nationalgrid

Steven P. Stucker, C.P.G.
Lead Engineer
Environmental Department

March 2, 2011

Mr. Scott Deyette
Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7014

Re: ***Malone (Amsden St.) Former MGP***
Site #: V00469
Remedial Investigation Data Summary

Dear Mr. Deyette:

This letter presents a summary of Remedial Investigation (RI) work completed to date at National Grid's former manufactured gas plant (MGP) site (the "site") located on Amsden Street in Malone, New York. The RI activities were implemented by ARCADIS in the summer and fall of 2010. Based on the results presented herein, National Grid recognizes that additional RI work will be required. As such, we are providing this summary report to the New York State Department of Environmental Conservation (NYSDEC) in advance of a proposed meeting between National Grid and NYSDEC. The purpose of the meeting would be to discuss the RI data collected to date, potential data gaps, and additional investigations to complete the RI.

A brief discussion of the RI fieldwork and resulting data is provided below. This discussion is supplemented by the following information:

Table 1 – Summary of Water Elevations
Table 2 – Monitoring Well Construction Details
Table 3 – Summary of Summary of Detected Subsurface Soil Sample Analytical Results
Table 4 – Summary of Summary of Detected Surface Soil Sample Analytical Results
Table 5 – Summary of Summary of Detected Ground Water Sample Analytical Results

Figure 1 – Site Map Showing Cross Section Location
Figure 2 – Cross Section A-A'
Figure 3 – Cross Section B-B'
Figure 4 – Cross Section C-C'
Figure 5 – Cross Section D-D'
Figure 6 – Overburden Ground Water Contours for 9/7/10
Figure 7 – Bedrock Ground Water Contours for 9/7/10
Figure 8 – Observed Impacts
Figure 9 – Subsurface Soil Analytical Results
Figure 10 – Surface Soil Analytical Results
Figure 11 – Ground Water Analytical Results

Soil Boring and Monitoring Well Construction Logs

Attachment 1 – Forensic Source Evaluation Memorandum

RI Field Activities

The RI field investigations were conducted between July and November 2010 in accordance with the scope of work described in the following correspondence:

- National Grid's April 5, 2010 Alternate Remedial Investigation Scope of Work;
- NYSDEC's May 10, 2010 comments on the alternate RI scope of work;
- National Grid's June 1, 2010 responses to NYSDEC's comments on the alternate RI scope of work;
- NYSDEC's June 18, 2010 approval letter of the alternate RI scope of work; and
- November 15, 2010 e-mail correspondence between ARCADIS and the NYSDEC.

As discussed in the above correspondence, the RI field and sampling activities were conducted in accordance with:

- the most recent version of DER-10, Technical Guidance for Site Investigation and Remediation (May 2010);
- the most recent version of the New York State Department of Health (NYSDOH) Community Air Monitoring Plan (CAMP); and
- National Grid's NYSDEC-approved *Generic Site Characterization/IRM Work Plan for Site Investigations at Non-Owned Former MGP Sites* and supporting appendices (Field Sampling Plan [FSP] and Quality Assurance Project Plan [QAPP]), dated November 2002.

Chosen field samples were analyzed by HamptonClarke-Veritech (HCV), a NYSDOH ELAP-certified laboratory. As described in the QAPP, samples were submitted for laboratory analysis using United States Environmental Protection Agency (USEPA) SW-846 Methods as referenced in the most recent edition of the NYSDEC Analytical Services Protocol (ASP), with Category B analytical laboratory reports. Samples were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semi-VOCs (SVOCs), and total cyanide. Some soil samples were also analyzed for free cyanide using ASTM-D4282-02. Data Usability Summary Reports (DUSRs) of the laboratory data packages were prepared and the results of the DUSRs are incorporated into data tables provided with this RI data summary.

The RI fieldwork consisted of:

- Drilling 43 soil borings (SB-100 through SB-135 and SS-A through SS-G);
- Installing five overburden monitoring wells (MW-2, MW-5, MW-6, MW-7, and MW-10), four bedrock monitoring wells (MW-1R, MW-5R, MW-8R, and MW-9R), and one overburden piezometer (PZ-110);
- Collecting 45 subsurface soil samples from borings for laboratory analysis of TCL VOCs, TCL SVOCs, and total cyanide;
- Collecting 36 subsurface soil samples from borings for free cyanide analysis;
- Collecting 15 surface soil samples (SS-100 through SS-107 and SS-A through SS-G) for laboratory analysis of TCL VOCs, TCL SVOCs, total cyanide, and free cyanide;
- Collecting a ground water sample from each new and previously existing monitoring wells (11 total wells) for laboratory analysis of TCL VOCs, TCL SVOCs, and total cyanide;
- Collecting a ground water seep sample (SEEP-1) from a drainage swale located at the toe of the slope in the northeast corner of the site for laboratory analysis of TCL VOCs, TCL SVOCs, and total cyanide;
- Collecting five samples of tar from the site and an off-site area near Coffee Street for forensic PAH analysis and source evaluation;
- Installing two surface water gauges (SG-1 and SG-2) on the Salmon River; and
- Measuring two rounds of water levels at all site wells and the river gauges.

The salient findings of the RI fieldwork are provided below based on a review of historical records and the attached information. The findings are divided into Physical Characterization and Chemical Characterization.

Findings of RI Fieldwork

Physical Characterization

Site Setting

The approximately 3 acre site is located in a mixed commercial and residential area of the Village of Malone, New York. The site limits are shown on Figure 1. National Grid owns the majority of the site. The portion not owned by National Grid consists of the approximate 90 foot by 130 foot parcel on Amsden Street shown as the "Former Malone Rubber Co." on Figure 1. This parcel is

currently owned by Mr. Timothy Carter. For the purposes of this summary report, the site is roughly divided into three general areas:

1) Mr. Carter's property;

2) Southern approximate half of the site which is where the former MGP operated; and

3) Northern approximate half of the site which is largely vacant and underlain by various types of refuse.

The southern (MGP) portion of the site is secured with a chain-link fence. The site is bounded by residential housing to the north, the Salmon River to the east, a vacant lot to the south and, Amsden Street to the west. Two unoccupied National Grid-owned stone block buildings remain on the southern portion of the site. A two-story, warehouse-type building on Mr. Carter's property is apparently used for storage. The only MGP structure still visible at the surface is a former Gas Holder foundation slab in the central portion of the site; however, evidence of several other MGP structures have been observed sub-grade. Relief at the site is significant, with a sharp drop of approximately 50 feet from Amsden Street to the Salmon River. The river flows northward adjacent to the site. Much of the northern and eastern portions (on the steep slope) of the site are heavily forested.

Three active subsurface utilities have been identified on site:

- One sanitary line (a sewer main) runs from south to north beneath the west bank of the river and is exposed in the riverbed due east of the former Gas Holder slab. This sanitary main runs to the Village of Malone's sewage treatment plant approximately one mile downriver.

- A second sanitary line originates from a concrete manhole located immediately south of the former railroad trestle/stone bridge abutment and runs northward underneath and adjacent to the lower access road on-site until it intersects with the sewer main near MW-2.

- A 42-inch concrete storm sewer pipe runs from Amsden Street in a southwest to northeast direction, beneath the warehouse building on Mr. Carter's property, and discharges to the ground surface at the toe of the slope in the northern portion of the site near MW-10.

Based on review of available historical documentation, the MGP operated from the 1880's to the 1940's (approximately 60 years) using the coal gas process. At its peak, the MGP consisted of a retort house, purifier house, coal and coke storage structures, two gas holders, and powerhouse and substation buildings located along the bank of the river. Following cessation of gas production, the property was used for storage and distribution of propane gas until it was sold to an adjacent property owner. The property was subsequently repurchased by Niagara Mohawk (now National Grid) in 2001. Two stone block buildings located on the southern portion of the site are currently leased through 2013 for storage purposes.

Soil

As shown in the cross-sections on Figures 2 through 5, the overburden is thickest on the western approximate half of the site and, as a result of the steep embankment, rapidly thins toward the river to the east. The thickness of the overburden ranges from approximately 18 to 23 feet in the area of the former MGP to 12 to 30 feet in the northern area. The thickness of the overburden along the riverbank is approximately 6 to12 feet and is thinnest to the north.

The overburden largely consists of re-worked native soils and various fill materials that lie directly on the sandstone bedrock surface; however, a layer of undisturbed native soil consisting on interbedded sand and silt does exist below the fill in the western one-third of the site. This native soil has an approximate thickness of 7 to 9 feet. The fill beneath the area of the MGP contains sand and gravel with a varying degree of anthropogenic materials (i.e., brick, glass, ash, cinders, slag, coal, concrete, wood). The fill in the northern half of the site contains the same anthropogenic materials as the southern half, but also contains general refuse consisting of metal, plastic, glass, and pieces of rubber. Large pieces of rubber resembling soles of footwear can be seen protruding from the steep embankment of the northern half of the site. The rubber debris is assumed to have been associated with the "Former Malone Rubber Co." located on Mr. Carter's property.

Bedrock

The topography of the bedrock surface generals mimics that of the land surface. The bedrock surface elevation is generally highest along Amsden Street and drops approximately 15 to 35 feet to the river (eastward). The bedrock surface elevation also decreases to the north, in the direction of river flow. As shown in cross sections A-A' (Figure 2 [SB-5, SB-132]) and B-B' (Figure 3 [SB-114]), a north-south trending bedrock ridge is evident on-site. Note that the interbedded sand and silt layer (discussed above) is present on the west side of the ridge, but not the east side.

The bedrock beneath the site is the late Cambrian age Potsdam Sandstone (formed approximately 500 million years ago). The Potsdam Sandstone in the region of Malone is composed of a large percentage of quartz (orthoquartzitic), thus producing a light buff to light gray coloration. Intervals approaching 100% quartz were observed in several retrieved rock cores. It was not uncommon for the drilling penetration rates for these intervals to be an hour or more per foot. The high percentage of quartz in the sandstone results in very high hardness. The thickness of the sandstone beds at the site ranges from less than one inch to several inches, and generally less than 1-foot. Examination of retrieved bedrock cores, and a measurement of the attitude of an exposed bedrock outcrop near the former powerhouse foundation, indicates that the sandstone beds are essentially flat-lying (i.e. no measurable dip direction). Few vertical fractures (joints) were identified during examination of bedrock cores.

Ground Water Occurrence and Flow

As shown in Table 2 and as observed while drilling borings, the water table is encountered within the overburden and bedrock beneath the site from 1 to 25 feet below grade. As expected, the depth to water is greater where the grade elevation is highest (approximate western two-thirds of the site)

and least where the grade elevation is lowest (near the river). As shown in the cross sections on Figures 2 through 4, the water table is within the bedrock in the area of the north-south trending bedrock ridge and in the southwest corner of the site. Saturated overburden is generally only a few feet across most of the site, and is thickest (approximately 5 feet) beneath the northeast corner of the site.

As shown on Figures 6 and 7, ground water flow in both the overburden and bedrock is toward the river. The horizontal hydraulic gradient in the overburden is very high - 0.30 in the southwest corner and 0.02 in the northwest corner of the site. During periods of high flow (shortly after storm events), ground water seeps can be observed at the toe of the slope in the northeast corner of the site.

Given the anisotropic conditions caused by the predominance of horizontal bedding plane fractures relative to joints (i.e., vertical fractures) within the bedrock, a fairly steep downward vertical hydraulic gradient is present within the shallow bedrock (upper approximately 20 feet of bedrock) across most of the site. The vertical gradient in the area of MW-5R is approximately 0.06 and the vertical gradient in the area of MW-9R is approximately 0.02. If a significant number of open joints were present in the bedrock, the vertical gradient would likely be much less. Given the higher number of bedding plane fractures, the primary ground water flow direction in the bedrock is interpreted to be horizontal. Ground water velocities along the bedding planes are expected to be very high given the horizontal hydraulic gradient along the bedding planes – based on the contours presented on Figure 7, the horizontal gradient in the bedrock is approximately 0.14.

As shown on Figure 6, perched ground water (a temporary ground water condition which does not reflect true ground water "head") was observed in the southern Gas Holder at an elevation of approximately 687.5 (on 9/7/10). This holder is located in an area where the overburden is otherwise dry. Perched water in this holder suggests that the foundation for this holder is relatively intact and water tight.

Visual Impacts

"Tar" was observed primarily within the upper five feet of overburden in the southern half of the site. Tar was not observed in any bedrock corehole drilled during the RI. Based on apparent differences in viscosity, the following two types of tar have been observed at the site:

- Solidified Tar – As shown with the pink shading on Figure 8, this type of tar is primarily observed at the land surface and within the upper approximately 5 feet of overburden soils. As its name implies, this tar has a hardened appearance, is somewhat pliable when exposed to heat, and is often crystalline. This type of tar was primarily observed in the southern half of the site, in the area of the former MGP. This type of tar was also observed in a test pit completed on Mr. Carter's property, and in soil boring SB-114 (located north of Mr. Carter's property). A small area of this tar was also observed along the edge of the river, near the former powerhouse foundation.

- Viscous Tar – As shown with the purple shading on Figure 8, this type of tar has been observed primarily within the footprint of the southern Gas Holder and the Tar Well. This tar was also observed on the bedrock surface only at MW-4. This tar differs from the solidified tar due to its relatively lower viscosity and taffy-like consistency.

As shown by the yellow shading on Figure 8, sheens and staining were observed in soils on the bedrock surface at several borings across the site. It should be noted that an apparent petroleum odor was also observed at several of these locations.

Chemical Characterization

Subsurface Soil

Subsurface soil analytical results are shown on Figure 9, and presented in Table 3 in comparison to the NYSDEC's Part 375 Restricted Commercial and Restricted Residential Soil Cleanup Objectives (SCOs). It should be noted that, with the exception of the sample collected at SB-120 (8-10') and samples collected for forensic source evaluation (as discussed below), soil samples were selected based on the presence of staining, sheen, or to provide lateral/vertical delineation. The samples collected from SB-120, and for forensic source evaluation, were the only ones which contained tar. The following observations can be made based on review of this information:

- Benzene was detected in only one sample (SB-120[8-10']) at a concentration (7.3 mg/kg) above the Restricted Residential SCO. As noted above, this sample contained solidified tar. No other VOCs were detected in any other samples above the SCOs; however, it is reasonable to assume that tar-containing soil could contain at least one BTEX compound at concentrations above SCOs. As such, the locations shown in pink and purple on Figure 8 likely contain at least one BTEX compound above SCOs.

- At least one PAH compound was detected above SCOs in 9 of the 45 subsurface soil samples. The highest total PAH concentration was detected in the sample containing tar at SB-120(8-10') at 22,000 mg/kg. The remaining 8 samples exceeding SCOs contained total PAH concentrations between 11 mg/kg and 45 mg/kg. Similar to the assumption for BTEX compounds, it is reasonable to assume that tar-containing soil could contain at least one PAH compound at concentrations above SCOs. As such, the locations on shown in pink and purple on Figure 8 likely contain at least one PAH compound above SCOs.

- Total cyanide was detected in 21 of the 45 subsurface soil samples at concentrations ranging between 0.620 mg/kg and 60 mg/kg. Total cyanide was only detected above SCOs in one of these samples - the sample collected at 2 to 4 feet below grade in boring SB-110 at a concentration of 60 mg/kg.

- Free cyanide was only detected in 6 of the 36 samples analyzed for free cyanide at concentrations between 0.0216 mg/kg and 0.452 mg/kg. None of these samples contain concentrations of free cyanide above SCOs.

Surface Soil

Surface soil analytical results are presented in Table 4 and on Figure 10 without a comparison to criteria. The following observations can be made based on review of this information:

- BTEX compounds were not detected in any of the 15 surface soil samples.
- PAH compounds were detected in all 15 surface soil samples at total PAH concentrations ranging between 1.2 mg/kg and 720 mg/kg. The highest levels of PAHs were detected in samples collected on/near the steep embankment in the southeast corner of the site.
- Total cyanide was detected in 8 of the 15 surface soil samples at concentrations ranging between 1.3 mg/kg and 56 mg/kg. Similar to the trend observed for PAHs, the highest levels of total cyanide were detected in samples collected on/near the steep embankment in the southeast corner of the site.
- Free cyanide was detected at estimated concentrations in 11 of the 15 samples at concentrations ranging between 0.0194 mg/kg and 2.65 mg/kg.

Ground Water

Ground water analytical results are presented in Table 5 and on Figure 11 in comparison to the NYSDEC's Technical and Operational Guidance Series (TOGS) 1.1.1. Class GA Ambient Ground Water Standards and Guidance Values. The following observations can be made based on review of this information:

- BTEX compounds were detected in ground water sampled from 7 of the 10 monitoring wells at concentrations exceeding Class GA Standards or Guidance Values. The highest total BTEX concentrations were detected in monitoring wells MW-5R (2,300 ug/L) and MW-6 (1,200 ug/L). BTEX compounds were also detected above Standards/Guidance Values in the seep sample (SEEP-1) collected at the toe of the slope near MW-2. It is possible that five (four wells and the seep sample) of the ground water exceedances for BTEX may not be related to the MGP, as follows:
  - The background monitoring well (MW-1R) contained 56 ug/L of total BTEX. This well is located hydraulically upgradient from the MGP operations area and petroleum-like odors were observed on purge water from this well during sampling.
  - Monitoring wells MW-2, MW-6, and MW-10, and seep sample SEEP-1 are all located within the northern area of the site and side-gradient to the former MGP operations area (and areas where tar has been observed). In addition, petroleum-related odors and sheens were observed during drilling at several borings in this area.

The remaining locations with BTEX exceedances (monitoring wells MW-3, MW-5R, and MW-8R) are located hydraulically downgradient from the southern Gas Holder and an area where viscous tar was observed in the overburden. Although apparent petroleum-related odors were also observed in this area of the site, it is reasonable to assume that the exceedances at these wells could also be attributable to the former MGP operations.

- Naphthalene was detected in ground water from two of the 10 monitoring wells at a concentration exceeding the Class GA Guidance Value for this compound. No other PAHs were detected in ground water samples above the Class GA Standards or Guidance Values. The two ground water samples containing the naphthalene exceedance were collected from monitoring well MW-5R and MW-6.

- Total cyanide was detected in three of the 10 monitoring well ground water samples, as follows: MW-3: 100 ug/L; MW-4: 160 ug/L; and MW-7: 160 ug/L. None of these concentrations exceed the Class GA Standard of 200 ug/L for total cyanide. The seep sample (SEEP-1) did not contain a detectable concentration of total cyanide.

Tar Source Evaluation

Consistent with the scope of work detailed in the November 15, 2010 e-mail correspondence between ARCADIS and the NYSDEC, ARCADIS, on behalf of National Grid, conducted a PAH source evaluation to assess whether tar observed in a remote area on the Salmon River riverbank approximately 500 feet downstream from the site (near Coffee Street) could be attributable to the former MGP operations. Tar was observed in this area during a site visit with National Grid and the NYSDEC on October 14, 2010. The purpose of the visit was to conduct a reconnaissance of the Salmon River to develop a preliminary scope of work for a sediment investigation. The tar in this remote area was solidified and scattered along the bank in only a few isolated areas near/at the water's edge.

On November 23, 2010 ARCADIS collected samples of tar for forensic PAH analysis. Two samples were collected from the former MGP site, and three samples were collected from the off-site riverbank area. One of the on-site samples was collected along the upper access road (roughly 100 feet from the Amsden Street gate), and the second was collected on the steep bank near the gabion wall on the southern part of the site (near the lower access road south gate). Two samples were collected at the site because the physical appearance of each sample was different. The sample collected by the upper access road was soft and pliable, while the sample collected by the lower access road south gate/gabion wall was more weathered and crystalline. The three samples collected off-site along the riverbank were collected along an approximate 200 feet long area of the bank -the same area that the NYSDEC observed during the river reconnaissance visit on October 14, 2010. These samples also had different physical appearances, one sample was pliable and two samples were more weathered and crystalline.

All samples were submitted to Alpha Analytical Laboratories in Mansfield, Massachusetts for forensic PAH analysis using modified USEPA Method 8270. Samples were analyzed for PAHs that include the 2- to 6-ring priority pollutant PAHs and alkyl groups of the major 2- to 4-ring

PAHs. The results of the analyses were used to establish the PAH compositions of the samples and to calculate PAH diagnostic ratios for use in identifying and differentiating the source and type of tar, petroleum products, or other hydrocarbon material in the samples. PAH compositional histograms of the samples and PAH diagnostic ratio plots were prepared to assist in the interpretation of the PAH data. In addition, a PAH compositional fingerprint was prepared for each sample. Multiple lines of evidence from the forensic data were used to identify potential sources of the PAHs in the tar samples.

The results of the forensic evaluation are presented in the memorandum in Attachment 1. As discussed in the memorandum, the tar in all five samples appears to have been produced from the same source. Given the proximity of the MGP site to the off-site area along the river, National Grid cannot rule out the former MGP as a possible source of the tar in the off-site area.

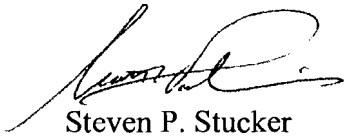
Summary

National Grid recognizes that additional investigations, particularly in the off-site area near Coffee Street and within the Salmon River sediments, are warranted in order to fully define the nature and extent of MGP-related impacts as part of the RI. As previously discussed, National Grid plans to conduct sediment investigations once the nature and extent of MGP-related impacts in the upland portion of the site (including the off-site area) has been fully defined. The scope of the sediment investigations will be based on the discussions held during the October 14, 2010 site visit, and will be adjusted, as necessary, based upon the results of the pending off-site investigation near Coffee Street.

National Grid suggests an on-site meeting with NYSDEC following review of the RI findings in order to discuss potential data gaps.

Please feel free to contact me by phone at 315.428.5652 or by e-mail at Steven.Stucker@us.ngrid.com if you have any questions or comments. I look forward to your feedback on this submittal.

Sincerely,



, for
Steven P. Stucker
Environmental Department

SAP/plf
Attachments

cc: Deanna Ripstein, NYSDOH
Scott Powlin, ARCADIS

Environmental Department, 300 Erie Boulevard West, Syracuse, New York 13202
T: (315) 428-5652 ■ F: (315) 460-8805 ■ steven.stucker@us.ngrid.com ■ www.nationalgrid.com

Tables

TABLE 1
MONITORING WELL CONSTRUCTION DETAILS

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Location ID	Date Completed	Well Diameter (in.)	Casing/ Screen Type	Screen Slot Size (in.)	Screen Length (ft.)	Sump Length (ft.)	Depth to Screened Interval (ft. bgs)		Total Well Depth
							Top	Bottom	ft. bgs
MW-1R	8/17/10	2	PVC	0.02	20.0	0.6	44.1	64.1	64.7
MW-2	7/29/10	2	PVC	0.02	2.8	0.2	3.5	6.3	6.5
MW-3	7/28/03	2	PVC	0.01	5.0	0.5	7.0	12.0	12.5
MW-4	7/28/03	2	PVC	0.01	5.0	0.0	3.5	8.5	8.5
MW-5	8/20/10	2	PVC	0.02	4.9	0.2	14.4	19.3	19.4
MW-5R	7/28/10	2	PVC	0.02	19.5	0.4	30.9	50.4	50.8
MW-6	8/25/10	2	PVC	0.02	9.3	0.5	20.7	30.0	30.5
MW-7	7/30/10	2	PVC	0.02	4.8	0.2	8.5	13.3	13.5
MW-8R	8/9/10	2	PVC	0.02	20.0	0.5	20.4	40.4	40.9
MW-9R	8/6/10	2	PVC	0.02	19.5	0.5	20.0	39.5	40.0
MW-10	7/29/10	2	PVC	0.02	4.8	0.2	3.3	8.1	8.3
PZ-110	8/19/10	2	PVC	0.02	9.3	0.6	6.0	15.3	15.9

Notes:
in. = inches.
Depths given in feet below ground surface (ft. bgs).
Monitoring wells MW-3 and MW-4 were installed by TRC during the Site Characterization.

TABLE 2
SUMMARY OF WATER ELEVATIONS

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Well ID	Ref. Point Elevation (ft AMSL)	Depth to Water (ft below TIC)		Groundwater Elevation (ft AMSL)	
		8/31/10-9/3/10	9/7/2010	8/31/10-9/3/10	9/7/2010
MW-1R	705.60	42.35	41.85	663.25	663.75
MW-2	642.40	4.20	4.32	638.20	638.08
MW-3	661.60	NA	10.65	NA	650.95
MW-4	652.20	NA	7.68	NA	644.52
MW-5	696.10	DRY	DRY	NA	NA
MW-5R	675.30	34.62	36.36	640.68	638.94
MW-6	680.20	27.05	27.01	653.15	653.19
MW-7	664.60	13.29	13.35	651.31	651.25
MW-8R	655.60	17.95	18.08	637.65	637.52
MW-9R	646.90	9.03	9.19	637.87	637.71
MW-10	647.00	4.71	4.66	642.29	642.34
PZ-110	696.01	NA	8.56	NA	687.45
SG-1	695.8	NA	56.73	NA	639.07
SG-2*	636.1	NA	NA	NA	635.20

Notes:

AMSL = above mean sea level.

ft = feet.

NA = Not available.

TIC = Top of Inner Casing.

* = Reference point elevation for SG-2 is ground surface. Surface water elevation at SG-2 is based on field observations, not an actual measurement.

Reference point for all wells is the top of inner casing, referenced to NGVD 1988.

TABLE 3
SUMMARY OF DETECTED SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Location ID: / Sample Depth(Feet): / Date Collected:	Restricted Use SCRs Commercial	Restricted Use SCRs Residential	Units	SB-100 20.4 - 22.4 08/18/10	SB-101 16.3 - 18.3 07/21/10	SB-102A 10 - 12 08/18/10	SB-102A 26 - 28 08/18/10	SB-103 21 - 23 07/30/10	SB-104 8 - 10 07/21/10	SB-104 22 - 23.5 07/21/10	SB-105/MW-1R 18 - 18.9 08/10/10	SB-105/MW-1R 28 - 28.5 08/10/10	SB-106 20 - 21.5 08/20/10	SB-107A 20 - 21 08/19/10
Detected Volatile Organics														
1,4-Dioxane	130	9.8	mg/kg	R	0.31 U	R	R	R	0.32 U	0.28 U	0.29 U	0.27 U	0.27 U	R
2-Butanone	500	100	mg/kg	0.0054 U	0.0062 U	0.0057 U	0.0055 U	0.0058 U	0.0064 U	0.0055 U	0.0058 U	0.0054 U	0.0055 U	0.0051 U
4-Methyl-2-pentanone	--	--	mg/kg	0.0054 U	0.0062 U	0.0057 UJ	0.0055 U	0.0058 U	0.0064 U	0.0055 U	0.0058 U	0.020	0.0055 U	0.0051 UJ
Acetone	500	100	mg/kg	0.027 U	0.055	0.029 U	0.027 U	0.048 J	0.032 U	0.049	0.14	0.035	0.027 U	0.025 U
Benzene	44	2.9	mg/kg	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U	0.0013 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0010 U
Ethylbenzene	390	30	mg/kg	0.0011 U	0.0012 U	0.00057 U	0.0011 U	0.0012 U	0.0013 U	0.0011 U	0.0012 U	0.0011 U	0.00055 U	0.00051 U
Isopropylbenzene	--	--	mg/kg	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U	0.0013 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0010 U
m&p-Xylene	--	--	mg/kg	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U	0.0013 U	0.0011 U	0.0012 U	0.0023	0.0011 U	0.0010 U
Methylcyclohexane	--	--	mg/kg	0.0054 U	0.0062 U	0.0057 U	0.0055 U	0.0058 U	0.0064 U	0.0055 U	0.0058 U	0.0054 U	0.0055 U	0.0051 U
Methylene Chloride	500	51	mg/kg	0.0054 U	0.0062 U	0.0057 U	0.0055 U	0.0058 UJ	0.0064 U	0.0055 U	0.0058 U	0.0054 U	0.0055 U	0.0051 U
o-Xylene	--	--	mg/kg	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U	0.0013 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0010 U
Styrene	--	--	mg/kg	0.0054 U	0.0062 U	0.0057 U	0.0055 U	0.0058 U	0.0064 U	0.0055 U	0.0058 U	0.0054 U	0.0055 U	0.0051 U
Toluene	500	100	mg/kg	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U	0.0013 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0010 U
Xylenes (total)	500	100	mg/kg	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0012 U	0.0013 U	0.0011 U	0.0012 U	0.0023	0.0011 U	0.0010 U
Total BTEX	--	--	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	0.0046	ND	ND
Detected Semivolatile Organics														
1,1'-Biphenyl	--	--	mg/kg	0.075 U	0.087 U	0.078 U	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.074 U	0.074 U
2,4-Dimethylphenol	--	--	mg/kg	0.075 U	0.087 U	0.078 U	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.074 U	0.074 U
2-Methylnaphthalene	--	--	mg/kg	0.075 U	0.087 U	0.078 U	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.074 U	0.074 U
2-Methylphenol	500	100	mg/kg	0.075 U	0.087 U	0.078 U	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.074 U	0.074 U
3&4-Methylphenol	--	--	mg/kg	0.075 U	0.087 U	0.078 U	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.074 U	0.074 U
Acenaphthene	500	100	mg/kg	0.075 U	0.087 U	0.078 U	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.074 U	0.074 U
Acenaphthylene	500	100	mg/kg	0.075 U	0.15	0.13	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.38	0.074 U
Anthracene	500	100	mg/kg	0.075 U	0.46	0.31	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.69	0.074 U
Benzo(a)anthracene	5.6	1	mg/kg	0.075 U	0.56	0.64	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	1.7	0.074 U
Benzo(a)pyrene	1	1	mg/kg	0.075 U	0.49	0.45	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	1.1	0.074 U
Benzo(b)fluoranthene	5.6	1	mg/kg	0.075 U	0.61	0.63	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	1.7	0.074 U
Benzo(g,h,i)perylene	500	100	mg/kg	0.075 U	0.32	0.27	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.55	0.074 U
Benzo(k)fluoranthene	56	1	mg/kg	0.075 U	0.19	0.16	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.59	0.074 U
bis(2-Ethylhexyl)phthalate	--	--	mg/kg	0.39	0.12	0.95	0.25	0.56	0.097	0.20	2.1	0.75	1.3	1.2
Carbazole	--	--	mg/kg	0.075 U	0.18	0.081	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.29	0.074 U
Chrysene	56	1	mg/kg	0.075 U	0.49	0.52	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	1.3	0.074 U
Dibenzo(a,h)anthracene	0.56	0.33	mg/kg	0.075 U	0.087 U	0.10	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.22	0.074 U
Dibenzofuran	350	14	mg/kg	0.075 U	0.19	0.14	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.20	0.074 U
Di-n-Butylphthalate	--	--	mg/kg	0.075 U	0.087 U	0.078 U	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.074 U	0.074 U
Fluoranthene	500	100	mg/kg	0.075 U	1.6	1.1	0.078 U	0.078 U	0.091	0.075 U	0.078 U	0.075 U	3.8	0.074 U
Fluorene	500	100	mg/kg	0.075 U	0.26	0.18	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.40	0.074 U
Indeno(1,2,3-cd)pyrene	5.6	0.5	mg/kg	0.075 U	0.29	0.25	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.60	0.074 U
Naphthalene	500	100	mg/kg	0.075 U	0.10	0.078 U	0.078 U	0.078 U	0.085 U	0.075 U	0.078 U	0.075 U	0.074 U	0.074 U
Phenanthrene	500	100	mg/kg	0.075 U	1.8	0.90	0.078 U	0.078 U	0.13	0.075 U	0.078 U	0.075 U	3.7	0.074 U
Pyrene	500	100	mg/kg	0.075 U	1.2	1.1	0.078 U	0.078 U	0.091	0.10	0.078 U	0.075 U	2.9	0.074 U
Total PAHs	--	--	mg/kg	ND	8.5	6.7	ND	ND	0.31	0.10	ND	ND	20	ND
Detected Cyanide														
Cyanide	27	27	mg/kg	0.280 U	0.320 U	0.740	0.290 U	0.290 U	0.840	0.280 U	0.290 U	0.280 U	0.280 U	0.280 U
Cyanide (Free)	--	--	mg/kg	0.0705 U	0.0767 U	NA	0.0693 U	0.0679 U	0.0795 U	NA	0.0719 U	0.0677 U	0.0664 U	0.0662 U

See Notes on Page 5.

