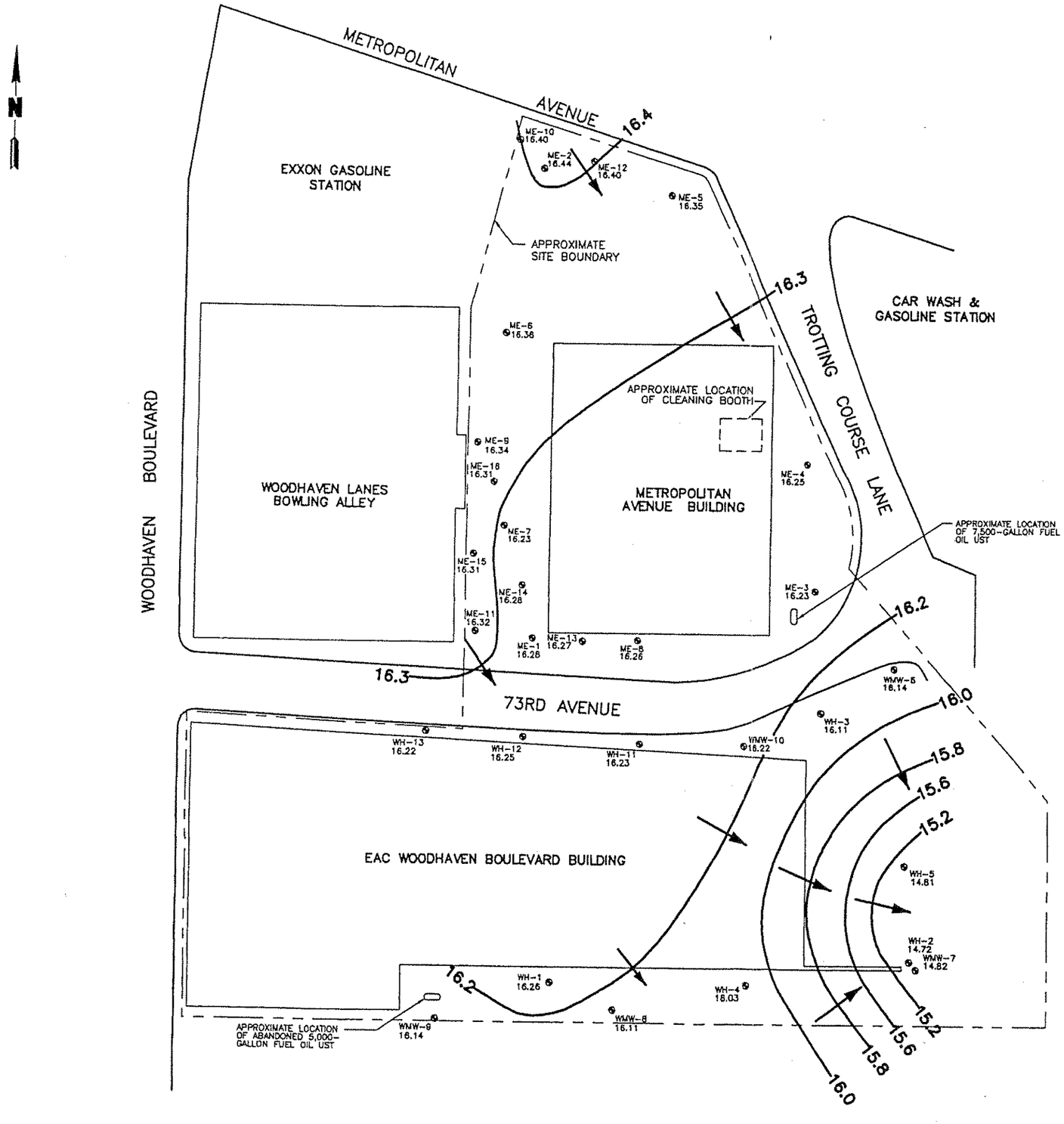
# APPARENT PCE PLUME AND CURRENT FLOW DIRECTION

EAC GLENDALE SITE
GLENDALE, NEW YORK

Prepared For:
MORGAN, LEWIS & BOCKIUS

ROUX ASSOCIATES INC
Environmental Consulting & Management

| | | | |
|---|---|---|---|
| Compiled by: A.M. | Date: 5/97 | FIGURE | |
| Prepared by: G.S. | Scale: As Shown | 3 | |
| Project Mgr: J.D. | Status: FINAL | | |
| File No: 04118013 | Project: 15204Y02 | | |




Title:

# GROUND-WATER ELEVATIONS AND INFERRED GROUND-WATER FLOW PATTERNS

EAC GLENDALE SITE
GLENDALE, NEW YORK

Prepared For:
MORGAN, LEWIS & BOCKIUS

ROUX ASSOCIATES INC
*Environmental Consulting & Management*

| | | | |
|---|---|---|---|
| Compiled by: J.D. | Date: 5/97 | FIGURE |
| Prepared by: G.S. | Scale: As Shown | 4 |
| Project Mgr: J.D. | Status: FINAL | |
| File No: 04118011 | Project: 15204Y02 | |