ARCADIS

Infrastructure, environment, facilities

ARCADIS
6723 Towpath Road
P.O. Box 66
Syracuse
New York 13214-0066
Tel 315.446.9120
Fax 315.449.4111
www.arcadis-us.com

ENVIRONMENT

Ms. Kiera A. Becker
Project Manager
Remedial Bureau C
Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7014

Subject:
New York State Electric & Gas Corporation
Washington Street Former MGP Site
Binghamton, New York
Index No. A7-0518-0505, BCP Site #C-704046
Final Remedial Investigation Report

Date:
October 21, 2008

Contact:
John C. Brussel, PE

Phone:
315.671.9441

Email:
John.Brussel@
arcadis-us.com

Our ref:
B0013075.0001 #5

Dear Ms. Becker:

On behalf of New York State Electric & Gas Corporation (NYSEG), enclosed are two copies of the final Remedial Investigation Report (the “RI Report”) for the Washington Street former manufactured gas plant (MGP) site located in Binghamton, New York. An electronic copy of the revised RI Report is provided on the attached compact disc (CD).

The report was previously submitted to the New York State Department of Environmental Conservation (NYSDEC) on August 29, 2008. The report has been revised to incorporate comments from the NYSDEC Division of Fish, Wildlife & Marine Resources pertaining to the Fish and Wildlife Impact Analysis (FWIA). A “redline” copy showing revisions to the report was submitted to the NYSDEC on October 9, 2008. The attached final report is being submitted in response to the NYSDEC’s request in e-mail correspondence dated October 20, 2008.

As a cost savings measure, only hard copies of the revised report text and Appendix H are provided. Please replace the report text from the 3-ring binders of the August 2008 RI Report with the attached revised pages and new Appendix H. New report covers to be inserted into the binders are also attached. Please note that the CD includes the revised text and Appendix H (in addition to the supporting information on the CD provided with the previous report submittal).

Please do not hesitate to contact Mr. Tracy L. Blazicek, CHMM of NYSEG at 607.762.8839 (tlblazicek@nyseg.com) or the undersigned (see contact information in sidebar) if you have any questions or require additional information.

Sincerely,

John C. Brussel

John C. Brussel, PE
Principal Engineer

Copies:
Ms. Julia Kenney, New York State Department of Health (1 copy, 1 CD)
Mr. Tracy L. Blazicek, CHMM, New York State Electric & Gas Corporation (3 copies, 3 CDs)
Mr. Keith A. White, CPG, ARCADIS (1 copy, 1 CD)

Remedial Investigation Report

Washington Street Former MGP Site
Binghamton, New York
NYSDEC Site #C-704046

New York State Electric & Gas Corporation
Binghamton, New York

November 2006
Revised October 2008

BBL®
an ARCADIS company

Certification Statement

I, John C. Brussel, as a licensed Professional Engineer in the State of New York, to the best of my knowledge, and based on my inquiry of the persons involved in preparing this document under my direction, certify that the Remedial Investigation (RI) activities at the former manufactured gas plant (MGP) site located on Washington Street in Binghamton, New York, were completed in general accordance with the following:

- the conceptual RI Work Plan that was emailed by Blasland, Bouck & Lee, Inc. (BBL) to the New York State Department of Environmental Conservation (NYSDEC) on January 3, 2005;
- NYSDEC comments on the Conceptual RI Work Plan, as discussed during a January 20, 2005 conference call between New York State Electric & Gas Company (NYSEG) and the NYSDEC;
- NYSDEC comments on the initial RI Work Plan (BBL, February 2005), as discussed during telephone conference calls with NYSEG, BBL, and the NYSDEC between August 2005 and October 2005;
- the Brownfield Cleanup Agreement between NYSEG and the NYSDEC dated October 17, 2005 (Index #A7-0518-0505);
- the NYSDEC-approved RI Work Plan (BBL, November 2005);
- NYSDEC comments on the initial RI Report (BBL, November 2006), as contained in a letter to NYSEG dated January 11, 2007;
- the NYSDEC-approved Supplemental RI Work Plan contained in a letter from NYSEG to the NYSDEC dated April 9, 2007;
- NYSDEC comments on the revised RI Report (ARCADIS BBL, 2007a), as contained in a letter to NYSEG dated November 26, 2007 (NYSDEC, 2007c); and
- the NYSDEC-approved Groundwater Sampling Plan (ARCADIS BBL, 2008) contained in a letter from ARCADIS BBL to the NYSDEC dated January 7, 2008.

I also certify that, to the best of my knowledge, this RI Report accurately summarizes the work activities performed and the results obtained for the RI.

STATE OF NEW YORK
JOHN C. BRUSSEL
No. 075208
LICENSED PROFESSIONAL ENGINEER

John C. Brussel, P.E.
Senior Engineer
NY P.E. License No. 075208

ARCADIS of New York, Inc.
6723 Towpath Road, P.O. Box 66
Syracuse, New York 13214-0066

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1. Introduction

1.1 Overview

This *Remedial Investigation Report* summarizes work performed and results obtained for the remedial investigation (RI) of the New York State Electric & Gas Corporation (NYSEG) Former Manufactured Gas Plant (MGP) Site located on Washington Street in Binghamton, New York (Figure 1) (site). The RI field activities were completed by ARCADIS of New York, Inc. (ARCADIS BBL, formerly known as Blasland, Bouck & Lee, Inc. [BBL]). The activities were performed to assess current site environmental conditions and develop a site conceptual model to support redevelopment of the site under the New York State Brownfield Cleanup Program (BCP).

ARCADIS BBL performed Phase I of the RI in accordance with the New York State Department of Environmental Conservation- (NYSDEC-) approved *Remedial Investigation Work Plan* (ARCADIS BBL, 2005b) (RI Work Plan) and the Brownfield Cleanup Agreement (BCA) between NYSEG and the NYSDEC, dated October 17, 2005 (Index #A7-0518-0505, Site #C-704046) (NYSEG and NYSDEC, 2005).

ARCADIS BBL performed Phase II of the RI in accordance with the NYSDEC comments (NYSDEC, 2007a) on the initial RI Report (ARCADIS BBL, 2006a), and the NYSDEC-approved Supplemental RI Work Plan contained in a letter from NYSEG to the NYSDEC dated April 9, 2007 (NYSEG, 2007).

ARCADIS BBL performed Phase III of the RI in accordance with the NYSDEC comments (NYSDEC, 2007c) on the revised RI Report (ARCADIS BBL, 2007a), and the NYSDEC-approved Groundwater Sampling Plan contained in a letter from ARCADIS BBL to the NYSDEC dated January 3, 2008 (ARCADIS BBL, 2008).

This report incorporates findings of previous environmental investigations, specifically the Phase I Environmental Site Assessment (Dunn Geoscience Corporation [Dunn], 1990) and Phase II Groundwater Investigation (Dunn, 1991).

1.2 Report Organization

The report is organized as follows:

- **Section 1: Introduction** – presents a brief overview of the RI activities and relevant site background information;
- **Section 2: Remedial Investigation Activities** – describes the tasks performed and general methods followed to meet the investigation's objectives;
- **Section 3: Remedial Investigation Findings** – presents and interprets field observations and laboratory results relating to the five principal components of the field work: area reconnaissance and mapping, and investigations of soil, groundwater, surface water, and sediment;
- **Section 4: Risk Evaluation** – analyzes fish and wildlife resource impacts and assesses potential human health exposure;
- **Section 5: Summary and Conclusions** – summarizes findings of the RI and conclusions based on the results; and
- **Section 6**: **References** – provides references used to prepare this report.

1.3 Background Information

This section presents relevant background information used to develop the scope of the RI. The site and site history are described below, followed by a summary of previous investigations, site topography and drainage, and the geologic and hydrogeologic setting of the site.

1.3.1 Site Description and History

The site is located in Binghamton, Broome County, New York (Figure 1). The site occupies approximately 1.4 acres of land within a city block bounded by Washington Street to the east, Water Street to the west, Susquehanna Street to the north, and Riverside Drive to the south. The site currently includes an existing two-story commercial building, an at-grade concrete foundation/slab from a demolished former two-story commercial building, a residential (apartment) building, and various parking lots. The existing commercial building is used by the American Automobile Association (AAA) as an office/travel center. This building is not included in redevelopment plans. The site formerly included a second, two-story commercial building, which was used by Rexel Electric Supply (formerly Wehle Electric) as an electrical supply warehouse and showroom. This building was demolished in early 2006 in anticipation of Brownfield redevelopment activities. The site is presently bounded to the north and south by various other commercial buildings and parking lots, to the east by a highway access ramp, and to the west by an industrial property and the Chenango River. The layout of the site and surrounding area is shown on the attached aerial photograph (Figure 2) and site layout map (Figure 3). The site and surrounding area are served with potable water by the City of Binghamton.

Based on available NYSEG records, the Washington Street MGP was first operated by the Binghamton Gas Light Company in 1853. The plant initially produced gas by the coal carbonization process and later (around 1884) by the carbureted water gas process. ARCADIS BBL obtained several Sanborn fire insurance maps of the area, including one that shows the layout of the MGP in 1887, after it was converted to a carbureted water gas plant. Copies of those maps are included in Appendix A. The 1887 Sanborn map identified the following major structures: two gas holders (Holder #1 and #2), purifiers, a super heater, offices, and several sheds. The approximate locations of these former structures are shown on Figure 2. No maps depicting the layout of the coal-carbonization MGP were identified.

NYSEG records indicate that in 1887 the Binghamton Gas Light Company merged with Brush-Swan Electric Light Company to become Binghamton Gas and Electric Company. The Washington Street MGP ceased operations in 1888, and the land was sold when gas manufacture was consolidated with another plant in the City of Binghamton (the former Court Street MGP). Based on review of Sanborn mapping, all above-grade MGP-related structures had been demolished by 1891, except for Holder #1. As discussed below, Holder #1 was razed sometime between 1918 and 1950.

Sanborn mapping indicates that a lumber yard and carpentry shop occupied a portion of the site after MGP operations ceased. By the early 1900s, the majority of the site had been redeveloped as the Larrabee-Deyo Motor Truck Company, which included a machine shop and assembly building in the western portion of the site (part of the former Rexel Electric Supply building), a warehouse within former Holder #1, and an office/showroom in the eastern portion of the site. As indicated by Sanborn mapping, the warehouse/former Holder #1 was razed sometime between 1918 and 1950. By 1950, the site was occupied primarily by an automobile sales and service station and used car lot. A plumbing supply building (Crane Company Wholesale Plumbing) was present at the current location of the AAA building, and a gas station was present south of the site. The gas station later became Henneken's Auto Sales and Service Station.

The auto sales/service station building was demolished in mid-2005 by Newman Development Group, the current site owner. The former building location is shown on Figure 2. Based on information provided in an environmental database search performed by Environmental Data Resources, Inc. (EDR) dated October 2004, no underground storage tanks (USTs) remained at the auto sales/service station property after a second UST (2,000 gallons) was removed in August 2000. It is unclear when the first UST was removed, and conditions encountered during the UST removals are unknown. The suspected former location of one UST was observed east of the auto sales/service station building during an October 29, 2004 site visit performed by the NYSDEC, NYSEG, and ARCADIS BBL (i.e., where a roughly 15-foot by 15-foot section of the asphalt pavement that covered most of the property had been removed and replaced with crushed stone). Suspected UST vent pipes were observed alongside the building. Additionally, a site neighbor reported to NYSEG that following the October 2004 demolition of the former Henneken's building, a UST was removed from the property.

Land use in the vicinity of the site has historically been commercial/industrial. A large tannery, which later became an Endicott Johnson shoe factory, was formerly located east of the MGP on property now occupied by a highway access ramp. In addition, a carriage manufacturing facility with a paint shop was formerly located north of the MGP on property now occupied by a ski and bike shop (Berger's Ski Shop and Chenango Point Cycles).

1.3.2 Summary of Previous Investigations

This section summarizes the scope and general findings of environmental investigations that preceded the RI. Scanned copies of the final reports documenting this work are included on the attached CD.

1.3.2.1 Phase I Environmental Site Assessment and UST Removal

Dunn performed a Phase I Environmental Site Assessment (ESA) of the former Wehle Electric Property in August 1990. The assessment included a visual inspection of the property, review of historical database listings, and review of local and regional geologic/hydrogeologic conditions. The ESA concluded that a UST likely existed on the property, but failed to recognize the presence of the former MGP.

The presence of the UST was confirmed in January 1991, when a 6,000-gallon tank was excavated and removed along with 65 cubic yards of stained soils around and beneath the tank (Dunn, 1991). Dunn reported that the tank was used to hold heating oil for the former Rexel Electric Supply building. A concrete foundation wall was uncovered during the excavation; however, a concrete floor was not encountered at the bottom of the excavation. The depth of the UST excavation was not provided by Dunn. As discussed later in this report, and unknown to Dunn, the foundation appears to have been the foundation of former Holder #1, and the UST had been installed inside the holder foundation. The UST removal and the subsequent groundwater investigation were reported by Dunn in their *Phase II Groundwater Investigation Report* (1991).

1.3.2.2 Phase II Groundwater Investigation

Dunn performed a groundwater investigation (the Phase II Groundwater Investigation) after impacted soils around the UST were removed. Investigation activities included installing and sampling two temporary wells within the UST excavation during January 1991 (wells PW-1 and PW-2) and three permanent monitoring wells around the excavation during March 1991 (wells MW-1 through MW-3). The locations of these temporary and permanent monitoring wells are shown on Figure 3. Boring logs and monitoring well construction diagrams for these wells are included in Appendices B and C, respectively.

During drilling of the wells, visibly impacted material was only observed at MW-3. Visible oil and oil tar was noted in test boring logs at MW-3 from approximately 11 to 17 feet below ground surface (bgs) (Dunn, 1991). Headspace screening results for soil samples collected from the 13 to 15-foot and 15 to 17-foot intervals at MW-3 were 140 parts per million (ppm) and 40 ppm, respectively. Visible staining and elevated headspace screening results were not encountered in soils recovered at any of the other boring locations. The permanent monitoring wells were constructed with 2-inch-diameter polyvinyl chloride (PVC) pipe with 0.20-inch slot screens placed to straddle the water table. A 10-foot-long screen section was used in monitoring wells MW-1 and MW-2, and a 20-foot-long screen section was used in monitoring well MW-3.

During May 1991, groundwater samples were collected from each permanent and temporary well, except PW-2 "due to its close proximity to PW-1 in the former tank pit" (Dunn, 1991). Each sample was analyzed for volatile organic compounds (VOCs), using United States Environmental Protection Agency (USEPA) Method 503.1 and petroleum hydrocarbon identification using New York State Department of Health (NYSDOH) Method 310-14. Sample results are summarized below:

- *PW-1.* N-butylbenzene and naphthalene were identified in the groundwater sample collected from this well at concentrations of 9 parts per billion (ppb) and 14 ppb, respectively, which were slightly above their groundwater quality standards (5 ppb and 10 ppb, respectively, as presented in 6 NYCRR Part 703). Petroleum fingerprinting indicated the presence of No. 4 fuel oil in this sample.

- *MW-1 and MW-2.* VOCs and petroleum products were not detected in the groundwater samples collected from these wells.

- *MW-3.* A strong petroleum-type odor and sheen were noticed in the groundwater sample collected from this well. Eleven VOCs were detected in the groundwater sample at concentrations ranging from 21 ppb (isopropylbenzene) to 6,600 ppb (benzene). The concentration of each VOC exceeded its respective groundwater quality standard, as presented in 6 NYCRR Part 703. Petroleum identification analysis indicated the presence of No. 4 fuel oil, gasoline, and various unidentified compounds in the sample.

The *Phase II Groundwater Investigation Report* (Dunn, 1991) suggested that the VOCs identified in monitoring well MW-3 could potentially be attributed to another nearby UST. The report noted that a standpipe was observed along the west side of the AAA building that might represent a fill pipe for a UST.

1.4 RI Objectives

This section describes agreements reached between NYSEG, the NYSDEC, and ARCADIS BBL, and summarizes the RI objectives.

1.4.1 Agreements Pertaining to the Remedial Investigation

The RI was performed to support site redevelopment under the New York State BCP. The tasks performed for this RI largely reflect the agreements made between NYSEG, the NYSDEC, and ARCADIS BBL, and were performed in accordance with:

- a conceptual RI Work Plan that was emailed by ARCADIS BBL to the NYSDEC on January 3, 2005;
- NYSDEC comments on the Conceptual RI Work Plan, as discussed during a January 20, 2005 conference call between NYSEG and the NYSDEC;
- NYSDEC comments on the initial RI Work Plan (BBL, 2005a), as discussed during telephone conference calls with NYSEG, ARCADIS BBL, and the NYSDEC between August 2005 and October 2005;
- the BCA between NYSEG and the NYSDEC dated October 17, 2005;
- the NYSDEC-approved RI Work Plan (BBL, 2005b);
- NYSDEC comments on the initial RI Report (ARCADIS BBL, 2006a), as contained in a letter to NYSEG dated January 11, 2007 (NYSDEC, 2007a);
- the NYSDEC-approved Supplemental RI Work Plan (NYSEG, 2007) contained in a letter from NYSEG to the NYSDEC dated April 9, 2007;
- NYSDEC comments on the revised RI Report (ARCADIS BBL, 2007a), as contained in a letter to NYSEG dated November 26, 2007 (NYSDEC, 2007c); and
- the NYSDEC-approved Groundwater Sampling Plan (ARCADIS BBL, 2008) contained in a letter from ARCADIS BBL to the NYSDEC dated January 7, 2008.

1.4.2 RI Objectives

The overall objective of this RI is to assess the nature and extent of site-related environmental impacts and evaluate the risks posed to human health and the environment by those impacts. The findings of this RI will be used to assess the need for remediation and, if required, to evaluate remedial options.

Based on this overall objective, NYSEG developed the following specific objectives for Phase I of the RI:

- Assess the potential for vapor intrusion at the AAA building.
- Evaluate the nature and extent of MGP-related impacts in soil at the site by collecting, visually characterizing, and analyzing surface and subsurface soil samples.
- Evaluate the nature and extent of MGP-related impacts in groundwater beneath the site by collecting and analyzing groundwater samples.
- Evaluate the nature and extent of MGP-related impacts in the Chenango River adjacent to the site by probing the river bottom and collecting sediment and surface-water samples.
- Characterize the general shape of the confining layer, and assess shallow groundwater flow patterns at the site.
- Investigate impacts associated with the former gas holders.
- Develop a conceptual site model using the data gathered during the RI.
- Determine if data gaps exist and perform additional investigation activities, if needed.
- Evaluate the risks posed to human health by the site, including identifying potential human exposure pathways for both current and anticipated future site conditions.

- Evaluate the risks posed to fish and wildlife by the site.

Based on Phase I of the RI and comments from the NYSDEC on the initial RI Report, NYSEG developed the following specific objectives for Phase II of the RI:

- Evaluate the nature and extent of MGP-related impacts in soil on the AAA property in the vicinity of MW-3 by collecting and visually characterizing subsurface soil samples;
- Install monitoring wells if significant NAPL is encountered in any soil borings;
- Inspect and measure any NAPL encountered in monitoring well MW-3;
- Evaluate the nature and extent of MGP-related impacts in the Chenango River south of the Phase I Chenango River investigation area to the confluence with the Susquehanna River by performing a reconnaissance along the riverbanks and probing the river bottom;
- Evaluate the nature and extent of MGP-related impacts in the Susquehanna River south of the site to the confluence with the Chenango River by performing a reconnaissance along the riverbanks and probing the river bottom; and
- Determine if data gaps exist and perform additional investigation activities, if needed.

Based on Phase II of the RI and comments from the NYSDEC on the revised RI Report, NYSEG developed the following specific objectives for Phase III of the RI:

- Inspect and measure any NAPL encountered in monitoring wells MW-3 and MW-9; and
- Further evaluate the nature and extent of MGP-related impacts in groundwater beneath the site by collecting and analyzing additional groundwater samples.

The work performed to meet these objectives was divided into five investigations:

1) Vapor Intrusion Investigation;
2) Soil Investigation;
3) Groundwater Investigation;
4) Surface-Water Investigation; and
5) Sediment Investigation.

Section 2 outlines the scope of these investigations and the methods used to complete them. Section 3 presents the findings of that work.

ARCADIS BBL used the findings, coupled with data collected during previous investigations, to evaluate the risks posed to human health, fish, and wildlife by the site. Section 4 describes the risk evaluations and findings.

2. Remedial Investigation Activities

2.1 Overview

This section describes the field activities and other evaluations performed during the RI to meet the objectives presented in Section 1.4.2. The RI included the following efforts:

- Vapor Intrusion Investigation;
- Soil Investigation;
- Groundwater Investigation;
- Chenango and Susquehanna Rivers Investigation (Surface-Water and Sediment Investigation);
- Human Health Exposure Evaluation (HHEE); and
- Fish and Wildlife Resources Impact Analysis (FWRIA).

The RI Work Plan (BBL, 2005b), Supplemental RI Work Plan (NYSEG, 2007), and Groundwater Sampling Plan (ARCADIS BBL, 2008) outlined the scope of these investigations and the procedures to be used to perform them. This section describes the work completed, including minor, necessary deviations from the Work Plans that were approved by the NYSDEC during the RI. ARCADIS BBL conducted the majority of the Phase I field work between May and August 2006; the Phase II field work between May and December 2007; and the Phase III field work between January 2008 and May 2008. Most of the field work was observed by an onsite representative from the NYSDEC. Four additional firms contributed work integral to the field effort:

- Parratt-Wolff, Inc. (Parratt-Wolff) of East Syracuse, New York provided drilling services;
- TestAmerica Laboratories, Inc. (TestAmerica), formerly Severn Trent Laboratories (STL), of Amherst, New York provided analytical services;
- TestAmerica of Knoxville, Tennessee provided analytical services; and
- Queens University – Department of Civil Engineering (Queens University) of Kingston, Ontario, Canada provided analytical services.

2.2 Vapor Intrusion Investigation

ARCADIS BBL performed a vapor intrusion investigation at the AAA building during February and March 2006 and the On the Roxx restaurant during January and February 2007. The purpose of the investigations was to evaluate the potential for vapors to migrate through the subsurface and enter the buildings. The scope and results of the investigation of the AAA building were detailed in a June 6, 2006 letter to the NYSDEC (ARCADIS BBL, 2006b). The letter was revised based on NYSDEC comments provided on September 7, 2006 and is included in Appendix D. The scope and results of the investigation of the On the Roxx restaurant were detailed in an April 13, 2007 letter to the NYSDEC (ARCADIS BBL, 2007b), which is included in Appendix D.

Several constituents were identified in vapor samples collected beneath the building foundation slabs and in the air inside the buildings. It was not possible to attribute the constituents to a particular source. Several of the constituents were potentially related to the former MGP, but those same constituents have other possible non-MGP sources as well. Other constituents were not related to the former MGP site. New York State does not currently have standards, criteria, or guidance values (SCGs) for concentrations of compounds in subsurface vapors. The concentrations identified in the samples are all less than the NYSDOH indoor air guideline values presented in Section 3.2.5 of the NYSDOH document titled *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, dated October 2006 (NYSDOH, 2006) (NYSDOH Soil Vapor Intrusion Guidance) and are less than or generally consistent with the 90th percentile of background indoor air levels observed by the USEPA in public and commercial office buildings as referenced in Section 3.2.4 of the NYSDOH Soil Vapor Intrusion Guidance. Based on the investigation results, soil vapor intrusion does not appear to be occurring at the AAA Property or the On the Roxx restaurant.

2.3 Soil Investigation

The soil investigation consisted of two forms of field exploration: soil boring and test-pit excavation. In most cases, this work provided two types of data: visual classification of geology and site-impacts, and analytical samples to identify and quantify site-related impacts to soil. The investigation method, sampling location, and suite of samples collected varied from point to point to meet the objectives listed in Section 1.4.2. This section describes the varied tasks comprising the soil investigation, including the general methods applied and specific objectives addressed.

2.3.1 Soil Borings

Soil borings were drilled to provide physical and chemical data about subsurface conditions and, in some cases, to install groundwater monitoring points. Phase I RI soil investigation field activities were performed between May and June 2006. A total of 37 soil borings were drilled during the Phase I RI, including 10 borings completed as monitoring wells and one boring completed as a piezometer. The borings ranged in depth from 13 to 50.3 feet bgs. Phase II RI soil investigation activities were performed in June 2007. Four soil borings were drilled during the Phase II RI, including one boring completed as a monitoring well. The boring depth at each Phase II location was 20 feet bgs.

2.3.1.1 Drilling Methods

Borings were drilled and sampled using hollow-stem augers and split-spoon samplers, following the drilling procedures outlined in the RI Work Plan and Supplemental RI Work Plan. Borings were drilled using the following methodology:

- Soil samples were retrieved continuously from grade to the total boring depth.
- Recovered soil samples were observed and described by a supervising geologist.
- Soil samples from each 2-foot depth interval (Phase I) or 4-foot depth interval (Phase II) were screened for VOCs using a photoionization detector (PID).
- Selected samples were submitted for various laboratory analyses, as described in Section 3.5.1.
- Upon completion, borings were tremie-grouted to grade (except for those used to install monitoring wells).

2.3.1.2 Boring Location and Rationale

Phase I soil boring locations were selected to investigate the various former MGP structures and to characterize subsurface geology and the distribution of MGP byproducts, particularly coal tar dense nonaqueous-phase liquid (DNAPL). Soil borings SB-1 through SB-23 were completed at the approximate locations identified in the RI Work Plan. Soil borings SB-24 through SB-27 were not identified in the RI Work Plan, but were completed based on field observations to further evaluate subsurface conditions at and around Holder #2. The location of each Phase I boring and the corresponding depth is identified in Table 2-1.

Phase II soil boring locations were selected to further evaluate the extent of coal tar DNAPL observed in monitoring well MW-3 during the Phase I RI. Soil borings SB-28, SB-30 and SB-31 were completed at the approximate locations identified in the Supplemental RI Work Plan. Refusal was encountered at soil boring SB-29 during the first and second attempt. As a result, the boring was relocated approximately 10 feet south and slightly east of the location proposed in the Work Plan. The location of each Phase II boring and the corresponding depth is identified in Table 2-1.

Table 2-1
Boring Information

Boring Identification	Boring Depth (feet)	Location
Phase I RI Borings		
SB-1	50.3	Former Holder #1 Footprint
SB-2	38.8	
SB-3	46.6	
SB-4	38.5	West of the former purifiers
SB-5	42	Former purifier footprint
SB-6	46	Former superheater footprint
SB-7	40	Former storage shed footprint
SB-8	44.5	East of former Holder #1
SB-9	31.3	South of former Holder #2
SB-10	33.1	South of former Holder #1
SB-11	40.9	North of former purifiers
SB-12	29.5	Adjacent to former storage shed
SB-13	26.7	South of former Holder #2
SB-14	37.3	South of the site
SB-15	37.5	
SB-16	30.8	
SB-17	16	Former Holder #2
SB-18	16.8	
SB-19	16	

Boring Identification	Boring Depth (feet)	Location
SB-20	35.5	West of former Holder #2
SB-21	39.5	
SB-22	38	
SB-23	19	
SB-24	34.7	Former Holder #2 (these borings were added to further evaluate conditions below the holder)
SB-25	31.2	
SB-26	31	South of Holder #1 and Holder #2, respectively (these borings were added to further evaluate the presence of nonaqueous-phase liquid (NAPL) encountered at SB-13 and MW-3, as more fully discussed in Section 3.4.1)
SB-27	29.3	
Phase II RI Borings		
SB-28	20	The AAA parking lot, 4 locations around monitoring well MW-3
SB-29	20	
SB-30	20	
SB-31	20	

Note: Borings SB-24 through 27 were added to the original RI scope-of-work while conducting the fieldwork.

Conditions encountered within each soil boring are summarized in the borings logs included in Appendix B.

2.3.1.3 Soil Analyses for Evaluating Nature and Extent

Selected soil samples from all but seven soil borings (SB-23, and SB-26 through SB-31) were analyzed by TestAmerica. The majority of these samples were analyzed for Target Compound List (TCL) VOCs, TCL semivolatile organic compounds (SVOCs), total cyanide, and eight Resource Conservation Recovery Act (RCRA) metals. Selected samples from within the former gas holders (samples from borings SB-1, SB-17, SB-19, and SB-24) were analyzed for a more focused list of potential constituents typically associated with MGP residuals: benzene, toluene, ethylbenzene, and xylene (BTEX compounds); polycyclic aromatic hydrocarbons (PAHs); and total cyanide. Analytical methods, sample handling procedures, and laboratory protocols are outlined in the RI Work Plan. Sample analyses were performed in accordance with USEPA SW-846 Methods, as referenced in the NYSDEC 2005 Analytical Services Protocol (ASP). Quality assurance/quality control (QA/QC) samples were collected as required by the Quality Assurance Project Plan (QAPP) included with the RI Work Plan. An analytical sample summary, which identifies each sample collected and the corresponding analyses performed, is included as Table 1.

Samples from up to three intervals per boring location were analyzed. Sampling intervals were selected in the field on a case-by-case basis, depending on the subsurface conditions and data needs. For boring locations where visible staining, NAPL, obvious odors, and/or elevated PID readings (readings significantly above background) were identified, one sample from the "most-impacted" interval was submitted for analysis. At these locations, samples were generally also submitted for analysis from the first visibly nonimpacted interval to delineate the vertical extent of impacts. At three locations, an additional (third) sample was collected to either further characterize the impacted soils (such as at locations SB-3 and SB-15) or to verify that the extent of the impacted soils had been reached (such as at location SB-1). If no impacts were noted in a boring, samples designated for analysis were generally collected from the first interval below surface coverings (asphalt pavement/concrete and sub-base material) and from the 2-foot interval directly above the water table or the lowest depth prior to termination of the boring.

Samples from boring SB-23 were not analyzed based on observations of soils recovered from the boring (i.e., evidence of only minor impacts) and the distribution of sampling locations nearby (boring SB-9 to the south and boring SB-21 to the east, which also appeared to have minimal impacts). Borings SB-26 and SB-27 were added to the RI for observation purposes only to further evaluate the presence of NAPL encountered at SB-13 and MW-3. Faint odors (possible MGP- or petroleum-type) were encountered in SB-26 (10 to 16 feet bgs), and trace staining, a moderate sheen, and MGP-type odors were encountered at SB-27 (10 to 24 feet bgs).

Samples from borings SB-28 through SB-31 were collected for observation purposes in accordance with the Supplemental RI Work Plan (to further evaluate the extent of NAPL encountered at MW-3). Soils recovered from boring SB-28 exhibited MGP-type odors (4.5 to 16 feet bgs), a sheen (5.5 to 8.0 feet bgs), and small amounts of tar (8.0 to 16.5 feet bgs). Based on the observations at soil boring SB-28, a DNAPL monitoring well (MW-9) was subsequently installed in the borehole for DNAPL monitoring/recovery depending on DNAPL quantity. A trace sheen and tar-like odor were encountered in SB-29 (9.5 to 13 feet bgs and 16 to 16.5 feet bgs). A petroleum-like odor and sheen were encountered in SB-30 (12 to 20 feet bgs). A trace of tar-like material, trace sheen, and tar-like odor were encountered in SB-31 (9 to 20 feet bgs). Samples were not collected from these borings because these observations were consistent with observations at other nearby borings where samples had already been collected for analysis.

PID screening results for soils recovered from each 2- or 4-foot depth interval within the borings are summarized in Table 2. The sampling intervals from which soil samples were collected and analyzed are designated via shading in Table 2. Intervals where staining, sheens, or odors were encountered within the soil borings are summarized in Table 3.

2.3.1.4 Additional Soil Sampling and Analysis

Additional analyses were performed on selected samples to help identify regions of soil that, if excavated, might constitute a hazardous waste. Samples from locations SB-13 (12 to 14 feet bgs), SB-19 (14 to 16 feet bgs), and SB-24 (18 to 20 feet bgs) were analyzed for polychlorinated biphenyls (PCBs), Toxicity Characteristic Leaching Procedure (TCLP) benzene, reactivity (reactive cyanide and reactive sulfide), total sulfur, and flashpoint. The characterization sample analyses were performed in accordance with USEPA SW-846 Methods, as referenced in the NYSDEC 2005 ASP. The sampling intervals that were selected correspond to the intervals that appeared to be the most heavily impacted.

2.3.2 Test Pits

Six test pits were excavated during the RI to investigate the former gas holders, purifiers, superheater, and office. The test pits were excavated to confirm the location of former MGP structures, provide information on their construction and integrity, and characterize the nature of materials contained within and near them. The test pits were excavated as described in the RI Work Plan and as discussed with NYSEG and the NYSDEC. Each test pit was excavated using a rubber-tired backhoe operated by Parratt-Wolff. The first five test pits (TP-1 through TP-5) were excavated to a depth of approximately 12 to 14.5 feet bgs. Excavation of the last test pit (TP-6, located inside Holder #1) was discontinued when water-saturated conditions were encountered at approximately 8 feet bgs. An ARCADIS BBL geologist observed the excavations and prepared test pit logs summarizing the pit dimensions and materials encountered. These logs are included as Appendix E.

Following excavation, the test pits were backfilled with the material removed from the pits. Soils were returned to approximately the same depth interval from which they were removed during excavation (i.e., the last soils out were the first back in). After backfilling was completed, the ground surface at each location was restored with asphalt pavement.

2.4 Groundwater Investigation

The groundwater investigation consisted of the following tasks:

- installing 10 groundwater monitoring wells and one piezometer;
- installing one DNAPL monitoring well;
- gauging groundwater and NAPL levels; and
- sampling groundwater and NAPL.

These tasks provided four principal types of data needed to meet the RI objectives: water quality data to quantify and delineate the nature and extent of site-related constituents in groundwater, potentiometric data to better quantify groundwater flow patterns, hydraulic conductivity data to help estimate groundwater flow rates, and data regarding the physical characteristics and recovery of DNAPL to help understand DNAPL migration and recovery potential.

2.4.1 Monitoring Well/Piezometer Installation

The RI Work Plan called for installing up to five shallow (water table) wells, three deeper wells, and one piezometer to supplement the three existing wells (MW-1 through MW-3). In addition to these, three additional monitoring wells were installed, two during Phase I of the RI, and one during Phase II of the RI. The purpose of each new well is summarized in Table 2-2.

Table 2-2
Monitoring Well and Piezometer Information

<table>
<tr><th>Well ID</th><th>Screened Interval (feet bgs)</th><th>Location</th><th>Purpose</th></tr>
<tr><td>MW-1R</td><td>16 – 26</td><td>Near the superheater and the apartment building</td><td>Replace existing well MW-1, which could not be located during the RI field work.</td></tr>
<tr><td>MW-4</td><td>15 – 25</td><td>Northwest vacant lot/parking area</td><td>Evaluate groundwater quality and hydraulic head conditions in the northwestern portion of the site.</td></tr>
<tr><td>MW-5</td><td>16 – 26</td><td rowspan="2">West side of former MGP site, bordering Water Street</td><td rowspan="2">Evaluate groundwater quality and hydraulic head conditions in the western portion of the site, including information on vertical hydraulic gradients.</td></tr>
<tr><td>MW-5D</td><td>37 – 42</td></tr>
</table>

Well ID	Screened Interval (feet bgs)	Location	Purpose
MW-6	20 – 30	Southwest corner of the site	Evaluate the potential presence of MGP residuals in groundwater hydraulically downgradient of SB-13 and evaluate hydraulic head conditions in the vicinity, including vertical hydraulic gradients. MW-6S was not originally proposed in the RI Work Plan, but was added to investigate perched groundwater identified in the vicinity during the RI field work.
MW-6S	8 – 13		
MW-7	13 – 23	South of the site	Evaluate groundwater quality and hydraulic head conditions south of the site, including information on vertical hydraulic gradients.
MW-7D	37 – 42		
MW-8	17 – 27	Northeast of the site	Evaluate groundwater quality and hydraulic head conditions upgradient of the site, including information on vertical hydraulic gradients.
MW-8D	44 – 49		
MW-9*	5 - 15	Near the northeast corner of the AAA parking lot	Evaluate whether DNAPL is pooled at this location and, if so, provide a means for its removal.
PZ-1	14 – 24	Southeast of the site	Evaluate groundwater flow patterns near the site that are likely to be influenced by the nearby Susquehanna River.

*MW-9 is a DNAPL monitoring well.

Well locations are shown on Figure 3, and monitoring well and piezometer boring/construction logs are included in Appendix C. Construction details for the monitoring wells and piezometer are summarized in Table 4.

The 10 new groundwater monitoring wells provide hydraulic and water-quality data to meet specific objectives (noted in Table 2-2), with the following minor deviations:

- Monitoring well locations MW-4 and MW-8 were moved south to be within the footprint of the site (they were shown outside the former MGP footprint in the RI Work Plan).

- Field personnel were unable to locate monitoring well MW-1. Therefore, one additional monitoring well (MW-1R) was installed.

- A shallow monitoring well (MW-6S) was completed to evaluate perched groundwater identified during field activities.

The groundwater monitoring wells were installed as follows:

- Borings were drilled to their target depths at each well location, as described in the RI Work Plan. At locations where a soil boring had not already been completed nearby (e.g., for monitoring well locations MW-6D and MW-7D), soil samples were retrieved continuously from grade to the total boring depth, and recovered soil samples were visually characterized by a supervising geologist and screened for VOCs using a PID.

- Wells were constructed of 2-inch Schedule 40 PVC with 0.010-inch slotted screens. Monitoring wells MW-5D, MW-6S, MW-7D, and MW-8D were installed with 5-foot-long screens, and monitoring wells MW-1R, MW-4, MW-5, MW-6, MW-7, and MW-8 were installed with 10-foot-long screens.

- Appropriately sized silica sand packs were installed in the annular space around the screened interval and generally extended 1 to 3 feet above the screen top. The silica sand packs measure 12 feet for MW-1R, MW-4, MW-5, MW-7, MW-8, and PZ-1; 7.5 feet for MW-5D; 6.5 feet for MW-6S; 11 feet for MW-6; 8 feet for MW-7D; and 7 feet for MW-8D.

- Above the sand pack, the well annulus was filled with 1 to 2 feet of bentonite chips to provide a seal. The chips were hydrated, and a cement/bentonite grout was placed on top of the seal, using a tremie pipe, to approximately 2 feet bgs.

- Each well was protected at the surface with an 8-inch flush-mount curb box. Each well was also fitted with a 2-inch locking J-plug cap.

- A measuring point was marked on top of the PVC riser of each well.

The DNAPL monitoring well (MW-9) was installed in the same manner as the groundwater monitoring wells, except that its screen slot size is 0.020 inch, and it is fitted with a 2-foot-long sump (grouted in place) at its base.

At least 48 hours after installation, the new monitoring wells were developed by surging/purging using a submersible positive displacement pump and dedicated polyethylene tubing. The wells were surged using a surge block and developed until the water removed from the well was reasonably free of visible sediment (50 nephelometric turbidity units [NTUs]), or until the turbidity levels stabilized following a minimum removal of 3 to 5 well volumes.

It was originally anticipated that the existing monitoring wells would be redeveloped; however, based on conditions encountered, neither well MW-2 nor MW-3 were redeveloped. Well MW-2 was not redeveloped because there was no water in the well. Approximately 1 foot of DNAPL mixed with sediment was encountered at the bottom of monitoring well MW-3 (June 15, 2006). The DNAPL/sediment mixture was removed to the extent possible, containerized, and then later transported for offsite disposal as a hazardous waste.

2.4.2 Water-Level Measurement

Following development, water levels in existing and Phase I RI monitoring wells and the piezometer were measured twice (once on June 27, 2006 and again on July 24, 2006). In addition, gauging points were established on the Washington Street Bridge (SG-1) and the Riverside Drive Bridge (SG-2) so that the levels of the Susquehanna and Chenango Rivers could also be measured. Water levels were also measured twice during Phase III of the RI (January 17, 2008 and May 15, 2008) at existing monitoring wells and DNAPL monitoring well MW-9. Locations of the gauging points are shown on Figure 3. During the gauging events, the field staff measured the depth to water, depth to NAPL (if present), and total depth at each new and existing monitoring well. Field personnel also measured the depth to water at the piezometer and staff gauges during both gauging events in 2006. The water-level measurements are summarized in Table 5.

2.4.3 Groundwater Sampling

The RI Work Plan called for one round of groundwater samples to be collected from all new and existing groundwater monitoring wells and analyzed for TCL VOCs, TCL SVOCs, RCRA metals, total cyanide, and PCBs[1]. The sampling event was initiated on June 26, 2006. However, after the first day of sampling, several inches of rain fell overnight and the sampling event was cancelled due to severe flooding in the vicinity that resulted in a state of emergency that lasted for several days. Samples had been collected from four monitoring wells (MW-6S, MW-6, MW-7, and MW-7D) and submitted to TestAmerica for analysis. It was subsequently decided to cancel the pending analyses on the submitted samples and begin the sampling event anew during the week of July 24, 2006. When TestAmerica was notified, they had already analyzed the submitted samples for TCL VOCs, total cyanide, and PCBs. Samples collected during the week of July 24, 2006 were analyzed for the full suite of parameters identified in the RI Work Plan. As a result, two rounds of VOC, cyanide, and PCB data are available from the Phase I RI for four of the monitoring wells. During the July sampling event, well MW-2 contained less than one foot of water, and well MW-3 was found to contain trace light nonaqueous-phase liquid (LNAPL) (approximately 0.05 feet) and a small amount of DNAPL. The exact thickness of the DNAPL could not be measured using an interface probe or by lowering a bailer into the well to remove the DNAPL (the sides of the bailer were smeared with NAPL, and no DNAPL was observed inside the bailer). Based on these findings, wells MW-2 and MW-3 were not sampled.

Based on the reported presence of potential site-related constituents in well MW-5D and the timing of the Phase I groundwater sampling close to the flooding event, the NYSDEC requested that a second phase of groundwater sampling be performed. The Groundwater Sampling Plan (ARCADIS BBL, 2008) prepared in response to the NYSDEC's request called for one additional round of groundwater samples to be collected from all new and existing monitoring wells and analyzed for TCL VOCs, TCL SVOCs, RCRA metals, total cyanide, and PCBs[1]. The sampling event was performed in January 2008. The sample collected from monitoring well MW-2 during this event was analyzed for only VOCs and SVOCs, due to a low volume of groundwater in the well. Monitoring well MW-3 was found to contain NAPL, and therefore was not sampled. Based on concerns over elevated detection limits in the January 2008 groundwater samples collected from well MW-5D, the NYSDEC requested that an additional sample be collected from the well and analyzed for TCL VOCs and TCL SVOCs. The additional sampling at well MW-5D was subsequently performed on May 15, 2008. The analyses performed on the groundwater samples collected during the sampling events are identified in Table 1.

ARCADIS BBL used low-flow sampling techniques (a peristaltic pump with dedicated disposable tubing) to purge the monitoring wells prior to sampling for each event. Field parameters (i.e., pH, conductivity, dissolved oxygen, temperature, turbidity, and oxidation-reduction potential) were measured approximately every five minutes during purging. The results of the field parameter measurements collected prior to sampling are presented on the groundwater sampling logs included on the attached CD. Field parameter measurements obtained during sampling are summarized in Table 6.

Groundwater samples were collected from each well after field parameters stabilized during well purging. Groundwater samples, except those submitted for laboratory analysis for VOCs, were collected using low-flow sampling techniques. Groundwater samples submitted for laboratory analysis for VOCs were collected using a disposable polyethylene bailer. Groundwater sampling was performed in accordance with the field sampling protocols presented in the RI Work Plan and the Field Sampling Plan (FSP) included in the Work Plan.

[1] Using USEPA SW-846 Methods, as referenced in the NYSDEC 2005 ASP.

2.4.4 Hydraulic Conductivity Testing

Specific-capacity tests were performed at each new groundwater monitoring well, except MW-9, during the initial sampling event to provide the data necessary to estimate the hydraulic conductivity of the material screened by each well. The amount of drawdown achieved during the low-flow sampling was insufficient to calculate a hydraulic conductivity at the following six wells: MW-1R, MW-4, MW-5, MW-6S, MW-7D, and MW-8. These wells were revisited using a Grundfos submersible pump to perform the specific-capacity tests. The hydraulic conductivities were calculated according to the method of Walton (1962) and are included in Table 4. Data used to perform the calculations are presented in Appendix F.

2.4.5 NAPL Sampling and Monitoring

Monitoring wells MW-3 and MW-9 were inspected and gauged for NAPL in each month from June through September 2007; in December 2007; and in January and May 2008 to investigate the recoverability of NAPL. The depth to NAPL was measured at both monitoring wells during each event. A DNAPL sample was collected from MW-3 on June 5, 2007 and sent to Queens University for analysis of viscosity, density, and interfacial tension at the approximate average groundwater temperature (14^{o}C). However, as discussed in Section 3.4.1, due to the highly viscous nature of the DNAPL, analysis was performed at higher temperatures (40^{o}C, 50^{o}C, and 60^{o}C) and results for density and viscosity were then extrapolated to 14^{o}C through regression. Testing for interfacial tension was not possible due to the high viscosity.

2.5 Chenango and Susquehanna Rivers Investigation

The Chenango and Susquehanna Rivers Investigation was performed following completion of the RI soil and groundwater investigations to identify and quantify site-related impacts to surface water and sediment within the rivers. Site reconnaissance, sediment probing, sediment sampling, and surface-water sampling performed as part of the Chenango and Susquehanna Rivers Investigation are discussed below.

2.5.1 Site Reconnaissance

Site reconnaissance was performed on August 2, 2006 for the Chenango River Phase I investigation and on May 22, 2007 for the Chenango and Susquehanna Rivers Phase II investigation. The purpose of the reconnaissance work was to identify river bottom characteristics and assess hydraulic and geomorphic conditions. As part of the reconnaissance, ARCADIS BBL walked the east bank of the Chenango River and north bank of the Susquehanna River to identify general bank characteristics, including the presence of any staining or weeps and the location of any discharge pipes into the river (outfall pipes). The reach of the Chenango River covered by the reconnaissance extended from the confluence of the Chenango and Susquehanna Rivers downstream of the site to the Court Street Bridge upstream from the site. The reach of the Susquehanna River covered by the reconnaissance extended from the confluence of the Chenango and Susquehanna Rivers downstream of the site to 550 feet upstream of the site. No staining or weeps were observed along the east bank of the Chenango River or along the north bank of the Susquehanna River. Along the east bank of the Chenango River a 15-inch diameter metal storm sewer outfall pipe was observed approximately 40 feet north of the Riverside Drive Bridge, a combined sewer overflow outlet was observed just west of the intersection of Water Street and Susquehanna Streets and several additional outfall pipes were observed between Susquehanna Street and the Court Street Bridge. No outfalls were observed along the north bank of the Susquehanna River.

2.5.2 Sediment Probing

Based on the findings of the site reconnaissance, sediment probing was performed at the following transects (see Figure 3):

- 13 transects established in the Chenango River adjacent to the site (transects T0 through T12) as part of the Phase I RI; and
- 6 transects in the Chenango River downstream from the site (transects T13 through T18) and 12 transects adjacent or downstream of the site in the Susquehanna River (transects T19 through T30), as part of the Phase II RI.

The transects were spaced approximately 50 feet apart and extended approximately 60 feet into the river. Sediment probing was performed at each transect at the shoreline and distances of approximately 5 feet, 20 feet, 40 feet, and 60 feet from the shoreline, except at transects T-19 and T-20. Transect T-19 was only probed at the shoreline and 5 feet, and transect T-20 was probed at all distances except 60 feet due to an increased current and the short distance of the transects from a low-head dam. Based on river flow conditions (the flow/depth was too high for wading), the sediment probing was performed from a small aluminum boat equipped with an outboard motor. A NYSDEC representative accompanied ARCADIS BBL field personnel in the boat to observe the probing during the Phase I sediment probing activities. No sheens or odors were noticed during the Phase I or Phase II probing. Field personnel recorded the water depth, sediment thickness, and sediment composition at each probing location. This information is summarized in Table 7. As indicated in Table 7, the water depth measured at the sediment probing locations ranges from approximately 0.2 feet (approximately 5 feet from the shoreline along transect T13) to approximately 10.4 feet (approximately 40 and 60 feet from the shoreline along transects T5 and T8, respectively). The measured sediment thickness ranges from 0.0 feet (at more than half of the locations) to approximately 3.8 feet (approximately 5 feet from the shoreline along transect T19).

2.5.3 Surface-Water Sampling

Surface-water sampling was performed in the Chenango River on August 3, 2006 (the day after the site reconnaissance and sediment probing). Surface-water samples were collected from six locations, including two locations upriver from the site (locations SW-2 and SW-3), two locations adjacent to the site (locations SW-4 and SW-5), and two locations downriver from the site (locations SW-6 and SW-7). The surface-water sampling locations are shown on Figure 3. Based on the Phase II reconnaissance and sediment probing data in conjunction with the Phase I surface water sampling results, surface water sampling was not performed in the Susquehanna River.

Surface-water sampling was performed starting at the most downstream location and continuing upstream. Surface-water samples were collected by submerging and filling unpreserved sample containers. Preserved sample containers were filled by transferring water from the unpreserved containers. The samples were collected from approximately half of the distance between the water surface and the river bottom. The water flow velocity, water depth, sampling depth, and field parameters (i.e., pH, conductivity, dissolved oxygen, temperature, turbidity, and oxidation-reduction potential) measured at each surface-water sampling location are summarized in Table 8.

The suite of samples collected varied from point to point to meet the objectives listed in Section 1.4.2. The surface-water samples collected at sampling locations SW-2, SW-4, and SW-6 were analyzed for VOCs, SVOCs, RCRA metals, PCBs, and total cyanide. The surface-water samples collected at the remaining locations were analyzed for BTEX and PAHs. The surface-water sample analyses were performed using USEPA Methods as referenced in the NYSDEC 2005 ASP.

2.5.4 Sediment Sampling

Sediment sampling was performed in the Chenango River on August 3 and 4, 2006, following completion of the surface-water sampling activities. Sediment samples were collected from eight locations, including three locations upriver from the site (locations SD-1, SD-2, and SD-3), two locations adjacent to the site (locations SD-4 and SD-5), and three locations downriver from the site (locations SD-6, SD-7, and SD-8). Based on the Phase II RI reconnaissance and sediment probing data and in accordance with the Supplemental RI Work Plan, sediment sampling was not performed in the Susquehanna River. The sediment sampling locations are shown on Figure 3. Each sediment sample was a surface sample collected at a depth of 0 to 2 inches below the sediment surface (bss), except for sample SD-8, which was collected at a depth of approximately 2 to 12 inches bss. The recovered sediment consisted mainly of silt, sand, and gravel.

The suite of samples collected varied from point to point to meet the objectives listed in Section 1.4.2. The sediment samples collected at sampling locations SD-1, SD-3, SD-5, and SD-7 were analyzed for VOCs, SVOCs, RCRA metals, PCBs, and total cyanide. Sediment samples collected at the remaining locations were analyzed for BTEX and PAHs. Each sample (except the subsurface sediment sample [SD-7]) was also analyzed for total organic carbon (TOC). Surface-water sample analyses were performed using USEPA Methods (and the Lloyd Khan Method for TOC), as referenced in the NYSDEC 2005 ASP.

2.6 Human Health Exposure Evaluation

An HHEE was performed for the site in general accordance with the NYSDEC document titled *Draft Brownfield Cleanup Program Guide* (NYSDEC, 2004) and Appendix 3B of the NYSDEC document titled *Draft DER-10 Technical Guidance for Site Investigation and Remediation* (NYSDEC, 2002a) (DER-10). The HHEE was performed to assess the significance of potential human exposure to site-related constituents in environmental media. The HHEE was completed considering the environmental site setting, available analytical data, and the current and likely future use of the site. Details of the HHEE are presented in Section 4.

2.7 Fish and Wildlife Resources Impact Analysis

The FWRIA was performed in general accordance with the NYSDEC's *Draft Brownfield Cleanup Program Guide* (NYSDEC, 2004) and Section 3.10 of DER-10 (NYSDEC, 2002a). The FWRIA was completed to identify the fish and wildlife resources that exist on and in the vicinity of the site, and to evaluate the potential for exposure of these resources to site-related constituents in environmental media. As established in DER-10 (NYSDEC, 2002a), the FWRIA was completed in a step-wise manner. Details of the FWRIA are presented in Section 4.

2.8 Decontamination

ARCADIS BBL decontaminated all equipment following the procedures outlined in the FSP. In general, all nondisposable equipment (including all drilling tools, groundwater sampling equipment, and sediment sampling equipment) was decontaminated prior to first use onsite, between each investigation location, and prior to demobilization. The integrity of the decontamination procedures was checked periodically with equipment rinse blanks, as required by the RI Work Plan. Decontamination was effective in preventing cross contamination as indicated by the equipment rinse blank sample results, included on the attached CD.

2.9 Waste Handling

All investigation-derived waste (IDW) was contained onsite and transferred to the NYSEG Court Street Former MGP Site for appropriate characterization and disposal. Soil cuttings, personal protective equipment (PPE), and spent disposable sampling materials were segregated by waste type and placed in New York State Department of Transportation- (NYSDOT-) approved steel 55-gallon drums. All decontamination water and purged groundwater water was stored in polyethylene tanks. All storage vessels were labeled with the contents, generator, location, and date. IDW was characterized and transported for proper offsite treatment/disposal by NYSEG.

2.10 Survey

NYSEG surveyed the locations and ground surface elevations for all soil boring, test pit, monitoring well, piezometer, and sediment transect endpoints (along the shoreline). NYSEG also surveyed the location of alignment points used by field personnel (as a visual reference) when probing and sampling along each transect, the elevation of the measuring point at each monitoring well/piezometer, and the location and elevation of the river gauge measuring points. ARCADIS BBL field personnel measured and recorded the distance from the shoreline to each sediment probing and surface-water/sediment sampling location. NYSEG also surveyed the locations of buildings, pads, paved areas, etc. at and in the vicinity of the site. Survey data for the soil borings, monitoring wells, and piezometer are shown on the logs included in Appendix B. Reference point elevations are also presented in Tables 4 and 5.

Surface coordinates refer to the New York State Plane Central (3102) coordinate system (North American Datum [NAD] 83) and elevations are referenced to North American Vertical Datum (NAVD) 88.

2.11 Data Usability Summary Report

ARCADIS BBL prepared a data usability summary report (DUSR) of the soil, groundwater, surface-water, sediment, and vapor intrusion investigation analytical results following the RI field activities. QA/QC information is contained and examined in the DUSR. The analytical summary tables include the data qualifiers identified in the DUSR. Electronic copies of the DUSRs are provided on the attached CD.

3. Remedial Investigation Findings

3.1 Overview

This section reports the cumulative findings of site investigations into the nature and condition of site soils, groundwater, surface water, and sediments at and near the site. The discussion is divided into the following categories:

- geology and physical setting (Section 3.2);
- groundwater flow (Section 3.3);
- NAPL evaluation (Section 3.4);
- soil quality evaluation (Section 3.5);
- groundwater quality evaluation (Section 3.6);
- surface-water quality evaluation (Section 3.7); and
- sediment quality evaluation (Section 3.8).

Findings of the FWRIA and HHEE are presented in Section 4.

3.2 Geology and Physical Setting

The following discussion of the geology and physical setting of the site and surroundings is divided into two subsections. Section 3.2.1 provides an overview of the regional geologic setting, and Section 3.2.2 provides an overview of site-specific geologic setting. The nature and hydrogeologic function of the site-specific geologic units is described in detail in Section 3.2.2.1.

3.2.1 Regional Geologic Setting

The city of Binghamton is located in the Appalachian Plateau physiographic province, a region of similar geologic history covering the majority of Central and Western New York State. The rock and soil at the site are best understood in the context of the Plateau's history, discussed briefly below.

3.2.1.1 Prior to Pleistocene Glaciation

The interbedded shales, siltstone, and sandstone that form the bedrock of the region were deposited as sediments in an inland sea during the upper Devonian age (Rickard and Fisher, 1970). The long sequence of erosion that has left Central New York's present landscape began approximately 340 million years ago when the inland sea drained and the region became dry land. The rock itself has remained nearly flat lying, cushioned from the compressive mountain building forces (which created the folds and faults in like-aged rocks south in Pennsylvania), by a ductile salt layer in underlying Silurian-aged rock.

3.2.1.2 The Pleistocene Glaciation

Several glacial advances have swept over Central New York. The last glacial advance occurred during the Wisconsinon period. That ice sheet retreated from its southern terminus in Pennsylvania approximately 17,000 years ago. The present day Chenango and Susquehanna Rivers locally follow valleys carved by the glacier, valleys that probably predated the glaciation but were deepened and widened by glacial ice. The glacier carried unconsolidated material (e.g., clay, silt, sand, gravel, cobbles, and boulders) with it as it moved southward, and deposited this material on the land. Unsorted deposits, referred to as till, were deposited beneath the ice (or at the edge of melting ice) while deposits exhibiting a higher degree of sorting (i.e., stratified drift) were deposited by glacial meltwater in rivers and lakes formed while the glacier slowly melted.

3.2.1.3 Post Glaciation

The present day Chenango and Susquehanna Rivers formed as the Wisconsinon glacier receded from the area 10- to 15,000 years ago. The rivers flow largely on glacial deposits that fill the valleys, gradually cutting into them and carrying the material downriver to be deposited again as alluvium. The soils deposited since the last glaciation are primarily this sand, silt, and clay left by the rivers and their tributary streams.

Binghamton was built on a broad lowland valley where the Chenango and Susquehanna Rivers join. The paths of the rivers, and the location of their junction have meandered across the valley floor leaving old stream channels, sand bars, and sediment-filled oxbows superimposed on the glacial outwash.

3.2.1.4 Man's Influence

In two centuries of intensive habitation, the people of Binghamton have significantly modified the landscape. The rivers are now dammed and lined by flood walls and dikes. Formerly swampy areas in the valley floor have been drained or raised with fill. A consideration of the near-surface geology must now include these man-made influences.

3.2.2 Site Geologic Setting

The site occupies a small parcel of land (about 1.4 acres) near the confluence of the Susquehanna and Chenango Rivers (see Figure 1). The land surface is relatively flat, with elevations ranging from approximately 842 to 847 feet above mean sea level (amsl)[2]. Ground-surface elevations just beyond one mile to the north and south of the site rise to more than 1,300 feet amsl. Stormwater is conveyed offsite via a combination of overland sheet flow and underground storm sewer piping connected to various stormwater catch basins. Figure 2 of the *Phase II Groundwater Investigation Report* (Dunn, 1991) shows two stormwater catch basins in the parking lot east of the former Rexel Electric Supply building and one catch basin in the parking lot west of the AAA building. These catch basins convey stormwater runoff to an existing municipal storm sewer system beneath Washington Street and Water Street. The *Phase II Groundwater Investigation Report* (Dunn, 1991) also indicates the potential presence of dry wells in the area for stormwater drainage.

[2] Relative to NAVD88.

Site investigations have identified five principal geologic units beneath the site described in Table 3-1. These units show a sequence of events specific to the site's geologic history:

- dense, gray-colored basal till deposited by the Wisconsinon glacier;
- moderately dense brown-colored till, perhaps deposited by a minor re-advance of glacial ice in the waning stages of the Wisconsinon period or as ablation till (an unsorted mixture of clay, silt, sand, gravel, cobbles, and boulders in varying proportions deposited by melting ice);
- outwash sand and gravel deposited by meltwater rivers as the glacier receded;
- post-glacial alluvial silt and clay; and
- fill and an assortment of man-made structures, originating in the site's industrial history.

Table 3-1
Generalized Geologic Column

Upper Contact Elev.(feet amsl)	Thickness (feet)	Stratigraphic Unit
845	10	**Fill –** silt, sand, gravel, ash, cinders, slag. Also includes demolition debris, foundation remnants, and buried utilities.
835	10	**Alluvial Silt –** massive, with a blocky texture and little or no organic matter. Absent in northern half of the site.
825	8	**Outwash Sand and Gravel** – discontinuous layers of variable thickness and composition, generally silty fine-to-coarse sand and silty fine-to-coarse sandy gravel.
815	15	**Brown Till** – Moderately dense fine sand and silt matrix containing embedded coarse sand and gravel, rounded to angular, multiple rock types.
800	5+	**Gray Till** – dense silt and clay matrix containing embedded sand and gravel, subrounded to angular, generally local rock types (gray colored).

Note: elevations and thicknesses approximated for center of site.

Section 3.2.2.1 describes the nature and hydrogeologic function of these geologic units in detail.

Although not encountered during the RI, bedrock was encountered at approximately 90 feet bgs 1 mile to the northeast at NYSEG's Court Street MGP Site. At that location, the bedrock consisted of gray-colored shale, with essentially horizontal bedding, slight weathering, and a moderate quantity of horizontal bedding plane fractures.

Currently, a portion of the precipitation that falls on the site and adjacent properties infiltrates to become groundwater. The remaining precipitation that falls on the streets and paved areas becomes runoff, entering the storm drains discussed above. The Susquehanna River (where it passes through the City of Binghamton) forms the backbone of an enormous drainage basin, extending to the south. At a gauging station upstream of the site (thus excluding the Chenango River's contribution) the average flow of the Susquehanna River is approximately 3,500 cubic feet per second (cfs) (United States Geological Survey [USGS], 2006). The average flow in the Chenango River near its confluence with the Susquehanna is approximately 560 cfs (USGS, 2006). The outwash sand and gravel unit filling much of the Susquehanna River Valley (as it runs east to west across Central New York) forms the Clinton Street Ballpark Sole Source Aquifer, a USEPA designation (USEPA, 2002). While the city of Binghamton obtains its water directly from the Susquehanna River, some adjacent communities rely on groundwater pumped from this aquifer.