TABLE 3
SUMMARY OF DETECTED SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Location ID: / Sample Depth(Feet): / Date Collected:	Restricted Use SCRs Commercial	Restricted Use SCRs Residential	Units	SB-108 20.7 - 22.7 08/23/10	SB-109 22 - 24 07/20/10	SB-109 26 - 26.5 07/20/10	SB-110 2 - 4 07/26/10	SB-110 12 - 14 07/26/10	SB-111 8 - 10 07/19/10	SB-112 16.8 - 17.6 07/20/10	SB-112 18 - 18.1 07/20/10	SB-113 6 - 7.6 07/22/10	SB-115 26 - 28 08/25/10	SB-116 20 - 22 08/03/10	SB-117 21 - 23 08/24/10
Detected Volatile Organics															
1,4-Dioxane	130	9.8	mg/kg	0.28 U	0.29 U	0.27 U	R	R	0.27 U	1.4 U	0.28 U	0.28 U	1.1 U	R	0.27 U [0.26 U]
2-Butanone	500	100	mg/kg	0.0057 U	0.0057 U	0.0054 U	0.0055 U	0.0059 U	0.0054 U	0.028 U	0.0056 U	0.0056 U	0.022 U	0.0054 U	0.0053 U [0.0053 U]
4-Methyl-2-pentanone	--	--	mg/kg	0.0057 U	0.0057 U	0.0054 U	0.0055 U	0.0059 U	0.0054 U	0.028 U	0.0056 U	0.0056 U	0.022 U	0.017	0.0053 U [0.0053 U]
Acetone	500	100	mg/kg	0.037	0.029 U	0.027 U	0.027 U	0.029 U	0.032	0.14 U	0.077	0.028 U	0.11 U	0.032	0.056 [0.026 U]
Benzene	44	2.9	mg/kg	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0057 U	0.0011 U	0.0011 U	0.0044 U	0.0011 U	0.0011 U [0.0011 U]
Ethylbenzene	390	30	mg/kg	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0057 U	0.014	0.0011 U	0.44	0.0011 U	0.0011 U [0.0011 U]
Isopropylbenzene	--	--	mg/kg	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0057 U	0.012	0.0011 U	0.37	0.0011 U	0.0011 U [0.0011 U]
m&p-Xylene	--	--	mg/kg	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0057 U	0.047	0.0011 U	0.58	0.0014	0.0011 U [0.0011 U]
Methylcyclohexane	--	--	mg/kg	0.0057 U	0.0057 U	0.0054 U	0.0055 U	0.0059 U	0.0054 U	0.028 U	0.071	0.0056 U	0.022 U	0.0054 U	0.0053 U [0.0053 U]
Methylene Chloride	500	51	mg/kg	0.0057 U	0.0057 U	0.0054 U	0.0055 U	0.0059 U	0.0054 U	0.028 U	0.0056 U	0.0056 U	0.022 U	0.0054 U	0.0053 U [0.0053 U]
o-Xylene	--	--	mg/kg	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0057 U	0.0025	0.0011 U	0.045	0.0011 U	0.0011 U [0.0011 U]
Styrene	--	--	mg/kg	0.0057 U	0.0057 U	0.0054 U	0.0055 U	0.0059 U	0.0054 U	0.028 U	0.0056 U	0.0056 U	0.022 U	0.0054 U	0.0053 U [0.0053 U]
Toluene	500	100	mg/kg	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0057 U	0.0011 U	0.0011 U	0.014	0.0011 U	0.0011 U [0.0011 U]
Xylenes (total)	500	100	mg/kg	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0057 U	0.050	0.0011 U	0.63	0.0014	0.0011 U [0.0011 U]
Total BTEX	--	--	mg/kg	ND	ND	ND	ND	ND	ND	ND	0.11	ND	1.7	0.0028	ND [ND]
Detected Semivolatile Organics															
1,1'-Biphenyl	--	--	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.076 U	0.078 U	0.073 U	0.078 U	0.072 U [0.072 U]
2,4-Dimethylphenol	--	--	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.076 U	0.078 U	0.073 U	0.078 U	0.072 U [0.072 U]
2-Methylnaphthalene	--	--	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.13	0.078 U	0.089	0.078 U	0.072 U [0.10]
2-Methylphenol	500	100	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.076 U	0.078 U	0.073 U	0.078 U	0.072 U [0.072 U]
3&4-Methylphenol	--	--	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.076 U	0.078 U	0.073 U	0.078 U	0.072 U [0.072 U]
Acenaphthene	500	100	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.076 U	0.078 U	0.073 U	0.078 U	0.20 [0.36]
Acenaphthylene	500	100	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.27	0.078 U	0.073 U	0.29	0.14 [0.18]
Anthracene	500	100	mg/kg	0.075 U	0.078 U	0.072 U	0.22	0.082 U	0.077 U	0.076 U	0.41	0.078 U	0.073 U	0.67	0.62 [1.1]
Benzo(a)anthracene	5.6	1	mg/kg	0.075 U	0.078 U	0.072 U	1.1	0.082 U	0.077 U	0.076 U	0.79	0.078 U	0.073 U	1.1	1.0 [1.8]
Benzo(a)pyrene	1	1	mg/kg	0.075 U	0.078 U	0.072 U	1.5	0.082 U	0.077 U	0.076 U	0.81	0.078 U	0.073 U	1.1	0.85 [1.5]
Benzo(b)fluoranthene	5.6	1	mg/kg	0.075 U	0.078 U	0.072 U	1.6	0.082 U	0.077 U	0.076 U	1.0	0.078 U	0.073 U	1.3	1.1 [1.8]
Benzo(g,h,i)perylene	500	100	mg/kg	0.075 U	0.078 U	0.072 U	0.88	0.082 U	0.077 U	0.076 U	0.62	0.078 U	0.073 U	0.78	0.50 [0.84]
Benzo(k)fluoranthene	56	1	mg/kg	0.075 U	0.078 U	0.072 U	0.71	0.082 U	0.077 U	0.076 U	0.33	0.078 U	0.073 U	0.41	0.38 [0.64]
bis(2-Ethylhexyl)phthalate	--	--	mg/kg	0.24	0.11	0.095	0.14	0.082 U	2.0	0.076 U	0.57	0.54	0.082	0.81	0.22 [0.27]
Carbazole	--	--	mg/kg	0.075 U	0.078 U	0.072 U	0.10	0.082 U	0.077 U	0.076 U	0.13	0.078 U	0.073 U	0.078 U	0.17 [0.30]
Chrysene	56	1	mg/kg	0.075 U	0.078 U	0.072 U	0.93	0.082 U	0.077 U	0.076 U	0.69	0.078 U	0.073 U	1.0	0.98 [1.6]
Dibenzo(a,h)anthracene	0.56	0.33	mg/kg	0.075 U	0.078 U	0.072 U	0.28	0.082 U	0.077 U	0.076 U	0.12	0.078 U	0.073 U	0.17	0.12 [0.20]
Dibenzofuran	350	14	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.22	0.078 U	0.073 U	0.11	0.18 [0.32]
Di-n-Butylphthalate	--	--	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.076 U	0.078 U	0.073 U	0.078 U	0.072 U [0.072 U]
Fluoranthene	500	100	mg/kg	0.11	0.078 U	0.072 U	1.2	0.082 U	0.077 U	0.076 U	2.2	0.078 U	0.073 U	3.3	2.4 [4.0]
Fluorene	500	100	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.30	0.078 U	0.073 U	0.20	0.23 [0.42]
Indeno(1,2,3-cd)pyrene	5.6	0.5	mg/kg	0.075 U	0.078 U	0.072 U	0.82	0.082 U	0.077 U	0.076 U	0.52	0.078 U	0.073 U	0.65	0.46 [0.78]
Naphthalene	500	100	mg/kg	0.075 U	0.078 U	0.072 U	0.073 U	0.082 U	0.077 U	0.076 U	0.32	0.078 U	0.075	0.078 U	0.085 [0.15]
Phenanthrene	500	100	mg/kg	0.088	0.078 U	0.072 U	0.63	0.082 U	0.077 U	0.076 U	1.9	0.078 U	0.073 U	1.8	2.4 [4.2]
Pyrene	500	100	mg/kg	0.097	0.078 U	0.072 U	1.0	0.082 U	0.077 U	0.076 U	1.8	0.078 U	0.073 U	2.6	2.2 [3.7]
Total PAHs	--	--	mg/kg	0.30	ND	ND	11	ND	ND	ND	12	ND	0.16	15	14 [23]
Detected Cyanide															
Cyanide	27	27	mg/kg	0.280 U	2.70	1.20	60.0	0.990	0.290 U	1.40	2.50	1.00	0.270 U	0.290 U	0.270 U [0.270 U]
Cyanide (Free)	--	--	mg/kg	0.0670 U	0.0733 U	0.0652 U	0.452 J	NA	0.0659 U	NA	NA	NA	0.0680 U	0.0655 U	0.0650 U

See Notes on Page 5.

TABLE 3
SUMMARY OF DETECTED SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Location ID: / Sample Depth(Feet): / Date Collected:	Restricted Use SCRs Commercial	Restricted Use SCRs Residential	Units	SB-118 12 - 13.5 07/29/10	SB-119 8 - 9.4 07/22/10	SB-120 8 - 10 08/03/10	SB-121 8 - 9.4 07/22/10	SB-122 6 - 7.7 08/04/10	SB-123 4 - 6 07/22/10	SB-124 4 - 6 07/29/10	SB-125 4.5 - 6.5 07/29/10	SB-126 23 - 25 07/23/10	SB-126 29.4 - 30.6 07/23/10	SB-127 10 - 12 08/24/10	SB-127 21 - 23 08/24/10
Detected Volatile Organics															
1,4-Dioxane	130	9.8	mg/kg	R	R	R	0.29 U	R	R	R	R	R	R	0.30 U	0.28 U [0.28 U]
2-Butanone	500	100	mg/kg	0.0062 U	0.0056 U	1.2 U	0.0057 U	0.0062 U	0.0070 U	2.2	0.0059 U	0.0061 U	0.0054 U	0.0059 U	0.0057 U [0.0056 U]
4-Methyl-2-pentanone	- -	- -	mg/kg	0.0062 U	0.0056 U	1.2 UJ	0.0057 U	0.0062 U	0.0070 U	0.13 UJ	0.0059 U	0.0061 U	0.0054 U	0.0059 U	0.0057 U [0.0056 U]
Acetone	500	100	mg/kg	0.031 U	0.028 U	29 U	0.029 U	0.031 U	0.093	3.4 U	0.087	0.036	0.051	0.030 U	0.028 U [0.028 U]
Benzene	44	2.9	mg/kg	0.0012 U	0.0011 U	7.3	0.0065	0.0012 U	0.0014 U	0.067 U	0.0023	0.0091	0.0040	0.0012 U	0.0011 U [0.0011 U]
Ethylbenzene	390	30	mg/kg	0.0012 U	0.0011 U	1.2 U	0.0042	0.0012 U	0.0014 U	0.28	0.013	0.027	0.065	0.0012 U	0.0011 U [0.00056 U]
Isopropylbenzene	- -	- -	mg/kg	0.0012 U	0.0011 U	1.2 U	0.0022	0.0012 U	0.0014 U	0.29	0.0069	0.0048	0.035	0.0012 U	0.0011 U [0.0011 U]
m&p-Xylene	- -	- -	mg/kg	0.0012 U	0.0011 U	8.6	0.018	0.0012 U	0.0014 U	0.16	0.0034	0.014	0.072	0.0012 U	0.0011 U [0.0011 U]
Methylcyclohexane	- -	- -	mg/kg	0.0062 U	0.0056 U	1.2 U	0.0057 U	0.0062 U	0.0070 U	0.13 U	0.018	0.0061 U	0.0054 U	0.0059 U	0.0057 U [0.0056 U]
Methylene Chloride	500	51	mg/kg	0.0062 U	0.0056 U	1.2 U	0.0057 U	0.0062 U	0.0070 U	0.13 U	0.011	0.0061 U	0.0054 U	0.0061	0.0057 U [0.0056 U]
o-Xylene	- -	- -	mg/kg	0.0012 U	0.0011 U	3.3	0.010	0.0012 U	0.0014 U	0.13 U	0.0012 U	0.0015	0.0059	0.0012 U	0.0011 U [0.0011 U]
Styrene	- -	- -	mg/kg	0.0062 U	0.0056 U	1.5	0.0057 U	0.0062 U	0.0070 U	0.13 U	0.0059 U	0.0061 U	0.0054 U	0.0059 U	0.0057 U [0.0056 U]
Toluene	500	100	mg/kg	0.0012 U	0.0011 U	7.1	0.0031	0.0012 U	0.0014 U	0.13 U	0.0012 U	0.0023	0.0027	0.0012 U	0.0011 U [0.0011 U]
Xylenes (total)	500	100	mg/kg	0.0012 U	0.0011 U	12	0.028	0.0012 U	0.0014 U	0.16	0.0034	0.016	0.078	0.0012 U	0.0011 U [0.0011 U]
Total BTEX	- -	- -	mg/kg	ND	ND	35	0.060	ND	ND	0.60	0.022	0.068	0.22	ND	ND [ND]
Detected Semivolatile Organics															
1,1'-Biphenyl	- -	- -	mg/kg	0.082 U	0.076 U	190 J	0.33	0.090 U	0.094 U	0.090 U	0.078 U	0.082 U	0.078 U	0.080 U	0.076 U [0.075 U]
2,4-Dimethylphenol	- -	- -	mg/kg	0.082 U	0.076 U	65 J	0.23 U	0.090 U	0.094 U	0.090 U	0.078 U	0.082 U	0.078 U	0.080 U	0.076 U [0.075 U]
2-Methylnaphthalene	- -	- -	mg/kg	0.082 U	0.076 U	680 DJ	2.6	0.090 U	0.094 U	0.34	0.078 U	0.082 U	0.078 U	0.16	0.076 U [0.075 U]
2-Methylphenol	500	100	mg/kg	0.082 U	0.076 U	40 J	0.23 U	0.090 U	0.094 U	0.090 U	0.078 U	0.082 U	0.078 U	0.080 U	0.076 U [0.075 U]
3&4-Methylphenol	- -	- -	mg/kg	0.082 U	0.076 U	89 J	0.23 U	0.090 U	0.094 U	0.090 U	0.078 U	0.082 U	0.078 U	0.080 U	0.076 U [0.075 U]
Acenaphthene	500	100	mg/kg	0.082 U	0.076 U	150 J	0.26	0.090 U	0.094 U	0.090 U	0.10	0.082 U	0.078 U	0.080 U	0.076 U [0.075 U]
Acenaphthylene	500	100	mg/kg	0.082 U	0.076 U	730 DJ	2.7	0.30	0.24	0.090 U	0.078 U	0.082 U	0.078 U	0.088	0.076 U [0.075 U]
Anthracene	500	100	mg/kg	0.082 U	0.19	840 DJ	1.6	0.79	0.28	0.12	0.25	0.082 U	0.078 U	0.10	0.076 U [0.075 U]
Benzo(a)anthracene	5.6	1	mg/kg	0.082 U	0.24	850 DJ	2.1	2.2	1.8	0.19	0.52	0.082 U	0.078 U	0.32	0.076 U [0.075 U]
Benzo(a)pyrene	1	1	mg/kg	0.082 U	0.25	810 DJ	4.1	2.4	2.4	0.18	0.49	0.082 U	0.078 U	0.33	0.076 U [0.075 U]
Benzo(b)fluoranthene	5.6	1	mg/kg	0.082 U	0.27	890 DJ	4.5	2.8	2.8	0.26	0.67	0.082 U	0.078 U	0.45	0.076 U [0.075 U]
Benzo(g,h,i)perylene	500	100	mg/kg	0.082 U	0.22	570 DJ	4.4	2.0	2.6	0.15	0.31	0.082 U	0.078 U	0.34	0.076 U [0.075 U]
Benzo(k)fluoranthene	56	1	mg/kg	0.082 U	0.10	190 J	1.3	0.92	1.0	0.090 U	0.22	0.082 U	0.078 U	0.16	0.076 U [0.075 U]
bis(2-Ethylhexyl)phthalate	- -	- -	mg/kg	0.082 U	0.11	3.9 UJ	1.0	0.52	0.31	0.44	1.1	0.082 U	0.32	0.11	0.15 [0.20]
Carbazole	- -	- -	mg/kg	0.082 U	0.076 U	450 DJ	0.27	0.094	0.094 U	0.090 U	0.084	0.082 U	0.078 U	0.080 U	0.076 U [0.075 U]
Chrysene	56	1	mg/kg	0.082 U	0.22	690 DJ	2.1	1.9	1.5	0.20	0.50	0.082 U	0.078 U	0.37	0.076 U [0.075 U]
Dibenzo(a,h)anthracene	0.56	0.33	mg/kg	0.082 U	0.076 U	110 J	0.98	0.37	0.44	0.090 U	0.096	0.082 U	0.078 U	0.080 U	0.076 U [0.075 U]
Dibenzofuran	350	14	mg/kg	0.082 U	0.076 U	760 DJ	0.46	0.19	0.094 U	0.090 U	0.078 U	0.082 U	0.078 U	0.087	0.076 U [0.075 U]
Di-n-Butylphthalate	- -	- -	mg/kg	0.082 U	0.076 U	3.9 UJ	0.23 U	0.090 U	0.094 U	1.4	0.078 U	0.082 U	0.078 U	0.080 U	0.076 U [0.075 U]
Fluoranthene	500	100	mg/kg	0.082 U	0.73	2,800 DJ	4.7	3.9	3.5	0.66	1.1	0.082 U	0.13	0.66	0.076 U [0.075 U]
Fluorene	500	100	mg/kg	0.082 U	0.076 U	800 DJ	1.0	0.25	0.094 U	0.12	0.14	0.082 U	0.078 U	0.080 U	0.076 U [0.075 U]
Indeno(1,2,3-cd)pyrene	5.6	0.5	mg/kg	0.082 U	0.17	480 DJ	3.1	1.6	2.0	0.12	0.26	0.082 U	0.078 U	0.27	0.076 U [0.075 U]
Naphthalene	500	100	mg/kg	0.082 U	0.076 U	4,900 DJ	0.78	0.13	0.24	0.13	0.078 U	0.082 U	0.078 U	0.19	0.076 U [0.075 U]
Phenanthrene	500	100	mg/kg	0.082 U	0.74	4,000 DJ	4.4	1.8	0.61	0.67	0.86	0.082 U	0.13	0.60	0.076 U [0.075 U]
Pyrene	500	100	mg/kg	0.082 U	0.64	2,400 DJ	4.8	4.3	2.9	0.51	0.89	0.082 U	0.12	0.68	0.076 U [0.075 U]
Total PAHs	- -	- -	mg/kg	ND	3.8	22,000 J	45	26	22	3.7	6.4	ND	0.38	4.7	ND [ND]
Detected Cyanide															
Cyanide	27	27	mg/kg	6.90	2.50	5.90	18.0	4.50	0.350 U	3.90	0.290 U	0.310 U	0.620	13.0	0.280 U [0.280 U]
Cyanide (Free)	- -	- -	mg/kg	0.0763 U	0.0216 J	0.0843	0.0693 U	0.0239 J	0.0836 U	0.0772 UJ	0.0743 UJ	NA	0.0701 U	0.0530 J	NA

See Notes on Page 5.

TABLE 3
SUMMARY OF DETECTED SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Location ID: / Sample Depth(Feet): / Date Collected:	Restricted Use SCRs Commercial	Restricted Use SCRs Residential	Units	SB-128 18.4 - 20.4 08/24/10	SB-129 10 - 12 08/18/10	SB-129 18.3 - 20.3 08/18/10	SB-130 28 - 29.4 08/17/10	SB-131 30.2 - 32.2 08/17/10	SB-132 16 - 18 08/19/10	SB-133 6.3 - 7.3 07/22/10	SB-133 24.4 - 26.4 07/22/10	SB-134 22 - 23.5 08/10/10	SB-135 30 - 31.5 08/12/10
Detected Volatile Organics													
1,4-Dioxane	130	9.8	mg/kg	0.29 U	R	R	R	R	0.27 U	0.30 U	0.29 U	0.26 U	0.29 U
2-Butanone	500	100	mg/kg	0.0058 U	0.0057 U	0.0057 U	0.0055 U	0.0057 U	0.0055 U	0.0059 U	0.0058 U	0.0052 U	0.0058 U
4-Methyl-2-pentanone	- -	- -	mg/kg	0.0058 U	0.0057 U	0.0057 U	0.0055 U	0.0057 UJ	0.0055 U	0.0059 U	0.0058 U	0.0052 U	0.0058 U
Acetone	500	100	mg/kg	0.029 U	0.029	0.028 U	0.028 U	0.028 U	0.027 U	0.048	0.071	0.029	0.037
Benzene	44	2.9	mg/kg	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.0010 U	0.0012 U
Ethylbenzene	390	30	mg/kg	0.00058 U	0.0015	0.0011 U	0.0011 U	0.00057 U	0.00055 U	0.0012 U	0.0012 U	0.0010 U	0.0012 U
Isopropylbenzene	- -	- -	mg/kg	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.0010 U	0.0012 U
m&p-Xylene	- -	- -	mg/kg	0.0012 U	0.0033	0.0012	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.0010 U	0.0012 U
Methylcyclohexane	- -	- -	mg/kg	0.0058 U	0.0057 U	0.0057 U	0.0055 U	0.0057 U	0.0055 U	0.0059 U	0.0058 U	0.0052 U	0.0058 U
Methylene Chloride	500	51	mg/kg	0.0058 U	0.0057 U	0.0057 U	0.0055 U	0.0057 U	0.0055 U	0.010	0.0097	0.0052 U	0.0058 U
o-Xylene	- -	- -	mg/kg	0.0012 U	0.0022	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.0010 U	0.0012 U
Styrene	- -	- -	mg/kg	0.0058 U	0.0057 U	0.0057 U	0.0055 U	0.0057 U	0.0055 U	0.0059 U	0.0058 U	0.0052 U	0.0058 U
Toluene	500	100	mg/kg	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.0010 U	0.0012 U
Xylenes (total)	500	100	mg/kg	0.0012 U	0.0055	0.0012	0.0011 U	0.0011 U	0.0011 U	0.0012 U	0.0012 U	0.0010 U	0.0012 U
Total BTEX	- -	- -	mg/kg	ND	0.010	0.0024	ND	ND	ND	ND	ND	ND	ND
Detected Semivolatile Organics													
1,1'-Biphenyl	- -	- -	mg/kg	0.079 U	0.076 U	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
2,4-Dimethylphenol	- -	- -	mg/kg	0.079 U	0.076 U	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
2-Methylnaphthalene	- -	- -	mg/kg	0.079 U	0.076 U	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
2-Methylphenol	500	100	mg/kg	0.079 U	0.076 U	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
3&4-Methylphenol	- -	- -	mg/kg	0.079 U	0.076 U	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Acenaphthene	500	100	mg/kg	0.079 U	0.076	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Acenaphthylene	500	100	mg/kg	0.079 U	0.10	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Anthracene	500	100	mg/kg	0.079 U	0.27	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Benzo(a)anthracene	5.6	1	mg/kg	0.23	0.59	0.11 J	0.075 U	0.081 U	0.11	0.084 U	0.099	0.074 U	0.078 U
Benzo(a)pyrene	1	1	mg/kg	0.26	0.56	0.098 J	0.075 U	0.081 U	0.11	0.084 U	0.096	0.074 U	0.078 U
Benzo(b)fluoranthene	5.6	1	mg/kg	0.33	0.51	0.12 J	0.075 U	0.081 U	0.10	0.084 U	0.12	0.074 U	0.078 U
Benzo(g,h,i)perylene	500	100	mg/kg	0.20	0.34	0.075 UJ	0.075 U	0.081 U	0.087	0.084 U	0.079 U	0.074 U	0.078 U
Benzo(k)fluoranthene	56	1	mg/kg	0.12	0.21	0.075 UJ	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
bis(2-Ethylhexyl)phthalate	- -	- -	mg/kg	0.15	0.14	0.82 J	0.25	0.081 U	0.87	0.12	0.28	0.25	0.15
Carbazole	- -	- -	mg/kg	0.079 U	0.076 U	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Chrysene	56	1	mg/kg	0.23	0.46	0.088 J	0.075 U	0.081 U	0.095	0.084 U	0.079	0.074 U	0.078 U
Dibenzo(a,h)anthracene	0.56	0.33	mg/kg	0.079 U	0.082	0.075 UJ	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Dibenzofuran	350	14	mg/kg	0.079 U	0.076 U	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Di-n-Butylphthalate	- -	- -	mg/kg	0.079 U	0.076 U	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Fluoranthene	500	100	mg/kg	0.43	1.0	0.16	0.075 U	0.081 U	0.27	0.084 U	0.22	0.074 U	0.078 U
Fluorene	500	100	mg/kg	0.079 U	0.16	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Indeno(1,2,3-cd)pyrene	5.6	0.5	mg/kg	0.17	0.24	0.075 UJ	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Naphthalene	500	100	mg/kg	0.079 U	0.076 U	0.075 U	0.075 U	0.081 U	0.073 U	0.084 U	0.079 U	0.074 U	0.078 U
Phenanthrene	500	100	mg/kg	0.18	0.59	0.075 U	0.075 U	0.081 U	0.30	0.084 U	0.13	0.074 U	0.078 U
Pyrene	500	100	mg/kg	0.39	1.8	0.20 J	0.075 U	0.081 U	0.31	0.084 U	0.19	0.074 U	0.078 U
Total PAHs	- -	- -	mg/kg	2.5	7.0	0.78 J	ND	ND	1.4	ND	0.93	ND	ND
Detected Cyanide													
Cyanide	27	27	mg/kg	0.300 U	1.10	0.280 U	0.280 U	0.300 U	7.40	11.0	1.20	0.280 U	0.290 U
Cyanide (Free)	- -	- -	mg/kg	0.0700 U	0.0675 U	NA	0.0673 U	0.0719 U	0.0198 J	0.0650 U	0.0674 U	0.0711 U	0.0689 U

See Notes on Page 5.

TABLE 3
SUMMARY OF DETECTED SUBSURFACE SOIL SAMPLE ANALYTICAL RESULTS

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Lab Qualifiers	Definition
D	Compound quantitated using a secondary dilution.
J	Indicates an estimated value.
ND	None detected.
R	Rejected.
U	The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

TABLE 4
SUMMARY OF DETECTED SURFACE SOIL SAMPLE ANALYTICAL RESULTS

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Location ID: / Sample Depth(Feet): / Date Collected:	Units	SS-100 0 - 0.2 09/02/10	SS-101 0 - 0.2 09/02/10	SS-102 0 - 0.2 09/02/10	SS-103 0 - 0.2 09/02/10	SS-104 0 - 0.2 09/02/10	SS-105 0 - 0.2 09/02/10	SS-106 0 - 0.2 09/02/10	SS-107 0 - 0.2 09/02/10	SS-A 0 - 1 08/31/10	SS-B 0 - 1 08/31/10	SS-C 0 - 1 08/31/10	SS-D 0 - 1 08/31/10	SS-E 0 - 1 09/01/10	SS-F 0 - 1 09/01/10	SS-G 0 - 1 09/01/10
Detected Volatile Organics																
1,4-Dioxane	mg/kg	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Methylene Chloride	mg/kg	0.0056 U	0.0068 U	0.0064 U	0.0054 U	0.0061 U	0.0076 U	0.0067 U	0.0061 U	0.0055 U	0.0056 U	0.0065	0.0058 U	0.0060 U	0.0073	0.0055 U
Total BTEX	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Detected Semivolatile Organics																
2-Methylnaphthalene	mg/kg	0.075 U	0.18 U	1.7 U	0.14 U	0.081 U	0.10 U	0.090 U	0.082 U	0.086	0.75 U	0.83 U	0.39 U	0.080 U	0.20	0.74 U
Acenaphthene	mg/kg	0.075 U	0.18 U	1.7 U	0.14 U	0.081 U	0.10 U	0.090 U	0.082 U	0.10	0.75 U	0.83 U	0.39 U	0.080 U	0.071 U	0.74 U
Acenaphthylene	mg/kg	0.075 U	2.0	4.4	0.31	0.081 U	0.10 U	0.090 U	0.082 U	0.58	0.83	1.6	1.3	0.40	0.51	2.7
Anthracene	mg/kg	0.075 U	1.5	20	0.38	0.090	0.10 U	0.38	0.082 U	1.1	3.3	1.2	1.3	0.38	0.69	3.5
Benzo(a)anthracene	mg/kg	0.33	9.0	72	1.7	0.55	0.12	1.3	0.41	3.3	14	11	7.0	1.6	2.7	17
Benzo(a)pyrene	mg/kg	0.42	8.8	60	1.8	0.57	0.14	1.1	0.50	3.1	11	7.2	6.0	1.1	2.8	16
Benzo(b)fluoranthene	mg/kg	0.60	12	80	2.4	0.80	0.20	1.3	0.62	5.0	15	19	12	2.0	4.1	21
Benzo(g,h,i)perylene	mg/kg	0.48	5.3	34	1.5	0.45	0.12	0.68	0.57	3.2	6.3	12	8.2	1.1	3.2	11
Benzo(k)fluoranthene	mg/kg	0.20	4.5	25	0.80	0.24	0.10 U	0.49	0.19	1.3	5.4	5.7	4.1	0.67	1.4	7.3
bis(2-Ethylhexyl)phthalate	mg/kg	0.090	0.19	1.7 U	0.59	0.081 U	0.10 U	0.090 U	0.082 U	0.074 U	0.75 U	0.83 U	0.39 U	0.080 U	0.071 U	0.74 U
Carbazole	mg/kg	0.075 U	0.32	1.7 U	0.14 U	0.081 U	0.10 U	0.090 U	0.082 U	0.34	0.82	0.83 U	0.39 U	0.13	0.35	1.0
Chrysene	mg/kg	0.34	7.5	55	1.5	0.53	0.15	1.1	0.35	2.9	12	12	6.3	1.4	2.6	14
Dibenzo(a,h)anthracene	mg/kg	0.10	1.8	11	0.35	0.12	0.10 U	0.18	0.098	0.66	2.0	2.5	1.8	0.27	0.57	3.4
Dibenzofuran	mg/kg	0.075 U	0.18 U	1.7 U	0.14 U	0.081 U	0.10 U	0.090 U	0.082 U	0.24	0.75 U	0.83 U	0.39 U	0.17	0.19	0.83
Fluoranthene	mg/kg	0.50	15	150	3.1	1.0	0.23	2.2	0.74	6.0	24	23	10	3.3	6.3	29
Fluorene	mg/kg	0.075 U	0 35	4.5	0.14 U	0.081 U	0.10 U	0.090 U	0.082 U	0.38	1.1	0.83 U	0.39 U	0.11	0.19	1.4
Indeno(1,2,3-cd)pyrene	mg/kg	0.38	5.2	33	1.2	0.36	0.10 U	0.62	0.40	2.8	5.9	10	7.0	0.95	2.6	9.8
Naphthalene	mg/kg	0.075 U	0.18 U	1.7 U	0.14 U	0.081 U	0.10 U	0.090 U	0.082 U	0.13	0.75 U	1.4	0.39 U	0.080 U	0.33	0.78
Phenanthrene	mg/kg	0.18	3.6	47	1.0	0.44	0.10 U	0.84	0.16	3.3	12	9.4	2.7	2.1	3.7	13
Pyrene	mg/kg	0.53	13	120	2.8	0.83	0.22	2.0	0.73	5.5	20	20	10	3.1	5.9	23
Total PAHs	mg/kg	4.1	90	720	19	6.0	1.2	12	4.8	39	130	140	78	18	38	170
Detected Cyanide																
Cyanide	mg/kg	0.280 U	0.340 U	13.0	0.270 U	0.300 U	0.380 U	0.340 U	0.310 U	4.20	11.0	22.0	56.0	4.40	6.70	1.30
Cyanide (Free)	mg/kg	0.0679 UJ	0.0249 J	0.0313 J	0.0199 J	0.0218 J	0.0365 J	0.0809 UJ	0.0741 UJ	0.126 J	0.0635 J	2.65 J	0.238 J	0.0703 J	0.0194 J	0.0662 UJ

Lab Qualifiers	Definition
J	Indicates an estimated value.
R	Rejected.
U	The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

