

**TECHNICAL MEMORANDUM  
OPERABLE UNIT 2 SUPPLEMENTAL INVESTIGATION  
PHASE 1 RESULTS**  
TransTechnology Site #1-30-101  
Glen Head, New York

*Submitted to:*  
**Breeze-Eastern Corporation, Union, New Jersey**

*Submitted by:*  
**AMEC Geomatrix, Inc., Buffalo, New York**

October 2009

Project 6238

## TABLE OF CONTENTS

	<b>Page</b>
1.0 INTRODUCTION .....	1
1.1 PRIOR SUBMITTALS UNDER THE ORDER ON CONSENT.....	1
1.2 PREVIOUS INVESTIGATION RESULTS.....	2
1.3 OU-2 INVESTIGATION OBJECTIVE AND PHASED APPROACH.....	2
2.0 PHASE 1 WORK PERFORMED .....	4
2.1 PHASE 1 INVESTIGATION TASKS.....	4
2.2 TASK 1: HYDRAULIC HEAD MONITORING.....	4
2.3 TASK 2: GROUNDWATER PROFILING.....	4
2.4 TASK 3: GROUNDWATER SAMPLING (ON-SITE MONITORING WELLS).....	5
3.0 PHASE 1 RESULTS.....	6
3.1 HYDRAULIC HEAD MONITORING.....	6
3.2 GROUNDWATER PROFILING .....	6
3.3 MONITORING WELL SAMPLING.....	7
3.4 DISCUSSION OF RESULTS .....	7
4.0 RECOMMENDED PHASE 2 SCOPE OF WORK.....	9
4.1 PHASE 2 MONITORING LOCATIONS.....	9
4.2 PHASE 2 GROUNDWATER PROFILING ACTIVITIES.....	9
4.2.1 Profiling Methods.....	9
4.2.2 Drilling Sequence/Program Termination .....	9
4.2.3 Conversion of Selected Holes to Permanent Monitoring Wells.....	10
4.3 ACCESS CONSIDERATIONS/PHASE 2 INVESTIGATION WORK PLAN .....	10

## TABLES

Table 1	Hydraulic Head Measurements
Table 2	Summary of Analytical Results OU-2 Investigation: Phase 1

## FIGURES

Figure 1	Site Location Map
Figure 2	Existing Monitoring Well Locations
Figure 3	Groundwater Sample Location Plan
Figure 4	Hydraulic Head Distribution Upper Zone September 2008
Figure 5	Supplemental OU-2 Investigation Results: TCE and PCE (ug/l)
Figure 6	Recommended Phase 2 Investigation Monitoring Well Locations

## APPENDICES

Appendix A	Groundwater Profiling Physio-Chemical Parameter Logs
Appendix B	Groundwater Profiling Analytical Results

**TECHNICAL MEMORANDUM**  
**OPERABLE UNIT 2 SUPPLEMENTAL INVESTIGATION PHASE 1 RESULTS**  
TransTechnology Site #1-30-101  
Glen Head, New York

**1.0 INTRODUCTION**

Geomatrix Consultants (Geomatrix) was retained by Breeze-Eastern Corporation (BEC), formerly known as TransTechnology Corporation (TTC), to implement the Supplemental Work Plan for Operable Unit 2 (Supplemental Work Plan or Work Plan) for the property located at One Robert Lane in Glen Head, New York (Site). The Site location is shown on Figure 1. The Site is currently listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Number 1-30-101 with a Classification 2. The Site is being investigated and remediated in accordance with Order on Consent Index # W1-0913-02-02 executed between TTC and the New York State Department of Environmental Conservation (NYSDEC).

In a letter dated June 25, 2004, NYSDEC separated the Site remediation work into two Operable Units. Operable Unit 1 (OU-1) was designated by NYSDEC for soil remediation. Operable Unit 2 (OU-2) was designated by NYSDEC for groundwater on and off the Site as it relates or pertains to the Site.

**1.1 PRIOR SUBMITTALS UNDER THE ORDER ON CONSENT**

To date, the following documents required by the Order on Consent have been submitted to and approved by NYSDEC:

1. Remedial Investigation/Feasibility Study Work Plan (Geomatrix, July 2002). Approved by NYSDEC (letter dated September 27, 2002).
2. Remedial Investigation Report (Geomatrix, September 2005). Approved by NYSDEC (letter dated September 8, 2005).
3. Feasibility Study Report for Operable Unit 1 (Geomatrix, September 2005). Approved by NYSDEC (letter dated September 8, 2005).
4. Remedial Design/Remedial Action Work Plan (Geomatrix, June 2007). Approved by NYSDEC (letter dated July 10, 2007).
5. Supplemental Work Plan for Operable Unit 2 (Geomatrix, April 2008). Approved by NYSDEC (letter dated June 2, 2008).

## **1.2 PREVIOUS INVESTIGATION RESULTS**

The September 2005 Remedial Investigation (RI) Report presents the results of all prior groundwater (i.e., OU-2) investigation activities conducted at the Site. Eleven groundwater monitoring wells have been installed and sampled at the Site. Monitoring well locations are shown on Figure 2. In addition, one off-Site well installed by NYSDEC as part of a regional study was sampled as part of the RI. The September 2005 RI Report presents the following conclusions with respect to OU-2:

1. The RI confirmed the results of the NYSDEC Preliminary Site Assessment Report for the Glen Head Groundwater Plume (September 2000) which showed that Site (and regional) groundwater has been impacted by apparent spillage of dry cleaning chemicals at current or former dry cleaning establishments located upgradient of the Site in the Village of Glen Head. The chemicals attributable to the dry cleaners are tetrachloroethene (PCE) and degradation products including trichloroethene (TCE).
2. The Site may also have contributed some TCE to groundwater.
3. Groundwater flow at the Site occurs generally from south to north/northwest.
4. On-Site groundwater is not used for water supply. Future development plans for the Site do not contemplate development of an on-Site water supply.
5. The furthest downgradient wells at the Site (MW-7 and MW-8) indicate off-Site migration in groundwater is not occurring to the north from this area. However, it is possible that some off-Site migration may occur in a more westerly direction which would not be detected in wells MW-7 and MW-8.

The Supplemental Investigation of OU-2 was designed to investigate the potential for off-Site migration to the west.

## **1.3 OU-2 INVESTIGATION OBJECTIVE AND PHASED APPROACH**

The objective of the Supplemental OU-2 Investigation is to provide additional data sufficient for characterization of the nature and extent of chemical presence in groundwater attributable to past releases at the Site.

As described in the Work Plan, the Supplemental OU-2 Investigation is being implemented in two phases. The Phase 1 Investigation was conducted on-Site with the objective of characterizing the extent to which impacted groundwater may be migrating off the Site property to the west. The Phase 1 Investigations were therefore focused on the western perimeter of the property.

The Phase 2 Investigation will be conducted off-Site to the west and/or northwest. The specifics of the Phase 2 Investigation will be determined based on the results of the Phase 1 Investigation.

## **2.0 PHASE 1 WORK PERFORMED**

### **2.1 PHASE 1 INVESTIGATION TASKS**

In accordance with the Work Plan, the Phase 1 Investigation consists of the following tasks:

- Task 1: Hydraulic Head Monitoring
- Task 2: Groundwater Profiling
- Task 3: Groundwater Sampling from Selected On-Site Monitoring Wells

The work performed for each of these tasks is described in detail below.

#### **2.2 TASK 1: HYDRAULIC HEAD MONITORING**

Hydraulic head measurements were obtained from existing on-Site monitoring wells. Hydraulic head measurements could not be obtained from four of the wells. Two of these wells could not be located due to vegetation overgrowth along the eastern fence line (MW-3, MW-11). Two wells were found to be blocked (MW-6, MW-8).

Hydraulic head monitoring procedures were conducted in accordance with the Work Plan.

#### **2.3 TASK 2: GROUNDWATER PROFILING**

Depth discrete groundwater samples were collected from boreholes advanced at two locations along the western perimeter of the Site as shown on Figure 3. The holes were advanced to a total depth of approximately 200 to 220 feet below ground surface (bgs). Groundwater samples were collected as follows:

- top two feet below the water table (estimated to occur at 100 to 110 feet bgs)
- at intervals of 10 feet to a depth of 60 feet below the water table
- at intervals of 20 feet from 60 feet to approximately 120 feet below the water table

BEC retained Stone Environmental, Inc. to conduct the groundwater profiling. Stone Environmental has conducted numerous projects on Long Island for projects under NYSDEC jurisdiction. At each boring location, a 6-inch diameter temporary steel casing was advanced via mud rotary methods to a depth approximately 10 feet above the saturated zone. Groundwater elevations in the vicinity of each proposed boring were determined through the water level measurements in nearby Site monitoring wells. Following the installation of the steel casing, a mud-rotary borehole was advanced with a 5 <sup>7</sup>/<sub>8</sub>-inch roller bit to the top of the

first selected sample interval. Groundwater samples were collected at 10 or 20 foot intervals with the Waterloo Profiling tool.