3.2.2.1 Geologic Units

Geologic cross sections have been developed to show the relationship of the five geologic units relative to one another. A geologic cross section location map is included on Figure 4 and the cross sections are shown on Figures 5 and 6. The geologic units are described in detail below.

Gray Till

The gray till is the deepest geologic unit penetrated beneath the site, and generally consists of a dense mixture of fine sand, silt, and clay (in varying proportions) that supports larger clasts of sand and is subrounded to angular gravel. The majority of the gravel comprises local bedrock (gray shale). Standard Penetration Test (SPT) N-values for the unit were typically greater than 50 and split-spoon refusal was common. The gray till surface beneath the site undulates slightly and generally slopes toward the south.

The dense nature of the till and the predominance of local bedrock clasts suggest that it is a lodgment till. Lodgment till is deposited by ice at the base of the glacier, and is typically very compact due to the great weight of the overlying glacier that deposited it. Aquifer modeling performed in the region by Randall (1986) indicated that the till of the region is "very poorly permeable." Reynolds and Garry (1990) noted that till in the Susquehanna River Valley generally has a very low permeability because of its high silt content and compactness. These observations suggest that the key hydrogeologic property of the gray till unit is its low hydraulic conductivity and consequently poor yield of groundwater.

Two monitoring wells are screened in the gray till (MW-5D and MW-8D); however, the sand packs of both wells extend a few feet into the overlying brown till. Consequently, hydraulic conductivity tests performed in these wells may overestimate the horizontal hydraulic conductivity (K_h) of the gray till, as the hydraulic conductivity of the brown till (described below) is expected to be higher than that of the gray till given the appearance of samples recovered from these two units. The results of hydraulic conductivity testing are presented in Table 3-2. The geometric mean of the K_h test results for wells MW-5D and MW-8D is approximately 3 feet per day. As noted above, the true K_h for the gray till is expected to be lower.

Table 3-2
Hydraulic Conductivity Results

Well ID	Screened Interval (ft bgs)	Unit Screened	Hydraulic Conductivity (feet per day)
MW-1R	16-26	Sand and Gravel	>170
MW-4	15-25	Sand and Gravel *and* Brown Till	21
MW-5	16-26	Sand and Gravel *and* Brown Till	48
MW-5D	37-42	Brown Till *and* Gray Till	2.4
MW-6S	8-13	Fill *and* Silt	9.2
MW-6	20-30	Brown Till	0.49
MW-7	13-23	Sand and Gravel	34
MW-7D	37-42	Brown Till	8.5
MW-8	17-27	Sand and Gravel *and* Brown Till	150
MW-8D	44-49	Brown Till *and* Gray Till	3.8

Brown Till

Brown till overlies the gray till and is characterized by its color, modest density, gravels of varying rock types, and generally lesser proportions of silt and clay as compared to the gray till. While SPT N-values were often above 50, they were generally less than those for the gray till and split-spoon refusals were uncommon. These observations suggest that the brown till may represent an ablation till—a poorly sorted material deposited in place by melting ice where some fines (i.e., silt and clay) may have been winnowed out in the process. The surface of the brown till generally slopes to the south, with a slight trough sloping southwest from near soil boring SB-1 toward the MW-7 well pair.

Two monitoring wells are screened exclusively in the brown till: MW-6 and MW-7D. Specific-capacity tests performed at these wells yielded K_h values of 0.49 and 8.5 feet per day, respectively, resulting in a geometric mean value of approximately 2 feet per day.

Sand and Gravel

The sand and gravel unit is the most significant at the site in terms of its ability to yield and transmit groundwater. However, the saturated thickness of the unit is relatively thin (generally less than 10 feet) and the unit was found to be unsaturated beneath the northernmost portion of the site during the July 2006 water-level monitoring event. Also, the unit is locally absent at the MW-6 well pair.

This unit consists of discontinuous layers of variable thickness and composition, generally silty fine-to-coarse sand and silty fine-to-coarse sandy gravel. The contact between this unit and the underlying brown till is sometimes gradational, suggesting that the two units were deposited nearly contemporaneously. Beneath the northern half of the site, where the alluvial silt and clay unit is absent, the water table resides in the sand and gravel unit.

Two monitoring wells are screened exclusively in the sand and gravel unit: MW-1R and MW-7. Specific-capacity tests performed at these wells yielded K_h values of >170 and 34 feet per day, respectively, resulting in a geometric mean value of approximately 76 feet per day.

The continuity of head in the sand and gravel and brown till units (i.e., the slight vertical and horizontal gradients), suggests a reasonable hydraulic connection between the units despite local variations in conductivity.

Alluvial Silt

A deposit of silt occurs across the southern half of the site. The surface of the unit (depicted on Figure 7) generally slopes toward the south, with a modest depression located in the region occupied by soil borings SB-13 and SB-28 through SB-31 and monitoring wells MW-2, MW-3 and MW-9. This unit is generally described as unstratified (massive), with varying amounts of clay, a blocky texture, and little discernable organic matter. Where the unit is present, its surface likely formed the original land surface prior to development of the area. The silt is currently covered by fill. The available data suggest that the former gas holders were constructed near the northern limits of the unit. As shown on Figures 5, 6, and 7, the gas holder foundations appear to have truncated the unit.

The unit is significant hydrogeologically because it limits recharge to the sand and gravel unit by restricting infiltration of precipitation, and because its presence results in modest perching of groundwater in the fill above it. Groundwater flow is discussed in detail in Section 3.3.

No site-specific hydraulic conductivity values are available for the unit, as no wells are screened exclusively within it. Silt deposits would be expected to have K_h values within the range of 0.03 to 3.3 feet per day (Brassington, 1988).

The vertical hydraulic conductivity (K_v) of the silt is expected to be lower than the K_h. Testing of undisturbed samples of a similar silt unit at NYSEG's nearby MGP site located on Court Street (located about 1 mile northeast of the site) yielded a geometric mean K_v of 0.001 feet per day (BBL, 2002).

Fill

The fill unit consists of silt, sand, gravel, ash, cinders, and slag, as well as demolition debris and building foundation remnants. Although expected to be fairly permeable, all but the bottom few feet of fill that overlie the silt unit is unsaturated and does not affect groundwater flow. It is possible that during seasonally dry periods the perched groundwater is nonexistent. Movement of this perched groundwater is discussed briefly in Section 3.6.1, but its relevance in terms of this RI appears negligible.

3.3 Groundwater Flow

3.3.1 Regional Groundwater Flow

The hydrogeology of the Susquehanna River Valley in the region has been the subject of considerable study. Detailed studies of the hydrogeology of the valley-fill aquifer in the region have been performed by Randall (1977 and 1978), Holecek et al. (1982), and MacNish and Randall (1983). Ku et al. (1975) studied stream flow in the region and its effect upon groundwater recharge. Randall (1986) and Wolcott and Coon (2001) developed finite-difference aquifer models for the region. The following discussion of regional groundwater flow is based upon these studies.

Groundwater in the sediments overlying bedrock in the Susquehanna River Valley near Binghamton is derived principally from infiltration of precipitation falling on the land and infiltration of water through the beds of tributary streams (Ku et al., 1975). Most of the rain and snowmelt in areas of the valley where sand and gravel occur at the surface infiltrates the soil, while only a small percentage of rain or snowmelt infiltrates the top foot or two of soils on the surrounding hills bordering the valley (Ku et al., 1975) (MacNish and Randall, 1983). Tributary streams have been shown to be important sources of recharge in valleys in the region (Miller and Randall, 1991). Typically, these streams originate in uplands and lose considerable amounts of water as they flow across stratified drift of the valley floor. A small but steady flow of groundwater likely moves through the bedrock and till from upland areas toward the river valley and into the sediments.

As soon as infiltrating water reaches the water table, it begins to move toward areas of discharge. In the Susquehanna River Valley near Binghamton, the major discharge areas are the Susquehanna and Chenango Rivers. The majority of groundwater flow in the valley is interpreted to occur through stratified-drift (sand and gravel) aquifers, due to their relatively high hydraulic conductivity, large thickness, and considerable areal extent. Lesser amounts of groundwater move through silt and clay deposits, till, and bedrock.

3.3.2 Site Groundwater Flow

Groundwater flow at the site was evaluated using the following information:

- Regional hydrogeologic information (presented above).
- Four rounds of water-level data collected at site monitoring wells (June 27 and July 24, 2006; and January 17 and May 15, 2008) and two rounds of water-level from piezometer PZ-1 (June 27 and July 24, 2006). These data are presented in Table 5.

To aid interpretation of site groundwater flow, a water-table map was prepared using the most comprehensive groundwater elevation data set (the July 24, 2006 set which includes piezometer water level data). The water table is also depicted on cross sections A-A’ and B-B’ (Figures 5 and 6).

Groundwater beneath the site is derived from infiltration of precipitation falling on unpaved areas, and from flow onto the site from upgradient, offsite areas (i.e., from the northeast). Infiltration of precipitation is retarded in the southern portion of the site by the alluvial silt unit, which results in minor, localized perching of water above it. Such perching is likely to be seasonal in nature.

Given the relatively high hydraulic conductivity of the sand and gravel and brown till units (relative to the expected hydraulic conductivity of the gray till unit), the majority of groundwater flow beneath the site is expected to occur in these two units. As shown on Figure 8, flow beneath the site is directed westward, toward the Chenango River. Groundwater to the south-southeast of the site flows southeastward toward the Susquehanna River. Note that groundwater elevation data from wells MW-2, MW-3 and MW-9 were not used to develop Figure 8. The data from MW-2 and MW-3 were not used because these wells screen across the alluvial silt unit and measured hydraulic heads are anomalously high, albeit only slightly. The anomalously high heads are interpreted to result from drainage of perched water above the silt, through the well screen, to the underlying sand and gravel unit. These wells were installed during a previous investigation conducted by others. Data from MW-9 were not used because the well was installed during the Phase II RI, after the site-wide round of water levels was collected (in Phase I).

The horizontal hydraulic gradient across the site is slight, approximately 0.003 based on Figure 8. The slight gradient is interpreted to result from the relatively permeable nature of the sand and gravel unit (and portions of the brown till unit), and a reasonable degree of hydraulic communication between these units and the Chenango and Susquehanna Rivers. The average linear velocity (v) of groundwater moving through the sand and gravel and brown till units can be estimated using the following equation (Fetter, 1988):

$$v = \frac{KI}{n_e}$$

Where:
K = the hydraulic conductivity of the unit
I = the horizontal hydraulic gradient
n_e = the effective porosity of the unit

Table 3-3
Seepage Velocity Parameters

Unit	K (ft/day)	I [1]	n_e [2] (%)
Sand and Gravel	76	0.003	28
Brown Till	2	0.003	33

[1]Dimensionless; estimated from Figure 8, between MW-8 and MW-5.
[2]From Brassington (1988).

Using the values for K, I, and n_e shown in Table 3-3, the average linear velocities of groundwater moving through the sand and gravel and brown till units are calculated to be approximately 76 and 2 feet per day, respectively.

Although the three deep wells at the site are not screened exclusively in the gray till, groundwater flow patterns in this deeper unit are expected to be similar to that of the overlying sand and gravel and brown till units. Although sufficient data to estimate a seepage velocity for the gray till unit are not available, it is expected that the seepage velocity would be less than that estimated for the brown till unit, above.

To assess the degree and direction of vertical groundwater movement, vertical gradients between the three shallow and deep well pairs (MW-5, MW-7, and MW-8) were examined. The average vertical gradients[3] for these three well pairs are shown in Table 3-4. The vertical gradients are relatively slight, suggesting reasonable hydraulic communication between the shallow- and deep-screened intervals of the well pairs. As would be expected, the direction of the vertical gradient is downward at the MW-8 well pair, which is located furthest from the Chenango River, and upward at the MW-5 and MW-7 well pairs, which are located near the Chenango River. This information, coupled with the relationship of the units to one another shown on Figures 5 and 6,

[3] Vertical gradients for the June and July 2006 data sets (Table 5) were averaged.

indicates that groundwater moves predominantly horizontally beneath the site and discharges to the Chenango River.

Often at MGP sites, utilities and other man-made structures can influence groundwater movement. Due to the depth of the water table across the site (approximately 18 feet below grade), buried utilities are expected to occur above the water table and therefore have no influence on groundwater flow, except potentially where perched groundwater is present. A storm sewer and buried natural gas line exist in the parking area behind (west of) the AAA building where a few feet of perched groundwater existed during the field work (Figure 3). This perched groundwater may be ephemeral, and its quantity at that time appeared minimal (just two feet or less of the fill were saturated). If these utilities were excavated into but not through the silt, and are surrounded by permeable bedding, they may locally allow some of the perched groundwater to migrate along them. If these utilities were excavated through the silt, they may locally permit the perched water to drain into the underlying sand and gravel unit. As discussed in Section 3.6.1, the quality of the perched water appears unaffected by the former MGP; therefore, its movement is generally moot.

The deepest man-made structures that exist at and near the site are the two former gas holder foundations and the concrete/sheet pile flood wall along the Chenango River. These structures are shown on cross section A-A' (Figure 5). As can be seen from this figure, these structures are either above (Holder #2 and the flood wall) or just below (Holder #1) the water table. As such, their affect upon groundwater flow is negligible.

Table 3-4
Vertical Gradients from Water Table

Well Pair	Vertical Gradient*	Direction
MW-5	0.007	Up
MW-7	0.0005	Up
MW-8	0.008	Down

*Represents the average of the two available data sets (See Table 5).

3.4 NAPL Evaluation

Due to their immiscible nature, NAPLs can persist for many years in the subsurface, where they act as continuing sources of constituents to groundwater as they slowly dissolve This is particularly true with DNAPLs, which tend to migrate below the water table, rather than float on top of it. NAPLs can also diffuse into low-permeability zones, such as silt or clay layers, which then act as continuing sources of constituents to groundwater. At MGP sites, NAPLs (predominantly coal tar) often serve as a major source of BTEX and PAHs to soils and groundwater; therefore, it is important to understand their distribution and behavior in the subsurface. In urban settings with a long industrial history (such as at this site) other sources of NAPL unrelated to the MGP can exist, such as spills and leaks associated with petroleum storage tanks or the service of automobiles (e.g., used motor oil). This section describes the nature and extent of NAPLs observed in the subsurface and how they would be expected to migrate, if at all.

ARCADIS BBL used field observation of subsurface soils, coupled with forensic interpretation of analytical results, to characterize the NAPLs identified and their extents. Details regarding the forensic evaluation of analytical samples are contained in Appendix G.

3.4.1 NAPL Characterization

Information regarding the nature of NAPLs identified at the site comes from observations made of subsurface soils[4] and of the NAPL that accumulated in monitoring wells MW-3 and MW-9, from forensic evaluation of NAPL-containing soil samples that were analyzed by TestAmerica, and from the results of testing performed on a DNAPL sample collected from MW-3 and analyzed by Queens University. DNAPL and sediment (intermixed with DNAPL) were removed from MW-3 on June 15, 2006, and a smaller amount of DNAPL (which could not be measured) was identified in the well during follow-up activities on July 26, 2006. Monthly NAPL monitoring at wells MW-3 and MW-9 began in June 2007 and continued through September 2007. Periodic NAPL monitoring was subsequently performed at both wells in December 2007, January 2008, and May 2008. Measurable DNAPL was identified in the wells in certain events and was removed using a tremie pipe. The thickness of DNAPL encountered in the wells during each monitoring event and amounts removed from the wells are summarized in Table 3-5.

Table 3-5
NAPL Gauging Data

Date	NAPL Thickness (feet)	Water Elevations (feet)	NAPL Removed (mL)
MW-3			
6/5/2007	1.4	6.98	200
7/24/2007	Trace	- -	0
8/28/2007	1.0	- -	177
9/20/2007	0.5	14.52	0
12/18/2007	0.04	6.43	0
1/17/2008	0.05	5.48	0
5/15/2008	0.0	6.45	0
MW-9			
6/12/2007	Trace	6.79	Trace
7/24/2007	Trace	- -	0
8/28/2007	Trace	- -	0
9/20/2007	Trace	15.00	0
12/18/2007	0.16	6.86	60-90
1/17/2008	Trace	5.83	0
5/15/2008	0	6.48	0

Note: - - = not measured.

From the investigations, two types of NAPL were identified. The first is described as dark gray to black colored and viscous, with a coal-tar-like odor. This NAPL was identified at the following five locations, all of which are within approximately 40 feet or less of one another: soil borings SB-13, SB-29, and SB-31, and monitoring wells MW-3 and MW-9. Forensic analysis of a NAPL-containing soil sample from SB-13 indicated that the NAPL was likely coal tar produced by the coal carbonization process. Approximately 1 foot of this NAPL mixed with sediment was identified at the bottom of MW-3 when the well was checked on June 15, 2006, demonstrating that it is a DNAPL. A sample of DNAPL was taken from MW-3 and sent to Queens University for analysis of viscosity, density, and interfacial tension at the approximate average groundwater temperature (14^{o}C). The density and viscosity were analyzed at 40^{O}C, 50^{O}C and 60^{O}C and results were then extrapolated to 14^{o}C through regression. As previously mentioned, testing for viscosity and density at 14^{o}C and testing for interfacial tension (at various temperatures) was not possible due to the high viscosity of the DNAPL. The test results are summarized in Table 3-6.

[4] No NAPL-containing soils were observed at the surface during the RI.

Table 3-6
NAPL Physical Characteristics from MW-3

Temperature (°C)	Density (g/mL)	Viscosity (cP)
14 (extrapolated)	1.4251	76,193
40	1.1979	14,600
50	1.1808	4470
60	1.2024	1873

The second type of NAPL in the subsurface was identified in soil borings SB-10 and SB-14. This NAPL is described as yellowish in color with a strong petroleum-like odor. Forensic analysis of a NAPL-containing sample from SB-14 indicated two signatures, one likely a No. 2 fuel oil (i.e., diesel[5]) and another likely a "heavy oil" (e.g., lubricating oil). Such NAPLs are typically light nonaqueous-phase liquids (LNAPLs).

3.4.2 NAPL Delineation

Delineating the extent of NAPLs, particularly DNAPLs, often proves challenging at MGP sites. This is due to many factors, including:

- *Lack of information*. Information on plant operations and waste handling practices is often scant or nonexistent.

- *Multiple NAPL-release points*. Typical MGP sites had multiple locations where DNAPL could have been released, usually undocumented.

- *Complicated behavior in the subsurface*. DNAPL often migrates in irregular ways, and its migration can be influenced by man-made features and naturally occurring conditions.

Despite such complications, the geologic and analytical data generated by the numerous borings drilled and wells/piezometers installed at the site have permitted ARCADIS BBL to sufficiently characterize the extent of NAPLs for the purposes of this RI. The balance of this section describes the approach that ARCADIS BBL used to delineate the horizontal and vertical extents of NAPL at the site, and describes those extents.

To delineate the extent of NAPL at the site, ARCADIS BBL used the NAPL observation information presented in Section 3.4.1, along with observations of sheens. While there are sources of sheen other than NAPLs, soil samples identified during the RI as exhibiting a sheen also exhibited either a petroleum- or coal-tar-like odor; therefore, for this report, samples with a sheen are interpreted to contain trace amounts of NAPL. Forensic evaluation of analytical samples that exhibited a sheen generally indicated the presence of a petroleum-like or coal-tar-like signature (or both).

As noted in Section 3.4.1, NAPL was observed in the subsurface at several locations. Coal-tar-like NAPL was identified at SB-13, SB-29, SB-31, MW-3 and MW-9, which are each south of former Holder #2. The NAPL at these locations was constrained vertically to the bottom few feet of fill (sheen only) and the upper to middle portion of the underlying silt deposit, a thickness of approximately 13 feet or less. NAPL-containing intervals in this area are depicted in the cross section on Figure 6. Limited intervals of sheen-producing soils were also observed north of this area, near or within both former gas holders, as summarized in Table 3-7. In all cases, these sheen-containing soils are bounded vertically and horizontally by visually NAPL-free soils. Given the location and forensic information regarding these sheen-producing intervals, they are interpreted to be related to the former MGP.

[5] No. 2 fuel oil and diesel fuel are essentially the same product.

South of this area and offsite, petroleum-like NAPL consisting of a mixture of No. 2 fuel oil and heavier lubricating oil is present. NAPL and sheen observations were limited to two borings, SB-10 (east of the former Henneken's Auto Sales and Service Station building near one of the suspected former UST locations, as identified in Section 1.3.1) and SB-14 (below the footprint of the former building). The former location/layout of the Henneken's building is shown on Figure 2, and sampling locations SB-10 and SB-14 are shown on Figure 3. The NAPL and sheen-producing intervals are limited to the bottom few feet of the silt unit and the upper few feet of the underlying sand and gravel unit, approximately 18 to 22 feet below grade, and are bounded vertically and horizontally by visually NAPL-free soils. Given the former presence of USTs in this area, which is outside the limits of the site, these impacted soils are interpreted to be unrelated to the former MGP. Regardless of the source, the concentrations of PAHs identified in soil samples analyzed from borings SB-10 and SB-14 (e.g., samples collected to characterize the NAPL/sheens) are less than the restricted residential soil cleanup objectives, as discussed in Section 3.5.

Table 3-7
Soils Exhibiting a Sheen – Former MGP Property

Location	Interval (Ft. BLS)	Forensic Signature	Comments
SB-1	16-16.5	NA	Inside Holder #1
SB-3	8-12	NA	Inside Holder #1
SB-17	15-16	Coal tar	Beneath Holder #2, in sand and gravel
SB-24	18-20	NA	Beneath Holder #2, in sand and gravel
SB-25A	14.5-15	Coal tar and heavy oil	Immediately beneath Holder #2
	18-19	NA	In sand and gravel/ top of brown till
SB-27	16-22	NA	In bottom of silt and top of sand and gravel

NA = not analyzed.

3.4.3 NAPL Movement

From the information regarding the nature and extent of NAPL provided in Section 3.4.2, it appears that potentially mobile DNAPL is present only in a small region surrounding MW-3 (and to a much lesser extent at MW-9), primarily in the top half of the silt unit. Although the exact source of this NAPL cannot be determined, it appears that the source was near this area and was relatively shallow. The results of the periodic NAPL-gauging performed at MW-3 and MW-9 are presented in Table 3-5.

Based on the data in Table 3-5, DNAPL is accumulating in a measurable thickness at monitoring well MW-3, and only very slowly. That accumulation demonstrates that the DNAPL is pooled, likely in macropores in the silt unit. Given the construction of MW-3, the DNAPL appears to have entered the well at a depth of 11 to 15 feet, and then settled to the bottom of the well (about 24 feet). This condition is undesirable because the potential exists for the DNAPL to migrate out of the screen bottom. It is unlikely that a significant quantity of DNAPL has done so because no BTEX or PAHs were detected in the groundwater sampled from well MW-6, which is located about 90 feet downgradient of MW-3. If a significant mass of NAPL were present in the sand and gravel or brown till units near MW-3, a dissolved plume of BTEX and lighter PAHs would be expected to extend downgradient to MW-6.

Given the available information, it is likely that the pooled DNAPL in the silt unit is either stable, or moving extremely slowly due to its high viscosity and the low permeability of the silt unit. If moving, the direction of movement would be expected to be downward due to gravity and the downward hydraulic gradient that exists across the silt unit.

3.5 Soil Quality Evaluation

At MGP sites, two types of gas-production byproducts often account for the majority of affected soils: NAPLs (primarily coal-tar DNAPL) and spent purifier wastes. Principal components of coal tar that are routinely analyzed for at MGP sites are BTEX (which are VOCs) and PAHs (which are SVOCs). Knowing the levels and distribution of these two classes of organic compounds is a useful way of identifying the nature and extent of soils affected by coal tar. Because coal tar typically contains elevated levels of these compounds, soil samples that contain coal tar need not always be analyzed; rather, it can be assumed that the levels of BTEX and PAHs will likely be above applicable standards, criteria, and guidance values (SCGs). Purifier wastes are typically composed of lime or a cellulose-based matrix (e.g., sawdust or wood chips) and often contain cyanide. Cyanide complexes in purifier waste typically color the waste bright blue (Prussian Blue), making it easy to detect in the field. Complexed cyanide species have been shown to be stable, and thus are not a toxicological concern. Blue discoloration (which may indicate purifier waste) was encountered only at one location, SB-23 (trace blue discoloration was identified at the 6- to 8-foot depth interval). The distribution of cyanide in site soil is summarized in Section 3.5.1.3.

3.5.1 Soil Sampling Results

Laboratory analytical results for the soil samples collected as part of the RI are summarized in Table 10. To evaluate the potential significance of the results, ARCADIS BBL compared the results to the unrestricted and restricted use soil cleanup objectives (SCOs) for the protection of public health as presented in the Superfund/Brownfield Regulations contained in 6 NYCRR Part 375-6 (NYSDEC, 2006a). The restricted residential SCOs are the focus of the discussion below because (as indicated in recent correspondence between NYSDEC and the developer) the intended use of the site is mixed commercial and residential (i.e., multi-story housing with retail on the main floor). Soil analytical results that exceed the restricted residential SCOs are shown on Figure 9. SCOs for the protection of groundwater quality are not presented in Table 10 because it is anticipated that onsite sources will be addressed via a remedial program (as needed) and an environmental easement will provide a groundwater use restriction for the site.

At MGP sites, the VOCs of interest are BTEX compounds because they typically occur in the greatest abundance. For the same reason, the SVOCs of interest are PAHs. No PCBs were detected in the RI soil samples at concentrations exceeding the restricted residential SCOs. Selected BTEX compounds, selected SVOCs/PAHs, and lead were detected at concentrations exceeding the SCOs, as summarized below.

3.5.1.1 VOCs

VOCs/BTEX were detected in soil samples from 3 of the 24 RI soil sampling locations at concentrations exceeding the restricted residential SCOs. Benzene was identified in the soil samples from locations SB-3 (20-20.5 feet) and SB-3 (12-14 feet) at concentrations of 6.6 ppm and 4.9 ppm, respectively, which are slightly greater than the 4.8 ppm restricted residential SCO. Xylenes were identified in the soil sample from location SB-18 (14-16 feet) at a concentration of 110 ppm, which slightly exceeds the 100 ppm restricted residential SCO. No other VOCs besides benzene and xylenes were identified in the RI soil samples at concentrations exceeding the restricted residential SCOs.

3.5.1.2 SVOCs

SVOCs (PAHs) were detected in soil samples collected from 13 of the 24 RI soil sampling locations at concentrations exceeding the restricted residential SCOs. Each PAH identified in soils at a concentration exceeding the restricted residential SCOs, the number of sampling locations exhibiting the PAH at concentrations exceeding the SCO, the range of concentrations detected (exceeding SCOs), and the location exhibiting the maximum PAH concentration are summarized in Table 3-8.

Table 3-8
SVOCs Exceeding Restricted Residential SCOs

PAH	Restricted Residential SCO (ppm)	Number of Sampling Locations Exhibiting PAH at Concentration >SCO	Range of Concentrations (ppm)	Location Exhibiting Maximum Concentration
Benzo(a)anthracene	1	11	1.4 – 61	SB-19
Benzo(a)pyrene	1	12	1.1 – 46	SB-19
Benzo(b)fluoranthene	1	13	1.1 – 48	SB-3
Benzo(k)fluoranthene	3.9	8	4.5 – 49	SB-3
Chrysene	3.9	9	7.6 – 51	SB-19
Dibenzo(a,h)anthracene	0.33	9	1.2 - 44	SB-19
Dibenzofuran	59	2	66 and 69	SB-18
Fluoranthene	100	1	120	SB-19
Fluorene	100	1	110	SB-19
Indeno(1,2,3-cd)pyrene	0.5	11	0.84 - 26	SB-6
Naphthalene	100	4	180 – 510	SB-18
Phenanthrene	100	3	130 – 230	SB-19
Pyrene	100	3	110 – 130	SB-19

As indicated above, the maximum concentration of each individual PAH was generally identified in the former holders (e.g., location SB-3 in Holder #1 and locations SB-18 and SB-19 in Holder #2). The maximum indeno(1,2,3-cd)pyrene concentration was identified in the soil sample collected from the 0.5- to 2-foot interval (below the asphalt pavement) near the former superheater location (at SB-6). Based on the forensics analysis (refer to Appendix G), the PAHs below Holder #2 appear to be a result of coal tars originating from the coal carbonization process, while the PAHs closer to the surface (0.5- to 2 feet) appear to be a result of coal tars originating from the carbureted water gas process.

As discussed above, NAPL was identified in the alluvial silt at location SB-13 at a depth of approximately 10 to 16 feet bgs. One sample of NAPL-containing soils was collected from the 12- to 14-foot depth interval and analyzed for PAHs. Based on the laboratory analytical results, PAHs were identified in these soils at concentrations exceeding the restricted residential SCOs, but the levels detected were lower than those identified in the former holders and elsewhere onsite. As indicated above, forensics analysis suggests that the NAPL at SB-13 is coal-tar produced by the coal carbonization process.

As shown on Figure 9, the vertical extent of soils exhibiting PAHs at concentrations exceeding the restricted residential SCOs has been determined at each sampling location, except at locations SB-17, SB-18, and SB-19, where the deepest soil samples were collected from the 2-foot interval just above the holder floor, and the borings were terminated at the floor (16 feet bgs). However, based on the results for sampling performed at two follow-up boring locations inside Holder #2 (locations SB-24 and SB-25), PAH impacts below Holder #2 do not extend more than 28 to 32 feet bgs (PAHs were not detected at concentrations exceeding the SCOs in sample SB-24 [30 to 32 feet] or in sample SB-25A [26 to 28 feet]).

Most of the PAH-impacted soils were encountered at depths of approximately 14 to 20 feet bgs. PAH-impacted soils were encountered at depths of between 0.5 to 2 feet bgs (immediately below asphalt pavement/concrete surface coverings) at four sampling locations: SB-4, SB-6, SB-16, and SB-21. However, PAH concentrations identified at several of these locations were only slightly greater than the SCOs, and the soils are covered (thereby limiting potential exposures), as discussed in Section 4.

3.5.1.3 Inorganics

Cyanide is associated with MGP operations because MGP purifier wastes sometimes contain elevated levels of various forms of cyanide. Carbureted water gas purifier wastes typically contain very little cyanide, while coal carbonization purifier wastes often contain substantial amounts of cyanide. As indicated above, the majority of cyanide in purifier waste occurs in the form of complexes that are nontoxic. Purifier wastes can consist of lime or iron-impregnated wood chips, and are often colored blue due to nontoxic ferrocyanide complexes. These wastes were typically disposed of as fill. A one-foot-thick layer of wood chips was identified approximately 10 feet deep at boring SB-15 (south of the site). One sample of these chips was analyzed for cyanide. Based on the laboratory analytical results (see Table 10), cyanide was not detected in the wood chip sample. As indicated above, blue discoloration (which may indicate purifier waste) was encountered only at one location, SB-23 (6 to 8 feet bgs). A sample of these soils was not collected for analysis. Cyanide was detected in several RI soil samples nearby SB-23; however, the maximum concentration detected, 8.5 ppm at location SB-1 (24 to 26 feet) (approximately 130 feet from SB-23), was well below the 27 ppm SCO for cyanide. Because the MGP at this site was located in a developed urban area with little available open land for filling, cyanide-containing wastes may have been disposed offsite.

As indicated in Section 2.2.1.3, the RI soil samples were analyzed for RCRA metals in addition to cyanide. Six of the eight RCRA metals (i.e., arsenic, barium, cadmium, chromium, lead, and mercury) were detected in the RI soil samples, but the concentrations detected are well below the restricted residential SCOs, with the following exception: lead was identified in the samples collected at locations SB-3 (20-20.5 feet) and SB-21 (0.5-2 feet) at concentrations of 584 ppm and 447 J ppm, respectively, which slightly exceed the 400 ppm SCO.

3.5.1.4 Additional Parameters

As indicated in Section 2.2.1.4, additional analyses were performed on selected samples to help identify regions of soil that, if excavated, might constitute a hazardous waste. Samples from locations SB-13 (12 to 14 feet), SB-19 (14 to 16 feet), and SB-24 (18 to 20 feet) were analyzed for PCBs, TCLP benzene, reactivity (reactive cyanide and reactive sulfide), total sulfur, and flashpoint. PCBs were not detected at concentrations exceeding laboratory detection limits in the soil samples collected as part of the RI. TCLP benzene was detected in each sample, but the maximum concentration detected (0.33 ppm at location SB-13 [12 to 14 feet]) is less than the 0.5 ppm regulatory limit in 6 NYCRR Part 371.3(e). The analytical results for the other parameters were also below regulatory limits. The results indicate that the soils, if they were to be excavated, would not exhibit characteristics of a hazardous waste.

3.6 Groundwater Quality Evaluation

This section discusses the quality of groundwater at and near the site, based on analytical results of groundwater samples collected during the RI. Table 11 summarizes the analytical results and compares them to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* Class GA Groundwater Quality Standards and Guidance Values (NYSDEC, 1998). Figure 10 shows the distribution of those constituents that exceeded the above criteria.

Groundwater monitoring wells at the site, monitor three distinct intervals. Monitoring well MW-6S monitors the groundwater perched above the alluvial silt south of the site. Monitoring wells with no letter designation at the end of their ID (e.g., MW-7) monitor the water table[6]. Where the alluvial silt is absent, these wells typically screen the sand and gravel and the underlying brown till. Where the alluvial silt is present, these wells typically screen it and the underlying sand and gravel. Monitoring wells designated with the letter D (e.g., MW-7D) are generally screened 10 to 20 feet deeper than the water-table wells, monitoring the bottom of the brown till and/or the top of the gray till. Monitoring well MW-3 is unlike the other monitoring wells in that its screen is at least twice as long as those of other site wells. As previously mentioned, MW-3 was installed during a previous investigation performed by others.

This evaluation focuses on the extent of MGP-related constituents (i.e., BTEX, PAHs, and cyanide) in groundwater; however, other constituents that were detected above the TOGS criteria are also discussed.

3.6.1 Perched Groundwater Quality

One well, MW-6S, monitors the quality of perched groundwater. As described in Section 2.3.3, this well was sampled three times, once in June 2006, July 2006, and January 2008. The June 2006 sample was not analyzed for the full suite of parameters, rather, it was only analyzed for TCL VOCs, PCBs, and cyanide. The sampling results indicate that the quality of the perched water near MW-6S has not been affected by the former MGP. The only constituents detected at concentrations exceeding TOGS criteria were PCBs (July 2006 sampling event only) and selenium (January 2008 sampling event only), as shown on Figure 10. PCBs and selenium were not detected in soil samples analyzed from borings SB-13 (uppermost 2 feet of silt directly below the perched groundwater), SB-19 (Holder #2 fill material), and SB-24 (Holder #2 fill material). PCBs and selenium are not associated with MGP operations.

The quality of perched water at MW-3, nearer to the former MGP, has likely been affected by the MGP because the fill material exhibited a sheen in that location and the upper several feet of the underlying alluvial silt were observed to contain coal-tar-like DNAPL. As noted previously, this well was not sampled because it initially contained approximately 1 foot of a DNAPL/sediment mixture. As noted in Section 3.4.2, the extent of NAPL near MW-3 is limited, and therefore the extent of affected groundwater is expected to be limited also. Note that the quantity of perched groundwater beneath the site is relatively small, and its extent is also limited.

[6] Well MW-1R also monitors the water table. The letter "R" denotes that it is a replacement well for MW-1, a "pre-RI" well that could not be located during the RI.

3.6.2 Shallow Monitoring Well Results

Eight wells monitor the quality of shallow groundwater: MW-2 (upgradient of the site), MW-8 (upgradient of the site), MW-4 (crossgradient of the site), MW-7 (crossgradient of the site), MW-3[7] (within the site), MW-1R (downgradient of the site), MW-5 (downgradient of the site), and MW-6 (downgradient of the site). Well MW-3 was not sampled because it contained DNAPL, and well MW-2 was only sampled for VOCs and SVOCs during the January 2008 mobilization because it was essentially dry during the previous sampling events.

3.6.2.1 VOCs

No MGP-related VOCs were detected in shallow groundwater above the TOGS criteria. Several other VOCs, specifically chlorinated solvents, were detected above the criteria south of the site, in samples collected from wells MW-6 and MW-7 (Figure 10). Chlorinated solvents are commonly used as degreasers in industry (e.g., to clean metal parts or prepare them for painting), but are not associated with the manufacture of gas from coal.

3.6.2.2 SVOCs

No MGP-related SVOCs were detected in shallow groundwater above the TOGS criteria.

3.6.2.3 Inorganics

Three inorganics, arsenic, cyanide, and selenium, were detected at concentrations exceeding the TOGS criteria in shallow groundwater. Arsenic was detected above its 25 micrograms per liter (µg/L) criterion in samples collected from two wells: upgradient well MW-8 (43.6 µg/L) and crossgradient well MW-7 (25.8 µg/L and 62.2 µg/L). Arsenic is not typically associated with former MGP operations; however, it is often associated with tannery operations. A tannery was formerly located upgradient (east of) the site and could conceivably be the source of arsenic in groundwater at these locations.

Cyanide was detected above its 200 µg/L criterion in two samples collected from MW-5 (269 µg/L and 1,650 µg/L). The source of cyanide in the samples is unclear. As discussed in Section 3.5.1.3, the primary source of cyanide at MGP sites is purifier waste; however, none was observed in soil borings near SB-5. Lower levels of cyanide were detected in most other shallow groundwater samples, including upgradient well MW-8 (MW-7 was the exception, where no cyanide was detected). Given the absence of elevated cyanide in other shallow wells, the extent of cyanide in groundwater at MW-5 appears to be limited.

Selenium was detected above its 10 µg/L criterion in samples collected from two wells: downgradient site well MW-5 (20.6 µg/L) and downgradient well MW-6S (16.2 µg/L). Selenium is not typically associated with MGP operations.

3.6.2.4 PCBs

PCBs were detected at concentrations exceeding the TOGS criteria in two groundwater samples collected from shallow groundwater. PCBs were detected above the 0.09 µg/L criterion in the January 2008 sample collected

[7] MW-3 is screened across both the perched groundwater and underlying "shallow" groundwater.

from downgradient well MW-5 (0.16 µg/L) and in the July 26, 2006 duplicate sample collected from MW-6 (0.82 J µg/L).[8] PCBs were not detected in any of the other samples collected from these wells. As noted previously, PCBs are not associated with MGP operations; therefore, the source of PCBs in these samples is unrelated to the former MGP.

3.6.3 Deep Monitoring Well Results

Three wells monitor the quality of deep groundwater beneath the site: MW-8D (upgradient), MW-5D (downgradient), and MW-7D (crossgradient).

3.6.3.1 VOCs

The only VOCs detected in deep groundwater above the TOGS criteria were BTEX. At crossgradient well MW-7D, benzene was detected above its 1 µg/L criterion in two of three samples collected from the well (8 µg/L and 5 µg/L). Given the distribution of MGP-related impacts in the subsurface and the understanding of groundwater flow determined by this RI, the source of benzene in groundwater at this well may not be associated with the former MGP.

For well MW-5D, all of the BTEX compounds in the July 2006 sample and all of the BTEX compounds, except toluene, in the May 2008 sample exceeded their respective TOGS criteria (Figure 10). The forensic evaluation performed for this RI (Appendix F) found that the probable source of impacts to groundwater at MW-5D was MGP related, specifically byproducts from the coal carbonization process. MW-5D is located directly downgradient of the site and screens the bottom of the brown till and top of the underlying gray till. The presence of affected groundwater at this location is puzzling because no evidence of coal-tar-like DNAPL or other MGP-related impacts were identified during the drilling of this well or nearby borings SB-20 and SB-22. In fact, MGP-related impacts were not identified at similar depths at any of the borings drilled during this RI. Because the groundwater flow in the area screened by this well appears to be primarily horizontal, the source of impacts to groundwater at MW-5D may be an area upgradient where DNAPL has migrated to near the base of the brown till. If so, the region must be very localized, as it was not identified in any of the deep borings drilled across the site.

3.6.3.2 SVOCs

The only SVOCs detected in deep groundwater at concentrations exceeding the TOGS criteria were PAHs in the samples collected from MW-5D (Figure 10). The probable source of these PAHs is the same as that discussed in Section 3.6.3.1 for BTEX.

3.6.3.3 Inorganics

Inorganics were not detected at concentrations exceeding the TOGS criteria in the groundwater samples collected from the deep wells, except barium. Barium was detected above its 25 µg/L criterion in the January 2008 sample and duplicate collected from downgradient well MW-5D (1,270 µg/L and 1,290 µg/L, respectively)

[8] As noted previously, this well is among those that were sampled twice for selected parameters.

and in the July 2006 and January 2008 samples collected from upgradient well MW-8D (1,110 µg/L and 1,590 µg/L, respectively). The source of the barium in the groundwater at these deep, upgradient and downgradient wells is not related to the former MGP.

3.6.3.4 PCBs

PCBs were not detected at concentrations exceeding the TOGS criteria in the groundwater samples collected from the deep wells.

3.7 Surface-Water Quality Evaluation

Six surface-water samples collected from the Chenango River during August 2006 were analyzed for VOCs/BTEX, SVOCs/PAHs, inorganics, and PCBs. The surface-water analytical results for detected constituents are presented in Table 12. For purposes of evaluating the results, ARCADIS BBL compared the results to the TOGS 1.1.1 criteria for Class B surface water, which is the best use classification for the reach of the Chenango River opposite the site. According to New York regulations (6 NYCRR Part 701.6), the best usage of Class B waterways is primary and secondary contact recreation and fishing. As previously discussed, surface water sampling was not performed in the Susquehanna River. The surface-water sampling locations in the Chenango River are shown on Figure 3.

The only constituents detected in the surface-water samples are toluene and barium. Toluene was detected in the surface-water sample collected from sampling location SW-2 at a concentration of 0.60 µg/L, which is less than the Class B TOGS criterion of 100 µg/L. Barium was detected in the surface-water samples collected from locations SW-2, SW-4, and SW-6 (each location sampled) at concentrations of between 36.8 and 38.2 µg/L. No Class B TOGS criterion has been established for barium. As discussed previously, barium is not an MGP by-product. No SVOCs or PCBs were detected in the surface-water samples.

Surface-water sampling results demonstrate that the former MGP is not adversely affecting the quality of water in the Chenango River.

3.8 Sediment Quality Evaluation

As summarized in Section 2.4.4, the RI sediment samples collected from the Chenango River were analyzed for VOCs/BTEX, SVOCs/PAHs, inorganics, PCBs, and TOC. As previously discussed, sediment sampling was not performed in the Susquehanna River. The sediment analytical results for detected constituents are presented in Table 13 and shown on Figure 11. The sediment screening values used to evaluate the sediment analytical results are from the NYSDEC document titled, *Technical Guidance for Screening Contaminated Sediments* dated January 1999. The NYSDEC sediment screening values for organic constituents were developed based on New York State water quality standards/guidance values and other applicable water quality criteria established by the USEPA and other agencies. The NYSDEC established three ecological, risk-based levels of protection for organics in sediment (i.e., protection of benthic aquatic life from acute toxicity, protection of benthic aquatic life from chronic toxicity, and protection of wildlife from bioaccumulation). The NYSDEC also established human health risk-based levels for organics in sediment. Because the NYSDEC screening values for organics are provided on an organic-carbon adjusted basis, sample-specific TOC concentrations were used to calculate sample-specific sediment screening values for the organic constituents. The NYSDEC established two sets of screening values for inorganics in sediment, the lowest effect levels (LELs) and severe effect levels (SELs), which are based on studies performed by various agencies and are not adjusted based on organic carbon concentrations.

In accordance with the *Technical Guidance for Screening Contaminated Sediments* (NYSDEC, 1999), sediment with constituent concentrations exceeding calculated sample-specific sediment criteria (or LELs and SELs) are considered impacted, but the criteria do not necessarily represent a final concentration to be achieved by remediation.

The sediment analytical results for VOCs, SVOCs, inorganic constituents, and TOC are summarized below.

3.8.1 VOCs

One or more VOCs were detected at three of the eight RI sediment sampling locations, including locations SD-5 (0 to 2 inches), SD-7 (2 to 12 inches), and SD-8 (0 to 2 inches). VOCs detected in the samples include acetone, chlorobenzene, methyl ethyl ketone (MEK), and toluene. The highest concentration of any individual VOC constituent detected in the sediment samples was 0.036 ppm (acetone at location SD-7). VOC concentrations identified in the sediment do not exceed the sample-specific sediment screening values.

3.8.2 SVOCs

Sixteen SVOCs (PAHs) were detected in the RI sediment samples. The SVOC sediment analytical results are compared below to the sediment screening values for protection of benthic aquatic life from acute and chronic toxicity:

- *Benthic Aquatic Life Acute Toxicity*. SVOC concentrations identified in the sediment samples do not exceed the benthic aquatic life acute toxicity sediment screening values.

- *Benthic Aquatic Life Chronic Toxicity*. Benzo(a)pyrene was the only SVOC identified in the sediment samples at concentrations exceeding the benthic aquatic life chronic toxicity screening values. It was identified in six of the eight sampling locations above criteria, including one upstream location (location SD-3). The benzo(a)pyrene concentrations at these locations range from an estimated 0.25 ppm to 0.94 ppm, except for location SD-5, where the result is 1.8 ppm.

Sediment screening values for wildlife protection are not provided in the NYSDEC guidance for any of the detected SVOCs.

The SVOC sediment analytical results were also compared to the human health sediment screening values. Six PAHs [i.e., benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene] were identified in the sediment samples at concentrations exceeding the human health sediment screening values. The concentrations of these PAHs identified above the screening values were around 0.5 ppm or less (except at location SD-5, where benzo(a)pyrene was identified at a concentration of up to 1.8 ppm).

In general, the SVOC/PAH concentrations do not vary significantly from the locations upstream of the site (locations SD-1 through SD-3) to those adjacent to, or downstream of the site. For the most part, the concentrations appear to be generally within the expected background range for Chenango River sediments upstream from the site.

Based on the forensics analysis performed as part of the RI (refer to Appendix G for details), the somewhat elevated PAHs at sampling location SD-5 may be primarily related to the former MGP. The forensics analysis indicates that the source of PAHs at SD-5 may be coal tar, similar to that identified in soil samples collected near the ground surface at the site, but unrelated to the coal tar found deeper (beneath Holder #2). This information supports that there is no subsurface migration of PAHs to the river sediments. The data also supports that the slightly elevated PAHs at location SD-5 are isolated.

3.8.3 Inorganics

No cyanide was detected in the RI sediment samples collected from the Chenango River. Six of the eight RCRA metals were detected in the RI sediment samples, but concentrations of only three metals (i.e., lead, mercury, and silver) exceed the LELs:

- Lead was identified in sediment at locations SD-5 and SD-7 at concentrations of 59 ppm and 59.8 ppm, respectively, which exceed the 31 ppm LEL.

- Mercury was identified in sediment at locations SD-1, SD-5, and SD-7 at estimated concentrations of 0.18 ppm, 0.27 ppm, and 0.37 ppm, which exceed the 0.15 ppm LEL.

- Silver was detected in sediment at location SD-5 at a concentration of 5.2 ppm, which exceeds the 1 ppm LEL (and also the 1.3 ppm SEL).

No inorganic constituents were identified at concentrations exceeding the SELs, except for silver at location SD-5.

3.8.4 PCBs

PCBs were detected at three of the four sediment sampling locations where samples were analyzed for PCBs, including locations SD-1, SD-3, and SD-5. The concentrations detected ranged from 0.065 ppm (at SD-1) to 0.12 ppm (at SD-5) and, at each location, they exceed the sediment screening values for protection of human health and wildlife from bioaccumulation. The PCB concentrations may be generally consistent with typical background concentrations in the Chenango River. As previously mentioned, PCBs are not associated with MGP operations.

3.8.5 Total Organic Carbon

TOC concentrations at the sediment sampling locations range from an estimated 6,320 ppm at location SD-1 to an estimated 76,300 ppm at location SD-5.

4. Risk Evaluation

4.1 Overview

This section presents the results of the HHEE and FWRIA, performed to assess the potential risks to humans and the environment, at and in the vicinity of the site, posed by site-related constituents. The results are summarized as follows:

- Human Health Exposure Evaluation (Section 4.2); and
- Fish and Wildlife Resource Impact Analysis (Section 4.3).

4.2 Human Health Exposure Evaluation

This section presents a qualitative HHEE that describes the potential for human exposure to site-related constituents at and in the vicinity of the site. The HHEE was performed in accordance with the requirements of the New York State BCP for site redevelopment and was conducted consistent with the guidance presented in DER-10 (NYSDEC, 2002a) and the *Draft Brownfield Cleanup Program Guide* (NYSDEC, 2004). This HHEE uses information regarding current and foreseeable land uses and available site data to evaluate the potential for exposure of human receptors. The HHEE characterizes the environmental setting of the site, and identifies constituents of interest and complete exposure pathways. The results of this qualitative HHEE will be used, in part, to help evaluate the redevelopment of the property under the New York State BCP.

4.2.1 Environmental Setting/Land Use

The site and surrounding area is described in Section 1.3.1 of this report. As previously mentioned, the site currently includes an existing two-story commercial building (used as a AAA office/travel center), an at-grade concrete foundation/slab from a demolished former two-story commercial building (the former Rexel Electric Supply building), a residential apartment building, and various parking lots. Remnants of the foundation walls and concrete slab of the former Rexel Electric Supply building are still present onsite. Most of the site surface is covered with asphalt pavement/concrete, an existing building, or gravel substrate. Some small vegetated (e.g., grass-covered) areas are present along the margins of the parking lot to the south, in the highway easement to the east, and along the banks of the Chenango River to the west.

Land use in the site vicinity is primarily a mix of commercial and residential. A paved recreation pathway runs parallel to the Chenango River (along the top of the riverbank) and extends from the Riverside Drive Bridge north through Binghamton. Several small parks are located south of the site along both the northern and southern shores of the Susquehanna River.

The site is relatively flat, with ground surface elevations that range from approximately 842 to 847 feet amsl. Ground surface elevations approximately 1 mile to the north and south of the site are more than 1,300 feet amsl. Stormwater is conveyed offsite via a combination of overland sheet flow and underground storm sewer piping connected to various catch basins.

4.2.2 Constituents of Potential Concern

Analytical data are available for surface and subsurface soil, surface water, sediment, groundwater, sub-slab vapor, and indoor air. The majority of the data was generated by RI field activities performed from May 2006 through May 2008. Most of the soil, surface-water, sediment, and groundwater samples were analyzed for VOCs, SVOCs, and inorganics, with selected samples analyzed for PCBs. Sub-slab vapor and indoor air samples were collected from the AAA building in March 2006 and the On the Roxx restaurant in February 2007 and analyzed for VOCs.

The following subsections briefly discuss the analytical data for each medium and the comparison of these data to screening criteria to identify constituents of potential concern (COPCs).

4.2.2.1 Surface Soil

One surface soil sample (0 to 2 feet) was collected and analyzed for SVOCs, VOCs, and inorganics. This sample was collected from a soil boring completed in a paved area north of the former Rexel Electric Supply building foundation. Although this surface soil sample was collected in a paved area of the site (i.e., does not represent a "true" surface soil sample), this sample was used as a surrogate to evaluate potential surface soil exposures. Only one VOC (toluene) was detected in this surface soil sample, and SVOCs were all nondetect.

Table 10 compares toluene data to screening criteria, including the unrestricted and restricted use (residential and commercial) SCOs for the protection of public health as presented in 6 NYCRR Part 375 (NYSDEC, 2006a), which became effective on December 14, 2006. Surface soil data were also compared to the soil guidance values presented in the NYSDEC Technical and Administrative Guidance Memorandum titled *Determination of Soil Cleanup Objectives and Cleanup Levels*, HWR-94-4046, dated January 24, 1994 (TAGM 4046) (NYSDEC, 1994a).

Two metals (arsenic and chromium) exceeded their associated TAGM 4046 values, although these concentrations were only slightly higher than the criteria. Chromium was the only metal to exceed the SCO for unrestricted land use. Toluene and metals concentrations (including chromium) were well below the SCOs for restricted residential land use (see Table 10).

4.2.2.2 Subsurface Soil

Forty-eight discrete subsurface soil samples and three duplicates were collected and analyzed for VOCs, SVOCs, inorganics, and/or PCBs. Analytical soil results were compared to the 6 NYCRR Part 375 (NYSDEC, 2006a) unrestricted and restricted use SCOs, and the TAGM 4046 soil guidance values. The comparison of subsurface soil data to these screening criteria is presented in Table 10. PCBs were nondetect in all analyzed samples. Several VOCs, SVOCs, and metals (primarily chromium, lead, and mercury) exceeded their associated TAGM 4046 values and Part 375 unrestricted use SCOs. Arsenic and barium only exceeded their associated screening criteria in one of the 48 samples (sample SB-11). The majority of these exceedances fall within the areas of the two former gas holders, which were located in the middle of the MGP property.

4.2.2.3 Groundwater

Twenty-six groundwater samples were collected and analyzed for VOCs, SVOCs, inorganics, and PCBs. Analytical results were compared to criteria presented in TOGS 1.1.1. Selected samples exhibited one or more VOCs, SVOCs, inorganics, and PCBs exceeded the TOGS criteria (see Table 11). The groundwater samples with exceedances of TOGS criteria for VOCs and PCBs were primarily collected near the western boundary of the former MGP facility. PAHs only exceeded their associated TOGS criteria in three samples from monitoring well MW-5D. Arsenic exceeded its TOGS criterion in three samples (MW-7 and MW-8). Barium slightly exceeded its associated TOGS criterion in one sample from MW-5D and two samples from MW-8D. Cyanide exceeded its TOGS criterion in two samples from monitoring well MW-5. Selenium exceeded its associated TOGS criterion in two samples from monitoring wells MW-5 and MW-6S. Monitoring wells MW-8 and MW-8D, which had exceedances of arsenic and barium, were located northeast of former Holder #1.

4.2.2.4 Surface Water

Six surface-water samples were collected from the portion of the Chenango River adjacent to the site. Surface-water samples were analyzed for VOCs, SVOCs, inorganics, and/or PCBs. SVOCs and PCBs were nondetect in all of the surface-water samples, and VOCs were only detected in two of the six samples at relatively low concentrations. Barium was the only detected metal.

Surface-water data were compared to the TOGS 1.1.1 criteria for Class B surface water (see Table 12). Detected constituents (i.e., bromomethane, toluene, and barium) were well below their associated TOGS criteria.

4.2.2.5 Sediment

Eight surficial sediment samples (0 to 2 inches, 2 to 12 inches) were collected from the portion of the Chenango River adjacent to the site and analyzed for VOCs, SVOCs, inorganics, PCBs, and/or TOC. The sediment analytical sediment results were compared to human health screening criteria presented in the NYSDEC document titled *Technical Guidance for Screening Contaminated Sediments* (NYSDEC, 1999). Screening criteria for organics (i.e., human health bioaccumulation) are presented in micrograms per gram (µg/g) organic carbon and were adjusted on a sample-specific basis for TOC.

Detected VOCs include acetone, chlorobenzene, MEK, methylene chloride, toluene, and BTEX. Detected metals included arsenic, barium, chromium, lead, mercury, and silver. However, there are no human health screening criteria for VOCs or metals in sediment. Several PAHs [i.e., benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene] were detected in the surficial sediment samples; PAH concentrations in these samples exceeded their associated human health bioaccumulation criteria (see Table 13). PCBs also exceeded their associated screening criterion in all analyzed samples.

4.2.2.6 Air

A vapor intrusion evaluation was conducted for the site in March 2006 and February 2007 in support of the RI. This evaluation consisted of collecting sub-slab vapor, indoor air, and outdoor air samples in and around the AAA building and the On the Roxx restaurant, which are located within the MGP footprint.

The AAA building investigation found several VOCs were present in indoor air, but only one VOC (dichlorodifluoromethane) was detected in the outdoor air sample. The On the Roxx restaurant found several VOCs were present in indoor air, outdoor air and sub-slab vapor samples. The soil vapor investigation testing results for both the AAA building and On the Roxx restaurant suggest that vapor intrusion is not occurring and the quality of air inside the buildings is not being affected by MGP residuals. The complete vapor intrusion evaluations and NYSDEC comments are included in entirety in Appendix D to this report.

4.2.3 Potential Exposure Points, Receptors, and Route of Exposure

An initial step in evaluating potential human exposure is identifying potentially complete exposure pathways. For an exposure pathway to be complete, the following five elements must exist:

1) contaminant source;
2) contaminant release and transport mechanisms;
3) point of exposure;
4) route of exposure; and
5) receptor population.

If all five elements exist, then that exposure pathway is considered to be complete (NYSDOH, 2002).

As previously described, arsenic and chromium concentrations exceeded their associated screening criteria in the surface soil boring (SB-5), which was collected from a paved area near the former purifier area of the former MGP facility. COPCs identified for subsurface soil and groundwater include VOCs, SVOCs, and metals. The COPCs for groundwater also included cyanide and PCBs. Several PAHs and PCBs exceeded NYSDEC human health criteria for sediment. Both surface-water and sub-slab vapor concentrations were well below their associated screening criteria.

The most likely current and future receptors at the site are onsite personnel (including residents, commercial workers, and construction workers), as well as visitors to the AAA office. Trespassers may also represent a potential exposure group because there is no fencing around the site to limit public access. Residents in the onsite apartment building also represent a potential receptor group. The portion of the Chenango and Susquehanna Rivers adjacent to the site may be used for recreational activities such as fishing and wildlife observation. Therefore, recreational users are potential offsite receptors.

Potentially complete human exposure pathways for the site are evaluated below.

4.2.3.1 Potential Direct Contact with Soils

As previously mentioned, the majority of the site is covered by asphalt pavement or concrete. There is a relatively small area of vegetated (i.e., grass-covered) soils to the east of the former Rexel Electric Supply building foundation, separating the parking lot between the AAA office building and the residential apartment building. Potential exposure of trespassers, residents, commercial visitors, commercial workers, and construction workers to COPCs in surface soils within this area could occur via incidental ingestion and dermal contact; however, such exposure is unlikely given the vegetative cover and small size of the area. Exposure of trespassers, residents, commercial visitors, and commercial workers to subsurface soils is unlikely because the majority of the site is covered by asphalt/concrete and these receptors are not expected to be involved in intrusive activities. However, construction workers may be exposed to subsurface soils during construction/ excavation activities, although their exposure would likely be mitigated by using PPE.

4.2.3.2 Potential Inhalation of Vapors and/or Particulates

Surface soil COPCs are primarily nonvolatile constituents (i.e., metals). Workers, residents, and trespassers may be exposed to COPCs in surface soils via inhalation of particulates. However, potential inhalation exposures are most likely mitigated by the presence of vegetation that precludes the generation of fugitive (wind-blown) dust. Because VOCs were detected in subsurface soils at the site, there is the potential for exposure of construction workers to COPCs via inhalation of vapors during construction/excavation activities. However, potential exposures could be mitigated by using PPE.

As previously discussed, the vapor intrusion to indoor air pathway is not complete. VOCs identified in indoor air were determined to be primarily related to activities inside the building, with little or no contribution from the subsurface.

4.2.3.3 Direct Contact with Groundwater

The groundwater table beneath the site ranges from approximately 5 to 15 feet below grade, and generally flows west-southwest toward the Chenango River. Groundwater is not used as a potable source at the site, and depth to groundwater precludes potential direct exposures of residents, trespassers, and commercial workers to this medium. Construction workers may be exposed to shallow groundwater during construction/excavation activities. However, potential exposures for these receptors could be mitigated by using PPE.

4.2.3.4 Direct Contact with Sediments and Surface Water from the Chenango and Susquehanna Rivers

The portion of the Chenango and Susquehanna Rivers adjacent to the site may be used for recreational activities such as fishing and wildlife observation. However, this area is not conducive to boating due to the flow control structures (e.g., dams). The relatively steep banks would most likely limit use of the river for swimming and/or wading. Therefore, the recreational users of the Chenango and Susquehanna Rivers that may be exposed to sediments and surface water are most likely fishermen. Several PAHs exceeded the NYSDEC human health bioaccumulation criteria for sediment in the Chenango River. Surface-water concentrations were well below screening values, so surface water does not represent a complete exposure pathway for the Chenango River. Based on the limited recreational use of this portion of the Chenango River, exposure to sediments is not expected to be a significant pathway. Food chain exposures (i.e., ingestion of fish) are not considered to be significant because most sediment COPCs (i.e., PAHs) are not bioaccumulative. However, the potential exists for exposure to PCBs from the ingestion of fish, due to the bioaccumulative nature of the constituent. As previously discussed, PCBs are unrelated to the former MGP operations.

4.2.4 Summary

Analytical data indicate that VOCs, SVOCs (primarily PAHs), and several metals are present in subsurface soils at concentrations exceeding potentially applicable SCOs for either unrestricted or restricted (residential and commercial) site use. The majority of the site is covered by an asphalt parking lot. As such, the potential for exposure to COPCs in subsurface soils is most likely limited to construction workers engaged in intrusive activities, although potential exposures could be mitigated by using PPE. Potential exposures of commercial workers, residents, and trespassers to constituents in subsurface soils are unlikely because these receptors would not be involved in intrusive activities.

Surface soils represent a complete exposure pathway for trespassers, residents, commercial visitors, commercial workers, and construction workers. However, potential exposures to COPCs in surface soil (i.e., metals) are most likely limited based on the relatively small area of vegetated soils onsite (i.e., soils that are not covered by impervious surfaces, such as asphalt and concrete). Further, metals concentrations in the surface soil sample were relatively low and only slightly exceeded the NYSDEC screening criteria.

Groundwater beneath the site is not used as a potable source, and therefore exposure via ingestion of groundwater is unlikely. Likewise, exposure of trespassers, commercial workers, and residents to groundwater is unlikely based on the depth to groundwater and the lack of surface expressions (i.e., seeps). Construction workers may be exposed to shallow groundwater during intrusive activities, but exposures would likely be mitigated by using PPE.