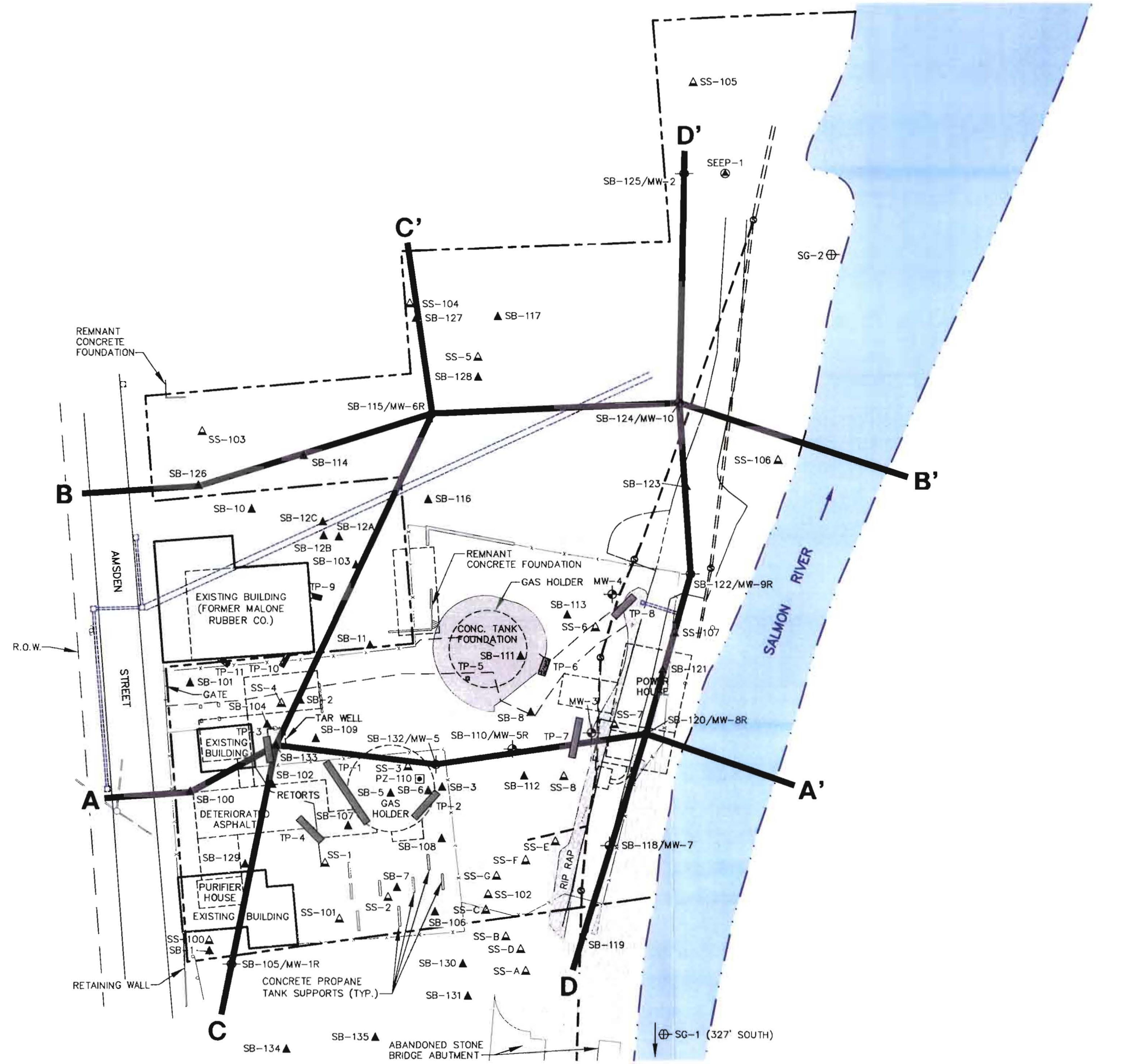
TABLE 5
SUMMARY OF DETECTED GROUND WATER SAMPLE ANALYTICAL RESULTS

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Location ID: / Date Collected:	NYSDEC TOGS 1.1.1 Water Guidance Values	Units	MW-1R 09/09/10	MW-2 09/09/10	MW-3 09/08/10	MW-4 10/14/10	MW-5R 10/14/10	MW-6 10/14/10	MW-7 10/14/10	MW-8R 10/14/10	MW-9R 10/14/10	MW-10 09/09/10	SEEP-1 10/14/10
Detected Volatile Organics													
2-Butanone	- -	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	17	1.0 U [1.0 U]	1.0 U	1.0 U
Benzene	1	ug/L	0.50 U	48	1.4	0.50 U	26	96	0.50 U	1.1	0.50 U [0.50 U]	21	7.5
Chloroform	7	ug/L	1.0 U	1.0 U	1.0 U	1.0 U	10 U	10 U	1.0 U	1.0 U	1.1 [1.1]	1.0 U	1.0 U
Cyclohexane	- -	ug/L	3.8	1.0 U	1.0 U	1.0 U	10 U	110	1.0 U	21	1.0 U [1.0 U]	1.0 U	1.0 U
Ethylbenzene	5	ug/L	3.5	100	1.0 U	1.0 U	360	270	1.0 U	1.0 U	1.0 U [1.0 U]	34	7.4
Isopropylbenzene	5	ug/L	1.0 U	23	1.0 U	1.0 U	96	57	1.0 U	1.0 U	1.0 U [1.0 U]	12	2.0
m&p-Xylene	- -	ug/L	23	46	1.4	1.0 U	850	370	1.0 U	14	1.0 U [1.0 U]	24	2.0
Methyl tert-butyl ether	- -	ug/L	0.50 U	13	0.50 U	0.50 U	5.0 U	18	0.50 U	2.6	0.50 U [0.50 U]	8.8	4.7
Methylcyclohexane	- -	ug/L	3.9	55	1.0 U	1.0 U	190	110	1.0 U	10	1.0 U [1.0 U]	51	6.2
o-Xylene	- -	ug/L	4.5	5.9	1.4	1.0 U	89	24	1.0 U	8.2	1.0 U [1.0 U]	4.0	1.0 U
Toluene	5	ug/L	1.8	3.8	1.0 U	1.0 U	83	39	1.0 U	1.6	1.0 U [1.0 U]	3.2	1.0 U
Xylenes (total)	5	ug/L	28	52	2.8	1.0 U	940	390	1.0 U	22	1.0 U [1.0 U]	28	2.0
Total BTEX	- -	ug/L	56	250	5.6	ND	2,300	1,200	ND	39	ND [ND]	110	19
Detected Semivolatile Organics													
2-Methylnaphthalene	- -	ug/L	2.0 U	17	2.0 U	2.1 U	800	25	2.1 U	2.6	2.1 U [2.1 U]	6.0	2.1
3&4-Methylphenol	- -	ug/L	2.0 U	7.2	2.0 U	0.52 U	5.3 U	0.52 U	0.53 U	0.50 U	0.52 U [0.52 U]	2.0 U	14
Acenaphthylene	- -	ug/L	2.0 U	2.0 U	3.0	2.1 U	21 U	2.1 U	2.1 U	2.0 U	2.1 U [2.1 U]	2.0 U	2.1 U
Fluoranthene	50	ug/L	2.0 U	2.0 U	2.0 U	2.1 U	21 U	2.1 U	2.2	2.0 U	2.1 U [2.1 U]	2.0 U	2.1 U
Naphthalene	10	ug/L	2.0 U	10	2.0 U	0.52 U	320	67	0.53 U	5.3	0.52 U [0.52 U]	8.9	0.52 U
Total PAHs	- -	ug/L	ND	27	3.0	ND	1,100	92	2.2	7.9	ND [ND]	15	2.1
Detected Cyanide													
Cyanide	200	ug/L	10.0 U	10.0 U	100	160	10.0 U	10.0 U	160	10.0 U	10.0 U [10.0 U]	10.0 U	10.0 U

Lab Qualifiers	Definition
ND	None detected.
U	The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

Figures



NOTES:

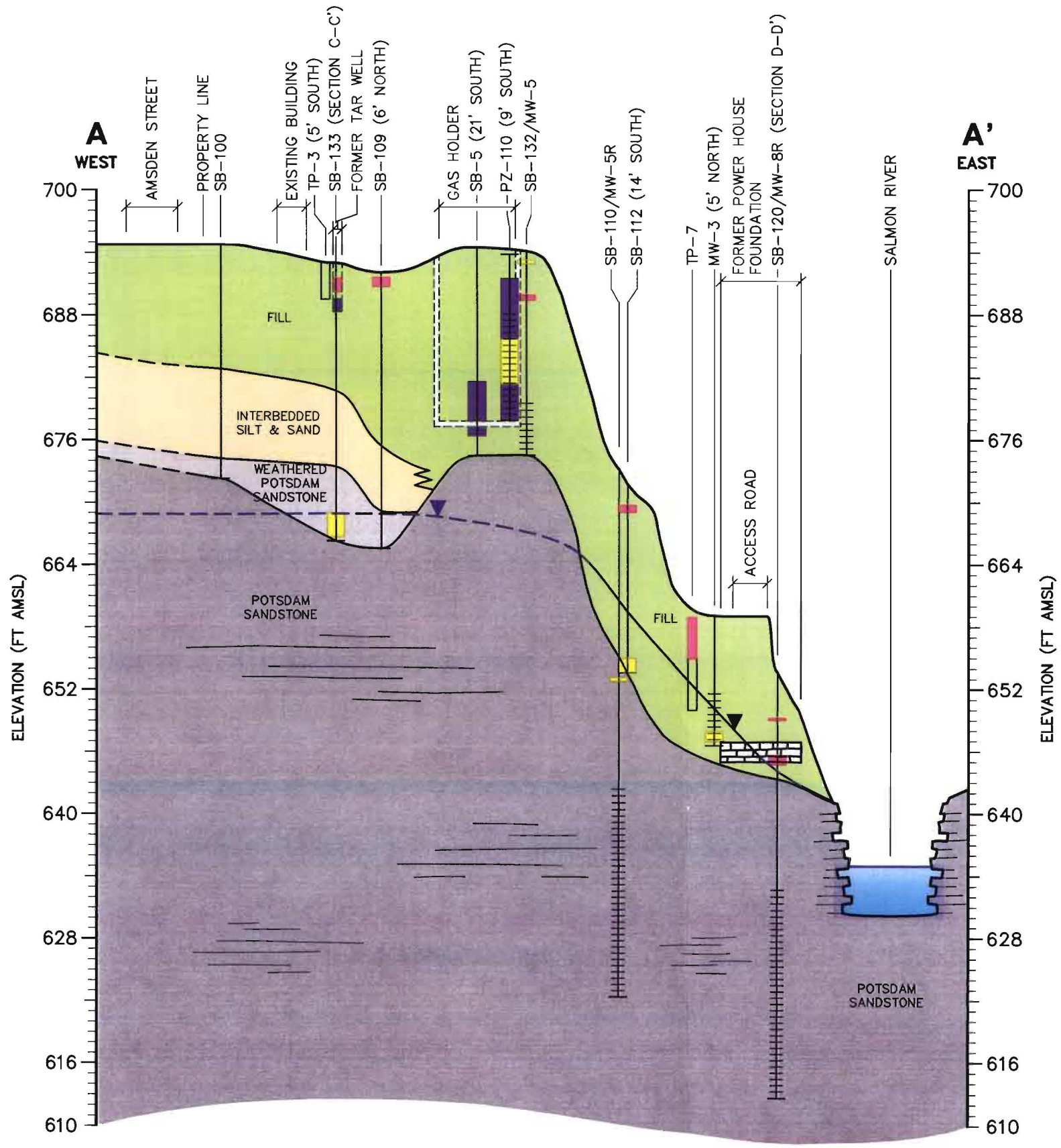
1. BASE MAP PREPARED FROM DRAWING FILE BY "TRC" TITLED SEWER ACCESS ROAD BUILT – FIGURE 2 – PROJECT NO. 106355001000-000016, DATED 4/04/09, AT A SCALE OF 1"=20'. MAP IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE) AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NORTH ARROW AS SHOWN INDICATES GRID NORTH REFERENCED TO NAD83 AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE).
2. ALL LOCATIONS ARE APPROXIMATE.

NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

CROSS SECTION LOCATION MAP

ARCADIS

FIGURE **1**



LEGEND:

- SB-100 — WELL OR BORING ID
- GROUND SURFACE
- GROUND WATER
- LITHOLOGIC CONTACT (DASHED WHERE INFERRED)
- SCREEN
- BOTTOM OF BORING
- FILL
- INTERBEDDED SILT AND SAND
- WEATHERED POTSDAM SANDSTONE
- POTSDAM SANDSTONE (BEDROCK)
- SHEEN/STAINING
- VISCOUS TAR
- SOLID TAR

→ WILL NEED TO BE UPDATED W/ MUST SUBMIT COLOR CHART

NOTE:

HORIZONTAL POSITIONS ARE RELATIVE TO NORTH AMERICAN DATUM OF 1983, NEW YORK EAST ZONE, AND VERTICAL POSITIONS ARE RELATIVE TO NORTH AMERICAN VERTICAL DATUM OF 1988..

VERTICAL EXAGGERATION = 5X

0 12' 24'
VERTICAL SCALE

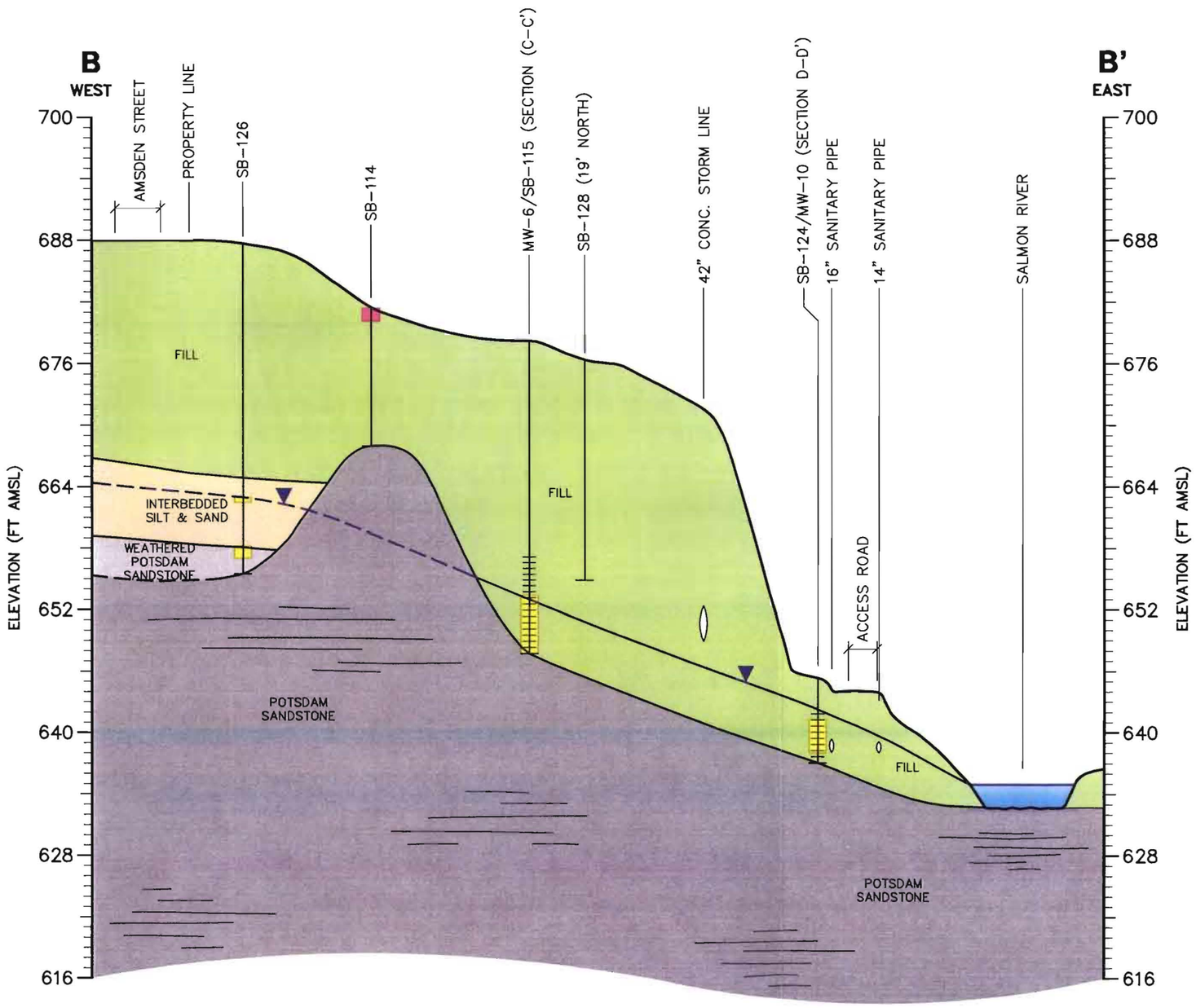
0 60' 120'
HORIZONTAL SCALE

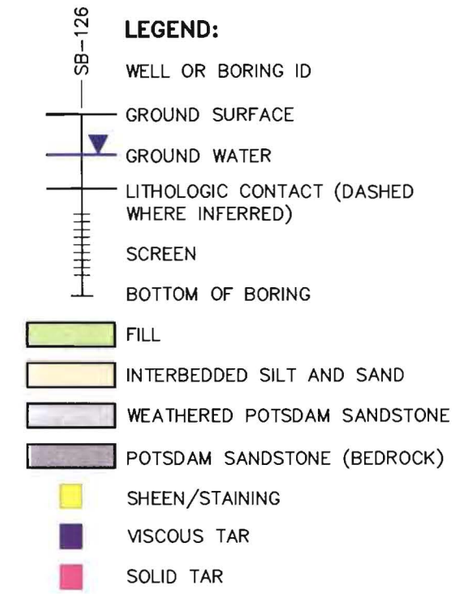
NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

GEOLOGIC CROSS SECTION A - A'

ARCADIS

FIGURE
2





NOTE:

HORIZONTAL POSITIONS ARE RELATIVE TO NORTH AMERICAN DATUM OF 1983, NEW YORK EAST ZONE, AND VERTICAL POSITIONS ARE RELATIVE TO NORTH AMERICAN VERTICAL DATUM OF 1988.

VERTICAL EXAGGERATION = 5X

0 12' 24'

VERTICAL SCALE

0 60' 120'

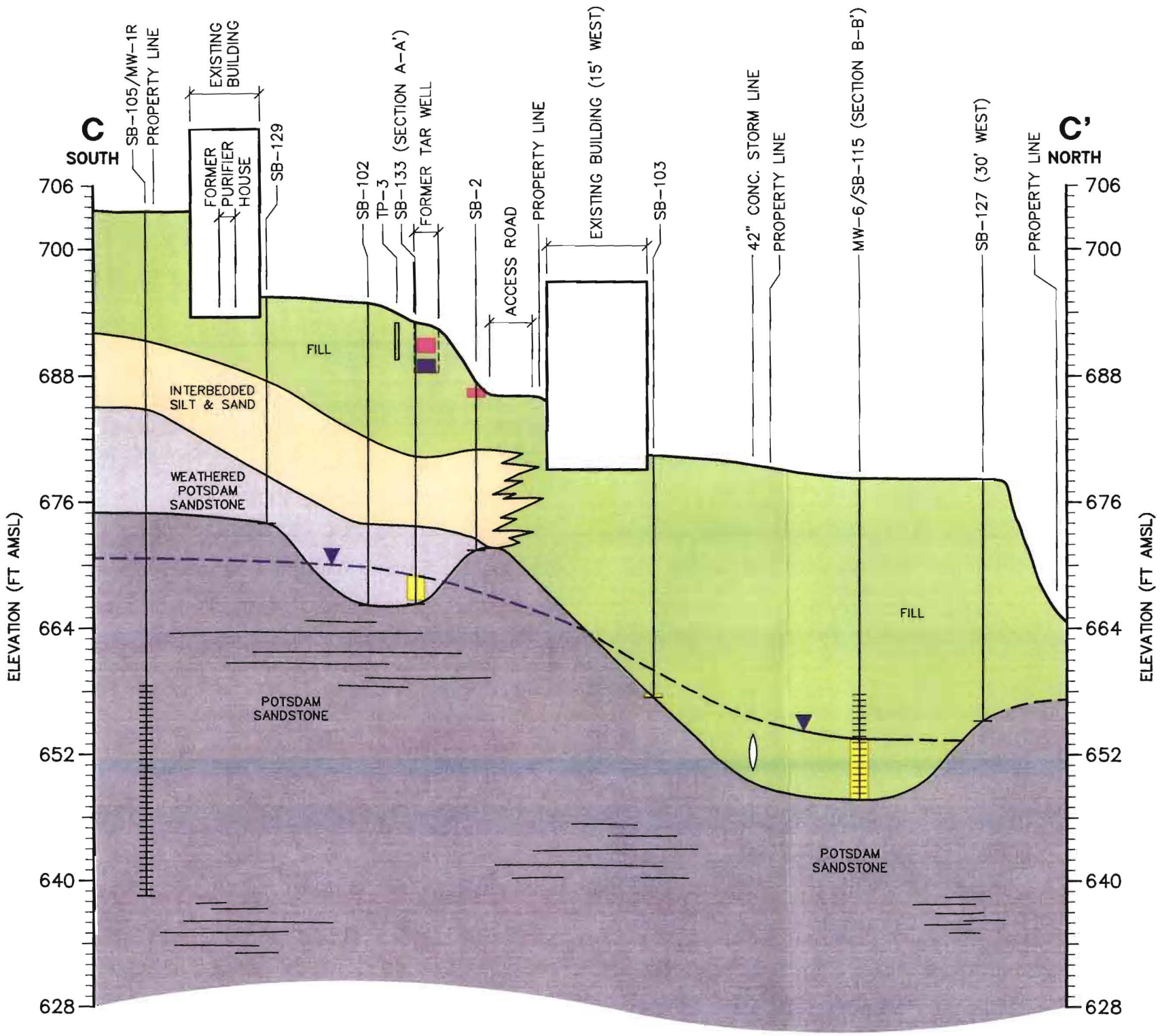
HORIZONTAL SCALE

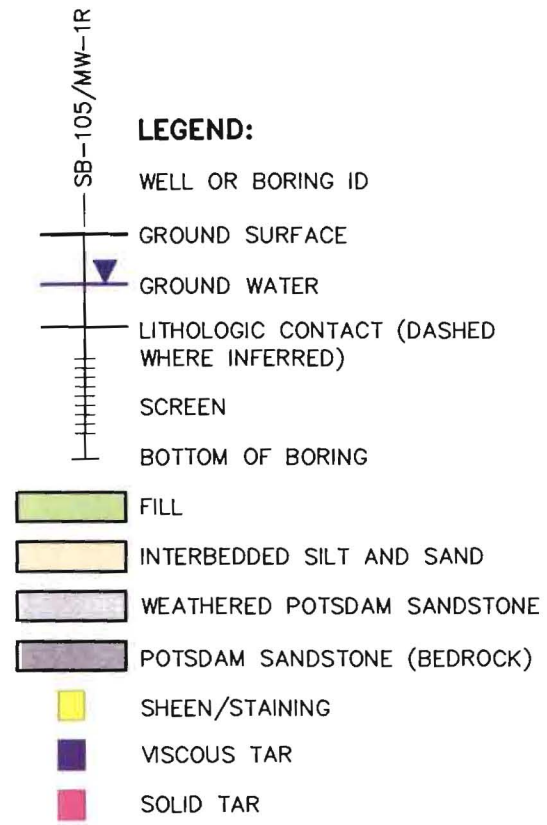
NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

GEOLOGIC CROSS SECTION B - B'

ARCADIS

FIGURE
3





NOTE:

HORIZONTAL POSITIONS ARE RELATIVE TO NORTH AMERICAN DATUM OF 1983, NEW YORK EAST ZONE, AND VERTICAL POSITIONS ARE RELATIVE TO NORTH AMERICAN VERTICAL DATUM OF 1988.

VERTICAL EXAGGERATION = 5X

0 12' 24'

VERTICAL SCALE

0 60' 120'

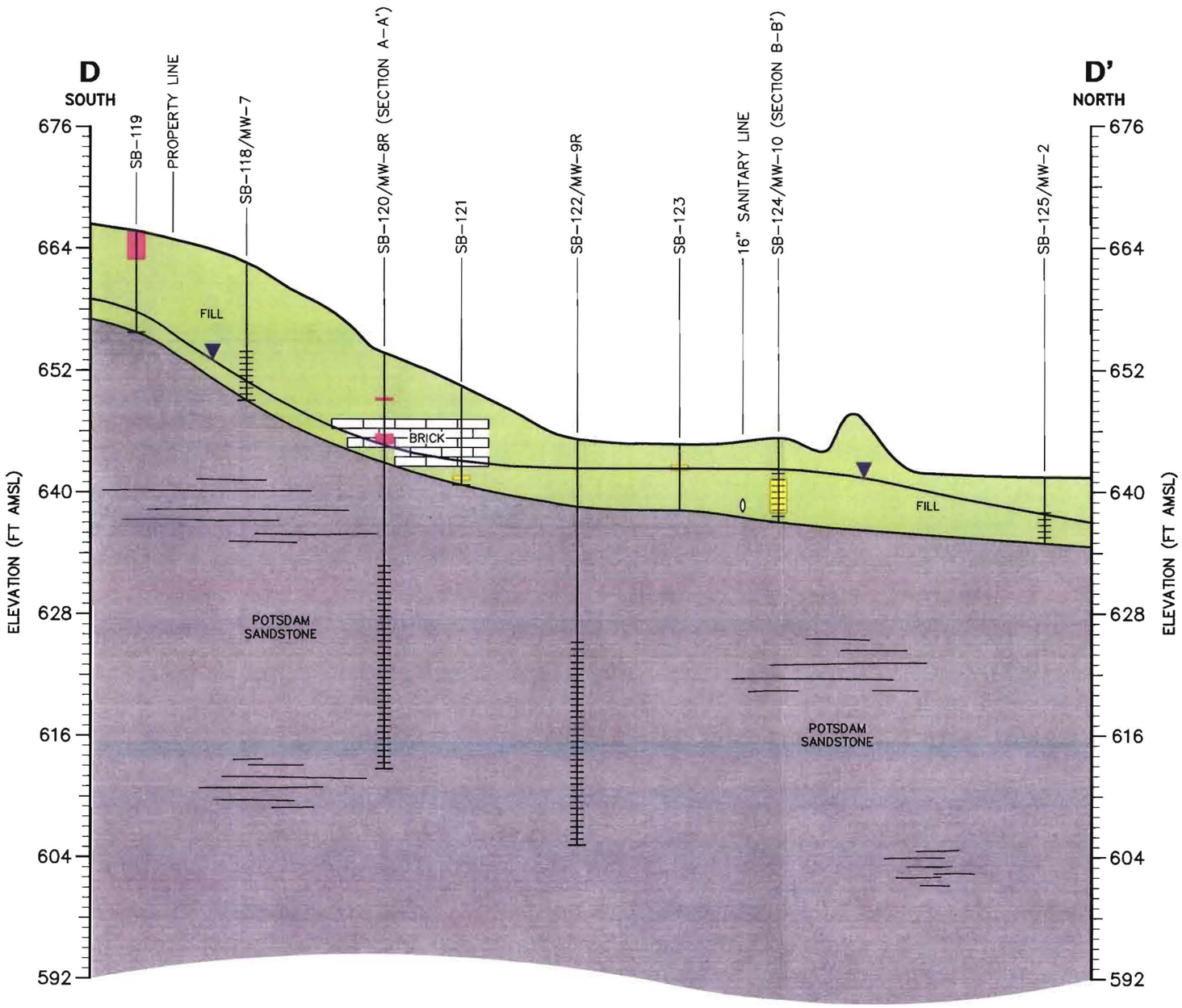
HORIZONTAL SCALE

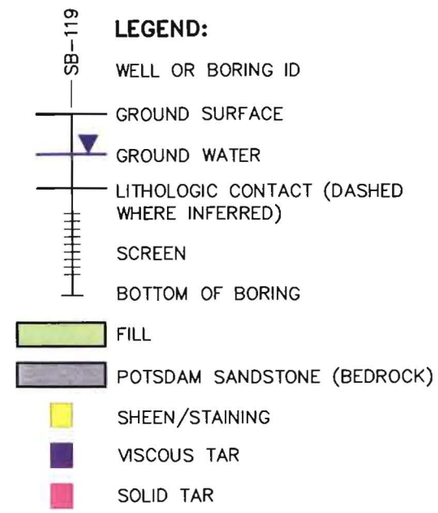
NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

GEOLOGIC CROSS SECTION C - C'

ARCADIS

FIGURE
4





NOTE:

HORIZONTAL POSITIONS ARE RELATIVE TO NORTH AMERICAN DATUM OF 1983, NEW YORK EAST ZONE, AND VERTICAL POSITIONS ARE RELATIVE TO NORTH AMERICAN VERTICAL DATUM OF 1988.

VERTICAL EXAGGERATION = 5X

0 12' 24'

VERTICAL SCALE

0 60' 120'

HORIZONTAL SCALE

NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

GEOLOGIC CROSS SECTION D - D'

ARCADIS

FIGURE
5

LEGEND:

PZ-110	PIEZOMETER LOCATION
SG-2	STREAM GAUGE LOCATION
MW-3	MONITORING WELL LOCATION
SB-8	SOIL BORING LOCATION
SS-6	SURFACE SOIL SAMPLE LOCATION
TP-8	TEST PIT
SEEP-1	SEEP SAMPLE LOCATION
	NATIONAL GRID PROPERTY LINE
	TOPOGRAPHIC CONTOUR (4/04/2009)
	HISTORIC STRUCTURE BASED ON 1923 SANBORN MAP
	APPROXIMATE EDGE OF WATER
	SANITARY PIPE AND MANHOLE
	STORM LINE AND CATCH BASIN
	FENCE
	GUARD RAIL
	UTILITY POLE
(651.25)	GROUND WATER ELEVATION
649	GROUND WATER ELEVATION CONTOUR
	APPROXIMATE EXTENT OF DRY OVERBURDEN

NOTES:

1. BASE MAP PREPARED FROM SURVEY CONDUCTED BY THEW ASSOCIATES, DATED 9/13/10. MAP IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE) AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NORTH ARROW AS SHOWN INDICATES GRID NORTH REFERENCED TO NAD83 AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE).
2. ALL LOCATIONS ARE APPROXIMATE.

0 60' 120'

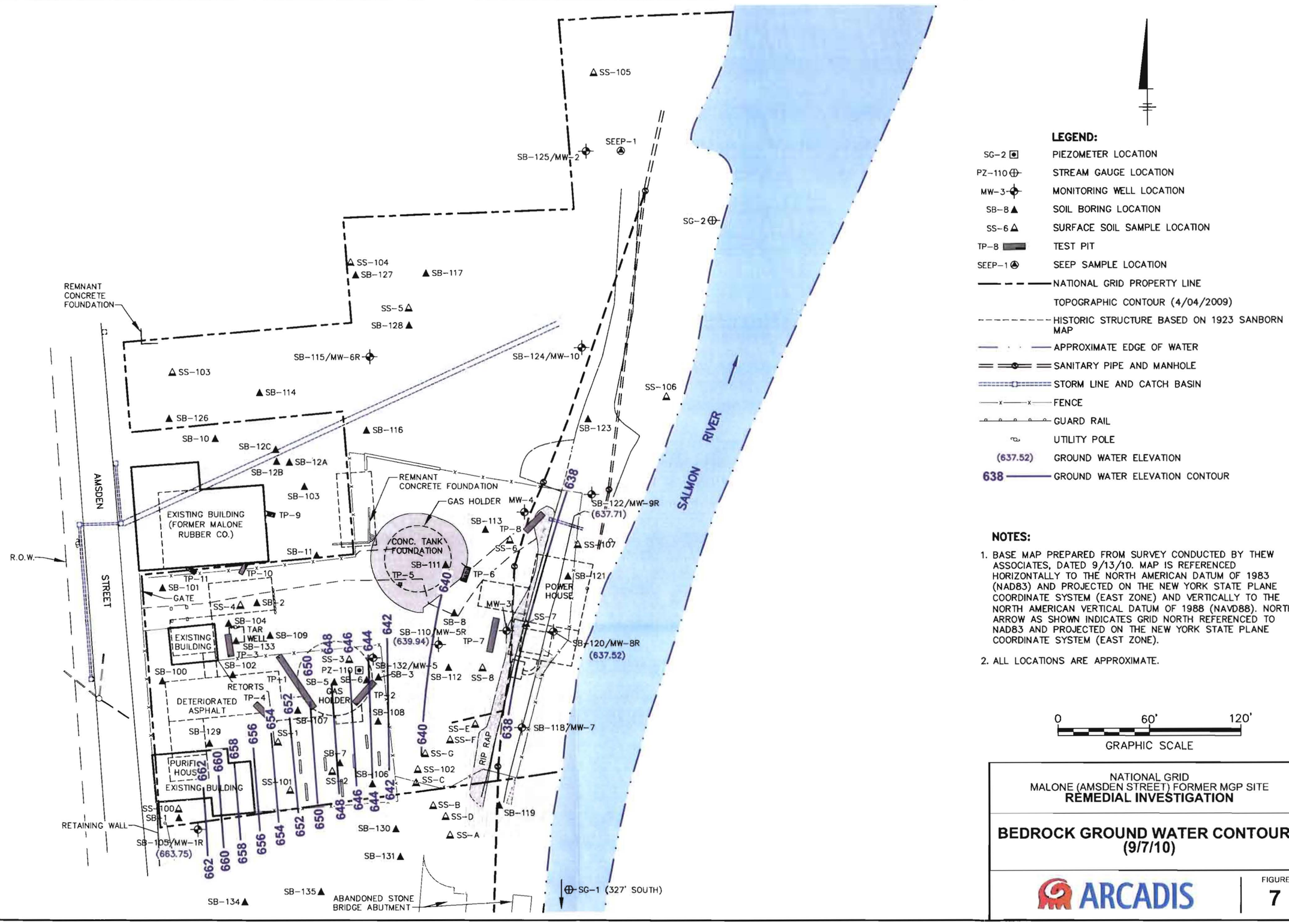
GRAPHIC SCALE

NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

OVERBURDEN GROUND WATER CONTOURS (9/7/10)

ARCADIS

FIGURE 6



LEGEND:

SG-2	PIEZOMETER LOCATION
PZ-110	STREAM GAUGE LOCATION
MW-3	MONITORING WELL LOCATION
SB-8	SOIL BORING LOCATION
SS-6	SURFACE SOIL SAMPLE LOCATION
TP-8	TEST PIT
SEEP-1	SEEP SAMPLE LOCATION
	NATIONAL GRID PROPERTY LINE
	TOPOGRAPHIC CONTOUR (4/04/2009)
	HISTORIC STRUCTURE BASED ON 1923 SANBORN MAP
	APPROXIMATE EDGE OF WATER
	SANITARY PIPE AND MANHOLE
	STORM LINE AND CATCH BASIN
	FENCE
	GUARD RAIL
	UTILITY POLE
(637.52)	GROUND WATER ELEVATION
638	GROUND WATER ELEVATION CONTOUR

NOTES:

1. BASE MAP PREPARED FROM SURVEY CONDUCTED BY THEW ASSOCIATES, DATED 9/13/10. MAP IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE) AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NORTH ARROW AS SHOWN INDICATES GRID NORTH REFERENCED TO NAD83 AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE).
2. ALL LOCATIONS ARE APPROXIMATE.