The Waterloo Ground Water Profiler is a direct-push device which allows the collection of several depth-discrete interval samples in a single borehole while minimizing vertical cross-contamination across these intervals. The profiler is driven with the drill rig hydraulics directly ahead of the temporary casing, or mud-rotary borehole. When the selected depth interval has been reached, a small volume of groundwater is drawn into the sampler, and conveyed to the ground surface within stainless steel or Teflon-lined tubing via compressed nitrogen. The sample volume from each interval is transferred into laboratory supplied 40mL glass vials at the surface. The sampler and associated tubing is purged following the collection of each groundwater sample to ensure that subsequent samples are representative of each interval.

Groundwater samples were analyzed for TCE, PCE and potential degradation products by the Stone Environmental, Inc. On-Site Laboratory. The results of the groundwater profiling are used (in conjunction with the hydraulic head monitoring and on-Site groundwater sampling (see below) to identify the appropriate location(s) and depth(s) of any off-Site monitoring well(s) to be installed for the Phase 2 Investigations.

During the groundwater profiling, continuous physio-chemical data are collected by means of downhole sensors integrated into the probing device. Data collected includes an index of relative hydraulic conductivity, specific conductance, dissolved oxygen, pH and oxidation/reduction potential.

#### **2.4 TASK 3: GROUNDWATER SAMPLING (ON-SITE MONITORING WELLS)**

Three existing Site monitoring wells (MW-2, MW-9, and MW-10) were sampled for analyses of Target Compound List Volatile Organic Chemicals (TCL VOCs). Samples were also analyzed for natural attenuation indicators (methane, ethane, ethene, nitrate, nitrite, sulfate, sulfide, alkalinity, hardness, dissolved organic carbon, chloride, magnesium, manganese, calcium, and iron). Groundwater sampling and analytical procedures were in accordance with the Work Plan.

### **3.0 PHASE 1 RESULTS**

#### **3.1 HYDRAULIC HEAD MONITORING**

Hydraulic head monitoring results are presented in Table 1. The measured depth to the water table ranged from 108.26 feet (MW-1) to 118.51 feet (MW-4).

Table 1 also presents prior measurements dating back to November 2002. Comparison of these measurements indicate the water table elevation in September 2008 was approximately 5 to 6 feet higher than the past measurements.

Figure 4 presents a hydraulic head distribution contour map for the upper zone groundwater (water table). This map shows a groundwater flow pattern toward the north-northwest, similar to that presented in the RI.

#### **3.2 GROUNDWATER PROFILING**

During the groundwater profiling, continuous physio-chemical data are collected by means of downhole sensors integrated into the probing device. Data collected includes an index of relative hydraulic conductivity, specific conductance, dissolved oxygen, pH and oxidation/reduction potential. Physio-chemical parameter logs were provided by Stone Environmental and are included in Appendix A.

Two low hydraulic conductivity horizons, indicative of clay presence, were encountered in each profile hole. In GP-01, clay was encountered from 160 to 180 feet bgs and again from 205 to 220 feet bgs. Clay layers were encountered in profile hole GP-02 from 150 to 175 feet bgs and from 208 to 220 feet bgs.

The analytical data package from Stone Environmental is included in Appendix B. Chemicals detected in one or more groundwater samples were TCE, PCE, and cis-1,2-dichloroethene (cis-1,2-DCE). Results are summarized as follows:

<b>GP-01</b>				<b>GP-02</b>			
<b>Depth (ft)</b>	<b>TCE</b>	<b>PCE</b>	<b>1,2-DCE</b>	<b>Depth (ft)</b>	<b>TCE</b>	<b>PCE</b>	<b>1,2-DCE</b>
110	25	ND	ND	110	290	6.3	9.0
120	200	4.1	23	120	120	ND	45
130	27	ND	4.1	130	ND	ND	ND
140	13	ND	ND	143	ND	ND	ND
150	5.1	ND	ND	150	ND	ND	ND
180	ND	ND	ND	179	ND	ND	ND
200	ND	ND	ND	199	ND	ND	ND

Notes:  
Concentrations in µg/L.  
ND = Not Detected.  
Depths rounded to nearest foot.

### 3.3 MONITORING WELL SAMPLING

The results of the sampling of existing monitoring wells are presented in Table 2. Detections of VOCs were as follows:

<b>Monitoring Well:</b>	<b>MW-10</b>	<b>MW-2</b>	<b>MW-9</b>
<b>Zone:</b>	<b>Upper</b>	<b>Upper</b>	<b>Deep</b>
<b>Screen Interval: (ft. bgs):</b>	<b>105.3 – 120.3</b>	<b>107 – 122</b>	<b>124.1 – 149.1</b>
TCE	560	720	0.58J/1.0
PCE	15	12	0.58J/ND
cis 1,2-DCE	51	120	ND/ND

Notes:  
Concentrations in µg/L.  
J = Estimated.  
Duplicate sample collected from MW-9.

### 3.4 DISCUSSION OF RESULTS

The results of the Phase 1 Supplemental OU-2 Investigation are consistent with the conclusions of the RI in that TCE presence is largely limited to the upper 20 feet of groundwater. In profile hole GP-02, TCE was not detected below approximately 120 feet (approximately 10 feet below the water table). In profile hole GP-1, located approximately 200 feet north of GP-02, generally lower concentrations of TCE were detected, however detectable TCE (5.1 ug/l) was present to a depth of 150 feet (approximately 40 feet below the water table). PCE and cis-1,2-DCE were detected in fewer samples and at lower concentrations compared to TCE.

As presented in Section 3.0, there is a low hydraulic conductivity clay layer encountered at approximately 160 feet bgs in GP-1 and 150 feet bgs in GP-02. This low hydraulic conductivity layer is approximately 20 to 25 feet in thickness. Chemicals were not detected below this layer.

Figure 5 presents a map summarizing TCE and PCE results for the profile holes and the monitoring wells sampled. PCE concentrations in this area of the Site are lower than TCE concentrations by a factor of more than 10. The TCE concentration is highest in MW-2, located near the midpoint of the western Site property line. The hydraulic head distribution (Figure 4) indicates groundwater flow occurs primarily to the north-northwest. This suggests the optimal location to monitor potential off-Site migration would be north-northwest of on-Site well MW-2.

## **4.0 RECOMMENDED PHASE 2 SCOPE OF WORK**

The Supplemental Investigation Work Plan indicates that the results of the Phase 1 Investigation will be used to identify additional investigation activities to be performed as part of a Phase 2 Investigation. The results of the Phase 1 investigation indicate that additional groundwater monitoring locations would be needed north and west of the Site in order to delineate the extent of the VOC plume.

### **4.1 PHASE 2 MONITORING LOCATIONS**

The indicated Phase 2 monitoring locations would be situated within the neighborhood known as Todd Estates which borders the Site on the west. Review of aerial photography suggests sampling points could be located along Todd Drive East which approximately parallels the western property boundary at distance of about 150 feet west of the Site. If additional locations more distant from the Site are found to be necessary for plume delineation, potential locations include: Todd Court, a cul-de-sac located approximately 400 feet west of the Site; Roosevelt Street, a cul-de-sac located approximately 800 feet west of the Site; and the parking lot for the school located 800 feet northwest of the Site. These potential monitoring locations are shown on Figure 6.

### **4.2 PHASE 2 GROUNDWATER PROFILING ACTIVITIES**

#### **4.2.1 Profiling Methods**

It is proposed the Phase 2 investigation utilize the same groundwater profiling/on-site laboratory methodology as conducted for the Phase 1 Investigation. The holes would be advanced to 150 feet BGS with groundwater samples obtained from the first 2 to 5 feet below the water table and at 20 foot intervals thereafter to a depth of approximately 150 feet or until the low hydraulic conductivity clay is encountered (whichever occurs first). The clay layer will not be penetrated in these profile holes.

Groundwater sample collection and analysis will be as described in Section 2.3.

#### **4.2.2 Drilling Sequence/Program Termination**

The potential groundwater profile hole locations depicted in Figure 6 may not all be necessary for delineation of the VOC plume. The three profile holes shown as “Primary Profile Holes” on Figure 6 would be installed first. The data from these holes would be discussed with NYSDEC representatives and a determination would be made as to whether to proceed to drill one or more of the other locations. The determination of which additional holes would be drilled would be based on measured concentrations in the samples and the indicated direction of

plume movement. The maximum number of profile holes for this phase of the investigation would be eight (as shown on Figure 6).