Selected PAHs exceeded the NYSDEC human health bioaccumulation criteria for sediment in the Chenango River. Exposure to the Chenango River adjacent to the site is not expected to be significant because recreational use of this area of the river is most likely limited due to surrounding land use and the physical characteristics of the river (e.g., steep banks). Food chain exposure (i.e., ingestion of fish) is not expected to be a significant exposure pathway because most sediment COPCs (i.e., PAHs) are not bioaccumulative. Potential exposure to PCBs through the ingestion of fish may exist, based on the low concentrations of PCBs found within the sediment.

4.3 Fish and Wildlife Resources Impact Analysis

The FWRIA was performed in accordance with the NYSDEC guidance documents including the *Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites* (NYSDEC, 1994b), DER-10 (NYSDEC, 2002a), and the *Draft Brownfield Cleanup Program Guide* (NYSDEC, 2004). The FWRIA was performed to identify the fish and wildlife resources that exist on and in the vicinity of the site, and to evaluate the potential for exposure of these resources to site-related constituents in environmental media. Results of the FWRIA will be used to aid in remedial decision-making.

In accordance with the NYSDEC guidance, FWRIAs are conducted in a step-wise manner. Specifically, this report includes Steps I, II(A), and II(B). Step I characterizes the terrestrial and aquatic ecology of the site and surrounding areas and develops a list of potential ecological receptors. The specific components of Step I include: I(A) – site description and maps; I(B) – description of fish and wildlife resources; I(C) – description of fish and wildlife resource value; and I(D) – identification of applicable fish and wildlife regulatory criteria. Step II (A) of the FWRIA involves a pathway analysis, which uses the receptor information generated in Step I to evaluate potential exposure pathways based on site ecology and the presence of site-related constituents. Step II (B) of the FWRIA involves a criteria-specific analysis, which compares site-specific data to screening criteria.

4.3.1 Site Description

The site and surrounding area is described in Sections 1.3.1 and 4.2.1 of this report.

4.3.2 Ecological Characterization

Topographic maps and aerial photographs were reviewed to identify the general physical and ecological features of the site and surrounding areas. A site visit was conducted on October 4, 2006 to aid in the development of a covertype map for the site and surrounding areas within a 0.5-mile radius of the site. The covertype map (Figure 12) classifies these areas into ecological communities based on vegetative assemblages (e.g., commercial/residential, mowed lawn with trees). As part of the ecological characterization, natural resources (i.e., rivers, lakes, wetlands) located within a 2-mile radius of the site were also identified. This information assisted in evaluating wildlife habitat value and human resource value for the site and surrounding areas.

4.3.2.1 Vegetative Covertypes

Although most of the site is either paved or covered by a building, some small, vegetated (e.g., grass-covered) areas are present along the margins of the parking lot to the south, in the highway easement to the east, and along the banks of the Chenango River to the west. Land use in the vicinity of the site is primarily commercial and residential. The Chenango River borders the site to the west; beyond the river is a mixture of commercial and residential areas. The Susquehanna River borders the site to the south. There are several parks along this river, and farther south the river is mainly bordered by commercial and residential areas. Ecological communities within a 0.5-mile radius of the site were generally classified according to the NYSDEC (2002b) document titled *Ecological Communities of New York State, Second Edition*. Six major covertypes were identified within a 0.5-mile radius of the site, including:

1) industrial/commercial/residential;
2) mowed lawn with trees;
3) roadway easement;
4) confined river;
5) scrub/shrub (riparian corridor); and
6) hardwood forest (riparian corridor).

A map showing these covertypes is presented on Figure 12. Individual covertypes are described below.

Industrial/Commercial/Residential Covertype

The site itself and most of the surrounding areas to the north, south, east, and west are characterized as an industrial/commercial/residential covertype. This covertype generally consists of industrial buildings, commercial businesses, paved and gravel lots, public roads, and limited amounts of cultivated vegetation (i.e., lawns, ornamental trees, and shrubs). A very limited amount of vegetation exists onsite.

Mowed Lawn with Trees Covertype

The mowed lawn with trees covertype is present south of the site in the form of a park. This covertype is generally characterized by open recreational lands (e.g., parks), in which the groundcover is dominated by maintained grasses. Ornamental and/or native shrubs, along with planted flower beds, are present along pathways and scattered throughout the area. Mature hardwood trees (e.g., maples, oaks) provide at least 30% cover.

Roadway Easement Covertype

The roadway easement covertype is present east of Washington Street and south of the site, beyond the southern shore of the Susquehanna River. This covertype is predominately characterized by mowed lawn, and also includes a mixture of mature hardwoods (e.g., oaks, maples) and various ornamental trees (e.g., crab apple, hawthorns).

Confined River Covertype

The Chenango and Susquehanna Rivers are classified as confined rivers, which are defined as the aquatic community of relatively large, flowing sections of streams with a moderate to gentle gradient (NYSDEC, 2002b). The section of the Chenango River west of the site flows from north to south and consists of a relatively shallow, moderate-flowing channel that flows between man-made shorelines (e.g., flood walls). The section of the Susquehanna River south of the site flows from east to west and consists of a relatively shallow, broad channel that flows between man-made shorelines (e.g., flood walls) and cascades over a check dam near the confluence with the Chenango River.

Scrub/Shrub Covertype

The scrub/shrub covertype is characterized by a mixture of woody and herbaceous vegetation. This covertype is present in a relatively small area west of the site along the eastern shore of the Chenango River. Dominant vegetation within this covertype includes box elder (*Acer negundo*), willow (*Salix* spp.), sumac (*Rhus* spp.), common cocklebur (*Xanthium strumarium*), smartweed (*Polygonum* spp.), goldenrod (*Solidago* spp.), and riverbank grape (*Vitis riparia*).

Hardwood Forest Covertype

The hardwood forest covertype is characterized by a mixture of mature hardwood trees. This covertype exists within the riparian corridor along the western shore of the Chenango River and parts of the northern and southern shores of the Susquehanna River. Dominant species within this covertype include oaks (*Quercus* spp.), maples (*Acer* spp.), and American beech (*Fagus grandifolia*).

4.3.2.2 Surface Waters

The two main surface-water bodies in the site vicinity are the Chenango River (to the west) and the Susquehanna River (to the south). The NYSDEC best usage classification for this reach of the Chenango River is Class B. According to New York Regulations (6 NYCRR Part 701.6), the best usage of Class B streams are primary and secondary contact recreation and fishing. These waters are suitable for fish propagation and survival.

The NYSDEC best usage classification for this reach of the Susquehanna River is Class A. According to 6 NYCRR Part 701.6, the best usage of Class A streams are: a water-supply source for drinking, culinary, or food processing purposes; primary and secondary contact recreation; and fishing. The waters are suitable for fish propagation and survival.

4.3.2.3 Wetlands

The NYSDEC Freshwater Wetlands Map for the Binghamton West quadrangle does not identify any state wetlands within a 2-mile radius of the site (Figure 13). The National Wetlands Inventory (NWI) Map for the Binghamton West quadrangle identifies 42 wetlands within a 2-mile radius of the site (Figure 14), including 16 types of palustrine and two types of riverine wetlands. The palustrine wetland types include five classes: emergent, forested, unconsolidated bottom, scrub-shrub, and a mixture of scrub-shrub/forested. The riverine wetland types include two subsystems: lower perennial and upper perennial. The wetland maps are generated by the United States Fish and Wildlife Service (USFWS) using stereoscopic analysis of high-altitude aerial photographs, and the majority of the mapped wetlands are not field verified. None of the mapped wetlands are located in close proximity to the site, and as such, are expected to be hydraulically isolated from the site.

4.3.3 Fish and Wildlife Resources

Due to the commercial nature of the site itself coupled with surrounding land use within Binghamton, wildlife usage of the site is expected to be minimal due to its lack of natural resources. In general, the wildlife species that may use the site are likely common species typical of urbanized and disturbed areas (e.g., small mammals, passerine birds). Table 14 lists biota that were observed in the site vicinity, as well as typical fish and wildlife species that may inhabit the site and/or surrounding areas based on the habitat types that are present.

Industrial/Commercial/Residential Covertype

The site itself, as well as a significant portion of the surrounding lands, is classified as an industrial/commercial/ residential covertype. Wildlife species that use these covertypes generally consist of species that are capable of using habitats created by urban landscapes. Typical wildlife species that may use industrial/commercial/ residential areas include, but are not limited to, gray squirrel, mice, rock dove, and house sparrow. Because the majority of the site is covered by asphalt pavement/concrete and both a residential and a commercial building, the site itself does not offer wildlife habitat that would be conducive to foraging, nesting, and/or shelter.

Mowed Lawn with Trees Covertype

This covertype is present south of the site and is generally characterized by open recreational lands (e.g., parks), in which the groundcover is dominated by maintained grasses. Surrounding land use most likely limits wildlife use of this covertype. Wildlife species that may use this covertype include, but are not limited to, eastern cottontail, gray squirrel, and passerine and migratory birds (e.g, house sparrow, Canada goose). Large mammals such as whitetail deer and red fox most likely do not use this covertype due to the surrounding commercial and residential areas.

Roadway Easement Covertype

The roadway easement covertype is present east of Washington Street and south of the site, beyond the southern shore of the Susquehanna River. This covertype includes a mixture of mature hardwoods (e.g., oaks, maples), various ornamental trees (e.g., crab apple, hawthorns), and is predominately characterized by mowed lawn. Wildlife species that may use this covertype generally consist of species that are capable of using habitats created by urban landscapes. Typical wildlife species that may use these areas include, but are not limited to, eastern cottontail, gray squirrel, and passerine and migratory birds (e.g, house sparrow, Canada goose).

Confined River Covertype

The Chenango and Susquehanna Rivers are classified as confined rivers, and are located west and south of the site, respectively. Characteristic fishes of the confined river vary, and community assemblages are dependent on several factors such as substrate type, stream velocity, and presence of macrophytes. Portions of the Chenango and Susquehanna Rivers adjacent to the site are impacted by upstream impoundments and have been altered for flow-control purposes. Characteristic fishes typically found in this ecoregion include various species of darters, minnows, redhorse, sunfish, walleye, pike, and smallmouth bass (NYSDEC, 2002b).

Scrub/Shrub Covertype

This covertype is present in a relatively small area west of the site along the eastern shore of the Chenango River. The east bank of the Chenango River adjacent to the site is relatively steep, but does contain some natural vegetation (e.g., herbaceous plants and woody shrubs). This relatively narrow corridor of natural habitat may be used by common wildlife species adapted to living in urban environments (e.g., passerine birds, small mammals), although the relatively small size of the area coupled with the steep gradient of the bank most likely limit wildlife use. Mallards, house sparrows, and signs of muskrat use were observed within this covertype at the time of the site visit.

Hardwood Forest Covertype

The hardwood forest covertype is characterized by a mixture of mature hardwood trees. This covertype exists as the riparian corridor along the western shore of the Chenango River and portions of the northern and southern shores of the Susquehanna River. The riparian corridor most likely provides some limited habitat for passerine and piscivorous birds. Large mammals such as whitetail deer and red fox most likely do not use this covertype due to the steep banks leading up from water’s edge and the surrounding commercial and residential land use.

4.3.3.1 Threatened/Endangered Species and Significant Habitat

Reviews of the U.S. Fish and Wildlife Service (USFWS) records and New York State Natural Heritage Program files were requested to assist in the evaluation of sensitive species or habitats in the vicinity of the site. The USFWS has responded that, except for occasional transient individuals, no federally listed or proposed endangered or threatened species or areas of significant habitat are present within a 2-mile radius of the site (Niver, 2006). The NYSDEC Natural Heritage Program responded that there are four records of known occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats within a 2-mile radius of the site (Seoane, 2006). An amphibian species, hellbender (*Cryptobranchus alleganiensis*), was found within the Susquehanna River from a historical record and is currently listed as a species of special concern. A dragonfly/damselfly species, pygmy snaketail (*Ophiogomphus howei*), was found within the vicinity of the Susquehanna River from a historical record and is currently listed as species of special concern. The peregrine falcon (*Falco peregrinus*) is listed as an endangered species and has been reported near the project site. Lastly, a mollusk species, yellow lampmussel (*Lampsilis cariosa*) has been reported from recent surveys at four locations within the Chenango River and is currently an unlisted species. During the October 4, 2006 site visit, no observations of these sensitive species were found. Letters from the USFWS and NYSDEC Natural Heritage Program providing information on threatened and endangered species at and in the vicinity of the site are provided in Appendix H.

4.3.3.2 Observations of Stress

During the October 4, 2006 site visit, no evidence of stressed vegetation or negative impacts on wildlife was observed for the site or surrounding areas.

4.3.4 Fish and Wildlife Resource Values

Step IC of the FWRIA consists of an assessment of the general ability of the area within 0.5 mile of the site to support fish and wildlife resources, and the value of fish and wildlife resources to humans. The following subsections provide a qualitative evaluation of the value of the identified covertypes to wildlife and the value of these wildlife resources to humans.

4.3.4.1 Value of Habitat to Associated Fauna

The qualitative determination of habitat value is based on field observations, research, and professional judgment.

The site is described as an industrial/commercial/residential covertype. The majority of the site is covered by asphalt pavement and concrete, and has minimal vegetation except for the east bank of the Chenango River, which borders the site to the west. Due to the general lack of suitable habitat onsite, the site itself is concluded to provide marginal value to wildlife. Similarly, the surrounding areas that are classified as industrial/commercial/residential covertypes do not provide adequate food, shelter, and/or nesting areas for most species. However, there is a family of peregrine falcons that nest on a commercial building only a couple blocks from the site.

The mowed lawn with trees and roadway easement covertypes are present east and south of the site. These covertypes contain mature trees that may provide arboreal habitat to terrestrial wildlife (e.g., birds, small mammals) and mowed lawn expanses that may attract migratory birds (e.g., Canada geese). The mature trees may offer food, cover, and nesting habitat for a variety of urbanized animal species. Use of these covertypes by large mammals is most likely limited due to the surrounding land use (i.e., industrial/commercial/residential).

The Chenango and Susquehanna Rivers are located west and south of the site, respectively. These rivers are impacted by man-made disturbances (e.g., dams, flood walls) within the site vicinity. The substrate for each of the river sections adjacent to the site appear to consist of a variety of mixed material. These rivers are likely to support a variety of aquatic organisms, and most likely function as a resource for piscivorous birds and small mammal species. Mallards were observed within the Chenango River at the time of the site visit.

The scrub-shrub and hardwood riparian covertypes exist within the floodplain and upland areas surrounding the Chenango and Susquehanna Rivers. The scrub-shrub and hardwood riparian corridors situated along the banks of the Chenango and Susquehanna Rivers most likely provide some shelter, cover, and nesting habitat for a limited number of avian and mammalian species. However, steep banks and surrounding land use most likely limit the use of these covertypes by large mammals.

4.3.4.2 Value of Resources to Humans

The site itself is relatively small and does not offer any natural resources that would encourage recreational use of the site. Due to the steep banks along the Chenango and Susquehanna Rivers, the riparian habitats (scrub-shrub, hardwood forest) most likely are not used for human activities. A river walkway exists along the eastern bank of the Chenango River to the west of Water Street, which provides potential wildlife viewing and scenic views. Activities associated with the Chenango River may include fishing and wildlife observation. Activities associated with the mowed lawn with trees covertype (i.e., park) most likely consist of wildlife observation and other recreational activities (e.g., picnics, sports). These uses of the rivers and park areas are likely to remain consistent in the future, and are not likely to be affected by activities or conditions at the site.

4.3.5 Fish and Wildlife Regulatory Criteria

The following New York State laws, rules, regulations, and criteria are relevant to this FWRIA:

- 6 NYCRR
  - Part 608, Use and Protection of Waters;
  - Part 663, Freshwater Wetlands Permit Requirements;
  - Part 664, Freshwater Wetlands Maps and Classifications;
  - Part 701, Classifications—Surface Waters and Groundwaters;
  - Part 702, Derivation and Use of Standards and Guidance Values;
  - Part 703, Surface Water and Groundwater Quality Standards and Groundwater Effluent Standards;
  - Part 800 ff., Classes and Standards of Quality and Purity Assigned to Fresh Surface and Tidal Salt Waters; and
  - Part 930, Susquehanna River (Main Stream).

- Environmental Conservation Law—Chapter 43-B of the Consolidated Laws
  - Article 11, Fish and Wildlife:
    - §11-0503, Polluting Streams Prohibited;
    - §11-0535, Endangered and Threatened Species;
  - Article 15, Water Resources: Title 5, Protection of Water; and
  - Article 24, Freshwater Wetlands.

- Criteria and Guidelines
  - NYSDEC Division of Water TOGS 1.1.1., *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (NYSDEC, 1998);
  - NYSDEC *Technical Guidance for Screening Contaminated Sediments* (NYSDEC, 1999); and
  - 6 NYCRR Part 375 SCOs for the protection of ecological resources (NYSDEC, 2006a).

4.3.6 Impact Assessment

Step II of the FWRIA includes an impact assessment to determine the impacts, if any, on fish and wildlife resources. This impact assessment includes a pathway analysis (Step II[A]), which determines if there are complete or potentially complete ecological exposure pathways to site-related constituents, and a criteria-specific analysis (Step II[B]), which compares site data to numerical criteria.

4.3.6.1 Pathway Analysis

The objective of the pathway analysis (Step II [A]) is to identify constituents of interest associated with the site, and to evaluate potential pathways by which fish and wildlife receptors may be exposed to such constituents. A complete exposure pathway exists if there is a source, a potential point of exposure, and a viable route of exposure and receptors at the exposure point. If any one of these elements is missing, then the pathway is not considered to be complete and exposure cannot occur, irrespective of constituent concentrations in environmental media. Potential media of interest associated with the site include surface soils, subsurface soils, and groundwater. Because the site is located in close proximity to the Chenango River, sediment and surface water within this river are also potential media of interest. Potential exposure pathways associated with these media are discussed below.

Surface Soils

The majority of the site is covered by asphalt pavement or concrete, and two buildings. There are a few small areas of natural habitat (i.e., vegetated soils) located east of the former Rexel Electric Supply building foundation. Although the relatively small size of these areas and the surrounding limited cover most likely limit wildlife use, these areas may be used by common wildlife species such as passerine birds and small mammals. Therefore, exposure to surface soils within this area is a potentially complete exposure pathway.

Subsurface Soils

As previously stated, the site is primarily characterized by asphalt pavement or concrete, and two buildings. The site itself provides low value to wildlife due to its general lack of natural resources. Wildlife is generally not exposed to subsurface soils (soils deeper than 0.5 feet bgs) during normal activities such as foraging and nesting. Based on these factors, exposure to subsurface soils does not present a complete exposure pathway.

Sediment and Surface Water

The portion of the Chenango and Susquehanna Rivers adjacent to the site is most likely inhabited by several fish species and benthic community assemblages (Susquehanna River Basin Commission [SRBC], 1999). Mallards were observed in the river during the October 2006 site visit. The river may also be used by a variety of semiaquatic and terrestrial fauna. The bioturbation zone of sediments (i.e., the depth of sediment to which ecological receptors may be exposed) is generally considered to include the top 6 inches. Therefore, exposure to surficial (0 to 0.5 feet) sediment within the Chenango and Susquehanna Rivers is considered to be a potentially complete exposure pathway. Likewise, exposure to surface waters within the Chenango and Susquehanna Rivers is a potentially complete exposure pathway.

Groundwater

Groundwater investigations indicate that depth to groundwater ranges from approximately 5 to 15 feet belowgrade. There are no groundwater seeps identified at the site, and exposure of wildlife to groundwater would only occur if an animal were to burrow down to the water table, which is unlikely given the depth to groundwater. Because the site itself offers low value to local wildlife, burrowing animals most likely would not use the site. Based on these factors, exposure to groundwater is not a complete exposure pathway.

4.3.7 Criteria-Specific Analysis

The objective of the criteria-specific analysis (Step II [B]) is to assess the potential ecological impact for those media that present potentially complete exposure pathways by comparing site data to screening criteria.

4.3.7.1 Surface Soils

One surface soil sample (0 to 2 feet) was collected and analyzed for VOCs, SVOCs, and inorganics. The surface soil sample was collected from a soil boring completed within a paved area north of the former Rexel Electric Supply building foundation. Although this surface soil sample was not collected in the vegetated area of the site (i.e., does not represent a “true” surface soil sample), this sample was used as a surrogate to evaluate potential surface soil exposures. Only one VOC (toluene) was detected in this surface soil sample, and SVOCs were not detected. Table 10 compares toluene and metals data to screening criteria. Surface soil data were also compared to 6 NYCRR Part 375 SCOs (NYSDEC, 2006a) for the protection of ecological resources. Inorganics were not detected above the SCOs.

4.3.7.2 Sediment

Eight surficial sediment samples (0 to 2 inches, and 2 to 12 inches) were collected from the portion of the Chenango River adjacent to the site, and analyzed for VOCs, SVOCs, PCBs, inorganics, and /or TOC. Sediment data were compared to benthic aquatic life chronic and acute toxicity criteria, as presented in the NYSDEC’s *Technical Guidance for Screening Contaminated Sediments* (NYSDEC, 1999). Table 13 compares data to the NYSDEC sediment screening criteria. Consistent with NYSDEC guidance, organic screening criteria presented in µg/g organic carbon were adjusted on a sample-specific basis for TOC.

VOC and PCB concentrations were well below their associated screening criteria. One PAH [benzo(a)anthracene] and three metals (lead, mercury, and silver) exceeded their associated NYSDEC chronic sediment criteria. The PAH exceedance was based on J-qualified (estimated) concentrations of less than 2 ppm. No PAH concentrations exceeded the acute sediment criteria. Silver was the only metal whose maximum concentration (sample SD-5) exceeded its associated NYSDEC SEL, and silver was only detected in one sample. Silver was not detected in the remaining samples. Lead and mercury exceeded their respective LELs at two and three locations, respectively; however, these concentrations were well below the SELs.

Surface Water

Six surface-water samples were collected from the portion of the Chenango River adjacent to the site. Surface-water samples were analyzed for VOCs, SVOCs, inorganics, and/or PCBs. No SVOCs or PCBs were detected in the surface-water samples. VOCs were detected in two of the six samples at relatively low concentrations. Barium was the only detected metal.

Surface-water data were compared to the NYSDEC Ambient Water Quality Standards and Guidance Values for Class B waters, as presented in TOGS 1.1.1 (NYSDEC, 1998) (see Table 12). Detected toluene concentrations were well below the screening criterion. No screening values were available for the remaining VOCs or barium.

4.3.8 Summary and Conclusions

The FWRIA for the site was conducted in accordance with NYSDEC guidance. The site has been used for commercial and industrial purposes. The site is now predominately characterized by paved (asphalt and concrete) surfaces and buildings, which provide marginal value to wildlife. Exposures to onsite surface soils and sediments and surface water in the Chenango and Susquehanna Rivers adjacent to the site are identified as potentially complete exposure pathways. The site contains only a relatively small area of natural habitat, which, coupled with surrounding land use, most likely limits wildlife use of the site. Therefore, ecological exposures to surface soil are not considered to be significant.

One PAH and three metals exceeded their associated NYSDEC sediment criteria in Chenango River sediment samples. PAH concentrations did not exceed acute sediment criteria. Silver was the only constituent to exceed its SEL for sediment, but this exceedance only occurred at one location (SD-5) and silver was not detected at the other locations and is not an MGP-related constituent. Lead and mercury exceeded their respective LELs, but the concentrations were well below the SELs.

5. Summary and Conclusions

5.1 Overview

The Washington Street MGP Site has been the subject of two investigations, starting in 1991 and culminating with the mulit-phase RI described in this report. During these investigations, approximately 46 soil borings were drilled; 13 groundwater monitoring wells, one DNAPL monitoring well, two temporary wells, and one piezometer were installed; six test pits were excavated; and over 100 samples of environmental media were analyzed. The primary objectives of this work were to characterize the nature and extent of site-related impacts to the environment and to evaluate the risk posed to human health and the environment by those impacts. These objectives have been satisfied by the work performed during these investigations, and the information gathered will enable an evaluation of remedial alternatives for the site.

This section summarizes the findings of the RI and presents relevant conclusions.

5.2 Site Location and History

The former MGP occupied a portion of a city block, bounded by Washington Street to the east, Water Street to the west, Susquehanna Street to the north, and Riverside Drive to the south. The site is approximately 100 feet east of the Chenango River, a tributary to the Susquehanna River that is approximately 425 feet to the south. The site is largely flat-lying, and the majority of the site is paved and sloped toward existing stormwater drains and the Chenango and Susquehanna Rivers. Land use in the site vicinity is primarily a mix of commercial and residential.

The former MGP operated for approximately 35 years, from 1853 to 1888. For most of that period, gas was produced using the coal carbonization process. Gas production switched to the carbureted water gas process sometime around 1884. The coal carbonization process used coal to produce gas, while the carbureted water gas process used steam and petroleum products to produce gas. Both processes produced varying amounts of “tar” as a byproduct. During the gas-production era, the term “tar” was used to denote any liquid or semi-liquid byproduct that was denser than water. The coal carbonization process also tended to produce significant amounts of cyanide as a byproduct, usually associated with spent purifier wastes. Based on a review of Sanborn maps, the site housed two gas holders near its center (Holder #1 and #2), various purifiers, a superheater north of the gas holders, and offices west of the gas holders.

Sanborn mapping indicates that a lumber yard and carpentry shop occupied a portion of the site after the MGP ceased operations. By the early 1900s, the majority of the site had been redeveloped as a motor truck company, which included a machine shop and assembly building in the western portion of the site, a warehouse within former Holder #1, and an office/showroom in the eastern portion of the site. The warehouse/former Holder #1 was razed sometime between 1918 and 1950. By 1950, the site was occupied primarily by an automobile sales and service station, and a used car lot. A plumbing supply building had been constructed at the current location of the AAA building, and a gas station had been constructed south of the site (at the location of the former Henneken’s building, as shown on Figure 2).

An interim remedial measure (IRM) was performed at the site in January 1991 to excavate and dispose of a UST that had been installed inside the remnants of Holder # 1. Approximately 65 cubic yards of stained soils around/below the tank were also removed and disposed.

5.3 Geology/Hydrogeology

The site is underlain by five geologic units. In descending order these are fill, alluvial silt, sand and gravel, brown till, and gray till. In terms of hydrogeology, the fill is the least significant unit because it is predominantly unsaturated. The alluvial silt is absent in the northern half of the site. In this area, the water table resides in the sand and gravel, at a depth of approximately 15 to 17 feet. Where the silt is present, the water table resides in the silt at a similar depth. Some groundwater is locally perched above the silt in the overlying fill, but the quantity is relatively small, and this water may only be present during seasonally wet periods. The ability of the various units to transmit groundwater (that is, their *hydraulic conductivity*) varies. The unit with the greatest hydraulic conductivity is the sand and gravel unit, followed by the brown till and the gray till units, which have hydraulic conductivities that are approximately one order of magnitude less than the sand and gravel unit. The silt likely has the least capacity to transmit water, which results in the perched groundwater above it.

Groundwater beneath the majority of the site moves westward, discharging into the Chenango River. Groundwater south of the site moves southward, discharging to the Susquehanna River.

5.4 Vapor Intrusion Investigation

ARCADIS BBL performed vapor intrusion investigations of the AAA building and the On the Roxx restaurant. The investigations involved collecting soil vapor samples from below the floor slab of the buildings and samples of air inside and outside of the buildings. Several constituents were identified in vapor samples collected beneath the building foundation slabs, in the air inside the buildings, and the air outside the On the Roxx restaurant. It was not possible to attribute the constituents to a particular source. Several of the constituents were potentially related to the former MGP, but those same constituents have other possible non-MGP sources as well. Other constituents were not related to the former MGP site. New York State does not currently have standards, criteria, or guidance values (SCGs) for concentrations of compounds in subsurface vapors. The concentrations identified in the samples are all less than the NYSDOH indoor air guideline values presented in Section 3.2.5 of the NYSDOH Soil Vapor Intrusion Guidance and are less than or generally consistent with the 90th percentile of background indoor air levels observed by the USEPA in public and commercial office buildings as referenced in Section 3.2.4 of the NYSDOH Soil Vapor Intrusion Guidance. Based on the investigation results, soil vapor intrusion does not appear to be occurring at the AAA Property and the On the Roxx restaurant.

5.5 NAPL Evaluation

This RI evaluated the extent and migration potential of NAPL because NAPL is frequently a significant, if not the major, source of environmental impacts at MGP sites. The evaluation relied on direct observations of NAPL contained in soil samples and forensic analysis of analytical results. From that information, the RI found that dark-colored, coal tar DNAPL is present in the alluvial silt, and perhaps the bottom few feet of the overlying fill, in a discreet area near monitoring wells MW-3 and MW-9 and borings SB-13, SB-29, and SB-31. At MW-3, the DNAPL is pooled, as it accumulated at the bottom of the well. Unfortunately, this well's screen extends some distance below the NAPL-containing soils, so the potential exists for the DNAPL to have passed out of the bottom of the well screen into the brown till unit. The relatively low hydraulic conductivity of the brown till would serve to inhibit penetration of the NAPL, and the groundwater samples downgradient of this area (at MW-6) showed no evidence of impacts. These observations indicate that if any DNAPL escaped from the well screen, the amount is likely minor. A trace amount of DNAPL was also observed in MW-9, but the quantity was too small to measure, except during the December 18, 2007 gauging event (when 0.16 feet was identified and approximately 60-90 milliliters was removed). Given the available information, it is likely that the DNAPL in the alluvial silt is either stable, or moving extremely slowly due to its high viscosity and the low permeability of the silt. If moving, the direction of movement would be expected to be downward.

A different type of NAPL was observed south of the site, near borings SB-10 and SB-14. This NAPL was lighter colored and exhibited a petroleum-like odor. Forensic analysis suggested that this NAPL was likely a mixture of No. 2 fuel oil (i.e., diesel) and heavier lubricating oil. These types of products are consistent with the types that may have been used at the former auto service station that was located in this area; therefore, the source of this NAPL is not interpreted to be the former MGP. The horizontal and vertical extent of this NAPL was characterized by the RI.

5.6 Soil Quality Evaluation

The quality of soils beneath the site was evaluated by comparing soil analytical results to restricted residential SCOs for the protection of public health as presented in NYSDEC (2006a). That comparison found that the only constituents that exceeded the SCOs were benzene, total xylenes, several PAHs, and lead. Most of the benzene, total xylenes, PAHs, and lead-impacted soils were encountered at depths of approximately 12 to 20.5 feet bgs, generally at or just beneath the bottoms of the two former gas holders. The region of coal-tar-containing soils identified in the small area surrounding well MW-3, just south of the former gas holders, is also expected to exceed SCOs for PAHs. At soil boring SB-13, the vertical limits of soils observed to contain NAPL (and found to contain benzene and PAHs at concentrations exceeding the SCOs) ranges from approximately 10 to 16 feet bgs. Soil samples collected beneath the areas noted above did not exceed any of the SCOs. The forensic signatures of these impacted soils suggested that they contained either coal carbonization coal tar, or a mixture of coal carbonization coal tar and heavy oils.

In addition to the soils described above, four near-surface soil samples exceeded the SCOs for a few PAHs, and one sample exceeded the SCO for lead. These samples were all collected at depths from 0.5 to 2 feet bgs (immediately below asphalt pavement/concrete surface coverings) at four sampling locations. However, the PAH concentrations identified at several of these locations were only slightly greater than the SCOs, and in all cases the soils are covered (thereby limiting potential exposures). The forensic signatures of these impacted soils were generally indicative of a carbureted water gas coal tar.

5.7 Groundwater Quality Evaluation

The quality of groundwater was evaluated by comparing the analytical results of groundwater samples to appropriate TOGS criteria. Three intervals of groundwater were evaluated: groundwater perched above the alluvial silt, shallow groundwater (extending from the water table down 10 feet), and deeper groundwater (extending from approximately 10 to 20 feet below the water table). The quality of perched groundwater was found to be impacted by PCBs near MW-5 (January 2008) and MW-6S (June 2006); however, PCBs are not related to the MGP. Although a groundwater sample was not collected from MW-3 or MW-9, it is expected that the quality of perched groundwater in a localized area near MW-3, where coal-tar DNAPL is present, has likely been impacted by the coal tar. However, the extent of such impacted groundwater is expected to be limited, and the quantity of perched groundwater beneath the site as a whole is judged to be relatively insignificant.

The quality of shallow groundwater was found to be unaffected by the former MGP, except at well MW-5. Samples from that location contained elevated level of cyanide and selenium. The extent of cyanide-containing groundwater appears to be limited. Shallow groundwater contained several chlorinated solvents and arsenic (south of the site); and PCBs (western portion of the site) at levels above TOGS criteria, but the former MGP is not the source of those constituents. Similarly, groundwater upgradient and south of the site contained elevated levels of arsenic. Based on groundwater flow patterns, the source of the arsenic is located upgradient of the site.

The quality of deeper groundwater was also found to be unaffected by the former MGP, except at well MW-5D. A sample from MW-5D contained BTEX and both samples contained several PAHs above TOGS criteria. A slight exceedence of barium was also found in one sample from MW-5D. The source of these constituents is thought to be related to a localized area where coal tar may have migrated to near the bottom of the brown till; however, no such area was identified by the thorough RI drilling program suggesting that the affected area is small. The samples from MW-7D contained benzene at concentrations above the 1 μg/L TOGS criterion, but based on the absence of PAHs at the well and the understanding of groundwater flow determined by this RI, the source of benzene in groundwater at MW-7D may be associated with the former gasoline station and unrelated to the former MGP. Barium was detected above its TOGS criterion in the sample collected from the upgradient monitoring well MW-8D, indicating an offsite source unrelated to the former MGP.

5.8 Surface-Water Quality Evaluation

ARCADIS BBL evaluated surface-water quality by collecting and analyzing six samples of Chenango River water and comparing the results to NYSDEC TOGS 1.1.1 Class B Standards. Only one sample had detectable levels of a few constituents. However, none of the detected constituents exceeded the Class B standards. Based on these results, the MGP has not adversely affected the quality of water in the Chenango River.

5.9 Sediment Quality Evaluation

ARCADIS BBL evaluated Chenango River sediment quality by comparing analytical results from data collected during the RI to the NYSDEC *Technical Guidance for Screening Contaminated Sediments* (NYSDEC, 1999) criteria. Surface sediment (0 to 2 inches) and, where encountered, subsurface sediment (i.e., 2 to 12 inches at one location) was evaluated. Six PAHs were identified in the sediment samples at concentrations exceeding the human health sediment screening values, but only one of the PAHs [benzo(a)pyrene] was identified at a concentration exceeding the ecological risk-based screening values. The concentrations of these PAHs identified above the screening values were approximately 0.5 ppm or less (except at location SD-5, where benzo(a)pyrene was identified at a concentration of up to 1.8 ppm). In general, the PAH concentrations appear to be consistent with the expected background range for Chenango River sediments upstream from the site, except the concentrations at sampling location SD-5 are slightly higher. The forensics analysis indicates that the PAHs at sampling location SD-5 may be coal tar similar to that identified in soil samples collected near the ground surface at the site (but unrelated to the coal tar found deeper, such as below Holder #2). The forensics evaluation supports that there is no subsurface migration of PAHs to the river sediments. The data also supports that the elevated PAHs at location SD-5 are isolated.

Three metals (i.e., lead, mercury, and silver) were identified in the sediment at concentrations exceeding the LELs, but the concentration of only one metal (silver at location SD-5) exceeded the SEL. Silver is not an

MGP-related constituent. PCBs were identified in the sediment at concentrations exceeding the screening values for protection of human health and wildlife from bioaccumulation, but the PCB concentrations (with a maximum of 0.12 ppm) may be generally consistent with typical background concentrations in the river. As indicated above, PCBs are not related to the MGP. VOCs were not identified in the river sediment at concentrations exceeding the sample-specific sediment screening values.

5.10 Risk Evaluation

ARCADIS BBL performed a risk evaluation by considering various site characteristics and reviewing data collected during the RI and previous site investigations. The risk evaluation consisted of a qualitative HHEE and an FWRIA [through Step II(B)]. The results of the HHEE and FWRIA are summarized below.

5.10.1 Human Health Exposure Evaluation

Analytical data indicate that VOCs, SVOCs (primarily PAHs), and several metals are present in subsurface soils at concentrations exceeding SCOs. The majority of the site is covered by an asphalt parking lot, a concrete foundation slab of a former building, or existing buildings. As such, the potential for exposure to COPCs in subsurface soils is most likely limited to construction workers engaged in intrusive activities, although potential exposures could be mitigated by using PPE. Potential exposures of commercial workers, residents, and trespassers to constituents in subsurface soils are unlikely because these receptors would not be involved in intrusive activities.

Surface soils represent a complete exposure pathway for trespassers, residents, commercial visitors, commercial workers, and construction workers. However, potential exposures to COPCs in surface soil (i.e., metals) are most likely limited based on the relatively small area of vegetated soils onsite (i.e., soils that are not covered by impervious surfaces such as asphalt and concrete). Further, metals concentrations in the surface soil sample were relatively low and only slightly exceeded the screening criteria.

Groundwater beneath the site is not used as a potable source, and therefore exposure via groundwater ingestion is unlikely. Likewise, exposure of trespassers, commercial workers, and residents to groundwater is unlikely based on the depth to groundwater and the lack of surface expressions (i.e., seeps). Construction workers may be exposed to shallow groundwater during intrusive activities, but exposures would likely be mitigated by using PPE.

Several PAHs exceeded the NYSDEC human health bioaccumulation criteria for Chenango River sediment. Exposure to the Chenango River adjacent to the site is not expected to be significant because recreational use of this area of the river is most likely limited due to surrounding land use and the physical characteristics of the river (e.g., steep banks). Food chain exposure (i.e., ingestion of fish) is not expected to be a significant exposure pathway because most Chenango River sediment COPCs (i.e., PAHs) are not bioaccumulative. Potential exposure to PCBs through the ingestion of fish may exist, based on the concentrations of PCBs found within the Chenango River sediment.

5.10.2 Fish and Wildlife Resource Impact Analysis

The FWRIA for the site was conducted in accordance with NYSDEC guidance. The site has been used for commercial and industrial purposes. The site is now predominately characterized by paved (asphalt) surfaces and buildings, which provide marginal value to wildlife. Exposures to onsite surface soils, and sediments and surface water in the Chenango and Susquehanna River adjacent to the site are identified as potentially complete exposure pathways. Although two metals (arsenic and chromium) exceeded their associated NYSDEC TAGM #4046 soils criteria and 6 NYCRR Part 375 Brownfield SCOs, the site contains only a relatively small area of natural habitat, which, coupled with surrounding land use, most likely limits wildlife use of the site. Therefore, ecological exposures to surface soil are not considered to be significant.

One PAH and three metals exceeded their associated NYSDEC chronic sediment criteria in Chenango River sediment samples. PAH concentrations did not exceed acute sediment criteria. Silver was the only constituent to exceed its SEL for Chenango River sediment, but this exceedance only occurred at one location (SD-5), and silver concentrations at the other locations were all nondetect. As previously mentioned, silver is not an MGP-related constituent. Lead and mercury exceeded their respective LELs at two and three locations, respectively, but these concentrations were well below the SELs.

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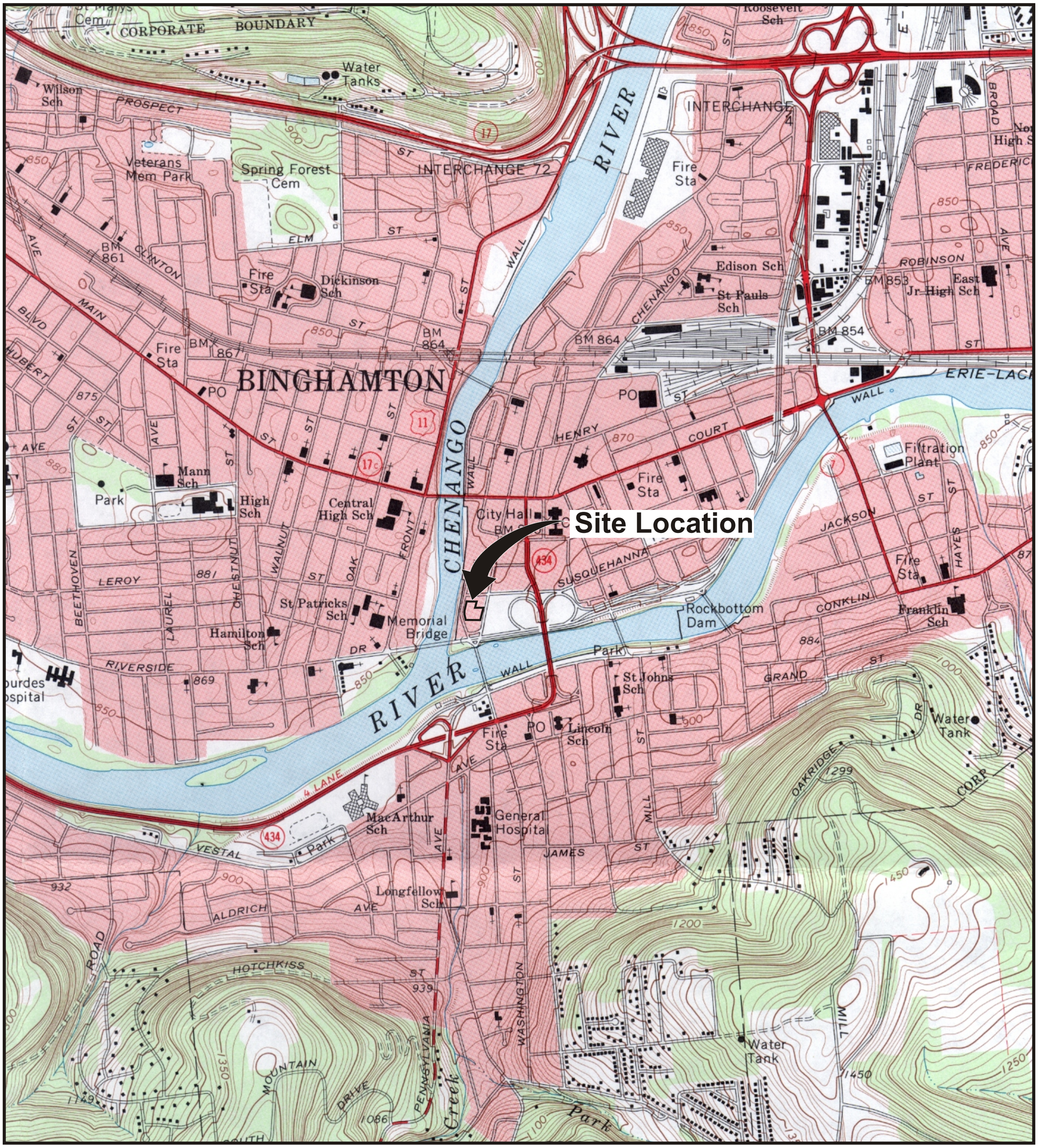
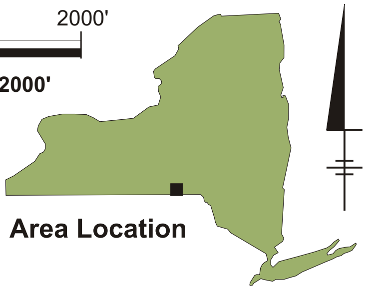
Figures



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., BINGHAMTON WEST, NY, 1968, PHOTOINSPECTED 1976.

2000' 0 2000'

Approximate Scale: 1" = 2000'



Area Location

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

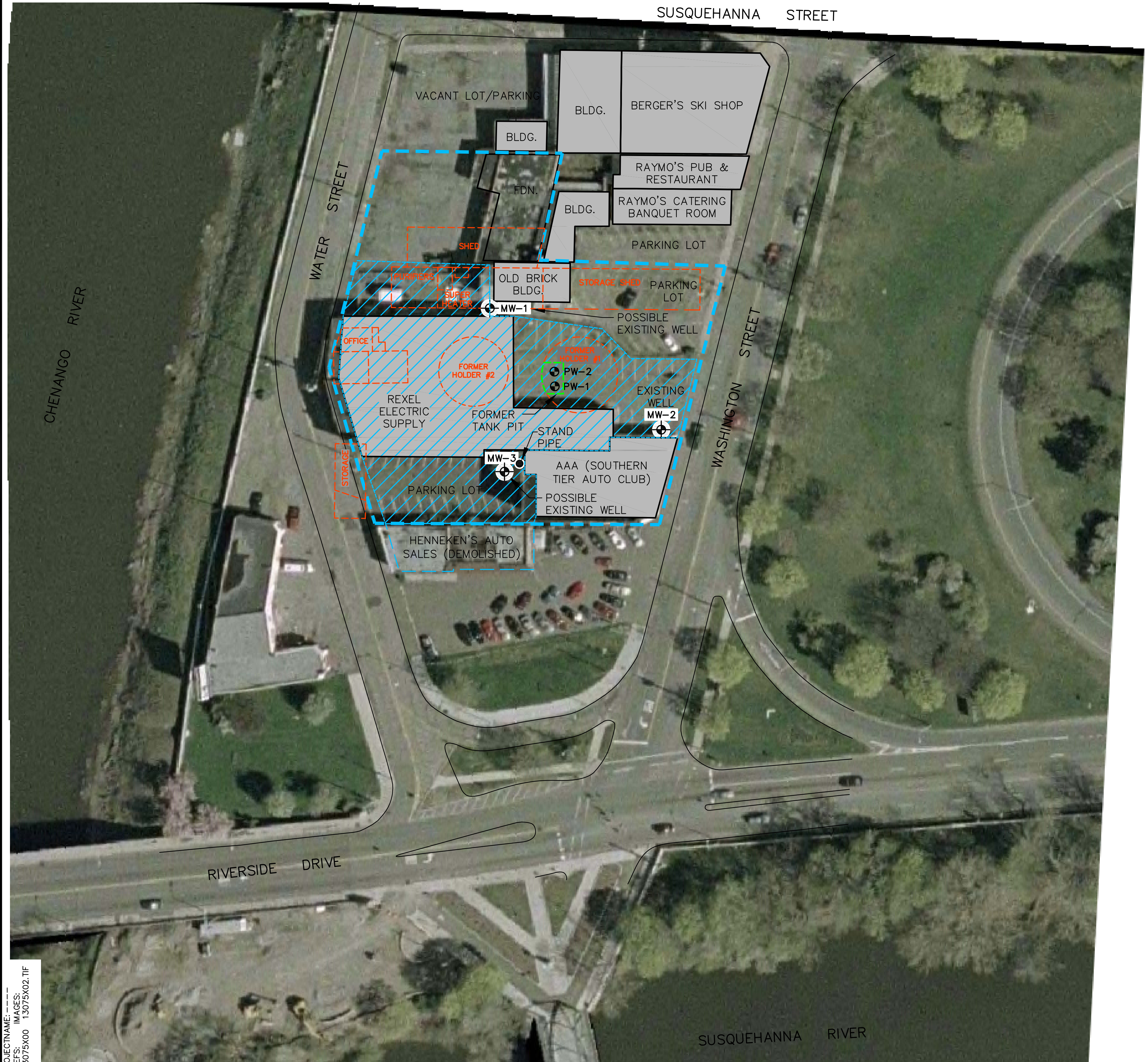
REMEDIAL INVESTIGATION

SITE LOCATION MAP

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE 1

08/10/07 SYR-D85-DJH, KLS
13075002/13075n01.cdr



LEGEND:

- FORMER WASHINGTON STREET MGP PROPERTY
- PORTION OF PROPOSED BROWNFIELD REDEVELOPMENT AREA
- EXISTING BUILDING
- APPROXIMATE LOCATION OF EXISTING MONITORING WELL
- APPROXIMATE LOCATION OF FORMER TEMPORARY MONITORING WELL (ABANDONED)
- FORMER MGP-RELATED STRUCTURE
- FORMER BUILDING (DEMOLISHED)

NOTE:

1. DRAWING PREPARED BY DIGITIZING INFORMATION FROM PAPER COPY OF CITY OF BINGHAMTON TAX MAP PROVIDED BY NYSEG. BUILDING AND FORMER HOLDER LOCATIONS WERE DIGITIZED FROM PAPER COPIES OF "SANBORN" MAPS DATED 1887 AND 1970, AT AN APPROXIMATE SCALE OF 1"=50'. ALL LOCATIONS ARE APPROXIMATE.
2. AERIAL BACKGROUND IMAGE DOWNLOADED FROM "NEW YORK STATE GIS CLEARINGHOUSE WEBPAGE (WWW.NYGIS.STATE.NY.US)" DATED APRIL, 2002. AERIAL IS NOT GEOREFERENCED AND SCALE IS APPROXIMATE.
3. APPROXIMATE LOCATIONS OF FORMER TANK PIT MONITORING WELLS PW-1 AND PW-2 DIGITIZED FROM A PAPER COPY OF FIGURE MADE BY "DUNN GEOSCIENTIFIC CORP." TITLED "GROUNDWATER ELEVATIONS" FIGURE 3, DATED 5/5/91, AT AN APPROXIMATE SCALE OF 1"=50'.

0 80' 160'
APPROXIMATE GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

SITE LAYOUT MAP

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
2

SYR-85-RCA WLJ LAF LAYER: ON=*, OFF=*REF*
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13075X00 13075X02.TIF

LEGEND:

- PHASE II RI SOIL BORING LOCATION
- PHASE I RI SOIL BORING LOCATION
- TP-5 TEST PIT LOCATION
- PIEZOMETER LOCATION
- MONITORING WELL LOCATION
- APPROXIMATE LOCATION OF TEMPORARY MONITORING WELL (ABANDONED)
- T13 PHASE II SEDIMENT TRANSECT
- PHASE II SEDIMENT PROBING LOCATION
- T0 PHASE I SEDIMENT TRANSECT
- PHASE I SEDIMENT PROBING LOCATION
- PHASE I SEDIMENT PROBING & SAMPLING LOCATION
- SURFACE WATER SAMPLING LOCATION
- RIVER STAGE MEASURING LOCATION
- FORMER WASHINGTON STREET MGP PROPERTY
- PORTION OF PROPOSED BROWNFIELD REDEVELOPMENT AREA
- EXISTING BUILDING
- FORMER TANK PIT
- FORMER MGP-RELATED STRUCTURE
- FENCE
- GUARDRAIL

NOTES:

1. BASE MAP INFORMATION WAS PROVIDED BY NYSEG AND NYSEG DRAWINGS TITLED "WASHINGTON STREET MGP SITE, CITY OF BINGHAMTON, BROOME COUNTY NEW YORK" RECEIVED 8/3/06 & 8/17/06 FILE INDEX: BING_WASH2.DGN, LAST REVISED 6/15/07.
2. APPROXIMATE LOCATIONS OF FORMER TANK PIT MONITORING WELLS PW-1 AND PW-2 DIGITIZED FROM A PAPER COPY OF FIGURE MADE BY "DUNN GEOSCIENTIFIC CORP." TITLED "GROUNDWATER ELEVATIONS" FIGURE 3, DATED 5/5/91, AT AN APPROXIMATE SCALE OF 1"=50'.

0 100' 200'

APPROXIMATE GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

SITE LAYOUT AND SAMPLING LOCATIONS MAP

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
3

SYR-85-RCA GMS WLJ LAYER: ON=*, OFF=REF
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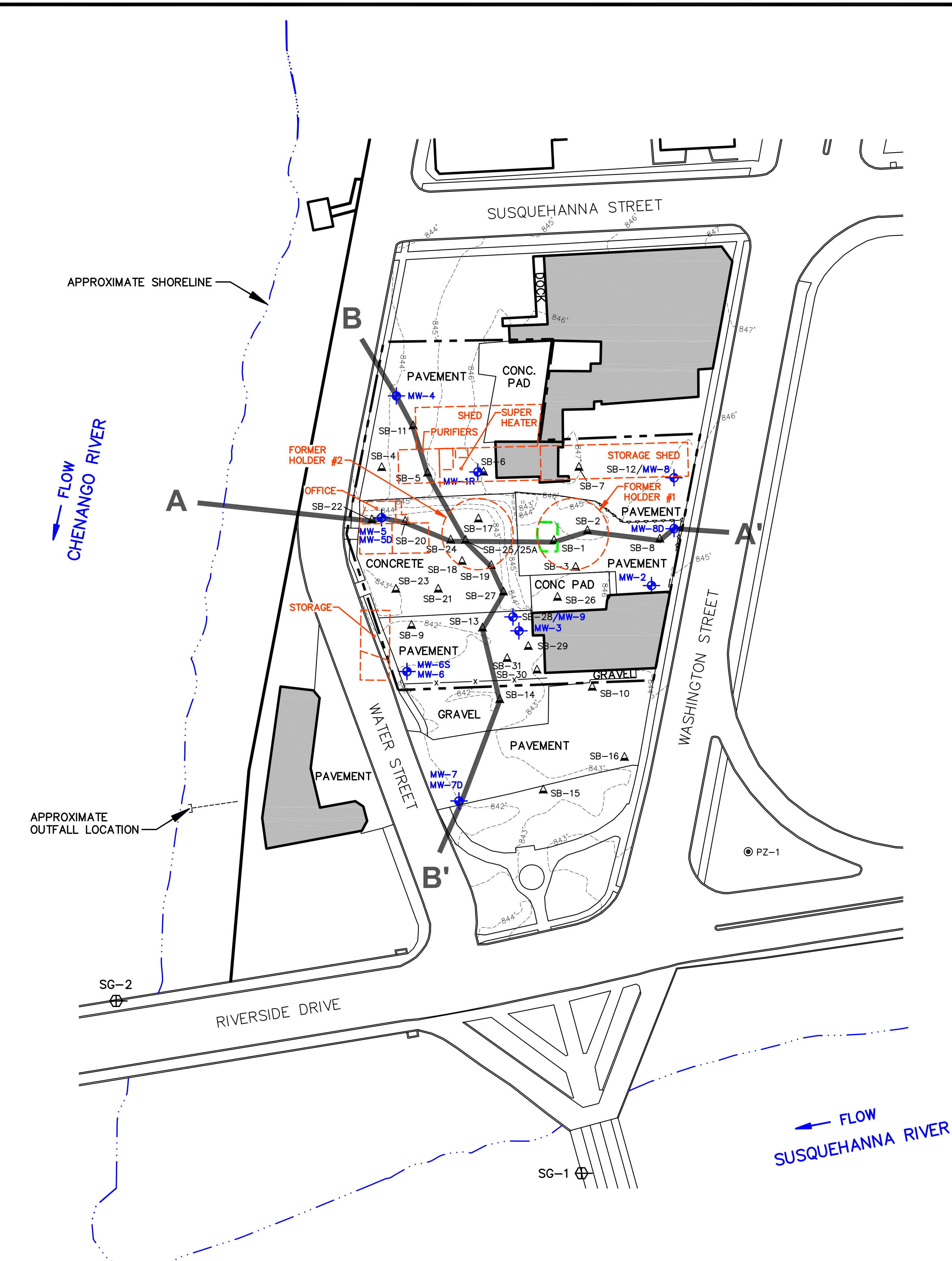

LEGEND:

- RI SOIL BORING LOCATION
- PIEZOMETER LOCATION
- MONITORING WELL LOCATION
- RIVER STAGE MEASURING LOCATION
- FORMER WASHINGTON STREET MGP PROPERTY
- EXISTING BUILDING
- FORMER TANK PIT
- FORMER MGP-RELATED STRUCTURE
- FENCE
- GUARDRAIL
- A —— A' LINE OF CROSS SECTION

NOTES:

1. BASE MAP INFORMATION WAS PROVIDED BY NYSEG AND NYSEG DRAWINGS TITLED "WASHINGTON STREET MGP SITE, CITY OF BINGHAMTON, BROOME COUNTY NEW YORK" RECEIVED 8/3/06 & 8/17/06 FILE INDEX: BING_WASH2.DGN.
2. APPROXIMATE LOCATION OF FORMER TANK PIT DIGITIZED FROM A PAPER COPY OF FIGURE MADE BY "DUNN GEOSCIENTIFIC CORP." TITLED "GROUNDWATER ELEVATIONS" FIGURE 3, DATED 5/5/91, AT AN APPROXIMATE SCALE OF 1"=50'.
3. ELEVATIONS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.

0 100' 200'

APPROXIMATE GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

CROSS SECTION LOCATIONS

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
4

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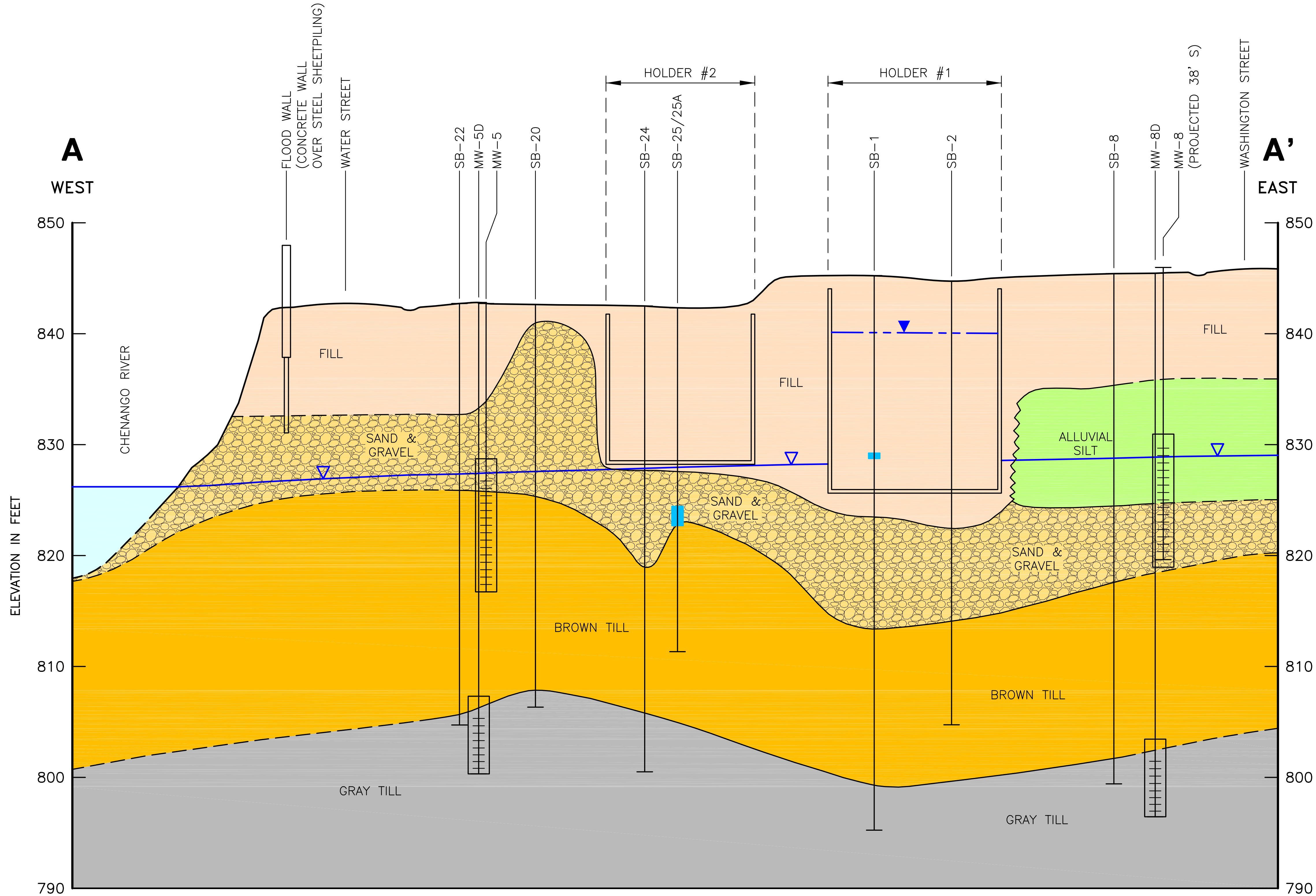

LEGEND:

PERCHED GROUNDWATER

WATER TABLE (7/24/2006)

LITHOLOGIC CONTACT (DASHED WHERE INFERRED)

SAND PACK

SCREEN

FIELD OBSERVATION:

SHEEN

NOTES:

1. ELEVATIONS REFERENCED TO THE NORTH AMERICA VERTICAL DATUM OF 1988.
2. FLOODWALL INFORMATION OBTAINED FROM: UNITED STATES ARMY CORPS OF ENGINEERS, 1943. SOUTHERN NEW YORK FLOOD CONTROL PROJECT BINGHAMTON, N.Y. SECTION NO. 4, CHENANGO RIVER LEFT BANK, SHEET 13.