0 60' 120'

GRAPHIC SCALE

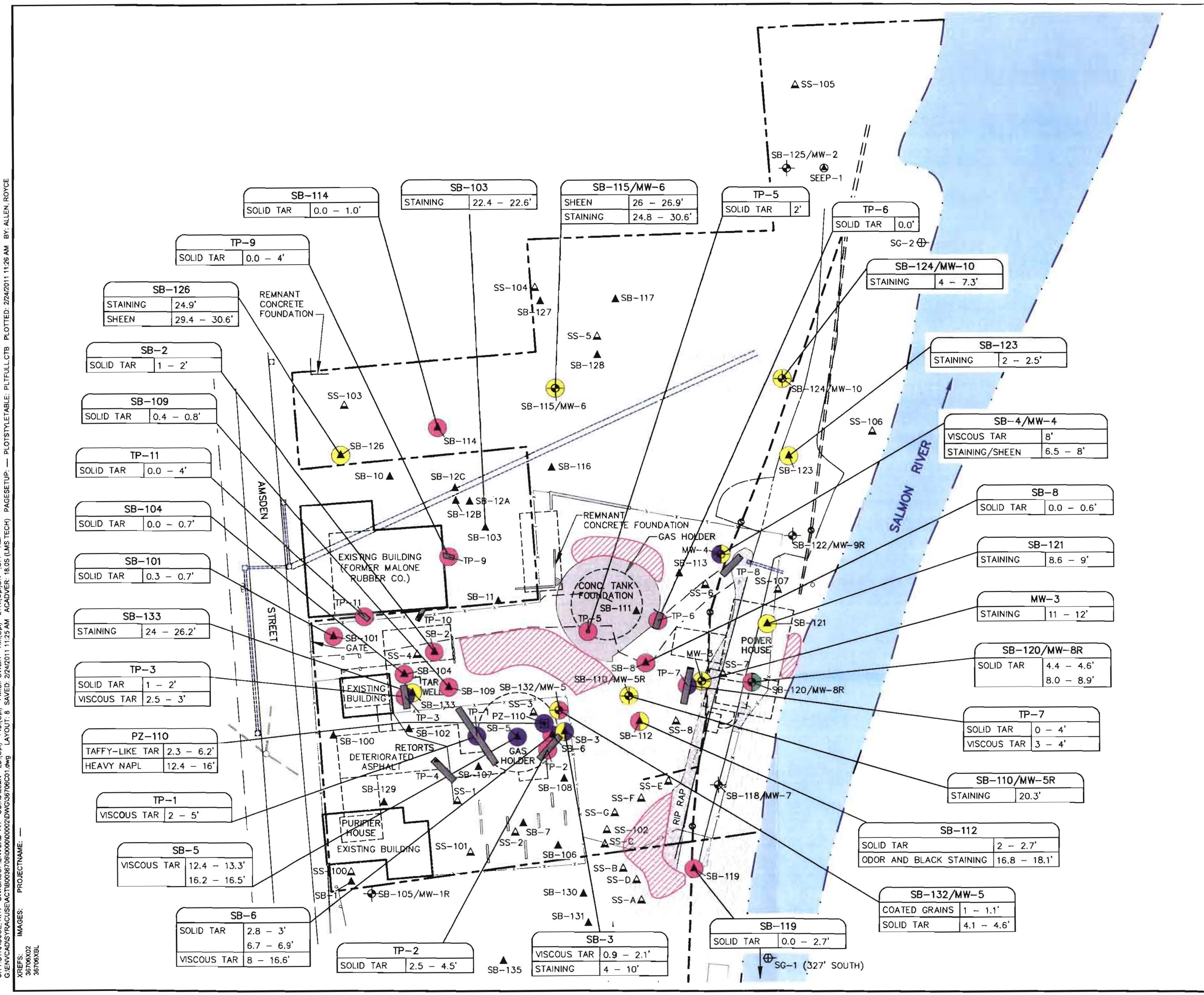
NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

BEDROCK GROUND WATER CONTOURS (9/7/10)

ARCADIS

FIGURE 7

CITY:SYRACUSE, N.Y. DIV/GROUP:ENVCAD-141 DB:R.ALLEN LD:(Opt) PIC:(Opt) PM:S.POWLIN TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\B003670610000\000002\DWG\367060W02.dwg LAYOUT: 7 SAVED: 3/2/2011 10:25 AM ACADVER: 18.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 3/2/2011 10:25 AM BY: JONES, WENDY
XREFS: IMAGES: PROJECTNAME: ---
367060X02
367060X8L



LEGEND:

Symbol	Description
PZ-110	PIEZOMETER LOCATION
SG-2	STREAM GAUGE LOCATION
MW-3	MONITORING WELL LOCATION
SB-8	SOIL BORING LOCATION
SS-6	SURFACE SOIL SAMPLE LOCATION
TP-8	TEST PIT
SEEP-1	SEEP SAMPLE LOCATION
	NATIONAL GRID PROPERTY LINE
	TOPOGRAPHIC CONTOUR (4/04/2009)
	HISTORIC STRUCTURE BASED ON 1923 SANBORN MAP
	APPROXIMATE EDGE OF WATER
	SANITARY PIPE AND MANHOLE
	STORM LINE AND CATCH BASIN
	FENCE
	UTILITY POLE
	SOLID TAR ABOVE 5 FEET BGS
	SOLID TAR BELOW 5 FEET BGS
	VISCOUS TAR
	SHEEN/STAINING
	APPROXIMATE AREA OF SOLID TAR OBSERVED AT LAND SURFACE

NOTES:

1. BASE MAP PREPARED FROM SURVEY CONDUCTED BY THEW ASSOCIATES, DATED 9/13/10. MAP IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE) AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NORTH ARROW AS SHOWN INDICATES GRID NORTH REFERENCED TO NAD83 AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE).
2. ALL LOCATIONS ARE APPROXIMATE.

0 60' 120'

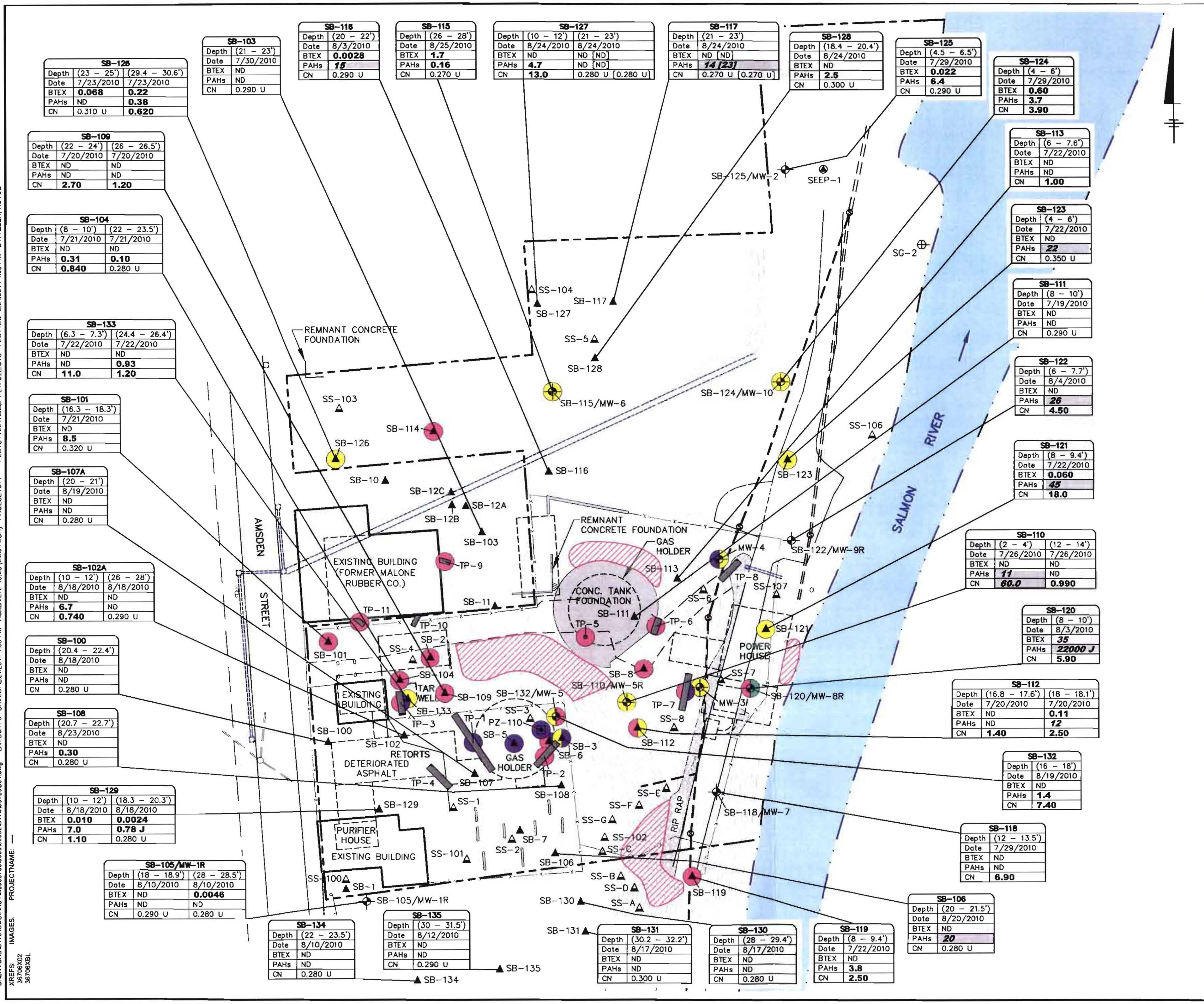
GRAPHIC SCALE

NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

OBSERVED IMPACTS

ARCADIS

FIGURE
8



SB-126		
Depth	(23 – 25')	(29.4 – 30.6')
Date	7/23/2010	7/23/2010
BTEX	**0.068**	**0.22**
PAHs	ND	**0.38**
CN	0.310 U	**0.620**

SB-103	
Depth	(21 – 23')
Date	7/30/2010
BTEX	ND
PAHs	ND
CN	0.290 U

SB-116	
Depth	(20 – 22')
Date	8/3/2010
BTEX	**0.0028**
PAHs	***15***
CN	0.290 U

SB-115	
Depth	(26 – 28')
Date	8/25/2010
BTEX	**1.7**
PAHs	**0.16**
CN	0.270 U

SB-127		
Depth	(10 – 12')	(21 – 23')
Date	8/24/2010	8/24/2010
BTEX	ND	ND [ND]
PAHs	**4.7**	ND [ND]
CN	**13.0**	0.280 U [0.280 U]

SB-117	
Depth	(21 – 23')
Date	8/24/2010
BTEX	ND [ND]
PAHs	***14 [23]***
CN	0.270 U [0.270 U]

SB-128	
Depth	(18.4 – 20.4')
Date	8/24/2010
BTEX	ND
PAHs	**2.5**
CN	0.300 U

SB-125	
Depth	(4.5 – 6.5')
Date	7/29/2010
BTEX	**0.022**
PAHs	**6.4**
CN	0.290 U

SB-124	
Depth	(4 – 6')
Date	7/29/2010
BTEX	**0.60**
PAHs	**3.7**
CN	**3.90**

SB-113	
Depth	(6 – 7.6')
Date	7/22/2010
BTEX	ND
PAHs	ND
CN	**1.00**

SB-123	
Depth	(4 – 6')
Date	7/22/2010
BTEX	ND
PAHs	***22***
CN	0.350 U

SB-111	
Depth	(8 – 10')
Date	7/19/2010
BTEX	ND
PAHs	ND
CN	0.290 U

SB-122	
Depth	(6 – 7.7')
Date	8/4/2010
BTEX	ND
PAHs	***26***
CN	**4.50**

SB-121	
Depth	(8 – 9.4')
Date	7/22/2010
BTEX	**0.060**
PAHs	***45***
CN	**18.0**

SB-110		
Depth	(2 – 4')	(12 – 14')
Date	7/26/2010	7/26/2010
BTEX	ND	ND
PAHs	***11***	ND
CN	***60.0***	**0.990**

SB-120	
Depth	(8 – 10')
Date	8/3/2010
BTEX	***35***
PAHs	***22000 J***
CN	**5.90**

SB-112		
Depth	(16.8 – 17.6')	(18 – 18.1')
Date	7/20/2010	7/20/2010
BTEX	ND	**0.11**
PAHs	ND	***12***
CN	**1.40**	**2.50**

SB-132	
Depth	(16 – 18')
Date	8/19/2010
BTEX	ND
PAHs	**1.4**
CN	**7.40**

SB-118	
Depth	(12 – 13.5')
Date	7/29/2010
BTEX	ND
PAHs	ND
CN	**6.90**

SB-106	
Depth	(20 – 21.5')
Date	8/20/2010
BTEX	ND
PAHs	***20***
CN	0.280 U

SB-119	
Depth	(8 – 9.4')
Date	7/22/2010
BTEX	ND
PAHs	**3.8**
CN	**2.50**

SB-130	
Depth	(28 – 29.4')
Date	8/17/2010
BTEX	ND
PAHs	ND
CN	0.280 U

SB-131	
Depth	(30.2 – 32.2')
Date	8/17/2010
BTEX	ND
PAHs	ND
CN	0.300 U

SB-135	
Depth	(30 – 31.5')
Date	8/12/2010
BTEX	ND
PAHs	ND
CN	0.290 U

SB-134	
Depth	(22 – 23.5')
Date	8/10/2010
BTEX	ND
PAHs	ND
CN	0.280 U

SB-105/MW-1R		
Depth	(18 – 18.9')	(28 – 28.5')
Date	8/10/2010	8/10/2010
BTEX	ND	**0.0046**
PAHs	ND	ND
CN	0.290 U	0.280 U

SB-129		
Depth	(10 – 12')	(18.3 – 20.3')
Date	8/18/2010	8/18/2010
BTEX	**0.010**	**0.0024**
PAHs	**7.0**	**0.78 J**
CN	**1.10**	0.280 U

SB-108	
Depth	(20.7 – 22.7')
Date	8/23/2010
BTEX	ND
PAHs	**0.30**
CN	0.280 U

SB-100	
Depth	(20.4 – 22.4')
Date	8/18/2010
BTEX	ND
PAHs	ND
CN	0.280 U

SB-102A		
Depth	(10 – 12')	(26 – 28')
Date	8/18/2010	8/18/2010
BTEX	ND	ND
PAHs	**6.7**	ND
CN	**0.740**	0.290 U

SB-107A	
Depth	(20 – 21')
Date	8/19/2010
BTEX	ND
PAHs	ND
CN	0.280 U

SB-101	
Depth	(16.3 – 18.3')
Date	7/21/2010
BTEX	ND
PAHs	**8.5**
CN	0.320 U

SB-133		
Depth	(6.3 – 7.3')	(24.4 – 26.4')
Date	7/22/2010	7/22/2010
BTEX	ND	ND
PAHs	ND	**0.93**
CN	**11.0**	**1.20**

SB-104		
Depth	(8 – 10')	(22 – 23.5')
Date	7/21/2010	7/21/2010
BTEX	ND	ND
PAHs	**0.31**	**0.10**
CN	**0.840**	0.280 U

SB-109		
Depth	(22 – 24')	(26 – 26.5')
Date	7/20/2010	7/20/2010
BTEX	ND	ND
PAHs	ND	ND
CN	**2.70**	**1.20**

LEGEND:

PZ-110 PIEZOMETER LOCATION
SG-2 STREAM GAUGE LOCATION
MW-3 MONITORING WELL LOCATION
SB-8 SOIL BORING LOCATION
SS-6 SURFACE SOIL SAMPLE LOCATION
TP-8 TEST PIT
SEEP-1 SEEP SAMPLE LOCATION
NATIONAL GRID PROPERTY LINE
TOPOGRAPHIC CONTOUR (4/04/2009)
HISTORIC STRUCTURE BASED ON 1923 SANBORN MAP
APPROXIMATE EDGE OF WATER
SANITARY PIPE AND MANHOLE
STORM LINE AND CATCH BASIN
FENCE
UTILITY POLE
SOLID TAR ABOVE 5 FEET BGS
SOLID TAR BELOW 5 FEET BGS
VISCOUS TAR
SHEEN/STAINING
APPROXIMATE AREA OF SOLID TAR OBSERVED AT LAND SURFACE

NOTES:

1. BASE MAP PREPARED FROM SURVEY CONDUCTED BY THEW ASSOCIATES, DATED 9/13/10. MAP IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE) AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NORTH ARROW AS SHOWN INDICATES GRID NORTH REFERENCED TO NAD83 AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE).
2. ALL LOCATIONS ARE APPROXIMATE.
3. SAMPLE RESULTS REPORTED IN MG/KG. DUPLICATE RESULTS PRESENTED IN BRACKETS.
4. BOLDED VALUES WERE DETECTED.
5. ITALICS INDICATES THAT ONE OR MORE COMPOUNDS WERE DETECTED AT A CONCENTRATION ABOVE THE NYSDEC RESTRICTED RESIDENTIAL SCO.
6. SHADING INDICATES THAT ONE OR MORE COMPOUNDS WERE DETECTED AT A CONCENTRATION ABOVE THE NYSDEC RESTRICTED USE COMMERCIAL SCO.

0 60' 120'
GRAPHIC SCALE

NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

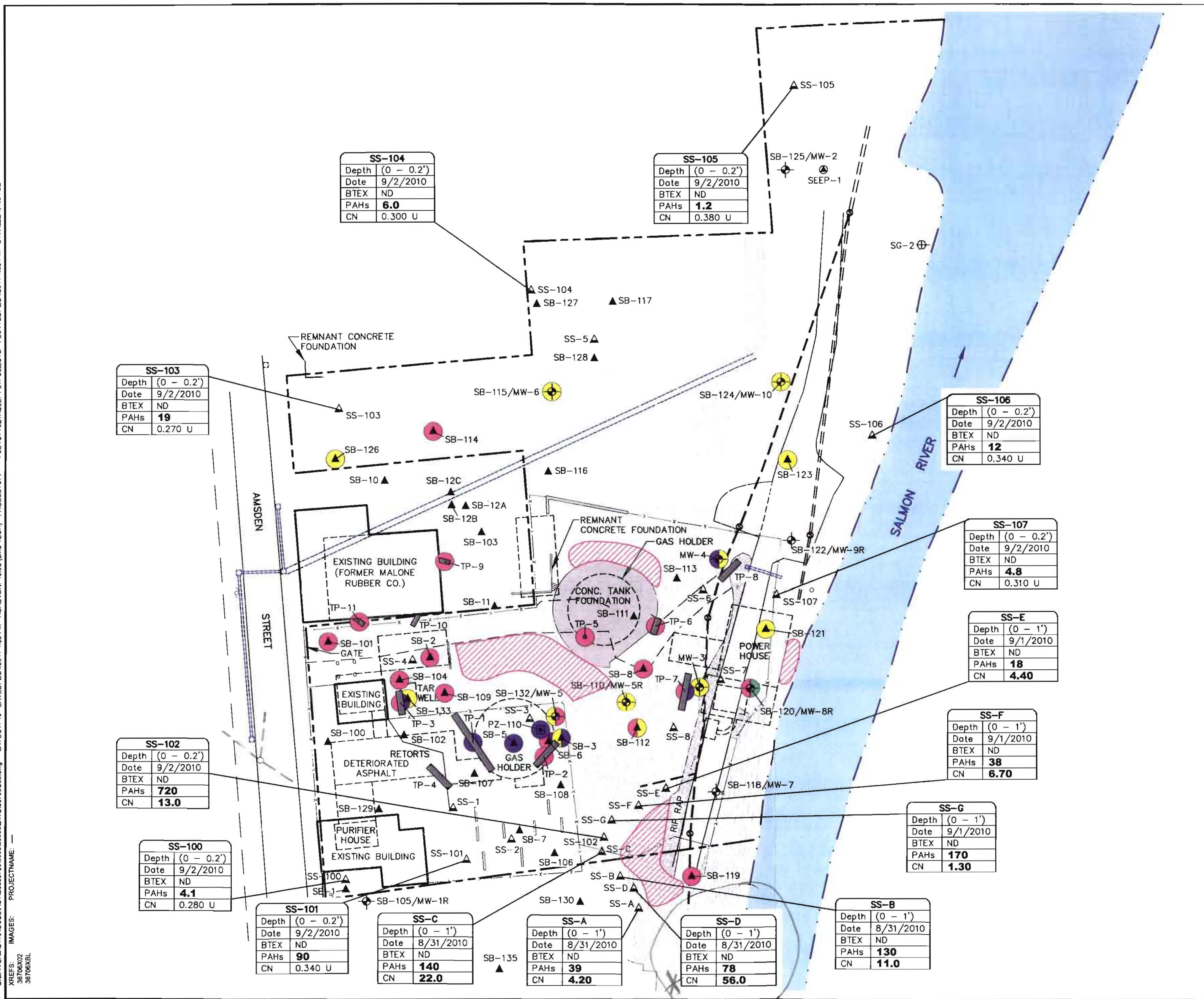
SUBSURFACE SOIL ANALYTICAL RESULTS

ARCADIS

FIGURE
9

CITY:SYRACUSE, N.Y. DIV/GROUP:ENVCAD-141 DB:R.ALLEN LD:(Opt) PIC:(Opt) PM:S.POWLIN TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/24/2011 4:08 PM BY: ALLEN, ROYCE
G:\ENVCAD\SYRACUSE\ACT\B0036706\0000\00002\DWG\36706C04.dwg LAYOUT: 9 SAVED: 2/24/2011 4:06 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: —
XREFS: 36706X02 36706XBL IMAGES: PROJECTNAME: —

CITY: SYRACUSE, N.Y. DIV/GROUP: ENVCAD-141 DB: ALLEN LD:(Opt) PIC:(Opt) PM: S.POWLIN TM:(Opt) LYR:(Opt)ON=*;OFF=*REF* G:\ENVCAD\SYRACUSE\ACT\B0038760\0000\00002\DWG\38760G02.dwg LAYOUT: 10 SAVED: 2/24/2011 4:02 PM ACADVER: 18.0S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/24/2011 4:03 PM BY: ALLEN, ROYCE
XREFS: 38760X02 38760XBL IMAGES: PROJECTNAME: ---



LEGEND:

PZ-110	PIEZOMETER LOCATION
SG-2	STREAM GAUGE LOCATION
MW-3	MONITORING WELL LOCATION
SB-8	SOIL BORING LOCATION
SS-6	SURFACE SOIL SAMPLE LOCATION
TP-8	TEST PIT
SEEP-1	SEEP SAMPLE LOCATION
	NATIONAL GRID PROPERTY LINE
	TOPOGRAPHIC CONTOUR (4/04/2009)
	HISTORIC STRUCTURE BASED ON 1923 SANBORN MAP
	APPROXIMATE EDGE OF WATER
	SANITARY PIPE AND MANHOLE
	STORM LINE AND CATCH BASIN
	FENCE
	UTILITY POLE
	SOLID TAR ABOVE 5 FEET BGS
	SOLID TAR BELOW 5 FEET BGS
	VISCOUS TAR
	SHEEN/STAINING
	APPROXIMATE AREA OF SOLID TAR OBSERVED AT LAND SURFACE

NOTES:

1. BASE MAP PREPARED FROM SURVEY CONDUCTED BY THEW ASSOCIATES, DATED 9/13/10. MAP IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE) AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NORTH ARROW AS SHOWN INDICATES GRID NORTH REFERENCED TO NAD83 AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE).
2. ALL LOCATIONS ARE APPROXIMATE.

0 60' 120'
GRAPHIC SCALE

NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

SURFACE SOIL ANALYTICAL RESULTS

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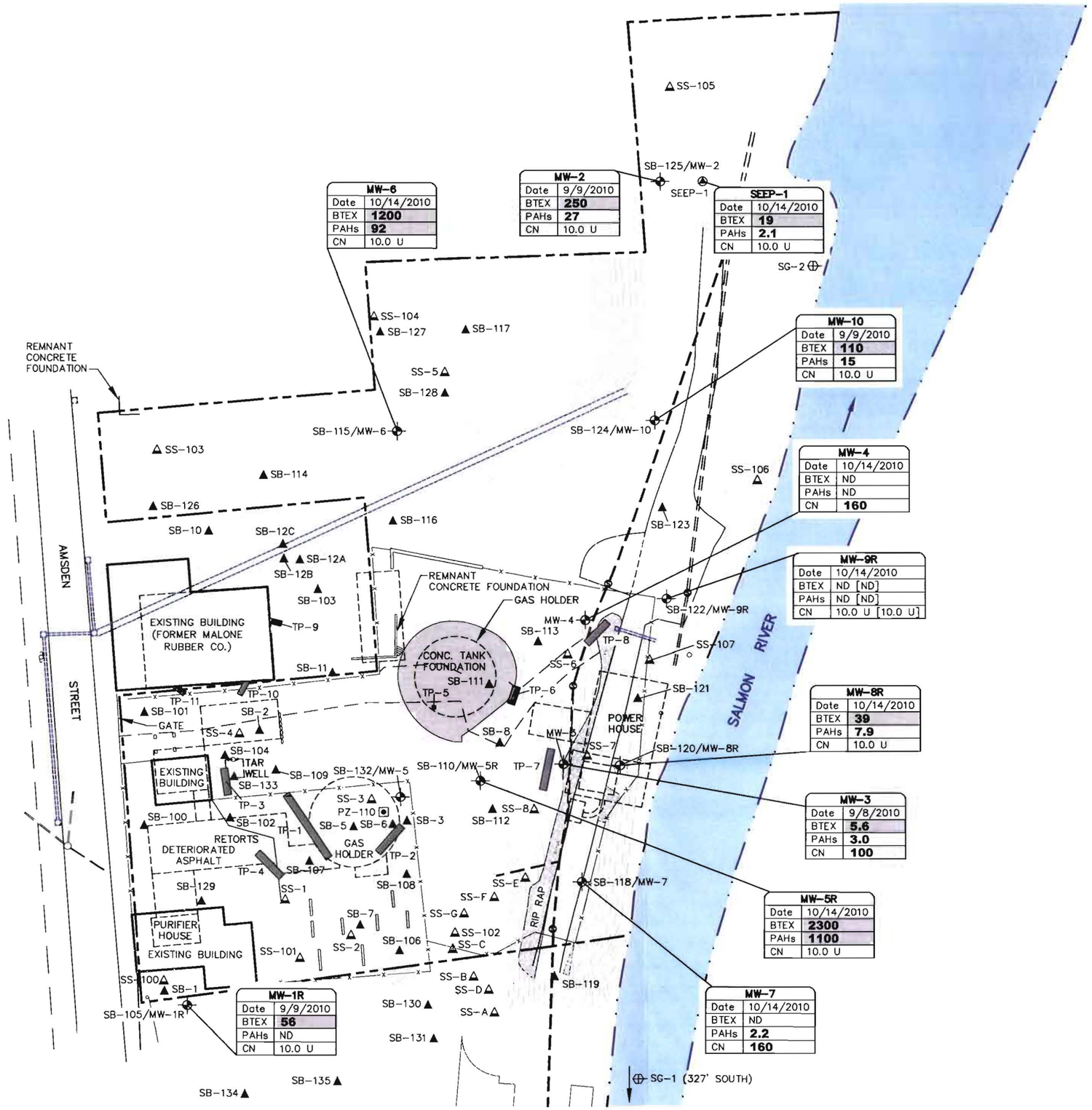
FIGURE **10**



LEGEND:

- PZ-110 — PIEZOMETER LOCATION
- SG-2 — STREAM GAUGE LOCATION
- MW-3 — MONITORING WELL LOCATION
- SB-8 — SOIL BORING LOCATION
- SS-6 — SURFACE SOIL SAMPLE LOCATION
- TP-8 — TEST PIT
- SEEP-1 — SEEP SAMPLE LOCATION
- NATIONAL GRID PROPERTY LINE
- TOPOGRAPHIC CONTOUR (4/04/2009)
- HISTORIC STRUCTURE BASED ON 1923 SANBORN MAP
- APPROXIMATE EDGE OF WATER
- SANITARY PIPE AND MANHOLE
- STORM LINE AND CATCH BASIN
- FENCE
- UTILITY POLE

NOTES:

1. BASE MAP PREPARED FROM SURVEY CONDUCTED BY THEW ASSOCIATES, DATED 9/13/10. MAP IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE) AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). NORTH ARROW AS SHOWN INDICATES GRID NORTH REFERENCED TO NAD83 AND PROJECTED ON THE NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE).
2. ALL LOCATIONS ARE APPROXIMATE.
3. SHADED RESULTS INDICATE THAT AT LEAST ONE COMPOUND EXCEEDS THE NEW YORK STATE CLASS GA STANDARDS OR GUIDANCE VALUES.
4. RESULTS GIVEN IN µg/L.

0 60' 120'

GRAPHIC SCALE

NATIONAL GRID
MALONE (AMSDEN STREET) FORMER MGP SITE
REMEDIAL INVESTIGATION

GROUND WATER ANALYTICAL RESULTS

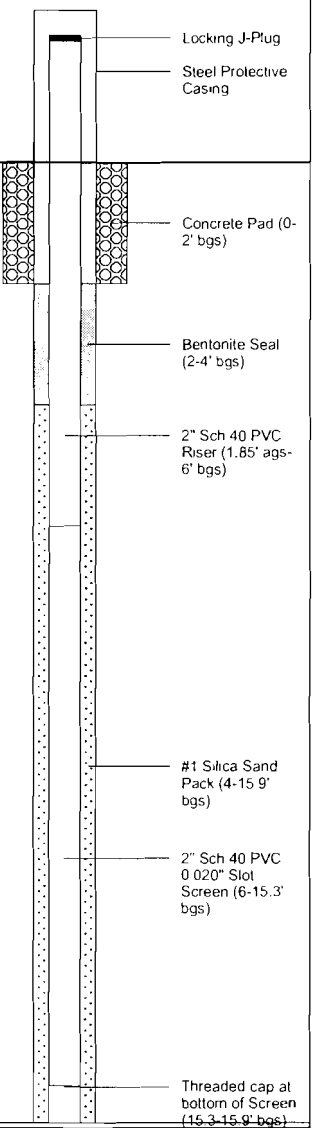
ARCADIS

FIGURE 11

Soil Boring and Monitoring Well Construction Logs

Date Start/Finish: 8/19/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** J. Percy **Drilling Method:** Hollow Stem Auger **Auger Size:** 4.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192327.26 **Easting:** 545605.98 **Casing Elevation:** 696.01 **Borehole Depth:** 15.9' bgs **Surface Elevation:** 693.83' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: PZ-110** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
695									
0	1	0-2	1.1	2 3 3 3	6	0.0			0.0-1.1 Brown to dark brown fine to coarse SAND, some fine Gravel, trace Organics, red Brick and Cinders. 2.0-2.3 Brown to dark brown fine to coarse SAND, some fine Gravel, trace Organics, red Brick and Cinders.
	2	2-4	0.6	2 2 3 4	5	42			2.3-4.6 Black solid Tar-like material (taffy consistency), moderate coal-tar-like odor, plastic. 4.0-4.1 Brown fine to medium SAND, some coarse Sand, trace Silt, non plastic, wet.
690									
5	3	4-6	0.3	1 2 1 2	3	47			4.1-4.3 Black solid Tar-like material (taffy consistency), moderate coal-tar-like odor, plastic.
	4	6-8	0.2	1 2 1 1	3	78			6.0-6.2 Black solid Tar-like material (taffy consistency), moderate coal-tar-like odor, plastic
685	5	8-10	0.8	1 2 1 1	3	10.6			8.0-8.8 Brown fine to coarse SAND, trace Silt (layer of black stained medium to coarse SAND at 8.3-8.4' bgs, faint coal-tar-like odor), non plastic, wet.
10	6	10-12	0.3	WOH/ 1.0 3 4	NA	50.9			10.0-10.3 Black medium to coarse SAND. Wood piece, rock Cobble in shoe, non plastic, saturated 12.0-12.4 Brown fine to coarse SAND, some fine Gravel, trace Wood, non plastic, saturated.
	7	12-14	0.8	4 2 3 3	5	209			12.4-12.8 Brown coarse SAND, saturated with Coal-Tar-like material, plastic, saturated. 14.0-14.4 Brown coarse SAND, saturated with Coal-Tar-like material, plastic saturated.
680									
15	8	14-16	0.7	9 5 8 8	13	301			14.4-14.7 Black solid Tar-like material (taffy consistency), moderate coal-tar-like odor, plastic. Rock fragment and red Brick in shoe. Stopped advancing augers when encountered BRICK at 16' bgs. End of Boring at 15.9' bgs.



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Infrastructure, Water, Environment, Buildings

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, WOH = weight of hammer.

No analytical sample collected.