#### **4.2.3 Conversion of Selected Holes to Permanent Monitoring Wells**

It is anticipated that at least two profile holes will be converted to permanent off-Site groundwater monitoring wells. The holes to be converted to permanent wells will be determined in the field based on the results of the groundwater sampling and in consultation with NYSDEC.

#### **4.3 ACCESS CONSIDERATIONS/PHASE 2 INVESTIGATION WORK PLAN**

Please note that the potential locations of the profile holes identified above are subject to change based on NYSDEC input, Community input and/or access considerations.

Once the general Phase 2 scope of work described above is approved, Breeze-Eastern will initiate the process of obtaining access to the drilling locations and will prepare a detailed Phase 2 Investigation Work Plan describing drilling and well conversion methods.

## TABLES

---

**TABLE 1**

**HYDRAULIC HEAD MEASUREMENTS**

TransTechnology Glen Head Site  
Glen Head, New York

Well ID	Top of Riser (ft. amsl)	Monitoring Zone	11/15/2002		3/19/2003		9/8/2008	
			Depth to Water (fbtor)	Water Level Elevation (ft. amsl)	Depth to Water (fbtor)	Water Level Elevation (ft. amsl)	Depth to Water (fbtor)	Water Level Elevation (ft. amsl)
MW-1	161.76	Upper	114.62	47.14	113.63	48.13	108.26	53.5
MW-2	162.92	Upper	115.84	47.08	114.7	48.22	109.67	53.25
MW-3	161.60	Upper	113.61	47.99	112.65	48.95	NM <sup>(3)</sup>	
MW-4	172.71	Upper	124.57	48.14	123.4	49.31	118.51	54.2
MW-5	169.13	Upper	121.15	47.98	119.96	49.17	114.92	54.21
MW-6	166.97	Upper	119.42	47.55	118.32	48.65	NM <sup>(4)</sup>	
MW-7	159.96	Lower	116.27	43.69	112.44	47.52	107.76	52.2
MW-8	160.35	Upper	113.78	46.57	112.89	47.46	NM <sup>(4)</sup>	
MW-9	163.21	Lower	116.25	46.96	115.23	47.98	110.04	53.17
MW-10	163.06	Upper	115.86	47.20	114.7	48.36	109.60	53.46
MW-11	161.62	Lower	116.25	45.37	112.3	49.32	NM <sup>(3)</sup>	

Notes:

- (1) Top of riser elevations from CRA.
  - (2) Depth to water measured by Geomatrix
  - (3) Monitoring well not located due to vegetation overgrowth
  - (4) Monitoring well blocked
- ft. amsl = feet above mean sea level  
fbtor = feet below top of riser

TABLE 2

**SUMMARY OF ANALYTICAL RESULTS**  
**OU-2 SUPPLEMENTAL INVESTIGATION: PHASE 1**  
 TransTechnology Glen Head Site  
 Glen Head, New York

ANALYTE	Monitoring Location and Date of Sample Collection			
	MW-10 08/21/08	MW-2 08/21/08	MW-9 08/21/08	MW-9 (Duplicate) 08/21/08
<b>TCL Volatile Organic Compounds (ug/L)</b>				
1,1,1-Trichloroethane	9.4	12	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND
1,1-Dichloroethane	1.7	4.7	0.63 J	0.74 J
1,1-Dichloroethene	0.62 J	0.55 J	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	ND	ND	ND	ND
1,2-Dibromoethane	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND
2-Butanone	ND	ND	ND	ND
2-Hexanone	ND	ND	ND	ND
4-Methyl-2-pentanone	ND	ND	ND	ND
Acetone	5.1	3.5 J	ND	ND
Benzene	ND	ND	ND	ND
Bromodichloromethane	ND	ND	ND	ND
Bromoform	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND
Carbon Disulfide	ND	ND	ND	ND
Carbon Tetrachloride	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND
Chloromethane	ND	ND	ND	ND
cis-1,2-Dichloroethene	51	120 D	ND	ND
cis-1,3-Dichloropropene	ND	ND	ND	ND
Cyclohexane	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND
Dichlorodifluoromethane	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND
Isopropylbenzene	ND	ND	ND	ND
m/p-Xylenes	ND	ND	ND	ND
Methyl acetate	ND	ND	ND	ND
Methyl-t-Butyl Ether (MTBE)	ND	ND	ND	ND
Styrene	ND	ND	ND	ND
Tetrachloroethene	15	12	0.58 J	ND

TABLE 2

**SUMMARY OF ANALYTICAL RESULTS**  
**OU-2 SUPPLEMENTAL INVESTIGATION: PHASE 1**  
 TransTechnology Glen Head Site  
 Glen Head, New York

ANALYTE	Monitoring Location and Date of Sample Collection			
	MW-10 08/21/08	MW-2 08/21/08	MW-9 08/21/08	MW-9 (Duplicate) 08/21/08
<b><i>TCL Volatile Organic Compounds (ug/L) (continued)</i></b>				
Toluene	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND
trans-1,3-Dichloropropene	ND	ND	ND	ND
Trichloroethene	560 D	720 D	0.58 J	1.0
Trichlorofluoromethane	ND	ND	ND	ND
Vinyl chloride	ND	ND	ND	ND
<b><i>RSK 175 (ug/L)</i></b>				
Ethane	ND	ND	ND	ND
Ethene	ND	ND	ND	ND
Methane	ND	ND	ND	ND
<b><i>Wet Chemistry Analysis (mg/L)</i></b>				
Iron - total	0.13	0.61	6.4	3.1
Chloride	44.6	42.4	113	115
Ferric Iron	0.13	0.61	6.4	3.1
Ferrous Iron	ND	ND	ND	ND
Nitrate	1.0	2.5	9.6	8.9
Nitrite	ND	ND	ND	ND
Sulfate	19.5	21.8	53.8	53.5
Sulfide	ND	ND	ND	ND
Total Alkalinity	35	23.4	71.7	74.6
Total Hardness	81.4	40.1	238	226
Total Organic Carbon	ND	ND	ND	ND