0 10' 20'
VERTICAL GRAPHIC SCALE

0 40' 80'
HORIZONTAL GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

CROSS SECTION A - A'

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
5

SYR-85-RCA WLJ LAF LAYER: ON=*, OFF=*REF*
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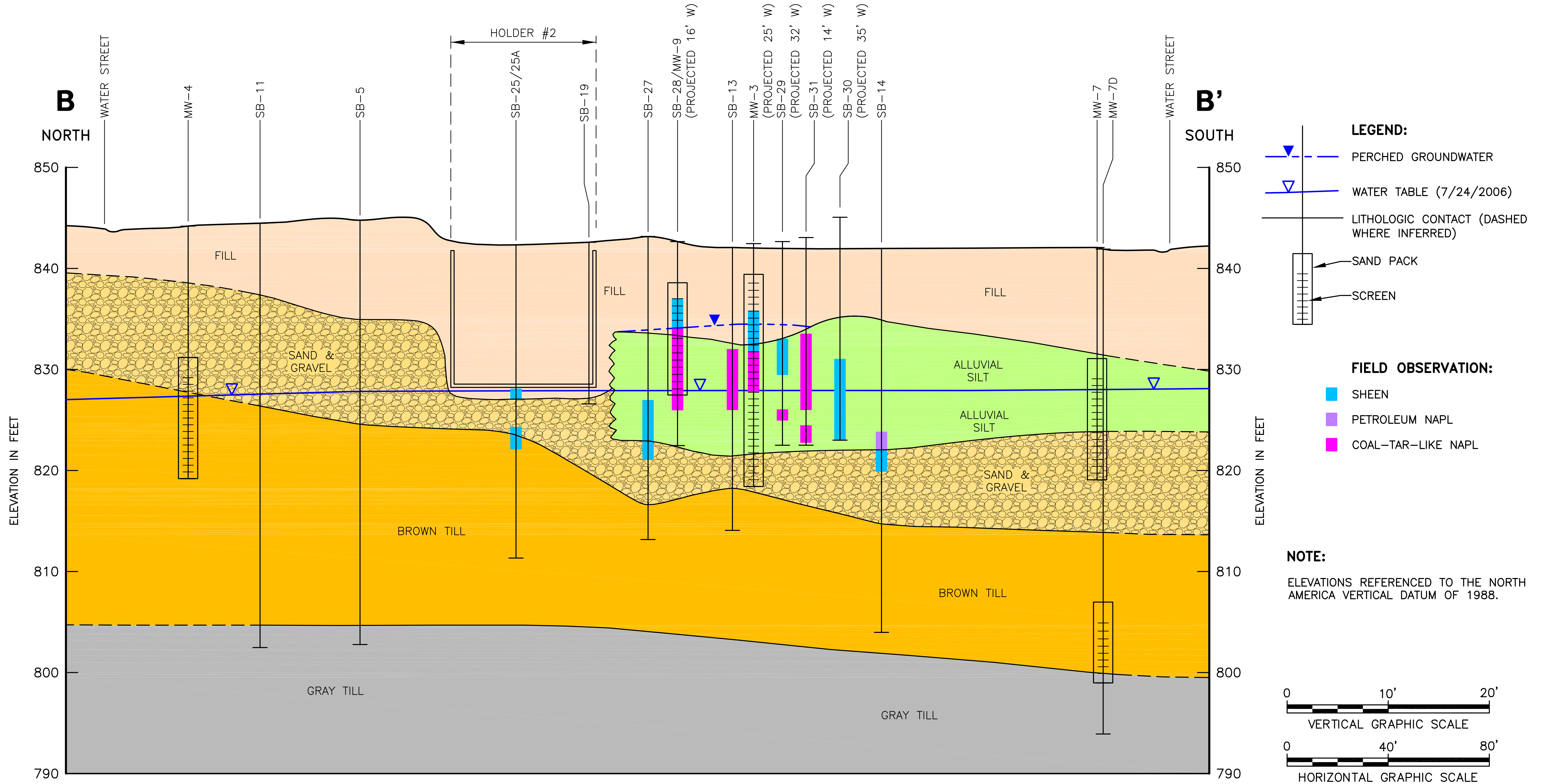

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

REMEDIAL INVESTIGATION

CROSS SECTION B - B'

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
6

SYR-85-RCA JHR LAF LAYER: ON=*, OFF=*REF*
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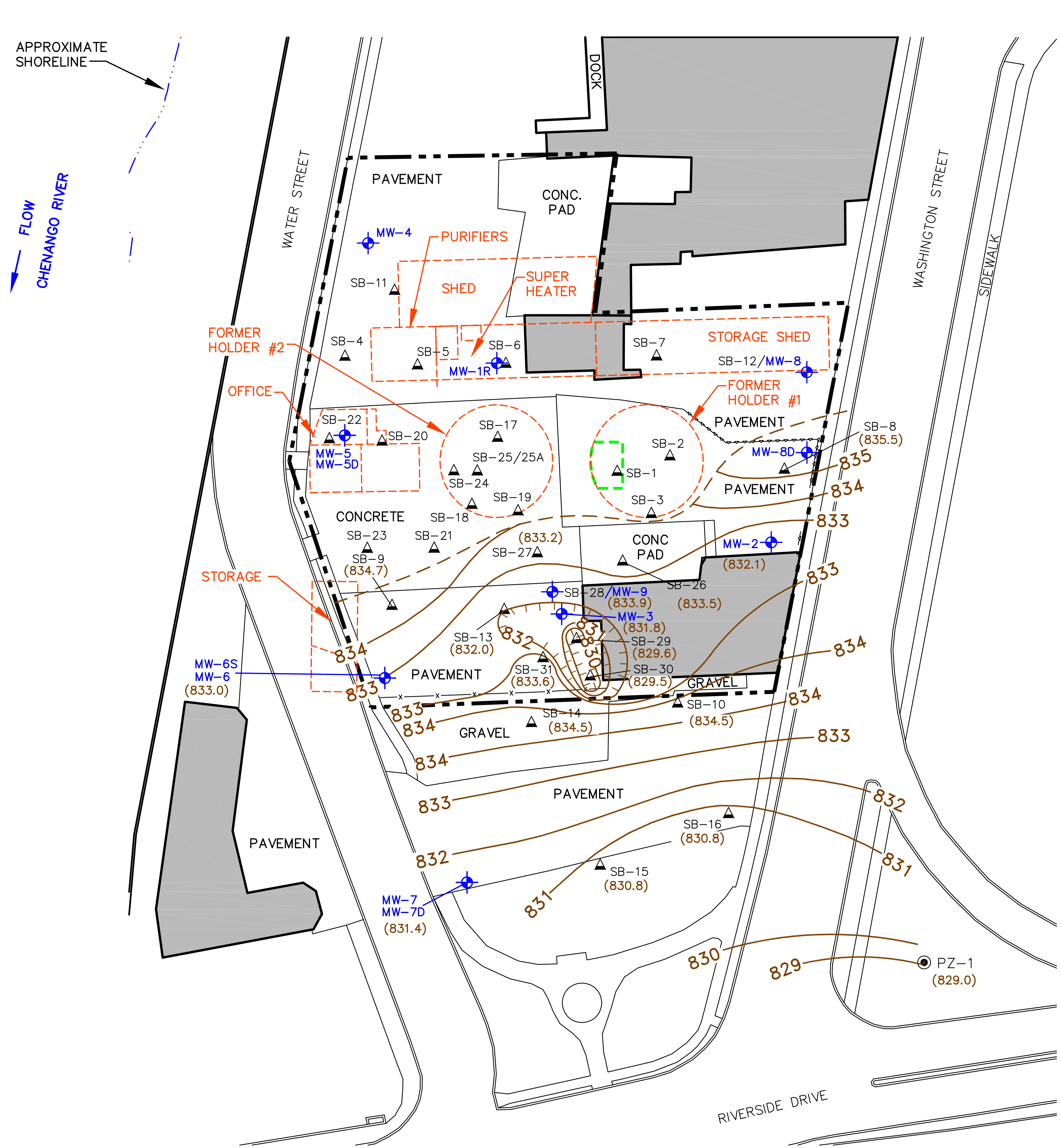


LEGEND:

- RI SOIL BORING LOCATION
- PIEZOMETER LOCATION
- MONITORING WELL LOCATION
- RIVER STAGE MEASURING LOCATION
- FORMER WASHINGTON STREET MGP PROPERTY
- EXISTING BUILDING
- FORMER TANK PIT
- FORMER MGP-RELATED STRUCTURE
- FENCE
- GUARDRAIL
- 833 SILT UNIT ELEVATION CONTOUR
- LIMITS OF SILT UNIT
- (834.5) SILT UNIT ELEVATION

NOTES:

1. BASE MAP INFORMATION WAS PROVIDED BY NYSEG AND NYSEG DRAWINGS TITLED "WASHINGTON STREET MGP SITE, CITY OF BINGHAMTON, BROOME COUNTY NEW YORK" RECEIVED 8/3/06 & 8/17/06 FILE INDEX: BING_WASH2.DGN.
2. APPROXIMATE LOCATION OF FORMER TANK PIT DIGITIZED FROM A PAPER COPY OF FIGURE MADE BY "DUNN GEOSCIENTIFIC CORP." TITLED "GROUNDWATER ELEVATIONS" FIGURE 3, DATED 5/5/91, AT AN APPROXIMATE SCALE OF 1"=50'.
3. ELEVATIONS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.

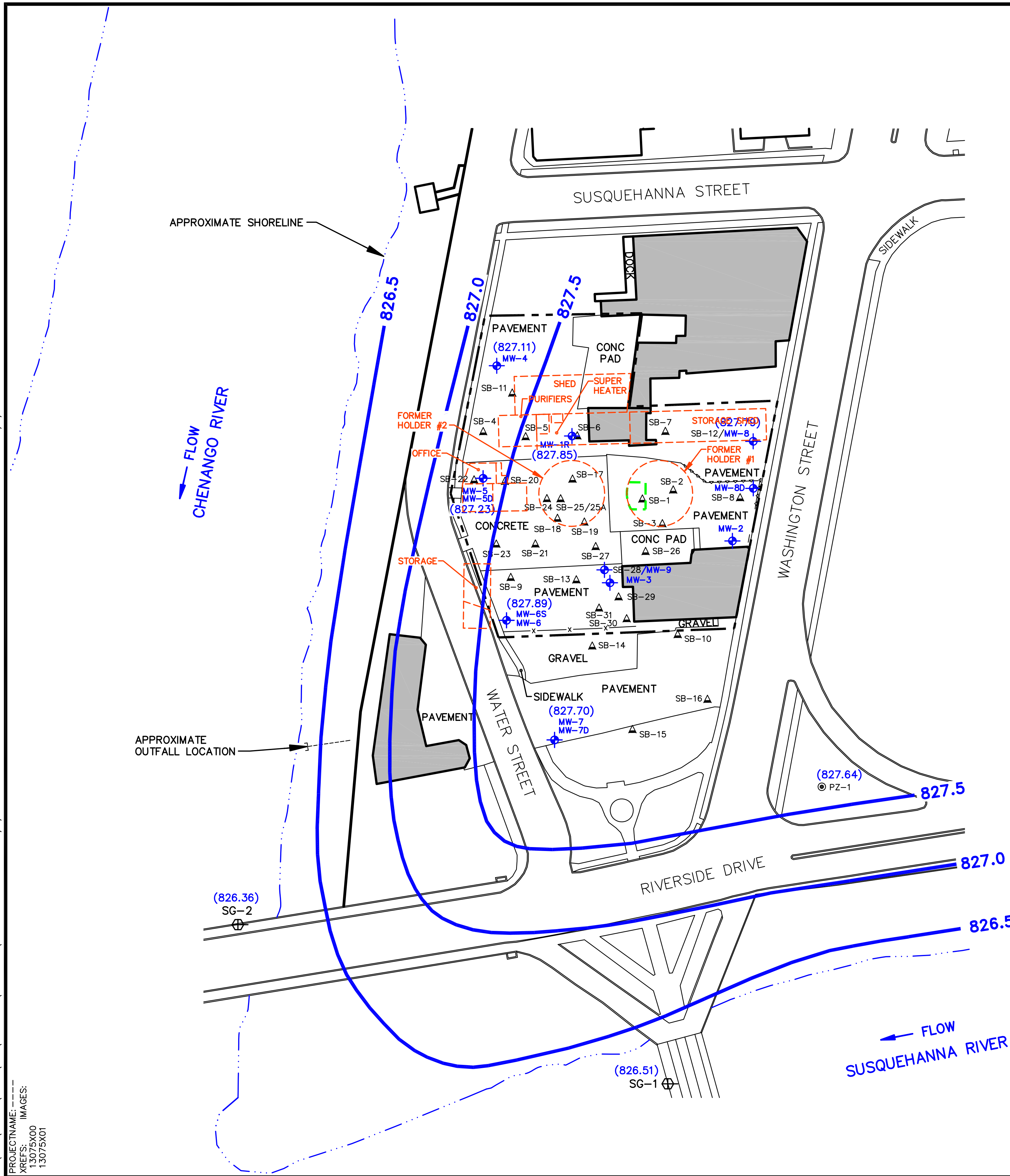
0 60' 120'
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

SILT UNIT SURFACE MAP

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
7



LEGEND:

- RI SOIL BORING LOCATION
- PIEZOMETER LOCATION
- MONITORING WELL LOCATION
- RIVER STAGE MEASURING LOCATION
- FORMER WASHINGTON STREET MGP PROPERTY
- EXISTING BUILDING
- FORMER TANK PIT
- FORMER MGP-RELATED STRUCTURE
- FENCE
- GUARDRAIL
- 827.5 GROUNDWATER ELEVATION CONTOUR
- (827.64) GROUNDWATER ELEVATION

NOTES:

1. BASE MAP INFORMATION WAS PROVIDED BY NYSEG AND NYSEG DRAWINGS TITLED "WASHINGTON STREET MGP SITE, CITY OF BINGHAMTON, BROOME COUNTY NEW YORK" RECEIVED 8/3/06 & 8/17/06 FILE INDEX: BING_WASH2.DGN.
2. APPROXIMATE LOCATION OF FORMER TANK PIT DIGITIZED FROM A PAPER COPY OF FIGURE MADE BY "DUNN GEOSCIENTIFIC CORP." TITLED "GROUNDWATER ELEVATIONS" FIGURE 3, DATED 5/5/91, AT AN APPROXIMATE SCALE OF 1"=50'.
3. ELEVATIONS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988.

0 100' 200'

APPROXIMATE GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

WATER TABLE MAP
JULY 24, 2006

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
8

SB-17 (5/16/2006)		
Depth(Feet)	SCO	14 – 16
Benzo(a)anthracene	1	28 J
Benzo(a)pyrene	1	18 J
Benzo(b)fluoranthene	1	20 J
Benzo(k)fluoranthene	3.9	6.3 J
Chrysene	3.9	22 J
Dibenzo(a,h)anthracene	0.33	42 J
Indeno(1,2,3–cd)pyrene	0.5	5.9 J
Naphthalene	100	330

SB-6 (5/17/2006)			
Depth(Feet)	SCO	0.5 – 2	20 – 22
Benzo(a)anthracene	1	12	0.23 J
Benzo(a)pyrene	1	27	0.22 J
Benzo(b)fluoranthene	1	26	0.34 J
Benzo(k)fluoranthene	3.9	7.5 J	0.34 J
Chrysene	3.9	11	0.20 J
Dibenzo(a,h)anthracene	0.33	7.8 J	0.048 J
Indeno(1,2,3–cd)pyrene	0.5	26	0.14 J

SB-1 (5/8/2006)					
Depth(Feet)	SCO	8 – 10.4	20 – 20.5	24 – 26	24 – 26 DUP
Benzo(a)anthracene	1	0.40 J	31 J	<0.38	[<0.40]
Benzo(a)pyrene	1	0.34 J	37 J	<0.38	[<0.40]
Benzo(b)fluoranthene	1	0.56 J	46 J	<0.38	[<0.40]
Benzo(k)fluoranthene	3.9	0.57 J	47 J	<0.38	[<0.40]
Chrysene	3.9	0.35 J	31 J	<0.38	[<0.40]
Dibenzo(a,h)anthracene	0.33	<3.6	4.2 J	<0.38	[<0.40]
Indeno(1,2,3–cd)pyrene	0.5	0.20 J	19 J	<0.38	[<0.40]
Phenanthrene	100	1.0 J	130	<0.38	[<0.40]
Pyrene	100	0.83 J	110	<0.38	[<0.40]

SB-4 (5/23/2006)				
Depth(Feet)	SCO	0.5 – 2	16 – 18	16 – 18 DUP
Benzo(a)pyrene	1	1.1 J	0.52	[0.24 J]
Benzo(b)fluoranthene	1	1.7 J	0.59	[0.27 J]
Indeno(1,2,3–cd)pyrene	0.5	0.84 J	0.32 J	[0.14 J]

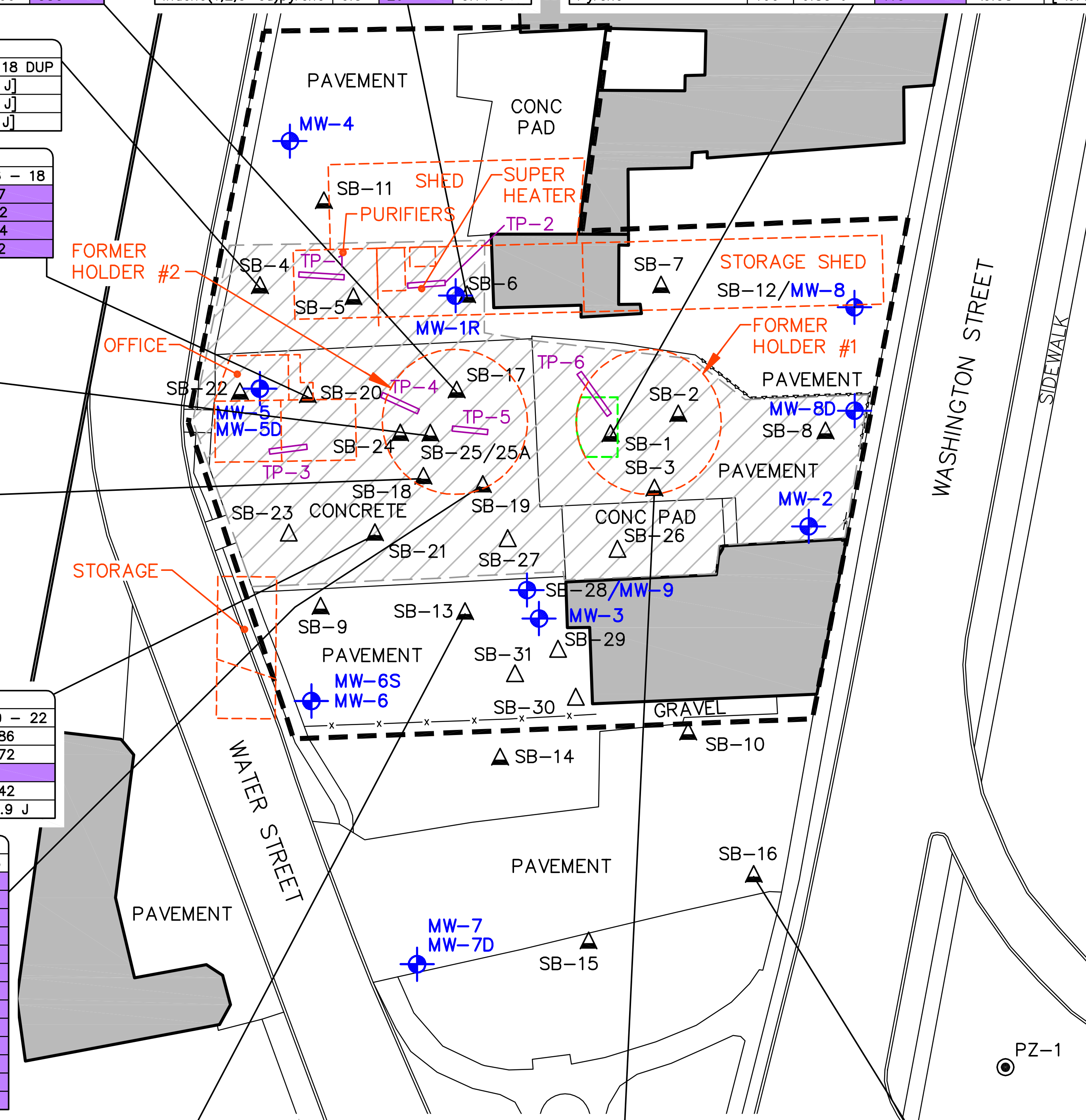
SB-20 (5/24/2006)			
Depth(Feet)	SCO	0.8 – 2	16 – 18
Benzo(a)anthracene	1	0.092 J	1.7
Benzo(a)pyrene	1	0.12 J	2.2
Benzo(b)fluoranthene	1	0.19 J	2.4
Indeno(1,2,3–cd)pyrene	0.5	0.082 J	1.2

SB-25A (5/26/2006)			
Depth(Feet)	SCO	14.6 – 16	26 – 28
Benzo(a)anthracene	1	9.3	0.040 J
Benzo(a)pyrene	1	7.0	0.030 J
Benzo(b)fluoranthene	1	7.4	0.042 J
Chrysene	3.9	7.6	0.032 J
Dibenzo(a,h)anthracene	0.33	1.2 J	<0.36
Indeno(1,2,3–cd)pyrene	0.5	2.8	<0.36

SB-18 (5/15/2006)		
Depth(Feet)	SCO	14 – 16
Total Xylenes	100	110 D
Benzo(a)anthracene	1	50
Benzo(a)pyrene	1	33 J
Benzo(b)fluoranthene	1	35
Benzo(k)fluoranthene	3.9	11 J
Chrysene	3.9	40
Dibenzo(a,h)anthracene	0.33	42 J
Dibenzofuran	59	69
Indeno(1,2,3–cd)pyrene	0.5	10 J
Naphthalene	100	510
Phenanthrene	100	190

SB-21 (5/16/2006 & 5/17/2006)			
Depth(Feet)	SCO	0.5 – 2	20 – 22
Benzo(a)anthracene	1	1.4 J	0.86
Benzo(a)pyrene	1	1.8 J	0.72
Benzo(b)fluoranthene	1	2.5 J	1.1
Indeno(1,2,3–cd)pyrene	0.5	0.92 J	0.42
Lead	400	447 J	10.9 J

SB-19 (5/15/2006)		
Depth(Feet)	SCO	14 – 16
Benzo(a)anthracene	1	61
Benzo(a)pyrene	1	46
Benzo(b)fluoranthene	1	44
Benzo(k)fluoranthene	3.9	16 J
Chrysene	3.9	51
Dibenzo(a,h)anthracene	0.33	44 J
Dibenzofuran	59	66
Fluoranthene	100	120
Fluorene	100	110
Indeno(1,2,3–cd)pyrene	0.5	15 J
Naphthalene	100	220
Phenanthrene	100	230
Pyrene	100	130



SB-13 (5/30/2006)			
Depth(Feet)	SCO	12 – 14	16 – 18
Benzene	4.8	4.9 D	0.28 D
Benzo(a)anthracene	1	16	0.040 J
Benzo(a)pyrene	1	12	0.026 J
Benzo(b)fluoranthene	1	13	0.033 J
Benzo(k)fluoranthene	3.9	4.5	<0.40
Chrysene	3.9	12	0.027 J
Dibenzo(a,h)anthracene	0.33	2.3	<0.40
Indeno(1,2,3–cd)pyrene	0.5	6.0	<0.40
Naphthalene	100	180 D	<0.40

SB-3 (5/11/2006)				
Depth(Feet)	SCO	20 – 20.5	22.4 – 23.2	30 – 32
Benzene	4.8	6.6 D	0.049	<0.0060
Benzo(a)anthracene	1	23	0.11 J	<0.36
Benzo(a)pyrene	1	28	0.13 J	<0.36
Benzo(b)fluoranthene	1	48	0.20 J	<0.36
Benzo(k)fluoranthene	3.9	49	0.21 J	<0.36
Chrysene	3.9	33	0.14 J	<0.36
Dibenzo(a,h)anthracene	0.33	4.5 J	0.019 J	<0.36
Indeno(1,2,3–cd)pyrene	0.5	18	0.081 J	<0.36
Lead	400	584	71.2	10.0

SB-16 (6/2/2006)			
Depth(Feet)	SCO	0.5 – 2	22 – 24
Benzo(a)anthracene	1	12	<0.36
Benzo(a)pyrene	1	27	<0.36
Benzo(b)fluoranthene	1	29	<0.36
Benzo(k)fluoranthene	3.9	30	<0.36
Chrysene	3.9	12	<0.36
Dibenzo(a,h)anthracene	0.33	2.4 J	<0.36
Indeno(1,2,3–cd)pyrene	0.5	23	<0.36
Pyrene	100	120	<0.36

LEGEND:

- RI SOIL BORING LOCATION (ONE OR MORE SAMPLES ANALYZED)
- RI SOIL BORING LOCATION (NO SAMPLES ANALYZED)
- TP-5 TEST PIT LOCATION
- PIEZOMETER LOCATION
- MONITORING WELL LOCATION
- FORMER WASHINGTON STREET MGP PROPERTY
- PORTION OF PROPOSED BROWNFIELD REDEVELOPMENT AREA
- EXISTING BUILDING
- FORMER TANK PIT
- FORMER MGP–RELATED STRUCTURE
- FENCE
- GUARDRAIL

NOTES:

1. BASE MAP INFORMATION WAS PROVIDED BY NYSEG AND NYSEG DRAWINGS TITLED "WASHINGTON STREET MGP SITE, CITY OF BINGHAMTON, BROOME COUNTY NEW YORK" RECEIVED 8/3/06 & 8/17/06 FILE INDEX: BING_WASH2.DGN.
2. APPROXIMATE LOCATION OF FORMER TANK PIT DIGITIZED FROM A PAPER COPY OF FIGURE MADE BY "DUNN GEOSCIENTIFIC CORP." TITLED "GROUNDWATER ELEVATIONS" FIGURE 3, DATED 5/5/91, AT AN APPROXIMATE SCALE OF 1"=50'.
3. SCO = SOIL CLEANUP OBJECTIVE FOR RESTRICTED RESIDENTIAL LAND USE AS PRESENTED IN 6 NYCRR PART 375–6.8(b), WHICH BECAME EFFECTIVE ON DECEMBER 14, 2006.
4. FIGURE SHOWS SOIL ANALYTICAL RESULTS ONLY FOR SAMPLING LOCATIONS WHERE ONE OR MORE CONSTITUENTS WERE IDENTIFIED AT CONCENTRATIONS EXCEEDING THE SCOs.
5. SHADING INDICATES THAT THE VALUE EXCEEDS THE SCO.
6. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (PPM), WHICH IS EQUIVALENT TO MILLIGRAMS PER KILOGRAM (MG/KG).
7. DUP = FIELD DUPLICATE.
8. D = COMPOUND QUANTITATED USING A SECONDARY DILATION.
9. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED VALUE IS AN ESTIMATED CONCENTRATION.
10. < = CONSTITUENT WAS NOT DETECTED AT A CONCENTRATION EXCEEDING THE PRESENTED LABORATORY DETECTION LIMIT.

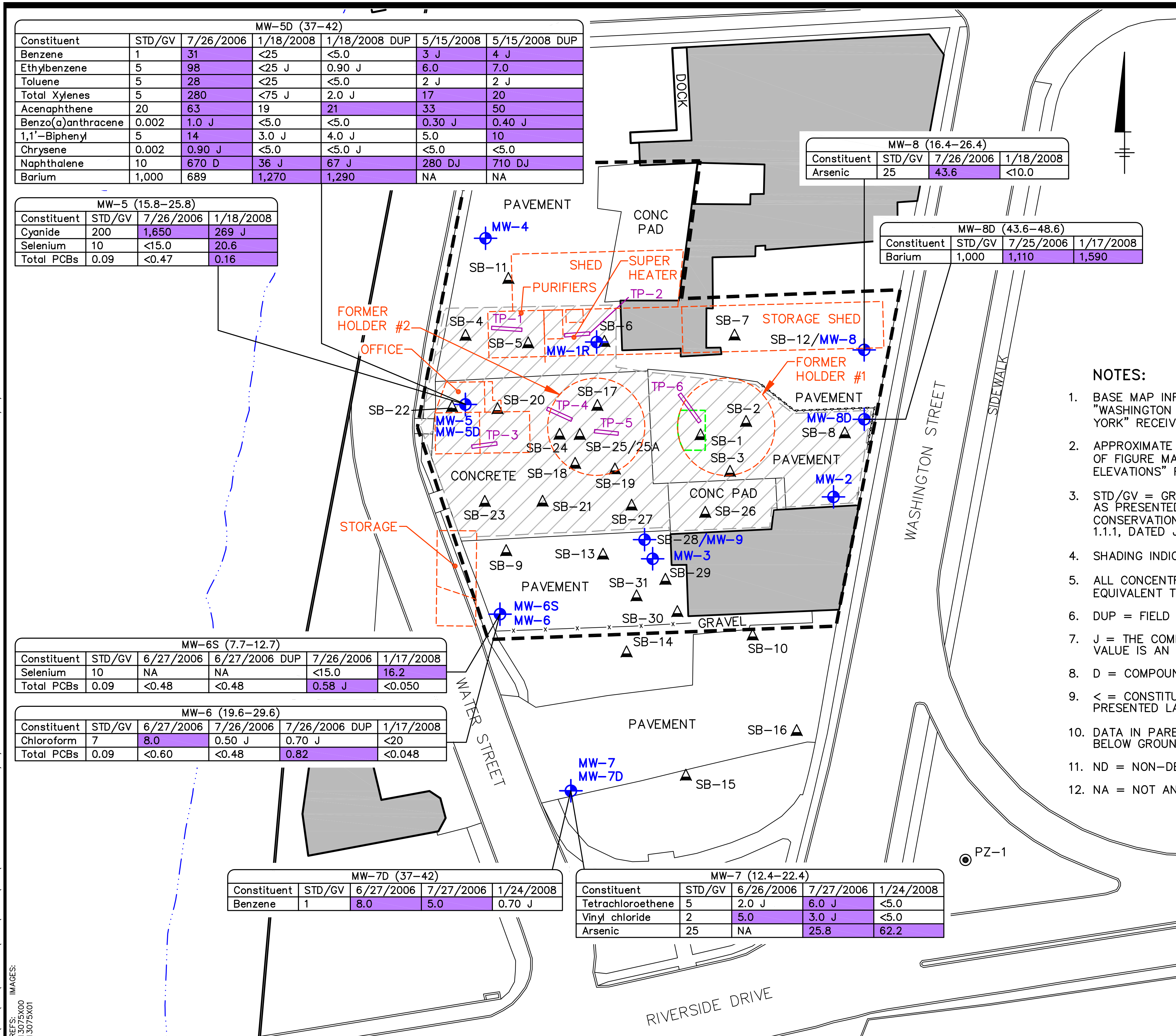
0 60' 120'
GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK
REMEDIAL INVESTIGATION

SOIL ANALYTICAL RESULTS EXCEEDING CLEANUP OBJECTIVES

ARCADIS

FIGURE
9



MW-5D (37-42)

Constituent	STD/GV	7/26/2006	1/18/2008	1/18/2008 DUP	5/15/2008	5/15/2008 DUP
Benzene	1	31	<25	<5.0	3 J	4 J
Ethylbenzene	5	98	<25 J	0.90 J	6.0	7.0
Toluene	5	28	<25	<5.0	2 J	2 J
Total Xylenes	5	280	<75 J	2.0 J	17	20
Acenaphthene	20	63	19	21	33	50
Benzo(a)anthracene	0.002	1.0 J	<5.0	<5.0	0.30 J	0.40 J
1,1'-Biphenyl	5	14	3.0 J	4.0 J	5.0	10
Chrysene	0.002	0.90 J	<5.0	<5.0 J	<5.0	<5.0
Naphthalene	10	670 D	36 J	67 J	280 DJ	710 DJ
Barium	1,000	689	1,270	1,290	NA	NA

MW-5 (15.8-25.8)

Constituent	STD/GV	7/26/2006	1/18/2008
Cyanide	200	1,650	269 J
Selenium	10	<15.0	20.6
Total PCBs	0.09	<0.47	0.16

MW-8 (16.4-26.4)

Constituent	STD/GV	7/26/2006	1/18/2008
Arsenic	25	43.6	<10.0

MW-8D (43.6-48.6)

Constituent	STD/GV	7/25/2006	1/17/2008
Barium	1,000	1,110	1,590

MW-6S (7.7-12.7)

Constituent	STD/GV	6/27/2006	6/27/2006 DUP	7/26/2006	1/17/2008
Selenium	10	NA	NA	<15.0	16.2
Total PCBs	0.09	<0.48	<0.48	0.58 J	<0.050

MW-6 (19.6-29.6)

Constituent	STD/GV	6/27/2006	7/26/2006	7/26/2006 DUP	1/17/2008
Chloroform	7	8.0	0.50 J	0.70 J	<20
Total PCBs	0.09	<0.60	<0.48	0.82	<0.048

MW-7D (37-42)

Constituent	STD/GV	6/27/2006	7/27/2006	1/24/2008
Benzene	1	8.0	5.0	0.70 J

MW-7 (12.4-22.4)

Constituent	STD/GV	6/26/2006	7/27/2006	1/24/2008
Tetrachloroethene	5	2.0 J	6.0 J	<5.0
Vinyl chloride	2	5.0	3.0 J	<5.0
Arsenic	25	NA	25.8	62.2

LEGEND:

- RI SOIL BORING LOCATION
- TP-5 TEST PIT LOCATION
- PIEZOMETER LOCATION
- MONITORING WELL LOCATION
- FORMER WASHINGTON STREET MGP PROPERTY
- PORTION OF PROPOSED BROWNFIELD REDEVELOPMENT AREA
- EXISTING BUILDING
- FORMER TANK PIT
- FORMER MGP-RELATED STRUCTURE
- FENCE
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NOTES:

1. BASE MAP INFORMATION WAS PROVIDED BY NYSEG AND NYSEG DRAWINGS TITLED "WASHINGTON STREET MGP SITE, CITY OF BINGHAMTON, BROOME COUNTY NEW YORK" RECEIVED 8/3/06 & 8/17/06 FILE INDEX: BING_WASH2.DGN.
2. APPROXIMATE LOCATION OF FORMER TANK PIT DIGITIZED FROM A PAPER COPY OF FIGURE MADE BY "DUNN GEOSCIENTIFIC CORP." TITLED "GROUNDWATER ELEVATIONS" FIGURE 3, DATED 5/5/91, AT AN APPROXIMATE SCALE OF 1"=50'.
3. STD/GV = GROUNDWATER STANDARDS/GUIDANCE VALUES FOR CLASS GA WATER AS PRESENTED IN THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) TECHNICAL AND OPERATIONAL GUIDANCE SERIES (TOGS) 1.1.1, DATED JUNE 1998, UPDATED APRIL 2000 AND JUNE 2004.
4. SHADING INDICATES THAT THE VALUE EXCEEDS THE STD/GV.
5. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER BILLION (PPB), WHICH ARE EQUIVALENT TO MICROGRAMS PER LITER (ug/L).
6. DUP = FIELD DUPLICATE.
7. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED VALUE IS AN ESTIMATED CONCENTRATION.
8. D = COMPOUND QUANTITATED USING A SECONDARY DILUTION.
9. < = CONSTITUENT WAS NOT DETECTED AT A CONCENTRATION EXCEEDING THE PRESENTED LABORATORY DETECTION LIMIT.
10. DATA IN PARENTHESIS () INDICATE THE DEPTH OF THE SCREENED INTERVAL BELOW GROUND SURFACE.
11. ND = NON-DETECT.
12. NA = NOT ANALYZED.

0 60' 120'

GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

REMEDIAL INVESTIGATION

GROUNDWATER ANALYTICAL RESULTS EXCEEDING STANDARDS/GUIDANCE VALUES

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
10

SD-2 (8/4/2006)		
Constituent	Screening Value/Basis	0–2"
Benzo(a)anthracene	0.0338 (HH)	0.30 J
Benzo(a)pyrene	0.0338 (HH)	0.32 J
Benzo(b)fluoranthene	0.0338 (HH)	0.62 J
Benzo(k)fluoranthene	0.0338 (HH)	0.64 J
Chrysene	0.0338 (HH)	0.35 J
Indeno(1,2,3–cd)pyrene	0.0338 (HH)	0.27 J

SD-3 (8/4/2006)		
Constituent	Screening Value/Basis	0–2"
Benzo(a)anthracene	0.0196 (HH), 0.181 (C)	0.94 J
Benzo(a)pyrene	0.0196 (HH)	0.93 J
Benzo(b)fluoranthene	0.0196 (HH)	1.1 J
Benzo(k)fluoranthene	0.0196 (HH)	0.39 J
Chrysene	0.0196 (HH)	0.71 J
Indeno(1,2,3–cd)pyrene	0.0196 (HH)	0.53 J
Total PCBs	0.00001 (HH), 0.0211 (W)	0.084

SD-4 (8/4/2006)		
Constituent	Screening Value/Basis	0–2"
Benzo(a)anthracene	0.0165 (HH), 0.152 (C)	0.28 J
Benzo(a)pyrene	0.0165 (HH)	0.27 J
Benzo(b)fluoranthene	0.0165 (HH)	0.39 J
Chrysene	0.0165 (HH)	0.27 J
Indeno(1,2,3–cd)pyrene	0.0165 (HH)	0.20 J

SD-5 (8/4/2006)		
Constituent	Screening Value/Basis	0–2"
Benzo(a)anthracene	0.0992 (HH), 0.916 (C)	1.8 J
Benzo(a)pyrene	0.0992 (HH)	1.3 J
Benzo(b)fluoranthene	0.0992 (HH)	1.7 J
Benzo(k)fluoranthene	0.0992 (HH)	0.54 J
Chrysene	0.0992 (HH)	1.5 J
Indeno(1,2,3–cd)pyrene	0.0992 (HH)	0.70 J
Total PCBs	0.00006 (HH), 0.107 (W)	0.12
Lead	31 (LEL)	59
Mercury	0.15 (LEL)	0.270 J
Silver	1 (LEL), 2.2 (SEL)	5.2

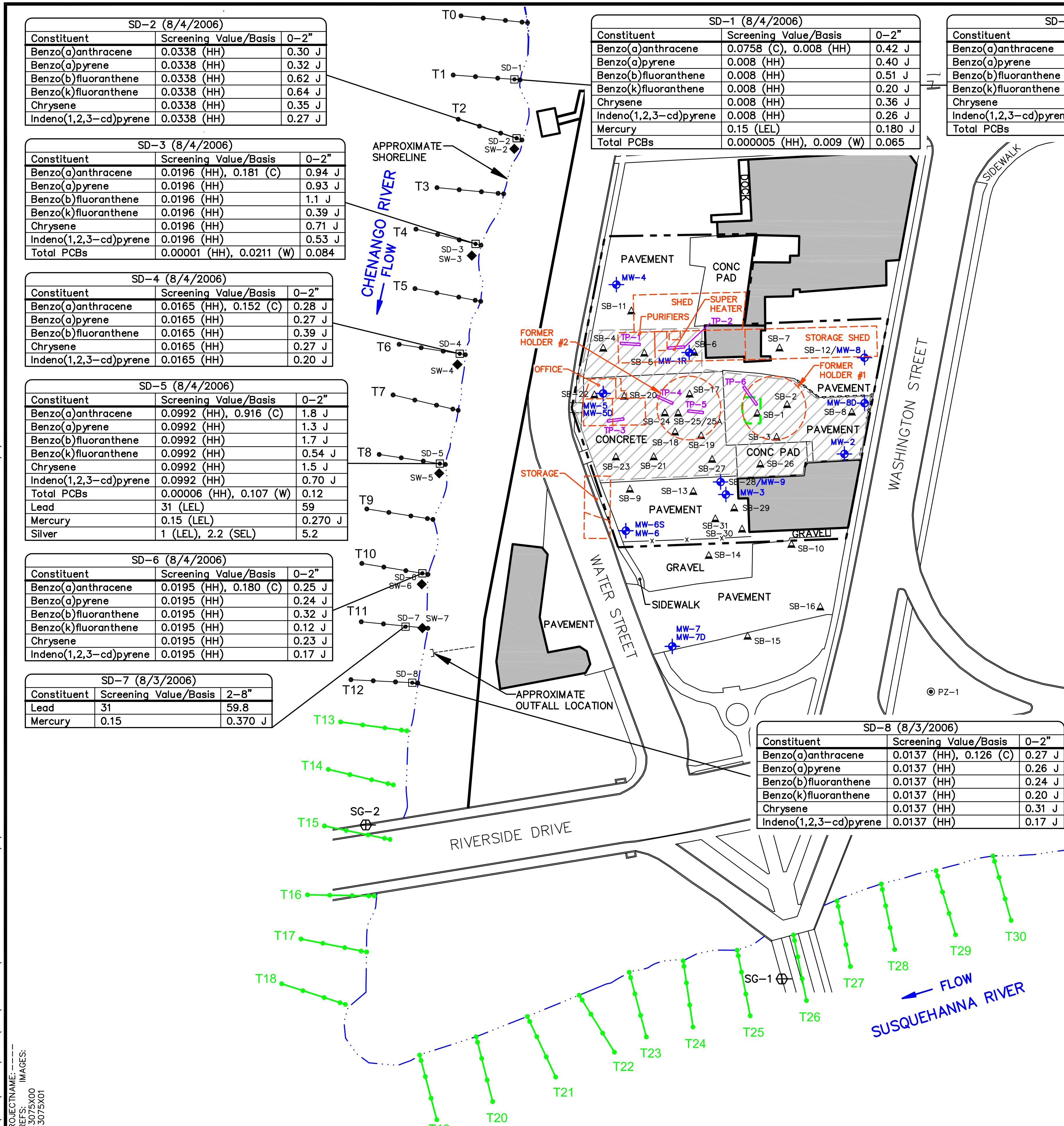
SD-6 (8/4/2006)		
Constituent	Screening Value/Basis	0–2"
Benzo(a)anthracene	0.0195 (HH), 0.180 (C)	0.25 J
Benzo(a)pyrene	0.0195 (HH)	0.24 J
Benzo(b)fluoranthene	0.0195 (HH)	0.32 J
Benzo(k)fluoranthene	0.0195 (HH)	0.12 J
Chrysene	0.0195 (HH)	0.23 J
Indeno(1,2,3–cd)pyrene	0.0195 (HH)	0.17 J

SD-7 (8/3/2006)		
Constituent	Screening Value/Basis	2–8"
Lead	31	59.8
Mercury	0.15	0.370 J

SD-1 (8/4/2006)		
Constituent	Screening Value/Basis	0–2"
Benzo(a)anthracene	0.0758 (C), 0.008 (HH)	0.42 J
Benzo(a)pyrene	0.008 (HH)	0.40 J
Benzo(b)fluoranthene	0.008 (HH)	0.51 J
Benzo(k)fluoranthene	0.008 (HH)	0.20 J
Chrysene	0.008 (HH)	0.36 J
Indeno(1,2,3–cd)pyrene	0.008 (HH)	0.26 J
Mercury	0.15 (LEL)	0.180 J
Total PCBs	0.000005 (HH), 0.009 (W)	0.065

SD-1 DUP (8/4/2006)		
Constituent	Screening Value/Basis	0–2"
Benzo(a)anthracene	0.175 (C), 0.019 (HH)	0.54 J
Benzo(a)pyrene	0.019 (HH)	0.46 J
Benzo(b)fluoranthene	0.019 (HH)	0.63 J
Benzo(k)fluoranthene	0.019 (HH)	0.24 J
Chrysene	0.019 (HH)	0.62 J
Indeno(1,2,3–cd)pyrene	0.019 (HH)	0.29 J
Total PCBs	0.00001 (HH), 0.020 (W)	0.07

SD-8 (8/3/2006)		
Constituent	Screening Value/Basis	0–2"
Benzo(a)anthracene	0.0137 (HH), 0.126 (C)	0.27 J
Benzo(a)pyrene	0.0137 (HH)	0.26 J
Benzo(b)fluoranthene	0.0137 (HH)	0.24 J
Benzo(k)fluoranthene	0.0137 (HH)	0.20 J
Chrysene	0.0137 (HH)	0.31 J
Indeno(1,2,3–cd)pyrene	0.0137 (HH)	0.17 J



LEGEND:

- RI SOIL BORING LOCATION
- TP-5 TEST PIT LOCATION
- PIEZOMETER LOCATION
- APPROXIMATE LOCATION OF EXISTING MONITORING WELL
- T30 PHASE II SEDIMENT TRANSECT
- PHASE II SEDIMENT PROBING LOCATION
- T0 PHASE I SEDIMENT TRANSECT
- PHASE I SEDIMENT PROBING LOCATION
- SEDIMENT PROBING AND SAMPLING LOCATION
- SURFACE WATER SAMPLING LOCATION
- RIVER STAGE MEASURING LOCATION
- FORMER WASHINGTON STREET MGP PROPERTY
- PORTION OF PROPOSED BROWNFIELD REDEVELOPMENT AREA
- EXISTING BUILDING
- FORMER TANK PIT
- FORMER MGP–RELATED STRUCTURE
- FENCE
- GUARDRAIL

NOTES:

1. BASE MAP INFORMATION WAS PROVIDED BY NYSEG AND NYSEG DRAWINGS TITLED "WASHINGTON STREET MGP SITE, CITY OF BINGHAMTON, BROOME COUNTY NEW YORK" RECEIVED 8/3/06 & 8/17/06 FILE INDEX: BING_WASH2.DGN.
2. APPROXIMATE LOCATION OF FORMER TANK PIT DIGITIZED FROM A PAPER COPY OF FIGURE MADE BY "DUNN GEOSCIENTIFIC CORP." TITLED "GROUNDWATER ELEVATIONS" FIGURE 3, DATED 5/5/91, AT AN APPROXIMATE SCALE OF 1"=50'.
3. SCREENING VALUE/BASIS = MOST CONSERVATIVE SEDIMENT SCREENING VALUES [BENTHIC AQUATIC LIFE CHRONIC TOXICITY (C), BENTHIC AQUATIC LIFE ACUTE TOXICITY (A), WILDLIFE BIOACCUMULATION (W), HUMAN HEALTH BIOACCUMULATION (HH), LOWEST EFFECT LEVEL (LEL), AND SEVERE EFFECT LEVEL (SEL)] AS PRESENTED IN NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) "TECHNICAL GUIDANCE FOR SCREENING CONTAMINATED SEDIMENTS", DATED JANUARY 1999.
4. ALL VALUES SHOWN EXCEED THE RESPECTIVE SCREENING VALUE.
5. ALL CONCENTRATIONS ARE PRESENTED IN PARTS PER MILLION (PPM), WHICH IS EQUIVALENT TO MILLIGRAMS PER KILOGRAM (MG/KG).
6. DUP = FIELD DUPLICATE.
7. J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED VALUE IS AN ESTIMATED CONCENTRATION.

0 100' 200'

APPROXIMATE GRAPHIC SCALE

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

REMEDIAL INVESTIGATION

SEDIMENT ANALYTICAL RESULTS EXCEEDING SCREENING VALUES

ARCADIS BBL
infrastructure, environment, facilities

FIGURE
11

SYR-85-RCA WLJ LAF LAYER: ON=*, OFF=*REF*
G:\CAD\ACTIVE\-DWG\ACT\13075002\13075C03.DWG LAYOUT: 11 SAVED: 10/8/2007 1:19 PM PAGESETUP: BL-PDF PENTABLE: PLTFULL.CTB PRINTED: 10/8/2007 1:19 PM BY: LFORAKER
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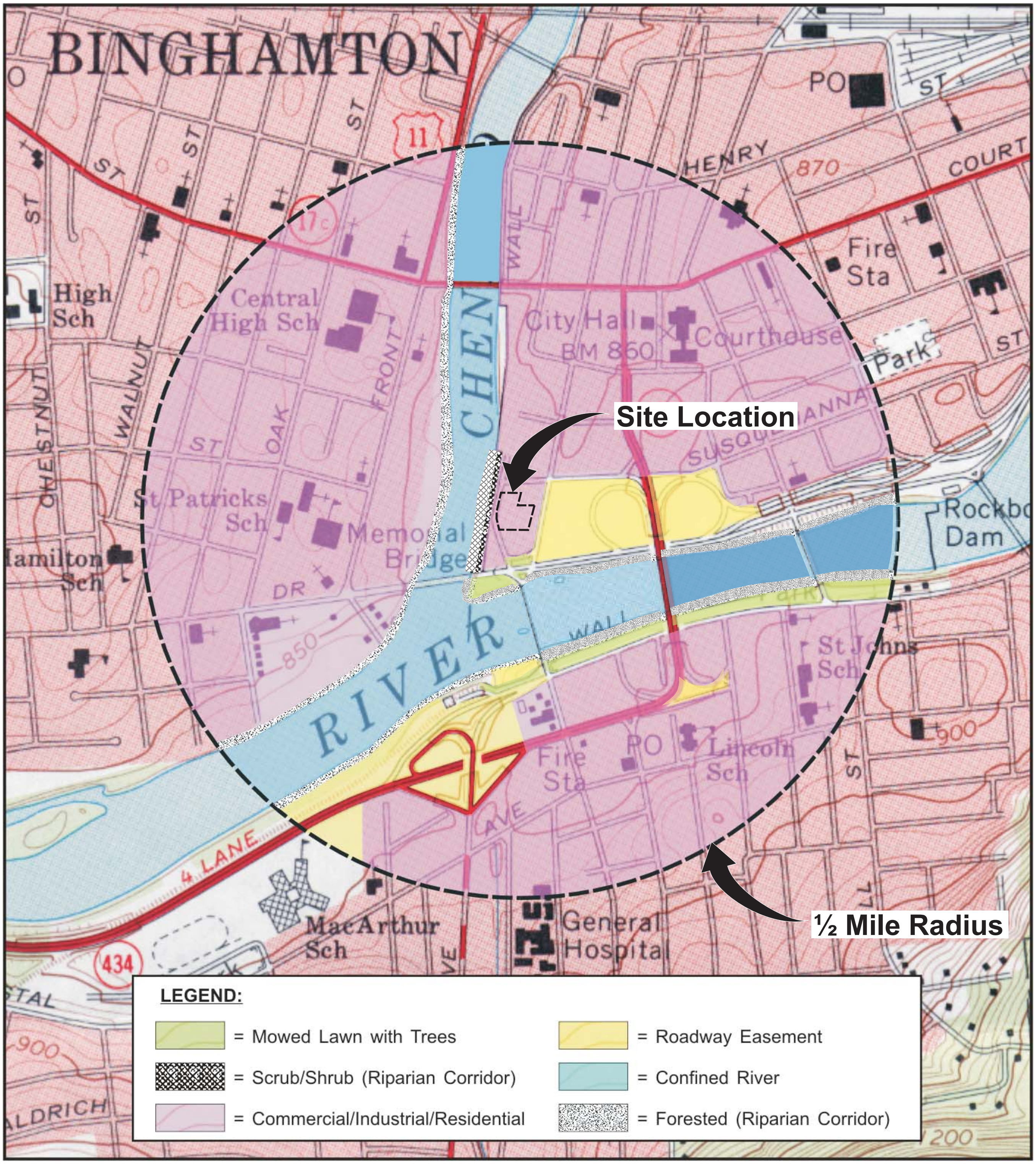
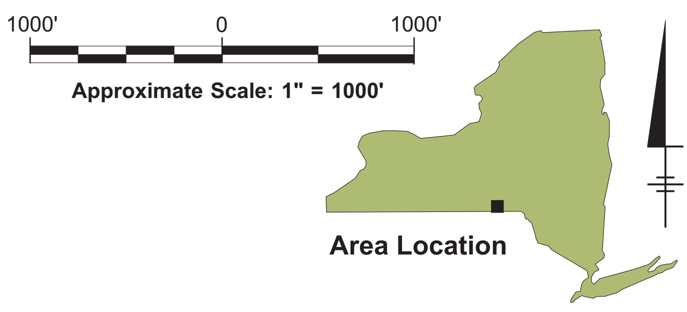


REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., BINGHAMTON, NY, 1968, PHOTOINSPECTED 1976.



NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

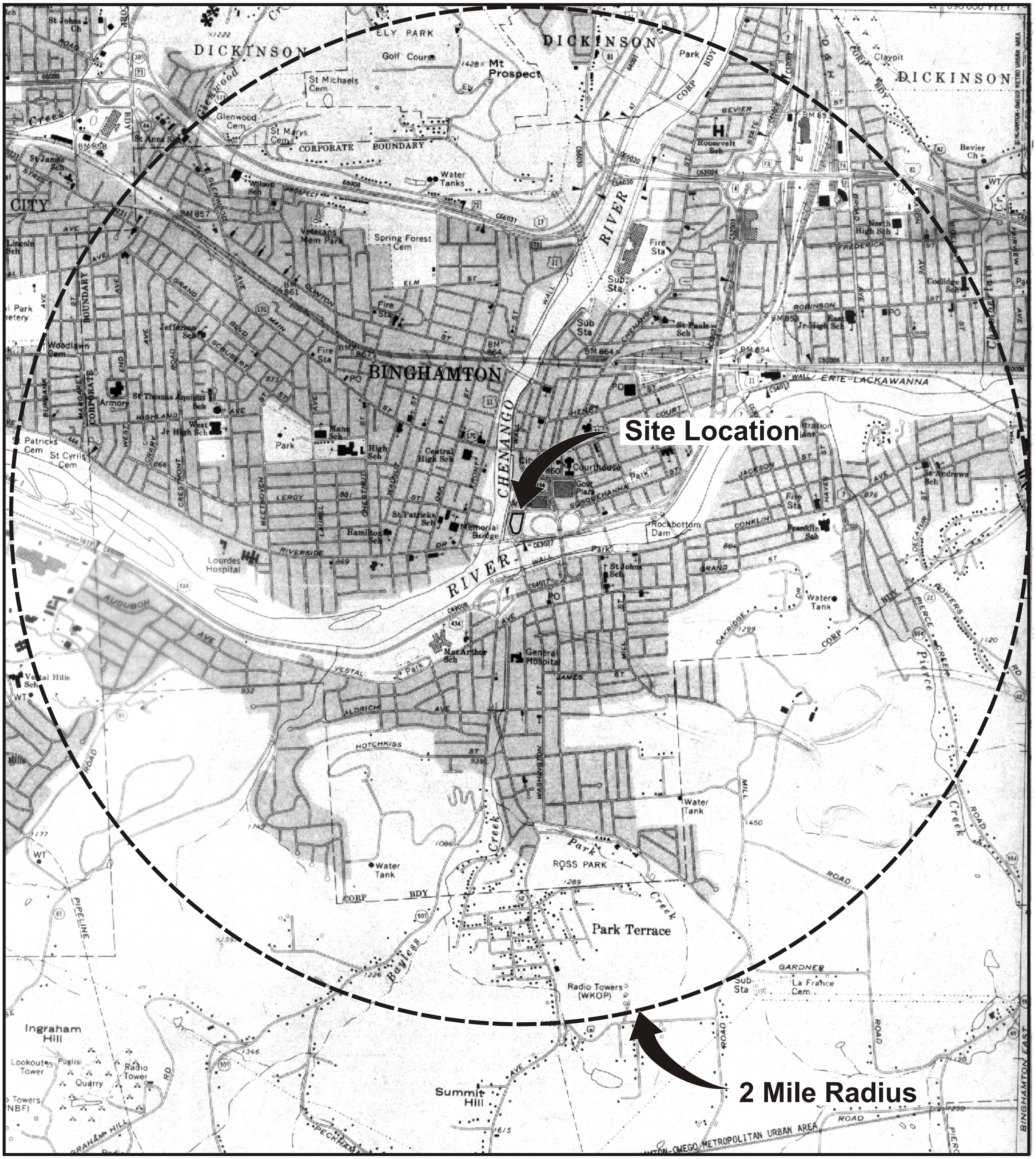
FISH AND WILDLIFE RESOURCE IMPACT ANALYSIS

COVERTYPE MAP

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
12

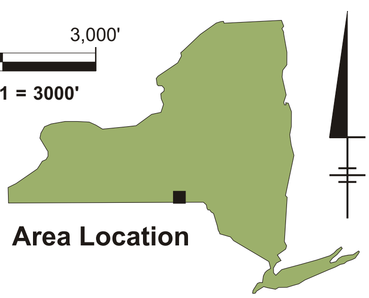
10/08/06 SYR-D85-DJH-KLS
13075002/13075n05.cdr



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., BINGHAMTON WEST, NY, 1968.

3,000' 0 3,000'

Approximate Graphic Scale: 1 = 3000'



Area Location

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

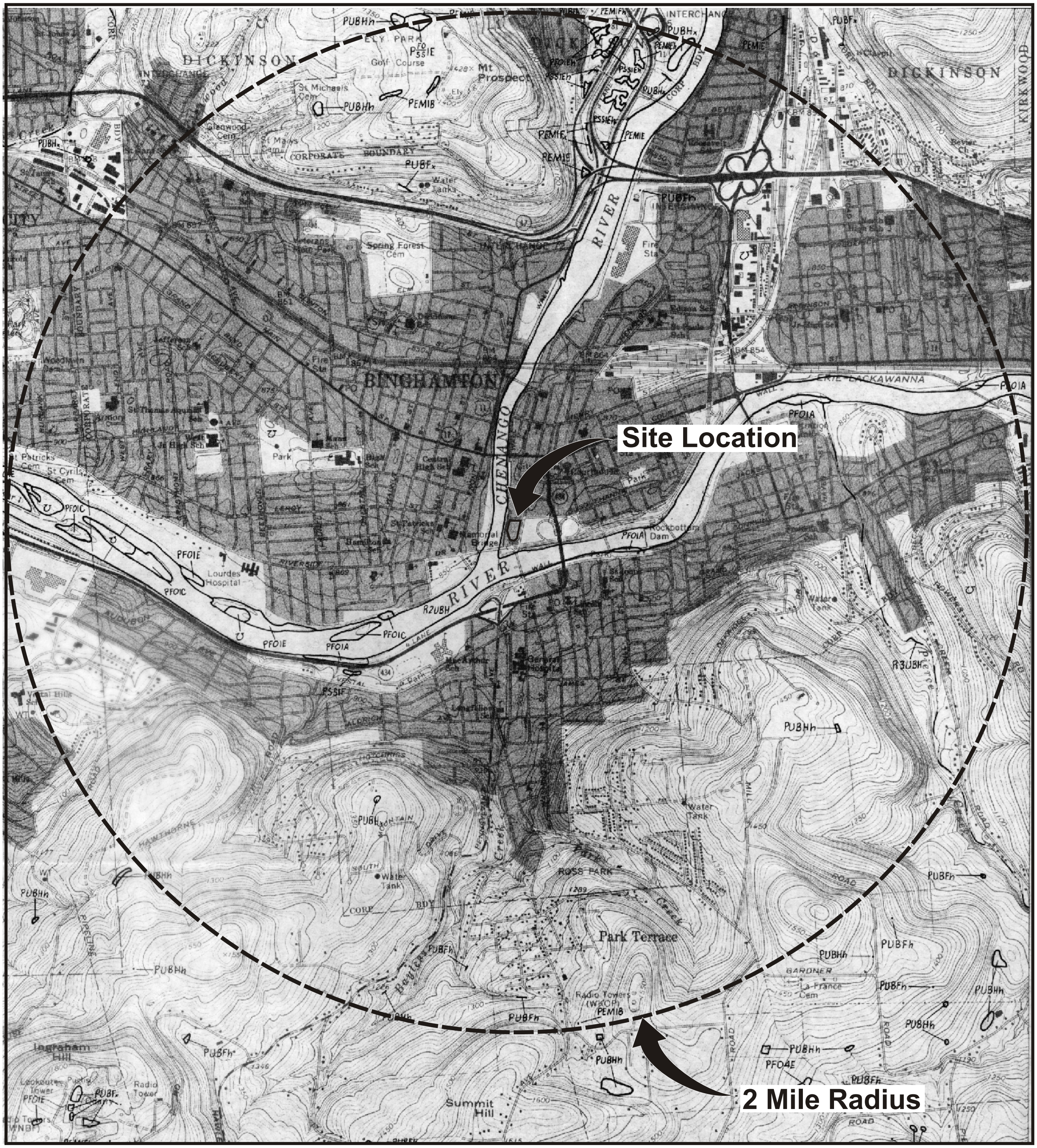
REMEDIAL INVESTIGATION

NEW YORK STATE FRESHWATER WETLANDS MAP

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE
13

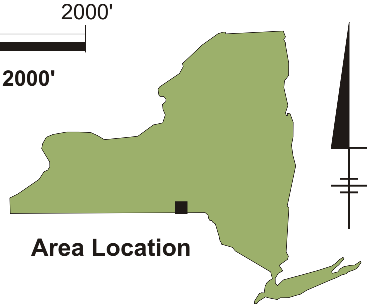
Map 65%
10/08/07 SYR-D85-DJH, KLS
13075002/13075n02.cdr



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., BINGHAMTON WEST, NY, 1968, PHOTOINSPECTED 1976.