Date Start/Finish: 8/18/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** J. Percy **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192319.52 **Easting:** 545477.64 **Casing Elevation:** NA **Borehole Depth:** 22.5' bgs **Surface Elevation:** 694.77' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-100** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 695										
	1	0-2	0.8	2 2 2 3	4	0.0			0.0-0.8 Brown fine to coarse SAND, some Organics, little red Brick, trace Coal fragments and paper fibers, non plastic, moist	
	2	2-4	0.5	1 3 3 3	6	0.0			2.0-2.5 Brown fine to coarse SAND and red BRICK, little Organics and fine Gravel, non plastic, moist.	
5 / 690	3	4-6	0.7	2 1 2 2	3	0.0			4.0-4.7 Brown fine to medium SAND, non plastic, moist	
	4	6-8	0.0	3 5 5 8	10	NA			NO RECOVERY.	
	5	8-10	0.1	9 10 10 10	20	0.0			8.0-8.1 Brown fine to medium SAND, some coarse Sand, trace Silt, non plastic, moist	Boring backfilled to grade with bentonite/cement grout
10 / 685	6	10-12	1.0	3 3 8 8	11	0.0			10.0-11.0 Brown fine to coarse SAND, little Silt, trace fine Gravel, non plastic, moist.	
	7	12-14	1.5	1 2 1 2	3	0.0			12.0-13.5 Brown SILT, some fine Sand, laminations of medium Sand, medium plasticity, wet.	
									14.0-14.6 Brown fine to coarse SAND, layer of SILT at 14.3-14.4' bgs, non plastic, moist.	
15 / 680	8	14-16	1.7	1 1 1 5	2	0.0			14.6-15.4 Brown SILT, medium plasticity, moist	
									15.4-15.7 White to light brown medium SAND, non plastic, moist.	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 20.4-22.4 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Project Number:B0036706.0.2 Template:G:\Rockware\LogPlot 2001\LogFiles\Templates\2007 Templates\boring_well HSA 2007 analytical.tdx
Data File:SB-100.dat Date: 2/17/2011 Created/Edited by: NJB

Date Start/Finish: 7/21/2010
Drilling Company: Parratt Wolff, Inc.
Driller's Name: G Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 3.25" ID
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon

Northing: 2192349.66
Easting: 545548.29
Casing Elevation: NA

Borehole Depth: 18.3' bgs
Surface Elevation: 692.06' AMSL

Descriptions By: Joshua Oliver

Well/Boring ID: SB-101
Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
695										
0	1	0-2	1.0	5 5 5 5	10	0.0			0.0-0.3 Gray medium to coarse SAND and subangular GRAVEL. 0.3-1.0 Black to brown medium to coarse SAND, some Organics, little red Bricks and Glass, trace solid tar-like pieces, non plastic, moist, no odor	
690	2	2-4	0.5	3 2 3 4	5	0.0			2.0-2.5 Black to brown medium to coarse SAND, some Organics, little red Bricks and Glass, non plastic, moist, no odor. 4.0-4.1 Black to brown medium to coarse SAND, some Organics, little red Bricks and Glass, non plastic, moist, no odor.	
5	3	4-6	0.9	7 3 2 3	5	0.0			4.1-4.9 Brown to light brown fine to medium SAND, trace Silt, color lighter with depth, non plastic, moist.	
685	4	6-8	0.8	2 2 2 2	4	0.0			6.0-6.8 Reddish-brown to brown fine to medium SAND, trace Silt, non plastic, moist.	
	5	8-10	0.7	1 3 5 10	8	0.0			8.0-8.7 Reddish-brown to brown fine to medium SAND, trace Silt, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout.
10	6	10-12	1.3	4 5 5 4	10	0.0			10.0-11.3 Brown fine to medium SAND, some Silt, medium plasticity, wet	
680	7	12-14	1.6	2 2 3 4	5	0.0			12.0-13.6 Brown fine to medium SAND, some Silt, medium plasticity, wet	
15	8	14-16	1.7	3 3 6 13	9	0.0			14.0-15.7 Brown SILT and fine SAND, trace medium Sand, medium plasticity, saturated	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 16.3-18.3' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/18/2010
Drilling Company: Parratt Wolff, Inc.
Driller's Name: G. Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 3.25" ID
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon

Northing: 2192323.55
Easting: 545523.65
Casing Elevation: NA

Borehole Depth: 28.7' bgs
Surface Elevation: 694.86' AMSL

Descriptions By: Joshua Oliver

Well/Boring ID: SB-102/102A

Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	695	1	0-2	0.9	8 5 15 16	20	0.0			0.0-0.2 ASPHALT. 0.2-0.5 Brown fine to medium SAND and GRAVEL, non plastic, moist 0.5-0.9 Black fine to medium SAND, some Slag, little Cinders, trace fire Brick and fine to medium white Gravel, non plastic, moist.	
		2	2-4	0.3	50/0.4	NA	0.0			2.0-2.3 Dark brown fine to coarse SAND and GRAVEL, non plastic, moist	
5	690	3	4-6	0.2	50/0.4	NA	0.0			4.0-4.2 CONCRETE fragments. Spoon refusal at 4.4 ft bgs Auger refusal at 5.4' bgs. Moved to MW-102A location.	
		4	6-8	0.9	1 1 2 4	3	0.0			6.0-6.9 Brown fine to medium SAND, trace coarse Sand and Organics, non plastic, moist.	
		5	8-10	0.8	6 5 4 4	9	0.0			8.0-8.8 Brown fine to medium SAND, trace coarse Sand and Organics, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout.
10	685	6	10-12	1.4	2 3 2 2	5	0.0	X		10.0-11.4 Brown fine to medium SAND, some coarse Sand, little Silt, non plastic, saturated.	
		7	12-14	2.0	1 1 1 2	2	0.0			12.0-12.6 Brown fine to medium SAND, some coarse Sand little Silt, non plastic, saturated 12.6-14.0 Brown SILT, trace fine to medium Sand, medium plasticity, saturated	
15	[illegible]	8	14-16	1.9	3 3 2 2	5	0.0			14.0-15.9 Brown SILT, laminations of fine to medium Sand, medium plasticity saturated.	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 10-12 ft bgs for VOCs, SVOCs and free cyanide and 26-28 ft bgs for VOCs, SVOCs, total cyanide, and free cyanide. 0-5.4 ft bgs installed as SB-102; auger refusal at 5.4' bgs. Moved less than 5ft northeast and installed boring SB-102A. 0-6 ft bgs descriptions from SB-102, 6-28.7 ft bgs descriptions from SB-102A.

Date Start/Finish: 7/30/2010
Drilling Company: Parratt Wolff, Inc.
Driller's Name: G. Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 3.25" ID
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon

Northing: 2192448.67
Easting: 545570.99
Casing Elevation: NA

Borehole Depth: 23.0' bgs
Surface Elevation: 682.46' AMSL

Descriptions By: Joshua Oliver

Well/Boring ID: **SB-103**

Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
685										
0	1	0-2	0.7	3 3 5 3	8	0.0			0.0-0.7 Brown fine to medium SAND, some Organics, trace red Brick and Cinders, non plastic, moist. (FILL)	
680	2	2-4	0.1	2 2 1 2	3	0.0			2.0-2.1 Red BRICK fragments in shoe, non plastic, moist. (FILL)	
5	3	4-6	0.1	1 2 1 2	3	0.0			4.0-4.1 Red BRICK fragments in shoe, non plastic, moist. (FILL) 6.0-6.1 Brown fine to medium SAND, some Organics, trace red Brick and Cinders, non plastic, moist. (FILL)	
675	4	6-8	1.4	5 5 4 5	9	0.0			6.1-7.4 Brown to light brown fine to medium SAND, non plastic, moist	
	5	8-10	1.0	7 5 4 3	9	0.0			8.0-9.0 Brown to light brown fine to medium SAND, trace Silt after 8.9' bgs, non plastic, moist	Boring backfilled to grade with bentonite/cement grout.
10	6	10-12	1.0	WOH/ 1.5 50/0.2	NA	0.0			10.0-10.7 Brown to light brown SILT, little fine Sand, brown-white rock fragments in shoe, medium plasticity, moist	
670	7	12-14	1.3	2 5 22 15	27	0.0			12.0-13.3 Light brown to white medium to coarse SAND, some fine Sand, white rock fragments in shoe, non plastic, moist 14.0-14.2 Light brown medium to coarse GRAVEL, little fine to medium Sand, non plastic, moist.	
15	8	14-16	0.7	27 50/0.5	NA	0.0			14.2-14.7 White to light brown fine to medium SAND, some fine to medium subangular Gravel, non plastic, moist	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, WOH = weight of hammer.

Analytical sample collected 21-23' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 7/21/2010
Drilling Company: Parratt Wolff, Inc.
Driller's Name: G. Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 3.25" ID
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon

Northing: 2192357.69
Easting: 545520.86
Casing Elevation: NA

Borehole Depth: 23.5' bgs
Surface Elevation: 689.78' AMSL

Descriptions By: Joshua Oliver

Well/Boring ID: SB-104

Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 690	1	0-2	0.7	1 3 4 3	7	25 0			0.0-0.7 Brown-black ORGANICS, trace fine to medium Sand, red Brick and Tar-like material (taffy consistency), slight tar-like odor, non plastic, moist.	
	2	2-4	0.0	2 2 3 5	5	NA			NO RECOVERY.	
5 / 685	3	4-6	0.1	50/0 3	NA	5 1			4.0-4 3 Brown-black ORGANICS, trace fine to medium Sand and red Brick, slight tar-like odor, non plastic, moist.	
	4	6-8	1.4	2 4 3 5	7	1.1			6.0-6.7 Brown medium to coarse SAND, little fine Gravel, trace fine Sand, non plastic, moist.	
	5	8-10	1 4	3 4 5 7	9	5 8	X		8.0-9.4 Brown medium to coarse SAND, little fine Gravel, trace fine Sand, non plastic, moist. Thin beds (approx 0.2' thick) of white fine SAND at 8.3' and 9.0' bgs, black staining (8.0-8.3' bgs), slight tar-like odor, medium plasticity, moist	Boring backfilled to grade with bentonite/cement grout.
10 / 680	6	10-12	2.0	1 1 1 1	2	0 0			10.0-12.0 Brown SILT and fine SAND, seam of fine white SAND at 11 8' bgs, black staining of some grains, no odor, medium plasticity, moist	
	7	12-14	1 5	2 3 4 6	7	0 0			12 0-13 5 Brown SILT and fine SAND, seam of fine white SAND at 13 2', 13 3' 13.5' bgs, medium plasticity, moist	
15 / 675	8	14-16	1.2	6 8 11 13	19	0 0			14.0-15 2 White fine SAND, seam of SILT and fine SAND at 14 2' bgs, non plastic, moist.	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

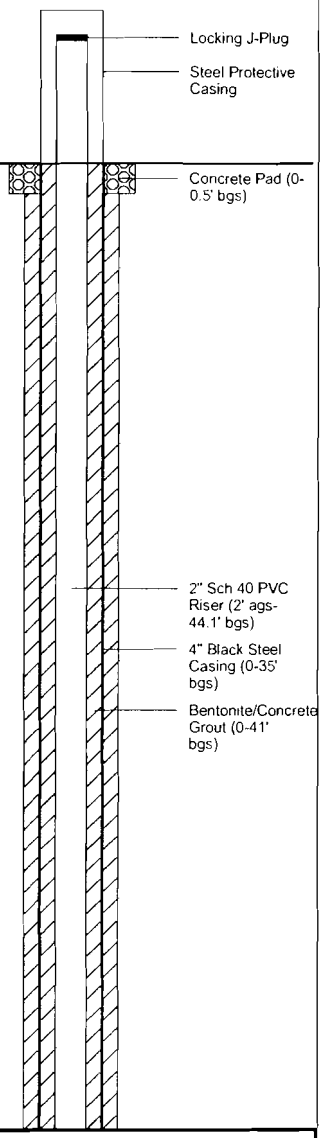
Analytical sample collected 8-10' ft bgs for VOCs, SVOCs, total cyanide and free cyanide and 22-23.5' ft bgs for VOCs.

Date Start/Finish: 8/10-8/16/2010
Drilling Company: Parratt Wolff, Inc.
Driller's Name: G. Lansing
Drilling Method: Hollow Stem Auger/Coring
Auger Size: 4.25" ID Auger/HQ Core Barrel
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon/ 2.5" x 5' Core Barrel

Northing: 2192223.76
Easting: 545497.66
Casing Elevation: 705.6" AMSL
Borehole Depth: 65.0' bgs
Surface Elevation: 703.54' AMSL
Descriptions By: Marcus Eriksson

Well ID/Boring ID: SB-105/MW-1R
Client: National Grid
Site Location: Malone - Amsden Street
Former MGP Site
Malone, NY

Depth (ft bgs) / Elevation (ft AMSL)	Sample Run Number	Sample/Int/Type	Blow Counts/ Minutes per ft - Coring	N - Value / RQD (%) - Coring	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
705								
0	1	0-2	2, 19, 21, 17	40	0.6	0.0		0.0-0.6 Brown fine to medium SAND, little to trace Organics and Silt, non plastic, moist.
	2	2-4	6, 4, 6, 20	10	1.4	0.0		2.0-3.4 Brown fine SAND, little fine to medium subangular Gravel, trace Silt and Organics, non plastic, moist. Rock in shoe.
700								
5	3	4-6	NA	NA	NA	0.0		4.0-5.5 Very hard drilling (No sampling). Auger refusal at 5.5' bgs. Moved rig and made second attempt.
	4	6-8	50/0.2	NA	0.2	0.0		6.0-6.2 Pink/gray fine to medium SANDSTONE (possible boulder)
695	5	8-10	4, 7, 8, 6	15	1.0	0.0		8.0-10.0 Brown fine to medium SAND, little fine to medium subangular Gravel, trace Silt, non plastic, moist.
10	6	10-12	4, 4, 5, 6	9	2.0	0.0		10.0-12.0 Brown fine to medium SAND, little fine to medium subangular Gravel, trace Silt, becoming more loose with depth, non plastic, moist
690	7	12-14	4, 5, 5, 5	10	1.5	0.0		12.0-13.5 Brown fine to medium SAND, little fine to medium subangular Gravel, trace Silt, 2mm laminations throughout, non plastic, moist
15	8	14-16	4, 4, 3, 4	7	1.2	0.0		14.0-15.2 Brown fine to medium SAND, little fine to medium subangular Gravel, trace Silt, 2mm laminations throughout, non plastic, moist.



ARCADIS
Design & Consultancy for natural and built assets

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, deg = degrees, hz = horizontal.

Analytical sample collected 18-18.9 ft and 28-28.5 ft bgs for VOCs, SVOCs, total cyanide and free cyanide. Intervals from 0-30.2 ft bgs sampled using a 2' by 2" split spoon. Intervals from 30.2-65 ft bgs sampled using an HQ rock core barrel.

Client: National Grid

Well/Boring ID: SB-105/MW-1R

Borehole Depth: 65 0' bgs

Site Location:

Malone - Amsden Street
Former MGP Site

Depth (ft bgs) / Elevation (ft AMSL)	Sample Run Number	Sample/Int/Type	Blow Counts/ Minutes per ft - Coring	N - Value / RQD (%) - Coring	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
665	1	35-39 3	7 7 7 5	100	4 29	NA		Fractures 35.5'-hz, 35.9'-hz Munsell Color: 7/N Impacts. None Approximate water loss. 0 gal
40								
660	2	40-45	18 18 18 18	91	4.96	NA		40.0-45.0 Gray/white fine to medium Quartzite SANDSTONE with gray/dark gray/brown fine laminations, very coarse Sandstone (43.0-43.4' bgs). Fractures: 40.2'-hz, 41.3'-hz, 42.7'-hz, 43.32'-hz, 43.51'-hz Munsell Color: 7/N Impacts None Approximate water loss: 280 gal (started loosing water at 43.5' bgs)
45								
655	3	45-50	19 19 19 19 19	87	4.67	NA		45.0-50.0 Gray/white fine to medium Quartzite SANDSTONE with dark gray/brown fine laminations, coarse Sandstone at 47.8' bgs. Fractures: 45.2'-hz, 46.3'-hz, 47 9'-hz, 47 95'-hz, 48 5'-hz, 49.1'-hz Munsell Color: 7/N Impacts: None Approximate water loss. NA
50	4	50-51.5	60	91	1 29	NA		50.0-51.5 Gray/white fine to coarse Quartzite SANDSTONE with dark gray/brown fine laminations, hard. Fractures: 50 45'-hz, 50 8'-hz Munsell Color: N7 Impacts: None Approximate water loss: 500 gal
650	5	51.3-55	23 4 6 20	83	3.08	NA		51 5-55.0 Gray/white fine to coarse Quartzite SANDSTONE with dark gray/brown fine laminations, hard. Fractures 52 0'-hz, 52.75'-hz, 53.9'-hz Munsell Color: N7 Impacts: None Approximate water loss. 300 gal
55			10					55.0-60 0 Gray/white fine to coarse Quartzite SANDSTONE with dark gray/brown/red fine laminations, hard

Well Construction

- Bentonite/Concrete Grout (0-41' bgs)
- 2" Sch 40 PVC Riser (2' ags-44.1' bgs)
- Bentonite Seal (41-43' bgs)
- #1 Silica Sand Pack (43-64 7' bgs)
- 2" Sch 40 PVC 0 020" Slot Screen (44 1-64 1' bgs)

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Analytical sample collected 18-18.9 ft and 28-28.5 ft bgs for VOCs, SVOCs, total cyanide and free cyanide. Intervals from 0-30.2 ft bgs sampled using a 2' by 2" split spoon. Intervals from 30.2-65 ft bgs sampled using an HQ rock core barrel.

Date Start/Finish: 8/20/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192251.00 **Easting:** 545615.74 **Casing Elevation:** NA **Borehole Depth:** 21.8' bgs **Surface Elevation:** 695.19' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SB-106 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	695	1	0-2	1.0	4 14 24 7	38	0.0			0.0-0.2 Dark brown fine to coarse SAND, some organics, trace Silt, non plastic, moist. 0.2-1.0 Gray fine to coarse SAND and fine to coarse angular GRAVEL, non plastic, moist.	
		2	2-4	1.4	3 3 4 4	7	0.0			2.0-2.3 Gray fine to coarse SAND and fine to coarse angular GRAVEL, non plastic, moist. 2.3-3.4 Brown medium SAND, some fine to coarse Sand, trace Silt and Organics, non plastic, moist	
5	690	3	4-6	1.2	3 2 3 6	5	0.0			4.0-5.2 Brown (lighter with depth) to light brown medium SAND, some fine Sand, non plastic, moist 6.0-6.1 Light brown medium SAND, trace fine Sand, non plastic, moist	
		4	6-8	1.6	7 7 7 10	14	0.0			6.1-7.6 Brown SILT and very fine SAND, trace medium Sand, non plastic. 8.0-8.3 Brown SILT and very fine SAND, trace medium Sand, non plastic.	Boring backfilled to grade with bentonite/cement grout.
		5	8-10	1.5	9 13 13 12	26	0.0			8.3-9.5 Brown fine to medium SAND, some Silt, non plastic, moist.	
10	685	6	10-12	1.9	7 8 12 11	20	0.0			10.0-11.9 Brown fine to medium SAND some Silt, non plastic, moist	
		7	12-14	1.9	8 10 10 10	20	0.0			12.0-13.9 Brown fine SAND and SILT, little to some medium Sand non plastic, moist	
15	680	8	14-16	1.9	6 8 8 8	16	0.0			14.0-15.2 Brown SILT, some fine Sand, seams of light brown medium Sand at 14.8' and 15.0' bgs, stiff, non plastic, moist 15.2-15.9 Brown to light brown fine to medium SAND, trace Silt, non plastic moist.	

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Analytical sample collected 20.0-21.5 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/19/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** J. Percy **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192300.03 **Easting:** 545566.59 **Casing Elevation:** NA **Borehole Depth:** 21' bgs **Surface Elevation:** 694.02' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SB-107 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	695										
0		1	0-2	0.5	4 7 7 2	14	0.0			0.0-0.5 Dark brown fine to coarse SAND, some Organics, little fine Gravel, non plastic, moist. 2.0-2.2 Black Coal fragments.	
		2	2-4	1.3	2 1 1 2	2	0.0			2.2-3.3 Brown fine to medium SAND, trace Silt, non plastic, moist.	
	690	3	4-6	1.4	2 5 6 5	11	0.0			4.0-5.4 Brown fine to medium SAND, trace Silt, non plastic, moist	
5		4	6-8	1.4	6 6 6 6	12	0.0			6.0-7.4 Brown fine to medium SAND, trace Silt, non plastic, moist 8.0-8.2 Brown fine to medium SAND, trace Silt, non plastic, moist	Boring backfilled to grade with bentonite/cement grout.
	685	5	8-10	1.4	5 4 3 4	7	0.0			8.2-9.4 Brown SILT, little fine Sand (laminations of dark brown fine Sand), non plastic, moist.	
10		6	10-12	1.4	2 1 2 1	3	0.0			10.0-11.4 Alternating layers of light brown to brown medium to coarse SAND and fine SAND/SILT layers (0.3" thick), no to medium plasticity, moist	
		7	12-14	1.9	1 2 1 5	3	0.0			12.0-13.0 Alternating layers of light brown to brown medium to coarse SAND and fine SAND/SILT layers (0.3" thick), no to medium plasticity, moist-wet 13.0-14.9 Brown SILT, getting stiff at 13.6' bgs, medium plasticity, wet	
15		8	14-16	1.6	4 5 10 10	15	0.0			14.0-15.6 Alternating brown medium to coarse SAND and Clayey SILT, stiff, medium plasticity, moist 16.0-16.4 Alternating brown medium to coarse SAND and Clayey SILT, stiff,	

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Analytical sample collected 20-21 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/23/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192292.89 **Easting:** 545619.44 **Casing Elevation:** NA **Borehole Depth:** 23.5' bgs **Surface Elevation:** 694.63' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-108** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	695										
0		1	0-2	1.3	1 2 3 5	5	0.0			0.0-1.3 Brown medium to coarse SAND, some Organics, some to little Coal and Slag, trace Silt and Clay, non plastic, moist.	
		2	2-4	0.1	4 4 5 5	9	0.0			2.0-2.1 Brown fine to medium SAND, trace Silt, non plastic, moist.	
5	690	3	4-6	1.1	4 4 7 4	11	0.0			4.0-5.1 Brown fine to medium SAND, trace fine subangular Gravel and Silt, non plastic, moist.	
		4	6-8	1.4	2 2 3 3	5	0.0			6.0-6.9 Brown fine to medium SAND, trace fine subangular Gravel and Silt, non plastic, moist. 6.9-7.4 Dark brown medium to coarse SAND, trace Organics, non plastic, moist.	
10	685	5	8-10	1.4	3 3 5 6	8	0.0			8.0-9.4 Gray/dark brown to brown fine to coarse SAND, trace Organics, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout
		6	10-12	2.0	3 4 5 5	9	0.0			10.0-12.0 Brown medium to coarse SAND, seam of medium Sand at 11.9' bgs, non plastic, moist	
		7	12-14	1.7	5 5 5 5	10	0.0			12.0-13.1 Brown medium to coarse SAND, non plastic, moist 13.1-13.7 Light brown-white medium SAND, trace fine Sand, non plastic, moist	
15		8	14-16	1.9	1 2 1 1	3	0.0			14.0-15.0 Light brown-white medium SAND, trace fine Sand, non plastic, moist 15.0-15.9 Brown SILT, some fine Sand, trace white medium Sand and Clay, medium plasticity, wet	

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Analytical sample collected 20.7-22.7 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 7/20/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192349.66 **Easting:** 545548.29 **Casing Elevation:** NA **Borehole Depth:** 26.5' bgs **Surface Elevation:** 692.06' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** **SB-109** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	692	1	0-2	0.8	NA	NA	0.0			0.0-0.4 Black ORGANICS, trace medium Sand and fine Gravel, non plastic, moist. 0.4-0.8 Brown fine to coarse SAND, trace solid Tar-like material (taffy consistency), trace Organics (roots), non plastic, moist.	Boring backfilled to grade with bentonite/cement grout.
	690	2	2-4	1.1	NA	NA	0.0			2.0-3.1 Brown fine to coarse SAND, trace Organics (roots), non plastic, moist	
5		3	4-6	1.1	7 9 8 7	17	0.0			4.0-5.1 Light brown fine to medium SAND, some Silt, non plastic, moist.	
	685	4	6-8	0.6	3 4 5 4	9	0.0			6.0-6.6 Light brown to dark brown fine to coarse SAND, some Organics non plastic, moist.	
		5	8-10	1.5	4 6 6 5	12	0.0			8.0-9.5 Dark to light brown fine to medium SAND, trace Organics, non plastic, moist.	
10		6	10-12	1.2	3 4 3 3	7	0.0			10.0-11.2 Light brown fine to medium SAND, homogeneous, non plastic, moist.	
	680	7	12-14	1.6	3 4 5 4	9	0.0			12.0-13.6 Light brown fine to medium SAND, homogeneous non plastic, moist to wet	
15		8	14-16	1.0	1 1 1 4	2	0.0			14.0-15.0 Light brown fine to medium SAND, homogeneous non plastic, moist to wet 16.0-16.4 Light brown fine to medium SAND, homogeneous, non plastic, moist	

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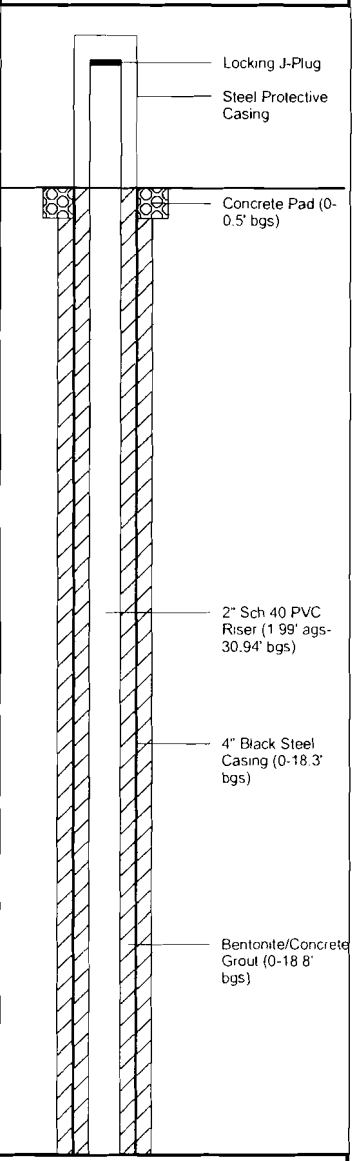
Analytical sample collected 22-24 ft bgs and 26-26.5 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 7/26-7/28/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger/Coring **Auger Size:** 6.25" ID Auger/HQ Core Barrel **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon/ 2.5" x 5' Core Barrel	**Northing:** 2192344.32 **Easting:** 545659.35 **Casing Elevation:** 675.3' AMSL **Borehole Depth:** 50.8' bgs **Surface Elevation:** 673.21' AMSL **Descriptions By:** Marcus Eriksson	**Well ID/Boring ID:** **SB-110/MW-5R** **Client:** National Grid **Site Location:** Malone - Amsden Street Former MGP Site Malone, NY

Depth (ft bgs) / Elevation (ft AMSL)	Sample Run Number	Sample/Int/Type	Blow Counts/ Minutes per ft - Coring	N - Value / RQD (%) - Coring	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
675								
0	1	0-2	1 2 5 7	7	1.0	0.0		0-1.0 Brown to black fine to coarse SAND, some Silt and red Brick, slightly coated grains (0.4-0.5' bgs), faint tar-like odor, non plastic, moist. (FILL)
670	2	2-4	7 8 4 3	12	0.9	0.0		2.0-2.9 Blue-green (brown at 2.6' bgs) medium SAND, trace Silt, non plastic, moist. Possible purifier waste.
5	3	4-6	3 3 5 7	8	0.7	0.0		4.0-4.7 Brown fine to medium SAND, non plastic, moist
	4	6-8	8 12 9 6	23	0.8	0.0		6.0-6.8 Brown (turning light brown) fine to medium SAND, non plastic, moist.
665	5	8-10	23 14 11 8	25	0.1	0.0		8.0-8.1 COBBLE, rock fragments (white-gray) in shoe, non plastic, moist.
10	6	10-12	3 4 3 4	7	0.7	0.0		10.0-10.7 Brown fine to medium SAND, some Silt, non plastic, moist to wet 12.0-12.1 Brown fine to medium SAND, some Silt, non plastic, moist to wet.
660	7	12-14	2 1 1 2	2	1.4	0.0		12.1-13.4 Brown medium SAND, fine SAND and SILT (interbedded), medium plasticity, wet to saturated at 12.5' bgs. Black discolored laminations at 12.55' bgs
15	8	14-16	NA	NA	NA	NA		14.0-16.0 No sample collected. Drilled using roller bit to 16.0' bgs.



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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, deg = degrees, hz = horizontal.

Analytical sample collected 2-4 and 12-14 ft bgs for VOCs, SVOCs, total cyanide and free cyanide. Intervals from 0-18.3 ft bgs sampled using a 2' by 2" split spoon. Intervals from 18.8-50.8 sampled using a HQ rock core barrel.

Client: National Grid

Well/Boring ID: **SB-110/MW-5R**

Borehole Depth: 50.8' bgs

Site Location:

Malone - Amsden Street
Former MGP Site

Depth (ft bgs) / Elevation (ft AMSL)	Sample Run Number	Sample/Int/Type	Blow Counts/ *Minutes per ft - Coring*	N - Value / *RQD (%) - Coring*	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
635 / 40	5	35.8-40.8	10, 10, 12, 11, 4	97	4.92	NA		35.8-40.8 White/gray fine to coarse Quartzite SANDSTONE with dark gray/brown very fine laminations, hard. Possible Silt seam at 39 3' bgs Fractures. 35.85'-hz, 37.85'-hz, 39.3'-hz, 39 85'-hz Munsell Color: N2-N7 (wet) Impacts: None. Approximate water loss: 310 gal
630 / 45	6	40 8-45 8	8, 9, 6, 7, 13	85	4 25	NA		40.8-45.8 White/gray fine to coarse Quartzite SANDSTONE with dark gray/brown very fine laminations throughout, hard. Possible 1 0' of core fell out of barrel. Fractures: 42 35'-hz moderately weathered, 45 0'-hz Munsell Color: N2-N7 (wet) Impacts: None. Approximate water loss: 280 gal
625 / 50	7	45 8-50 8	10, 10, 12, 14, 14	100	5.92	NA		45.8-50.8 White/gray fine to coarse Quartzite SANDSTONE with dark gray/brown very fine laminations throughout, hard. Fractures: 45.87'-hz, 48.1'-hz, 48.7'-10 deg-possible Silt seam (highly weathered), 48.94'-hz, 50.1-50.2'-fracture zone. Munsell Color: N2-N7 (wet) Impacts: None. Approximate water loss: 350 gal
620 / 55								End of boring at 50 8' bgs

Well Construction

- 2" Sch 40 PVC 0 020" Slot Screen (30.94-50.46' bgs)
- #1 Silica Sand Pack (28-50.8' bgs)
- Slip cap at bottom of Screen (50.46-50.8' bgs)

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Analytical sample collected 2-4 and 12-14 ft bgs for VOCs, SVOCs, total cyanide and free cyanide. Intervals from 0-18.3 ft bgs sampled using a 2' by 2" split spoon. Intervals from 18.8-50.8 sampled using a HQ rock core barrel.

Date Start/Finish: 7/19/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192396.83 **Easting:** 545664.10 **Casing Elevation:** NA **Borehole Depth:** 10.4' bgs **Surface Elevation:** 670.56' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SB-111 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 670	1	0-2	0.9	NA NA 2 2	NA	0.0			0-1.0 CONCRETE (Holder Tank). 1.0-1.9 Brown fine to medium SAND, trace Organics (roots), non plastic, moist (FILL)	Boring backfilled to grade with bentonite/cement grout.
	2	2-4	0.7	2 3 8 6	11	0.0			2.0-2.7 Brown fine to medium SAND, little subangular multicolored fine to medium Gravel, non plastic, moist. (FILL)	
5 665	3	4-6	0.8	7 8 2 7	10	0.0			4.0-4.8 Brown fine to medium SAND, little subangular multicolored fine to medium Gravel, non plastic, moist. (FILL)	
	4	6-8	0.9	4 3 3 5	6	0.0			6.0-6.9 Brown fine to medium SAND, little subangular multicolored fine to medium Gravel, trace Silt, non plastic, moist. (FILL)	
10	5	8-10	1.2	8 12 15 19	27	0.0	X		8.0-9.2 Brown fine to medium SAND, little subangular multicolored fine to medium Gravel, trace Silt, non plastic, moist (FILL) 10.0-10.1 Brown fine to medium SAND, little subangular multicolored fine to medium Gravel, trace Silt, non plastic, moist (FILL) Dark rock chips in shoe, possible bedrock Spoon refusal at 10.1' bgs	
660	6	10-10.1	0.1	50/0.1	NA	0.0			Auger refusal at 10.4' bgs End of Boring	
15 655										

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Analytical sample collected 8-10' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 7/20/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192328.52 **Easting:** 545665.91 **Casing Elevation:** NA **Borehole Depth:** 18.1' bgs **Surface Elevation:** 671.77' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-112** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	671.77	1	0-2	0.2	1 1 5 4	6	0.0			0-0.2 Dark brown ORGANICS and red BRICK, Cobble in shoe, non plastic, moist.	
	670	2	2-4	0.7	2 2 1 2	3	0.0			2.0-2.7 Dark brown to brown fine to medium SAND, trace Organics, trace Brick, trace solid Tar globs (taffy consistency), non plastic, moist. 4.0-4.2 Dark brown to brown fine to medium SAND, trace Organics, trace Brick, trace Glass, slight tar-like odor, non plastic, moist	
		3	4-6	0.7	8 20 50/0.1	NA	16.2			4.2-4.7 Light brown fine to coarse SAND and fine to medium subangular GRAVEL, trace Brick, trace Silt, non plastic, moist	
5										Augered past COBBLE from 5.1-6.2' ft bgs.	
										6.5-6.7 White quartz COBBLE, trace white Sand, non plastic, moist.	
	665	4	6-8	0.8	25 31 29	NA	3.6			6.7-7.3 Light brown medium SAND, little fine Gravel, non plastic, moist	
		5	8-10	0.4	15 13 11 14	24	1.3			8.0-8.4 Brown medium to coarse SAND, some fine Gravel, multicolored Cobble in shoe, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout.
10		6	10-12	1.6	7 5 4 4	9	0.2			10.0-11.6 Brown fine to medium SAND, homogeneous, moist to wet. Wet at 10.5' bgs.	
	660	7	12-14	0.2	2 2 2 2	4	0.8			12.0-12.2 Brown medium to coarse SAND and fine to medium GRAVEL, non plastic, saturated	
					16 18 23 28					14.0-15.0 Brown medium to coarse SAND and fine to medium GRAVEL, degraded petroleum-like odor, non plastic, saturated 15.0-15.3 White to light brown medium to coarse SAND. Cobble in shoe, non plastic, saturated.	
15		8	14-16	1.3		41	5.1				

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Analytical sample collected 16.8-17.6' ft bgs for VOCs, SVOCs, total cyanide and 18-18.1 ft bgs for VOCs.

Date Start/Finish: 7/22/2010
Drilling Company: Parratt Wolff, Inc.
Driller's Name: G. Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 3.25" ID
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon

Northing: 2192420.18
Easting: 545690.31
Casing Elevation: NA

Borehole Depth: 7.8' bgs
Surface Elevation: 660.53' AMSL

Descriptions By: Joshua Oliver

Well/Boring ID: SB-113

Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0 / 660	1	0-2	1.0	2 2 5 6	7	0.0			0.0-0.1 ORGANICS (grass, roots, stems), moist. 0.1-0.5 Brown fine to medium SAND, some Organics, trace Silt, non plastic, moist. 0.5-1.0 Brown fine to coarse SAND, little Coal fragments, trace red Brick, Concrete and Organics, loose, non plastic, moist	
	2	2-4	0.9	3 3 4 2	7	0.0			2.0-2.9 Brown fine to coarse SAND, trace Coal fragments, red Brick, Concrete and Organics, loose, non plastic, moist.	
5 / 655	3	4-6	0.2	3 3 1 3	4	0.0			4.0-4.2 Brown fine to medium SAND, trace Concrete, Cobble in shoe, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout
	4	6-7.8	0.3	6 4 2 50/0.1	6	0.0	X		6.0-6.3 Brown fine to medium SAND, some fine Gravel, trace Concrete, Cobble in shoe, non plastic, saturated. Split spoon refusal at 7.6' bgs.	
10 / 650									Auger refusal at 7.8' bgs. End of Boring.	
15 / 645										

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Analytical sample collected 6-7.6' ft bgs for VOCs.