## Notes:

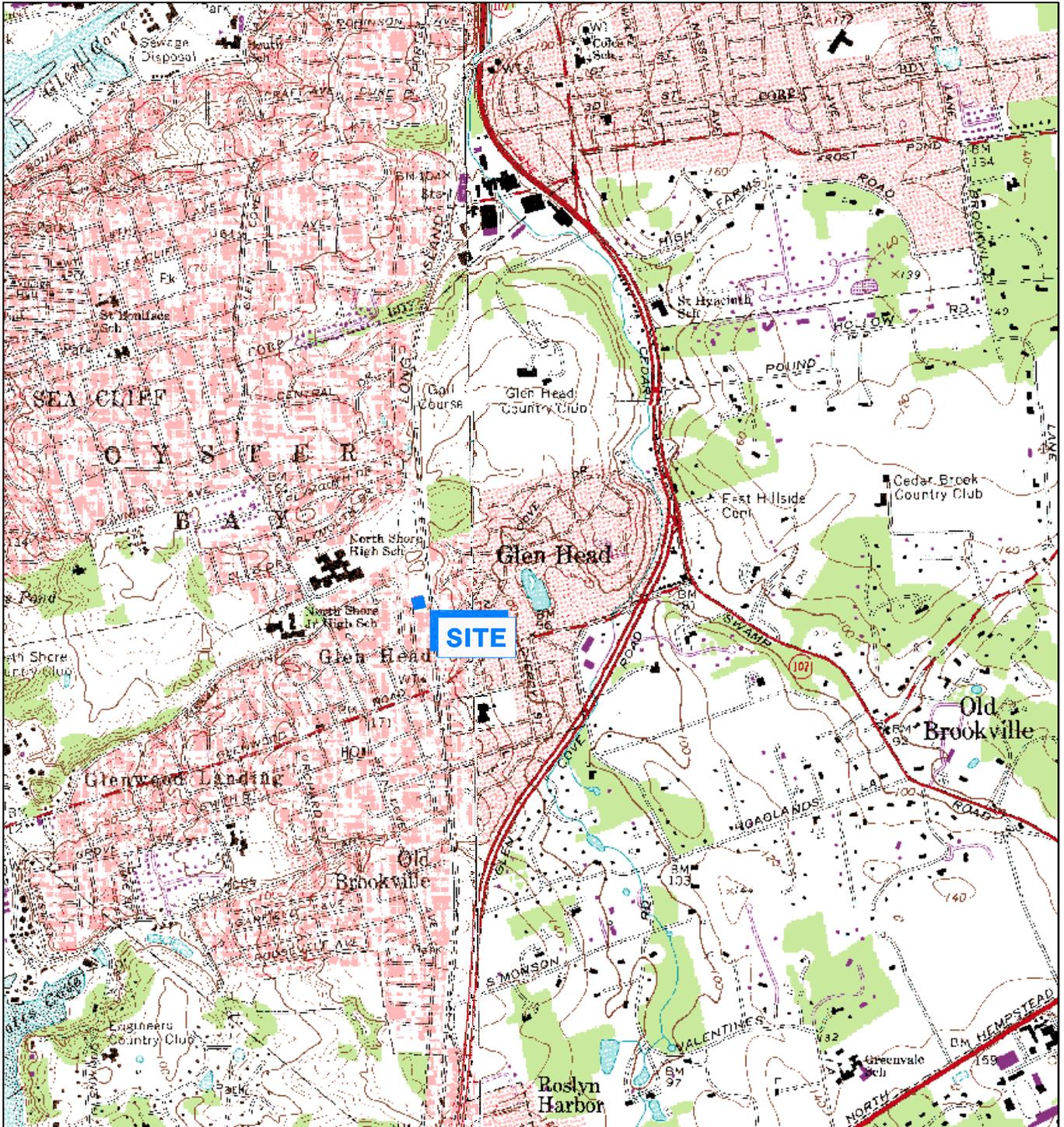
ND - Not detected

J - Indicates an estimated value.

D - Indicates a compound identified in an analysis at the secondary dilution factor.

## **FIGURES**

---



SOURCE:

USGS HICKSVILLE AND SEA CLIFF, NY QUADRANGLES.

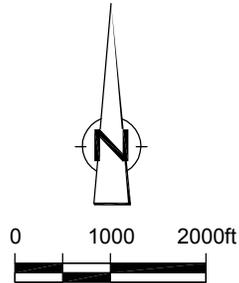
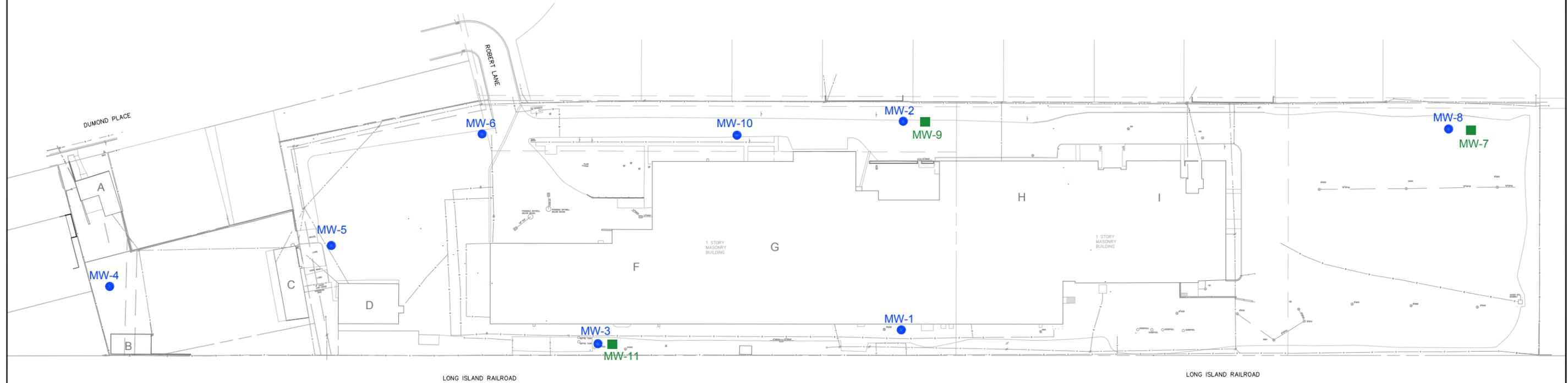
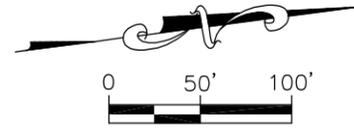


figure 1

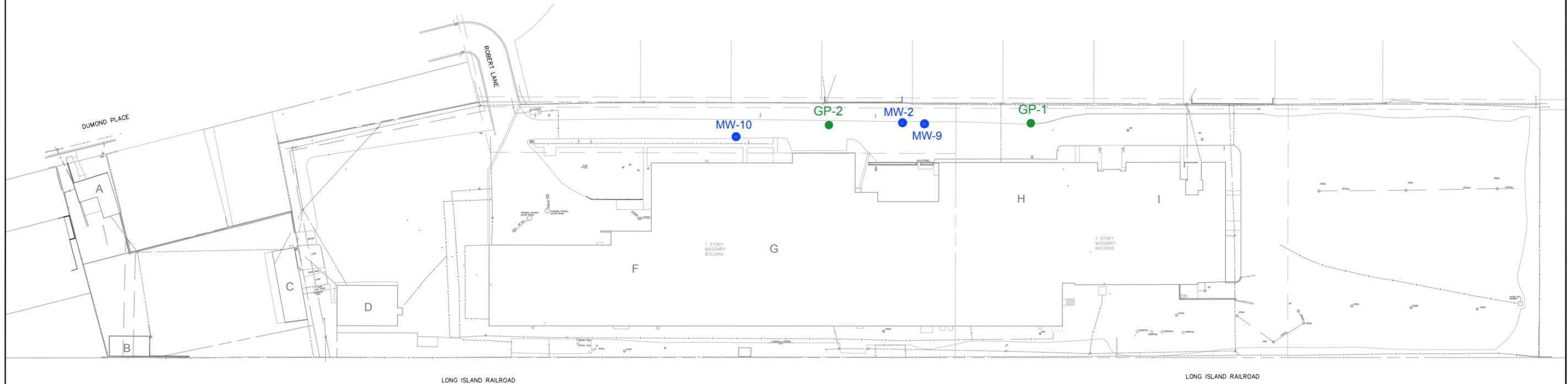
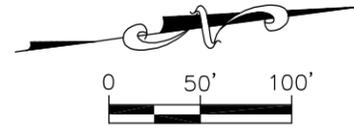
SITE LOCATION MAP  
 TRANSTECHNOLOGY GLEN HEAD SITE  
*Glen Head, New York*



**LEGEND**

- MW-4 ● UPPER ZONE GROUNDWATER MONITORING WELL LOCATION
- MW-7 ■ LOWER ZONE GROUNDWATER MONITORING WELL LOCATION

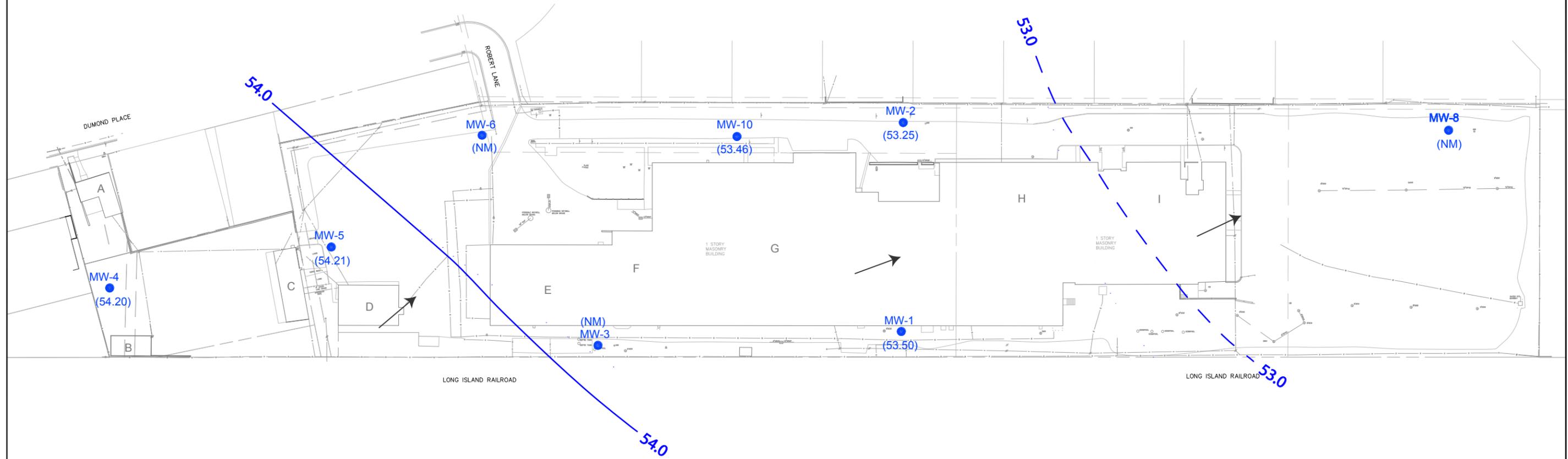
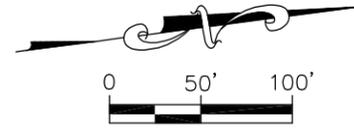
<b>EXISTING MONITORING WELL LOCATIONS</b> TRANSTECHNOLOGY CORPORATION GLEN HEAD, NEW YORK		
<b>AMEC Geomatrix</b>	Project No. 6238	Figure 2