2000' 0 2000'

Approximate Scale: 1" = 2000'



Area Location

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

REMEDIAL INVESTIGATION

U.S. FISH AND WILDLIFE SERVICE NATIONAL WETLANDS INVENTORY MAP

ARCADIS BBL
Infrastructure, environment, facilities

FIGURE 14

10/08/07 SYR-D85-DJH, KLS
13075002/13075n03.cdr

Tables

TABLE 1
SUMMARY OF RI SAMPLING LOCATIONS AND LABORATORY ANALYSES

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID	Reported Sample Depth (feet)	Date Sampled	BTEX	PAH	Total Cyanide	VOCs/ SVOCs	RCRA Metals	PCBs	TCLP Benzene	Reactivity (CN, S)	Total Sulfur	Flashpoint	Total Organic Carbon
Soil Samples													
SB-1	8.0 - 10.4	5/8/2006			X	X	X						
	20.0 - 20.5	5/8/2006	X	X	X								
	24.0 - 26.0	5/8/2006	X	X	X								
DUP-1 [SB-1]	24.0 - 26.0	5/8/2006	X	X	X								
SB-2	20.0 - 22.0	5/10/2006			X	X	X						
	28.0 - 30.0	5/10/2006			X	X	X						
SB-3	20.0 - 20.5	5/11/2006			X	X	X						
	22.4 - 23.2	5/11/2006			X	X	X						
	30.0 - 32.0	5/11/2006			X	X	X						
SB-4	0.5 - 2.0	5/23/2006			X	X	X						
	16.0 - 18.0	5/23/2006			X	X	X						
DUP-2 [SB-4]	16.0 - 18.0	5/23/2006			X	X	X						
SB-5	0.0 - 2.0	5/18/2006			X	X	X						
	18.0 -20.0	5/18/2006			X	X	X						
SB-6	0.5 - 2.0	5/17/2006			X	X	X						
	20.0 - 22.0	5/17/2006			X	X	X						
SB-7	24.0 - 25.0	6/14/2006			X	X	X						
	36.0 - 37.2	6/14/2006			X	X	X						
SB-8	22.0 - 24.0	5/12/2006			X	X	X						
	28.0 - 30.0	5/12/2006			X	X	X						
SB-9	8.0 - 10.0	5/25/2006			X	X	X						
	10.0 - 12.0	5/25/2006			X	X	X						
SB-10	19.0 - 22.0	6/1/2006			X	X	X						
	26.0 - 26.9	6/1/2006			X	X	X						
SB-11	2.0 - 4.0	6/6/2006			X	X	X						
	20.0 - 22.0	6/6/2006			X	X	X						
SB-12	22.0 - 24.0	6/13/2006			X	X	X						
	24.7 - 25.7	6/13/2006			X	X	X						
SB-13	12.0 - 14.0	5/30/2006			X	X	X	X	X	X	X	X	
	16.0 - 18.0	5/30/2006			X	X	X						
SB-14	16.0 - 18.0	5/31/2006			X	X	X						
	26.0 - 28.0	5/31/2006			X	X	X						
SB-15	10.0 - 11.1	5/31/2006			X								
	20.0 - 21.4	6/1/2006			X	X	X						
	30.0 - 32.0	6/1/2006			X	X	X						
DUP-3 [SB-15]	20.0 - 21.4	6/1/2006			X	X	X						
SB-16	0.5 - 2.0	6/2/2006			X	X	X						
	22.0 - 24.0	6/2/2006			X	X	X						
SB-17	14.0 - 16.0	5/15/2006	X	X	X								
SB-18	14.0 - 16.0	5/15/2006			X	X	X						
SB-19	14.0 - 16.0	5/16/2006	X	X	X			X	X	X	X	X	
SB-20	0.8 - 2.0	5/24/2006			X	X	X						
	16.0 - 18.0	5/24/2006			X	X	X						
SB-21	0.5 - 2.0	5/16/2006			X	X	X						
	20.0 - 22.0	5/17/2006			X	X	X						
SB-22	2.0 - 4.0	5/22/2006			X	X	X						
	14.0 - 16.0	5/22/2006			X	X	X						
SB-23	--	5/16/2006											
SB-24	18.0 - 20.0	5/23/2006						X	X	X	X	X	
	30.0 - 32.0	5/23/2006	X	X	X								
SB-25A	14.6 - 16.0	5/26/2006			X	X	X						
	26.0 - 28.0	5/26/2006			X	X	X						
SB-26	--	6/5/2006											
SB-27	--	6/5/2006											
Groundwater Samples													
MW-1R	--	7/25/2006			X	X	X	X					
	--	1/18/2008			X	X	X	X					
MW-2	--	1/18/2008				X							
MW-4	--	7/25/2006			X	X	X	X					
	--	1/18/2008			X	X	X	X					
MW-5	--	7/26/2006			X	X	X	X					
	--	1/18/2008			X	X	X	X					
MW-5D	--	7/26/2006			X	X	X	X					
	--	1/18/2008			X	X	X	X					
	--	5/15/2008				X							
DUP-1 [MW-5D]	--	1/18/2008			X	X	X	X					
DUP-1 [MW-5D]	--	5/15/2008				X							

TABLE 1
SUMMARY OF RI SAMPLING LOCATIONS AND LABORATORY ANALYSES

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID	Reported Sample Depth (feet)	Date Sampled	BTEX	PAH	Total Cyanide	VOCs/ SVOCs	RCRA Metals	PCBs	TCLP Benzene	Reactivity (CN, S)	Total Sulfur	Flashpoint	Total Organic Carbon
Groundwater Samples (continued)													
MW-6S	--	6/27/2006			X	X(V)		X					
	--	7/26/2006			X	X	X	X					
	--	1/17/2008			X	X	X	X					
MW-6	--	6/27/2006			X	X(V)		X					
	--	7/26/2006			X	X	X	X					
	--	1/17/2008			X	X	X	X					
DUP 72606 [MW-6]	--	7/26/2006			X	X	X	X					
MW-7	--	6/26/2006			X	X(V)		X					
	--	7/27/2006			X	X	X	X					
	--	1/24/2008			X	X	X	X					
MW-7D	--	6/27/2006			X	X(V)		X					
	--	7/27/2006			X	X	X	X					
	--	1/24/2008			X	X	X	X					
MW-8	--	7/26/2006			X	X	X	X					
	--	1/18/2008			X	X	X	X					
MW-8D	--	7/25/2006			X	X	X	X					
	--	1/17/2008			X	X	X	X					
Sediment Samples													
SD-1	0 - 0.17	8/4/2006			X	X		X					X
DUP-2 [SD-1]	0 - 0.17	8/4/2006			X	X		X					X
SD-2	0 - 0.17	8/4/2006	X	X									X
SD-3	0 - 0.17	8/4/2006			X	X		X					X
SD-4	0 - 0.17	8/4/2006	X	X									X
SD-5	0 - 0.17	8/4/2006			X	X		X					X
SD-6	0 - 0.17	8/4/2006	X	X									X
SD-7	0.17 - 1.0*	8/3/2006			X	X		X					
SD-8	0 - 0.17	8/3/2006	X	X									X
Surface Water Samples													
SW-2	--	8/3/2006			X	X	X	X					
DUP-1 [SW-2]	--	8/3/2006			X	X	X	X					
SW-3	--	8/3/2006	X	X									
SW-4	--	8/3/2006			X	X	X	X					
SW-5	--	8/3/2006	X	X									
SW-6	--	8/3/2006			X	X	X	X					
SW-7	--	8/3/2006	X	X									

Notes:

1. Samples were collected by ARCADIS BBL on the dates indicated.
2. DUP = Blind duplicate [corresponding sampling location is identified in brackets].
3. Laboratory analysis was performed by TestAmerica Laboratories, Inc. (TestAmerica), formerly Severn Trent Laboratories, Inc. (STL), of Buffalo, New York.
4. Samples were submitted for laboratory analysis of one or more of the following constituents:
   - Volatile Organic Compounds (VOCs)/Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) using United States Environmental Protection Agency (USEPA) SW-846 Method 8260B;
   - Semi Volatile Organic Compounds (SVOCs)/Polynuclear Aromatic Hydrocarbons (PAHs) using USEPA SW-846 Method 8270C
   - Inorganics using USEPA SW-846 Methods 6010, 7470/7471 and 9012A
   - Polychlorinated Biphenyls (PCBs) using USEPA SW-846 Method 8082
   - Toxic Characteristic Leaching Procedure (TCLP) Benzene using USEPA SW-846 Methods 1311 for extraction and 8260B for analysis;
   - Hydrogen sulfide (H2S) and hydrogen cyanide (HCN) released from waste using SW-846 Sect. 7.3
   - Percent sulfur using American Society for Testing and Materials (ASTM) Method D129
   - Ignitability using USEPA SW-846 Method 1010; anc
   - Total Organic Carbon (TOC) by the Lloyd Kahn Method
5. -- = A depth is not applicable for the sample.
6. * = A depth of 2- to 8-inches was recorded on the laboratory chain of custody, while 2- to 12- inches was listed in the field notebook and workpla
7. X = indicates analysis was conducted
8. X(V) = Indicates analysis of VOCs only.

TABLE 2
SOIL PHOTOIONIZATION DETECTOR SCREENING RESULTS (ppm)

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample Depth (feet)	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	SB-9	SB-10	SB-11
0.5 - 2.0	0	0.0	0.0	0.0	0.0	0.3	--	0.0	0.0	--	0.0
2.0 - 4.0	0.0	0.0	0.0	0.0	1.1	1.3	0.0	0.0	0.0	0.0	0.0
4.0 - 6.0	0.0	0.0 - 0.8	0.0	0.0	1.6	1.5	0.0	0.0	0.0	0.0	0.0
6.0 - 8.0	3.9	0.4	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	--
8.0 - 10.0	12.9	0.0	3.9	0.0	0.1	2	0.0	0.0	0.6	19.8	0.0
10.0 - 12.0	3.6	0.0	4.1	0.0	0.5	3.1	0.0	0.0	0.0	168 - 214	0.0
12.0 - 14.0	12.5	0.0	0.4	0.0	NA	2.3	0.0	0.0	0.0	535 - 600	0.0
14.0 - 16.0	--	0.0	0.0	0.0	1.3	3	0.0	0.0	0.0	50 - 358	0.0
16.0 - 18.0	0.7	0.0	0.0	0.0	NA	1.5	0.0	0.0	0.0	130 - 970	0.0
18.0 - 20.0	0.7	0.0	1.9	0.0	0.9	1.8	0.0	0.0	0.0	7.6 - 1160	0.0
20.0 - 22.0	0.0 - 1.0	40.9 - 789	34	0.0	1.5 - 1.9	2.8	0.0	0.0	0.0	54.3 - 845	0.0
22.0 - 24.0	--	179	990	0.0	1.2	2.2	7.9 - 68.2	33.1	0.0	63.9	0.0
24.0 - 26.0	0.0	61 - 220	232	0.0	0.9	4.2	206	3.5	0.0	19.3	0.0
26.0 - 28.0	0.0	0.4 - 3.9	309	0.0	1.4	3.4	147	1.5	0.0	0.3 - 0.7	0.0
28.0 - 30.0	0.0	0.8 - 1.1	95.3	0.0	1.1	3.2	17.5 - 38.3	0.0	0.0	5.4	0.0
30.0 - 32.0	0.0	0.0	9.0	0.0	2	3.3	15.9	0.0	0.0	0.2 - 0.5	0.0
32.0 - 34.0	0.0	0.0	9.0	0.0	2.3	2.5	11 - 12.7	0.0	--	--	0.0
34.0 - 36.0	0.0	0.0	2.1	0.0	2.3	2	13.3	0.0	--	--	0.0
36.0 - 38.0	0.0	0.0	0.0	0.0	1.9	2.1	0.0	0.0	--	--	0.0
38.0 - 40.0	0.0	0.0	0.0	0.0	1.9	1.9	0.0	0.0	--	--	0.0
40.0 - 42.0	0.0	0.0	0.0	--	2.6	4.4	--	0.0	--	--	0.0
42.0 - 44.0	0.0	--	0.0	--	--	NA	--	0.0	--	--	--
44.0 - 46.0	0.0	--	0.0	--	--	40	--	0.0	--	--	--
46.0 - 48.0	0.0	--	0.0	--	--	--	--	--	--	--	--
48.0 - 50.0	0.0	--	--	--	--	--	--	--	--	--	--
50.0 - 52.0	0.0	--	--	--	--	--	--	--	--	--	--

TABLE 2
SOIL PHOTOIONIZATION DETECTOR SCREENING RESULTS (ppm)

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample Depth (feet)	SB-12	SB-13	SB-14	SB-15	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21
0.5 - 2.0	0.0	0.0	0.0	0.0	0.0	1.3 - 8.1*	--	NA	0.0	0.7
2.0 - 4.0	0.0	0.0	0.0	0.0	0.0	0.5 - 14*	0.0	NA	0.0	1.4
4.0 - 6.0	0.0	0.0	0.0	0.0	0.0	7.2	2	NA	0.0	1
6.0 - 8.0	0.0	0.0	2.4	0.0	0.0	NA	2.9	NA	0.0	0.9
8.0 - 10.0	--	0.0	110 - 191	0.0	0.0	3.8	2.7	NA	0.0	1
10.0 - 12.0	0.0	19 - 55	167 - 174	0.0	0.0	2.9	1.5	NA	0.0	1.2
12.0 - 14.0	0.0	152 - 179	114 - 167	0.0	0.0	3.8	NA	NA	0.0	1.3
14.0 - 16.0	0.0	15 - 27	171 - 173	0.0	--	25.4 - 55.7 (962)	10.5 - 129 (259)	148 - 180	0.0	1.7
16.0 - 18.0	0.0	7.3 - 8.5	159 - 261	0.0	0.0	--	19.9 (114)	--	0.0	2.6
18.0 - 20.0	--	4.8 - 13	161 - 180	804	0.0	--	--	--	0.0	2.7
20.0 - 22.0	43.1	26.2	45.3	62.3 - 867	0.0	--	--	--	0.0	1.4
22.0 - 24.0	1384	6.6	10.1	12.4	0.0	--	--	--	0.0	1.5
24.0 - 26.0	31.6 - 129	19.2	14.7	--	0.0	--	--	--	0.0	1.7
26.0 - 28.0	250	9.1	4.7	13.3	0.0	--	--	--	0.0	1.6
28.0 - 30.0	1.8 - 8.4	--	7.1	1.9 - 15.3	0.0	--	--	--	0.0	1.8
30.0 - 32.0	--	--	6.2	0.1 - 0.8	0.0	--	--	--	0.0	2.1
32.0 - 34.0	--	--	1.8	0.0	--	--	--	--	0.0	1.7
34.0 - 36.0	--	--	6.1	0.0	--	--	--	--	0.0	2.7
36.0 - 38.0	--	--	1.3	0.0	--	--	--	--	--	2.4
38.0 - 40.0	--	--	--	--	--	--	--	--	--	1.5
40.0 - 42.0	--	--	--	--	--	--	--	--	--	--
42.0 - 44.0	--	--	--	--	--	--	--	--	--	--
44.0 - 46.0	--	--	--	--	--	--	--	--	--	--
46.0 - 48.0	--	--	--	--	--	--	--	--	--	--
48.0 - 50.0	--	--	--	--	--	--	--	--	--	--
50.0 - 52.0	--	--	--	--	--	--	--	--	--	--

TABLE 2
SOIL PHOTOIONIZATION DETECTOR SCREENING RESULTS (ppm)

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample Depth (feet)	SB-22	SB-23	SB-24	SB-25/ SB-25A	SB-26	SB-27	SB-28	SB-29	SB-30	SB-31
0.5 - 2.0	0.0	13.3*	--	--	0.0	0.0	0.0	0.0	0.0	0.0
2.0 - 4.0	0.0	60.2*	--	--	0.0	0.0				
4.0 - 6.0	0.0	27.3*	--	--	0.0	0.0	0.4	0.0	0.0	0.0
6.0 - 8.0	0.0	11.3*	--	--	0.0	0.0				
8.0 - 10.0	0.0	4.9*	--	--	0.0	0.0	79.4	0.0	0.0	2.1
10.0 - 12.0	0.0	3.8*	--	--	0.0 - 0.4	1.7				
12.0 - 14.0	0.0	2.8*	--	0.6	2.9 - 6.7	12.8	0.9	0.6	0.0	0.6
14.0 - 16.0	0.0	12*	178 - 256	58.2 - 1004	1.2 - 2.3	8.8				
16.0 - 18.0	0.0	9.3*	176	215 - 297	0.0 - 0.8	3.1 - 345	0.0	0.1	0.0	0.1
18.0 - 20.0	0.0	21.3*	16.1 - 171	5.9 - 28.2	0.0	73.1				
20.0 - 22.0	0.0	--	7.7 - 24	1.3 - 2.7	0.0	387 - 540				
22.0 - 24.0	0.0	--	21	1.5	0.0	301				
24.0 - 26.0	0.0	--	0.1 - 0.8	0.8	0.0	--				
26.0 - 28.0	0.0	--	20.4	1.6	0.0	16.9				
28.0 - 30.0	0.0	--	2	2	0.0	7.6				
30.0 - 32.0	0.0	--	0.0	0.0	0.0	--				
32.0 - 34.0	0.0	--	0.0	--	--	--				
34.0 - 36.0	0.0	--	0.0	--	--	--				
36.0 - 38.0	0.0	--	--	--	--	--				
38.0 - 40.0	--	--	--	--	--	--				
40.0 - 42.0	--	--	--	--	--	--				
42.0 - 44.0	--	--	--	--	--	--				
44.0 - 46.0	--	--	--	--	--	--				
46.0 - 48.0	--	--	--	--	--	--				
48.0 - 50.0	--	--	--	--	--	--				
50.0 - 52.0	--	--	--	--	--	--				

TABLE 2
SOIL PHOTOIONIZATION DETECTOR SCREENING RESULTS (ppm)

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample Depth (feet)	MW-4	MW-5D	MW-6	MW-7	PZ-1
0.5 - 2.0	--	--	--	--	0.0
2.0 - 4.0	--	--	0.0	--	0.0
4.0 - 6.0	--	--	0.0	--	0.0
6.0 - 8.0	--	--	0.0	--	0.0
8.0 - 10.0	--	--	0.0	1.7	0.0
10.0 - 12.0	--	--	0.0	--	0.0
12.0 - 14.0	--	--	0.0	2.8	0.0
14.0 - 16.0	--	--	0.0	0.0	0.0
16.0 - 18.0	--	--	0.0	0.0	0.0
18.0 - 20.0	--	--	0.0	0.0	0.0
20.0 - 22.0	0.0	--	0.0	0.0	0.0
22.0 - 24.0	0.0	--	0.0	0.0	0.0
24.0 - 26.0	--	--	0.0	0.0	--
26.0 - 28.0	--	--	0.0	0.0	--
28.0 - 30.0	--	--	0.0	0.0	--
30.0 - 32.0	--	--	--	0.0	--
32.0 - 34.0	--	--	--	0.0	--
34.0 - 36.0	--	--	--	0.0	--
36.0 - 38.0	--	--	--	0.0	--
38.0 - 40.0	--	0.0	--	0.0	--
40.0 - 42.0	--	0.0	--	0.0	--
42.0 - 44.0	--	0.0	--	0.0	--
44.0 - 46.0	--	--	--	0.0	--
46.0 - 48.0	--	--	--	0.0	--
48.0 - 50.0	--	--	--	--	--
50.0 - 52.0	--	--	--	--	--

TABLE 2
SOIL PHOTOIONIZATION DETECTOR SCREENING RESULTS (ppm)

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Notes:

1. Samples were collected by ARCADIS BBL.
2. All samples were collected during May & June 2006, except for samples from SB-28 through SB-31, which were collected in June 2007.
3. Field screening measurements were obtained using a photoionization detector (PID).
4. Concentrations reported in parts per million (ppm), which is equivalent to milligrams per kilogram (mg/kg).
5. * = Humidity may have affected PID reading.
6. -- = A PID measurement was not obtained for this interval.
7. NA = No media was recovered at the interval or a PID reading was not possible due to moisture/precipitation.
8. Parenthesis ( ) indicates a headspace screening result for a jarred soil sample.
9. Shading indicates that a sample obtained from within the interval was submitted for laboratory analysis.

TABLE 3
SOIL SAMPLING LOCATIONS EXHIBITING DISCOLORATION, SHEENS, OR ODORS

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID/ Depth Interval	Sample Analyzed	Description
SB-1		
8.0-10.0	✔ (8.0-10.4)	Faint possible degraded petroleum-like odor
10.0-12.0		Faint petroleum-like odor
16.0-18.0		Sheen on water (16-16.5'), faint petroleum-like odor, wood (possible holder floor) very faint MGP-like odor in wood
18.0-20.0		Trace discoloration (black) on wood
SB-2		
20.0-24.0	✔ (20.0-22.0)	Moderate petroleum-like odor
24.0-26.0		Faint petroleum-like odor
SB-3		
8.0-10.0		Trace sheen
10.0-12.0		Trace sheen
20.0-22.0	✔ (20.0-20.5)	Faint MGP-like odor (above steel [possible floor holder])
22.0-24.0	✔ (22.4-23.2)	Faint to moderate petroleum-like odor
24.0-28.0		Moderate petroleum-like odor
28.0-30.0		Faint to moderate petroleum-like odor
SB-4		
--		--
SB-5		
--		--
SB-6		
--		--
SB-7		
22.0-24.0		Faint petroleum-like odor
24.0-26.0	✔ (24.0-25.0)	Moderate petroleum-like odor
26.0-28.0		Faint to moderate petroleum-like odor
30.0-32.0		Faint petroleum-like odor
SB-8		
22.0-24.0	✔ (22.0-24.0)	Moderate petroleum-like odor
24.0-26.0		Faint petroleum-like odor
SB-9		
--		--
SB-10		
8.0-10.0		Faint to moderate petroleum-like odor
10.0-14.0		Strong petroleum-like odor, trace yellow NAPL
14.0-18.0		Strong petroleum-like odor
18.0-20.0	✔ (19.0-22.0)	Sheen (19.4-19.5')
20.0-22.0		Moderate to strong petroleum-like odor, trace sheen
22.0-24.0		Faint to moderate petroleum-like odor
SB-11		
--		--

TABLE 3
SOIL SAMPLING LOCATIONS EXHIBITING DISCOLORATION, SHEENS, OR ODORS

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID/ Depth Interval	Sample Analyzed	Description
SB-12		
20.0-22.0		Very faint petroleum-like odor
22.0-24.0	✔ (22.0-24.0)	Faint to moderate petroleum-like odor
26.0-28.0		Faint to moderate petroleum-like odor
28.0-30.0		Very faint petroleum-like odor
SB-13		
10.0-12.0		Trace sheen and NAPL (dark gray)
12.0-14.0	✔ (12.0-14.0)	Little to some NAPL along vertical fractures (possible root scars)
14.0-16.0		Trace NAPL (decreasing NAPL with depth)
16.0-18.0	✔ (16.0-18.0)	Trace staining, faint odor, trace faint sheen
18.0-20.0		Very faint odor
20.0-22.0		Faint odor
SB-14		
6.0-8.0		Faint petroleum-like odor
8.0-16.0		Moderate petroleum-like odor
16.0-18.0	✔ (16.0-18.0)	Stronger petroleum-like odor
18.0-20.0		Little NAPL, possible petroleum, strong petroleum-like odor
20.0-22.0		Heavy sheen, moderate petroleum-like odor
SB-15		
18.0-22.0	✔ (20.0-21.4)	Strong petroleum-like odor
SB-16		
--		--
SB-17		
14.0-16.0	✔ (14.0-16.0)	Trace sheen
SB-18		
--		--
SB-19		
12.0-14.0		Faint odor in tip of spoon
SB-20		
--		--
SB-21		
32.0-34.0		Very faint petroleum-like odor
SB-22		
--		--
SB-23		
6.0-10.0		Trace blue discoloration, faint petroleum-like odor
12.0-14.0		Trace orange-brown discoloration

TABLE 3
SOIL SAMPLING LOCATIONS EXHIBITING DISCOLORATION, SHEENS, OR ODORS

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID/ Depth Interval	Sample Analyzed	Description
SB-24		
14.0-18.0		(Possible holder floor), little sheen
18.0-20.0	✔ (18.0-20.0)	Trace sheen
SB-25/25A		
14.0-16.0	✔ (14.6-16.0)	Moderate sheen (14.5-15 feet)
18.0-20.0		Trace sheen (18-19 feet)
SB-26		
10.0-14.0		Faint petroleum-like odor, possible MGP-like odor
14.0-16.0		Very faint petroleum-like odor
SB-27		
10.0-12.0		Faint MGP-like odor
12.0-14.0		Trace dark gray staining, faint MGP-like odor
14.0-16.0		Faint MGP-like odor
16.0-18.0		Faint MGP-like odor, little gray staining, moderate MGP-like odor, trace sheen
18.0-20.0		Moderate sheen
20.0-22.0		Moderate sheen, moderate MGP-like odor
22.0-24.0		Moderate MGP-like odor
SB-28		
4.5-5.0		Stong tar-like odor
5.5-8.0		Sheen, tar-like odor
8.0-8.5		Some tar-like material pooled in liner, tar-like odor
8.5-12.0		Little tar-like material, tar-like odor
12.0-16.0		Little tar-like material throughout, tar-like odor
16.0-16.5		Trace tar-like material
SB-29		
9.5-13.0		Trace sheen, tar-like odor
16.0-16.5		Trace tar-like material, tar-like odor
16.5-20		Tar-like odor
SB-30		
12.0-16.0		Petroleum-like odor, sheen
16.0-20.0		Trace sheen, sligt petroleum-like odor
SB-31		
8.0-12.0		Trace tar-like material throughout
12.0-16.0		Trace tar-like material throughout, tar-like odor, trace sheen
16.0-18.0		Tar-like odor, trace sheen
18.0-19.0		Tar-like material, tar-like odor, trace sheen
19.0-20.0		Tar-like odor, trace sheen
TP-1		
--		--
TP-2		
--		--
TP-3		
--		--

TABLE 3
SOIL SAMPLING LOCATIONS EXHIBITING DISCOLORATION, SHEENS, OR ODORS

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID/ Depth Interval	Sample Analyzed	Description
TP-4		
--		--
TP-5		
--		--
TP-6		
6.0		Petroleum-like odor
MW-1R		
--		--
MW-4		
--		--
MW-5		
--		--
MW-5D		
--		--
MW-6S		
--		--
MW-6		
--		--
MW-7		
--		--
MW-7D		
--		--
MW-8		
--		--
MW-8D		
--		--
PZ-1		
--		--

Notes:
1. Samples were collected by ARCADIS BBL.
2. All samples were collected during May & June 2006, except for samples from SB-28 through SB-31, which were collected in June 2007.
3. Borings drilled and test-pits excavated by Parratt-Wolff, Inc. (Parratt-Wolff) of East Syracuse, New York, except for borings at locations SB-28 through SB-31, which were drilled by ARCADIS BBL.
4. -- = No observed impacts.

TABLE 4
MONITORING WELL, PIEZOMETER, AND STAFF GAUGE CONSTRUCTION DETAILS

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Location ID	Material Screened/ Location	Date Completed	Northing Coordinate	Easting Coordinate	Measuring Point Elev.	Ground Surface Elev.	Well Diam.	Casing/Screen Type	Screen Slot Size	Screen Length	Depth to Screened Interval (ft. bgs)		Well Depth	Estimated Hydraulic Conductivity (K)	Estimated Hydraulic Conductivity (K)	Comments
			ft.	ft.	ft. NAVD 88	ft. NAVD 88	in.		in.	ft.	Top	Bottom	ft. bgs	cm/sec	ft/day	
MW-1R	sand, gravel, and silt	6/16/06	763803.57	1001520.51	845.67	845.95	2	PVC	0.01	10.0	15.4	25.4	25.4	>5.8E-02*	>1.7E+02*	specific capacity test
MW-2	gravel and sand	3/26/91	763712.64	1001659.62	844.88	845.11	2	PVC	0.2	10.0	7.0	17.0	17	--	--	--
MW-3	gravel and sand	3/28/91	763676.31	1001553.39	842.01	842.34	2	PVC	0.2	20.0	4.0	24.0	24	--	--	--
MW-4	sand, gravel and cobbles	6/6/06	763864.48	1001455.24	843.62	844.19	2	PVC	0.01	10.0	14.5	24.5	24.5	7.4E-03	2.1E+01	specific capacity test
MW-5	silt, gravel, cobbles, and sand	6/8/06	763766.52	1001444.88	842.32	842.72	2	PVC	0.01	10.0	15.8	25.8	25.8	1.7E-02	4.8E+01	specific capacity test
MW-5D	fine sandy silt, medium sand, and gravel	6/7/06	763767.32	1001441.93	842.58	842.81	2	PVC	0.01	5.0	37.0	42.0	42.0	8.3E-04	2.4E+00	specific capacity test
MW-6S	sand, silt, clay, and organics	6/12/06	763645.29	1001463.26	841.61	842.10	2	PVC	0.01	5.0	7.7	12.7	12.7	3.2E-03	9.2E+00	specific capacity test
MW-6	silt, clay, sand, gravel, and cobbles	6/12/06	763642.31	1001464.17	841.65	842.13	2	PVC	0.01	10.0	19.6	29.6	29.6	1.7E-04	4.9E-01	specific capacity test
MW-7	clay, silt, sand, and gravel, and cobbles	6/12/06	763540.35	1001507.77	841.62	842.07	2	PVC	0.01	10.0	12.4	22.4	22.4	1.2E-02	3.4E+01	specific capacity test
MW-7D	clay, silt, gravel, and cobbles	6/9/06	763539.81	1001502.97	841.51	841.91	2	PVC	0.01	5.0	37.0	42.0	42.0	3.0E-03	8.5E+00	specific capacity test
MW-8	silt, sand, clay, cobbles, and gravel	6/13/06	763798.97	1001677.65	845.60	845.87	2	PVC	0.01	10.0	16.4	26.4	26.4	5.5E-02	1.5E+02	specific capacity test
MW-8D	silt, sand, and gravel	6/7/06	763758.21	1001677.70	844.84	845.45	2	PVC	0.01	5.0	43.6	48.6	48.6	1.4E-03	3.8E+00	specific capacity test
MW-9	brick, silt, fine sand, trace clay	6/5/07	763687.53	1001548.65	842.04	842.46	2	PVC	0.02	10.0	5.0	15.0	17.0	--	--	--
PZ-1	silt, sand, clay, and gravel	6/16/06	763499.48	1001737.14	841.87	842.12	2	PVC	0.01	10.0	14.0	24.0	24.0	--	--	--
SG-1	Susquehanna River	6/16/06	763241.93	1001603.58	847.86	847.86	--	--	--	--	--	--	--	--	--	--
SG-2	Chenango River	6/16/06	763379.94	1001230.72	855.76	855.76	--	--	--	--	--	--	--	--	--	--

Notes:
1. MW = Monitoring Well; R = Replacement Well; S = Shallow Well; D = Deep Well; PZ = Piezometer; SG = Staff Gauge (reference point on bridge).
2. SG-1 is located on the pedestrian bridge south of the site. SG-2 is located on the Washigton Street bridge
3. All wells are flush-mounted and are constructed of 2-inch diameter polyvinyl chloride (PVC)
4. TIC = Top of Inner Casing; NA = Not Applicable.
5. Elevations are in feet referenced to the North American Vertical Datum (NAVD) 1988. Datum: NAD 83, NYS Plane Central
6. Depths are measured in feet referenced TIC.
7. -- = Data is not available.
8. * = 0.01 feet of drawdown was assumed due to no recorded drawdown during specific capacity testing

TABLE 5
WATER-LEVEL DATA

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Location	Reference Point Elevation	Depth to Groundwater/Surface Water (feet bgs)				Groundwater/Surface Water Elevation (feet, NAVD 1988)			
		6/27/2006	7/24/2006	1/17/2008	5/15/2008	6/27/2006	7/24/2006	1/17/2008	5/15/2008
MW-1R	845.67	18.69	17.82	17.83	20.69	826.98	827.85	827.84	824.98
MW-2	844.88	NA	16.09	15.74	NA	NA	828.79	829.14	NA
MW-3	842.01	NA	13.60	5.48	6.45	NA	828.41	836.53	835.56
MW-4	843.62	15.69	16.51	16.93	19.60	827.93	827.11	826.69	824.02
MW-5	842.32	14.16	15.09	15.09	17.91	828.16	827.23	827.23	824.41
MW-5D	842.58	14.71	14.82	15.34	18.1	827.87	827.76	827.24	824.48
MW-6S	841.61	7.00	7.19	7.00	7.56	834.61	834.42	834.61	834.05
MW-6	841.65	13.25	13.72	14.25	15.67	828.40	827.93	827.40	825.98
MW-7	841.62	13.22	13.92	NA	16.29	828.40	827.70	NA	825.33
MW-7D	841.51	13.14	13.76	NA	NA	828.37	827.75	NA	NA
MW-8	845.60	18.39	17.81	18.21	20.76	827.21	827.79	827.39	824.84
MW-8D	844.84	17.16	17.96	18.15	20.47	827.68	826.88	826.69	824.37
MW-9	842.04	NA	NA	5.83	6.48	NA	NA	836.21	835.56
PZ-1	841.87	13.86	14.23	NA	NA	828.01	827.64	NA	NA
SG-1	847.86	17.14	21.35	NA	NA	830.72	826.51	NA	NA
SG-2	855.76	25.02	29.40	NA	NA	830.74	826.36	NA	NA

Notes:

1. MW = Monitoring Well; R = Replacement Well; S = Shallow Well; D = Deep Well; PZ = Piezometer; SG = Staff Gauge (reference point on bridge).
2. -- = Not Installed; bgs = Below Ground Surface.
3. TIC = Top of Inner Well Casing.
4. Reference point elevations for monitoring wells and piezometer are the top of the inner casing.
5. Elevations are in feet referenced to the North American Vertical Datum (NAVD) 1988.
6. The water level measurements for each mobilization were taken within one hour, with the following exceptions:
   - Measurements from MW-6S and MW-6D on 6/27/2006, which were taken four hours earlier.
   - MW-2 was essentially dry on 6/27/2006 and 5/15/2008.
   - The water level in MW-3 on 6/27/2006 could not be positively determined due to the presence of non-aqueous phase liquid (NAPL) in the well.
   - Measurements from MW-5 on 1/17/2008, which was taken four hours later.
7. NA = not available.

TABLE 6
GROUNDWATER QUALITY PARAMETERS

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sampling Location	Date	Temp. (°C)	pH (S.U.)	Cond. (mS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
MW-1R	7/25/2006	17.1	7.22	0.61	8.60	16.3	220
	1/18/2008	13.4	7.04	0.65	2.99	2.0	160
MW-2	1/18/2008	9.6	6.80	2.09	5.42	3.1	191
MW-4	7/25/2006	16.1	7.24	1.44	8.70	36.9	174
	1/18/2008	13.6	7.05	1.76	4[1]	1.6	145
MW-5	7/26/2006	16.8	6.04	1.89	8.55	25.0	287
	1/18/2008	10.2	7.41	1.77	8.19	0.9	162
MW-5D	7/26/2006	15.8	8.37	1.23	0.00	36.6	-161
	1/18/2008	10.6	7.42	1.85	1.91	0.4	-107
	5/15/2008	13.9	11.10	0.82	4.99	16.7	-25
MW-6S	6/27/2006	15.8	6.72	2.02	3.15	2.9	-3
	7/26/2006	17.5	8.00	1.38	1.44	53.1	-53
	1/17/2008	11.7	6.45	3.37	0.00	2.4	-107
MW-6	6/27/2006	15.6	6.84	1.23	1.73	20.3	-73
	7/26/2006*	14.5	8.14	1.18	0.00	0.0	-125
	1/17/2008	12.9	6.72	1.41	0.00	19.8	-136
MW-7	6/26/2006	18.0	6.70	1.99	2.25	30.1	-123
	7/27/2006	14.4	7.92	1.83	0.00	3.1	-119
	1/24/2008	10.6	6.63	2.33	2.54	1.6	-109
MW-7D	6/27/2006	15.1	6.73	3.42	1.76	38.9	-111
	7/27/2006	15.2	7.62	3.56	0.00	0.9	-85
	1/24/2008	16.5	6.61	2.90	2.45	15.0	-111
MW-8	7/26/2006*	16.2	7.92	2.07	0.14	10.2	-114
	1/18/2008	9.3	7.14	1.80	2.25	0.0	-23
MW-8D	7/25/2006*	16.2	8.64	2.02	0.26	40.0	-123
	1/17/2008	12.1	7.16	2.23	0.91	0.0	-79

Notes:
1. Field parameters recorded immediately before groundwater samples were collected.
2. Temperature reported in degrees Celsius (°C).
3. pH reported in Standard Units (S.U.).
4. Specific Conductivity reported in milliSiemens per centimeter (mS/cm).
5. Dissolved Oxygen (DO) reported in milligrams per liter (mg/L).
6. Turbidity reported in Nephelometric Turbidity Units (NTU).
7. Oxidation/Reduction Potential (ORP) reported in millivolts (mV).
8. * = Meter behaving erratically; data may not be reliable.
9. [1] = DO sensor was not working and Chemets kit was used to measured DO.

TABLE 7
SEDIMENT PROBING PARAMETERS AND VISUAL CHARACTERIZATION SUMMARY

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Transect	Distance from Bank (feet)	Date	Time	Water Depth (feet)	Probe Depth (feet)	Description
Remedial Investigation - August 2006						
T0	0	8/2/2006	15:30	0.0	1.0	Sandy silt over rock.
	5			3.0	0.0	Rock.
	20			5.8	0.0	Rock.
	40			7.3	0.0	Rock.
	60			6.9	0.0	Rock.
T1	0	8/2/2006	11:15	0.0	1.5	Very fine silt and silt over rock.
	5			2.8	0.0	Gravel and rock.
	20			7.8	0.0	Rock.
	40			7.5	0.1	Fine to coarse gravel and rock.
	60			7.0	0.0	Gravel and rock.
T2	0	8/2/2006	11:40	0.0	0.5	Gravel, silt, and fine sand over rock.
	5			3.1	0.8	Silt, fine sand, and gravel over rock.
	20			5.4	0.0	Gravel and rock.
	40			7.0	0.0	Gravel and rock.
	60			8.4	0.0	Gravel and rock.
T3	0	8/2/2006	11:55	0.0	0.5	Fine sand and silt over rock.
	5			1.5	0.5	Silt and sand over rock.
	20			3.6	0.0	Gravel and rock.
	40			6.9	0.05	Coarse over rock.
	60			8.6	0.0	Gravel and rock.
T4	0	8/2/2006	12:05	0.0	0.0	Gravel and rock.
	5			1.4	0.0	Gravel and rock.
	20			6.7	0.1	Fine to coarse sand over gravel and rock.
	40			8.4	0.0	Rock and gravel.
	60			8.2	0.2	Fine sand over rock.
T5	0	8/2/2006	12:17	0.0	0.5	Silt and sand over rock.
	5			1.0	0.0	Gravel.
	20			3.4	0.0	Gravel and rock.
	40			10.4	0.0	Gravel and rock.
	60			9.5	0.0	Gravel and rock.
T6	0	8/2/2006	12:34	0.0	1.0	Silt and fine sand over rock.
	5			1.8	0.0	Gravel and rock.
	20			4.5	0.0	Gravel and rock.
	40			9.9	0.0	Gravel and rock.
	60			9.4	0.0	Gravel and rock.
T7	0	8/2/2006	12:58	0.0	0.6	Silt and sand over gravel.
	5			0.8	0.1	Silt and fine sand over gravel and rock.
	20			5.8	0.2	Gravel and rock.
	40			9.5	0.0	Gravel and rock.
	60			9.5	0.0	Gravel and rock.
T8	0	8/2/2006	13:09	0.0	0.7	Silt and sand over rock.
	5			1.4	0.0	Rock.
	20			7.3	0.0	Gravel and rock.
	40			9.8	0.0	Gravel and rock.
	60			10.4	0.0	Gravel and rock.

TABLE 7
SEDIMENT PROBING PARAMETERS AND VISUAL CHARACTERIZATION SUMMARY

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Transect	Distance from Bank (feet)	Date	Time	Water Depth (feet)	Probe Depth (feet)	Description
T9	0	8/2/2006	13:20	0.0	0.9	Silt and sand over rock.
	5			1.7	0.8	Sand, silt, and gravel over rock.
	20			7.5	0.0	Gravel and rock.
	40			9.7	0.05	Coarse sand and gravel over rock.
	60			9.3	0.0	Gravel and rock.
T10	0	8/2/2006	13:33	0.0	1.1	Silt/sand over gravel over rock.
	5			1.6	0.0	Rock and gravel.
	20			4.9	0.1	Gravel over gravel and rock.
	40			7.5	0.0	Gravel and rock.
	60			8.2	0.0	Gravel and rock.
T11	0	8/2/2006	13:45	0.0	0.4	Silt/sand over rock.
	5			2.0	0.5	Silt/sand over rock.
	20			3.7	1.5	Gravel over silt/sand over rock.
	40			6.7	1.0	Gravel over silt/sand over rock.
	60			8.0	0.0	Gravel/rock.
T12	0	8/2/2006	14:00	0.0	0.9	Fine to coarse sand, little silt and gravel over rock.
	5			0.8	0.6	Silt/sand over rock.
	20			3.3	0.4	Fine to coarse sand, little silt/gravel over rock.
	40			5.0	0.0	Gravel/rock.
	60			6.4	0.0	Gravel/rock.
Supplemental Remedial Investigation - May 2007						
T13	0	5/22/2007	15:00	0.0	0.8	Silt/fine sand over rock.
	5			0.2	1.0	Silt/fine sand with rock gravel.
	20			1.5	0.2	Medium to coarse sand over rock/cobble.
	40			2.4	0.0	Rock and cobble.
	60			3.8	0.1	Trace sand over rock and cobble
T14	0	5/22/2007	15:20	0.0	0.0	Rock and cobble.
	5			1.6	0.0	Rock and cobble.
	20			2.0	0.0	Rock and cobble.
	40			2.0	0.0	Trace medium to coarse sand in small pockets.
	60			2.8	0.2	Trace medium to coarse sand in small pockets.
T15	0	5/23/2007	9:00	0.2	0.0	Large boulders with small pockets of medium to coarse sand.
	5			2.1	0.2	Large boulders with small pockets of medium to coarse sand.
	20			3.2	0.1	Rock and cobble with small pockets of sand.
	40			3.6	0.0	Rock and gravel.
	60			1.2	0.8	Large boulders with small pockets of medium to coarse sand.
T16	0	5/23/2007	9:15	0.8	0.3	Large boulders with small pockets of medium to coarse sand.
	5			1.1	0.2	Rock and gravel with trace sand.
	20			3.3	0.0	Rock and cobble.
	40			3.3	0.0	Rock and cobble.
	60			1.0	0.0	Rock and cobble.
T17	0	5/23/2007	9:30	0.0	0.5	Silt and fine sand over rock and cobble.
	5			2.0	0.4	Medium to coarse sand with rock and cobble.
	20			3.7	0.2	Rock and cobble with pockets of medium to coarse sand.
	40			5.0	0.0	Rock and cobble with pockets of medium to coarse sand.
	60			4.8	1.0	Medium to coarse sand in pockets between boulders.

TABLE 7
SEDIMENT PROBING PARAMETERS AND VISUAL CHARACTERIZATION SUMMARY

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Transect	Distance from Bank (feet)	Date	Time	Water Depth (feet)	Probe Depth (feet)	Description
T18	0	5/23/2007	9:40	1.0	0.0	Large boulders.
	5			4.2	0.5	Small pockets between large boulders.
	20			5.2	0.4	Small pockets of medium to coarse sand between rock.
	40			5.2	0.0	Rock and cobble.
	60			3.8	0.2	Small pockets of medium to coarse sand between rock.
T19	0	5/23/2007	8:30	0.0	3.0	Tight fine sand with gravel over rock.
	5			1.2	3.8	Tight fine sand with gravel over rock.
T20	0	5/22/2007	14:40	0.0	0.4	Fine sand over rock and gravel.
	5			1.9	0.1	Trace sand over rock and cobble.
	20			2.7	0.1	Trace sand over rock and cobble.
	40			4.2	0.0	Rock and cobble.
T21	0	5/22/2007	14:00	0.0	0.3	Fine to medium sand over rock and cobble.
	5			1.4	0.1	Trace sand over rock and cobble.
	20			4.0	0.0	Rock and cobble.
	40			4.2	0.0	Rock and cobble.
	60			4.7	0.0	Rock and cobble.
T22	0	5/22/2007	13:00	0.0	0.2	Fine sand with rock and cobble.
	5			1.1	0.0	Rock and cobble.
	20			4.2	0.0	Rock and cobble.
	40			4.2	0.0	Rock and cobble.
	60			4.5	0.0	Rock and cobble.
T23	0	5/22/2007	12:40	0.0	0.9	Fine sand and gravel over rock.
	5			1.7	0.0	Rock and cobble.
	20			4.0	0.0	Rock and cobble.
	40			4.0	0.2	Sand and gravel over rock.
	60			4.4	0.0	Rock and cobble.
T24	0	5/22/2007	12:20	0.0	0.9	Fine sand over rock.
	5			1.9	0.0	Rock and cobble.
	20			4.0	0.0	Rock and cobble.
	40			4.0	0.0	Rock and cobble.
	60			3.7	0.0	Rock and cobble.
T25	0	5/22/2007	12:00	0.0	0.4	Fine sand over rock.
	5			1.2	0.0	Rock gravel over rock.
	20			3.0	0.0	Rock gravel over rock.
	40			4.2	0.0	Rock gravel over rock.
	60			4.3	0.0	Rock gravel over rock.
T26	0	5/22/2007	11:40	1.2	0.7	Fine sand.
	5			1.3	0.0	Rock and cobble.
	20			2.0	0.0	Rock and cobble.
	40			4.3	0.0	Rock and cobble trace pockets.
	60			5.0	0.0	Rock and cobble trace pockets of medium to coarse sand.
T27	0	5/22/2007	11:20	0.0	0.3	Fine sand/silt over rock.
	5			0.8	0.9	Fine sand over rock.
	20			4.0	0.0	Rock and cobble.
	40			3.9	0.0	Rock and cobble small pockets of coarse sand.
	60			4.2	0.1	Rock and cobble trace medium sand.

TABLE 7
SEDIMENT PROBING PARAMETERS AND VISUAL CHARACTERIZATION SUMMARY

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Transect	Distance from Bank (feet)	Date	Time	Water Depth (feet)	Probe Depth (feet)	Description
T28	0	5/22/2007	11:00	0.0	2.6	Fine sand over rock.
	5			1.0	1.0	Fine sand over rock.
	20			3.8	0.4	Fine sand over rock.
	40			3.8	0.2	Rock and cobble.
	60			3.1	0.1	Rock and cobble.
T29	0	5/22/2007	10:40	0.0	2.8	Fine sand over rock, no sheen.
	5			0.9	2.4	Fine sand no sheen over rock.
	20			1.9	0.2	Fine sand over rock, no sheen.
	40			2.2	0.1	Coarse sand with rock and cobble.
	60			2.4	0.0	Rock and cobble.
T30	0	5/23/2007	10:00	0.0	2.9	Fine sand over rock and cobble.
	5			1.2	0.9	Fine sand over rock and cobble.
	20			2.0	0.2	Medium to coarse sand with gravel over rock and cobble.
	40			2.0	0.0	Rock and cobble.
	60			2.0	0.0	Rock and cobble.

Note: Sediment probing and sampling was performed by ARCADIS BBL on the dates/times indicated above.

TABLE 8
SURFACE WATER SAMPLING PARAMETERS

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sampling Location	Date	Time	Water Velocity (feet/second)	Water Depth (feet)	Sample Depth (feet)	Temp. (°C)	pH (S.U.)	Cond. (mS/cm)	DO (mg/L)	Turbidity (NTU)	ORP (mV)
SW-2	8/3/2006	11:55	0.02	2.5	1.25	27.51	8.05	0.236	10.82	227	257
SW-3	8/3/2006	11:20	0.75	0.9	0.45	27.09	7.86	0.227	11.28	81.8	267
SW-4	8/3/2006	11:00	0.27	1.2	0.6	27.16	7.9	0.229	11.41	82.6	261
SW-5	8/3/2006	10:45	0.32	1.4	0.7	27.22	7.9	0.223	10.86	106	263
SW-6	8/3/2006	10:15	0.36	1.2	0.6	26.88	7.48	0.223	10.35	84.2	275
SW-7	8/3/2006	9:55	0.07	1.4	0.7	26.88	7.75	0.226	10.3	75	232

Notes:
1. Samples were collected by ARCADIS BBL.
2. All samples were collected 5 feet from the shoreline.
3. Temperature reported in degrees Celsius (°C).
4. pH reported in Standard Units (S.U.).
5. Specific Conductivity reported in milliSiemens per centimeter (mS/cm).
6. Dissolved Oxygen (DO) reported in milligrams per liter (mg/L).
7. Turbidity reported in Nephelometric Turbidity Units (NTU).
8. Oxidation/Reduction Potential (ORP) reported in millivolts (mV).

TABLE 9
SEDIMENT SAMPLING PARAMETERS

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample Location	Date	Time	Penetration Depth (feet)	Water Depth (feet)	Recovery (feet)	Sample Depth (inches)
SD-1	8/4/2006	10:45	0.3	0.9	0.2	0-2
SD-2	8/4/2006	10:20	0.5	1	0.3	0-2
SD-3	8/4/2006	10:00	0.4	0.7	0.3	0-2
SD-4	8/4/2006	9:40	0.5	0.5	0.3	0-2
SD-5	8/4/2006	9:15	0.8	0.8	0.7	0-2
SD-6	8/4/2006	8:50	0.8	1.4	0.7	0-2
SD-7	8/3/2006	14:00	0.8	4.9	0.8	2-12
SD-8	8/3/2006	13:20	1.0	1.2	0.9	0-2

Note: Samples were collected by ARCADIS BBL on the dates indicated.

TABLE 10
SOIL ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

	6 NYCRR PART 375 SCOs							
Location ID:	**Unrestricted**	**Restricted Residential**	**Commercial**	**SB-1**			**SB-2**	
Sample Depth(Feet):	**(Exceedances**	**(Exceedances**	**(Exceedances**	**8 - 10.4**	**20 - 20.5**	**24 - 26**	**20 - 22**	**28 - 30**
Date Collected:	**in bold font)**	**in italic font)**	**shaded)**	**05/08/06**	**05/08/06**	**05/08/06**	**05/10/06**	**05/10/06**
Detected VOCs/BTEX (ppm)								
Acetone	0.05	100	500	<0.029	NA	NA	<0.030	<0.027
Benzene	0.06	4.8	44	<0.0060	**0.082**	<0.0060 [<0.0060]	**2.3 D**	<0.0050
Bromomethane	- -	- -	- -	R	NA	NA	<0.0060	R
Carbon disulfide	- -	- -	- -	<0.0060	NA	NA	0.0010 J	<0.0050
Chloroethane	- -	- -	- -	<0.0060	NA	NA	<0.0060 J	<0.0050
Ethylbenzene	1	41	390	<0.0060	0.045	<0.0060 [<0.0060]	0.46 D	<0.0050
Styrene	- -	- -	- -	<0.0060	NA	NA	0.17 D	<0.0050
Tetrachloroethene	1.3	19	150	0.0030 J	NA	NA	0.0020 J	<0.0050
Toluene	0.7	100	500	0.0030 J	0.036	0.013 [0.020]	**1.7 D**	0.017
Total Xylenes	0.26	100	500	<0.017	0.018 J	<0.017 [<0.017]	**3.5 D**	<0.016
Trichloroethene	0.47	21	200	0.0020 J	NA	NA	<0.0060	<0.0050
Total BTEX	- -	- -	- -	0.0030 J	0.18 J	0.013 [0.020]	8.0	0.017
Total VOCs	- -	- -	- -	0.0080 J	0.18 J	0.013 [0.020]	8.1 J	0.017
Detected SVOCs/PAHs (ppm)								
2,4-Dimethylphenol	- -	- -	- -	<3.6	NA	NA	<0.37	<0.37
2-Methylnaphthalene	- -	- -	- -	<3.6	12 J	<0.38 [<0.40]	0.058 J	<0.37
2-Methylphenol	0.33	100	500	<3.6	NA	NA	<0.37	<0.37
4-Methylphenol	0.33	100	500	<3.6	NA	NA	<0.37	<0.37
4-Nitrophenol	- -	- -	- -	<18 J	NA	NA	<1.8 J	<1.8 J
Acenaphthene	20	100	500	0.23 J	**32 J**	<0.38 [<0.40]	0.040 J	<0.37
Acenaphthylene	100	100	500	<3.6	6.7 J	<0.38 [<0.40]	0.031 J	<0.37
Anthracene	100	100	500	0.32 J	28 J	<0.38 [<0.40]	0.056 J	<0.37
Benzo(a)anthracene	1	1	5.6	0.40 J	***31 J***	<0.38 [<0.40]	0.076 J	<0.37
Benzo(a)pyrene	1	1	1	0.34 J	***37 J***	<0.38 [<0.40]	0.084 J	<0.37
Benzo(b)fluoranthene	1	1	5.6	0.56 J	***46 J***	<0.38 [<0.40]	0.11 J	<0.37
Benzo(ghi)perylene	100	100	500	0.24 J	26 J	<0.38 [<0.40]	0.067 J	<0.37
Benzo(k)fluoranthene	0.8	3.9	56	0.57 J	***47 J***	<0.38 [<0.40]	0.11 J	<0.37
Benzoic acid	- -	- -	- -	<53 J	NA	NA	<5.4 J	<5.3 J
Bis(2-ethylhexyl) phthalate	- -	- -	- -	<3.6	NA	NA	<0.37	0.11 J
Chrysene	1	3.9	56	0.35 J	***31 J***	<0.38 [<0.40]	0.065 J	<0.37
Dibenzo(a,h)anthracene	0.33	0.33	0.56	<3.6	***4.2 J***	<0.38 [<0.40]	<0.37	<0.37
Dibenzofuran	7	59	350	<3.6	**8.9 J**	<0.38 [<0.40]	<0.37	<0.37
Di-n-butyl phthalate	- -	- -	- -	<3.6	NA	NA	<0.37	<0.37
Fluoranthene	100	100	500	0.83 J	100	<0.38 [<0.40]	0.20 J	<0.37
Fluorene	30	100	500	0.24 J	24 J	<0.38 [<0.40]	0.051 J	<0.37
Indeno(1,2,3-cd)pyrene	0.5	0.5	5.6	0.20 J	***19 J***	<0.38 [<0.40]	0.049 J	<0.37
Naphthalene	12	100	500	<3.6	**46 J**	<0.38 [<0.40]	0.092 J	<0.37
N-nitrosodiphenylamine	- -	- -	- -	<3.6	NA	NA	<0.37	<0.37
Pentachlorophenol	0.8	6.7	6.7	<18	NA	NA	<1.8	<1.8
Phenanthrene	100	100	500	1.0 J	***130***	<0.38 [<0.40]	0.23 J	<0.37
Phenol	0.33	100	500	<3.6	NA	NA	<0.37	<0.37
Pyrene	100	100	500	0.83 J	***110***	<0.38 [<0.40]	0.22 J	<0.37
Total Cresols	- -	- -	- -	<7.3	NA	NA	<0.75	<0.73
Total Carcinogenic PAHs	- -	- -	- -	2.4 J	220 J	<0.38 [<0.40]	0.49 J	<0.37
Total PAHs	- -	- -	- -	5.9 J	720 J	<0.38 [<0.40]	1.5 J	<0.37
Total SVOCs	- -	- -	- -	6.1 J	740 J	<0.38 [<0.40]	1.5 J	0.11 J
Detected Inorganics (ppm)								
Arsenic	13	16	16	3.30	NA	NA	4.70	6.40
Barium	350	400	400	33.1 J	NA	NA	52.1 J	28.7 J
Cadmium	2.5	4.3	9.3	<0.210	NA	NA	0.250	<0.220
Chromium	30	180	1,500	9.50	NA	NA	6.40	10.0
Cyanide	27	27	27	1.30 J	<1.40 J	8.50 J [<1.20 J]	<1.00 J	<0.960 J
Lead	63	400	1,000	40.9	NA	NA	**118**	17.6
Mercury	0.18	0.81	2.8	0.0470	NA	NA	0.150	<0.0200
PCBs (ppm)								
None Detected	- -	- -	- -	NA	NA	NA	NA	NA
	Waste Characterization Regulatory Limits							
Waste Characterization Parameters								
H2S Released From Waste	*			NA	NA	NA	NA	NA
HCN Released From Waste	*			NA	NA	NA	NA	NA
Ignitability (^{o}F)	140			NA	NA	NA	NA	NA
Percent Sulfur (%)	-			NA	NA	NA	NA	NA
TCLP Benzene (ug/L)	500			NA	NA	NA	NA	NA
Percent Sulfur (%)	-			NA	NA	NA	NA	NA
TCLP Benzene (ug/L)	500			NA	NA	NA	NA	NA

TABLE 10
SOIL ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

	6 NYCRR PART 375 SCOs							
Location ID:	**Unrestricted**	**Restricted Residential**	**Commercial**	**SB-3**			**SB-4**	
Sample Depth(Feet):	**(Exceedances**	**(Exceedances**	**(Exceedances**	**20 - 20.5**	**22.4 - 23.2**	**30 - 32**	**0.5 - 2**	**16 - 18**
Date Collected:	**in bold font)**	**in italic font)**	**shaded)**	**05/11/06**	**05/11/06**	**05/11/06**	**05/23/06**	**05/23/06**
Detected VOCs/BTEX (ppm)								
Acetone	0.05	100	500	0.023 J	<0.028	0.0060 J	<0.026	<0.027 [<0.026]
Benzene	0.06	4.8	44	***6.6 D***	0.049	<0.0060	<0.0050	<0.0050 [<0.0050]
Bromomethane	- -	- -	- -	<0.0060	R	<0.0060	<0.0050	<0.0050 [<0.0050]
Carbon disulfide	- -	- -	- -	0.0040 J	0.0020 J	<0.0060	<0.0050	<0.0050 [<0.0050]
Chloroethane	- -	- -	- -	<0.0060 J	<0.0060	<0.0060 J	<0.0050 J	<0.0050 J [<0.0050 J]
Ethylbenzene	1	41	390	**7.6 D**	1.0 D	0.0010 J	<0.0050	<0.0050 [<0.0050]
Styrene	- -	- -	- -	<0.0060	<0.0060	<0.0060	<0.0050	<0.0050 [<0.0050]
Tetrachloroethene	1.3	19	150	<0.0060	<0.0060	<0.0060	<0.0050	<0.0050 [<0.0050]
Toluene	0.7	100	500	**2.8 D**	0.16 D	0.031	0.0020 J	<0.0050 J [0.019 J]
Total Xylenes	0.26	100	500	**7.9 D**	**0.94 D**	<0.017	<0.016	<0.016 [<0.016]
Trichloroethene	0.47	21	200	<0.0060	<0.0060	<0.0060	<0.0050	<0.0050 [<0.0050]
Total BTEX	- -	- -	- -	25	2.2	0.032 J	0.0020 J	<0.016 [0.019 J]
Total VOCs	- -	- -	- -	25 J	2.2 J	0.038 J	0.0020 J	<0.027 [0.019 J]
Detected SVOCs/PAHs (ppm)								
2,4-Dimethylphenol	- -	- -	- -	<8.7	<0.36	<0.36	<3.5	<0.34 [<0.35]
2-Methylnaphthalene	- -	- -	- -	5.8 J	0.029 J	<0.36	<3.5	0.042 J [<0.35]
2-Methylphenol	0.33	100	500	**0.52 J**	<0.36	<0.36	<3.5	<0.34 [<0.35]
4-Methylphenol	0.33	100	500	**1.6 J**	<0.36	<0.36	<3.5	<0.34 [<0.35]
4-Nitrophenol	- -	- -	- -	<42 J	<1.8 J	<1.8 J	<17	<1.7 [<1.7]
Acenaphthene	20	100	500	2.6 J	<0.36	<0.36	<3.5	0.030 J [<0.35]
Acenaphthylene	100	100	500	10	0.042 J	<0.36	<3.5	0.13 J [0.048 J]
Anthracene	100	100	500	8.8	0.062 J	<0.36	<3.5	0.31 J [0.11 J]
Benzo(a)anthracene	1	1	5.6	***23***	0.11 J	<0.36	0.93 J	0.55 [0.25 J]
Benzo(a)pyrene	1	1	1	***28***	0.13 J	<0.36	***1.1 J***	0.52 [0.24 J]
Benzo(b)fluoranthene	1	1	5.6	***48***	0.20 J	<0.36	***1.7 J***	0.59 [0.27 J]
Benzo(ghi)perylene	100	100	500	18	0.096 J	<0.36	1.0 J	0.34 [0.14 J]
Benzo(k)fluoranthene	0.8	3.9	56	***49***	0.21 J	<0.36	**1.8 J**	0.18 J [0.088 J]
Benzoic acid	- -	- -	- -	<130 J	<5.3 J	<5.3 J	<50 J	<5.0 J [<5.1 J]
Bis(2-ethylhexyl) phthalate	- -	- -	- -	<8.7	0.16 J	0.088 J	<3.5	0.25 J [0.24 J]
Chrysene	1	3.9	56	***33***	0.14 J	<0.36	0.81 J	0.46 [0.22 J]
Dibenzo(a,h)anthracene	0.33	0.33	0.56	***4.5 J***	0.019 J	<0.36	0.25 J	0.092 J [0.040 J]
Dibenzofuran	7	59	350	**9.5**	0.033 J	<0.36	<3.5	0.11 J [0.028 J]
Di-n-butyl phthalate	- -	- -	- -	<8.7	<0.36	<0.36	<3.5	<0.34 [<0.35]
Fluoranthene	100	100	500	87	0.40	<0.36	1.4 J	1.3 [0.57 J]
Fluorene	30	100	500	12	0.057 J	<0.36	<3.5	0.16 J [0.048 J]
Indeno(1,2,3-cd)pyrene	0.5	0.5	5.6	***18***	0.081 J	<0.36	***0.84 J***	0.32 J [0.14 J]
Naphthalene	12	100	500	**25**	0.078 J	<0.36	<3.5	0.053 J [<0.35]
N-nitrosodiphenylamine	- -	- -	- -	<8.7	<0.36	<0.36	<3.5	<0.34 [<0.35]
Pentachlorophenol	0.8	6.7	6.7	<42	<1.8	<1.8	<17	<1.7 [<1.7]
Phenanthrene	100	100	500	99	0.45	<0.36	0.40 J	1.0 J [0.36 J]
Phenol	0.33	100	500	**0.98 J**	<0.36	<0.36	<3.5	<0.34 [<0.35]
Pyrene	100	100	500	74	0.39	<0.36	1.3 J	1.1 J [0.46 J]
Total Cresols	- -	- -	- -	2.2 J	<0.72	<0.73	<6.9	<0.69 [<0.70]
Total Carcinogenic PAHs	- -	- -	- -	200 J	0.89 J	<0.36	7.4 J	2.7 J [1.3 J]
Total PAHs	- -	- -	- -	540 J	2.5 J	<0.36	12 J	7.1 J [3.0 J]
Total SVOCs	- -	- -	- -	560 J	2.7 J	0.088 J	12 J	7.5 J [3.3 J]
Detected Inorganics (ppm)								
Arsenic	13	16	16	8.70	6.00	5.80	8.10	8.50 [5.50]
Barium	350	400	400	137 J	62.6 J	56.3 J	132 J	56.1 J [35.5 J]
Cadmium	2.5	4.3	9.3	0.430	0.330	0.220	0.280	<0.210 [<0.200]
Chromium	30	180	1,500	13.8	13.4	11.6	12.7	16.2 [9.90]
Cyanide	27	27	27	1.60	<1.00	<0.980	R	R [1.00 J]
Lead	63	400	1,000	***584***	**71.2**	10.0	**371**	11.2 [9.20]
Mercury	0.18	0.81	2.8	**0.514**	<0.0190	<0.0190	**0.192**	<0.0170 [<0.0180]
PCBs (ppm)								
None Detected	- -	- -	- -	NA	NA	NA	NA	NA
	Waste Characterization Regulatory Limits							
Waste Characterization Parameters								
H2S Released From Waste		*		NA	NA	NA	NA	NA
HCN Released From Waste		*		NA	NA	NA	NA	NA
Ignitability (^oF)		140		NA	NA	NA	NA	NA
Percent Sulfur (%)		-		NA	NA	NA	NA	NA
TCLP Benzene (ug/L)		500		NA	NA	NA	NA	NA
Percent Sulfur (%)		-		NA	NA	NA	NA	NA
TCLP Benzene (ug/L)		500		NA	NA	NA	NA	NA