Date Start/Finish: 8/25/2010
Drilling Company: Parratt Wolff, Inc.
Driller's Name: G. Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 3.25" ID
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon

Northing: 2192535.35
Easting: 545614.28
Casing Elevation: 680.2' AMSL

Borehole Depth: 31.2' bgs
Surface Elevation: 678.23' AMSL

Descriptions By: Joshua Oliver

Well/Boring ID: SB-115_MW-6
Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
680									
0	1	0-2	0.9	1 1 2 3	3	0.0			0.0-0.9 Brown fine to medium SAND, little Silt, little Coal fragments starting at 0.7' bgs, non plastic, moist
	2	2-4	0.0	4 5 4 4	9	NA			NO RECOVERY Cobble in shoe.
675									4.0-4.4 Brown fine to medium SAND, trace Coal fragments and medium Gravel, non plastic, moist
5	3	4-6	0.8	7 4 2 2	6	0.0			4.4-4.8 White-black CINDERS, some red Brick, little Coal fragments, non plastic, moist.
	4	6-8	1.0	2 2 2 2	4	0.0			6.0-7.0 Brown-white fine to coarse SAND, some Cinders, little Coal fragments, trace fire Brick, Wood and red Brick, non plastic, moist.
									8.0-8.1 Brown-white fine to coarse SAND, some Cinders, little Coal fragments, trace fire Brick, Wood and red Brick, non plastic, moist
670	5	8-10	1.1	2 2 2 3	4	0.0			8.1-9.1 Black-white CINDERS, some Coal fragments, little red Brick, trace Slag, trace Glass, non plastic, moist.
10	6	10-12	0.7	1 1 1 1	2	0.0			10.0-10.7 Black-white CINDERS, some Coal fragments, little red Brick, trace Slag, trace Glass, non plastic, moist.
	7	12-14	0.6	1 1 1 1	2	0.0			12.0-12.6 Black-white CINDERS, some Coal fragments, little red Brick, trace Slag, trace Glass, non plastic, moist
665									14.0-14.4 Gray medium to coarse SAND and fine to medium subangular GRAVEL, non plastic, moist.
15	8	14-16	0.8	23 20 6 5	26	0.0			14.4-14.7 Red BRICK, little Coal fragments, non plastic, moist
									14.7-14.8 Dark brown fine to medium SAND, trace fine Gravel, non plastic moist

Well/Boring Construction

- Locking J-Plug
- Steel Protective Casing
- Concrete Pad (0-0.5' bgs)
- 2" Sch 40 PVC Riser (3' ags-20.66' bgs)
- Bentonite/Concrete Grout (0-5' bgs)

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, WOH = weight of hammer.

Analytical sample collected 26-28' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/3/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192486.00 **Easting:** 545611.89 **Casing Elevation:** NA **Borehole Depth:** 22.0' bgs **Surface Elevation:** 680.54' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SB-116 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	680	1	0-2	0.7	WOH 2 3 3	5	0.0			0.0-0.3 Brown WOOD chips. 0.3-0.7 Brown to dark brown fine to medium SAND, some Cinders, red Brick and Coal fragments, loose, non plastic, moist. (FILL)	Boring backfilled to grade with bentonite/cement grout.
		2	2-4	0.1	1 2 2 3	4	0.0			2.0-2.1 Brown to dark brown fine to medium SAND, some Cinders, red Brick and Coal fragments, loose, non plastic, moist. (FILL)	
5	675	3	4-6	0.1	6 6 2 2	8	0.0			4.0-4.1 Brown to dark brown fine to medium SAND, some Cinders, red Brick and Coal fragments, loose, non plastic, moist (FILL)	
		4	6-8	0.3	1 2 2 2	4	0.0			6.0-6.3 Brown to dark brown fine to medium SAND, some Cinders, red Brick and Coal fragments, trace Organics, loose, non plastic, moist. (FILL)	
		5	8-10	0.1	2 1 WOH 1	NA	0.0			8.0-8.1 Brown to dark brown fine to medium SAND, some Cinders, red Brick and Coal fragments, trace Organics, loose, non plastic, moist. (FILL)	
10	670	6	10-12	0.6	1 2 1 4	3	0.0			10.0-10.6 Brown to dark brown fine to medium SAND, some Cinders, red Brick and Coal fragments, trace Glass and Slag, loose, non plastic, moist. (FILL) 12.0-12.3 Brown to dark brown fine to medium SAND, some Cinders, red Brick and Coal fragments, trace Glass and Slag, loose, non plastic, moist. (FILL)	
		7	12-14	1.2	2 2 2 3	4	0.0			12.3-12.6 Black to dark brown fine to coarse SAND, trace Cinders, non plastic, moist. (FILL) 12.6-13.2 Light brown turning reddish-brown fine to medium SAND, trace coarse Sand, non plastic, moist.	
15	665	8	14-16	0.1	1 2 8 7	10	0.0			14.0-14.1 Light brown turning reddish-brown fine to medium SAND, trace coarse Sand, non plastic, moist to wet	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, WOH = weight of hammer.

Analytical sample collected 20-22 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/24/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192590.17 **Easting:** 545651.43 **Casing Elevation:** NA **Borehole Depth:** 23.0' bgs **Surface Elevation:** 677.48' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-117** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
680										
0	1	0-2	1.0	1 1 1 1	2	0.0			0.0-0.4 Brown fine to coarse SAND, some Organics, little Silt, trace Cinders, non plastic, moist. 0.4-1.0 Black-white CINDERS, some Coal fragments, trace Slag, non plastic, moist.	
675	2	2-4	0.3	2 2 3 4	5	0.0			2.0-2.3 Black-white CINDERS, some Coal fragments, trace Slag, trace red Brick, non plastic, moist.	
5	3	4-6	0.4	1 1 1 1	2	0.0			4.0-4.4 Black-white CINDERS, some Coal fragments, trace Slag, trace red Brick, non plastic, moist	
670	4	6-8	0.5	2 1 2 1	3	0.0			6.0-6.5 Black-white CINDERS, some Coal fragments, trace Slag, trace red Brick, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout.
	5	8-10	0.8	2 2 3 3	5	0.0			8.0-8.8 Black-white CINDERS, some Coal fragments, some Slag, trace red Brick, trace gray medium Sand and fine subangular Gravel, non plastic, moist.	
10	6	10-12	1.2	2 3 2 3	5	0.0			10.0-11.2 Black-gray-brown CINDERS and COAL fragments, some Slag, trace fire Brick, non plastic, moist	
									12.0-12.3 Black COAL fragments, non plastic, moist.	
665	7	12-14	0.7	3 4 3 4	7	0.0			12.3-12.7 Red BRICK, some black/white Cinders Coal fragments and Slag, trace fine Gravel, non plastic, moist	
									14.0-14.3 Red BRICK	
									14.3-14.4 Black COAL fragments	
15	8	14-16	0.9	3 4 6 3	10	0.0			14.4-14.9 Pink-gray medium to coarse SAND, red BRICK and fine GRAVEL non plastic, moist.	

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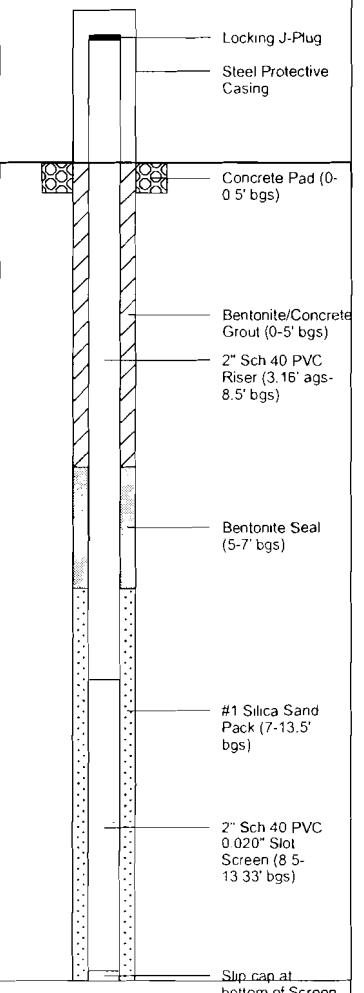
Analytical sample collected 21-23 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 7/29/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192289.22 **Easting:** 545714.14 **Casing Elevation:** 664.6' AMSL **Borehole Depth:** 13.5' bgs **Surface Elevation:** 662.51' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-118_MW-7** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
665									
0	1	0-2	0.8	6 10 7 6	17	0.0			0.0-0.8 Light brown to brown fine to coarse SAND, some fine multicolored Gravel, trace Silt, Organics, and Cinders, non plastic, moist.
									2.0-2.3 Light brown fine to coarse SAND, some fine multicolored Gravel, trace Silt, Organics, and Cinders, non plastic, moist.
660	2	2-4	1.0	4 4 4 4	8	0.0			2.3-3.0 Brown fine to coarse SAND and fine subangular GRAVEL, little red Brick, Coal fragments, Slag fragments and Cinders, non plastic, moist.
									4.0-4.4 Brown-gray medium to coarse SAND and fine subangular multicolored GRAVEL, trace red Brick and Cinders, non plastic, moist.
5	3	4-6	0.7	12 14 7 5	21	0.0			4.4-6.0 Brown medium to coarse SAND, non plastic, moist.
	4	6-8	0.7	7 6 7 8	13	0.0			6.0-6.7 Light brown fine SAND, some fine to medium subangular white Gravel, little Silt, trace Organics, non plastic, moist.
655									
	5	8-10	0.2	6 4 2 2	6	0.0			8.0-8.2 Light brown fine SAND, some fine to medium subangular white Gravel, little Silt, trace Organics, non plastic, moist.
10									10.0-10.8 Light brown fine SAND, some fine to medium subangular white Gravel, little Silt, trace Organics, non plastic, moist.
	6	10-12	1.1	5 7 3 5	10	0.0			10.8-11.1 Dark brown fine to medium SAND, little Silt, white angular rock fragments at 11.0' bgs, trace Organics, organic odor, non plastic, saturated.
									12.0-12.2 Dark brown fine to medium SAND, little Silt, trace Organics, organic odor, non plastic saturated
650	7	12-13.5	1.5	2 2 4 50/0.3	6	0.0	X		12.2-13.5 Brown to light brown (lighter with depth) fine SAND, some Silt, trace organics, non plastic, saturated
									Refusal at 13.5' bgs End of Boring
15									



Well/Boring Construction

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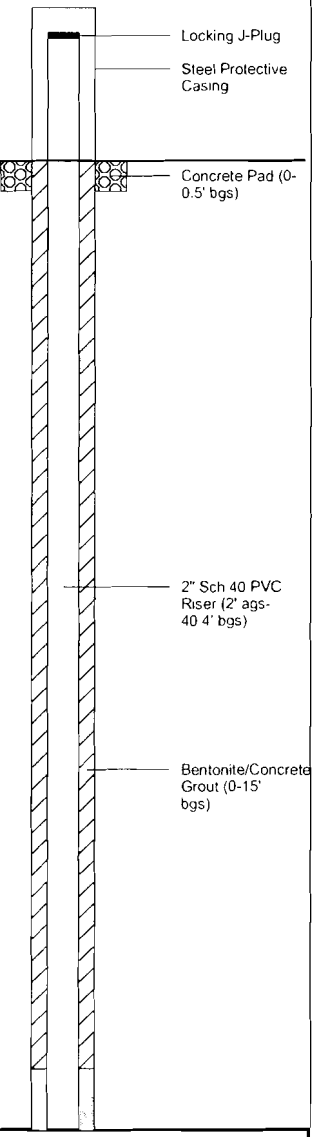
Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 12-13.5' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/3 & 8/6/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger/Coring **Auger Size:** 4.25" ID Auger/HQ Core Barrel **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon/ 2.5" x 5' Core Barrel	**Northing:** 2192352.85 **Easting:** 545734.72 **Casing Elevation:** 655.6' AMSL **Borehole Depth:** 41.0' bgs **Surface Elevation:** 653.68' AMSL **Descriptions By:** Joshua Oliver	**Well ID/Boring ID:** **SB-120/MW-8R** **Client:** National Grid **Site Location:** Malone - Amsden Street Former MGP Site Malone, NY

Depth (ft bgs) / Elevation (ft AMSL)	Sample Run Number	Sample/Int/Type	Blow Counts/ Minutes per ft - Coring	N - Value / RQD (%) - Coring	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
655								
0								
	1	0-2	3 6 8 11	14	0.8	0.0		0.0-0.4 Brown fine to coarse SAND, some Organics, non plastic, moist 0.4-0.8 Brown to gray fine to coarse SAND and fine multicolored GRAVEL, trace red Brick and Cinders, non plastic, moist. (FILL)
	2	2-4	6 11 29 13	40	0.9	0.0		2.0-2.6 Brown to gray fine to coarse SAND and fine multicolored GRAVEL, trace red Brick and Cinders, non plastic, moist. (FILL) 2.6-2.9 White-gray fine to coarse SAND and fine to medium GRAVEL (slight pinkish hue to Sand), Cobble in shoe, non plastic, moist.
650								4.0-4.4 White-gray fine to coarse SAND and fine to medium GRAVEL (slight pinkish hue to Sand), Cobble in shoe, non plastic, moist.
5	3	4-6	12 5 6 12	11	0.6	50.8		4.4-4.6 Black solid hardened tar-like material, tar-like odor, medium plasticity, moist.
	4	6-8	7 2 5 8	7	0.5	0.0		6.0-6.5 Red BRICK, non plastic, moist. 8.0-8.1 Red BRICK and solid black Tar-like material (taffy consistency) at 8.0-8.4' bgs, tar-like odor, non plastic, moist.
645	5	8-10	12 13 14 8	27	0.9	98.1		8.1-8.9 Light brown to gray fine to medium SAND and fine subangular GRAVEL, tar-like material continues, tar-like odor, non plastic, moist.
10	6	10-10.5	50/0.2	NA	0.2	0.0		10-10.2 Dark brown to black medium to coarse fine subangular GRAVEL, very faint tar-like odor, non plastic, saturated.
	NA	10.5-10.7	NA	NA	NA	NA		No samples collected/logged
	1	10.7-14	40 40 40	81	3.08	NA		10.7-14.0 White/gray fine to coarse Quartzite SANDSTONE with dark gray very fine laminations throughout, hard. Fractures: 11.2'-hz, 11.8'-hz, 12.65'-hz, 12.83'-hz, 13.55'-hz, possible silt seem at 12.83' bgs. Munsell Color: N2-N7 Impacts: Possible black staining at 12.65 and 12.83' bgs. Approximate water loss: 220 gal
640								
15	2	14-16	11 13	54	1.75	NA		14.0-16.0 White/gray fine to coarse Quartzite SANDSTONE with dark gray fine laminations throughout, hard Fractures: 14.35'-hz, 14.45'-hz, 14.7'-hz, 15.05'-hz, 15.35'-hz. Munsell Color: N3-N7 Impacts: None Approximate water loss: 0 gal



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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, deg = degrees, hz = horizontal.

Analytical sample collected 8-10 ft bgs for VOCs, SVOCs, total cyanide and free cyanide. Intervals from 0-10.5 ft bgs sampled using a 2' by 2" split spoon. Intervals from 10.7-41 ft bgs sampled using a HQ rock core barrel.

Client: National Grid

Well/Boring ID: SB-120/MW-8R

Borehole Depth: 41.0' bgs

Site Location:

Malone - Amsden Street
Former MGP Site

Depth (ft bgs) / Elevation (ft AMSL)	Sample Run Number	Sample/Int/Type	Blow Counts/ Minutes per ft - Coring	N - Value / RQD (%) - Coring	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well Construction
615 / 40	7	36-41	7 8 8 7 7	89	4 92	NA		36.0-41.0 Red/gray/pink fine to medium Quartzite SANDSTONE with dark gray fine laminations, hard. Fractures: 38.2'-hz, 39 5'-hz, 39 6'-hz, 339 9'-hz, 40 1'-hz Munsell Color: N2-N7 Impacts: None. Approximate water loss: 350	2" Sch 40 PVC 0.020" Slot Screen (20 4-40 4' bgs) Threaded cap at bottom of Screen (40.4-40.9' bgs)
610 / 45								End of boring at 41 0' bgs	
605 / 50									
600 / 55									

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Analytical sample collected 8-10 ft bgs for VOCs, SVOCs, total cyanide and free cyanide. Intervals from 0-10.5 ft bgs sampled using a 2' by 2" split spoon. Intervals from 10.7-41 ft bgs sampled using a HQ rock core barrel.

Date Start/Finish: 7/22/2010
Drilling Company: Parratt Wolff, Inc.
Driller's Name: G. Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 3.25" ID
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon

Northing: 2192389.18
Easting: 545744.12
Casing Elevation: NA

Borehole Depth: 9.5' bgs
Surface Elevation: 650.20' AMSL

Descriptions By: Joshua Oliver

Well/Boring ID: SB-121

Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	650	1	0-2	0.4	1 5 28 41	33	0.0			0-0.4 Brown fine to medium SAND, some Organics, trace Silt, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout
		2	2-4	0.4	10 6 6 4	12	0.0			2.0-2.4 Red BRICK, some Rock fragments, trace fine Sand, non plastic, moist	
5	645	3	4-6	0.2	7 8 7 7	15	0.0			4.0-4.2 Red BRICK in shoe	
		4	6-8	0.3	5 4 3 2	7	0.0			6.0-6.3 Red BRICK in shoe and white rock fragments	
		5	8-10	1.0	7 41 50/0.4	NA	4.9	X		8.0-8.7 Red BRICK, some Concrete, trace staining at 8.6' bgs, non plastic, moist 8.7-9.0 White fine to coarse SAND and fine to medium GRAVEL, black stained rock fragments at 9.0' bgs, moderate coal-tar-like odor, non plastic, moist.	
10	640									Refusal at 9.5' bgs. End of Boring.	
15	635										

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Analytical sample collected 8-9.4' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

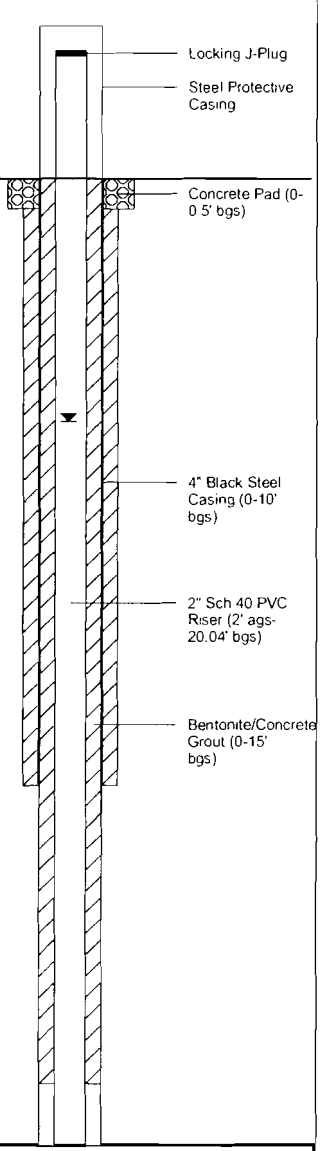
Date Start/Finish: 8/4 & 8/5/2010
Drilling Company: Parratt Wolff, Inc
Driller's Name: G. Lansing
Drilling Method: Hollow Stem Auger/Coring
Auger Size: 4.25" ID Auger/HQ Core Barrel
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon/ 2.5" x 5' Core Barrel

Northing: 2192443.92
Easting: 545759.80
Casing Elevation: 646.9' AMSL
Borehole Depth: 40.0' bgs
Surface Elevation: 645.23' AMSL
Descriptions By: Joshua Oliver

Well ID/Boring ID: SB-122/MW-9R
Client: National Grid
Site Location: Malone - Amsden Street
Former MGP Site
Malone, NY

Depth (ft bgs) / Elevation (ft AMSL)	Sample Run Number	Sample/Int/Type	Blow Counts/ Minutes per ft - Coring	N - Value / RQD (%) - Coring	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
0 / 645	1	0-2	3 9 50/0 5	NA	0.9	0 0		0 0-0.7 Brown fine to coarse SAND and fine to medium angular GRAVEL, trace Organics, non plastic, moist. 0.7-0.9 White-gray medium to coarse GRAVEL, little fine to medium Sand, fragments in shoe, non plastic, moist.
	2	2-4	17 4 5 4	9	0.6	0.0		2 0-2.6 Brown medium to coarse SAND and fine to medium subangular GRAVEL, non plastic, moist. White medium to coarse Sand in shoe
5 / 640	3	4-6	8 2 3 4	5	1 0	0.0		4 0-5.0 Brown fine to medium SAND, some Silt, trace fine Gravel, non plastic, saturated
	4	6-8	3 50/0 3	NA	1.1	0.0		6 0-6 8 Brown SILT, some fine Sand, trace fine Gravel, slight faint organic odor at 7.0' bgs, rock fragments in shoe, medium plasticity, saturated. Spoon refusal at 6.8' bgs. Auger refusal at 7.7' bgs.
	1	7.7-10	50	0	0 7	NA		7 7-10 0 White/gray fine to coarse Quartzite SANDSTONE with dark gray fine laminations, hard. Recovered 3 ground up cobbles between 0 1-0 4' in length. Fractures. None Munsell Color: N2-N7 Impacts: Faint Coal-tar-like odor in return water at 9' bgs Approximate water loss 40 gal
10 / 635	2	10-15	22 5 4 4 5	42	4 58	NA		10 0-15.0 White/gray fine to coarse Quartzite SANDSTONE with dark gray fine laminations, hard. Fractures 10 2'-hz, 10.5'-hz, 10 8'-hz, 11.0'-hz, 11 3'-hz, 11 5'-hz, 11.51'-hz, 11 72'-hz, 11 9'-hz, 12 1'-hz, 12.45'-hz, 12.8'-hz, 12.85'-hz, 13 13'-hz, 13 65'-hz, 13 9'-hz, 14.0'-hz Munsell Color: N2-N7 Impacts None Approximate water loss 10 gal
15 / 630			5					15.0-20.0 White/gray fine to coarse Quartzite SANDSTONE with dark gray fine laminations, hard

Well Construction



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Analytical sample collected 6-7.7 ft bgs for VOCs, SVOCs, total cyanide and free cyanide. Intervals from 0-7.7 ft bgs sampled using a 2' by 2" split spoon. Intervals from 7 7-40 ft bgs sampled using a HQ rock core barrel.

Client: National Grid

Well/Boring ID: SB-122/MW-9R

Borehole Depth: 40.0' bgs

Site Location:

Malone - Amsden Street
Former MGP Site

Depth (ft bgs) / Elevation (ft AMSL)	Sample Run Number	Sample/Int/Type	Blow Counts/ Minutes per ft - Coring	N - Value / RQD (%) - Coring	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well Construction
	7	35-40	13 13 15 17	100	5.25	NA		Fractures. 37.65'-10 deg, 38.1'-10 deg, 39.75'-25 deg Munsell Color. N2-N7 (Laminations are 10 R (8/2)) Impacts. None Approximate water loss 500 gal	2" Sch 40 PVC 0.020" Slot Screen (20.04-39.5' bgs) #1 Silica Sand Pack (18-40' bgs) Slip cap at bottom of Screen (39.5-40' bgs)
40 605								End of boring at 40.0' bgs.	
45 600									
50 595									
55 590									

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, deg = degrees, hz = horizontal.

Analytical sample collected 6-7.7 ft bgs for VOCs, SVOCs, total cyanide and free cyanide. Intervals from 0-7.7 ft bgs sampled using a 2' by 2" split spoon. Intervals from 7.7-40 ft bgs sampled using a HQ rock core barrel.

Date Start/Finish: 7/20/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192493.42 **Easting:** 545757.48 **Casing Elevation:** NA **Borehole Depth:** 6.5' bgs **Surface Elevation:** 644.72' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SB-123 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
645										
0	1	0-2	0.8	7 15 17 19	32	0.0			0.0-0.8 Brown-gray medium to coarse SAND and fine to medium subangular to angular GRAVEL, trace Organics, cloth and Cinders, non plastic, saturated.	Boring backfilled to grade with bentonite/cement grout.
	2	2-4	0.5	8 8 8 6	16	0.0			2.0-2.5 Gray fine to coarse SAND and fine to medium subangular GRAVEL, trace Silt, faint unknown odor, trace black staining, non plastic, saturated.	
640	3	4-6	0.6	9 17 9 7	16	0.0	X		4.0-4.6 Gray to dark gray fine SAND and SILT, coarse Gravel at 4.1' bgs, faint unknown odor, medium plasticity, saturated.	
5	4	6-8	NA	50/0.1	NA	NA			NO RECOVERY.	
									Refusal at 6.5' bgs. End of Boring.	
635										
10										
630										
15										

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 4-6' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 7/29/2010 **Drilling Company:** Parratt Wolff, Inc **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192671.63 **Easting:** 545756.71 **Casing Elevation:** 642.4' AMSL **Borehole Depth:** 6.5' bgs **Surface Elevation:** 641.47' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SB-125_MW-2 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0										Locking J-Plug Steel Protective Casing
642	1	0-2	0.7	WOH/ 1.5' 17	NA	0.2			0-0.7 Dark brown to light brown fine to medium SAND, some Organics, little Silt, organic odor, non plastic, moist	Concrete Pad (0-0.5' bgs) Bentonite/Concrete Grout (0-2' bgs)
	2	2-4	0.3	5 5 4 5	9	0.0			2.0-2.3 Dark brown to light brown fine to medium SAND, some Organics, little Silt, organic odor, non plastic, moist. 4.0-4.2 Dark brown to light brown fine to medium SAND, some Organics, little Silt, organic odor, non plastic, moist.	Bentonite Seal (2-3' bgs) 2" Sch 40 PVC Riser (1.92' ags-3.5' bgs)
5	3	4-6	0.9	5 7 7 9	14	3.9			4.2-4.9 Gray/brown fine to medium SAND and white coarse subangular GRAVEL, trace Silt, very faint degraded petroleum-like odor, non plastic, saturated. 6.0-6.3 Gray/brown fine to medium SAND and fine to medium Subangular GRAVEL, trace Silt, faint degraded petroleum-like odor, non plastic, saturated	#1 Silica Sand Pack (3-6.5' bgs) 2" Sch 40 PVC 0.020" Slot Screen (3.5-6.33' bgs)
635	4	6-6.5	0.3	1 50/0.3	NA	8.9			Refusal at 6.5' bgs. End of Boring	Slip cap at bottom of Screen (6.33-6.5' bgs)
10										
15										

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, WOH = weight of hammer.

Analytical sample collected 4.5-6.5' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 7/23/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192493.87 **Easting:** 545482.37 **Casing Elevation:** NA **Borehole Depth:** 32.2' bgs **Surface Elevation:** 687.64' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-126** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	690										
0		1	0-2	0.4	1 3 7 22	10	0.0			0.0-0.4 Brown fine to coarse SAND, some Organics, little Silt, cobble in shoe, non plastic, moist (FILL)	
	685	2	2-4	0.4	4 6 6 5	12	0.0			2.0-2.4 Brown fine to coarse SAND, some Organics, little Silt, trace Cinders and Organics, non plastic, moist (FILL)	
5		3	4-6	0.5	2 1 1 1	2	0.0			4.0-4.5 Brown fine to coarse SAND, trace Cinders and Organics, non plastic, moist. (FILL)	
	680	4	6-8	0.1	2 2 1 2	3	0.0			6.0-6.1 Metal piece and COBBLE in tip of shoe, wet. 8.0-8.5 Brown fine to coarse SAND, trace Cinders, Organics and Glass, trace Silt, non plastic, moist. (FILL)	Boring backfilled to grade with bentonite/cement grout.
		5	8-10	0.7	2 3 2 3	5	0.0			8.5-8.7 Brown fine SAND, little Silt, trace fine Gravel, non plastic, moist	
10		6	10-12	0.7	3 3 3 3	6	0.0			10.0-10.7 Brown fine SAND, little Silt, little fine subangular Gravel, trace Silt, non plastic, moist	
	675	7	12-14	NA	3 4 3 4	7	NA			NO RECOVERY Cobble in shoe	
15		8	14-16	0.9	4 4 8 8	12	0.0			14.0-14.9 Brown (lighter with depth) fine to medium SAND, trace Silt, fine Gravel, non plastic, moist	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, WOH = weight of hammer.

Analytical sample collected 23-25 ft bgs for VOCs, SVOCs, total cyanide and 29.4-30.6 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/23-8/24/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192589.00 **Easting:** 545605.17 **Casing Elevation:** NA **Borehole Depth:** 23.1' bgs **Surface Elevation:** 678.22' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SB-127 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	1	0-2	1.3	1 4 8 10	12	0.0			0.0-0.8 Brown fine to coarse SAND, some Organics, trace Coal fragments, non plastic, moist. 0.8-1.3 Pink-brown medium to coarse SAND, some red Brick, trace fine Sand and Cinders, non plastic, moist.	
	2	2-4	0.6	10 30 10 5	40	0.0			2.0-2.6 Brown fine to coarse SAND and fine to medium subangular GRAVEL, trace Brick, Cinders, Slag, Coal fragments, Glass fragments and Organics, non plastic, moist. 4.0-4.2 Brown fine to coarse SAND and fine to medium subangular GRAVEL, trace Brick, Cinders, Slag, Coal fragments, Glass fragments and Organics. non plastic, moist.	
	3	4-6	1.4	11 6 6 4	12	0.0			4.2-4.3 Dark brown medium to coarse SAND, trace Slag and Coal fragments, non plastic, moist 4.3-4.5 Red BRICK.	
	4	6-8	0.9	4 2 2 2	4	0.0			4.5-4.6 Brown fine to coarse SAND and fine to medium subangular GRAVEL, trace Brick, Cinders, Slag, Coal fragments, Glass fragments and Organics, non plastic, moist. 4.6-4.8 Dark brown fine to coarse SAND, trace Coal fragments, non plastic, moist. 4.8-5.0 White CINDERS. some Slag and Coal fragments, non plastic. moist	
	5	8-10	1.0	2 2 2 3	4	0.0			5.0-5.2 Brown fine to coarse SAND, trace Silt and fine Gravel, non plastic, moist. 5.2-5.4 White CINDERS, some Slag and Coal fragments, non plastic, moist	Boring backfilled to grade with bentonite/cement grout
	6	10-12	1.5	2 5 6 6	11	0.0	X		6.0-6.4 Brown-white fine to coarse SAND, some Cinders little red Brick, trace Slag, non plastic, moist 6.4-6.7 WOOD 6.7-6.9 Red BRICK. 8.0-8.7 Dark brown fine to medium SAND, trace Silt and Organics, non plastic moist	
	7	12-14	1.0	3 5 3 5	8	0.0			8.7-9.0 Black-white CINDERS, some Slag and Coal fragments. non plastic. moist 10.0-10.6 Black-gray CINDERS, some Coal fragments and medium to coarse Sand, non plastic. moist	
	8	14-16	1.2	9 7 5 4	12	0.0			10.6-11.1 Gray SILT. some fine Sand, trace Clay. stiff, green seam at 11' bgs non plastic, moist 11.1-11.5 Gray-black-orange CINDERS, some Slag and Coal fragments trace red Brick, non plastic, moist. 12.0-13.0 Gray-black-orange CINDERS, some Slag and Coal fragments, trace	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 10-12 and 21-23 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/24/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192555.68 **Easting:** 545640.21 **Casing Elevation:** NA **Borehole Depth:** 21.5' bgs **Surface Elevation:** 676.39' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** **SB-128** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample
1	0-2	1.0	1, 1, 2, 2	3	0.0	
2	2-4	1.0	2, 3, 3, 4	6	0.0	
3	4-6	1.1	2, 2, 2, 2	4	0.0	
4	6-8	0.6	1, 1, 1, 1	2	0.0	
5	8-10	0.8	2, 2, 3, 4	5	0.0	
6	10-12	1.3	1, 2, 1, 2	3	0.0	
7	12-14	0.8	2, 2, 2, 2	4	0.0	
8	14-16	0.8	2, 2, 2, 2	4	0.0	

Stratigraphic Description

- 0.0-0.8 Brown fine to medium SAND, some Silt, little Organics, trace Coal fragments, non plastic, moist.
- 0.8-1.0 White-black CINDERS, some Coal fragments, trace red Brick. Slag and fire Brick, non plastic, moist.
- 2.0-3.0 White-black CINDERS, some Coal fragments. trace red Brick, Slag and fire Brick, non plastic, moist
- 4.0-4.7 Brown medium to coarse SAND. trace Cinders and Coal fragments. non plastic, moist.
- 4.7-5.0 White-black CINDERS, some Coal fragments, trace red Brick. non plastic, moist.
- 5.0-5.1 Red BRICK.
- 6.0-6.6 White-black-brown CINDERS, some fine to medium Sand, little Coal fragments and Slag, trace red Brick, non plastic, moist.
- 8.0-8.8 White-black-brown CINDERS, some fine to medium Sand, little Coal fragments and Slag. trace red Brick, non plastic. moist
- 10.0-10.4 Brown fine to medium SAND. little Silt, trace Cinders and Coal fragments. non plastic, moist.
- 10.4-11.3 White-black CINDERS, some Coal fragments and Slag non plastic. moist.
- 12.0-12.2 White-black CINDERS. some Coal fragments and Slag non plastic moist.
- 12.2-12.6 Brown fine to medium SAND, little Silt. trace Cinders and Coal fragments. non plastic moist
- 12.6-12.8 White-black CINDERS. some Coal fragments and Slag. non plastic moist
- 14.0-14.8 White-black CINDERS. some Coal fragments and Slag trace amber Glass fragments, non plastic, moist.