**LEGEND**

- MW-4 ● EXISTING WELL TO BE SAMPLED
- GP-1 ● GROUNDWATER PROFILE LOCATION

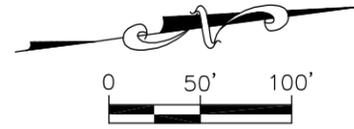
<b>GROUNDWATER SAMPLE LOCATION PLAN</b> TRANSTECHNOLOGY CORPORATION GLEN HEAD, NEW YORK		
<b>AMEC Geomatrix</b>	Project No. 6238	Figure 3



**LEGEND**

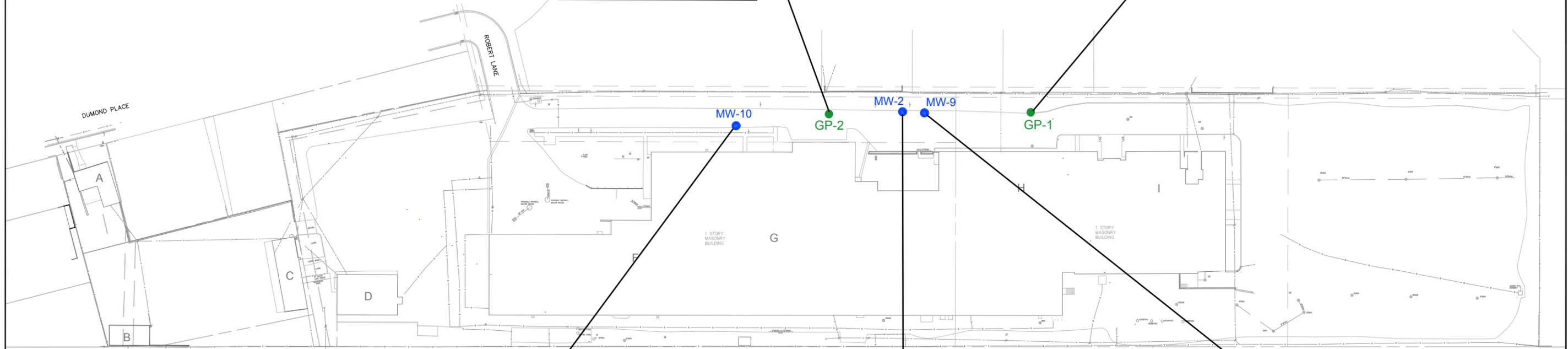
- MW-4 ● UPPER ZONE GROUNDWATER MONITORING WELL LOCATION
- (49.31) HYDRAULIC HEAD MEASURED SEPTEMBER 8, 2008 (ft AMSL)
- EQUIPOTENTIAL LINE
- - - INFERRED EQUIPOTENTIAL LINE
- GROUNDWATER FLOW DIRECTION
- NM NOT MEASURED

HYDRAULIC HEAD DISTRIBUTION UPPER ZONE GROUNDWATER - SEPT. 2008 BREEZE-EASTERN CORPORATION GLEN HEAD, NEW YORK		
<b>AMEC Geomatrix</b>	Project No. 6238	Figure 4



GP-2		
Depth (feet bgs)	Concentrations	
	TCE	PCE
110.00	290	6.3
120.25	120	ND
130.25	ND	ND
142.65	ND	ND
150.25	ND	ND
179.25	ND	ND
199.25	ND	ND

GP-1		
Depth (feet bgs)	Concentrations	
	TCE	PCE
110.0	25	ND
120.0	200	4.1
130.0	27	ND
140.0	13	ND
150.0	5.1	ND
180.3	ND	ND
200.0	ND	ND



MW-10		
Screened Interval (feet bgs)	Concentrations	
	TCE	PCE
105.3 - 120.3	560	15

MW-2		
Screened Interval (feet bgs)	Concentrations	
	TCE	PCE
107 - 122	720	14

MW-9		
Screened Interval (feet bgs)	Concentrations	
	TCE	PCE
124.1 - 149.1	0.58J	0.58J

**LEGEND**

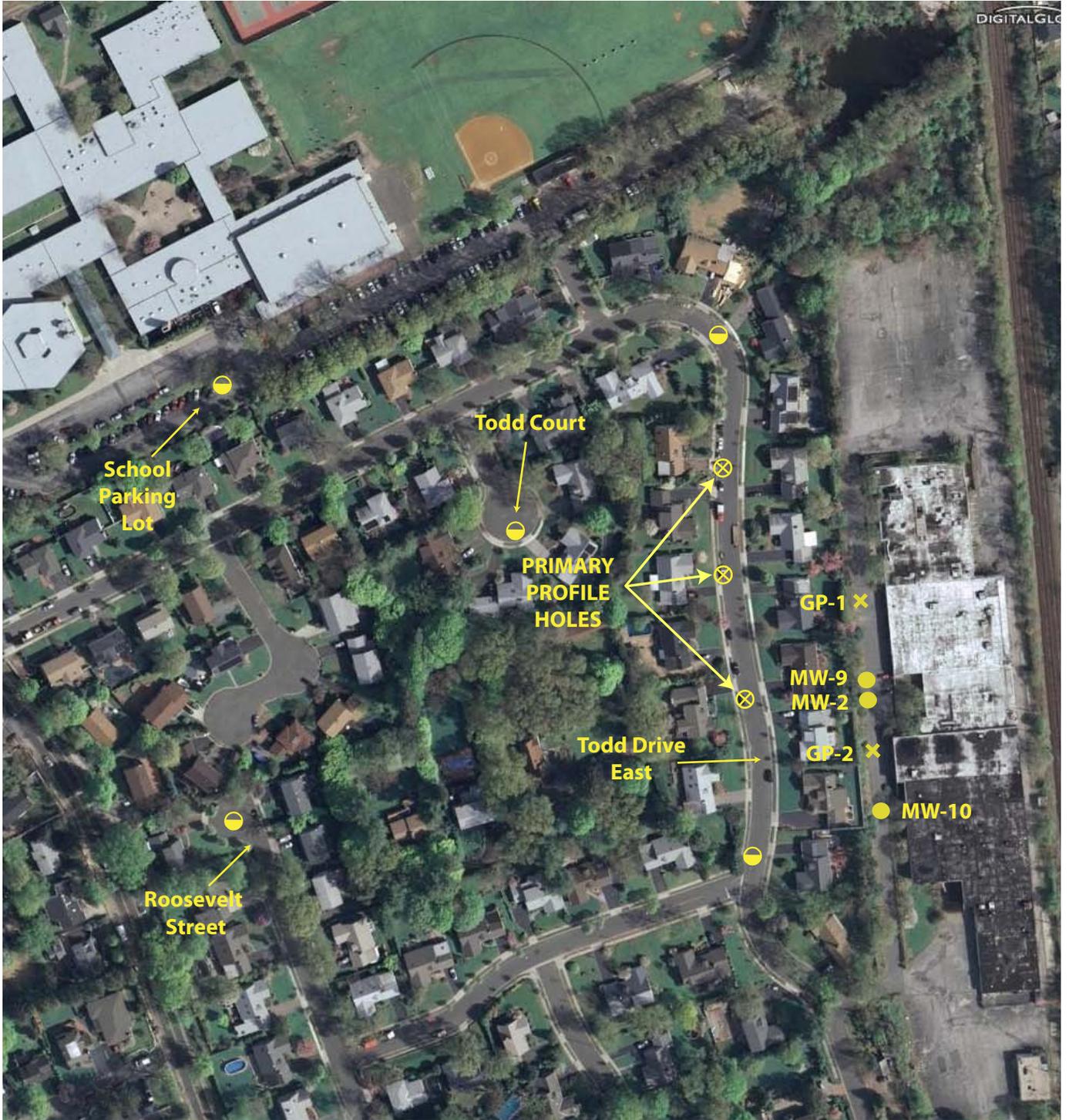
- MW-4 ● EXISTING WELL TO BE SAMPLED
- GP-1 ● GROUNDWATER PROFILE LOCATION
- TCE TRICHLOROETHANE
- PCE TETRACHLOROETHENE
- bgs BELOW GROUND SURFACE
- ND CHEMICAL NOT DETECTED AT DETECTION LIMIT OF 2 ug/L
- J ESTIMATED CONCENTRATION
- CONCENTRATIONS IN ug/L