TABLE 10
SOIL ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

	6 NYCRR PART 375 SCOs										
Location ID:	Unrestricted	Restricted Residential	Commercial	SB-5		SB-6		SB-7		SB-8	
Sample Depth(Feet):	(Exceedances	(Exceedances	(Exceedances	0 - 2	18 - 20	0.5 - 2	20 - 22	24 - 25	36 - 37.2	22 - 24	28 - 30
Date Collected:	in bold font)	in italic font)	shaded)	05/18/06	05/18/06	05/17/06	05/17/06	06/13/06	06/13/06	05/12/06	05/12/06
Detected VOCs/BTEX (ppm)											
Acetone	0.05	100	500	<0.026 J	<0.029 J	<0.030 J	0.0070 J	0.022 J	0.010 J	<0.028	<0.026
Benzene	0.06	4.8	44	<0.0050	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	<0.0060	<0.0050
Bromomethane	- -	- -	- -	<0.0050	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	R	<0.0050
Carbon disulfide	- -	- -	- -	<0.0050	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	<0.0060	<0.0050
Chloroethane	- -	- -	- -	<0.0050 J	<0.0060 J	<0.0060 J	<0.0050 J	<0.0060	<0.0060	<0.0060	<0.0050 J
Ethylbenzene	1	41	390	<0.0050	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	<0.0060	<0.0050
Styrene	- -	- -	- -	<0.0050	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	<0.0060	<0.0050
Tetrachloroethene	1.3	19	150	<0.0050	0.0020 J	<0.0060	<0.0050	<0.0060	<0.0060	<0.0060	<0.0050
Toluene	0.7	100	500	0.020	0.045	0.032	0.022	<0.0060 J	<0.0070 J	0.0040 J	0.0020 J
Total Xylenes	0.26	100	500	<0.015	<0.017	<0.018	<0.016	<0.017	<0.017	<0.017	<0.016
Trichloroethene	0.47	21	200	<0.0050	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	<0.0060	<0.0050
Total BTEX	- -	- -	- -	0.020	0.045	0.032	0.022	<0.017	<0.017	0.0040 J	0.0020 J
Total VOCs	- -	- -	- -	0.020	0.047 J	0.032	0.029 J	0.022 J	0.010 J	0.0040 J	0.0020 J
Detected SVOCs/PAHs (ppm)											
2,4-Dimethylphenol	- -	- -	- -	<68	<0.39	<7.9	<0.36	<0.36	<0.37	<0.37	<0.35
2-Methylnaphthalene	- -	- -	- -	<68	<0.39	<7.9	<0.36	0.14 J	0.41	0.023 J	<0.35
2-Methylphenol	0.33	100	500	<68	<0.39	<7.9	<0.36	<0.36	<0.37	<0.37	<0.35
4-Methylphenol	0.33	100	500	<68	<0.39	<7.9	<0.36	<0.36	<0.37	<0.37	<0.35
4-Nitrophenol	- -	- -	- -	<330	<1.9	<38	<1.8	<1.7	<1.8	<1.8 J	<1.7 J
Acenaphthene	20	100	500	<68	<0.39	1.5 J	<0.36	<0.36	0.10 J	0.040 J	<0.35
Acenaphthylene	100	100	500	<68	<0.39	<7.9	<0.36	0.021 J	0.055 J	<0.37	<0.35
Anthracene	100	100	500	<68	<0.39	2.1 J	0.098 J	0.026 J	<0.37	0.21 J	<0.35
Benzo(a)anthracene	1	1	5.6	<68	<0.39	***12***	0.23 J	0.059 J	<0.37	0.67	<0.35
Benzo(a)pyrene	1	1	1	<68	<0.39	***27***	0.22 J	0.052 J	<0.37	0.80	<0.35
Benzo(b)fluoranthene	1	1	5.6	<68	<0.39	***26***	0.34 J	0.060 J	<0.37	1.0	<0.35
Benzo(ghi)perylene	100	100	500	<68	<0.39	33	0.16 J	0.030 J	<0.37	0.43	<0.35
Benzo(k)fluoranthene	0.8	3.9	56	<68	<0.39	***7.5 J***	0.34 J	0.024 J	<0.37	**1.1**	<0.35
Benzoic acid	- -	- -	- -	<980 J	<5.6 J	<110 J	<5.3 J	<5.2 J	<5.3 J	<5.4 J	<5.2 J
Bis(2-ethylhexyl) phthalate	- -	- -	- -	<68	0.16 J	<7.9	0.30 J	0.087 J	<0.37	0.40	<0.35
Chrysene	1	3.9	56	<68	<0.39	***11***	0.20 J	0.049 J	<0.37	0.60	<0.35
Dibenzo(a,h)anthracene	0.33	0.33	0.56	<68	<0.39	***7.8 J***	0.048 J	<0.36	<0.37	0.18 J	<0.35
Dibenzofuran	7	59	350	<68	<0.39	<7.9	<0.36	0.023 J	0.058 J	0.042 J	<0.35
Di-n-butyl phthalate	- -	- -	- -	<68	<0.39	<7.9	<0.36	0.15 J	0.095 J	<0.37	<0.35
Fluoranthene	100	100	500	<68	<0.39	10	0.37	0.11 J	<0.37	0.59	<0.35
Fluorene	30	100	500	<68	<0.39	<7.9	0.031 J	0.019 J	0.033 J	0.054 J	<0.35
Indeno(1,2,3-cd)pyrene	0.5	0.5	5.6	<68	<0.39	***26***	0.14 J	0.030 J	<0.37	0.41	<0.35
Naphthalene	12	100	500	<68	<0.39	<7.9	<0.36	1.2	3.8	0.026 J	<0.35
N-nitrosodiphenylamine	- -	- -	- -	<68	<0.39	<7.9	<0.36	<0.36	<0.37	<0.37	<0.35
Pentachlorophenol	0.8	6.7	6.7	<330	<1.9	<38	<1.8	<1.7	<1.8	<1.8	<1.7
Phenanthrene	100	100	500	<68	<0.39	5.8 J	0.23 J	0.072 J	0.025 J	0.49	<0.35
Phenol	0.33	100	500	<68	<0.39	<7.9	<0.36	<0.36	<0.37	<0.37	<0.35
Pyrene	100	100	500	<68	<0.39	12	0.36	<0.36	<0.37	0.62	<0.35
Total Cresols	- -	- -	- -	<140	<0.77	<16	<0.72	<0.72	<0.73	<0.74	<0.71
Total Carcinogenic PAHs	- -	- -	- -	<68	<0.39	120 J	1.5 J	0.27 J	<0.37	4.8 J	<0.35
Total PAHs	- -	- -	- -	<68	<0.39	180 J	2.7 J	1.9 J	4.5 J	7.2 J	<0.35
Total SVOCs	- -	- -	- -	<980	0.16 J	180 J	3.1 J	2.2 J	4.6 J	7.7 J	<5.2
Detected Inorganics (ppm)											
Arsenic	13	16	16	9.00	6.10	6.10	8.30	5.30	6.20	5.90	7.00
Barium	350	400	400	72.2	28.5	56.5	53.7	43.5 J	52.4 J	53.8 J	33.9 J
Cadmium	2.5	4.3	9.3	0.210	<0.230	<0.250	<0.210	<0.220	<0.220	0.250	0.250
Chromium	30	180	1,500	14.7	9.60	9.80	14.4	8.20	9.90	13.2	10.7
Cyanide	27	27	27	<1.00	<1.00	2.70	<1.10	<1.10	<1.00	6.60	<0.940
Lead	63	400	1,000	15.5 J	6.80 J	8.80 J	11.0 J	7.40	9.80	19.7	7.50
Mercury	0.18	0.81	2.8	<0.0170	<0.0190	<0.0190	0.107	<0.0170	<0.0170	0.0400	<0.0180
PCBs (ppm)											
None Detected	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA
	Waste Characterization Regulatory Limits										
Waste Characterization Parameters											
H2S Released From Waste		*		NA	NA	NA	NA	NA	NA	NA	NA
HCN Released From Waste		*		NA	NA	NA	NA	NA	NA	NA	NA
Ignitability (^oF)		140		NA	NA	NA	NA	NA	NA	NA	NA
Percent Sulfur (%)		-		NA	NA	NA	NA	NA	NA	NA	NA
TCLP Benzene (ug/L)		500		NA	NA	NA	NA	NA	NA	NA	NA
Percent Sulfur (%)		-		NA	NA	NA	NA	NA	NA	NA	NA
TCLP Benzene (ug/L)		500		NA	NA	NA	NA	NA	NA	NA	NA

TABLE 10
SOIL ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

	6 NYCRR PART 375 SCOs										
Location ID:	Unrestricted	Restricted Residential	Commercial	SB-9		SB-10		SB-11		SB-12	
Sample Depth(Feet):	(Exceedances	(Exceedances	(Exceedances	8 - 10	10 - 12	19 - 22	26 - 26.9	2 - 4	20 - 22	22 - 24	24.7 - 25.7
Date Collected:	in bold font)	in italic font)	shaded)	05/25/06	05/25/06	06/01/06	06/01/06	06/06/06	06/06/06	06/13/06	06/13/06
Detected VOCs/BTEX (ppm)											
Acetone	0.05	100	500	0.024 J	0.012 J	<0.030	0.018 J	<0.028	<0.028	<0.027	0.022 J
Benzene	0.06	4.8	44	<0.0070	<0.0060	**0.14 D**	0.0020 J	<0.0060	<0.0060	<0.0050	<0.0050
Bromomethane	- -	- -	- -	<0.0070	<0.0060	<0.0060 J	<0.0050 J	<0.0060 J	<0.0060 J	<0.0050	<0.0050
Carbon disulfide	- -	- -	- -	<0.0070	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	0.0020 J	<0.0050
Chloroethane	- -	- -	- -	<0.0070 J	<0.0060 J	<0.0060 J	<0.0050 J	<0.0060 J	<0.0060 J	<0.0050	<0.0050
Ethylbenzene	1	41	390	<0.0070	<0.0060	0.45 D	<0.0050	<0.0060	<0.0060	<0.0050	<0.0050
Styrene	- -	- -	- -	<0.0070	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	<0.0050	<0.0050
Tetrachloroethene	1.3	19	150	<0.0070	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	<0.0050	<0.0050
Toluene	0.7	100	500	0.022	0.022	0.019 J	0.047 J	<0.0060 J	<0.0060 J	<0.0050 J	<0.0050 J
Total Xylenes	0.26	100	500	<0.020	<0.018	**0.78 D**	<0.016	<0.017	<0.017	<0.016	<0.016
Trichloroethene	0.47	21	200	<0.0070	<0.0060	<0.0060	<0.0050	<0.0060	<0.0060	<0.0050	<0.0050
Total BTEX	- -	- -	- -	0.022	0.022	1.4 J	0.049 J	<0.017	<0.017	<0.016	<0.016
Total VOCs	- -	- -	- -	0.046 J	0.034 J	1.4 J	0.067 J	<0.028	<0.028	0.0020 J	0.022 J
Detected SVOCs/PAHs (ppm)											
2,4-Dimethylphenol	- -	- -	- -	<0.43	<0.39	<0.38	<0.36	<0.55	<0.36	<0.35	<0.36
2-Methylnaphthalene	- -	- -	- -	<0.43	<0.39	0.030 J	<0.36	<0.55	<0.36	<0.35	<0.36
2-Methylphenol	0.33	100	500	<0.43	<0.39	<0.38	<0.36	<0.55	<0.36	<0.35	<0.36
4-Methylphenol	0.33	100	500	<0.43	<0.39	<0.38	<0.36	<0.55	<0.36	<0.35	<0.36
4-Nitrophenol	- -	- -	- -	<2.1	<1.9	<1.8	<1.7	<2.6	<1.8	<1.7	<1.7
Acenaphthene	20	100	500	<0.43	<0.39	<0.38	<0.36	0.034 J	<0.36	<0.35	<0.36
Acenaphthylene	100	100	500	<0.43	<0.39	<0.38	<0.36	0.14 J	<0.36	<0.35	<0.36
Anthracene	100	100	500	<0.43	<0.39	<0.38	<0.36	0.18 J	<0.36	<0.35	<0.36
Benzo(a)anthracene	1	1	5.6	0.029 J	<0.39	<0.38	<0.36	0.52 J	<0.36	<0.35	<0.36
Benzo(a)pyrene	1	1	1	0.024 J	<0.39	<0.38	<0.36	0.49 J	<0.36	<0.35	<0.36
Benzo(b)fluoranthene	1	1	5.6	0.044 J	<0.39	<0.38	<0.36	0.89	<0.36	<0.35	<0.36
Benzo(ghi)perylene	100	100	500	<0.43	<0.39	<0.38	<0.36	0.39 J	<0.36	<0.35	<0.36
Benzo(k)fluoranthene	0.8	3.9	56	0.046 J	<0.39	<0.38	<0.36	**0.89**	<0.36	<0.35	<0.36
Benzoic acid	- -	- -	- -	<6.2 J	<5.7 J	<5.5 J	<5.2 J	8.0 J	<5.3 J	<5.1 J	<5.2 J
Bis(2-ethylhexyl) phthalate	- -	- -	- -	<0.43	<0.39	0.10 J	<0.36	0.54 J	0.35 J	0.79	0.061 J
Chrysene	1	3.9	56	<0.43	<0.39	<0.38	<0.36	0.48 J	<0.36	<0.35	<0.36
Dibenzo(a,h)anthracene	0.33	0.33	0.56	<0.43	<0.39	<0.38	<0.36	0.073 J	<0.36	<0.35	<0.36
Dibenzofuran	7	59	350	<0.43	<0.39	<0.38	<0.36	0.050 J	<0.36	<0.35	<0.36
Di-n-butyl phthalate	- -	- -	- -	<0.43	<0.39	<0.38	<0.36	<0.55	<0.36	0.20 J	0.14 J
Fluoranthene	100	100	500	0.037 J	<0.39	<0.38	<0.36	0.95	<0.36	<0.35	<0.36
Fluorene	30	100	500	<0.43	<0.39	<0.38	<0.36	0.070 J	<0.36	<0.35	<0.36
Indeno(1,2,3-cd)pyrene	0.5	0.5	5.6	<0.43	<0.39	<0.38	<0.36	0.23 J	<0.36	<0.35	<0.36
Naphthalene	12	100	500	<0.43	0.022 J	0.032 J	<0.36	0.052 J	<0.36	<0.35	<0.36
N-nitrosodiphenylamine	- -	- -	- -	<0.43	<0.39	<0.38	<0.36	<0.55	<0.36	<0.35	<0.36
Pentachlorophenol	0.8	6.7	6.7	<2.1	<1.9	<1.8	<1.7	<2.6	<1.8	<1.7	<1.7
Phenanthrene	100	100	500	<0.43	<0.39	<0.38	<0.36	0.67	<0.36	<0.35	<0.36
Phenol	0.33	100	500	<0.43	<0.39	<0.38	<0.36	<0.55	<0.36	<0.35	<0.36
Pyrene	100	100	500	0.037 J	<0.39	<0.38	<0.36	0.82	<0.36	<0.35	<0.36
Total Cresols	- -	- -	- -	<0.86	<0.79	<0.76	<0.71	<1.1	<0.73	<0.70	<0.71
Total Carcinogenic PAHs	- -	- -	- -	0.14 J	<0.39	<0.38	<0.36	3.6 J	<0.36	<0.35	<0.36
Total PAHs	- -	- -	- -	0.22 J	0.022 J	0.062 J	<0.36	6.9 J	<0.36	<0.35	<0.36
Total SVOCs	- -	- -	- -	0.22 J	0.022 J	0.16 J	<5.2	16 J	0.35 J	0.99 J	0.20 J
Detected Inorganics (ppm)											
Arsenic	13	16	16	4.40	7.30	6.90	6.00	8.10	**13.2**	4.40	5.40
Barium	350	400	400	166 J	47.6 J	60.2 J	59.4 J	**375**	67.1	48.2 J	36.5 J
Cadmium	2.5	4.3	9.3	<0.250	<0.240	<0.210	<0.210	<0.210	<0.230	<0.210	<0.220
Chromium	30	180	1,500	14.7	20.1	12.4	12.0	14.4	12.9	9.60	8.90
Cyanide	27	27	27	4.00 J	R	<0.980	<0.940	2.60	<1.00	<0.960	<0.940
Lead	63	400	1,000	21.8	12.8	10.7 J	9.00 J	**291**	11.7	7.20	7.70
Mercury	0.18	0.81	2.8	0.0630	<0.0220	<0.0200	<0.0190	**0.284**	<0.0200	<0.0190	<0.0170
PCBs (ppm)											
None Detected	- -	- -	- -	NA	NA	NA	NA	NA	NA	NA	NA
	Waste Characterization Regulatory Limits										
Waste Characterization Parameters											
H2S Released From Waste		*		NA	NA	NA	NA	NA	NA	NA	NA
HCN Released From Waste		*		NA	NA	NA	NA	NA	NA	NA	NA
Ignitability (^{o}F)		140		NA	NA	NA	NA	NA	NA	NA	NA
Percent Sulfur (%)		-		NA	NA	NA	NA	NA	NA	NA	NA
TCLP Benzene (ug/L)		500		NA	NA	NA	NA	NA	NA	NA	NA
Percent Sulfur (%)		-		NA	NA	NA	NA	NA	NA	NA	NA
TCLP Benzene (ug/L)		500		NA	NA	NA	NA	NA	NA	NA	NA

TABLE 10
SOIL ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

	6 NYCRR PART 375 SCOs									
Location ID:	**Unrestricted**	**Restricted Residential**	**Commercial**	**SB-13**		**SB-14**		**SB-15**		
Sample Depth(Feet):	**(Exceedances**	**(Exceedances**	**(Exceedances**	**12 - 14**	**16 - 18**	**16 - 18**	**26 - 28**	**10 - 11.1**	**20 - 21.4**	**30 - 32**
Date Collected:	**in bold font)**	**in italic font)**	**shaded)**	**05/30/06**	**05/30/06**	**05/31/06**	**05/31/06**	**05/31/06**	**06/01/06**	**06/01/06**
Detected VOCs/BTEX (ppm)										
Acetone	0.05	100	500	0.044	0.026 J	**0.31 J**	0.014 J	NA	<0.028 [<0.028]	0.010 J
Benzene	0.06	4.8	44	***4.9 D***	**0.28 D**	**1.3**	<0.0060	NA	<0.0060 [<0.0060]	<0.0050
Bromomethane	- -	- -	- -	<0.0060	<0.0060 J	<0.15 J	<0.0060 J	NA	<0.0060 J [<0.0060 J]	<0.0050 J
Carbon disulfide	- -	- -	- -	<0.0060	<0.0060	<0.15 J	<0.0060	NA	<0.0060 [<0.0060]	<0.0050
Chloroethane	- -	- -	- -	<0.0060 j	<0.0060	<0.15	<0.0060 J	NA	<0.0060 [0.0010 J]	<0.0050 J
Ethylbenzene	1	41	390	**17 D**	0.069	**11**	<0.0060	NA	0.14 J [0.22 D]	<0.0050
Styrene	- -	- -	- -	7.2 D	0.019	<0.15	<0.0060	NA	<0.0060 [<0.0060]	<0.0050
Tetrachloroethene	1.3	19	150	<0.0060	<0.0060	<0.15	<0.0060	NA	<0.0060 [<0.0060]	<0.0050
Toluene	0.7	100	500	**10 D**	0.031 J	**13 J**	0.0050 J	NA	0.0050 J [0.0040 J]	0.010 J
Total Xylenes	0.26	100	500	**62 D**	0.19	**78 D**	<0.017	NA	**1.5 D [1.0 D]**	<0.016
Trichloroethene	0.47	21	200	<0.0060	<0.0060	<0.15	<0.0060	NA	<0.0060 [<0.0060]	<0.0050
Total BTEX	- -	- -	- -	94	0.57 J	100 J	0.0050 J	NA	1.7 J [1.2 J]	0.010 J
Total VOCs	- -	- -	- -	100	0.62 J	100 J	0.019 J	NA	1.7 J [1.2 J]	0.020 J
Detected SVOCs/PAHs (ppm)										
2,4-Dimethylphenol	- -	- -	- -	1.4 J	0.14 J	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
2-Methylnaphthalene	- -	- -	- -	50 D	<0.40	20 D	<0.35	NA	0.047 J [0.061 J]	<0.36
2-Methylphenol	0.33	100	500	<2.0	<0.40	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
4-Methylphenol	0.33	100	500	0.16 J	0.052 J	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
4-Nitrophenol	- -	- -	- -	<9.7	<1.9	<1.8	<1.7	NA	<1.6 [<1.8]	<1.7
Acenaphthene	20	100	500	8.1	<0.40	0.14 J	<0.35	NA	<0.34 [<0.38]	<0.36
Acenaphthylene	100	100	500	27	0.030 J	0.36 J	<0.35	NA	<0.34 [<0.38]	<0.36
Anthracene	100	100	500	22	0.039 J	0.19 J	<0.35	NA	<0.34 [<0.38]	<0.36
Benzo(a)anthracene	1	1	5.6	***16***	0.040 J	0.18 J	<0.35	NA	<0.34 [<0.38]	<0.36
Benzo(a)pyrene	1	1	1	***12***	0.026 J	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
Benzo(b)fluoranthene	1	1	5.6	***13***	0.033 J	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
Benzo(ghi)perylene	100	100	500	6.1	<0.40	0.12 J	<0.35	NA	<0.34 [<0.38]	<0.36
Benzo(k)fluoranthene	0.8	3.9	56	***4.5***	<0.40	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
Benzoic acid	- -	- -	- -	<29 J	<5.8 J	<5.5 J	<5.1 J	NA	<4.9 J [<5.6 J]	<5.2 J
Bis(2-ethylhexyl) phthalate	- -	- -	- -	<2.0	0.066 J	0.59	0.13 J	NA	0.18 J [0.24 J]	<0.36
Chrysene	1	3.9	56	***12***	0.027 J	0.26 J	<0.35	NA	<0.34 [<0.38]	<0.36
Dibenzo(a,h)anthracene	0.33	0.33	0.56	***2.3***	<0.40	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
Dibenzofuran	7	59	350	**21**	0.033 J	0.44	<0.35	NA	<0.34 [<0.38]	<0.36
Di-n-butyl phthalate	- -	- -	- -	<2.0	<0.40	0.083 J	<0.35	NA	<0.34 [<0.38]	<0.36
Fluoranthene	100	100	500	37 D	0.069 J	0.36 J	<0.35	NA	<0.34 [<0.38]	<0.36
Fluorene	30	100	500	27	0.036 J	0.62	<0.35	NA	<0.34 [<0.38]	<0.36
Indeno(1,2,3-cd)pyrene	0.5	0.5	5.6	***6.0***	<0.40	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
Naphthalene	12	100	500	***180 D***	<0.40	10 D	<0.35	NA	0.029 J [0.032 J]	<0.36
N-nitrosodiphenylamine	- -	- -	- -	<2.0	<0.40	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
Pentachlorophenol	0.8	6.7	6.7	<9.7	<1.9	<1.8	<1.7	NA	<1.6 [<1.8]	<1.7
Phenanthrene	100	100	500	68 D	0.11 J	0.98	<0.35	NA	<0.34 [<0.38]	<0.36
Phenol	0.33	100	500	<2.0	<0.40	<0.38	<0.35	NA	<0.34 [<0.38]	<0.36
Pyrene	100	100	500	30	0.063 J	0.65	<0.35	NA	<0.34 [<0.38]	<0.36
Total Cresols	- -	- -	- -	<4.0	<0.79	<0.76	<0.70	NA	<0.68 [<0.76]	<0.71
Total Carcinogenic PAHs	- -	- -	- -	66	0.13 J	0.44 J	<0.35	NA	<0.34 [<0.38]	<0.36
Total PAHs	- -	- -	- -	520	0.47 J	34 J	<0.35	NA	0.076 J [0.093 J]	<0.36
Total SVOCs	- -	- -	- -	540 J	0.76 J	35 J	0.13 J	NA	0.26 J [0.33 J]	<5.2
Detected Inorganics (ppm)										
Arsenic	13	16	16	7.50	7.80	6.10	4.60	NA	6.60 [7.10]	6.60
Barium	350	400	400	69.3 J	61.9 J	60.7 J	53.2 J	NA	55.4 J [63.8 J]	41.0 J
Cadmium	2.5	4.3	9.3	<0.230	<0.240	<0.230	<0.220	NA	<0.210 [<0.220]	<0.200
Chromium	30	180	1,500	17.3	16.6	12.0	12.0	NA	10.9 [20.3]	11.0
Cyanide	27	27	27	<1.20	<1.00	<1.10	<1.00	<2.60 J	<1.00 [<0.990]	<0.990
Lead	63	400	1,000	12.8 J	12.3 J	38.1 J	7.20 J	NA	12.5 J [15.6 J]	7.20 J
Mercury	0.18	0.81	2.8	<0.0190	<0.0200	<0.0190	<0.0180	NA	<0.0170 [<0.0190]	<0.0190
PCBs (ppm)										
None Detected	- -	- -	- -	- -	NA	NA	NA	NA	NA	NA
		Waste Characterization Regulatory Limits								
Waste Characterization Parameters										
H2S Released From Waste		*		<500	NA	NA	NA	NA	NA	NA
HCN Released From Waste		*		<250	NA	NA	NA	NA	NA	NA
Ignitability (^{o}F)		140		>200	NA	NA	NA	NA	NA	NA
Percent Sulfur (%)		-		1,100	NA	NA	NA	NA	NA	NA
TCLP Benzene (ug/L)		500		330	NA	NA	NA	NA	NA	NA
Percent Sulfur (%)		-		1,100	NA	NA	NA	NA	NA	NA
TCLP Benzene (ug/L)		500		330	NA	NA	NA	NA	NA	NA

TABLE 10
SOIL ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

	6 NYCRR PART 375 SCOs									
Location ID:	**Unrestricted**	**Restricted Residential**	**Commercial**	**SB-16**		**SB-17**	**SB-18**	**SB-19**	**SB-20**	
Sample Depth(Feet):	**(Exceedances**	**(Exceedances**	**(Exceedances**	**0.5 - 2**	**22 - 24**	**14 - 16**	**14 - 16**	**14 - 16**	**0.8 - 2**	**16 - 18**
Date Collected:	**in bold font)**	**in italic font)**	**shaded)**	**06/02/06**	**06/02/06**	**05/16/06**	**05/15/06**	**05/15/06**	**05/24/06**	**05/24/06**
Detected VOCs/BTEX (ppm)										
Acetone	0.05	100	500	<0.028	<0.027	NA	<0.026	NA	<0.027	<0.027
Benzene	0.06	4.8	44	<0.0060	<0.0050	<0.67	**0.15**	**0.31 J**	<0.0050	<0.0050
Bromomethane	- -	- -	- -	<0.0060 J	<0.0050 J	NA	R	NA	<0.0050	<0.0050
Carbon disulfide	- -	- -	- -	<0.0060	<0.0050	NA	<0.0050	NA	<0.0050	<0.0050
Chloroethane	- -	- -	- -	<0.0060	<0.0050 J	NA	<0.0050	NA	<0.0050 J	<0.0050 J
Ethylbenzene	1	41	390	<0.0060	<0.0050	**24**	**25 D**	**23**	<0.0050	<0.0050
Styrene	- -	- -	- -	<0.0060	<0.0050	NA	<0.0050	NA	<0.0050	<0.0050
Tetrachloroethene	1.3	19	150	<0.0060	<0.0050	NA	<0.0050	NA	<0.0050	<0.0050
Toluene	0.7	100	500	0.032 J	0.0070 J	**4.4**	**6.4 D**	**0.98**	0.0030 J	<0.0050
Total Xylenes	0.26	100	500	<0.017	<0.016	**100**	***110 D***	**55**	<0.016	<0.016
Trichloroethene	0.47	21	200	<0.0060	<0.0050	NA	<0.0050	NA	<0.0050	<0.0050
Total BTEX	- -	- -	- -	0.032 J	0.0070 J	130	140	79 J	0.0030 J	<0.016
Total VOCs	- -	- -	- -	0.032 J	0.0070 J	130	140	79 J	0.0030 J	<0.027
Detected SVOCs/PAHs (ppm)										
2,4-Dimethylphenol	- -	- -	- -	<7.5	<0.36	NA	<35	NA	<0.36	<0.35
2-Methylnaphthalene	- -	- -	- -	0.75 J	<0.36	57	180	86	<0.36	<0.35
2-Methylphenol	0.33	100	500	<7.5	<0.36	NA	<35	NA	<0.36	<0.35
4-Methylphenol	0.33	100	500	<7.5	<0.36	NA	<35	NA	<0.36	<0.35
4-Nitrophenol	- -	- -	- -	R	<1.8	NA	<170	NA	<1.8	<1.7
Acenaphthene	20	100	500	0.48 J	<0.36	8.0 J	13 J	**94**	<0.36	<0.35
Acenaphthylene	100	100	500	11	<0.36	53	99	31 J	<0.36	0.37
Anthracene	100	100	500	4.5 J	<0.36	37	67	77	<0.36	0.35
Benzo(a)anthracene	1	1	5.6	***12***	<0.36	***28 J***	***50***	***61***	0.092 J	***1.7***
Benzo(a)pyrene	1	1	1	***27***	<0.36	***18 J***	***33 J***	***46***	0.12 J	***2.2***
Benzo(b)fluoranthene	1	1	5.6	***29***	<0.36	***20 J***	***35***	***44***	0.19 J	***2.4***
Benzo(ghi)perylene	100	100	500	41	<0.36	6.1 J	10 J	17 J	0.089 J	1.7
Benzo(k)fluoranthene	0.8	3.9	56	***30***	<0.36	***6.3 J***	***11 J***	***16 J***	0.20 J	**2.5**
Benzoic acid	- -	- -	- -	<110 J	<5.2 J	NA	<500 J	NA	<5.3 J	<5.1 J
Bis(2-ethylhexyl) phthalate	- -	- -	- -	<7.5	<0.36	NA	<35	NA	0.54	0.25 J
Chrysene	1	3.9	56	***12***	<0.36	***22 J***	***40***	***51***	0.083 J	**1.3**
Dibenzo(a,h)anthracene	0.33	0.33	0.56	***2.4 J***	<0.36	***42 J***	***42 J***	***44 J***	0.025 J	0.27 J
Dibenzofuran	7	59	350	<7.5	<0.36	**34 J**	***69***	***66***	<0.36	<0.35
Di-n-butyl phthalate	- -	- -	- -	<7.5	<0.36	NA	<35	NA	<0.36	<0.35
Fluoranthene	100	100	500	73	<0.36	50	94	***120***	0.14 J	2.6
Fluorene	30	100	500	3.1 J	<0.36	**56**	**100**	***110***	<0.36	0.042 J
Indeno(1,2,3-cd)pyrene	0.5	0.5	5.6	***23***	<0.36	***5.9 J***	***10 J***	***15 J***	0.082 J	***1.2***
Naphthalene	12	100	500	1.5 J	<0.36	***330***	***510***	***220***	<0.36	<0.35
N-nitrosodiphenylamine	- -	- -	- -	<7.5	<0.36	NA	<35	NA	<0.36	<0.35
Pentachlorophenol	0.8	6.7	6.7	R	<1.8	NA	<170	NA	<1.8	<1.7
Phenanthrene	100	100	500	61	<0.36	100	***190***	***230***	0.066 J	0.18 J
Phenol	0.33	100	500	<7.5	<0.36	NA	<35	NA	<0.36	<0.35
Pyrene	100	100	500	***120***	<0.36	45	84	***130***	0.14 J	4.2
Total Cresols	- -	- -	- -	<15	<0.72	NA	<69	NA	<0.72	<0.70
Total Carcinogenic PAHs	- -	- -	- -	140 J	<0.36	140 J	220 J	280 J	0.79 J	12 J
Total PAHs	- -	- -	- -	450 J	<0.36	860 J	1,500 J	1,400 J	1.2 J	21 J
Total SVOCs	- -	- -	- -	450 J	<5.2	920 J	1,600 J	1,500 J	1.8 J	21 J
Detected Inorganics (ppm)										
Arsenic	13	16	16	5.50	7.90	NA	5.70	NA	5.50	5.10
Barium	350	400	400	92.9 J	37.6 J	NA	42.7	NA	46.7 J	35.7 J
Cadmium	2.5	4.3	9.3	<0.200	<0.210	NA	<0.200	NA	<0.220	<0.200
Chromium	30	180	1,500	10.2	10.7	NA	11.8	NA	11.3	11.9
Cyanide	27	27	27	R	<0.950	1.70	<0.880	6.10	R	R
Lead	63	400	1,000	**71.6 J**	10.1 J	NA	7.30	NA	12.3	8.40
Mercury	0.18	0.81	2.8	0.161	<0.0200	NA	<0.0170	NA	0.0320	<0.0180
PCBs (ppm)										
None Detected	- -	- -	- -	NA	NA	NA	NA	- -	NA	NA
	Waste Characterization Regulatory Limits									
Waste Characterization Parameters										
H2S Released From Waste	*			NA	NA	NA	NA	<500	NA	NA
HCN Released From Waste	*			NA	NA	NA	NA	<250	NA	NA
Ignitability (^{o}F)	140			NA	NA	NA	NA	>200	NA	NA
Percent Sulfur (%)	-			NA	NA	NA	NA	310	NA	NA
TCLP Benzene (ug/L)	500			NA	NA	NA	NA	7.7	NA	NA
Percent Sulfur (%)	-			NA	NA	NA	NA	310	NA	NA
TCLP Benzene (ug/L)	500			NA	NA	NA	NA	7.7	NA	NA

TABLE 10
SOIL ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

	6 NYCRR PART 375 SCOs										
Location ID:	**Unrestricted**	**Restricted Residential**	**Commercial**	**SB-21**		**SB-22**		**SB-24**		**SB-25A**	
Sample Depth(Feet):	**(Exceedances**	**(Exceedances**	**(Exceedances**	**0.5 - 2**	**20 - 22**	**2 - 4**	**14 - 16**	**18 - 20**	**30 - 32**	**14.6 - 16**	**26 - 28**
Date Collected:	**in bold font)**	**in italic font)**	**shaded)**	**05/16/06**	**05/17/06**	**05/22/06**	**05/22/06**	**05/23/06**	**05/24/06**	**05/26/06**	**05/26/06**
Detected VOCs/BTEX (ppm)											
Acetone	0.05	100	500	<0.027 J	<0.027 J	<0.027	<0.028	NA	NA	0.0080 J	0.0060 J
Benzene	0.06	4.8	44	<0.0050	<0.0050	<0.0050	<0.0060	NA	0.0060	**0.061**	<0.0050
Bromomethane	- -	- -	- -	<0.0050	<0.0050	<0.0050	<0.0060	NA	NA	<0.0050	<0.0050
Carbon disulfide	- -	- -	- -	<0.0050	<0.0050	<0.0050	<0.0060	NA	NA	0.0010 J	<0.0050
Chloroethane	- -	- -	- -	<0.0050 J	<0.0050 J	<0.0050 J	<0.0060 J	NA	NA	<0.0050 J	<0.0050 J
Ethylbenzene	1	41	390	<0.0050	<0.0050	<0.0050	<0.0060	NA	<0.0050	**2.8 D**	0.0030 J
Styrene	- -	- -	- -	<0.0050	<0.0050	<0.0050	<0.0060	NA	NA	1.9 D	0.0020 J
Tetrachloroethene	1.3	19	150	<0.0050	<0.0050	<0.0050	<0.0060	NA	NA	<0.0050	<0.0050
Toluene	0.7	100	500	0.0060	0.0020 J	0.0020 J	0.0020 J	NA	0.020	**0.81 D**	0.0040 J
Total Xylenes	0.26	100	500	<0.016	<0.016	<0.016	<0.016	NA	<0.016	**16 D**	0.012 J
Trichloroethene	0.47	21	200	<0.0050	<0.0050	<0.0050	<0.0060	NA	NA	<0.0050	<0.0050
Total BTEX	- -	- -	- -	0.0060	0.0020 J	0.0020 J	0.0020 J	NA	0.026	20	0.019 J
Total VOCs	- -	- -	- -	0.0060	0.0020 J	0.0020 J	0.0020 J	NA	0.026	22 J	0.027 J
Detected SVOCs/PAHs (ppm)											
2,4-Dimethylphenol	- -	- -	- -	<3.5	<0.35	<0.35	<0.35	NA	NA	0.41 J	<0.36
2-Methylnaphthalene	- -	- -	- -	<3.5	<0.35	<0.35	<0.35	NA	<0.34	27 D	<0.36
2-Methylphenol	0.33	100	500	<3.5	<0.35	<0.35	<0.35	NA	NA	**0.36 J**	<0.36
4-Methylphenol	0.33	100	500	<3.5	<0.35	<0.35	<0.35	NA	NA	**1.4 J**	<0.36
4-Nitrophenol	- -	- -	- -	<17	<1.7	<1.7	<1.7	NA	NA	<8.6	<1.7
Acenaphthene	20	100	500	<3.5	0.027 J	<0.35	<0.35	NA	0.033 J	2.5	0.018 J
Acenaphthylene	100	100	500	<3.5	0.21 J	<0.35	<0.35	NA	0.024 J	15	<0.36
Anthracene	100	100	500	<3.5	0.38	<0.35	<0.35	NA	0.074 J	12	0.040 J
Benzo(a)anthracene	1	1	5.6	***1.4 J***	0.86	0.020 J	0.070 J	NA	0.072 J	***9.3***	0.040 J
Benzo(a)pyrene	1	1	1	***1.8 J***	0.72	<0.35	0.11 J	NA	0.055 J	***7.0***	0.030 J
Benzo(b)fluoranthene	1	1	5.6	***2.5 J***	***1.1***	0.026 J	0.13 J	NA	0.059 J	***7.4***	0.042 J
Benzo(ghi)perylene	100	100	500	1.2 J	0.44	<0.35	0.080 J	NA	0.019 J	2.8	<0.36
Benzo(k)fluoranthene	0.8	3.9	56	0.59 J	**1.2**	<0.35	0.14 J	NA	0.019 J	**2.4**	0.044 J
Benzoic acid	- -	- -	- -	<52 J	<5.1 J	<5.2 J	<5.1 J	NA	NA	<26 J	<5.2 J
Bis(2-ethylhexyl) phthalate	- -	- -	- -	0.93 J	0.16 J	0.21 J	0.55	NA	NA	<1.8	<0.36
Chrysene	1	3.9	56	**1.3 J**	0.64	<0.35	0.070 J	NA	0.062 J	***7.6***	0.032 J
Dibenzo(a,h)anthracene	0.33	0.33	0.56	0.30 J	0.13 J	<0.35	<0.35	NA	<0.34	***1.2 J***	<0.36
Dibenzofuran	7	59	350	<3.5	0.030 J	<0.35	<0.35	NA	0.023 J	**10**	<0.36
Di-n-butyl phthalate	- -	- -	- -	<3.5	<0.35	<0.35	<0.35	NA	NA	<1.8	<0.36
Fluoranthene	100	100	500	2.0 J	1.8	0.031 J	0.10 J	NA	0.14 J	18	0.073 J
Fluorene	30	100	500	<3.5	0.14 J	<0.35	<0.35	NA	0.060 J	17	0.034 J
Indeno(1,2,3-cd)pyrene	0.5	0.5	5.6	***0.92 J***	0.42	<0.35	0.060 J	NA	0.022 J	***2.8***	<0.36
Naphthalene	12	100	500	<3.5	<0.35	<0.35	0.051 J	NA	<0.34	**56 D**	0.023 J
N-nitrosodiphenylamine	- -	- -	- -	<3.5	<0.35	<0.35	<0.35	NA	NA	0.46 J	<0.36
Pentachlorophenol	0.8	6.7	6.7	<17	<1.7	<1.7	<1.7	NA	NA	<8.6	<1.7
Phenanthrene	100	100	500	0.54 J	0.75	<0.35	0.028 J	NA	0.20 J	30 D	0.090 J
Phenol	0.33	100	500	<3.5	<0.35	<0.35	<0.35	NA	NA	**1.2 J**	<0.36
Pyrene	100	100	500	1.9 J	1.6	0.031 J	0.16 J	NA	0.12 J	15	0.060 J
Total Cresols	- -	- -	- -	<7.1	<0.70	<0.71	<0.71	NA	NA	1.8 J	<0.71
Total Carcinogenic PAHs	- -	- -	- -	8.8 J	5.1 J	0.046 J	0.58 J	NA	0.29 J	38 J	0.19 J
Total PAHs	- -	- -	- -	15 J	10 J	0.11 J	1.0 J	NA	0.92 J	230 J	0.49 J
Total SVOCs	- -	- -	- -	15 J	11 J	0.32 J	1.6 J	NA	0.98 J	250 J	0.53 J
Detected Inorganics (ppm)											
Arsenic	13	16	16	6.30	8.10	4.90	5.00	NA	NA	6.00	6.60
Barium	350	400	400	77.3	63.3	29.1 J	44.4 J	NA	NA	70.1 J	67.0 J
Cadmium	2.5	4.3	9.3	0.440	0.270	<0.210	<0.220	NA	NA	<0.200	<0.210
Chromium	30	180	1,500	12.7	13.4	11.7	14.8	NA	NA	12.0	11.4
Cyanide	27	27	27	<1.00	<0.980	R	<1.00	NA	R	2.10 J	R
Lead	63	400	1,000	***447 J***	10.9 J	9.50	8.70	NA	NA	25.4	25.5
Mercury	0.18	0.81	2.8	0.142	<0.0190	<0.0190	<0.0190	NA	NA	0.0680	<0.0160
PCBs (ppm)											
None Detected	- -	- -	- -	NA	NA	NA	NA	- -	NA	NA	NA
	Waste Characterization Regulatory Limits										
Waste Characterization Parameters											
H2S Released From Waste		*		NA	NA	NA	NA	<500	NA	NA	NA
HCN Released From Waste		*		NA	NA	NA	NA	<250	NA	NA	NA
Ignitability (^{o}F)		140		NA	NA	NA	NA	>200	NA	NA	NA
Percent Sulfur (%)		-		NA	NA	NA	NA	<0.01	NA	NA	NA
TCLP Benzene (ug/L)		500		NA	NA	NA	NA	9.8	NA	NA	NA
Percent Sulfur (%)		-		NA	NA	NA	NA	<0.01	NA	NA	NA
TCLP Benzene (ug/L)		500		NA	NA	NA	NA	9.8	NA	NA	NA

TABLE 10
SOIL ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Notes:

1. Samples were collected by ARCADIS BBL on the dates indicated.
2. VOCs = Target Compound List (TCL) Volatile Organic Compounds and Methyl-t-Butyl Ether (MTBE).
3. BTEX = Benzene, toluene, ethylbenzene and xylenes.
4. SVOCs = TCL Semi-Volatile Organic Compounds and Pyridine.
5. PAHs = Polynuclear aromatic hydrocarbons.
6. Inorganics = Resource Conservation Recovery Act (RCRA) Metals and Cyanide.
7. PCBs = Polychlorinated Biphenyls.
8. TCLP = Toxicity Characteristic Leaching Procedure.
9. Laboratory analysis was performed by TestAmerica Laboratories, Inc. (TestAmerica), formerly Severn Trent Laboratories, Inc. (STL), of Buffalo, New York
   - VOCs/BTEX using United States Environmental Protection Agency (USEPA) SW-846 Method 8260B;
   - SVOCs/PAHs using USEPA SW-846 Method 8270C;
   - Inorganics using USEPA SW-846 Methods 6010, 7471 and 9012A;
   - PCBs using USEPA SW-846 Method 8082;
   - TCLP benzene using USEPA SW-846 Method 1311 for extraction and 8260B for analysis;
   - Hydrogen sulfide (H2S) and hydrogen cyanide (HCN) released from waste using SW-846 Sect. 7.3;
   - Ignitability using USEPA SW-846 Method 1010; and
   - Percent sulfur using American Society for Testing and Materials (ASTM) Method D129.
10. Total Carcinogenic PAHs consist of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene and Indeno(1,2,3-cd)pyrene.
11. With the exception of waste characterization parameters, only those constituents detected in one or more samples are summarized.
12. With the exception of Ignitability and TCLP benzene, concentrations reported in dry weight parts per million (ppm), which is equivalent to milligrams per kilogram (mg/Kg). Results for Ignitability and TCLP benzene are reported in units of degrees Fahrenheit (^{o}F) and micrograms per liter (ug/L) respectively.
13. Field duplicate sample results are presented in brackets.
14. Data qualifiers are defined as follows:
    < - Constituent not detected at a concentration above the reported detection limit..
    D - Compound quantitated using a secondary dilution.
    J - Indicates that the associated numerical value is an estimated concentration.
    R - Data was rejected due to a deficiency in the data generation process.
15. 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs) are from the New Superfund/Brownfield Regulations, which became effective on December 14, 2006.
16. Bold font indicates that the result exceeds the 6 NYCRR Part 375 Unrestricted Use SCO.
17. Italic font indicates that the result exceeds the 6 NYCRR Part 375 Restricted Residential Use SCO.
18. Shading indicates that the result exceeds the 6 NYCRR Part 375 Commercial Use SCO.
19. - - = No 6 NYCRR Part 375 SCO listed.
20. NA = Not Analyzed.
21. Results have been validated in accordance with USEPA National Functional Guidelines of October 1999.
22. * = Sample which does not exceed the USEPA action levels of 250 mg HCN/kg waste and 500 mg H2S/kg waste is not reactive.
23. - = Waste characterization regulatory limit is not available.
24. Regulatory limits for waste characterization parameters are from the following sources:
    - Ignitability - 40 CFR 261.21;
    - Reactivity - In accordance with an April 2, 1998 memorandum from the USEPA's Office of Solid Waste and Emergency Response (OSWER), the USEPA has withdrawn the guidance levels for evaluating potentially reactive cyanide-bearing and sulfide-bearing wastes (i.e. 250 ppm and 500 ppm, respectively); and
    - TCLP Benzene - in accordance with 6 NYCRR 371.3(e) effective September 5, 2006.

TABLE 11
GROUNDWATER ANALYTICAL RESULTS (ppb)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	NYSDEC Groundwater Standards	MW-1R		MW-2	MW-4		MW-5		MW-5D			MW-6S		
Date Collected:	and Guidance Values	07/25/06	01/18/08	01/18/08	07/25/06	01/18/08	07/26/06	01/18/08	07/26/06	01/18/08	05/15/08	06/27/06	07/26/06	01/17/08
Detected Volatile Organics														
1,1,1-Trichloroethane	5	1.0 J	1.0 J	<5.0	<5.0	<5.0	<5.0 J	<5.0	<5.0 J	<25 [<5.0]	<5.0 [<5.0]	<5.0 [<5.0]	<5.0	<20
1,2-Dichloroethene (Total)	- -	<10	<10	<10	<10	<10	<10	<10	<10	<50 [<10]	<10 [<10]	<10 [<10]	<10	<40
Acetone	50	<25	<25	<25	<25	<25	<25 J	<25	<25 J	22 J [10 J]	13 J [11 J]	<25 [<25]	<25	<100
Benzene	1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	31	<25 [<5.0]	3.0 J [4.0 J]	<5.0 [<5.0]	<5.0	<20
Bromodichloromethane	50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25 [<5.0]	<5.0 [<5.0]	<5.0 [<5.0]	<5.0	<20
Bromoform	50	<5.0 J	<5.0	<5.0	<5.0 J	<5.0	<5.0 J	<5.0	5.0 J	<25 [<5.0]	<5.0 [<5.0]	<5.0 [<5.0]	<5.0 J	<20
Chloroform	7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25 [<5.0]	<5.0 [<5.0]	0.50 J [0.60 J]	1.0 J	<20
Ethylbenzene	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	98	<25 J [0.90 J]	6.0 [7.0]	<5.0 [<5.0]	<5.0	<20
Methyl ethyl ketone (MEK)	- -	<25	<25	<25 J	<25	<25	<25 J	<25 J	<25 J	<120 J [<25]	1.0 J [1.0 J]	<25 [<25]	<25	<100
Methyl tert-butyl ether	- -	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0 J	<5.0	<5.0 J	<25 [<5.0]	<5.0 [<5.0]	<5.0 [<5.0]	<5.0	<20
Tetrachloroethene	5	<5.0	<5.0	<5.0	<5.0	<5.0	0.60 J	<5.0	<5.0 J	<25 [<5.0]	<5.0 [<5.0]	<5.0 [<5.0]	<5.0	<20
Toluene	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	28	<25 [<5.0]	2.0 J [2.0 J]	<5.0 J [<5.0]	<5.0	<20
Total Xylenes	5	<15	<15	<15	<15	<15	<15	<15	280	<75 J [2.0 J]	17 [20]	<15 [<15]	<15	<60
Trichloroethene	5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<25 [<5.0]	<5.0 [<5.0]	<5.0 J [<5.0]	<5.0	<20
Vinyl chloride	2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0 J	<5.0	<5.0 J	<25 [<5.0]	<5.0 [<5.0]	<5.0 [<5.0]	<5.0	<20
Total BTEX	- -	<15	<15	<15	<15	<15	<15	<15	440	<75 [2.9 J]	28 J [33 J]	<15 [<15]	<15	<60
Total VOCs	- -	1.0 J	1.0 J	<25	<25	<25	0.60 J	<25	440 J	22 J [13 J]	42 J [45 J]	0.50 J [0.60 J]	1.0 J	<100
Detected Semivolatile Organics														
2,4-Dimethylphenol	50	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	<9.0	<5.0 [<5.0]	0.90 J [2.0 J]	NA	<9.0	<5.0
2-Methylnaphthalene	- -	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	120	0.60 J [2.0 J]	19 J [40 J]	NA	<9.0	<5.0
2-Methylphenol	- -	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	<9.0	<5.0 [<5.0]	0.20 J [0.50 J]	NA	<9.0	<5.0
4,6-Dinitro-2-methylphenol	- -	<50	<10	<9.0	<48	<10	<47	<49	<47	<10 [<10]	11 [<10]	NA	<47	<10
4-Methylphenol	- -	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	<9.0	<5.0 [<5.0]	<5.0 [0.50 J]	NA	<9.0	<5.0
Acenaphthene	20	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	63	19 [21]	33 [50]	NA	<9.0	<5.0
Acenaphthylene	- -	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	15	3.0 J [4.0 J]	4.0 J [6.0]	NA	<9.0	<5.0
Anthracene	50	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	11	4.0 J [4.0 J]	5.0 [7.0]	NA	<9.0	<5.0
Benzo(a)anthracene	0.002	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	1.0 J	<5.0 [<5.0]	0.30 J [0.40 J]	NA	<9.0	<5.0
Benzo(a)pyrene	- -	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	0.50 J	<5.0 [<5.0]	<5.0 [<5.0]	NA	<9.0	<5.0
Biphenyl	5	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	14	3.0 J [4.0 J]	5.0 [10]	NA	<9.0	<5.0
Chrysene	0.002	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	0.90 J	<5.0 [<5.0]	<5.0 [<5.0]	NA	<9.0	<5.0
Dibenzofuran	- -	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	24	7.0 [7.0]	8.0 [14]	NA	<9.0	<5.0
Di-n-butyl phthalate	50	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	<9.0	<5.0 [<5.0]	0.30 J [<5.0]	NA	<9.0	<5.0
Fluoranthene	50	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	7.0 J	3.0 J [3.0 J]	4.0 J [6.0]	NA	<9.0	<5.0
Fluorene	50	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	40	12 [12]	16 [25]	NA	<9.0	<5.0
Naphthalene	10	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	670 D	36 J [67 J]	280 DJ [710 DJ]	NA	<9.0	<5.0
Phenanthrene	50	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	38	15 [16]	15 [24]	NA	<9.0	<5.0
Phenol	1	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	<9.0	<5.0 [<5.0]	<5.0 [0.70 J]	NA	<9.0	<5.0
Pyrene	50	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	5.0 J	2.0 J [2.0 J]	2.0 J [3.0 J]	NA	<9.0	<5.0
Total Carcinogenic PAHs	- -	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	2.4 J	<5.0 [<5.0]	NA	NA	<9.0	<5.0
Total PAHs	- -	<10	<5.0	<5.0	<10	<5.0	<9.0	<24	960 J	90 J [130 J]	370 J [860 J]	NA	<9.0	<5.0
Total SVOCs	- -	<150	<140	<140	<140	<140	<140	<740	1,000 J	110 J [140 J]	400 J [900 J]	NA	<140	<140
Detected Inorganics														
Arsenic	25	<10.0	<10.0	NA	<10.0	<10.0	<10.0 J	<10.0	10.1 J	12.7 [12.7]	NA	NA	<10.0	<10.0
Barium	1,000	73.4	87.1	NA	79.2	92.9	81.2	85.6	689	1,270 [1,290]	NA	NA	73.9	97.7
Cyanide	200	71.3	168 J	NA	33.3	66.0 J	1,650	269 J	13.7	17.8 J [20.4 J]	NA	63.4 J [55.5 J]	112	148 J
Selenium	10	<15.0	<15.0	NA	<15.0	<15.0	<15.0	20.6	<15.0	<15.0 [<15.0]	NA	NA	<15.0	16.2
Detected PCBs														
Aroclor 1248	- -	<0.50	<0.048	NA	<0.48	<0.048	<0.47	<0.047	<0.47	<0.047 [<0.047]	NA	<0.48 [<0.48]	0.37 J	<0.050
Aroclor 1254	- -	<0.50	<0.048	NA	<0.48	<0.048	<0.47	0.16	<0.47	<0.047 [<0.047]	NA	<0.48 [<0.48]	0.21 J	<0.050
Total PCBs	0.09	<0.50	<0.048	NA	<0.48	<0.048	<0.47	0.16	<0.47	<0.047 [<0.047]	NA	<0.48 [<0.48]	0.58 J	<0.050

TABLE 11
GROUNDWATER ANALYTICAL RESULTS (ppb)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	NYSDEC Groundwater Standards	MW-6			MW-7			MW-7D			MW-8		MW-8D	
Date Collected:	and Guidance Values	06/27/06	07/26/06	01/17/08	06/26/06	07/27/06	01/24/08	06/27/06	07/27/06	01/24/08	07/26/06	01/18/08	07/25/06	01/17/08
Detected Volatile Organics														
1,1,1-Trichloroethane	5	<5.0	<5.0 [<5.0]	<20	<5.0	<5.0 J	<5.0	<5.0	<5.0 J	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethene (Total)	- -	<10	<10 [<10]	<40	14	12	<10	<10	<10	<10	<10	<10	<10	<10
Acetone	50	5.0 J	<25 [<25]	13 J	4.0 J	<25 J	<25	3.0 J	<25 J	<25	<25	<25	<25 J	<25
Benzene	1	<5.0	<5.0 [<5.0]	<20	<5.0	<5.0	<5.0	8.0	5.0	0.70 J	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	50	1.0 J	<5.0 [<5.0]	<20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform	50	<5.0	<5.0 J [<5.0 J]	<20	<5.0	<5.0 J	<5.0	<5.0	<5.0 J	<5.0	<5.0 J	<5.0	<5.0	<5.0
Chloroform	7	8.0	0.50 J [0.70 J]	<20	0.80 J	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	5	<5.0	<5.0 [<5.0]	<20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	0.50 J	<5.0	<5.0	<5.0
Methyl ethyl ketone (MEK)	- -	<25	<25 [<25]	<100	<25	<25 J	<25	<25	<25 J	<25	<25	5.0 J	<25	<25
Methyl tert-butyl ether	- -	<5.0	<5.0 [<5.0]	<20	<5.0	<5.0 J	<5.0	1.0 J	0.70 J	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	5	<5.0	<5.0 [<5.0]	<20	2.0 J	6.0 J	<5.0	<5.0	<5.0 J	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene	5	<5.0	<5.0 [<5.0]	<20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Total Xylenes	5	<15	<15 [<15]	<60	<15	<15	<15	<15	<15	<15	<15	<15	<15	<15
Trichloroethene	5	<5.0	<5.0 [<5.0]	<20	3.0 J	4.0 J	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl chloride	2	<5.0	<5.0 [<5.0]	<20	5.0	3.0 J	<5.0	<5.0	<5.0 J	<5.0	<5.0	<5.0	<5.0	<5.0
Total BTEX	- -	<15	<15 [<15]	<60	<15	<15	<15	8.0	5.0	0.70 J	0.50 J	<15	<15	<15
Total VOCs	- -	14 J	0.50 J [0.70 J]	13 J	29 J	25 J	<25	12 J	5.7 J	0.70 J	0.50 J	5.0 J	<25	<25
Detected Semivolatile Organics														
2,4-Dimethylphenol	50	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
2-Methylnaphthalene	- -	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	1.0 J	<10	<5.0
2-Methylphenol	- -	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
4,6-Dinitro-2-methylphenol	- -	NA	<47 [<48]	<10	NA	<48	<10	NA	<47	<9.0	<47	<10	<48	<9.0
4-Methylphenol	- -	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Acenaphthene	20	NA	<9.0 [<10]	0.20 J	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	0.80 J	<10	<5.0
Acenaphthylene	- -	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Anthracene	50	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Benzo(a)anthracene	0.002	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Benzo(a)pyrene	- -	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Biphenyl	5	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Chrysene	0.002	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Dibenzofuran	- -	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	0.30 J	<10	<5.0
Di-n-butyl phthalate	50	NA	<9.0 [<10]	0.30 J	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Fluoranthene	50	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Fluorene	50	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	0.50 J	<10	<5.0
Naphthalene	10	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Phenanthrene	50	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	0.30 J	<10	<5.0
Phenol	1	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Pyrene	50	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Total Carcinogenic PAHs	- -	NA	<9.0 [<10]	<5.0	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	<5.0	<10	<5.0
Total PAHs	- -	NA	<9.0 [<10]	0.20 J	NA	<10	<5.0	NA	<9.0	<5.0	<9.0	2.4 J	<10	<5.0
Total SVOCs	- -	NA	<140 [<140]	0.50 J	NA	<140	<150	NA	<140	<140	<140	2.9 J	<140	<140
Detected Inorganics														
Arsenic	25	NA	11.3 [11.3]	17.1	NA	25.8	62.2	NA	14.5 J	16.9	43.6	<10.0	<10.0	<10.0
Barium	1,000	NA	136 [135]	197	NA	419	552	NA	258	330	295	224	1,110	1,590
Cyanide	200	56.6 J	55.0 [<10.0]	71.2 J	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	18.3	11.8 J	13.8	<10.0
Selenium	10	NA	<15.0 [<15.0]	<15.0	NA	<15.0	<15.0	NA	<15.0	<15.0	<15.0	<15.0	<15.0	<15.0
Detected PCBs														
Aroclor 1248	- -	<0.60	<0.48 [0.52]	<0.048	<0.47	<0.47	<0.048	<0.57	<0.47	<0.047	<0.48	<0.048	<0.48	<0.048
Aroclor 1254	- -	<0.60	<0.48 [0.30 J]	<0.048	<0.47	<0.47	<0.048	<0.57	<0.47	<0.047	<0.48	<0.048	<0.48	<0.048
Total PCBs	0.09	<0.60	<0.48 [0.82 J]	<0.048	<0.47	<0.47	<0.048	<0.57	<0.47	<0.047	<0.48	<0.048	<0.48	<0.048

TABLE 11
GROUNDWATER ANALYTICAL RESULTS (ppb)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Notes:

1. Samples were collected by ARCADIS BBL on the dates indicated.
2. VOCs = Target Compound List (TCL) Volatile Organic Compounds and Methyl-t-Butyl Ether (MTBE).
3. BTEX = Benzene, toluene, ethylbenzene and xylenes.
4. SVOCs = TCL Semi-Volatile Organic Compounds and Pyridine.
5. Inorganics = Resource Conservation Recovery Act (RCRA) Metals and Cyanide.
6. PAHs = Polynuclear aromatic hydrocarbons.
7. PCBs = Polychlorinated Biphenyls.
8. Laboratory analysis was performed by TestAmerica Laboratories, Inc. (TestAmerica), formerly Severn Trent Laboratories, Inc. (STL), of Buffalo, New York.
   - VOCs using United States Environmental Protection Agency (USEPA) SW-846 Method 8260B;
   - SVOCs using USEPA SW-846 Method 8270C;
   - Inorganics using USEPA SW-846 Methods 6010, 7470 and 9012A; and
   - PCBs using USEPA SW-846 Method 8082.
9. Total Carcinogenic PAHs consist of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene and Indeno(1,2,3-cd)pyrene.
10. Only those constituents detected in one or more samples are summarized.
11. Concentrations reported in parts per billion (ppb), which is equivalent to micrograms per liter (ug/L).
12. Field duplicate sample results are presented in brackets.
13. Data qualifiers are defined as follows:
    < = Constituent not detected at a concentration above the reported detection limit.
    D - Compound quantitated using a secondary dilution.
    J - Indicates that the associated numerical value is an estimated concentration.
14. NYSDEC groundwater standards/guidance values are from the NYSDEC Division of Water, Technical and Operational Guidance Series (TOGS) document titled "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (TOGS 1.1.1) dated June 1998, revised April 2000 and June 2004.
15. Shading indicates that the result exceeds the TOGS 1.1.1 Water Quality Standard/Guidance Value.
16. - - = No TOGS 1.1.1 Water Quality Standard/Guidance Value listed.
17. NA = Not Analyzed.
18. Results have been validated in accordance with USEPA National Functional Guidelines of October 1999.
19. * = Monitoring well MW-2 was not sampled during the July 2006 sampling event due to an insufficient amount of water in the well.