Well/Boring Construction: Boring backfilled to grade with bentonite/cement grout

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 18.4-20.4 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/18/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** J. Percy **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192278.04 **Easting:** 545508.51 **Casing Elevation:** NA **Borehole Depth:** 21.5' bgs **Surface Elevation:** 695.46' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-129** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	695	1	0-2	0.7	WOH/ 1.0 8 8	NA	0.0			0.0-0.5 ASPHALT 0.5-0.9 Black fine to coarse SAND and GRAVEL, some Asphalt fragments, trace red Brick, non plastic, moist 0.9-1.2 Gray medium to coarse GRAVEL, non plastic, moist.	
		2	2-4	0.8	5 3 2 4	5	0.0			2.0-2.8 Black to dark brown fine to coarse SAND and fine to medium GRAVEL, some Slag, trace red Brick and Cinders, non plastic, moist	
5	690	3	4-6	0.0	4 5 4 5	9	NA			NO RECOVERY Cobble in shoe.	
		4	6-8	1.5	4 8 5 3	13	0.0			6.0-7.5 Brown fine to medium SAND, little Silt, trace coarse Sand (black laminations of coarse Sand and fine Gravel at 6.4' bgs), rock fragments at 6.9' bgs, non plastic, wet.	
		5	8-10	0.9	3 4 3 3	7	0.0			8.0-8.9 Brown SILT, little medium to coarse Sand, medium plasticity, wet to saturated. 10.0-10.1 Brown SILT, little medium to coarse Sand, medium plasticity, wet	Boring backfilled to grade with bentonite/cement grout.
10	685	6	10-12	1.1	3 2 4 5	6	6.9	X		10.1-10.3 White to light brown medium SAND, medium plasticity, moist 10.3-11.1 Brown to light brown alternating layers of medium to coarse SAND and SILT, very faint degraded petroleum-like odor, non plastic, moist to wet.	
		7	12-14	1.6	8 13 13 17	26	0.0			12.0-13.6 Brown alternating layers (0.3' thick) medium to coarse SAND and Clayey SILT, stiff, medium plasticity, moist	
15	680	8	14-16	2.0	7 9 8 9	17	0.0			14.0-16.0 Brown Clayey SILT, stiff, 2 laminations of medium to coarse SAND medium plasticity, moist	

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Analytical sample collected 10-12 ft bgs for VOCs, SVOCs, total cyanide and free cyanide and 18.3-20.3 ft bgs for VOCs, SVOCs and total cyanide.

Date Start/Finish: 8/17/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** J. Percy **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192221.36 **Easting:** 545631.37 **Casing Elevation:** NA **Borehole Depth:** 30.1' bgs **Surface Elevation:** 702.17' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-130** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
705										
0	1	0-2	0.4	4 4 5 6	9	0.0			0.0-0.4 Brown fine to coarse SAND, some Organics, little fine to medium subangular Gravel, non plastic, moist.	
700	2	2-4	0.3	4 3 4 3	4	0.0			2.0-2.3 Brown fine to coarse SAND, some Organics, little fine to medium subangular Gravel, trace Coal fragments, Cobble in shoe, non plastic, moist.	
5	3	4-6	0.2	4 1 2 3	3	0.0			4.0-4.2 Brown fine to coarse SAND, some Organics and fine to medium subangular Gravel, trace Coal fragments, non plastic, moist.	
695	4	6-8	0.8	2 4 4 2	8	0.0			6.0-6.8 Black COAL fragments, trace brown medium Sand, medium subangular Gravel, non plastic, moist	
	5	8-10	0.3	2 1 3 4	4	0.0			8.0-8.3 Black COAL fragments, some Cinders, fine Brick fragments and Slag, trace medium Sand, non plastic, moist. 10.0-10.2 Black COAL fragments, some Cinders, fine Brick fragments and Slag, trace medium Sand, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout.
10	6	10-12	1.1	4 3 3 2	6	0.0			10.2-11.1 Brown fine to medium SAND, trace coarse Sand and Organics, non plastic, moist	
690	7	12-14	1.7	3 4 4 8	8	0.0			12.0-13.7 Brown fine to medium SAND, trace Coarse Sand, Silt and Organics, non plastic, moist	
15	8	14-16	0.6	5 2 1 2	3	0.0			14.0-14.6 Brown fine to medium SAND, trace Coarse Sand, Silt and Organics, non plastic, moist	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 28-29.4 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/17/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** J. Percy **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192203.23 **Easting:** 545634.35 **Casing Elevation:** NA **Borehole Depth:** 33.0' bgs **Surface Elevation:** 702.33' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SB-131 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
705										
0	1	0-2	0.9	2 2 16 23	18	0.0			0.0-0.9 Brown fine to coarse SAND, some Organics, trace medium Gravel and black Coal fragments, non plastic, moist.	
700	2	2-4	NA	6 4 3 3	7	NA			NO RECOVERY. Cobble in shoe.	
5	3	4-6	0.3	3 1 2 2	3	0.0			4.0-4.3 Brown fine to coarse SAND, some Organics, trace medium Gravel and black Coal fragments, non plastic, moist.	
695	4	6-8	NA	2 2 2 10	4	NA			NO RECOVERY.	
	5	8-10	1.1	3 2 2 5	4	0.0			8.0-9.1 Brown fine to medium SAND, trace Organics and medium Gravel, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout
10	6	10-12	1.3	3 8 10 32	18	0.0			10.0-11.3 Brown fine to medium SAND, trace Organics, non plastic, moist. White fine to coarse Sand in shoe from broken Cobble.	
690	7	12-14	1.0	29 10 11 10	21	0.0			12.0-13.0 Brown fine to medium SAND, trace Organics and medium white Gravel, non plastic, moist	
15	8	14-16	0.9	7 5 5 4	10	0.0			14.0-14.9 Brown fine to medium SAND, trace Organics and medium white Gravel, non plastic, wet	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 30.2-32.2 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/19-8/20/2010
Drilling Company: Parratt Wolff, Inc.
Driller's Name: G. Lansing
Drilling Method: Hollow Stem Auger
Auger Size: 3.25" ID
Rig Type: Track-Mounted CME-850
Sampling Method: 2" x 2' Split Spoon

Northing: 2192335.52
Easting: 545616.14
Casing Elevation: 696.1' AMSL
Borehole Depth: 19.6' bgs
Surface Elevation: 694.15' AMSL
Descriptions By: Joshua Oliver

Well/Boring ID: SB-132_MW-5
Client: National Grid
Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	695									
0		1	0-2	1.1	WOH 2 3 2	5	213			0.0-1.1 Brown fine to coarse SAND, trace Silt and Organics, non plastic, moist. Coal moderate coated grains 1.0-1.1' bgs, faint coal-tar-like odor.
		2	2-4	0.0	1 2 1 2	3	NA			NO RECOVERY
	690									4.0-4 1 Brown medium to coarse SAND, trace fine Gravel, non plastic, moist
5		3	4-6	1.3	5 9 7 6	16	20			4.1-4 6 Black hardened tar-like material, trace fine Gravel, non plastic, moist. 4.6-5.3 Brown to light brown fine to coarse SAND, trace Silt, non plastic, moist.
		4	6-8	1.2	8 10 10 12	20	0.0			6 0-7 2 Brown to light brown fine to coarse SAND, trace Silt, non plastic, moist 8.0-8.1 White SANDSTONE fragments
	685	5	8-10	1.4	14 11 10 9	21	0.0			8.1-9.4 Brown fine to coarse SAND, little fine subangular Gravel, trace Silt, non plastic, moist.
10		6	10-12	0.8	4 5 4 5	9	0 0			10 0-10.8 Brown fine to coarse SAND, little fine subangular Gravel, trace Silt, non plastic, moist.
		7	12-14	0 8	9 11 9 15	20	0 0			12 0-12.5 White SANDSTONE and black SHALE rock fragments 12 5-12.8 Brown fine to coarse SAND, little Silt, little fine to medium subangular Gravel, non plastic, moist Auger refusal at 14.5' bgs. Move location 3' south and continue sampling at 14' bgs.
	680									14 0-14 5 Brown fine to coarse SAND and fine to medium subangular GRAVEL, non plastic, moist.
15		8	14-16	0.9	50 40 21 21	61	0.0			14 5-14 9 Gray-white rock fragments Cobble in shoe 16.0-16.2 Gray-white rock fragments, Cobble in shoe

Well/Boring Construction

- Locking J-Plug
- Steel Protective Casing
- Concrete Pad (0-0 5' bgs)
- Bentonite/Concrete Grout (0-11' bgs)
- 2" Sch 40 PVC Riser (2' ags-14.4' bgs)
- Bentonite Seal (11-13' bgs)
- #1 Silica Sand Pack (13-19 6' bgs)
- 2" Sch 40 PVC 0.020" Slot Screen (14.4-19.25' bgs)

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, WOH = weight of hammer.

Analytical sample collected 16-18' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Project Number:B0036706.0.2 Template:G:\Rockware\LogPlot 2001\LogFiles\Templates\2007 Templates\boring_well HSA 2007 analytical.tdx
Data File:SB-132_MW-5.dat Date: 2/17/2011 Created/Edited by: NJB

Date Start/Finish: 7/22/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192346.15 **Easting:** 545525.84 **Casing Elevation:** NA **Borehole Depth:** 26.4' bgs **Surface Elevation:** 692.94' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SB-133 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	692.5										
0		1	0-2	0.5	WOH 1 1 2	2	0.0			0.0-0.5 Brown to black ORGANICS, some fine to medium Sand, trace red Brick, Coal fragments and Concrete, non plastic, moist. (FILL)	
	690	2	2-4	0.7	WOH 1 1 1	2	0.0			2.0-2.7 Brown fine to medium SAND, trace Brick, no Coal fragments, trace Organics, non plastic, moist (FILL)	
5		3	4-6	0.6	WOH 1 1 4	2	0.0			4.0-4.6 Brown fine to medium SAND, trace Brick, trace Coal fragments, trace Organics, non plastic, moist. (FILL) 6.0-6.3 Brown fine to medium SAND, trace Brick, trace Coal fragments, trace Organics, non plastic, moist. (FILL)	
		4	6-8	1.3	3 3 3 3	6	0.0	X		6.3-7.3 Brown to light brown medium to coarse SAND, homogeneous, blue-green stained grains throughout sample, non plastic, moist.	
	685	5	8-10	0.9	2 3 3 3	6	0.0			8.0-8.9 Brown to light brown medium to coarse SAND, homogeneous, seam of Silt <0.01' thick at 8.6' bgs, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout.
10		6	10-12	1.4	1 2 3 4	5	0.0			10.0-10.8 Brown to light brown medium to coarse SAND, homogeneous, little Silt, trace fine Gravel at 10.7' bgs, non plastic, moist. 10.8-11.4 Light brown white fine to medium SAND, trace Coarse Sand, non plastic, moist.	
		7	12-14	1.7	4 7 10 13	17	0.0			12.0-12.2 Light brown white fine to medium SAND, trace Coarse Sand non plastic, moist 12.2-13.7 Brown SILT and fine SAND, layer of light brown to white fine to medium SAND (13.1-13.3'), medium plasticity, moist 14.0-14.2 Brown SILT and fine SAND, medium plasticity, moist	
15		8	14-16	1.8	5 10 10 9	20	0.0			14.2-15.3 Light brown to white fine to medium SAND, non plastic moist 15.3-15.8 Brown SILT and fine SAND interbedded with light brown to white SAND, medium plasticity, moist	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level, WOH = weight of hammer.

Analytical sample collected 6.3-7.3' and 24.4-26.4' ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/10/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** G. Lansing **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192173.00 **Easting:** 545531.88 **Casing Elevation:** NA **Borehole Depth:** 24.7' bgs **Surface Elevation:** 703.34' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-134** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	705										
0		1	0-2	1.1	5 10 15 16	25	0.0			0.0-1.1 Brown fine to medium SAND, some fine to medium subangular Gravel, little Organics, trace Coal fragments, non plastic, moist.	
	700	2	2-4	0.3	8 7 10 8	17	0.0			2.0-2.3 Brown fine to medium SAND, little fine to medium subangular Gravel, trace Coal, non plastic, moist. Rock in shoe	
5		3	4-6	0.7	1 2 2 3	4	0.0			4.0-4.7 Brown fine SAND, little fine to medium subangular Gravel and Silt, non plastic, moist.	
		4	6-8	0.8	5 10 9 10	19	0.0			6.0-6.8 Brown fine SAND, little fine to medium subangular Gravel and Silt, non plastic, moist.	
	695	5	8-10	1.1	8 8 9 6	17	0.0			8.0-8.9 Brown fine SAND, little fine to medium subangular Gravel and Silt, non plastic, moist.	Boring backfilled to grade with bentonite/cement grout.
10										10.0-10.4 Brown fine SAND, little fine to medium subangular Gravel and Silt, non plastic, moist.	
		6	10-12	2.0	5 10 9 10	19	NA			10.4-12.0 Brown fine SAND, trace fine subangular Gravel, non plastic, moist	
	690	7	12-14	2.0	3 4 4 5	8	0.0			12.0-14.0 Brown fine SAND, little Silt, trace fine subangular Gravel, non plastic, moist.	
15		8	14-16	2.0	1 5 3 5	8	NA			14.0-16.0 Brown fine SAND, little Silt, trace fine subangular Gravel, non plastic, moist, increasing moisture with depth	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 22-23.5 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/12/2010 **Drilling Company:** Parratt Wolff, Inc. **Driller's Name:** J. Percy **Drilling Method:** Hollow Stem Auger **Auger Size:** 3.25" ID **Rig Type:** Track-Mounted CME-850 **Sampling Method:** 2" x 2' Split Spoon	**Northing:** 2192179.85 **Easting:** 545582.14 **Casing Elevation:** NA **Borehole Depth:** 31.5' bgs **Surface Elevation:** 702.73' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SB-135** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	705										
0		1	0-2	1.1	6 11 10 9	21	0.0			0.0-0.6 Brown fine SAND, some fine to medium subangular Gravel, trace Silt and Organics, non plastic, moist. 0.6-1.1 Brown fine SAND, little fine to coarse subangular Gravel, trace Silt, non plastic, moist.	
	700	2	2-4	1.3	8 6 6 4	12	0.0			2.0-3.3 Brown fine SAND, little fine to medium subangular Gravel and Silt, non plastic, moist. 4.0-4.5 Brown fine SAND, little fine to medium subangular Gravel and Silt, non plastic, moist.	
-5		3	4-6	1.2	3 2 3 3	5	0.0			4.5-5.2 Brown fine SAND, trace fine subangular Gravel, Silt, non plastic, moist.	
	695	4	6-8	0.9	1 1 2 3	3	0.0			6.0-6.9 Brown fine SAND, trace fine subangular Gravel, Silt, non plastic, moist.	
		5	8-10	1.0	3 6 6 6	12	0.0			8.0-10.0 Brown fine SAND, trace fine subangular Gravel, Silt, non plastic, moist	Boring backfilled to grade with bentonite/cement grout
-10		6	10-12	NA	2 3 9 12	12	NA			NO RECOVERY	
	690	7	12-14	0.8	16 18 50/0.3	NA	0.0			12.0-12.9 Dark brown fine to medium SAND, little to some fine to coarse subangular Gravel and Silt, non plastic, moist. Crushed Quartz in spoon	
-15		8	14-16	NA	50/0.4	NA	NA			NO RECOVERY	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 30-31.5 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 9/2/2010 **Drilling Company:** ARCADIS **Driller's Name:** L. Terrell/J. Oliver **Drilling Method:** Hand Auger **Auger Size:** 4" Bucket Auger **Rig Type:** NA **Sampling Method:** Bucket Auger	**Northing:** 2192234.35 **Easting:** 545488.45 **Casing Elevation:** NA **Borehole Depth:** 1.0' bgs **Surface Elevation:** 703.66' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SS-100** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
705										
0	1	0-1.0	1.0	NA	NA	0.0	X		0.0-0.2 Brown fine SAND, some Silt, trace Organics, trace fine subangular Gravel, moist.	Location backfilled with cuttings.
									End of Boring at 1.0' bgs	
700										
5										
695										
10										
690										
15										

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 0-0.2 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 9/2/2010 **Drilling Company:** ARCADIS **Driller's Name:** L. Terrell/J. Oliver **Drilling Method:** Hand Auger **Auger Size:** 4" Bucket Auger **Rig Type:** NA **Sampling Method:** Bucket Auger	**Northing:** 2192260.70 **Easting:** 545645.79 **Casing Elevation:** NA **Borehole Depth:** 1.0' bgs **Surface Elevation:** 693.52' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID: SS-102** **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	695	1	0-1.0	1.0	NA	NA	0.0	X		Dark brown SILT, some Organics, little red Brick, trace Ash/Cinders and fine Sand, moist.	Location backfilled with cuttings.
										End of Boring at 1.0' bgs	
5	690										
10	685										
15											

Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 0-0.2 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 9/2/2010 **Drilling Company:** ARCADIS **Driller's Name:** L. Terrell/J. Oliver **Drilling Method:** Hand Auger **Auger Size:** 4" Bucket Auger **Rig Type:** NA **Sampling Method:** Bucket Auger	**Northing:** 2192597.18 **Easting:** 545596.47 **Casing Elevation:** NA **Borehole Depth:** 1.0' bgs **Surface Elevation:** 677.41' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SS-104 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	1	0-1.0	1.0	NA	NA	0.0	X		Brown SILT, some fine Sand, trace Organics, red Brick and Glass, moist.	Location backfilled with cuttings
									End of Boring at 1.0' bgs	

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 0-0.2 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 9/2/2010 **Drilling Company:** ARCADIS **Driller's Name:** L. Terrell/J. Oliver **Drilling Method:** Hand Auger **Auger Size:** 4" Bucket Auger **Rig Type:** NA **Sampling Method:** Bucket Auger	**Northing:** 2192508.19 **Easting:** 545809.05 **Casing Elevation:** NA **Borehole Depth:** 1.0' bgs **Surface Elevation:** 637.54' AMSL **Descriptions By:** Joshua Oliver	**Well/Boring ID:** SS-106 **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
640										
0	1	0-1.0	1.0	NA	NA	0.0	X		Brown fine SAND, little Silt, trace Organics, moist.	Location backfilled with cuttings.
635									End of Boring at 1.0' bgs.	
5										
630										
10										
625										
15										

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 0-0.2 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/31/2010 **Drilling Company:** ARCADIS **Driller's Name:** L. Terrell/J. Oliver **Drilling Method:** Hand Auger **Auger Size:** 4" Bucket Auger **Rig Type:** NA **Sampling Method:** Bucket Auger	**Northing:** 2192217.18 **Easting:** 545667.07 **Casing Elevation:** NA **Borehole Depth:** 4.0' bgs **Surface Elevation:** 680.75' AMSL **Descriptions By:** Levia Terrell	**Well/Boring ID:** SS-A **Client:** National Grid **Location:** Malone - Amsden Street Former MGP Site Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	680	1	0-0.5	0.5	NA	NA	0.0	X		0.0-0.5 Brown SILT, trace fine Sand, fine subangular Gravel and Organics, loose, moist.	Location backfilled to grade with bentonite.
		2	0.5-1	0.5	NA	NA	0.0			0.5-1.0 Brown SILT, trace fine Sand, fine subangular Gravel, Organics and Slag, loose, moist.	
		3	1-1.5	0.5	NA	NA	0.0			1.0-1.5 Brown SILT, little Slag, trace fine Sand, fine subangular Gravel, Organics and red Brick, loose, moist.	
		4	1.5-2	0.5	NA	NA	0.0			1.5-2.0 Brown SILT, little Slag, trace fine Sand, fine subangular Gravel, Organics, red Brick and Wood (roots), loose, moist.	
		5	2-2.5	0.5	NA	NA	0.0			2.0-2.5 Brown SILT, some Slag, trace medium to coarse Sand, fine subangular Gravel and red Brick, loose, moist	
		6	2.5-3	0.5	NA	NA	0.0			2.5-3.0 Brown SILT, some Slag, trace medium to coarse Sand and fine subangular Gravel, loose, moist.	
		7	3-3.5	0.5	NA	NA	0.0			3.0-3.5 Brown SILT, some medium subangular Gravel and Slag, trace fine to coarse Sand, loose, moist.	
		8	3.5-4	0.5	NA	NA	0.0			3.5-4.0 Brown SILT, some medium subangular Gravel and Slag, trace fine to coarse Sand and red Brick, loose, moist.	
5	675									End of Boring at 4.0' bgs.	
10											
15	665										

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 0-1 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 8/31/2010
Drilling Company: ARCADIS
Driller's Name: L. Terrell/J. Oliver
Drilling Method: Hand Auger
Auger Size: 4" Bucket Auger
Rig Type: NA
Sampling Method: Bucket Auger

Northing: 2192251.90
Easting: 545644.51
Casing Elevation: NA

Borehole Depth: 2.5' bgs
Surface Elevation: 693.85' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: SS-C

Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	695										
		1	0-1	1.0	NA	NA	0.0	X		0.0-1.0 Dark brown to black fine SAND and SILT, little Ash and Cinders, trace fine subangular Gravel, moist.	Location backfilled to grade with bentonite
		2	1-2	1.0	NA	NA	0.0			1.0-2.0 Dark brown to black fine SAND, SILT, CINDERS and ASH, trace medium subangular Gravel, trace red Brick, loose, moist.	
		3	2-2.5	0.5	NA	NA	0.0			2.0-2.5 Dark brown to black fine SAND, SILT, CINDERS and ASH, trace medium subangular Gravel, trace red Brick, loose, moist	
										Refusal at 2.5' bgs. End of Boring.	
	690										
5											
	685										
10											
	680										
15											

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 0-1 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 9/1/2010
Drilling Company: ARCADIS
Driller's Name: L. Terrell/J. Oliver
Drilling Method: Hand Auger
Auger Size: 4" Bucket Auger
Rig Type: NA
Sampling Method: Bucket Auger

Northing: 2192290.94
Easting: 545683.64
Casing Elevation: NA

Borehole Depth: 2.0' bgs
Surface Elevation: 670.96' AMSL

Descriptions By: Joshua Oliver

Well/Boring ID: SS-E

Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
670	1	0-1	1.0	NA	NA	0.0	X		0.0-1.0 Brown fine SAND and SILT, little Organics, trace fine Gravel (subangular to angular), moist.	Location backfilled to grade with bentonite.
	2	1-2	1.0	NA	NA	0.0			1.0-2.0 Brown fine SAND and SILT, little red Brick and Cinders, trace Organics, trace fine subangular Gravel, moist.	
									Refusal at 2.1' bgs. End of Boring	
665										

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Remarks: ags = above ground surface; bgs = below ground surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 0-1 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Date Start/Finish: 9/1/2010
Drilling Company: ARCADIS
Driller's Name: L. Terrell/J. Oliver
Drilling Method: Hand Auger
Auger Size: 4" Bucket Auger
Rig Type: NA
Sampling Method: Bucket Auger

Northing:
Easting:
Casing Elevation: NA

Borehole Depth: 1.5' bgs
Surface Elevation: NA' AMSL

Descriptions By: Joshua Oliver

Well/Boring ID: SS-G

Client: National Grid

Location: Malone - Amsden Street
Former MGP Site
Malone, NY

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		1	0-1	1.0	NA	NA	0.0	X		0.0-1.0 Brown fine SAND, little Organics, trace red Brick, fine subangular Gravel and Cinders, moist.	Location backfilled to grade with bentonite
		2	1-1.5	1.5	NA	NA	0.0			1.0-1.5 Brown fine to medium SAND and fine subangular GRAVEL, little Silt and Organics, trace Cinders and Slag, moist.	
										Refusal at 1.5' bgs. End of Boring.	

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Remarks: ags = above ground surface; bgs = below ground surface, NA = Not Applicable/Available; AMSL = Above Mean Sea Level.

Analytical sample collected 0-1 ft bgs for VOCs, SVOCs, total cyanide and free cyanide.

Attachment 1 – Forensic Evaluation Memorandum

ARCADIS

ARCADIS
11000 Regency Parkway
West Tower
Suite 205
Cary
North Carolina 27518-8518
Tel 919.415.2262
Fax 919.469.5676

MEMO

To:
File

Copies:
Scott Powlin
David Cornell

From:
Ted Sauer

Date:
January 11, 2011

ARCADIS Project No.:
B0036706

Subject:
Forensic Evaluation of PAHs in Tar Samples Collected at the National Grid Former MGP Site and Downstream of the Site in Malone, NY

This memorandum summarizes the results of an evaluation of potential sources of PAHs in tar samples collected at the National Grid Former Manufactured Gas Plant (MGP) and Downstream of the Site in Malone, NY.

Polycyclic aromatic hydrocarbons (PAHs) that included in the parent and alkyl groups of 2- to 6-ring PAHs were analyzed by modified EPA Method 8270 in two representative tar samples from the Site and three tar samples found along the river bank approximately 800 feet downstream of the Site (Coffee Street). With the results, PAH diagnostic ratios were calculated and PAH double ratio plots were prepared to help with the evaluation. The PAH diagnostic ratios are useful in identifying PAH compositional differences/ similarities that suggest potential PAH sources in samples (Yunker et al., 2000; Stout et al., 2000; EPRI, 2000). In addition, a PAH compositional fingerprint was prepared for each sample. Multiple lines of evidence from the forensic data were used to identify potential sources of the PAHs in the tar samples.

The results of the forensic PAH analyses are presented in Table 1. Also, the PAH diagnostic ratio values are provided in the table. PAH Double ratio plots for representative ratios are presented in Figures 1, 2, and 3. A PAH compositional distribution is provided for each sample (Figures A1 thru A5).

The PAH compositional distribution of each tar sample (Figures A1 thru A5) had a pyrogenic PAH pattern consistent with a composition typical of coal tar type material. Some of the lower-molecular-weight PAHs (e.g., 2- and 3-ring PAHs) were lower in relative concentrations compared to the higher-molecular-weight PAHs indicating that variable amounts of weathering of the tar had occurred. The patterns of the total ion chromatograms from the Method 8270 analyses (see lab data package) showed no petroleum product in any of the tar samples.

The coal tar material in the samples appeared to have originated from the coal carbonization process (not carbureted water gas process) since the fluoranthene/pyrene ratios were greater than 1 (Table 1). Each of

the PAH diagnostic ratios of the tar samples was consistently similar among all samples. The double ratio plot in Figure 1 shows a tight cluster of all samples indicating similarity in PAH composition and suggesting PAHs from a common source. The diagnostic ratios of Access Road Tar-1 from the Site, and Coffee StTar-3 and Coffee St Tar-4 downstream of the Site were especially consistent. PAH diagnostic ratios with the most variation among samples were plotted in Figure 2 to possible identify PAHs of a different source. Still, the diagnostic ratios were sufficiently similar to suggest tars of similar PAH composition and common PAH source. Slight differences in diagnostic ratios in samples Slope Tar-2 and Coffee St Tar-5 compared to the ratios of the other samples can be easily attributed to analytical variability, not PAH composition difference.

The physical descriptions of the tar as being described as 'pliable' or 'brittle' is consistent with the degree of weathering that has occurred for each tar sample. As illustrated in Figure 3, tar samples described as 'brittle' showed more loss of the more weathering-susceptible PAHs (e.g., 2- and 3-ring PAHs) in the tar. 'Pliable' tar samples had more of the more weathering-susceptible PAHs. The most weathered sample was Coffee St-Tar 4 where almost all the naphthalenes (2-ring PAHs) were lost.

In conclusion, although the tar samples show varying degrees of weathering of tar, the PAH compositions of the samples indicate PAHs of a similar type product and probably from a common source.

References

EPRI (Electric Power Research Institute). 2000. *Chemical Source Attribution at Former MGP Sites.* EPRI, Palo Alto, CA, NYSEG, Binghamton, NY, and RG&E, Rochester, NY. Report No. 1000728.

Stout, S.A., A.D. Uhler, K.J. McCarthy, and S. Emsbo-Mattingly. 2002. Chemical fingerprinting of hydrocarbons. *In: Introduction to Environmental Forensics*, eds. B.L Murphy and R.D. Morrison. London: Academic Press, pp. 137-260.

Yunker, M.B., Macdonald, R.W., Vingarzin, R., Mitchell, R.H., Goyette, D., and Sylvestre, S. 2002. PAH in the Fraser River basin: a critical appraisal of PAH ratios as indicators of PAH source and composition. *Organic Geochemistry* 33:489-515.