SUPPLEMENTAL OU-2 INVESTIGATION RESULTS:  
TCE AND PCE (ug/L)  
AUGUST - SEPTEMBER 2008  
BREEZE-EASTERN CORPORATION  
GLEN HEAD, NEW YORK

**AMEC Geomatrix**

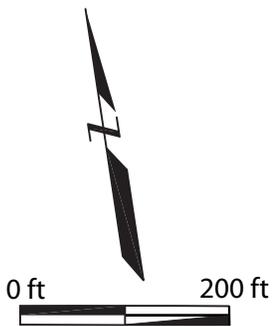
Project No.  
6238

Figure  
5



Notes:

- Existing Monitoring Well Location
- ⊗ Existing Groundwater Profile Hole Location
- ⊗ Proposed Profile Hole Locations (approximate)
- Proposed As-Needed Profile Hole Locations (approximate)



**RECOMMENDED PHASE 2 INVESTIGATION  
MONITORING WELL LOCATION**  
Breeze-Eastern Corporation  
Glen Head, New York

By: DMH	Date: 9/29/09	Project No. 6238
---------	---------------	------------------

<b>AMEC Geomatrix</b>	Figure 6
-----------------------	----------

**APPENDIX A**

---

Groundwater Profiling Physio-Chemical Parameter Logs

# GP01

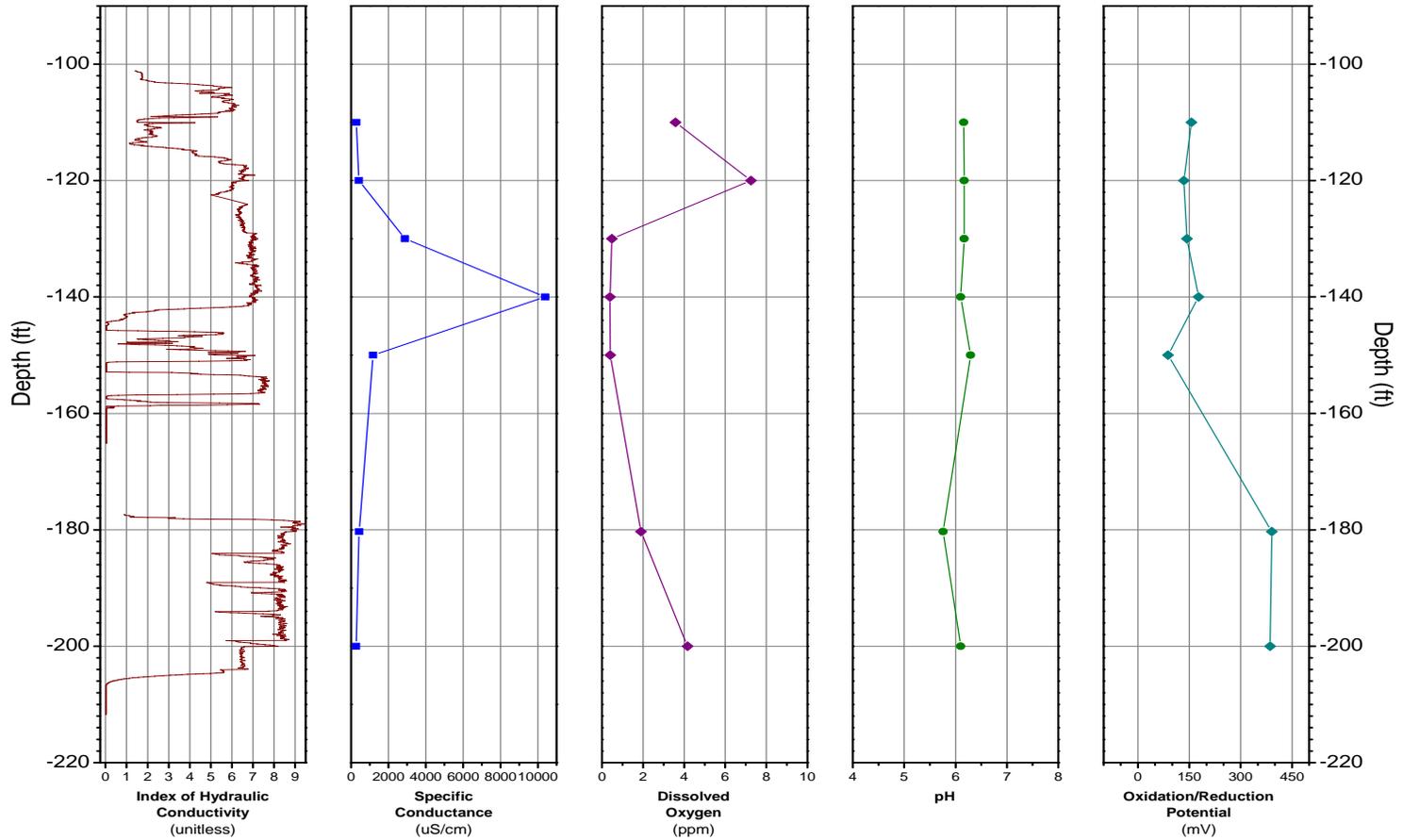


FIGURE GP01,  $I_k$  RECORD AND PHYSICO-CHEMICAL PARAMETERS

Dates Sampled : 8/19/2008 - 9/3/2008

AMEC GEOMATRIX / Glen Head, NY

Source: SEI groundwater quality profiling data

Path: O:\Proj-08\IR\2031-R AMEC Glen Head, NY\F-Data\Profile\PhysChem\_GP01.opj

Date: 09/04/08 DCM



STONE ENVIRONMENTAL INC

## GP02

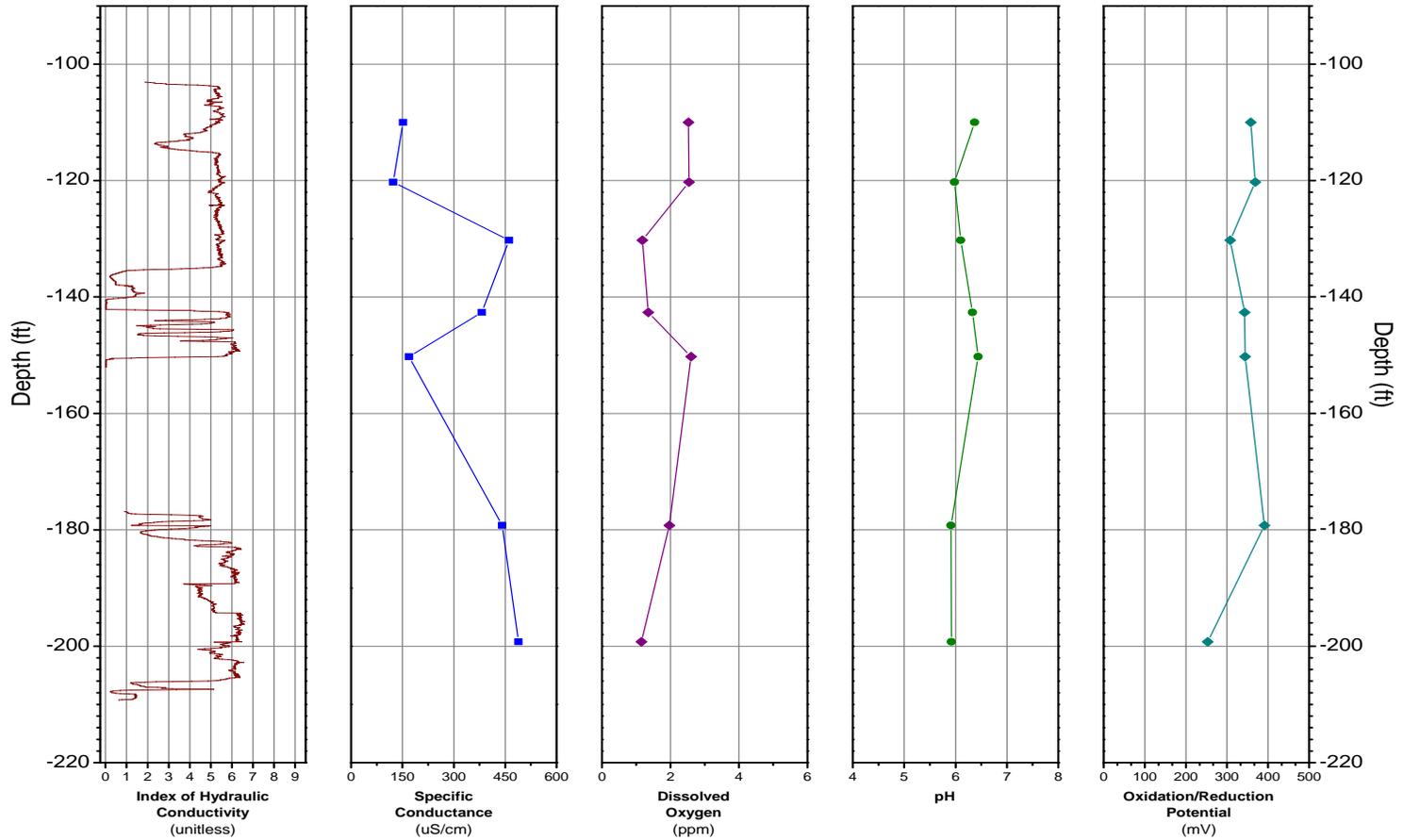


FIGURE GP02,  $I_k$  RECORD AND PHYSICO-CHEMICAL PARAMETERS

Dates Sampled : 9/5/2008 - 9/9/2008  
 AMEC GEOMATRIX / Glen Head, NY

Source: SEI groundwater quality profiling data  
 Path: O:\Proj-08\IR\2031-R AMEC Glen Head, NY\F-Data\Profile\PhysChem\_GP02.opj  
 Date: 09/14/08 DCM

**APPENDIX B**

---

Groundwater Profiling Analytical Results

**AMEC Geomatrix Site #6238,  
Glen Head, New York  
PROJECT NO. 0802031-R  
STONE ENVIRONMENTAL, INC. LABORATORY**

**SAMPLE DATA PACKAGE**

**SAMPLES RECEIVED FROM  
August 19, 2008 – September 9, 2008**

**AMEC Geomatrix Site #6238,  
Glen Head, New York  
PROJECT NO. 08-2031-R  
STONE ENVIRONMENTAL, INC. LABORATORY  
NARRATIVE REPORT**

**AMEC Geomatrix SITE # 6238, Glen Head, NY  
STONE ENVIRONMENTAL, INC. ONSITE LABORATORY**

**NARRATIVE – September 26, 2008**

*No gas samples collected  
KSM*

## **1.0 INTRODUCTION**

This data package presents the analytical results for the groundwater and soil gas samples analyzed by Stone Environmental, Inc. Onsite Laboratory (Stone Laboratory) at the AMEC Geomatrix Site # 6238 in Glen head, NY from August 19, 2008 to September 9, 2008.

All samples were analyzed by EPA SW846 Method 8260 in Selective Ionization Monitoring (SIM) Mode (gas chromatography/mass spectrometry (GC/MS)) for select volatile organic compounds (VOCs).

All groundwater analyses were performed within two days of sample collection.

The analytical results associated with the groundwater samples presented in this test report were generated under a quality system that adheres to requirements specified in the National Environmental Laboratory Accreditation Conference (NELAC) standards. Results for the quality control (QC) samples (laboratory method blanks, laboratory control samples (LCS), matrix spike and matrix spike duplicate (MS/MSD)) are provided in the Quality Control Summaries Section following this narrative. Comments and qualifiers outside the conditions stated in the associated laboratory Standard Operating Procedures (SOPs) and the NELAC standards are noted below.

### **1.1 EPA SW846 8260, Volatile Organic Analysis by GC/MS for Groundwater Samples**

- Water samples were received by the laboratory in 40 mL VOA Teflon-cap lid, certified clean sample vials.
- LCS analyses were performed on four of the six days of analyses. The LCS results are found in the QC summary section and were within the acceptable QC limits.