TABLE 12
SURFACE-WATER ANALYTICAL RESULTS (ppb)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID: Date Collected:	NYSDEC Water Quality Standards and Guidance Values	SW-2 08/03/06	SW-3 08/03/06	SW-4 08/03/06	SW-5 08/03/06	SW-6 08/03/06	SW-7 08/03/06
Detected VOCs							
Toluene	100 A(C)	0.60 J [0.60 J]	<5.0	<5.0	<5.0	<5.0	<5.0
Total BTEX	- -	0.60 J [0.60 J]	<15	<15	<15	<15	<15
Total VOCs	- -	0.60 J [0.60 J]	<15	<15	<15	<25	<15
Detected SVOCs							
None Detected	- -	- - [- -]	- -	- -	- -	- -	- -
Detected Inorganics							
Barium	- -	38.2 [37.6]	NA	36.8	NA	37.7	NA
Detected PCBs							
Total PCBs	0.000001 H(FC)	<0.47 [<0.47]	NA	<0.47	NA	<0.47	NA

Notes:
1. Samples were collected by ARCADIS BBL on the dates indicated.
2. VOCs = Target Compound List (TCL) Volatile Organic Compounds and Methyl-t-Butyl Ether (MTBE).
3. BTEX = Benzene, toluene, ethylbenzene and xylenes.
4. SVOCs = TCL Semi-Volatile Organic Compounds and Pyridine.
5. Inorganics = Resource Conservation Recovery Act (RCRA) Metals and Cyanide.
6. PCBs = Polychlorinated Biphenyls.
7. Samples were analyzed by Severn Trent Laboratories, Inc. (STL) located in Buffalo, New York for:
   - VOCs using United States Environmental Protection Agency (USEPA) SW-846 Method 8260B;
   - SVOCs using USEPA SW-846 Method 8270C;
   - Inorganics using USEPA SW-846 Methods 6010, 7470 and 9012A; and
   - PCBs using USEPA SW-846 Method 8082.
8. Only those constituents detected in one or more samples are summarized.
9. Concentrations reported in parts per billion (ppb), which is equivalent to micrograms per liter (ug/L).
10. Field duplicate sample results are presented in brackets.
11. Data qualifiers are defined as follows:
    < = Constituent not detected at a concentration above the reported detection limit..
    J - Indicates that the associated numerical value is an estimated concentration.
12. NYSDEC water standards/guidance values are from the NYSDEC Division of Water, Technical and Operational Guidance Series (TOGS) document titled "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (TOGS 1.1.1) dated June 1998, revised April 2000 and June 2004. The standards and guidance values presented are for Class B waters.
13. - - = No TOGS 1.1.1 Water Quality Standard/Guidance Value listed.
14. NA = Not Analyzed.
15. Results have been validated in accordance with USEPA National Functional Guidelines of October 1999.
16. A(C) = Protection for fish propagation (fresh waters).
17. H(FC) = Protection for human consumption of fish (fresh waters).

TABLE 13
SEDIMENT ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	NYSDEC Sediment Criteria						SD-1	SD-2	SD-3	SD-4	SD-5	SD-6	SD-7	SD-8
Sample Depth (Inches):	Benthic Aquatic Life Toxicity (ug/gOC)		Bioaccumulation (ug/gOC)		Effect Level (ppm)		0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	0 - 2	2 - 12	0 - 2
Date Collected:			Wildlife	Human Health	Lowest	Severe	8/4/2006	8/4/2006	8/4/2006	8/4/2006	8/4/2006	8/4/2006	8/3/2006	8/3/2006
Exceedences Shown In:	Acute (None Exceeded)	Chronic (Bold)	(Italic)	(Shade)	(Shade)	(Bold)								
Detected VOCs/BTEX														
Acetone	- -	- -	- -	- -	- -	- -	<0.039 [<0.034]	NA	<0.034	NA	<0.036	NA	0.036	NA
Chlorobenzene	34.6	3.5	- -	- -	- -	- -	<0.0080 [<0.0070]	NA	<0.0070	NA	<0.0070	NA	0.0010 J	NA
Methyl ethyl ketone (MEK)	- -	- -	- -	- -	- -	- -	<0.039 [<0.034]	NA	<0.034	NA	0.0040 J	NA	0.0040 J	NA
Toluene	235	49	- -	- -	- -	- -	<0.0080 [<0.0070]	<0.0080	<0.0070	<0.0080	<0.0070	<0.0060	0.0040 J	0.0030 J
Total BTEX	- -	- -	- -	- -	- -	- -	<0.024 [<0.020]	<0.023	<0.020	<0.024	<0.021	<0.017	0.0040 J	0.0030 J
Total VOCs	- -	- -	- -	- -	- -	- -	<0.039 [<0.034]	<0.023	<0.034	<0.024	0.0040 J	<0.017	0.045 J	0.0030 J
Detected SVOCs/PAHs														
2-Methylnaphthalene	304	34	- -	- -	- -	- -	<2.6 [<4.5]	<2.5	<2.3	<2.6	0.24 J	<1.9	<0.39	<0.49
Acenaphthene	- -	- -	- -	140	- -	- -	<2.6 [<4.5]	<2.5	<2.3	<2.6	0.58 J	<1.9	0.025 J	0.025 J
Acenaphthylene	- -	- -	- -	- -	- -	- -	<2.6 [<4.5]	<2.5	<2.3	<2.6	<4.7	<1.9	<0.39	0.035 J
Anthracene	986	107	- -	- -	- -	- -	<2.6 [<4.5]	<2.5	0.16 J	<2.6	1.0 J	<1.9	0.074 J	0.10 J
Benzo(a)anthracene	94	12	- -	1.3	- -	- -	**0.42 J [0.54 J]**	0.30 J	**0.94 J**	**0.28 J**	**1.8 J**	**0.25 J**	0.24 J	**0.27 J**
Benzo(a)pyrene	- -	- -	- -	1.3	- -	- -	0.40 J [0.46 J]	0.32 J	0.93 J	0.27 J	1.3 J	0.24 J	0.25 J	0.26 J
Benzo(b)fluoranthene	- -	- -	- -	1.3	- -	- -	0.51 J [0.63 J]	0.62 J	1.1 J	0.39 J	1.7 J	0.32 J	0.18 J	0.24 J
Benzo(ghi)perylene	- -	- -	- -	- -	- -	- -	0.32 J [0.34 J]	0.32 J	0.66 J	0.25 J	0.78 J	0.22 J	0.21 J	0.20 J
Benzo(k)fluoranthene	- -	- -	- -	1.3	- -	- -	0.20 J [0.24 J]	0.64 J	0.39 J	<2.6	0.54 J	0.12 J	0.20 J	0.20 J
Chrysene	- -	- -	- -	1.3	- -	- -	0.36 J [0.62 J]	0.35 J	0.71 J	0.27 J	1.5 J	0.23 J	0.24 J	0.31 J
Dibenzo(a,h)anthracene	- -	- -	- -	- -	- -	- -	<2.6 [<4.5]	<2.5	0.16 J	<2.6	<4.7	<1.9	0.058 J	0.069 J
Fluoranthene	- -	1,020	- -	- -	- -	- -	0.69 J [1.1 J]	0.63 J	1.4 J	0.48 J	3.3 J	0.48 J	0.45	0.61
Fluorene	73	8	- -	- -	- -	- -	<2.6 [<4.5]	<2.5	<2.3	<2.6	0.52 J	<1.9	0.027 J	0.049 J
Indeno(1,2,3-cd)pyrene	- -	- -	- -	1.3	- -	- -	0.26 J [0.29 J]	0.27 J	0.53 J	0.20 J	0.70 J	0.17 J	0.17 J	0.17 J
Phenanthrene	- -	120	- -	- -	- -	- -	0.39 J [0.48 J]	0.26 J	0.62 J	0.25 J	4.2 J	0.24 J	0.27 J	0.46 J
Pyrene	8,775	961	- -	- -	- -	- -	0.59 J [0.84 J]	0.51 J	1.2 J	0.45 J	2.9 J	0.40 J	0.42	0.50
Total Carcinogenic PAHs	- -	- -	- -	- -	- -	- -	2.2 J [2.8 J]	2.5 J	4.8 J	1.4 J	7.5 J	1.3 J	1.3 J	1.5 J
Total PAHs	- -	- -	- -	- -	- -	- -	4.1 J [5.5 J]	4.2 J	8.8 J	2.8 J	21 J	2.7 J	2.8 J	3.5 J
Total SVOCs	- -	- -	- -	- -	- -	- -	4.1 J [5.5 J]	4.2 J	8.8 J	2.8 J	21 J	2.7 J	2.8 J	3.5 J
Detected Inorganics														
Arsenic	- -	- -	- -	- -	6	33	<2.90 [3.40]	NA	3.30	NA	4.50	NA	4.70	NA
Barium	- -	- -	- -	- -	- -	- -	65.3 [68.4]	NA	56.9	NA	80.4	NA	66.3	NA
Chromium	- -	- -	- -	- -	26	110	13.5 [14.4]	NA	13.7	NA	16.0	NA	12.8	NA
Lead	- -	- -	- -	- -	31	110	26.4 [21.7]	NA	27.8	NA	59.0	NA	59.8	NA
Mercury	- -	- -	- -	- -	0.15	1.3	0.180 J [0.0500 J]	NA	0.0550 J	NA	0.270 J	NA	0.370 J	NA
Silver	- -	- -	- -	- -	1	2.2	<0.720 [<0.660]	NA	<0.680	NA	**5.20**	NA	<0.610	NA
PCBs														
Aroclor 1248	- -	- -	- -	- -	- -	- -	<0.026 [0.038]	NA	<0.023	NA	<0.024	NA	<0.020	NA
Aroclor 1254	- -	- -	- -	- -	- -	- -	<0.026 [<0.022]	NA	0.084	NA	<0.024	NA	<0.020	NA
Aroclor 1260	- -	- -	- -	- -	- -	- -	0.065 [0.032]	NA	<0.023	NA	0.12	NA	<0.020	NA
Total PCBs	2,760.8	19.3	1.4	0.0008	- -	- -	*0.065 [0.070]*	NA	*0.084*	NA	*0.12*	NA	<0.020	NA
Organic Carbon														
TOC by Lloyd Kahn	- -	- -	- -	- -	- -	- -	6320 J [14,600 J]	26,000 J	15,100 J	12,700	76,300 J	15,000 J	NA	10,500 J

TABLE 13
SEDIMENT ANALYTICAL RESULTS (ppm)

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

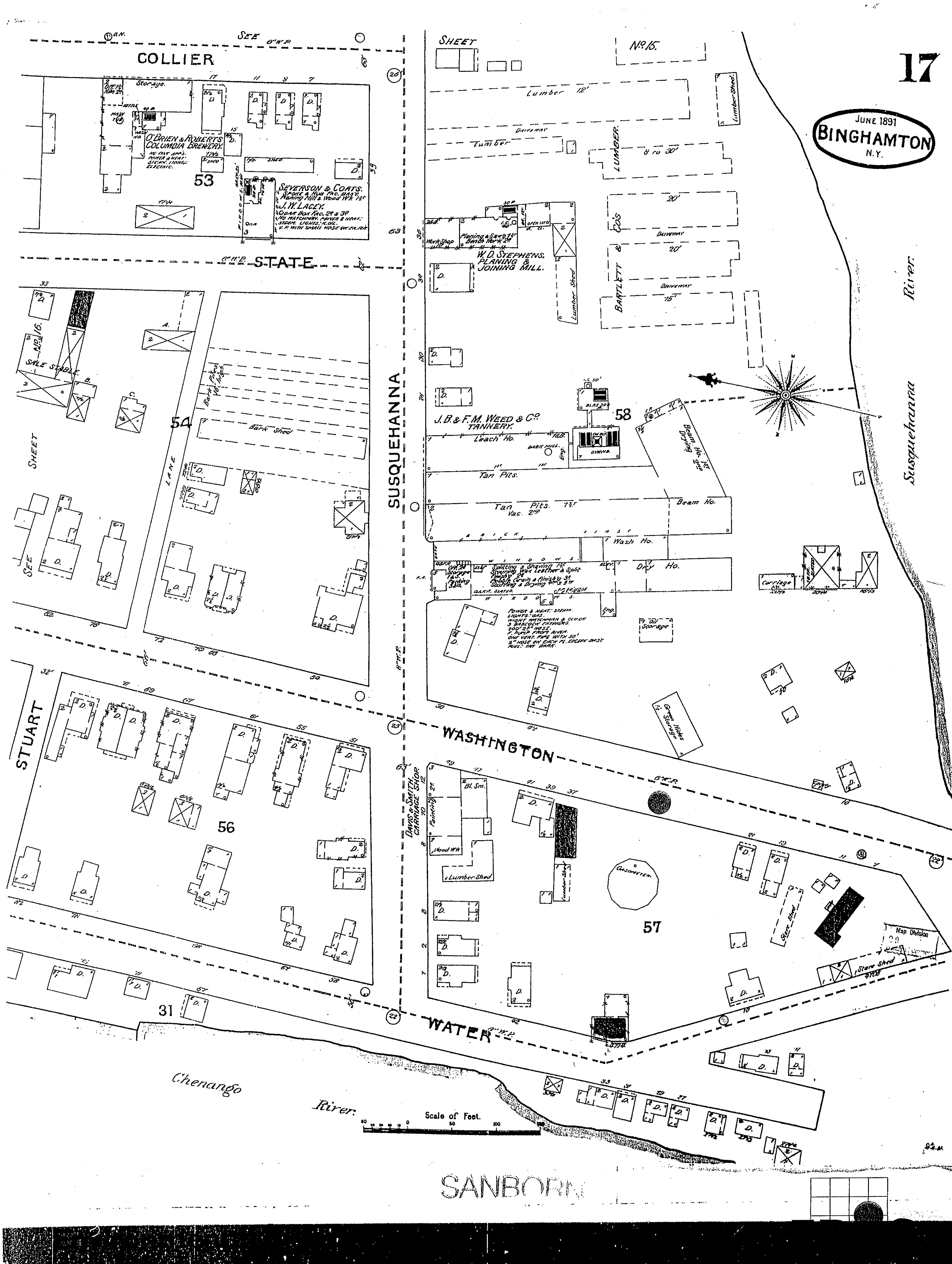
<u>Notes</u>:

1. Samples were collected by ARCADIS BBL on the dates indicated.
2. VOCs = Target Compound List (TCL) Volatile Organic Compounds and Methyl-t-Butyl Ether (MTBE).
3. BTEX = Benzene, toluene, ethylbenzene and xylenes.
4. SVOCs = TCL Semi-Volatile Organic Compounds and Pyridine.
5. PAHs = Polynuclear aromatic hydrocarbons.
6. Inorganics = Resource Conservation Recovery Act (RCRA) Metals and Cyanide.
7. PCBs = Polychlorinated Biphenyls.
8. Laboratory analysis was performed by TestAmerica Laboratories, Inc. (TestAmerica), formerly Severn Trent Laboratories, Inc. (STL), of Buffalo, New York.
   - VOCs/BTEX using United States Environmental Protection Agency (USEPA) SW-846 Method 8260B;
   - SVOCs/PAHs using USEPA SW-846 Method 8270C;
   - Inorganics using USEPA SW-846 Methods 6010, 7471 and 9012A;
   - PCBs using USEPA SW-846 Method 8082; and
   - Total Organic Carbon (TOC) by the Lloyd Kahn Method.
9. Total Carcinogenic PAHs consist of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Dibenzo(a,h)anthracene and Indeno(1,2,3-cd)pyrene.
10. Concentrations reported in dry weight parts per million (ppm), which is equivalent to milligrams per kilogram (mg/Kg).
11. Field duplicate sample results are presented in brackets.
12. Data qualifiers are defined as follows:
    < = Constituent not detected at a concentration above the reported detection limit..
    J - Indicates that the associated numerical value is an estimated concentration.
13. New York State Department of Environmental Conservation (NYSDEC) Sediment Criteria are from the Technical Guidance for Screening Contaminated Sediments, January 25, 1999.
14. Criteria for VOCs/BTEX, SVOCs/PAHs, and PCBs, which are presented in micrograms per gram organic carbon (ug/gOC), are adjusted for each sample based on sample-specific Total Organic Carbon (TOC) concentrations. For example, for Chlorobenzene (benthic aquatic life acute value of 34.6 ug/g OC and chronic value of 3.5 ug/g OC) and sample SD-1 (0-2) (TOC of 0.632% or 6.32 g OC/kg), the criteria are adjusted as follows:
    Benthic Aquatic Life Chronic Toxicity: (3.5 ug/g OC) * (6.32 g OC/kg) = 22.1 ug/kg or 0.0221 mg/kg
    Benthic Aquatic Life Acute Toxicity: (34.6 ug/g OC) * (6.32 g OC/kg) = 219 ug/kg or 0.0129 mg/kg
15. No TOC adjusted sample specific criteria were exceeded.
16. Shading indicates that the result exceeds the Lowest Effect Level.
17. Italic font indicates that the result exceeds the Severe Effect Level.
18. Bold font indicates that the result exceeds the Benthic Aquatic Life Chronic Toxicity.
19. - - = No NYSDEC Sediment Criteria listed.
20. NA = Not Analyzed.
21. Results have been validated in accordance with USEPA National Functional Guidelines of October 1999.

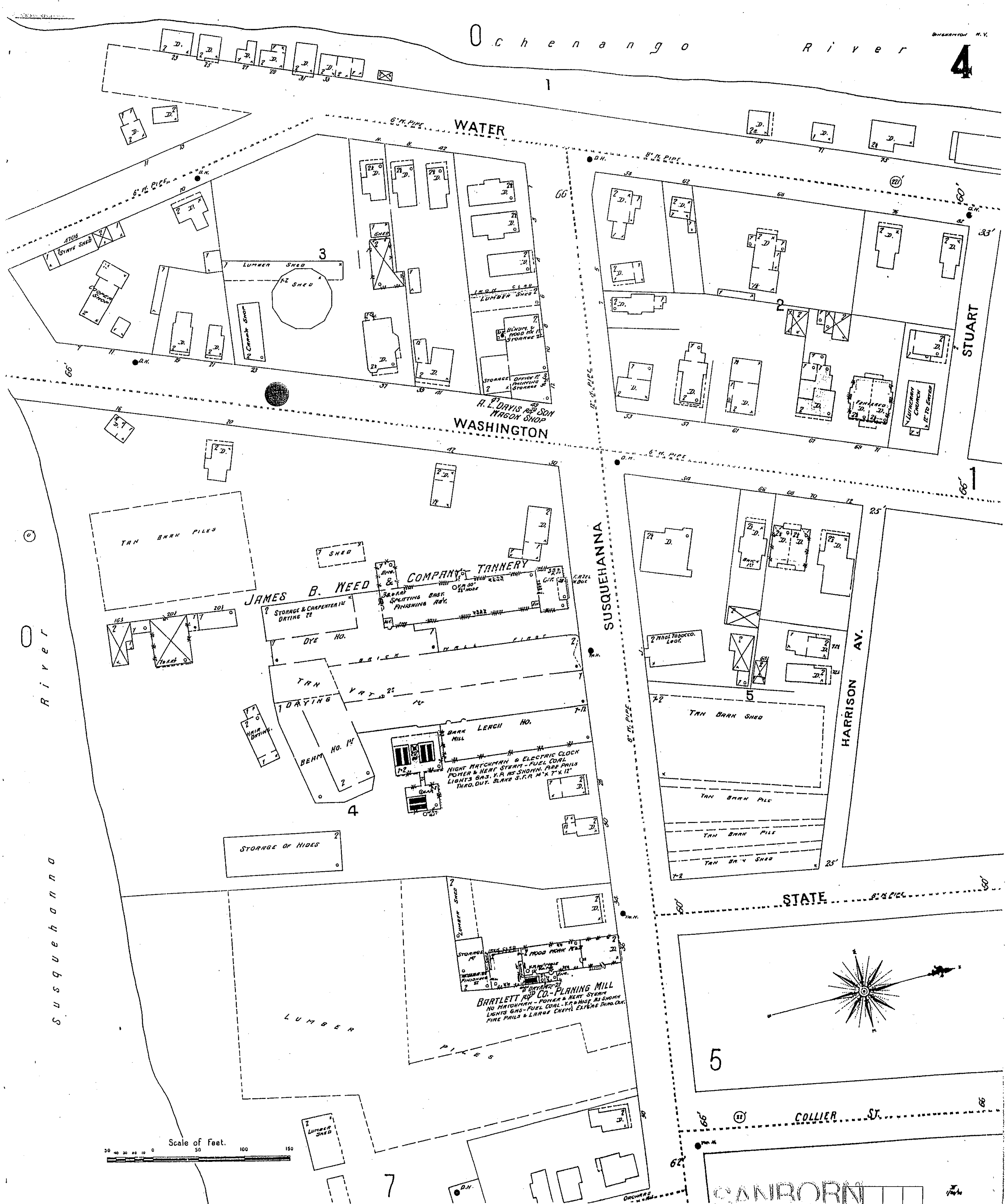

CHENANGO
SUSQUEHANNA
SUSQUEHANNA
WATER
WASHINGTON
Simpson Heirs
WD. 2
Lot 65
Lot 66
Lot 67
Lot 73
R. Mather
J.F. Wentz
J.R. & E.E. Clark
E.E. Clark
A. Shultz
S. M. Ely
J. B. & F. M. Weed
J. B. & F. M. Weed
J. B. & F. M. Weed
White & Fuller
Bartlett Bros
John Evans
B. S. Curran
CARRIAGE FACTORY
A. L. Davis
Lentz Bros
City of Binghamton
GAS WORKS
B. F. Young
SHOP
OFFICE
TANNERY
White & Wood
POTTERY
Bartlett Bros
W. F. Young
Island covered
COVERED BRIDGE
1885


9
MAY 1887
BINGHAMTON
N.Y.
No. 8.
SEE SHEET
COURT
STATE
HAWLEY
WASHINGTON
WATER
STUART
SUSQUEHANNA
ST.
COLLIER
No. 14.
No. 10.
Chenango River
LAFAYETTE BLOCK
EXCHANGE HOTEL
BINGHAMTON IRON WORKS.
HOTEL JOHNSON
CHENANGO HO.
WINSOR HO.
DUNLEY HOUSE.
WHITE HORSE HOTEL
BINGHAMTON GAS WORKS.
GAS HOLDERS.
31
32
33
34
55
56
57
Scale of Feet.
SANBORN

1887

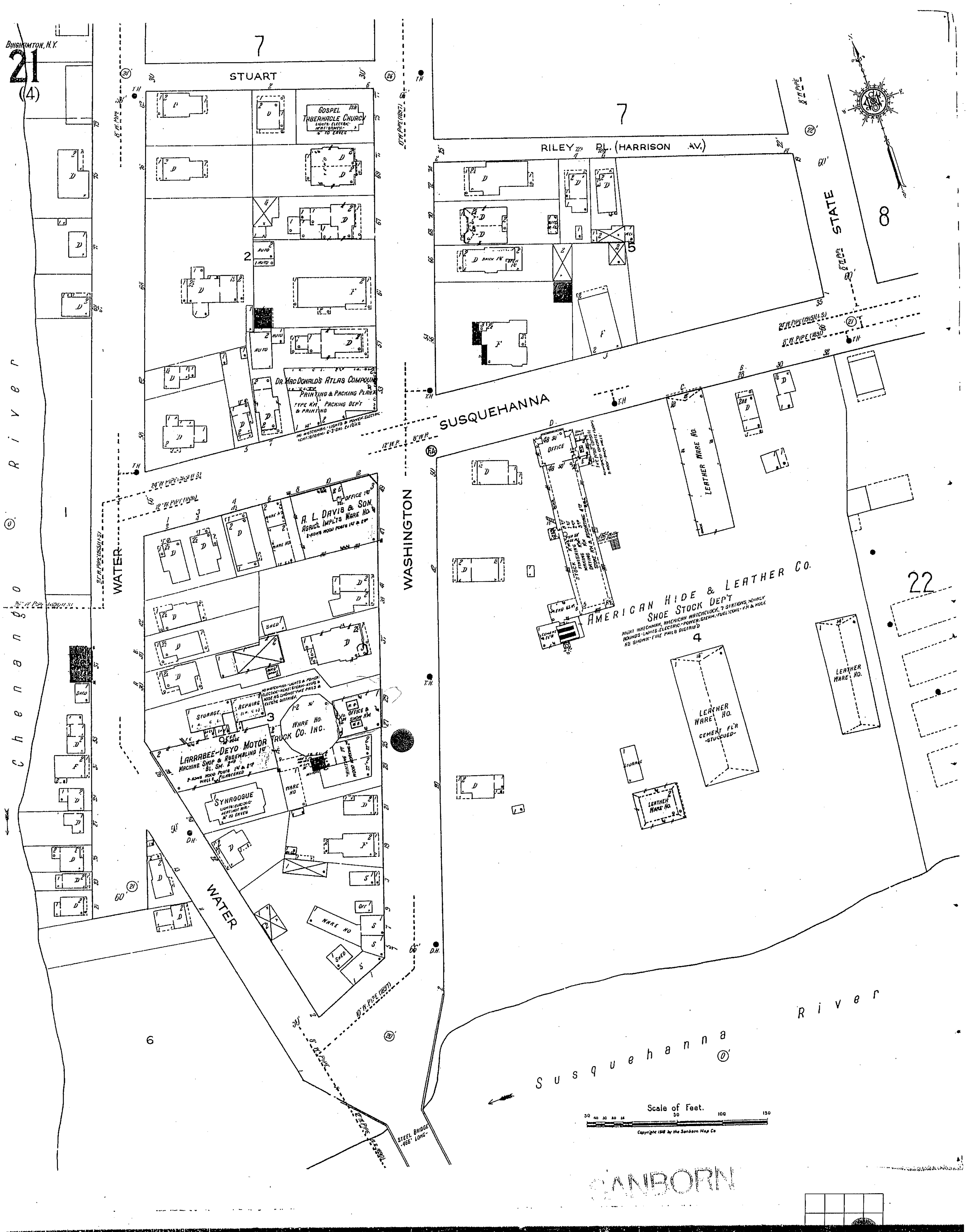

17
JUNE 1891
BINGHAMTON
N.Y.
COLLIER
STATE
SUSQUEHANNA
WASHINGTON
WATER
STUART
LANE
Susquehanna River
Chenango River
O'BRIEN & ROBERTS
COLUMBIA BREWERY
SEVERSON & COATS
J. W. LACEY
W. D. STEPHENS
PLANING & JOINING MILL
BARTLETT & CO'S LUMBER
J. B. & F. M. WEED & Co.
TANNERY
DAVIS & SMITH CARRIAGE SHOP
SALE STABLE
Green Hides Storage
GASOMETER
Lumber Shed
Bark Shed
Tan Pits
Beam Ho.
Wash Ho.
Dry Ho.
Leach Ho.
53
54
56
57
58
31
SHEET No. 15
SEE SHEET No. 16
Scale of Feet.
SANBORN

1891

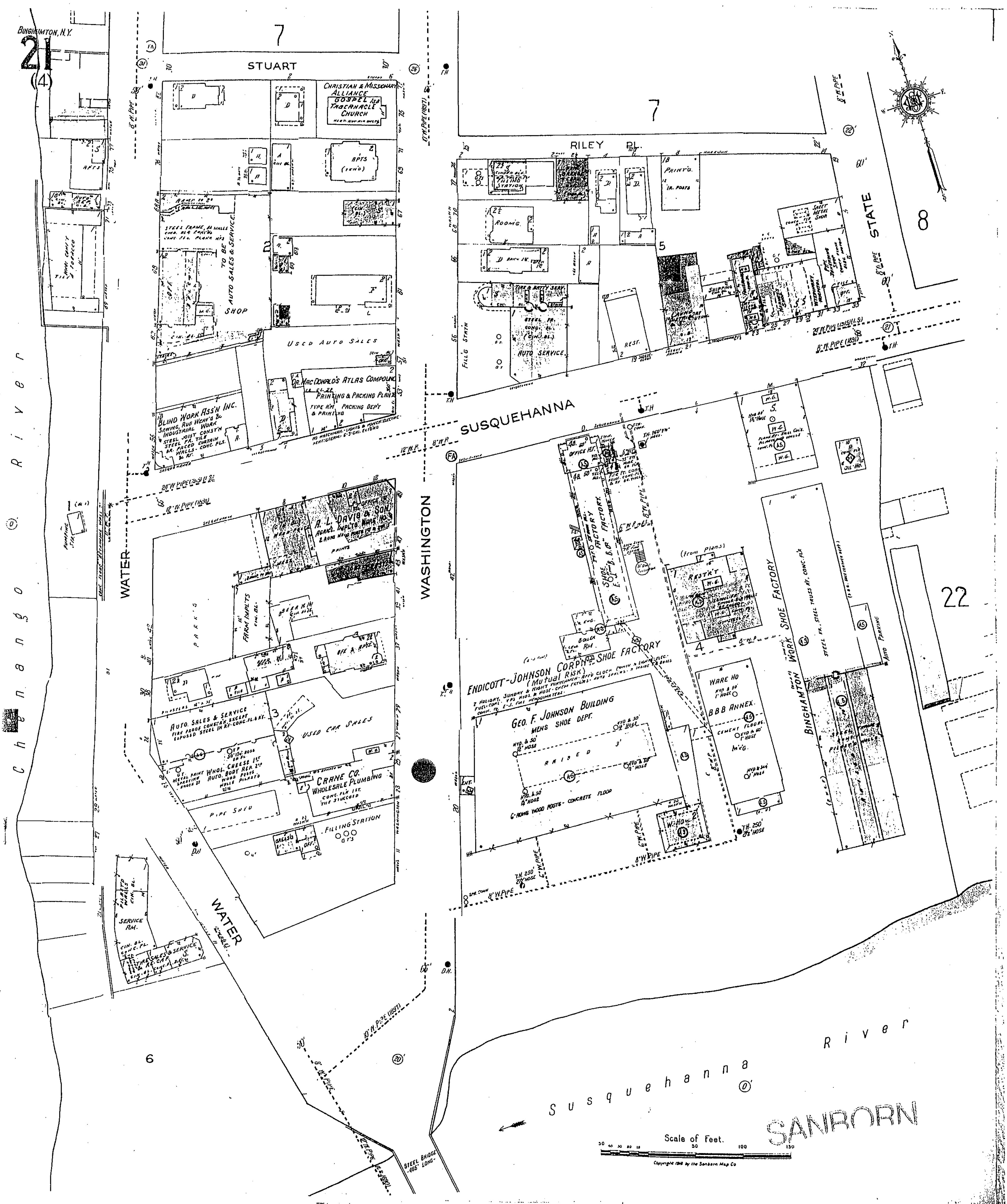


Environmental Risk Information & Imaging Services

1898

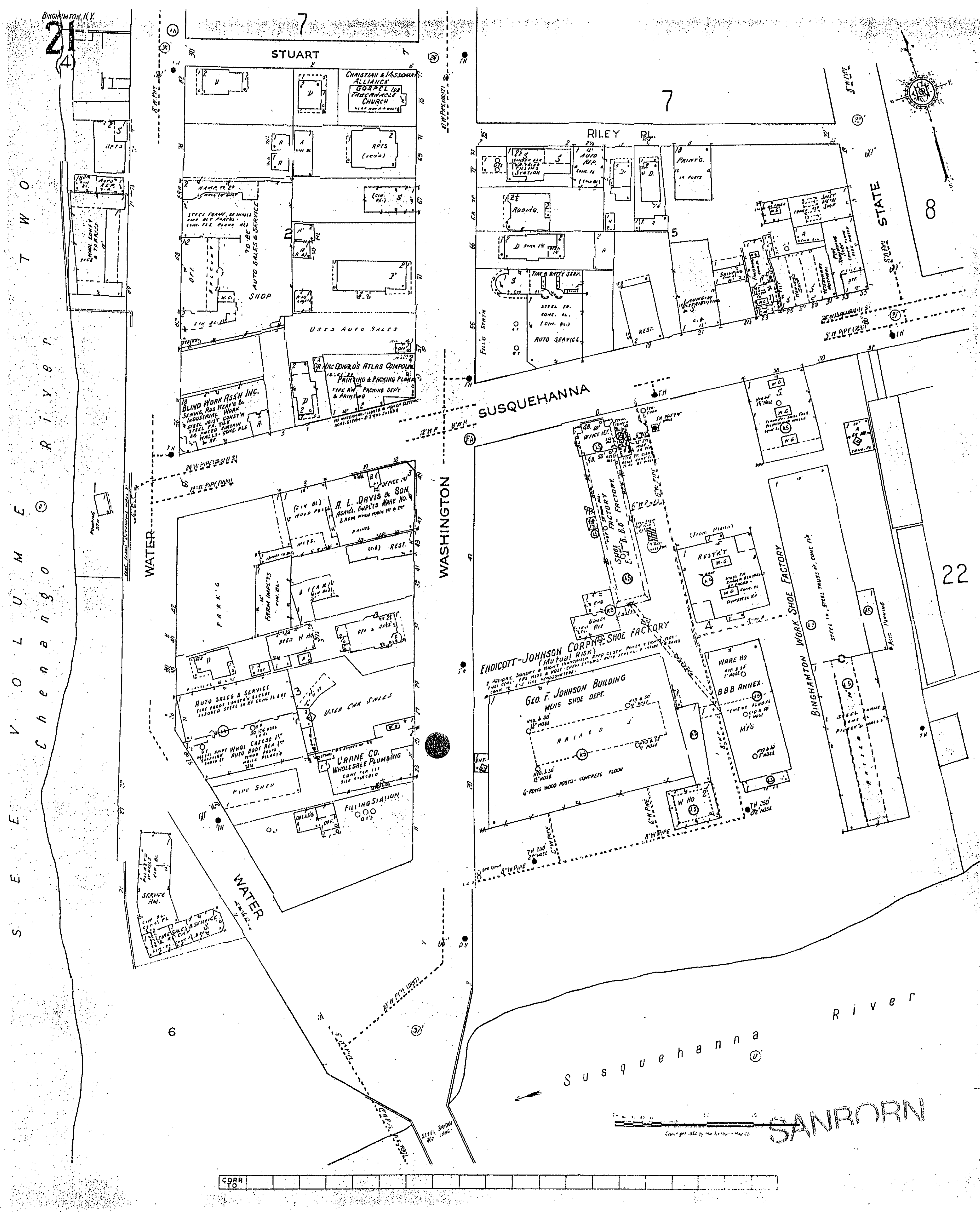

Binghamton, N.Y.
21
(4)
STUART
7
GOSPEL TABERNACLE CHURCH
RILEY PL. (HARRISON AV.)
STATE
8
SUSQUEHANNA
WASHINGTON
WATER
DR. MACDONALD'S ATLAS COMPOUND PRINTING & PACKING PLANT
A. L. DAVIS & SON AGRICL IMPL'TS WARE HO.
AMERICAN HIDE & LEATHER CO. SHOE STOCK DEP'T
LEATHER WARE HO.
LARRABEE-DEYO MOTOR TRUCK CO. INC.
SYNAGOGUE
22
Chenango River
Susquehanna River
STEEL BRIDGE
Scale of Feet.
SANBORN

1918



BINGHAMTON, N.Y.
21
(4)
STUART
RILEY PL.
STATE
SUSQUEHANNA
WASHINGTON
WATER
CHRISTIAN & MISSIONARY ALLIANCE GOSPEL TABERNACLE CHURCH
USED AUTO SALES
AUTO SALES & SERVICE
SHOP
MACDONALD'S ATLAS COMPOUND
PRINTING & PACKING PLANT
BLIND WORK ASS'N INC.
AUTO SERVICE
A. L. DAVIS & SON
FARM IMPL'TS
AUTO SALES & SERVICE
USED CAR SALES
CRANE CO. WHOLESALE PLUMBING
PIPE SHED
FILLING STATION
ENDICOTT-JOHNSON CORP'N SHOE FACTORY (Mutual Risk)
GEO. F. JOHNSON BUILDING
MENS SHOE DEPT.
B B B ANNEX
WARE HO
BINGHAMTON WORK SHOE FACTORY
AUTO PARKING
SHOE FACTORY
22
8
7
6
Chenango River
Susquehanna River
STEEL BRIDGE
Scale of Feet.
SANBORN

1950



1952

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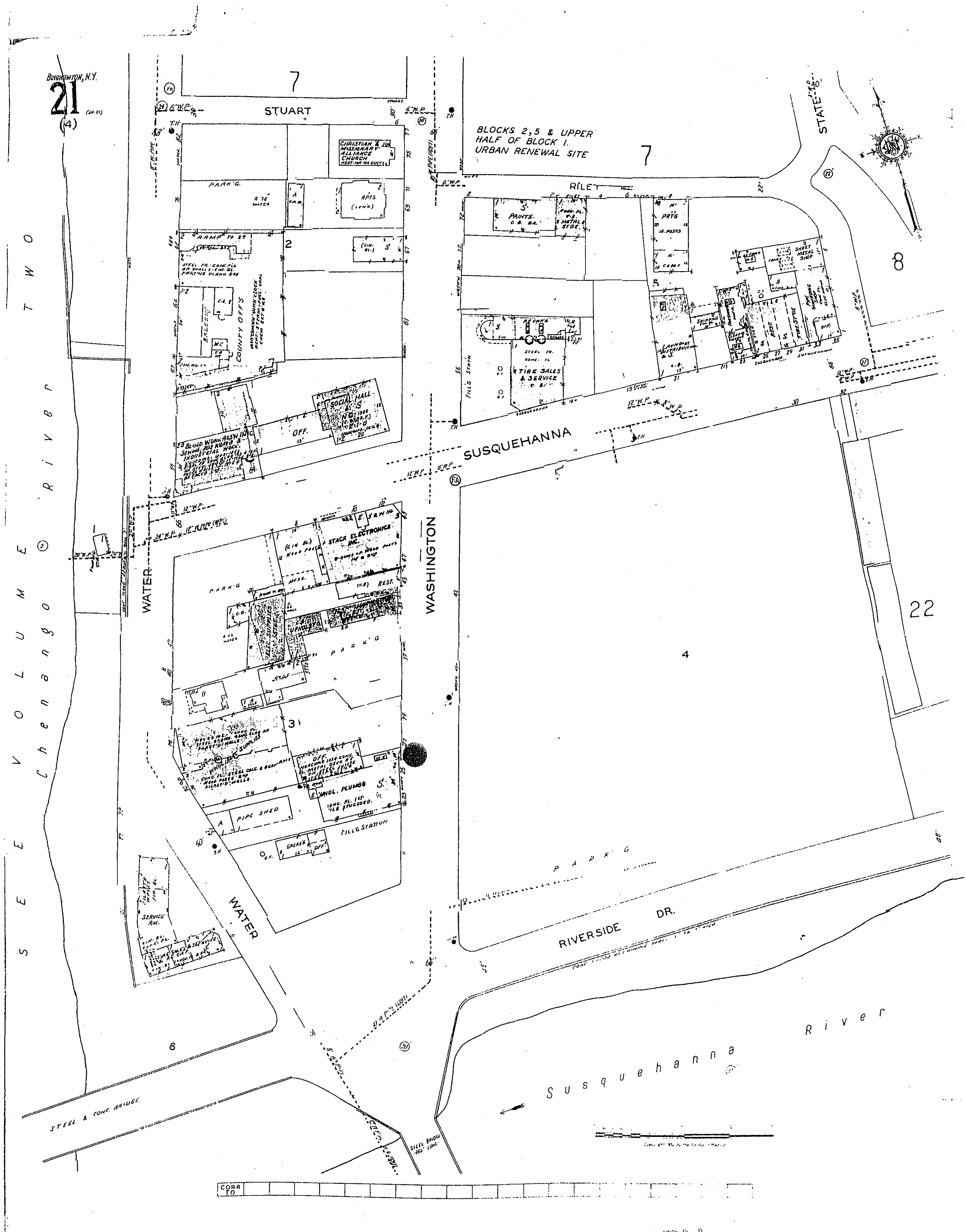
ERIIS



Binghamton, N.Y.
21
(4)
7
STUART
BLOCKS 2,5 & UPPER
HALF OF BLOCK 1.
URBAN RENEWAL SITE
7
RILEY
STATE
8
CHRISTIAN & MISSIONARY ALLIANCE CHURCH
APTS
PARK'G
2
COUNTY OFFS
PAINTS
PRTG
SHEET METAL SHOP
TIRE SALES & SERVICE
FILL'G STATN
SOCIAL HALL
OFF.
SUSQUEHANNA
WASHINGTON
WATER
STACK ELECTRONICS INC.
REST.
ELEC. SUPPLIES
PARK'G
31
WHOL. PLUMB'G
PIPE SHED
FILL'G STATION
GREASE
OFF.
WATER
4
22
PARK'G
RIVERSIDE DR.
6
STEEL & CONC. BRIDGE
STEEL BRIDGE
Susquehanna River
Chenango River
SEE VOLUME TWO
SERVICE RM.
CORR TO

1970

Date Start/Finish: 5/8/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-56 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763748.205 **Easting:** 1001581.522 **Casing Elevation:** NA **Borehole Depth:** 50.3' below grade **Surface Elevation:** 845.24' AMSL **Descriptions By:** Dave Cornell	**Well/Boring ID:** SB-1 **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	845	NA	NA	NA	NA	NA	NA			ASPHALT.	Borehole backfilled with Bentonite to grade.
		1	0.5-2	1.2	10 10 10	NA	ND			Gray Silty fine SAND and fine to medium subangular GRAVEL, non-plastic, moist. [Subbase] Brown Silty fine to medium SAND, some fine to coarse subangular Gravel, non-plastic, moist.	
		2	2-4	1.4	5 5 3 6	8	ND				
5	840	3	4-6	1.0	14 9 2 2	11	ND			Saturated below 5.0' bgs.	
		4	6-8	1.1	4 3 3 2	6	3.9			Brown-gray Silty fine SAND, some fine to medium subangular to rounded Gravel, non-plastic, saturated.	
		5	8-10	0.4	9 3 4 3	7	12.9	X		Silty medium to fine SAND, little medium to fine subrounded Gravel, faint possible degraded petroleum-like odor, non-plastic, saturated.	
10	835	6	10-12	0.4	9 4 3 5	7	3.6				
		7	12-14	1.0	12 6 6 10	12	12.5			Silty fine to coarse SAND and fine to coarse subrounded GRAVEL, little Brick fragments, trace Wood chips, trace Slag, faint odor, non-plastic, saturated.	
15	830	8	14-16	0.0	3 3 3 3	6	NA			No Recovery.	

BBL® an ARCADIS company

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

Soil samples collected from 8.0' - 10.4' bgs for TCL VOCs, TCL SVOCs, total Cyanide and Metals; from 20' - 20.5' and 24' - 26' bgs for BTEX, PAHs, and Total Cyanide. Duplicate sample DUP-1 collected from 24' -26' bgs.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-1**

Borehole Depth: 50.3' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-16.5	1.0	50/0.5	NA	0.7			Silty fine to coarse SAND and fine to coarse subrounded GRAVEL, little Brick fragments, trace Wood chips, trace Slag, sheen on water (slough), faint petroleum odor, non-plastic, saturated.	Borehole backfilled with Bentonite to grade.
		NA	NA	NA	NA	NA	NA			WOOD, very faint MGP-like odor, non-plastic, saturated.	
										Auger to 18' bgs. [Possible Holder Floor]	
		10	18-18.5	0.5	50/0.5	NA	0.7			WOOD, trace black staining.	
		NA	NA	NA	NA	NA	NA			Auger to 20' bgs. [Possible Holder Floor]	
20	825	11	20-22	1.5	34 17 25 19	42	1.0 ND	X		Dark-gray SILT and fine SAND, trace Wood and fine Gravel, non-plastic, saturated. BRICK. [Possible Holder Floor] Gray-olive Silty fine to medium SAND, some fine to coarse subrounded Gravel, non-plastic, moist to wet.	
		12	22-24	0.0	10 17 34 47	51	NA			No Recovery, Cobble stuck in spoon.	
25	820	13	24-26	2.0	25 36 27 29	63	ND	X		Brown Silty fine to coarse SAND, non-plastic, saturated. Cobble at 24.6' bgs. Brown SILT and fine SAND, non-plastic, saturated. Brown Silty fine to coarse SAND, non-plastic, saturated.	
		14	26-28	1.2	10 5 6 3	11	ND			Brown Silty fine to medium rounded GRAVEL, little fine to medium Sand, non-plastic, saturated.	
		15	28-30	0.7	15 18 14 14	32	ND				
30	815	16	30-32	0.9	12 14 16 18	30	ND				
		17	32-34	1.8	18 25 47 50	72	ND			Brown Silty fine to coarse subrounded to rounded GRAVEL, some fine to coarse Sand, non-plastic, saturated.	
35	810	18	34-36	1.5	40 37 48 51	85	ND				

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Remarks:
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Soil samples collected from 8.0' - 10.4' bgs for TCL VOCs, TCL SVOCs, total Cyanide and Metals; from 20' - 20.5' and 24' - 26' bgs for BTEX, PAHs, and Total Cyanide. Duplicate sample DUP-1 collected from 24' -26' bgs.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-1

Borehole Depth: 50.3' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		19	36-38	1.5	41 43 41 50/0.4	84	ND			Brown Silty fine to coarse subrounded to rounded GRAVEL, some fine to coarse Sand, non-plastic, saturated. Trace Cobbles below 38' bgs.	
		20	38-40	1.1	29 27 50/0.4 -	27	ND			Brown Silty fine SAND, trace medium Sand, possibly bouncing on Cobble, non-plastic, saturated.	Borehole backfilled with Bentonite to grade.
40	805	21	40-42	1.3	37 60 50/0.3 -	60	ND			Brown Silty fine SAND, some fine to coarse subrounded multicolored Gravel, trace medium to coarse Sand, non-plastic, saturated. Increasing medium Sand content, trace Cobbles below 42' bgs.	
		22	42-44	1.4	30 45 50/0.4 -	45	ND				
45	800	23	44-46	1.5	25 40 75 -	115	ND			Gray SILT and fine SAND, non-plastic, saturated. Fine Sand seam from 44.8' - 45' bgs.	
		24	46-48	0.3	100/0.3	NA	ND			Gray SILT, some fine to coarse subangular to subounded Gravel, little to trace Clay and fine Sand, dense, non-plastic, saturated. [Possible Till] Trace Cobbles below 48' bgs.	
		25	48-50	0.2	50/0.2	NA	ND				
50	795	26	50-50.3	0.3	50/0.3	NA	ND			Shale fragments below 50' bgs.	
55	790										

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Remarks:
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Soil samples collected from 8.0' - 10.4' bgs for TCL VOCs, TCL SVOCs, total Cyanide and Metals; from 20' - 20.5' and 24' - 26' bgs for BTEX, PAHs, and Total Cyanide. Duplicate sample DUP-1 collected from 24' -26' bgs.

Date Start/Finish: 5/10/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763756.056
Easting: 1001608.26
Casing Elevation: NA

Borehole Depth: 40.2' below grade
Surface Elevation: 844.73' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-2**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	845	NA	NA	NA	NA	NA	NA			ASPHALT and Subbase, non-plastic, moist.	
		1	0.5-2	1.0	24 25 50	49	ND			Brown-gray fine to medium SAND, some fine to coarse subangular Gravel, trace Brick, Concrete fragments, and Cinders, non-plastic, moist.	
		2	2-4	0.3	50/0.3	NA	ND			CONCRETE.	Borehole backfilled with Bentonite to grade.
5	840	3	4-6	1.1	6 5 4 4	9	ND 0.8			Dark gray SILT and fine to medium angular GRAVEL, little fine Sand, trace Metal, Cinders, and Brick, non-plastic, moist. Saturated below 4.8' bgs.	
		4	6-8	0.7	2 2 1 1	3	0.4				
		5	8-10	0.4	1 1 1 1	2	ND			Gray SILT, some fine Sand, little Ash-like material, trace Cinders, non-plastic, saturated.	
10	835	6	10-12	2.0	3 2 2 3	4	ND			Dark gray to gray fine to coarse Sandy fine to medium angular GRAVEL, some Cinders, little white Ash-like material, trace Slag, trace Silt, non-plastic, moist. Little Wood below 11.7' bgs.	
		7	12-14	0.4	1 1 2 2	3	ND			Trace Glass below 14' bgs.	
15	830	8	14-16	1.0	2 7 9 7	16	ND			Brown SILT, little Clay, trace Brick fragments and fine Sand, slightly plastic, moist.	

BBL® an ARCADIS company

Remarks:

bgs = below ground surface; NA = Not Available/Applicable; ND = Not Detected; AMSL = Above Mean Sea Level.

Soil samples collected from 20' - 22' and from 28' - 30' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-2**

Borehole Depth: 40.2' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample
		9	16-18	0.8	7, 9, 10, 11	19	ND	
		10	18-20	1.4	18, 11, 50/0.4, -	11	ND	
20	825	11	20-22	1.8	23, 15, 14, 16	29	40.9, 789	
		12	22-24	0.9	10, 12, 8, 9	20	179	
25	820	13	24-26	1.3	16, 10, 12, 13	22	220	
		14	26-28	1.7	12, 25, 20, 52	45	3.9, 1.8, 0.4	
		15	28-30	1.8	35, 32, 24, 19	56	1.1, 0.8	
30	815	16	30-32	1.5	18, 34, 37, 24	71	ND	
		17	32-34	0.6	50, 50/0.1, -, -	NA	ND	
35	810	18	34-36	0.9	16, 50/0.4, -, -	NA	ND	

Stratigraphic Description

- BRICK fragments and fine to coarse subrounded GRAVEL, little Concrete chips, trace Wood, fine to medium Sand and Cinders, non-plastic, saturated.
- BRICK fragments, trace Silt and fine Sand. Auger through possible Holder Floor to 20' bgs.
- Gray-olive Silty fine to coarse SAND and fine to coarse subrounded GRAVEL, trace Cobbles, trace Brick, moderate petroleum-like odor, non-plastic, saturated.
  No Brick below 22' bgs.
- Olive-gray Silty fine to coarse SAND and fine to coarse subrounded to rounded GRAVEL, little to trace Cobbles, faint petroleum-like odor, non-plastic, saturated.
- Olive Silty fine SAND, non-plastic, saturated.
  Brown color below 27.4' bgs.
- Brown fine to medium SAND, some fine to coarse subrounded multicolored Gravel, trace Silt, Cobbles, and coarse Sand, non-plastic, saturated.
- Brown Silty fine SAND, non-plastic, saturated.
- Brown Silty fine SAND, some fine to medium subrounded mulitcolored Gravel, dense, non-plastic, moist to wet.
  Little medium to coarse Sand, saturatd below 34' bgs.

Well/Boring Construction

Borehole backfilled with Bentonite to grade.

BBL® an ARCADIS company

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

Soil samples collected from 20' - 22' and from 28' - 30' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Project: 130.55
Data File:SB-2.dat
Template:J:/Rockware/Logplot2001/Logfiles/13055/NYSEG_boring_well.ldf
Date: 6/28/06

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-2**

Borehole Depth: 40.2' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		19	36-38	0.4	100/0.5	NA	ND			Brown Silty fine SAND, some fine to medium subrounded mulitcolored Gravel, little Cobbles to 36.4' bgs, dense, non-plastic, saturated.	Borehole backfilled with Bentonite to grade.
		20	38-40	0.8	56 50/0.3 - -	NA	ND			Brown Silty fine SAND, trace medium Sand, non-plastic, saturated.	
40	805	21	40-40.2	0.0	50/0.2	NA	NA			No Recovery.	
45	800										
50	795										
55	790										

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

Soil samples collected from 20' - 22' and from 28' - 30' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

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Date Start/Finish: 5/11/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763726.798
Easting: 1001598.844
Casing Elevation: NA

Borehole Depth: 46.6' below grade
Surface Elevation: 845.83' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-3**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	NA	NA	NA	NA	NA			ASPHALT and Subbase.	
	845	1	0.5-2	1.5	12, 15, 15	NA	ND			Gray fine to medium rounded GRAVEL, non-plastic, moist. Brown Silty fine to medium SAND, little to some fine to coarse rounded Gravel, trace Cobbles and Cinders, non-plastic, moist.	
		2	2-4	1.1	3, 4, 3, 5	7	ND				Borehole backfilled with Bentonite to grade.
5	840	3	4-6	0.7	9, 8, 12, 17	20	ND				
		4	6-8	0.6	5, 4, 4, 3	8	ND			Saturated below 6.0' bgs.	
		5	8-10	0.5	2, 3, 2, 4	5	3.9			Dark gray CINDERS, little Brick fragments and fine Sand, trace sheen, faint odor, non-plastic, saturated.	
10	835	6	10-12	1.2	3, 2, 2, 2	4	4.1			Trace fine Gravel, trace sheen from 10' - 11.2' bgs.	
		7	12-14	0.4	3, 2, 3, 4	5	0.4			Trace Wood below 12' bgs.	
15	830	8	14-16	0.4	4, 2, 2, 6	4	ND			Little Wood, trace Nails and Screws below 14' bgs.	

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Remarks:

bgs = below ground surface; NA = Not Available/Applicable; ND = Not Detected; AMSL = Above Mean Sea Level.

Soil samples collected from 20' - 20.5', 22.4' - 23.2', and 30' - 32' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-3**

Borehole Depth: 46.6' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	0.4	6 3 3 3	6	ND			Dark gray CINDERS, little Brick fragments and fine Sand, trace Slag, non-plastic, saturated.	Borehole backfilled with Bentonite to grade.
20		10	18-20	1.2	6 4 9 8	13	1.9			Dark gray-black CINDERS and BRICK fragments, little to trace fine to medium Sand and fine to coarse subrounded Gravel, trace Cobbles and Wood, non-plastic, saturated.	
		11	20-20.5	0.5	50/0.5	NA	34	X		Brown-gray Silty fine to medium SAND, faint MGP-like odor above Steel. [Possible Holder Floor]	
	825	NA	NA	NA	NA	NA	NA			Auger through holder pad from 20.5' - 22' bgs.	
										Orange BRICK. [Possible Holder Floor]	
		12	22-24	1.2	20 19 12 11	31	990	X		Gray-brown Silty fine to coarse subrounded GRAVEL, trace fine to medium Sand, faint petroleum-like odor, non-plastic, saturated.	
25	820	13	24-26	0.9	17 50/0.4 - -	NA	232			Olive-gray fine to medium Sandy fine to coarse subrounded GRAVEL, trace Silt, medium to moderate petroleum-like odor, non-plastic, saturated.	
		14	26-28	0.9	50 50/0.4 - -	NA	309			Moderate petroleum-like odor below 26' bgs.	
30		15	28-30	1.1	16 23 14 10	37	95.3			Faint to moderate petroleum-like odor below 28' bgs.	
	815	16	30-32	1.8	21 28 28 29	56	9.0	X		Brown Silty fine to medium SAND, some fine to coarse subrounded mulitcolored Gravel, non-plastic, wet. [Possible Till]	
		17	32-34	1.4	29 29 33 25	62	9.0			Trace Cobbles, dense, moist to wet below 32' bgs.	
35	810	18	34-36	2.0	33 43 67 83	110	2.1			Brown Silty fine to coarse subrounded multicolored GRAVEL, some fine to coarse Sand, non-plastic, saturated.	

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

Soil samples collected from 20' - 20.5', 22.4' - 23.2', and 30' - 32' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-3**

Borehole Depth: 46.6' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		19	36-38	0.8	56 50/0.3 - -	NA	ND			Brown Silty fine to coarse subrounded multicolored GRAVEL, some fine to coarse Sand, increasing Silt content with depth, non-plastic, saturated.	
		20	38-40	0.8	40 50/0.3 - -	NA	ND				Borehole backfilled with Bentonite to grade.
40	805	21	40-42	0.8	27 50/0.3 - -	NA	ND			Brown fine to coarse subrounded multicolored GRAVEL, some fine to coarse Sand, trace to little Silt, trace Cobbles, dense, non-plastic, wet. [Possible Till] Moist to wet below 42' bgs.	
		22	42-44	0.2	50/0.2	NA	ND				
45	800	23	44-46	0.7	26 50/0.2 - -	NA	ND			Olive-brown Silty fine SAND, non-plastic, saturated.	
		24	46-46.6	0.6	50 50/0.1	NA	ND			Gray fine Sandy SILT, some fine to coarse angular to subangular Gravel (Shale), dense, non-plastic, wet. [Till]	
50	795										
55	790										

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

Soil samples collected from 20' - 20.5', 22.4' - 23.2', and 30' - 32' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 5/23/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-56 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763806.62 **Easting:** 1001443.473 **Casing Elevation:** NA **Borehole Depth:** 38.5' below grade **Surface Elevation:** 843.77' AMSL **Descriptions By:** Dave Cornell	**Well/Boring ID:** **SB-04** **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			ASPHALT and Subbase.	Borehole backfilled with Bentonite to grade.
		1	0.5-2	1.1	16, 18, 14	NA	ND	X		Brown fine to coarse SAND, some fine to coarse angular Gravel, little Cobbles, trace Brick, Cinders, and Slag, non-plastic, moist.	
										Orange BRICK fragments.	
	840	2	2-4	1.2	8, 6, 7, 7	13	ND			Black COAL and SLAG, little Cinders.	
5		3	4-6	1.3	7, 5, 4, 4	9	ND			Brown fine to medium SAND, some fine to coarse angular Gravel, little Brick, trace Silt and coarse Sand, non-plastic, moist.	
		4	6-8	1.2	5, 3, 4, 5	7	ND				
	835	5	8-10	1.5	7, 5, 8, 8	13	ND			Brown Silty fine to coarse SAND, some fine to coarse subrounded to rounded Gravel, trace Cobbles, non-plastic, moist.	
10		6	10-12	0.4	10, 11, 11, 11	22	ND				
	830	7	12-14	0.8	10, 14, 12, 11	26	ND				
15		8	14-16	1.8	14, 25, 26, 24	51	ND				

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

Soil samples collected from 0.5' - 2.0' and 16' - 18' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals. Duplicate sample, DUP-2, and MS/MSD collected from 16' - 18' bgs.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-04

Borehole Depth: 38.5' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	1.2	23, 13, 10, 10	23	NA	X		Brown Silty fine to coarse SAND, some fine to coarse subrounded to rounded Gravel, trace Cobbles, non-plastic, moist. Brown Silty fine to medium SAND, non-plastic, wet.	
20	825	10	18-20	2.0	18, 28, 30, 29	58	ND			Brown fine Sandy SILT, trace fine Gravel, non-plastic, wet. Brown SILT, some imbedded fine to coarse subangular to subrounded multicolored GRAVEL, little fine Sand and Cobbles, trace Clay, non-plastic, wet. [Possible Till]	Borehole backfilled with Bentonite to grade.
		11	20-22	0.7	38, 38, 40, 35	78	ND				
	820	12	22-24	1.5	41, 39, 25, 24	64	ND			Brown Silty fine to coarse SAND and fine to coarse subrounded multicolored GRAVEL, little Cobbles, non-plastic, saturated.	
25		13	24-26	1.5	16, 27, 45, 28	71	ND			Brown SILT, some fine to coarse subrounded multicolored Gravel, little fine Sand and Cobbles, trace Clay, non-plastic, wet. [Till]	
		14	26-28	1.0	37, 22, 17, 17	39	ND			Saturated to wet below 26' bgs.	
	815	15	28-30	1.0	16, 17, 19, 22	36	ND			Trace medium Sand below 28' bgs.	
30		16	30-32	1.2	12, 10, 11, 9	21	ND			Wet below 30' bgs.	
	810	17	32-34	1.1	41, 50, 38, 35	88	ND			Gray color, dense below 32.8' bgs	
35		18	34-36	1.4	51, 43, 25, 28	68	ND			Gray Silty fine to coarse SAND, trace fine Gravel, non-plastic, saturated.	

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Remarks:
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Soil samples collected from 0.5' - 2.0' and 16' - 18' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals. Duplicate sample, DUP-2, and MS/MSD collected from 16' - 18' bgs.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-04

Borehole Depth: 38.5' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		19	36-38	1.0	40 46 56 70	102	ND			Gray Silty fine to coarse SAND, trace fine Gravel, non-plastic, saturated. (Possible slough)	Borehole backfilled with Bentonite to grade.
		20	38-38.5	0.5	80/0.5	NA	ND			Gray SILT, some fine to coarse subangular Gravel, trace Clay, non-plastic, wet.	
	805										
40											
	800										
45											
	795										
50											
	790										
55											

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

Soil samples collected from 0.5' - 2.0' and 16' - 18' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals. Duplicate sample, DUP-2, and MS/MSD collected from 16' - 18' bgs.