TABLE 1
PAH CONCENTRATIONS AND DIAGNOSTIC RATIOS OF TAR SAMPLES

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Sample ID:	Access Rd Tar-1		Slope Tar-2		Coffee St Tar-3		Coffee St Tar-4		Coffee St Tar-5	
Lab ID:	1012001-01		1012001-02		1012001-03		1012001-04		1012001-05	
Collection Date:	11/23/2010		11/23/2010		11/23/2010		11/23/2010		11/23/2010	
Reporting Limit:	42.0		40.1		26.7		39.9		39.2	
Units:	mg/kg oil		mg/kg oil		mg/kg oil		mg/kg oil		mg/kg oil	
cis/trans-Decalin	42.0	U	40.1	U	26.7	U	39.9	U	39.2	U
C1-Decalins	42.0	U	40.1	U	26.7	U	39.9	U	39.2	U
C2-Decalins	42.0	U	40.1	U	26.7	U	39.9	U	39.2	U
C3-Decalins	42.0	U	40.1	U	26.7	U	39.9	U	39.2	U
C4-Decalins	42.0	U	40.1	U	26.7	U	39.9	U	39.2	U
Benzothiophene	2510		1090		970		24.7	J	481	
C1-Benzo(b)thiophenes	409		304		232		50.2		272	
C2-Benzo(b)thiophenes	154		194		120		128		261	
C3-Benzo(b)thiophenes	62.1		95.9		55.5		104		154	
C4-Benzo(b)thiophenes	42.0	U	37.6	J	26.7	U	43.3		55.8	
Naphthalene	69800		30300		29000		451		12300	
C1-Naphthalenes	7770		5920		4660		893		5260	
C2-Naphthalenes	2420		3260		2040		2220		4230	
C3-Naphthalenes	844		1410		806		1540		2200	
C4-Naphthalenes	223		463		229		559		762	
Biphenyl	3270		2220		1580		167		1240	
Dibenzofuran	11600		9750		5770		3170		6310	
Carbazole	6210		5990		3350		746		4670	
Acenaphthylene	20800		6720		9220		4440		6130	
Acenaphthene	1570		3230		2000		1430		1930	
Fluorene	10000		10200		6060		5170		8370	
C1-Fluorenes	956		1230		707		1330		1860	
C2-Fluorenes	315		590		305		704		969	
C3-Fluorenes	314		2020		296		1080		1890	
Anthracene	14900		11500		8880		12300		8920	
Phenanthrene	56800		64100		29400		37000		42000	
C1-Phenanthrenes/Anthracenes	5610		7380		3690		8470		11100	
C2-Phenanthrenes/Anthracenes	1520		2490		1300		3590		4200	
C3-Phenanthrenes/Anthracenes	424		785		403		1220		1400	
C4-Phenanthrenes/Anthracenes	118		255		135		380		744	
Dibenzothiophene	3430		3590		1650		1920		2630	
C1-Dibenzothiophenes	558		749		386		794		1380	
C2-Dibenzothiophenes	242		398		202		509		801	
C3-Dibenzothiophenes	127		203		113		314		390	
C4-Dibenzothiophenes	59.9		100		46.6		139		188	
Fluoranthene	37000		48800		20400		46200		27500	
Pyrene	31300		44000		17700		40300		23500	
C1-Fluoranthenes/Pyrenes	7240		8500		4430		10400		9990	
C2-Fluoranthenes/Pyrenes	1250		2470		956		3680		3890	
C3-Fluoranthenes/Pyrenes	424		945		424		1290		1300	
C4-Fluoranthenes/Pyrenes	351	G	752	G	300	G	832	G	844	G
Naphthobenzothiophenes	1740		2040		906		2240		1910	
C1-Naphthobenzothiophenes	391		603		277		819		983	
C2-Naphthobenzothiophenes	142		260		114		340		440	
C3-Naphthobenzothiophenes	126		198		88.2		230		226	
C4-Naphthobenzothiophenes	0.0	U	77.2		0.0	U	0.0	U	0.0	U
Benz[a]anthracene	11300		13400		6360		13900		10800	
Chrysene/Triphenylene	9980		13500		5820		12000		9860	
C1-Chrysenes	1960		2960		1370		3420		4030	
C2-Chrysenes	630		1170		565		1470		1720	
C3-Chrysenes	614		970		480		1180		1270	
C4-Chrysenes	501		634		407		720		782	

TABLE 1
PAH CONCENTRATIONS AND DIAGNOSTIC RATIOS OF TAR SAMPLES

NATIONAL GRID
REMEDIAL INVESTIGATION
MALONE (AMSDEN STREET) FORMER MGP SITE
MALONE, NEW YORK

Sample ID:	Access Rd Tar-1		Slope Tar-2		Coffee St Tar-3		Coffee St Tar-4		Coffee St Tar-5	
Lab ID:	1012001-01		1012001-02		1012001-03		1012001-04		1012001-05	
Collection Date:	11/23/2010		11/23/2010		11/23/2010		11/23/2010		11/23/2010	
Reporting Limit:	42.0		40.1		26.7		39.9		39.2	
Units:	mg/kg oil		mg/kg oil		mg/kg oil		mg/kg oil		mg/kg oil	
Benzo[b]fluoranthene	9050		18800		5160		10700		7030	
Benzo[k]fluoranthene	7950		4390		3990		9390		7530	
Benzo[a]fluoranthene	2500		2820		1280		2660		2130	
Benzo[e]pyrene	6470		9520		3620		7490		5400	
Benzo[a]pyrene	13900		18800		7770		15200		11000	
Perylene	3670		4920		2060		4150		2330	
Indeno[1,2,3-cd]pyrene	7660		11400		4400		8990		5420	
Dibenz[a,h]anthracene	1530		2480		835		1830		1480	
Benzo[g,h,i]perylene	7880		13500		4730		8980		5170	
Retene	42.0	U	40.1	U	26.7	U	39.9	U	1690	
Benzo(b)fluorene	42.0	U	3270		26.7	U	39.9	U	39.2	U
1-Methylnaphthalene	4110		3540		2550		772		3460	
2-Methylnaphthalene	8550		6080		5050		697		5100	
2,6-Dimethylnaphthalene	1300		1580		1030		1020		1920	
2,3,5-Trimethylnaphthalene	109		177		92.2		201		246	
4-Methyldibenzothiophene	116		149		73.7		162		329	
2/3-Methyldibenzothiophene	212		284		150		300		512	
1-Methyldibenzothiophene	69.3		95.9		42.8		106		159	
3-Methylphenanthrene	1370		1840		858		1850		2730	
2/4-Methylphenanthrene	1820		2450		1180		2750		3610	
2-Methylanthracene	680		710		472		1060		976	
9-Methylphenanthrene	870		1160		581		1450		1810	
1-Methylphenanthrene	723		1030		496		1210		1780	

	Access Rd Tar-1 Site - downgd of tar well (pliable)	Slope Tar-2 Site - downgd of gas holder (brittle)	Coffee St Tar-3 Off-Site - downstr ~800 ft (pliable)	Coffee St Tar-4 Off-Site - downstr ~800 ft (brittle)	Coffee St Tar-5 Off-Site - downstr ~800 ft (brittle)
TPAH	385,440	402,762	206,671	298,947	278,409
TPPPAH	311,420	315,120	161,725	228,281	188,940
TPPPAH/TPAH	0.81	0.78	0.78	0.76	0.68
Diagnostic Ratios					
A/P	0.26	0.18	0.30	0.33	0.21
Fl/Py	1.18	1.11	1.15	1.15	1.17
BAA/C	1.13	0.99	1.09	1.16	1.10
BAP/C	1.39	1.39	1.34	1.27	1.12
BAA/BAP	0.81	0.71	0.82	0.91	0.98
BEP/BAP	0.47	0.51	0.47	0.49	0.49
B(b+k)F/C	1.70	1.72	1.57	1.67	1.48
Ind/ghi	0.97	0.84	0.93	1.00	1.05
2-&3-PAH/TPAH	0.57	0.43	0.54	0.30	0.47

Figure 1. Diagnostic Ratios - BEP/BAP vs Fl/Py of Tar Samples
NG Former Malone MGP Site, Malone NY

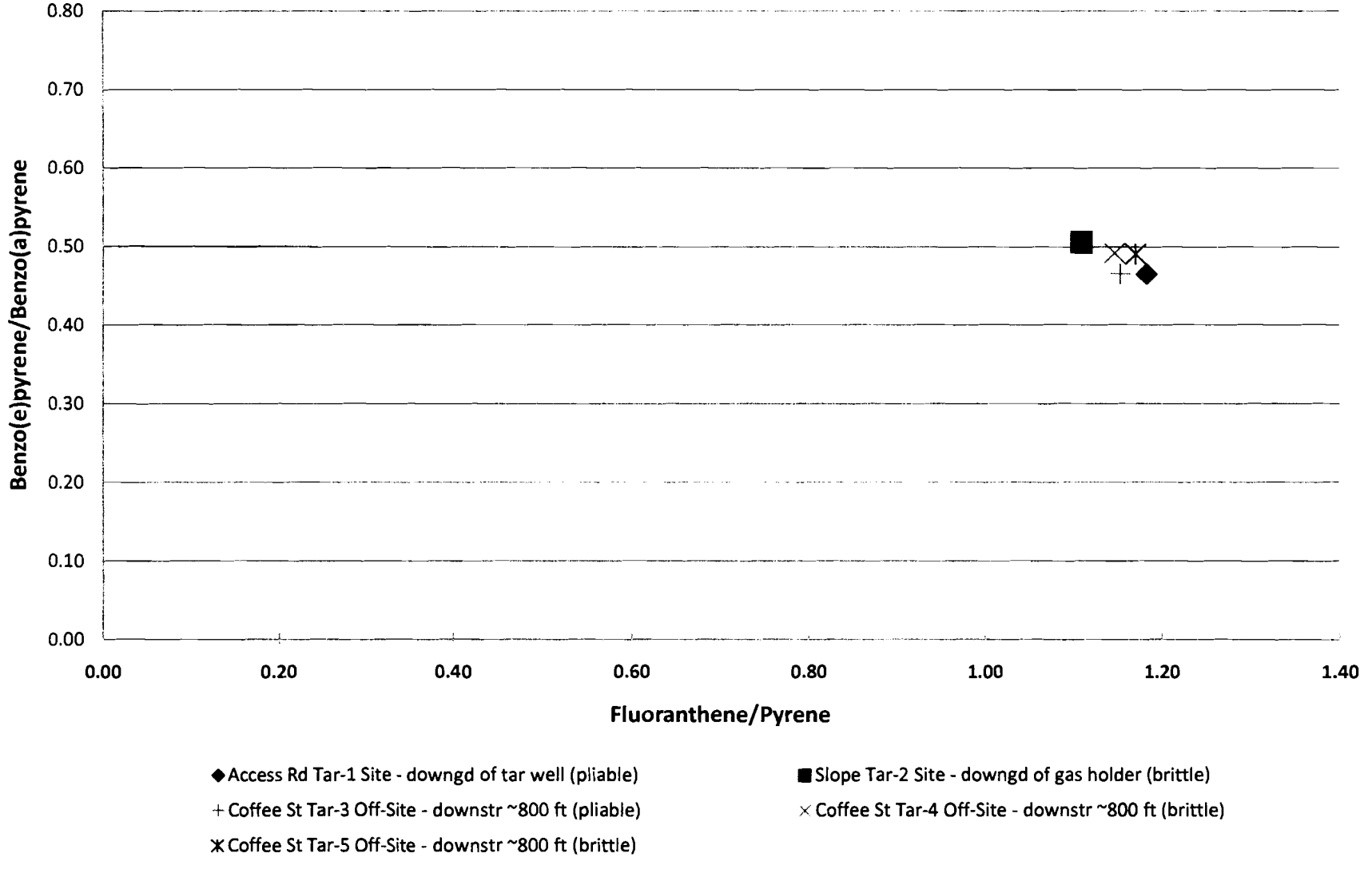


Figure 2. Diagnostic Ratios - BAA/BAP vs B(b+k)Fl/C of Tar Samples
NG Former Malone MGP Site, Malone NY

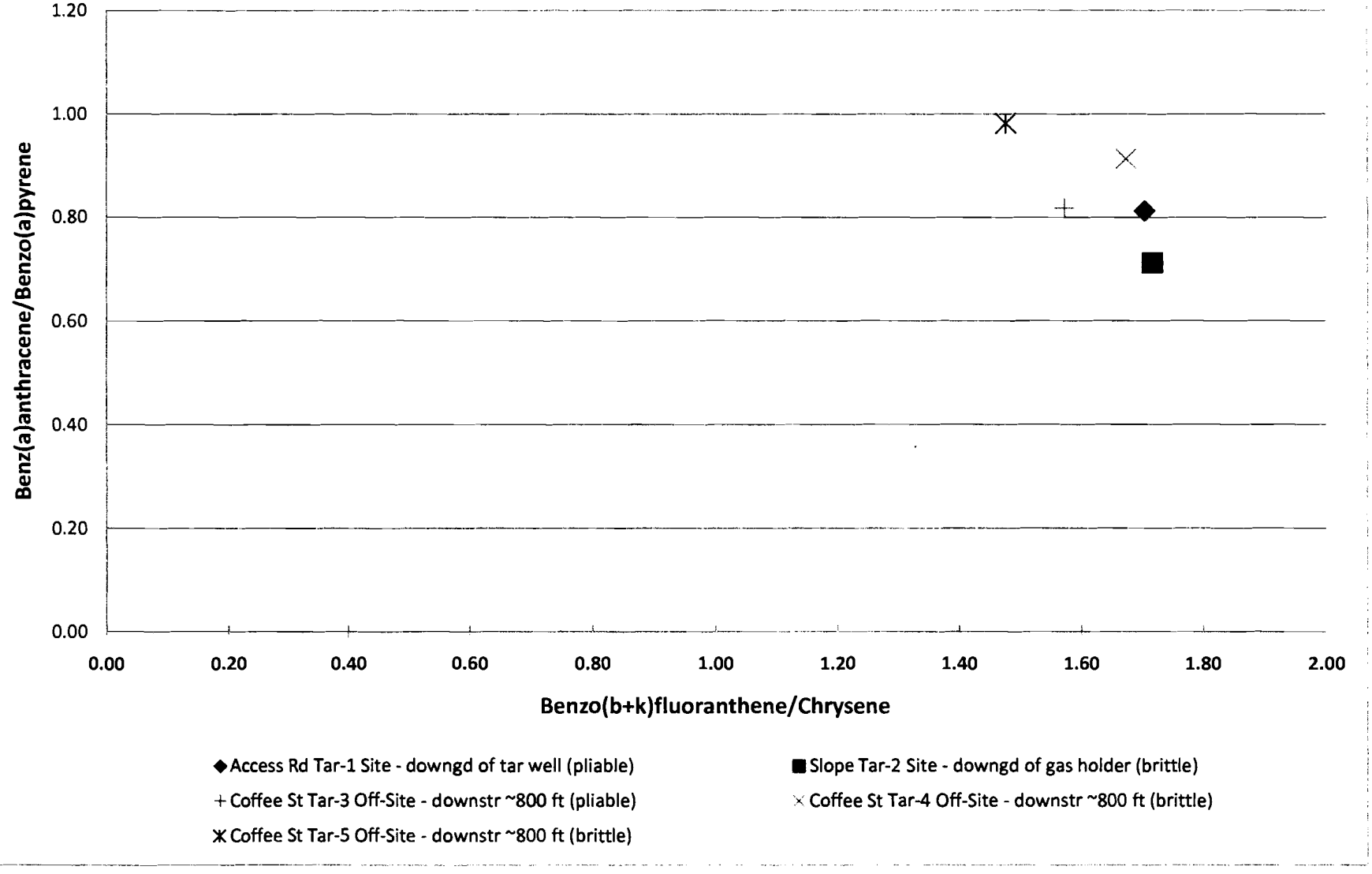
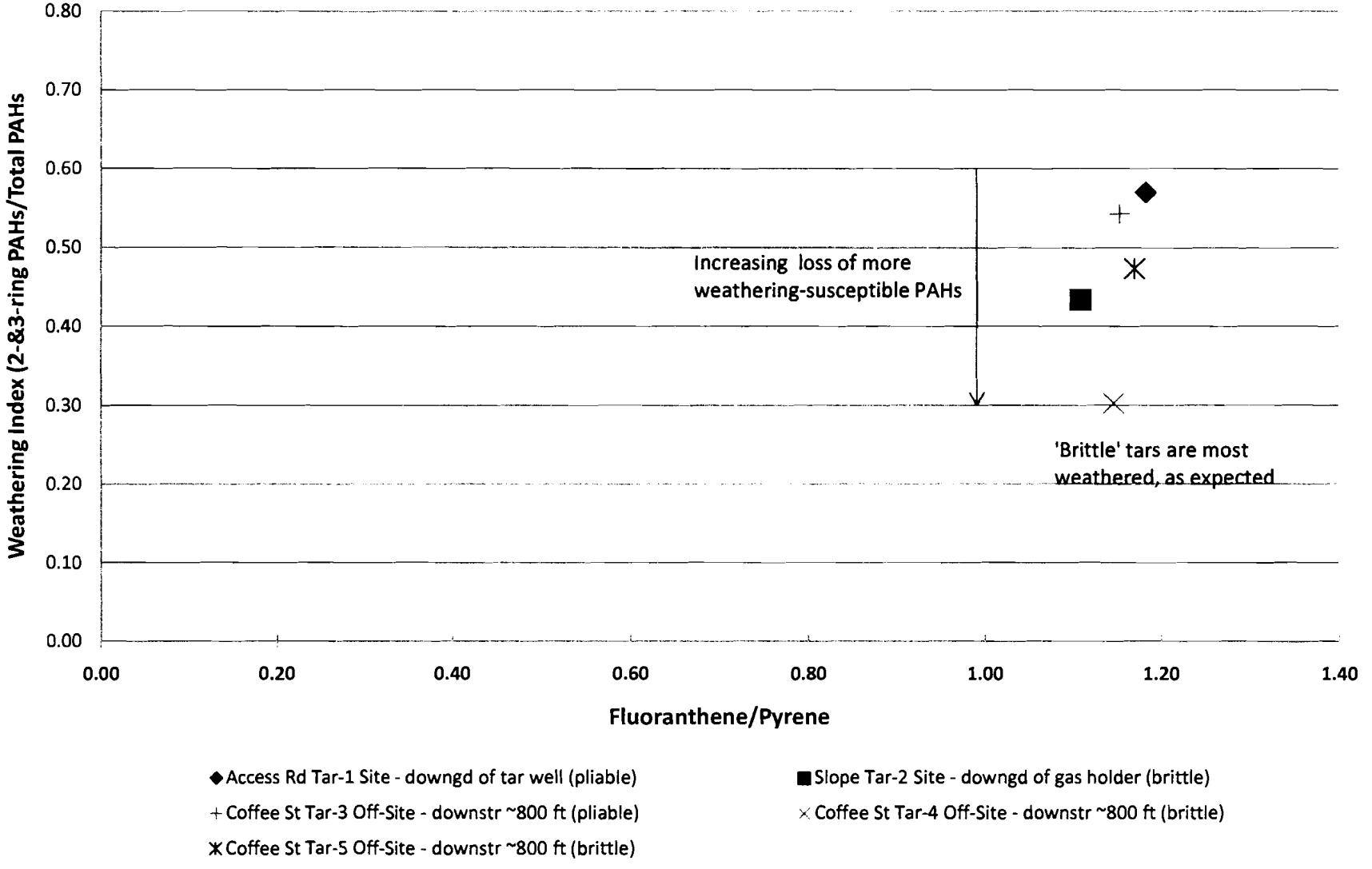


Figure 3. Diagnostic Ratios - Weathering Index vs Fl/Py of Tar Samples
NG Former Malone MGP Site, Malone NY



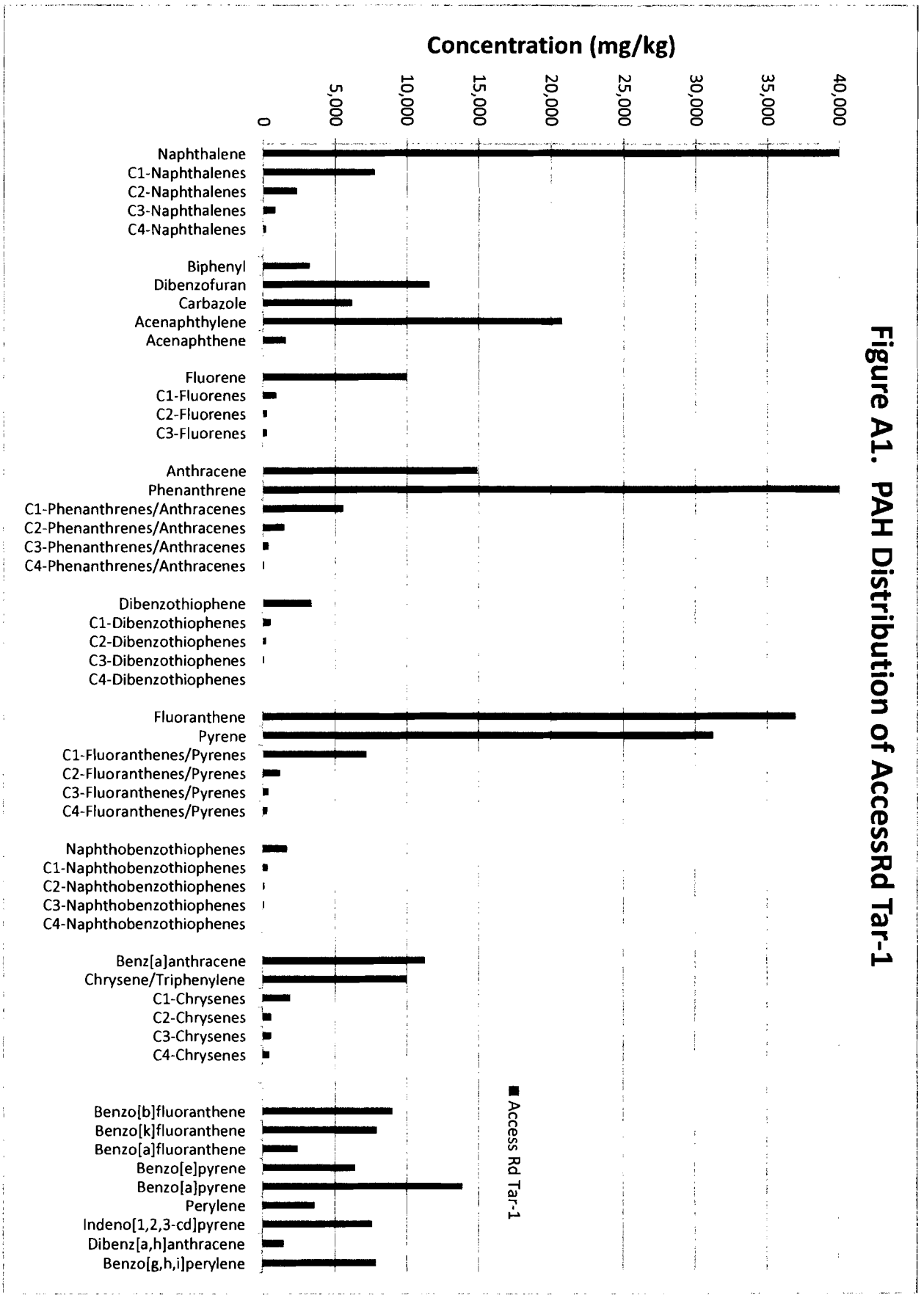


Figure A1. PAH Distribution of AccessRd Tar-1

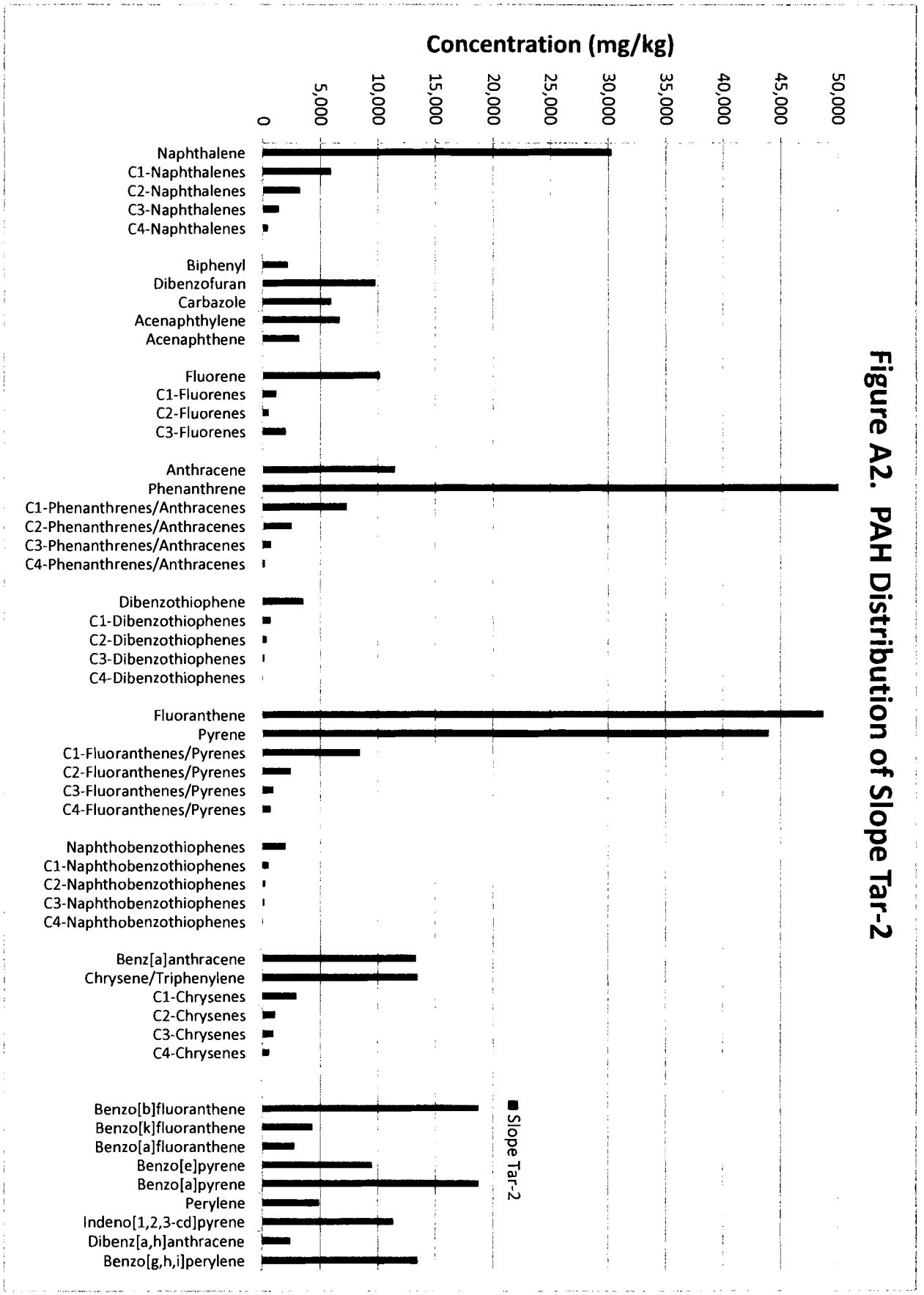


Figure A2. PAH Distribution of Slope Tar-2

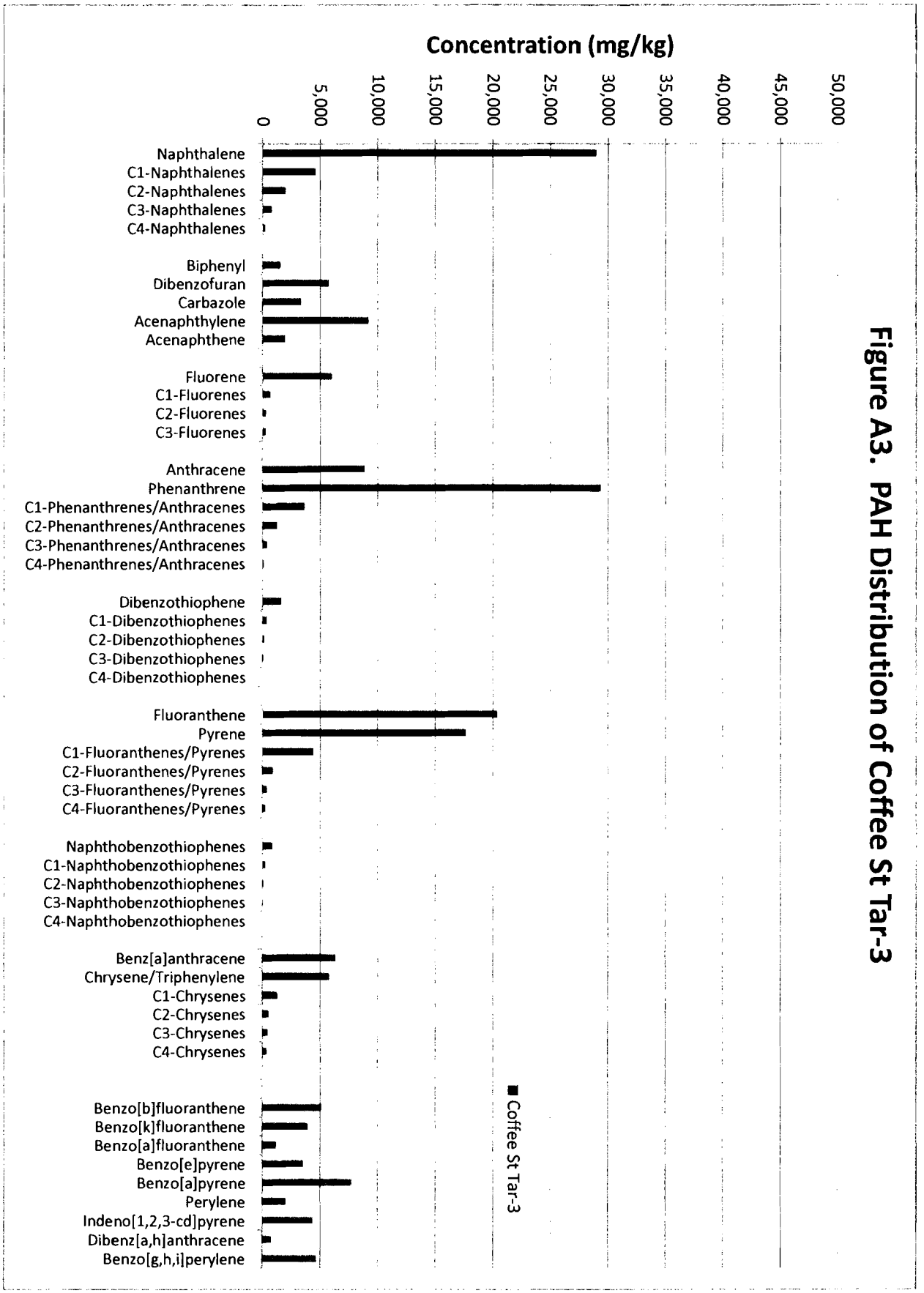


Figure A3. PAH Distribution of Coffee St Tar-3

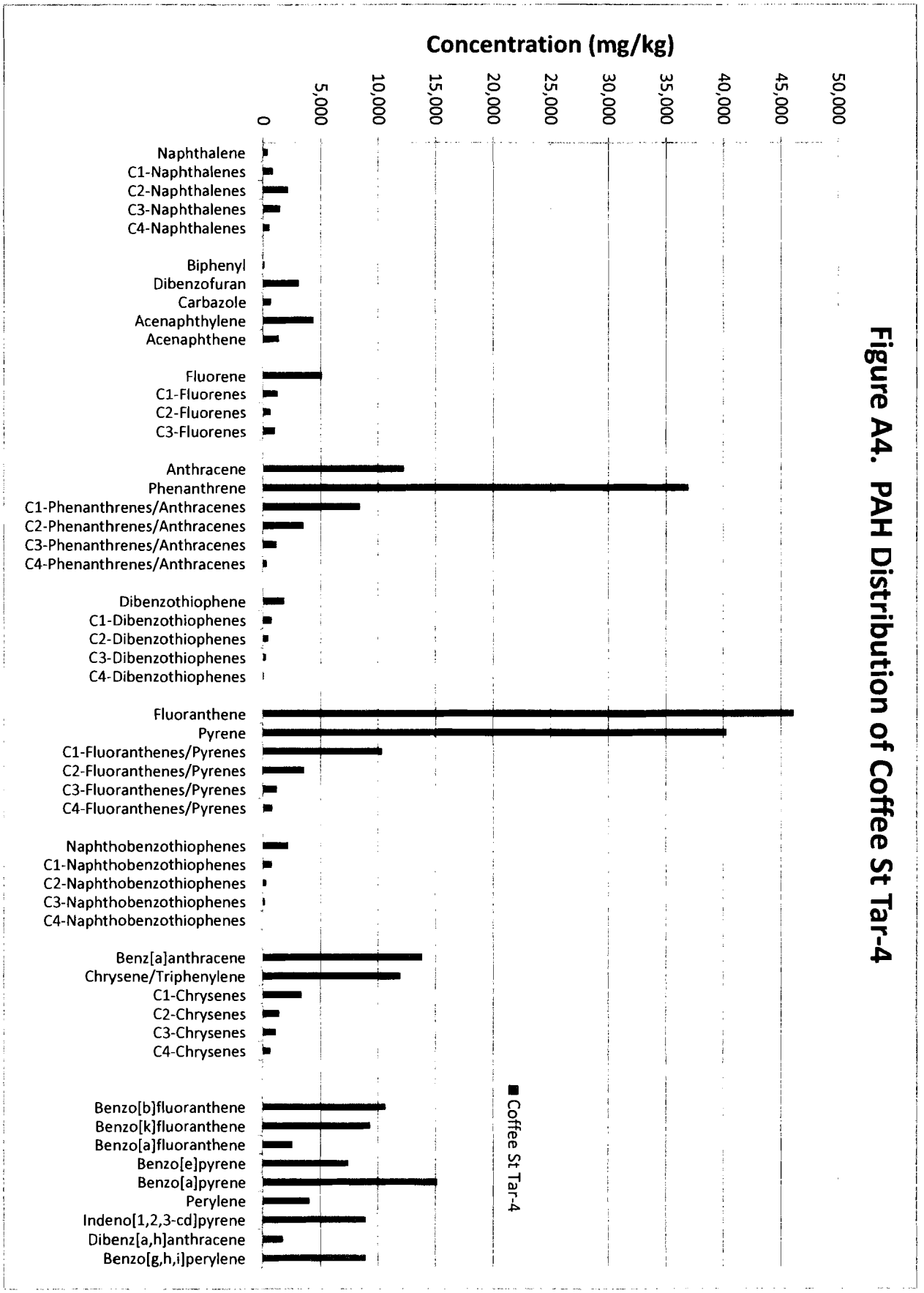


Figure A4. PAH Distribution of Coffee St Tar-4

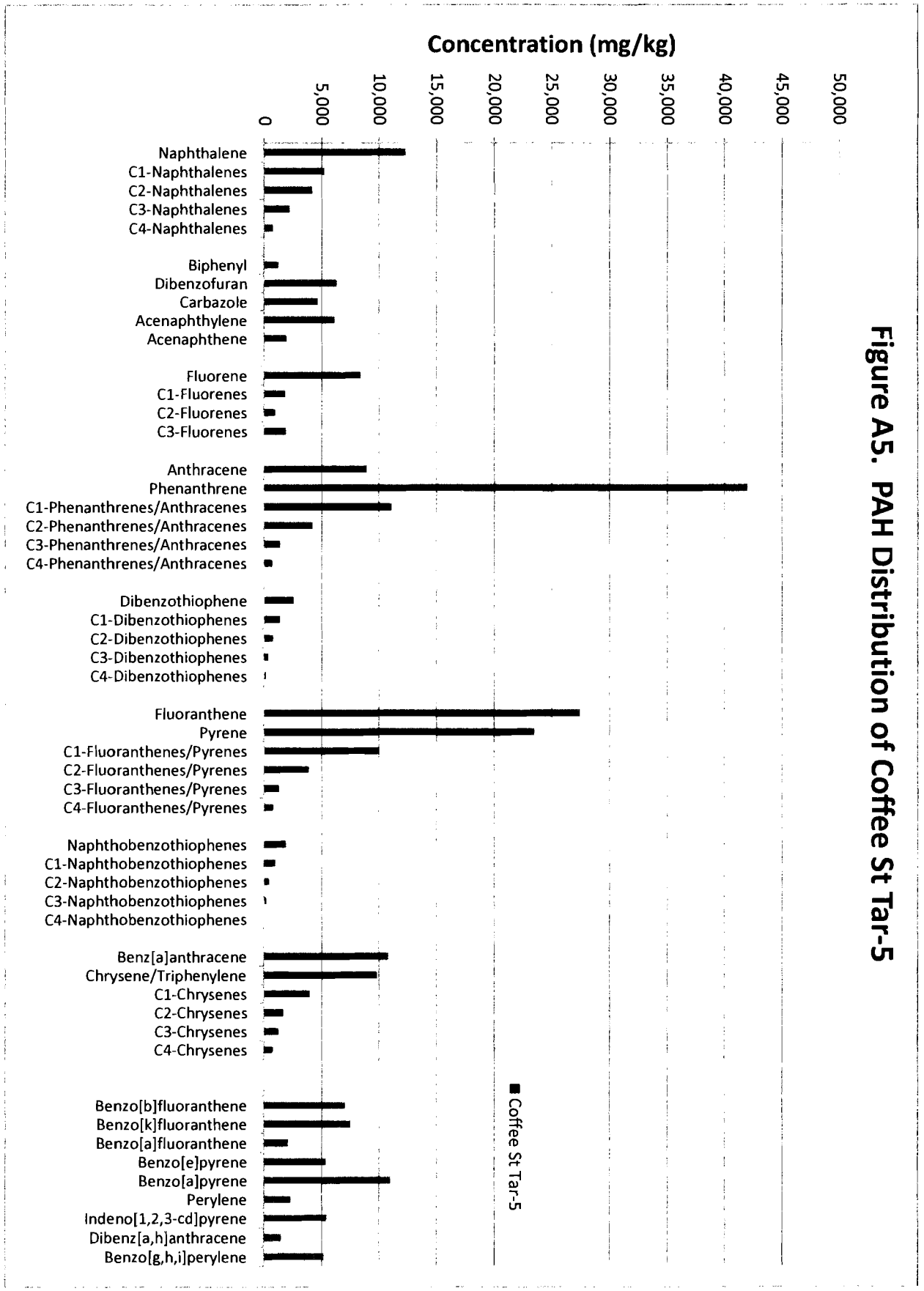


Figure A5. PAH Distribution of Coffee St Tar-5