- Surrogate (bromofluorobenzene) recoveries for the groundwater samples are included with the individual results presented in this data package. All sample surrogate recoveries were acceptable. (70-130%)
- MS and MSD analyses were performed at a frequency of 5%; one MS/MSD pair was collected as there were only 15 groundwater samples collected. Results for these samples are summarized in the QC summary section. Recoveries were within acceptance limits.

When applicable, the final results were annotated with the following codes:

- U - The analyte was analyzed for, but was not detected above the reported quantitation limit.
- J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

**AMEC Geomatrix Site #6238,  
Glen Head, New York  
PROJECT NO. 08-2031-R**

**STONE ENVIRONMENTAL, INC. LABORATORY**

**LABORATORY RESULTS SUMMARIES  
VOA –EPA SW846 Method 8260  
Groundwater**

## Onsite Laboratory Results Mobile Laboratory 2

**Client:** AMEC Geomatrix  
**Location:** Glen Head, NY  
**Project ID:** 6238  
**SEI Project No:** 082031-R  
**Matrix:** Groundwater  
**Hole ID:** GP01

**Report Date:** 9/4/2008  
**Date(s) Sampled:** 08/19/2008 - 09/03/2008  
**Date(s) Analyzed:** 08/19/2008 - 09/04/2008  
**Test Method:** D6520,SW8260B  
**Results Given as:** ppb

Depth:	CAS #	000.01	000.02	110.00	120.00	130.00	140.00	150.00	180.30
		GP01 EBLK	GP01 EBLK	GP01-110.00	GP01-120.00	GP01-130.00	GP01-140.00	GP01-150.00	GP01-180.30
Sample Name:		08/19/08	09/03/08	08/19/08	08/20/08	08/20/08	08/20/08	08/20/08	09/03/08
Analysis Date:		EB	EB	N	N	N	N	N	N
Vinyl Chloride	75-01-4	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1-Dichloroethene	75-35-4	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
trans-1,2-Dichloroethene	156-60-5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	156-59-2	2.0 U	2.0 U	2.0 U	23	4.1	2.0 U	2.0 U	2.0 U
Trichloroethene	79-01-6	2.0 U	2.0 U	25	200	27	13	5.1	2.0 U
Tetrachloroethene	127-18-4	2.0 U	2.0 U	2.0 U	4.1	2.0 U	2.0 U	2.0 U	2.0 U
Bromofluorobenzene (SS)	460-00-4	99 %	98 %	103 %	90 %	107 %	109 %	99 %	92 %

U = Not detected above the specified reporting limit.  
 J = Estimated value.  
 E = Estimated value, marginally above the calibration levels.  
 D = Sample analyzed at a dilution.

N = Normal sample.  
 EB = Equipment Blank  
 B = Indicates blank contamination.

## Onsite Laboratory Results Mobile Laboratory 2

**Client:** AMEC Geomatrix  
**Location:** Glen Head, NY  
**Project ID:** 6238  
**SEI Project No:** 082031-R  
**Matrix:** Groundwater  
**Hole ID:** GP01

**Report Date:** 9/4/2008  
**Date(s) Sampled:** 09/03/2008 - 09/04/2008  
**Date(s) Analyzed:** 08/19/2008 - 09/04/2008  
**Test Method:** D6520,SW8260B  
**Results Given as:** ppb

Depth:	CAS #	000.03	200.00	200.00
		GP01 EBLK	GP01-200.00	GP01-200.00
Sample Name:		09/04/08EB	09/03/08N	09/04/08FD
Analysis Date:				
Vinyl Chloride	75-01-4	2.0 U	2.0 U	2.0 U
1,1-Dichloroethene	75-35-4	2.0 U	2.0 U	2.0 U
trans-1,2-Dichloroethene	156-60-5	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	156-59-2	2.0 U	2.0 U	2.0 U
Trichloroethene	79-01-6	2.0 U	2.0 U	2.0 U
Tetrachloroethene	127-18-4	2.0 U	2.0 U	2.0 U
Bromofluorobenzene (SS)	460-00-4	96 %	97 %	97 %

U = Not detected above the specified reporting limit.  
 J = Estimated value.  
 E = Estimated value, marginally above the calibration levels.  
 D = Sample analyzed at a dilution.

N = Normal sample.  
 EB = Equipment Blank  
 B = Indicates blank contamination.

## Onsite Laboratory Results Mobile Laboratory 2

**Client:** AMEC Geomatrix  
**Location:** Glen Head, NY  
**Project ID:** 6238  
**SEI Project No:** 082031-R  
**Matrix:** Groundwater  
**Hole ID:** GP02

**Report Date:** 9/9/2008  
**Date(s) Sampled:** 09/05/2008 - 09/09/2008  
**Date(s) Analyzed:** 08/19/2008 - 09/09/2008  
**Test Method:** D6520,SW8260B  
**Results Given as:** ppb

Depth:	CAS #	000.00	110.00	120.25	130.25	142.65	150.25	179.25	199.25
		GP02 EBLK	GP02-110.00	GP02-120.25	GP02-130.25	GP02-142.65	GP02-150.25	GP02-179.25	GP02-199.25
Sample Name:		09/09/08	09/05/08	09/09/08	09/09/08	09/09/08	09/09/08	09/09/08	09/09/08
Analysis Date:		EB	N	N	N	N	N	N	N
Vinyl Chloride	75-01-4	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
1,1-Dichloroethene	75-35-4	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
trans-1,2-Dichloroethene	156-60-5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
cis-1,2-Dichloroethene	156-59-2	2.0 U	9.0	45	2.0 U				
Trichloroethene	79-01-6	2.0 U	290	120	2.0 U				
Tetrachloroethene	127-18-4	2.0 U	6.3	2.0 U					
Bromofluorobenzene (SS)	460-00-4	91 %	109 %	99 D	110 %	103 %	109 %	101 %	100 %

U = Not detected above the specified reporting limit.  
 J = Estimated value.  
 E = Estimated value, marginally above the calibration levels.  
 D = Sample analyzed at a dilution.

N = Normal sample.  
 EB = Equipment Blank  
 B = Indicates blank contamination.

**TLR-TOWN OF ROCKINGHAM SITE,  
BELLOWS FALLS, VERMONT  
PROJECT NO. 071898-R  
STONE ENVIRONMENTAL, INC. LABORATORY**

**QUALITY CONTROL SUMMARIES  
VOA –EPA SW846 Method 8260  
Groundwater**

**Laboratory Blank Sample Analyses Summary - August 19 through September 9, 2008**

**Client: AMEC Geomatrix**

**Location: Glen Head, NY**

**Stone Environmental Project Number: 08-2031-R**

**Sample Information/Compounds**

Sample ID Lab ID	VBLK NA		VBLK NA		VBLK NA	
Sample Date	NA	<b>Acceptable Limit &lt;</b>	NA	<b>Acceptable Limit &lt;</b>	NA	<b>Acceptable Limit &lt;</b>
Date Analyzed	8/19/2008	<b>1.0 ug/L</b>	8/20/2008	<b>1.0 ug/L</b>	9/3/2008	<b>1.0 ug/L</b>
Vinyl Chloride	2.0	U Yes	2.0	U Yes	2.0	U Yes
1,1-Dichloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes
t-Dichloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes
c-Dichloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes
Trichloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes
Tetrachloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes

Sample ID Lab ID	VBLK01 NA		VBLK02 NA		VBLK03 NA	
Sample Date	NA	<b>Acceptable Limit &lt;</b>	NA	<b>Acceptable Limit &lt;</b>	NA	<b>Acceptable Limit &lt;</b>
Date Analyzed	9/4/2008	<b>1.0 ug/L</b>	9/5/2008	<b>1.0 ug/L</b>	9/9/2008	<b>1.0 ug/L</b>
Vinyl Chloride	2.0	U Yes	2.0	U Yes	2.0	U Yes
1,1-Dichloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes
t-Dichloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes
c-Dichloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes
Trichloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes
Tetrachloroethene	2.0	U Yes	2.0	U Yes	2.0	U Yes

**Laboratory Control Sample Analyses Summary - August 19 through September 9, 2008**

**Client: AMEC Geomatrix**

**Location: Glen Head, NY**

**Stone Environmental Project Number: 08-2031-R**

**Sample Information/Compounds**

Sample ID Lab ID	LCS20 NA	Spike Amount, ug/L 20	LCS10 NA	Spike Amount, ug/L 10	LCS10 NA	Spike Amount, ug/L 10	LCS10 NA	Spike Amount, ug/L 10
Sample Date	8/19/2008	% Recovery Acceptable Range = 75 - 125%	8/20/2008	% Recovery Acceptable Range = 75 - 125%	9/3/2008	% Recovery Acceptable Range = 75 - 125%	9/5/2008	% Recovery Acceptable Range = 75 - 125%
Date Analyzed	8/19/2008		8/20/2008		9/3/2008		9/5/2008	
Vinyl Chloride	23.0	115	9.0	90	10.0	100	9.0	90
1,1-Dichloroethene	25.0	125	10.0	100	12.0	120	12.0	120
t-Dichloroethene	23.0	115	11.0	110	11.0	110	11.0	110
c-Dichloroethene	25.0	125	9.0	90	11.0	110	10.0	100
Trichloroethene	22.0	110	10.0	100	11.0	110	8.0	80
Tetrachloroethene	26.0	130	10.0	100	11.0	110	10.0	100

**Matrix Spike/Matrix Spike Duplicate Analyses Summary - August 19 through September 9, 2008**

**Client: AMEC Geomatrix**

**Location: Glen Head, NY**

**Stone Environmental Project Number: 08-2031-R**

Sample Information/Compounds	Matrix Spike			Matrix Spike/Duplicate		
	Original	MS	Spike Amount, ug/L 10	MSD		
Sample ID						
Lab ID						
Sample Date	9/8/2008	9/8/2008	<b>% Recovery Acceptable Range 70 - 130%</b>	9/8/2008	<b>% Recovery Acceptable Range 70 - 130%</b>	<b>RPD &lt;30</b>
Date Analyzed	9/9/2008	9/9/2008		9/9/2008		
Vinyl Chloride	2.0 U	12	120	10.0	100	18
1,1-Dichloroethene	2.0 U	12	120	11.0	110	9
t-Dichloroethene	2.0 U	10	100	10.0	100	0
c-Dichloroethene	2.0 U	10	100	10.0	100	0
Trichloroethene	2.0 U	11	110	10.0	100	10
Tetrachloroethene	2.0 U	10	100	11.0	110	10

**AMEC Geomatrix Site #6238,  
Glen Head, New York  
PROJECT NO. 08-2031-R**

**STONE ENVIRONMENTAL, INC. LABORATORY**

**Sample Log-In Sheet  
Groundwater**

# Mobile Lab 2 - SAMPLE LOG SHEET

Project ID: AMEC Geomatics  
 Project Location: Glen Head, NY

Sample ID	Collected		Received		Type*	Container**	Number of Containers	Preservation***	Analysis			Lab ID	Analyst	Comments		
	B y	Date	Time	B y					Date	Time	ASTM D6520 & Modified 8021/8015				8260	Other
GLO E01k#1	DEM	8/19/08	9:15	MDR	8/19/08	11:48	1	2	2	-	✓					
GLO1-110			1744			1750										
GLO1-120.00	DEM	8/20/08	8:55	MDR	8/20/08	9:00	1	2	2	-	✓					
"		"	10:32	"	"	10:35										
140.00			1158			1200										
150.00			1311			1315										

\* Type of Sample: (1) water (2) soil (3) ice (1) HCl (2) HCl (3) Other  
 \*\* Container: (1) bag (2) bottle (3) other  
 \*\*\* Preservation: (1) ice (2) HCl (3) Other



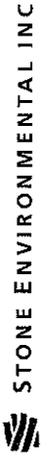
# Mobile Lab 2 - SAMPLE LOG SHEET

88-2031

Project ID: AMEC Geomatics  
 Project Location: Glen Head, NY

Sample ID	Collected		Received		Type*	Container**	Number of Containers	Preservation***	Analysis			Comments
	B y	Date	Time	B y					Date	Time	ASTM D6520 & Modified 8021/8015	
G801-EB1/K45	DM	7/3/08	1115	DM	9/3/08	1700	2	2	-	✓		
G801-180.3			1640			1750				✓		
200.00			1746			1750				✓		
200.00	FD		1746			1750						
G801-EB1/K44	DM	9/4/08	1800	DM	9/4/08	10:07	1	2	-	✓		
<del>G802-110</del>	<del>DM</del>	<del>9/5/08</del>	<del>1819</del>	<del>DM</del>	<del>9/5/08</del>	<del>1820</del>	<del>1</del>	<del>2</del>	<del>-</del>	<del>✓</del>		
<del>G802-EB1/K42</del>	<del>DM</del>	<del>9/8/08</del>	<del>1635</del>	<del>DM</del>	<del>9/9/08</del>	<del>0800</del>	<del>1</del>	<del>2</del>	<del>-</del>	<del>✓</del>		
- 120.25	DM		9:07			0800						
130.25			10:38			0800						ms/msd
142.65			12:55			0800			4			
150.25			13:55			0800						
179.25			15:29			01:45						
199.25			17:23			1730						

\* Type of Sample: (1) water (2) soil  
 \*\* Container: (1) bag (2) bottle (3) other  
 \*\*\* Preservation: (1) ice (2) HCl (3) Other



STONE ENVIRONMENTAL INC