Date Start/Finish: 5/18/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763802.204
Easting: 1001480.288
Casing Elevation: NA

Borehole Depth: 42' below grade
Surface Elevation: 844.77' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-5**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	845				35					ASPHALT and Subbase.	Borehole backfilled with Bentonite to grade.
		1	0-2	1.2	25 20 14	45	0.0	X		Dark brown fine to coarse SAND and fine to coarse angular GRAVEL, trace red Brick fragments, moderately loose to medium dense, dry.	
		2	2-4	0.8	8 7 4 2	11	1.1			Brown fine to coarse SAND and fine to coarse GRAVEL, grading to gray broken angular to subangular Rock fragments, moderately loose, dry.	
5	840	3	4-6	0.7	2 2 3 2	5	1.6			Gray fine to coarse SAND and fine to medium GRAVEL, trace Wood fragments, trace white Ash-like material, trace Pottery fragments, loose, dry to moist.	
										Red BRICK fragments, trace clear Glass.	
		4	6-8	0.5	5 3 3 17	6	0.0			Brown fine to coarse SAND, little medium to coarse subrounded Gravel, loose, moist.	
		5	8-10	1.4	54 30 25 26	55	0.1			Brown fine to coarse SAND, little Silt, little broken Cobbles, moderately loose to medium dense, trace Wood fragments, moist.	
10	835	6	10-12	0.8	23 26 21 22	44	0.5			Brown fine to coarse SAND, little fine to coarse subangular to subrounded Gravel, medium dense, moist.	
		7	12-14	0.0	50/0.3	NA	NA			No Recovery.	
15	830	8	14-16	0.2	50/0.2	NA	1.3			Gray broken COBBLE, dry.	

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

Soil samples collected from 0' - 2.0' and 18' - 20' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-5

Borehole Depth: 42' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	0.0	50/0.2	NA	NA			No Recovery.	
		10	18-20	1.0	6 5 7 7	12	0.9	X		Brown fine to medium SAND, well sorted, loose, moist to wet at bottom of spoon.	Borehole backfilled with Bentonite to grade.
20	825	11	20-22	1.4	28 31 33 35	64	1.2 1.0			Light brown SILT, some fine Sand, little fine to medium subangular Gravel, very dense, non-plastic. [Possible Till] Trace coarse subangular Gravel, very dense, hard below 22' bgs.	
		12	22-24	0.8	46 48 32 36	80	1.2				
25	820	13	24-26	0.6	11 16 12 16	28	0.9			Light brown fine to medium SAND, little Silt, little fine to coarse angular to subrounded Gravel, moderately loose, wet. Some Gravel, dense below 26' bgs.	
		14	26-28	0.7	27 35 31 31	66	1.4				
		15	28-30	1.2	28 21 18 16	39	1.1			Light brown to gray fine to coarse angular to subrounded GRAVEL, little fine to coarse Sand, dense, wet. Trace angular broken Rock fragments below 30' bgs.	
30	815	16	30-32	0.9	23 24 28 21	52	2.0				
		17	32-34	1.4	29 29 25 21	54	2.3				
35	810	18	34-36	0.8	39 31 46 41	77	2.3			Light brown fine to coarse SAND, little Silt, little to some fine to coarse subangular to subrounded multicolored Gravel, dense.	

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

Soil samples collected from 0' - 2.0' and 18' - 20' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

BBL® an ARCADIS company

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-5

Borehole Depth: 42' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		19	36-38	0.4	100/0.5	NA	1.9			Light gray-brown fine SAND, some Silt, little fine to coarse subrounded Gravel, very dense, hard.	
		20	38-40	0.2	50/0.2	NA	1.9			Gray fine to coarse SAND and fine to coarse GRAVEL, loose, wet.	Borehole backfilled with Bentonite to grade.
40	805	21	40-42	0.1	50/0.4	NA	2.6			Gray SILT, little to some broken Rock fragments, very dense, hard. [Till]	
45	800										
50	795										
55	790										

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

Soil samples collected from 0' - 2.0' and 18' - 20' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 5/17/06 - 5/18/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763802.995
Easting: 1001525.059
Casing Elevation: NA

Borehole Depth: 46' below grade
Surface Elevation: 845.99' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-6**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	NA	NA	NA	NA	NA			Auger through Concrete to 0.5' bgs.	
	845	1	0.5-2	0.8	6 8 9	NA	0.3	X		Brown fine to coarse SAND, little Silt, little medium to coarse subrounded Gravel, trace Cinders, loose, dry.	
		2	2-4	0.6	4 4 2 2	6	1.3			Brown fine to coarse SAND, trace red Brick fragments, trace Silt, trace coarse Gravel, loose, dry.	Borehole backfilled with Bentonite to grade.
5	840	3	4-6	1.2	6 8 11 9	19	1.5			Dark brown to brown fine to coarse SAND, little fine to coarse subangular Gravel, trace Silt, trace Cinders, moderately dense, dry to moist.	
		4	6-8	0.8	21 18 22 20	40	1.2			Gray broken ROCK fragments.	
		5	8-10	0.8	41 28 20 16	48	2.0			Brown medium to corse some medium to coarse angular to subangular Gravel, medium dense, moist.	
10	835	6	10-12	0.2	50/0.4	NA	3.1			Brown fine to coarse SAND, trace medium to coarse subangular Gravel, trace Silt, dense, moist.	
		7	12-14	1.4	52 48 50/0.3 -	NA	2.3			Gray broken ROCK fragments. Dark brown fine to coarse SAND and fine to coarse subangular to subrounded GRAVEL, trace Cinders, dense, moist.	
15	830	8	14-16	1.4	89 37 25 28	62	3.0			Brown fine to medium SAND, moderately loose, moist.	

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

Soil samples collected from 0.5' - 2.0' and 20' - 22' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-6

Borehole Depth: 46' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Stratigraphic Description	Well/Boring Construction
	830	9	16-18	1.5	17, 18, 18, 22	36	1.5		Brown to gray-brown fine to medium SAND, little fine to coarse subangular to subrounded Gravel, dense, moist.	
		10	18-20	1.3	11, 12, 15, 19	27	1.8		Brown fine to coarse SAND, little fine to coarse subrounded Gravel, medium dense, moist.	Borehole backfilled with Bentonite to grade.
20	825	11	20-22	1.4	8, 10, 17, 16	27	2.8	X	Brown fine to coarse SAND, trace fine to coarse subangular Gravel, medium dense, moist to wet. Light brown SILT, little to trace subangular to subrounded Gravel, very dense, hard, non-plastic, moist.	
		12	22-24	0.7	14, 40, 43, 49	83	2.2		Brown fine to coarse SAND, little fine to medium subrounded Gravel, moderately loose, wet.	
25		13	24-26	1.0	20, 18, 21, 25	39	4.2		Light brown SILT, trace coarse Gravel, little fine to medium Gravel, some fine to medium Sand, medium dense to stiff, very slightly plastic, wet.	
	820	14	26-28	1.1	17, 21, 25, 18	46	3.4		Brown fine to coarse subangular GRAVEL, little fine to coarse Sand, medium dense, wet. Light brown SILT, little to some subangular to subrounded fine to coarse Gravel, stiff, non-plastic, wet.	
		15	28-30	0.9	45, 37, 35, 16	72	3.2		Stiff, hard below 28' bgs.	
30	815	16	30-32	1.0	29, 41, 42, 39	83	3.3		Little subrounded Gravel, stiff, hard below 30' bgs.	
		17	32-34	0.7	3, 8, 11, 17	19	2.5		Little fine Sand, medium stiff, slightly plastic below 32' bgs.	
35	810	18	34-36	1.1	10, 27, 25, 29	52	2.0		Stiff, non-plastic below 34' bgs.	

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

Soil samples collected from 0.5' - 2.0' and 20' - 22' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-6

Borehole Depth: 46' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	810	19	36-38	0.4	40 50/0.3 - -	NA	2.1			Light brown fine to coarse SAND and fine to coarse subrounded to angular GRAVEL, little Silt, moderately loose, wet.	Borehole backfilled with Bentonite to grade.
		20	38-40	0.5	70 50/0.3 - -	NA	1.9			Brown SILT, little fine Sand, little fine to coarse Gravel, very dense, non-plastic, wet.	
40	805	21	40-42	2.0	38 50 50 50/0.4	NA	4.4			Brown fine to coarse SAND and fine to medium GRAVEL, slight coarsening with depth, very dense, wet.	
		22	42-44	0.0	100/0.3	NA	NA			No Recovery.	
45	800	23	44-46	0.3	50/0.4	NA	4.0			Gray SILT, little Shale broken subangular Rock fragments, very hard. [Till]	
50	795										
55	790										

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

Soil samples collected from 0.5' - 2.0' and 20' - 22' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 6/14/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-56 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763806.78 **Easting:** 1001601.487 **Casing Elevation:** NA **Borehole Depth:** 40' below grade **Surface Elevation:** 847.07' AMSL **Descriptions By:** Dave Cornell	**Well/Boring ID:** SB-7 **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	850										
0										ASPHALT.	Borehole backfilled with Bentonite to grade.
		NA	NA	NA	NA	NA	NA			CONCRETE and Cobbles.	
	845	1	2-4	1.0	14, 10, 6, 3	16	ND			Brown fine to coarse SAND, some fine to coarse subrounded Gravel, little Cobbles, trace Silt, non-plastic, moist.	
5		2	4-6	0.5	2, 2, 12, 12	14	ND			Trace Cinders below 4.0' bgs.	
	840	3	6-8	0.8	12, 18, 16, 25	34	ND			Brown Silty fine SAND, some to little fine to coarse subrounded Gravel, trace Cobbles and medium Sand, non-plastic, moist.	
		4	8-10	0.7	29, 50/0.5, -, -	NA	ND			Trace Brick fragments and Cinders below 8.0' bgs.	
10		5	10-12	1.4	19, 22, 27, 32	49	NA			Brown Silty fine to coarse SAND and fine to coarse subrounded to subangular GRAVEL, little Cobbles, non-plastic, moist.	
	835	6	12-14	1.8	43, 40, 42, 39	82	ND				
15		7	14-16	1.3	22, 28, 50/0.3, -	NA	ND				

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

Soil samples collected from 24' - 25' and 36' - 37.2' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-7

Borehole Depth: 40' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Stratigraphic Description	Well/Boring Construction
	830	8	16-18	1.2	5, 16, 28, 28	44	ND		Brown Silty fine to coarse SAND and fine to coarse subrounded to subangular GRAVEL, little Cobbles, non-plastic, moist.	
		9	18-20	1.0	19, 26, 20, 20	46	ND			Borehole backfilled with Bentonite to grade.
20		10	20-22	1.2	11, 11, 15, 22	26	ND			
	825	11	22-24	1.8	22, 24, 24, 34	48	7.9, 68.2		Brown fine Sandy SILT, some imbedded fine to coarse subrounded multicolored Gravel, little Cobbles, dense, non-plastic, wet. [Till] Gray color, faint petroleum-like odor below 23.2' bgs.	
25		12	24-26	1.0	21, 18, 23, 30	41	206	X		
	820	13	26-28	1.4	44, 37, 22, 31	59	147		Gray fine to medium SAND, trace coarse Sand and Silt, faint to moderate petroleum-like odor, non-plastic, saturated. Trace fine Gravel below 28' bgs.	
		14	28-30	1.9	14, 35, 30, 35	65	38.3, 17.5		Gray Silty fine SAND, some imbedded fine to coarse subrounded multicolored Gravel, trace medium to coasrse Sand, non-plastic, wet to saturated.	
30		15	30-32	1.5	27, 44, 32, 30	76	15.9		Gray Silty fine to coarse SAND, some fine to coarse subrounded to subangular Gravel, faint petroleum-like odor, non-plastic, saturated.	
	815	16	32-34	1.7	32, 37, 40, 42	77	12.7, 33.5		Trace medium Sand, moderate petroleum-like odor, saturated below 32' bgs. Brown fine Sandy SILT, some imbedded fine to coarse subrounded multicolored Gravel, trace medium to coarse Sand, non-plastic, wet. [Till]	
35		17	34-36	1.2	3, 9, 22, 30	31	13.3		Gray-brown fine to medium SAND, non-plastic, saturated. (Possible Slough) Brown Silty fine to coarse SAND, some fine to coarse subrounded Gravel, trace Clay and Cobbles, non-plastic, saturated.	

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

Soil samples collected from 24' - 25' and 36' - 37.2' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-7

Borehole Depth: 40' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	810	18	36-38	1.2	26 15 24 30	39	13.3	X		Brown Silty fine SAND, some to little fine to coarse subrounded multicolored Gravel, non-plastic, wet.	Borehole backfilled with Bentonite to grade.
		19	38-38.5	0.5	110/0.5	NA	ND			Brown SILT, little to trace fine Sand, non-plastic, saturated.	
										No Recovery - Cobble in shoe.	
40		20	39.5-40	0.5	100/0.5	NA	ND			Brown fine Sandy SILT, some fine to coarse subrounded multicolored Gravel, trace Clay and medium Sand, slightly plastic to non-plastic, saturated.	
	805										
45											
	800										
50											
	795										
55											

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

Soil samples collected from 24' - 25' and 36' - 37.2' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

Date Start/Finish: 5/11/06 - 5/12/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763749.336
Easting: 1001666.276
Casing Elevation: NA

Borehole Depth: 46' below grade
Surface Elevation: 845.41' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-8**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	845	NA	NA	NA	NA	NA	NA			ASPHALT and Subbase.	
		1	1-2	0.0	16, 11	NA	ND			Brown fine to medium SAND, some fine to coarse subangular Gravel, trace Silt, non-plastic, moist. (Descriptions taken from cuttings)	
		2	2-4	0.2	4, 5, 5, 3	10	ND				Borehole backfilled with Bentonite to grade.
5	840	3	4-6	1.7	2, 3, 7, 7	10	ND			Brown Silty fine to medium SAND, some fine to coarse subangular Gravel, trace Brick fragments, non-plastic, moist.	
		4	6-8	1.4	7, 3, 3, 7	6	ND			Dark gray-black CINDERS and fine to medium SAND, little Slag and white Ash-like material, non-plastic, moist to wet.	
		5	8-10	1.5	3, 4, 6, 7	10	ND			Little coarse Sand below 8.0' bgs. Brown fine to coarse SAND, little fine to medium subangular Gravel, trace Silt, non-plastic, moist to wet.	
10	835	6	10-12	1.4	6, 10, 4, 6	14	ND			Gray-brown SILT and fine to coarse SAND, little fine to medium subangular Gravel, non-plastic, moist to wet.	
		7	12-14	1.8	3, 5, 6, 7	11	ND			Brown SILT, little Clay, trace fine Sand and fine subangular Gravel, slightly mottled, slightly plastic, moist.	
15	830	8	14-16	2.0	4, 10, 12, 9	22	ND			Brown SILT, some Clay, trace fine Sand, mottled, slightly plastic, wet.	

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

Soil samples collected from 22' - 24' and 28' - 30' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-8**

Borehole Depth: 46' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Stratigraphic Description	Well/Boring Construction
		9	16-18	2.0	8, 8, 8, 8	16	ND		Brown SILT, some Clay, trace fine Sand, mottled, slightly plastic, wet to saurated. Brown SILT, some fine Sand, little to trace Clay, non-plastic, saturated.	
		10	18-20	2.0	3, 6, 6, 7	12	ND		Brown SILT, little fine Sand, trace Clay interbedded with Silty fine SAND, non-plastic, saturated.	Borehole backfilled with Bentonite to grade.
20	825	11	20-22	1.3	8, 10, 38, 17	48	ND		Auger through Cobble to 22' bgs.	
		12	22-24	1.1	15, 19, 32, 14	51	33.1	X	Brown Silty fine to coarse subangular GRAVEL, little fine to coarse Sand, trace Cobbles, turning gray with a moderate petroleum-like odor with depth, non-plastic, saturated.	
25	820	13	24-26	1.0	12, 12, 14, 14	26	3.5		Olive-brown-gray Silty fine to coarse SAND and fine to coarse subrounded GRAVEL, trace to little subrounded Cobbles, faint petroleum-like odor, non-plastic, saturated.	
		14	26-28	1.1	12, 14, 16, 25	30	1.5			
		15	28-30	1.0	24, 35, 17, 17	52	ND	X	Brown Silty fine SAND, some fine to coarse subrounded multicolored Gravel, trace medium Sand and Cobbles, dense, non-plastic, wet. [Possible Till]	
30	815	16	30-32	1.7	31, 31, 33, 35	64	ND			
		17	32-34	0.8	60, 50/0.3, -, -	NA	ND			
35	810	18	34-36	1.4	51, 56, 50/0.4, -	56	ND			

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

Soil samples collected from 22' - 24' and 28' - 30' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-8

Borehole Depth: 46' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		19	36-38	1.1	41 50 50/0.3 -	50	ND			Brown fine to coarse SAND, little fine to coarse subrounded multicolored Gravel, less dense than above, non-plastic, saturated.	
		20	38-40	0.4	50/0.4	NA	ND				Borehole backfilled with Bentonite to grade.
40	805	21	40-42	2.0	21 80 52 50	132	ND			Increased Gravel content with depth below 40' bgs.	
		22	42-44	0.8	60 50/0.3 - -	NA	ND				
45	800	23	44-46	0.5	100/0.5	NA	ND			Gray fine Sandy SILT, some fine to coarse subangular Gravel (gray Shale), dense, non-plastic, moist.	
50	795										
55	790										

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

Soil samples collected from 22' - 24' and 28' - 30' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 5/25/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-56 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763680.201 **Easting:** 1001467.364 **Casing Elevation:** NA **Borehole Depth:** 31.3' below grade **Surface Elevation:** 841.68' AMSL **Descriptions By:** Dave Cornell	**Well/Boring ID:** **SB-09** **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	NA	NA	NA	NA	NA			ASPHALT.	Borehole backfilled with Bentonite to grade.
	840	1	0.5-2	1.5	9 9 12	NA	ND			Dark gray to black CINDERS, trace fine to medium Sand, non-plastic, moist.	
		2	2-4	0.7	6 5 3 3	8	ND			Brown Silty fine to medium SAND, some fine to coarse subangular Gravel, little Cinders, non-plastic, moist.	
5		3	4-6	1.1	6 5 2 2	7	ND			Dark gray CINDERS and fine to medium SAND, little Silt and fine to coarse subrounded Gravel, trace white Ash-like material, non-plastic, moist. Wet below 4.8' bgs.	
	835	4	6-8	0.2	2 2 1 2	3	ND			Dark gray fine to coarse SAND and fine to medium subrounded GRAVEL, little Cinders, non-plastic, saturated.	
		5	8-10	1.2	1 3 3 5	6	0.6	X		Dark brown SILT, little Clay, trace fine Sand, trace mottled Organics, non-plastic to slightly plastic, saturated.	
10	830	6	10-12	1.8	1 2 3 3	5	ND	X		Gray-brown SILT, trace Clay and fine Sand, mottled, non-plastic, wet.	
		7	12-14	2.0	4 4 5 5	9	ND			Gray-brown SILT and fine SAND, trace Clay, non-plastic, saturated.	
15		8	14-16	1.9	1 2 3 4	5	ND			Brown-gray Silty fine SAND, non-plastic, saturated.	

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

Soil samples collected from 8.0' - 10' and 10' - 12' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-09

Borehole Depth: 31.3' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	9	16-18	1.6	8 9 7 7	16	ND			Brown-gray Silty fine SAND, non-plastic, saturated. Brown fine Sandy SILT, some fine to coarse subrounded multicolored Gravel, trace Cobbles, non-plastic, wet. [Possible Till]	
20		10	18-20	1.7	7 9 10 7	19	ND			Brown Silty fine SAND, some fine to coarse subrounded Gravel, trace medium Sand, non-plastic, saturated.	Borehole backfilled with Bentonite to grade.
	820	11	20-22	0.5	4 3 1 1	4	ND			Brown Silty fine to medium SAND, some fine to coarse subrounded Gravel, loose, non-plastic, saturated.	
		12	22-24	1.4	1 1 2 5	3	ND				
25		13	24-26	1.2	15 26 18 27	44	ND			Brown-gray SILT and fine SAND, some fine to coarse subrounded multicolored Gravel, trace Clay, dense, non-plastic, saturated. [Possible Till]	
	815	14	26-28	2.0	18 45 50/0.2 -	NA	ND			Brown-gray SILT, little fine to coarse subrounded Gravel, trace fine Sand, trace Cobbles, very dense, non-plastic, wet. Dense, moist below 28' bgs.	
		15	28-30	0.4	70/0.4	NA	ND				
30		16	30-31.3	1.3	65 58 100/0.3	NA	ND			Little fine Sand below 30' bgs.	
	810										
35											

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

Soil samples collected from 8.0' - 10' and 10' - 12' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 6/1/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763630.689
Easting: 1001612.156
Casing Elevation: NA

Borehole Depth: 34' below grade
Surface Elevation: 843.51' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: SB-10

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0										ASPHALT and Subbase.	
				NA	NA	NA	NA			Small Void from 0.6' - 0.9' bgs.	
										CONCRETE.	
		NA	0-2		2					Brown-gray Silty fine to medium SAND, little Ash-like material and Cinders, trace Slag and Coal.	
	840	1	2-4	1.9	2 3 2	5	ND			Brown fine to medium SAND, little to trace fine to coarse Gravel, trace Silt, non-plastic, moist.	Borehole backfilled with Bentonite to grade.
5		2	4-6	1.2	4 3 4 7	7	ND				
		3	6-8	0.4	5 7 7 11	14	ND				
	835	4	8-10	0.5	8 7 5 7	12	19.8			Brown, turning gray, fine to medium SAND, faint to moderate petroleum-like odor.	
10		5	10-12	2.0	3 5 7 5	12	214 168			Brown-gray SILT, trace fine Sand, trace Clay, strong petroleum-like odor, trace yellow NAPL, non-plastic, moist.	
	830	6	12-14	2.0	11 11 6 8	17	535 600			Trace fine Sand seams below 13.5' bgs. No NAPL, moist to wet below 14' bgs.	
15		7	14-16	1.1	4 5 6 8	11	64 50 358				

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

Soil sample collected from 19' - 22' and 26' - 26.9' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-10

Borehole Depth: 34' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		8	16-18	1.6	4 4 6 4	10	368 970 130			Brown-gray SILT, trace fine Sand, trace Clay, strong petroleum-like odor, non-plastic, wet.	
20	825	9	18-20	1.9	4 4 4 5	8	7.6 8.4 1160 256			Brown-gray fine Sandy SILT, trace Clay, strong petroleum-like odor, non-plastic, wet. Saturated fine to medium Sand zone with sheen from 19.4' - 19.5' bgs. Moderate to strong petroleum-like odor below 20' bgs.	Borehole backfilled with Bentonite to grade.
		10	20-22	1.6	7 7 10 8	17	522 54.3 845	X		Gray Silty fine to coarse SAND, some fine to coarse subrounded multicolored Gravel, trace Cobbles, trace sheen, moderate petroleum-like odor, non-plastic, saturated. Faint to moderate petroleum-like odor below 22' bgs.	
	820	11	22-24	1.2	10 4 11 15	15	63.9				
25		12	24-26	1.1	15 13 15 22	28	19.3			Brown-gray Silty fine to coarse SAND, some to little imbedded fine to coarse subrounded multicolored Gravel, trace Clay and cobbles, non-plastic, saturated.	
		13	26-28	0.9	47 50/0.4 - -	NA	0.7 0.3	X		Brown Silty fine SAND, some imbedded fine to coarse subrounded multicolored Gravel, trace medium Sand, dense, non-plastic, wet. [Till]	
30	815	14	29-30	1.3	14 19 10 14	29	5.4				
		15	30-32	1.8	22 29 33 48	62	0.5 0.2			Brown SILT, little to trace fine Sand and fine to coarse subrounded multicolored Gravel, trace Clay, dense, non-plastic, wet. Gray color below 31.5' bgs.	
	810	16	32-34	1.1	52 60 50/0.1 -	NA					
35											

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

Soil sample collected from 19' - 22' and 26' - 26.9' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

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Project: 130.55
Data File:SB-10.dat

Template:J:/Rockware/Logplot2001/Logfiles/13055/NYSEG_boring_well.ldf
Date: 7/11/06

Date Start/Finish: 6/6/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763840.047
Easting: 1001468.663
Casing Elevation: NA

Borehole Depth: 42' below grade
Surface Elevation: 844.47' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-11**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		1	0-2	0.2	29 11 8 8	19	ND			ASPHALT, dry.	
		2	2-4	0.5	9 16 8 5	24	ND			Dark brown fine to medium SAND, crushed stone, little Asphalt, loose, damp. [Fill]	Borehole backfilled with Bentonite to grade.
5	840	3	4-6	0.1	8 6 5 4	11	ND			Black crushed ASPHALT, loose, damp.	
		4	6-8	0.0	4 3 3 4	6	NA			No Recovery.	
	835	5	8-10	0.4	5 3 11 6	14	ND			Brown fine to medium SAND, little coarse Sand and rounded to subangular fine to medium Gravel, loose, wet.	
10		6	10-12	0.1	15 16 17 32	33	ND			Trace recovery from 10' - 14' bgs - Gray Cobble in shoe. Silt in spoon.	
		7	12-14	0.1	50/0.5	NA	ND				
15	830	8	14-16	0.9	42 54 40 21	148	ND			Gray-brown shattered COBBLE (possible Quartzite).	

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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-11**

Borehole Depth: 42' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	1.8	13 15 22 18	37	ND			Brown fine to medium SAND, little coarse Sand and rounded to subangular fine to medium Gravel, loose, damp. Brown fine to medium SAND, trace rounded medium Gravel, loose, damp. Possible Silty material in shoe od spoon.	
20	825	10	18-20	1.1	18 28 50 -	NA	ND			Brown SILT, zones of fine to medium Sand, little multicolored angular to subangular fine to medium Gravel, very stiff, damp.	Borehole backfilled with Bentonite to grade.
		11	20-22	0.5	26 50/0.1 - -	NA	ND				
		12	22-24	0.2	54/0.5	NA	ND				
25	820	13	24-26	0.2	14 25 20 20	45	ND			Soupy (ground up slough), wet below 24' bgs.	
		14	26-28	1.3	14 13 14 13	27	ND			Brown fine to medium SAND and fine GRAVEL, little Silt, trace shattered Cobble, loose, wet.	
30	815	15	29-30	0.3	4 8 12 19	20	ND				
		16	30-32	1.1	8 14 19 24	33	ND			Olive-brown fine to medium SAND and angular to rounded multicolored fine to medium GRAVEL, little Silt, very dense, wet.	
		17	32-34	1.2	38 32 20 34	52	ND			Dark gray fine to medium SAND and angular to rounded multicolored fine to medium GRAVEL, shattered Cobbles of Shaly Rock present, odor, very dense, wet.	
35	810	18	34-36	1.3	10 22 23 47	45	ND			No odor below 34' bgs.	

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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-11**

Borehole Depth: 42' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		19	36-38	0.0	50/0.3	NA	NA			No Recovery.	Borehole backfilled with Bentonite to grade.
40	805	20	38-40	0.3	50/0.3	NA	ND			Gray to dark gray fine to medium SAND and angular to rounded multicolored fine to medium GRAVEL, shattered Cobbles of Shaly Rock present, very dense, wet.	
			40-42	0.9	80 50/0.3 - -	NA	ND			Gray fine to medium SAND, SILT, and shattered Shale GRAVELS, no apparent exotic/"bright" Gravels present, very dense, damp.	
45	800										
50	795										
55	790										

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

Date Start/Finish: 6/13/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-56 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763798.968 **Easting:** 1001677.654 **Casing Elevation:** NA **Borehole Depth:** 30' below grade **Surface Elevation:** 845.87' AMSL **Descriptions By:** Dave Cornell	**Well/Boring ID:** **SB-12** **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	NA	NA	NA	NA	NA			ASPHALT and Subbase.	Borehole backfilled with Bentonite to grade.
	845	1	0.5-2	1.5	56 22 88	NA	ND			Gray fine to coarse SAND and fine to coarse suborounded GRAVEL, non-plastic, wet. Brown fine to coarse SAND, little fine to coarse subangular Gravel and Cobbles, trace Silt, non-plastic, moist.	
		2	2-4	1.1	50 14 48 33	62	ND				
5	840	3	4-6	1.6	17 62 50 33	112	ND				
		4	6-8	0.3	10 7 7 7	14	ND			Orange-brown Silty fine to medium SAND, some fine to coarse rounded Gravel, trace Clay, non-plastic, moist to wet.	
		5	8-10	0.0	2 2 3 3	5	NA			No Recovery - Cobble stuck in shoe.	
10	835	6	10-12	0.7	6 27 31 27	58	ND			Brown fine to coarse SAND, some fine to coarse subrounded Gravel, trace Cobbles and Silt, non-plastic, moist.	
		7	12-14	1.7	17 20 20 20	40	ND				
15	830	8	14-16	1.6	15 22 22 24	44	ND				

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

Soil samples collected from 12' - 14' and 16' - 18' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals. Soil sample collected from 12' - 14' bgs for TCLP Benzene, Reactivity, Total Sulfur, Flash Point, and PCBs.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-12**

Borehole Depth: 30' below grade

Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Stratigraphic Description
9	16-18	1.7	20, 36, 46, 27	82	ND		Brown fine to coarse SAND, some fine to coarse subrounded Gravel, trace Cobbles and Silt, non-plastic, moist. Gray color, little Silt below 17.5' bgs.
10	18-20	0.0	20, 42, 52/0.5, -	NA	NA		No Recovery - Cobble stuck in shoe.
11	20-22	1.2	23, 23, 21, 16	44	43.1		Gray fine Sandy SILT, some fine to coarse subrounded multicolored Gravel, little Cobbles, trace medium Sand, very faint petroleum-like odor, non-plastic, wet to saturated.
12	22-24	1.3	13, 19, 22, 13	41	1384	X	Trace coarse Sand, faint to moderate petroleum-like odor below 22' bgs.
13	24-26	1.7	19, 33, 37, 33	70	129, 31.6	X	Increasing density below 24' bgs. Brown SILT, some imbedded fine to coarse subrounded multicolored Gravel, trace Cobbles and fine Sand, dense, non-plastic, moist. [Till]
14	26-28	0.6	19, 70/0.5, -, -	NA	250		Gray fine to medium SAND, some fine to coarse subangular to subrounded Gravel, faint to moderate petroleum-like odor, moderately dense.
15	28-30	1.5	21, 34, 52, 18	86	1.8, 8.4		Brown SILT, some imbedded fine to coarse subrounded multicolored Gravel, trace Cobbles and fine Sand, dense, non-plastic, moist. [Till] Brown Silty fine to coarse SAND, trace fine Sand, very faint petroleum odor, non-plastic, saturated.

Depth scale: 20, 25, 30, 35. Elevation scale: 825, 820, 815, 810.

Well/Boring Construction: Borehole backfilled with Bentonite to grade.

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

Soil samples collected from 12' - 14' and 16' - 18' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals. Soil sample collected from 12' - 14' bgs for TCLP Benzene, Reactivity, Total Sulfur, Flash Point, and PCBs.

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Date Start/Finish: 5/30/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763678.129
Easting: 1001524.247
Casing Elevation: NA

Borehole Depth: 28' below grade
Surface Elevation: 842.07' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-13**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			ASPHALT and Subbase.	
		1	0.5-2	1.5	13 7 6	NA	ND			Brown fine to medium SAND, little Slag, Cinders, and fine to coarse Gravel, trace white Ash-like material and Silt, non-plastic, moist.	
	840	2	2-4	0.2	4 4 3 2	7	ND			Brick stuck in end of spoon shoe.	Borehole backfilled with Bentonite to grade.
5		3	4-6	0.7	3 4 4 7	8	ND			Dark brown Silty fine to medium SAND, little fine to coarse subrounded Gravel, trace Cinders, non-plastic, moist. Moist to wet below 6.0' bgs.	
	835	4	6-8	1.2	6 7 7 9	14	ND				
		5	8-10	0.2	15 11 11 8	22	ND			Cobble stuck in spoon shoe.	
10		6	10-12	2.0	3 3 4 3	7	55 29 19			Dark gray Silty fine to medium SAND, little to some fine to coarse subrounded Gravel, trace sheen and dark gray NAPL, non-plastic, saturated.	
	830	7	12-14	1.8	3 4 4 5	8	182 179	X		Brown-gray Silty CLAY, mottled, little to some NAPL down through stringers (possible Root scars), moderately plastic, moist to wet.	
15		8	14-16	2.0	4 5 5 7	10	27 15			Brown-gray Clayey SILT, mottled, trace NAPL, NAPL content decreasing with depth, moderately plastic, moist to wet.	

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

Soil samples collected from 12' - 14' and 16' - 18' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals. Soil sample collected from 12' - 14' bgs for TCLP Benzene, Reactivity, Total Sulfur, Flash Point, and PCBs.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-13

Borehole Depth: 28' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	9	16-18	2.0	9 8 10 13	18	8.5 7.3	X		Brown-gray SILT, little to trace mottled Clay, trace fine Sand, trace staining, faint odor, non-plastic to slightly plastic, saturated.	Borehole backfilled with Bentonite to grade.
20		10	18-20	1.8	3 4 4 8	8	13 4.8			Brown-gray SILT, little fine Sand, trace mottled Clay to 18.5' bgs, very faint odor, non-plastic, saturated. Faint odor below20' bgs.	
	820	11	20-22	0.8	7 4 4 5	8	26.2			Gray-brown Silty fine to medium SAND, some fine to coarse subrounded Gravel, trace Cobbles, non-plastic, saturated.	
		12	22-24	0.4	19 20 23 31	43	6.6				
25		13	24-26	0.5	45 43 43 50	86	19.2			Gray-brown Silty fine to medium SAND and fine to coarse subrounded GRAVEl, little Cobbles, non-plastic, saturated. Increasing density with depth below 26' bgs,	
	815	14	26-28	0.8	26 50/0.4 - -	NA	9.1				
30											
	810										
35											

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

Soil samples collected from 12' - 14' and 16' - 18' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals. Soil sample collected from 12' - 14' bgs for TCLP Benzene, Reactivity, Total Sulfur, Flash Point, and PCBs.

Date Start/Finish: 5/31/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763620.753
Easting: 1001538.055
Casing Elevation: NA

Borehole Depth: 38' below grade
Surface Elevation: 841.97' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-14**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		1	0-2	1.4	20, 22, 21, 11	43	ND			Brown Silty fine to medium SAND, some fine to coarse subangular Gravel, trace Brick and coarse Sand, non-plastic, moist.	Borehole backfilled with Bentonite to grade.
	840	2	2-4	0.6	31, 10, 11, 15	21	ND				
5		3	4-6	1.1	7, 10, 7, 7	17	ND			Brown fine to coarse SAND, some fine to coarse subangular Gravel, trace Coal and white Ash-like material, non-plastic, moist.	
	835	4	6-8	0.2	6, 4, 4, 5	8	2.4			Trace recovery - Cobble stuck in shoe. Shoe was wet with faint petroleum-like odor.	
		5	8-10	1.9	5, 6, 8, 8	14	191, 110, 168			Gray-brown SILT, little to trace fine Sand, trace Clay, moderate petroleum-like odor, slightly plastic to non-plastic, wet.	
10		6	10-12	1.7	2, 2, 2, 2	4	167, 174				
	830	7	12-14	1.5	4, 4, 4, 2	8	167, 114				
15		8	14-16	1.9	2, 3, 3, 4	6	171, 173			Gray-brown SILT with trace fine Sand and Clay interbedded with fine Sandy SILT, trace Organics, moderate petroleum-like odor, non-plastic, saturated.	

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

Soil samples collected from 16' - 20' and 26' - 28' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-14

Borehole Depth: 38' below grade

Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample
9	16-18	1.8	2, 4, 4, 5	8	157, 261	X
10	18-20	1.4	3, 4, 10, 11	14	180, 161	X
11	20-22	1.2	7, 5, 5, 7	10	45.3	
12	22-24	1.2	7, 14, 17, 19	21	10.1	
13	24-26	0.4	12, 13, 7, 7	20	14.7	
14	26-28	1.3	17, 20, 43, 32	63	4.7	X
15	29-30	0.9	24, 34, 28, 32	62	7.1	
16	30-32	1.7	29, 21, 28, 28	49	6.2	
17	32-34	0.8	50, 50/0.3, -, -	NA	1.8	
18	34-36	0.6	70, 50/0.1, -, -	NA	6.1	

Depth: 20, 25, 30, 35
Elevation: 825, 820, 815, 810

Stratigraphic Description

Gray-brown SILT with trace fine Sand and Clay interbedded with fine Sandy SILT, trace Organics, strong petroleum-like odor, trace NAPL (possible gas or disel), non-plastic, saturated.

Little NAPL (possible petroleum) below 18' bgs.

Gray Silty fine to coarse SAND and fine to coarse subrounded GRAVEL, heavy sheen, moderate petroleum-like odor, non-plastic, saturated.

Increased density below 22' bgs.

Faint odor below 24' bgs.

Very faint odor below 26' bgs.

Gray fine Sandy SILT, some imbedded fine to coarse subrounded multicolored Gravel, little medium to coarse Sand, trace Cobbles, dense, non-plastic, wet. [Till]

Well/Boring Construction

Borehole backfilled with Bentonite to grade.

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

Soil samples collected from 16' - 20' and 26' - 28' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-14

Borehole Depth: 38' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	805	19	36-38	1.3	37 50 50/0.4 -	NA	1.3			Gray fine Sandy SILT, some imbedded fine to coarse subrounded multicolored Gravel, little medium to coarse Sand, trace Cobbles, dense, non-plastic, wet. [Till]	Borehole backfilled with Bentonite to grade.
40											
	800										
45											
	795										
50											
	790										
55											

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

Soil samples collected from 16' - 20' and 26' - 28' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

Date Start/Finish: 5/31/06 - 6/1/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763548.376
Easting: 1001572.903
Casing Elevation: NA

Borehole Depth: 38' below grade
Surface Elevation: 842.86' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-15**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0										Grass and Roots.	
		1	0-2	2.0	8 7 7 4	14	ND			Brown fine to medium SAND, some to little subrounded Gravel, trace Cobbles and Organids, non-plastic, moist.	
	840	2	2-4	1.4	3 2 2 2	4	ND			Trace Cinders below 3.0' bgs.	Borehole backfilled with Bentonite to grade.
5		3	4-6	1.2	3 7 5 5	12	ND			Brown Silty fine to medium SAND, little fine to coarse Gravel, trace Brick and Cinders, non-plastic, moist.	
		4	6-8	1.3	12 12 9 3	21	ND			Moist to wet below 6.0' bgs.	
	835	5	8-10	1.2	3 5 5 3	10	ND			Moist below 8.0' bgs.	
10		6	10-12	1.7	3 4 4 4	8	ND	X		Maroon-brown WOOD chips, non-plastic, moist.	
										Brown-gray fine Sandy SILT, trace Brick, fine to coarse Gravel, and Cinders, non-plastic, moist.	
	830	7	12-14	1.5	4 4 4 4	8	ND			Brown-gray SILT, little Clay, trace fine Sand, slightly plastic, wet.	
15		8	14-16	1.0	1 1 2 2	3	ND			Gray Silty CLAY, moderately plastic, saturated.	

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Remarks:

bgs = below ground surface; NA = Not Available/Applicable; ND = Not Detected; AMSL = Above Mean Sea Level.

Soil sample collected from 10' - 11' bgs for total Cyanide; and from 20' - 21.4' and 30' - 32' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals. Duplicate sample, Dup-3, collected from 20' - 21.4' bgs.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-15**

Borehole Depth: 38' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	9	16-18	1.8	2, 2, 2, 1	4	ND			Gray Silty CLAY, moderately plastic, saturated. / Gray SILT, little to trace fine Sand and Clay, slightly plastic, saturated.	
20		10	18-20	0.6	1, 5, 6, 9	11	804			Gray Silty fine to coarse SAND, some fine to coarse subrounded Gravel, strong petroleum-like odor, non-plastic, saturated.	Borehole backfilled with Bentonite to grade.
		11	20-22	2.0	11, 13, 18, 37	31	867, 62.3	X			
	820	12	22-24	1.0	19, 21, 22, 36	43	12.4			Brown SILT, some to little imbedded fine to coarse subrounded multicolored Gravel, trace fine Sand and Clay, trace Cobbles, dense, non-plastic, wet. [Till] Brown-gray color below 22' bgs.	
25		13	24-26	0.3	61, 50/0.3, -, -	NA	NA			Trace recovery - Cobble stuck in spoon shoe. Slough water with odor running over sample.	
	815	14	26-28	0.8	13, 17, 18, 21	35	13.3			Brown SILT, some to little imbedded fine to coarse subrounded multicolored Gravel, trace medium to coarse Sand and Clay, trace Cobbles, dense, non-plastic, wet to saturated. [Till]	
		15	29-30	1.1	43, 18, 28, 29	46	15.3, 2.8, 1.9			Saturated below 28' bgs.	
30		16	30-32	1.5	25, 28, 30, 32	58	0.8, 0.1, ND	X			
	810	17	32-34	0.3	66, 50/0.4, -, -	NA	ND				
35		18	34-36	1.3	13, 15, 23, 27	38	ND				

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

Soil sample collected from 10' - 11' bgs for total Cyanide; and from 20' - 21.4' and 30' - 32' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals. Duplicate sample, Dup-3, collected from 20' - 21.4' bgs.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-15

Borehole Depth: 38' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	805	19	36-38	1.5	28 63 60 60/0.2	123	ND			Brown SILT, some to little imbedded fine to coarse subrounded multicolored Gravel, trace medium to coarse Sand and Clay, trace Cobbles, dense, non-plastic, saturated. [Till]	Borehole backfilled with Bentonite to grade.
40											
	800										
45											
	795										
50											
	790										
55											

BBL® an ARCADIS company

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

Soil sample collected from 10' - 11' bgs for total Cyanide; and from 20' - 21.4' and 30' - 32' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals. Duplicate sample, Dup-3, collected from 20' - 21.4' bgs.

Date Start/Finish: 6/2/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763574.559
Easting: 1001637.996
Casing Elevation: NA

Borehole Depth: 32' below grade
Surface Elevation: 843.24' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: SB-16

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Stratigraphic Description	Well/Boring Construction
	845									
0		NA	NA	NA	NA	NA	NA		ASPHALT and Subbase.	
		1	0.5-2	1.5	10 10 7	NA	ND	X	Brown Silty fine to coarse SAND, some fine to coarse angular Gravel, trace Cinders and Ash-like material, non-plastic, moist.	
	840	2	2-4	1.0	10 7 7 10	14	ND			Borehole backfilled with Bentonite to grade.
5		3	4-6	1.6	4 4 3 4	7	ND		Orange-brown fine to coarse SAND, little fine to coarse rounded Gravel, non-plastic, moist.	
		4	6-8	1.7	6 15 12 8	27	ND		Brown Silty fine to coarse SAND, some fine to coarse rounded Gravel, trace Cinders, non-plastic, moist.	
	835	5	8-10	0.7	6 3 2 2	5	ND		Moist to wet below 8.0' bgs.	
10		6	10-12	1.7	2 5 15 13	20	ND		Dark brown-gray Silty fine SAND, little Organics (Wood chips), trace fine Gravel and medium Sand, non-plastic, wet. Gray fine to coarse SAND, little fine to medium subrounded Gravel, non-plastic, wet. Brown Silty fine to medium SAND, some to little fine to coarse subrounded multicolored Gravel, trace Cobbles, non-plastic, wet.	
	830	7	12-14	1.4	8 9 7 7	16	ND		Gray SILT, little Clay, trace Organics, slightly plastic, moist.	
15		8	14-16	0.0	1 1 1 2	2	NA		No Recovery.	

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

Soil sample collected from 0.5' - 2.0' and 22' - 24' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-16

Borehole Depth: 32' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	1.4	3 3 2 3	5	ND			Gray SILT, little to trace fine Sand and Clay, non-plastic, saturated.	
	825	10	18-20	2.0	1 1 2 2	3	ND			Gray fine Sandy SILT, trace Clay, non-plastic, saturated. Brown-gray color and mottled below 19.3' bgs.	Borehole backfilled with Bentonite to grade.
20		11	20-22	1.9	2 3 3 4	6	ND			Gray SILT and fine SAND, trace Root scars, non-plastic, saturated.	
	820	12	22-24	2.0	7 10 17 25	27	ND	X		Brown-gray Silty fine SAND, some fine to coarse subrounded multicolored Gravel, loose, non-plastic, saturated. Brown color, trace Cobbles and Clay, increased density below 23.1' bgs. [Possibly Till] Trace medium Sand, wet below 24' bgs. [Till]	
25		13	24-26	1.7	9 13 14 21	27	ND				
		14	26-28	1.6	29 31 33 50/0.1	64	ND				
	815	15	29-30	1.2	32 39 39 50	NA	ND			Trace medium to coarse Sand, saturated below 28' bgs. [Till]	
30		16	30-32	0.8	60 50/0.3 - -		ND			Brown-gray fine to coarse SAND and fine to medium subrounded to subangular GRAVEL, non-plastic, saturated.	
	810										
35											

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

Soil sample collected from 0.5' - 2.0' and 22' - 24' bgs for TCL VOCs, SVOCs, Total Cyanide, and RCRA Metals.

Date Start/Finish: 5/16/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763765.473
Easting: 1001520.926
Casing Elevation: NA

Borehole Depth: 16' below grade
Surface Elevation: 842.33' AMSL

Descriptions By: Jennifer Sandorf

Well/Boring ID: SB-17

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			Auger though Concrete to 0.5' bgs.	Borehole backfilled with Bentonite to grade.
		1	0.5-2	0.6	5, 5, 3	NA	1.3			Brown fine to coarse SAND, little Silt, trace coarse Gravel, trace red Brick and Concrete fragments, loose, moist.	
	840	2	2-4	0.8	3, 3, 2, 1	5	0.5			Brown fine to medium SAND, trace red Brick fragments, little Silt, loose, moist.	
5		3	4-6	0.4	2, 2, 2, 1	4	7.2			Red BRICK fragments.	
	835	4	6-8	0.0	4, 3, 3, 3	6	NA			No Recovery.	
		5	8-10	1.2	5, 5, 5, 5	10	3.8			Light brown fine to medium SAND, some red Brick fragments, trace fine Gravel, moderately loose, moist.	
10		6	10-12	0.4	4, 4, 3, 3	7	2.9			Red BRICK fragments, some light brown fine to medium Sand, loose, moist to wet.	
	830	7	12-14	0.6	2, 2, 3, 31	5	3.8				
15		8	14-16	2.0	50, 97, 75, 76	172	25.4, 55.7	X		Olive to dark gray fine to coarse SAND and fine to coarse GRAVEL, little Silt, trace Cobbles, moderate to strong odor, trace sheen, very dense.	

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

Soil sample collected from 14' - 16' for BTEX, PAHs, and total Cyanide.

Date Start/Finish: 5/15/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763731.45
Easting: 1001507.852
Casing Elevation: NA

Borehole Depth: 16.8' below grade
Surface Elevation: 842.89' AMSL

Descriptions By: Jennifer Sandorf

Well/Boring ID: **SB-18**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	0-2	NA	NA	NA	NA			Auger through Concrete and Rubble to 2.0' bgs.	
	840	1	2-4	1.0	33 8 4 3	12	0.0			Gray-brown CONCRETE fragments, some red Brick, little fine to coarse Sand, trace Wood fragments, dry to moist.	Borehole backfilled with Bentonite to grade.
5		2	4-6	0.4	2 2 4 4	6	2.0			Trace Cinders below 4.0' bgs.	
		3	6-8	0.6	7 5 5 7	10	2.9			Brown fine to medium SAND, little fine to coarse Gravel, trace red Brick fragments, trace black Cinders, moist.	
	835	4	8-10	1.3	7 5 9 6	14	2.7			Dark brown-back CINDRS and fine SAND, moderately loose, moist.	
10		5	10-12	1.1	5 3 3 4	6	1.5				
	830	6	12-14	0.2	3 5 5 5	10	NA				
15		7	14-16	2.0	47 55 80 97	135	10.5 20.9 129	X		Brown to dark olive-gray fine to coarse SAND and fine to coarse GRAVEL, trace yellow furnace Brick, trace Silt, moderate to strong odor at bottom of spoon, dense, moist	

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

Soil sample collected from 14' - 16' for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-18

Borehole Depth: 16.8' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		8	16-16.8	0.7	75 50/0.3	NA	19.9			Brown to dark olive-gray fine to coarse SAND, little fine to coarse Gravel, trace yellow furnace Brick, trace Silt, trace sheen, slight to moderate odor, dense, moist.	Borehole backfilled with Bentonite to grade.
	825										
20											
	820										
25											
	815										
30											
	810										
35											

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

Soil sample collected from 14' - 16' for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 5/15/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-56 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763728.187 **Easting:** 1001531.223 **Casing Elevation:** NA **Borehole Depth:** 16' below grade **Surface Elevation:** 842.59' AMSL **Descriptions By:** Jennifer Sandorf	**Well/Boring ID: SB-19** **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		1	0-2	0.8	51 12 10 10	22	NA			Gray CONCRETE fragments, dry.	
	840	2	2-4	0.4	12 12 8 8	20	NA			Gray CONCRETE and red BRICK fragments, dry.	Borehole backfilled with Bentonite to grade.
5		3	4-6	0.8	27 25 9 9	34	NA			Gray-brown fine to coarse SAND, little Silt, little medium to coarse Gravel, dense, dry to moist.	
	835	4	6-8	1.0	9 4 4 4	8	NA			Trace red Brick fragments, trace Concrete below 6.0' bgs.	
		5	8-10	0.7	8 4 4 6	8	NA			Light gray-brown fine to coarse SAND, some fine to medium Gravel, little Silt, trace Cinders, trace red Brick fragments, loose, moist.	
10		6	10-12	0.8	8 7 6 6	13	NA			Brown fine to medium subrounded SAND, little fine to coarse Gravel, trace Cinders, trace red Brick, moderately loose, moist to wet.	
	830	7	12-14	0.4	5 2 2 10	4	NA			Little Clay, faint odor in tip of spoon, wet below 12' bgs.	
15		8	14-16	2.0	30 56 67 92	123	148 180	X		Dark gray to black fine to medium SAND, little to some fine to coarse Gravel, trace Cobbles, moderate strong odor, trace sheen, very dense, moist.	

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Remarks:

bgs = below ground surface; NA = Not Available/Applicable; ND = Not Detected; AMSL = Above Mean Sea Level.

Soil sample collected from 14' - 16' for BTEX, PAHs, total Cyanide, TCLP Benzene, Reactivity (CN/S), Total Sulfur, Flash Point, and PCBs.

Date Start/Finish: 5/24/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763763.571
Easting: 1001462.307
Casing Elevation: NA

Borehole Depth: 36' below grade
Surface Elevation: 842.63' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: SB-20

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Stratigraphic Description	Well/Boring Construction
	845									
0		NA	NA	NA	NA	NA	NA		CONCRETE.	
		1	0.5-2	1.5	11, 11, 9	NA	ND	X	Gray CINDERS, little Slag and fine to medium Sand, trace Ash-like material, non-plastic, moist. / Brown fine SAND and SILT, little fine to coarse subrounded Gravel and medium to coarse Sand, non-plastic, moist.	
	840	2	2-4	2.0	12, 14, 16, 16	30	ND			Borehole backfilled with Bentonite to grade.
5		3	4-6	1.4	29, 14, 26, 15	40	ND		Some Cobbles below 4.0' bgs.	
	835	4	6-8	1.0	33, 27, 26, 31	63	ND			
10		5	8-10	0.5	48, 50/0.3, -, -	NA	ND			
		6	10-12	1.2	7, 18, 26, 30	44	ND			
	830	7	12-14	0.7	61, 50/0.2, -, -	NA	ND		Brown Silty fine to coarse SAND, some fine to coarse rounded Gravel, little Cobbles, non-plastic, moist.	
15		8	14-16	1.8	4, 4, 4, 5	8	ND		Brown fine to coarse SAND, trace fine to coarse subrounded Gravel, non-plastic, moist.	

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Remarks:

bgs = below ground surface; NA = Not Available/Applicable; ND = Not Detected; AMSL = Above Mean Sea Level.

Soil samples collected from 0.8' - 2.0' and 16' - 18' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-20

Borehole Depth: 36' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	9	16-18	2.0	7 10 17 27	27	NA	X		Brown fine to coarse SAND, trace fine to coarse subrounded Gravel, non-plastic, moist. Wet below 16.7' bgs. / Brown fine to coarse SAND, some fine subrounded Gravel, non-plastic, wet.	Borehole backfilled with Bentonite to grade.
20		10	18-20	1.6	17 25 21 22	46	ND			Brown SILT, some imbedded fine to coarse subrounded multicolored Gravel, trace fine Sand and Cobbles, non-plastic, moist to wet. [Possible Till] Wet below 18' bgs. / Brown fine to coarse SAND, little to trace fine Gravel, non-plastic, saturated.	
		11	20-22	0.4	8 14 12 12	26	ND			Brown fine Sandy SILT, some fine to coarse subrounded multicolored Gravel, little Cobbles, trace medium to coarse Sand, non-plastic, wet. Little medium to coarse Sand, saturated below 22' bgs.	
	820	12	22-24	1.8	9 17 19 26	36	ND				
25		13	24-26	1.5	6 6 8 8	14	ND				
	815	14	26-28	1.6	9 13 19 21	32	ND				
		15	28-30	1.8	22 23 25 49	48	ND			Brown fine Sandy SILT, some to little fine to coarse subrounded multicolored Gravel, trace Cobbles, trace Clay, dense, non-plastic, wet. [Till]	
30		16	30-32	0.8	60 50/0.3 - -	NA	ND				
	810	17	32-34	1.7	40 52 51 45	103	ND			Gray-brown fine Sandy SILT interbedded with brown-gray Silty fine to medium SAND, non-plastic, saturated.	
35		18	34-36	1.5	42 56 87/0.5 -	NA	ND			Gray fine SAND and SILT, trace fine Gravel, dense, non-plastic, saturated. / Gray SILT with interbedded fine to coarse subrounded multicolored GRAVEL, trace fine Sand and Cobbles, dense, non-plastic, saturated. [Till]	

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

Soil samples collected from 0.8' - 2.0' and 16' - 18' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 5/16/06 - 5/17/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763709.229
Easting: 1001488.737
Casing Elevation: NA

Borehole Depth: 39.5' below grade
Surface Elevation: 842.62' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: SB-21

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			Auger through Concrete to 0.5' bgs.	
		1	0.5-2	1.1	5, 22	NA	0.7	X		Dark brown to black CINDERS and SLAG, little brown fine to coarse Sand, loose, dry. Trace coarse Gravel below 2.0' bgs.	Borehole backfilled with Bentonite to grade.
	840	2	2-4	0.6	1, 1, 5, 7	6	1.4				
5		3	4-6	0.6	7, 8, 5, 5	13	1.0			Brown SILT, trace Clay, trace coarse subrounded Gravel, soft, slightly plastic, moist. Dark brown to brown color below 6.0' bgs.	
	835	4	6-8	0.7	5, 3, 4, 2	7	0.9				
		5	8-10	0.3	8, 22, 25, 29	47	1.0			Orange-brown SILT, trace fine subrounded Gravel, stiff, non-plastic, moist.	
10		6	10-12	0.3	2, 3, 6, 4	9	1.2			Orange-brown fine to coarse SANd and fine to coarse GRAVEL, little Silt, moderately loose, moist to wet.	
	830	7	12-14	0.8	6, 6, 7, 8	13	1.3			Light brown SILT, little fine to coarse Sand, trace fine Gravel, stiff, slightly plastic, moist. Trace Cobbles below 14' bgs.	
15		8	14-16	1.2	20, 18, 18, 27	36	1.7				

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

Soil samples collected from 0.5' - 2.0' and 20' - 22' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

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Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-21**

Borehole Depth: 39.5' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	9	16-18	0.7	24, 18, 23, 21	41	2.6			Light gray-brown fine to coarse SAND and fine to coarse GRAVEL, some Silt, dense, moist.	
		10	18-20	1.4	20, 21, 21, 24	42	2.7			Very dense below 18' bgs.	Borehole backfilled with Bentonite to grade.
20		11	20-22	1.0	21, 29, 15, 11	44	1.4	X		Moderately dense below 20' bgs.	
	820	12	22-24	1.0	8, 7, 5, 5	12	1.5			Wet below 22' bgs.	
25		13	24-26	0.4	8, 8, 15, 12	23	1.7			Light brown fine to coarse SAND, little fine to coarse Gravel, little Silt, moderately dense, wet.	
	815	14	26-28	2.0	24, 25, 31, 21	56	1.6			Light brown fine to coarse SAND, some fine to coarse Gravel, little Silt, very dense, wet.	
		15	28-30	0.9	20, 21, 51, 20	72	1.8			Light brown fine to coarse subrounded to subangular GRAVEL, little fine to coarse Sand, trace Silt, dense, wet.	
30		16	30-32	0.9	25, 30, 50/0.3, -	NA	2.1			Gray color, very dense below 30' bgs.	
	810	17	32-34	0.6	35, 60, 50/0.2, -	NA	1.7			Light gray-brown to dark gray fine to coarse SAND, some fine to coarse Gravel, very faint petroleum-like odor in dark gray soil, dense, wet.	
35		18	34-36	1.6	30, 47, 49, 46	96	2.7			Gray to dark gray fine to coarse SAND, some fine to medium Gravel, 1"-thick Silt lenses near bottom of spoon, dense, no odor, wet.	

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

Soil samples collected from 0.5' - 2.0' and 20' - 22' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-21

Borehole Depth: 39.5' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	805	19	36-38	0.2	45 48 50/0.2 -	NA	2.4			Gray to dark gray fine to coarse SAND, some fine to medium Gravel, dense, no odor, wet.	Borehole backfilled with Bentonite to grade.
		20	38-40	0.4	100/0.4	NA	1.5				
40											
	800										
45											
	795										
50											
	790										
55											

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

Soil samples collected from 0.5' - 2.0' and 20' - 22' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 5/22/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763764.776
Easting: 1001435.57
Casing Elevation: NA

Borehole Depth: 38' below grade
Surface Elevation: 842.72' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: SB-22

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			CONCRETE (former Slab).	Borehole backfilled with Bentonite to grade.
		1	0.5-2	0.8	6 12 14	NA	ND			Gray fine to medium SAND, little Slag, trace Brick and Cinders, non-plastic, moist.	
	840	2	2-4	1.3	7 6 6 4	12	ND	X		Brown Silty fine to coarse SAND, some fine to coarse subagular Gravel, trace Brick, non-plastic, moist.	
5		3	4-6	1.3	7 9 41 38	50	ND			Trace Cinders, decreasing coarse Sand content with depth below 4.0' bgs.	
		4	6-8	1.0	46 36 24 28	60	ND			Gray-brown color, trace Cobbles below 6.0' bgs.	
	835	5	8-10	0.4	100/0.4	NA	ND			BRICK.	
10										Dark brown Silty fine SAND, little Brick, trace Cinders, non-plastic, moist.	
		6	10-12	1.6	48 31 33 31	64	ND			Brown fine to medium SAND and fine to coarse rounded GRAVEL, little Cobbles, trace Silt, non-plastic, moist.	
	830	7	12-14	0.5	36 19 8 8	27	ND				
15		8	14-16	1.2	11 6 7 12	11	ND	X		Gray-brown Silty fine to medium SAND and fine to coarse subrounded multicolored GRAVEL, trace Cobbles, non-plastic, wet.	

BBL an ARCADIS company

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

Soil samples collected from 2.0' - 4.0' and 14' - 16' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-22

Borehole Depth: 38' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	9	16-18	0.0	25 50/0.2 - -	NA	NA			No Recovery.	
20		10	18-20	1.3	45 74 44 50	118	ND			Brown-gray Silty fine to medium SAND and fine to coarse subangular GRAVEL, trace Cobbles, non-plastic, wet. [Possible Till]	Borehole backfilled with Bentonite to grade.
		11	20-22	1.0	95 45 38 36	83	ND			Subangular to subrounded Gravel below 20' bgs.	
	820	12	22-24	1.5	39 41 45 50/0.4	86	ND			Brown fine Sandy SILT, some fine to coarse subrounded multicolored Gravel, little medium to coarse Sand, trace Cobbles, zones of coarser Sand matix containing water present throughout, non-plastic, saturated.	
25		13	24-26	0.4	100/0.4	NA	ND				
	815	14	26-28	0.9	100 67/0.4 - -	NA	ND				
		15	28-30	1.5	27 30 32 45	62	ND			Increased Cobble content below 28' bgs.	
30		16	30-32	1.7	19 40 36 36	76	ND			Brown SILT, some fine to coarse subrounded multicolored Gravel, little fine Sand, little Cobbles, trace Clay, dense, non-plastic, saturated. [Till]	
	810	17	32-34	0.3	70/0.3	NA	ND				
35		18	34-36	1.3	98 94 50/0.3 -	NA	ND			Gray SILT, little fine Sand, trace fine Gravel, non-plastic, moist.	

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

Soil samples collected from 2.0' - 4.0' and 14' - 16' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-22

Borehole Depth: 38' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	805	19	36-38	2.0	27 52 75 55	127	ND			Brown fine Sandy SILT, some fine to coarse rounded Gravel, trace Clay and Cobbles, non-plastic, wet to saturated. [Till] Gray color below 37.2' bgs.	Borehole backfilled with Bentonite to grade.
40											
	800										
45											
	795										
50											
	790										
55											

BBL® an ARCADIS company

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

Soil samples collected from 2.0' - 4.0' and 14' - 16' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 5/16/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763709.135
Easting: 1001454.818
Casing Elevation: NA

Borehole Depth: 16' below grade
Surface Elevation: 843.02' AMSL

Descriptions By: Jennifer Sandorf

Well/Boring ID: **SB-23**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			Auger though Concrete to 0.5' bgs.	Borehole backfilled with Bentonite to grade.
		1	0.5-2	1.4	5, 6, 6	NA	13.3			CONCRETE fragments, ASH, and CINDERS, loose, dry.	
	840	2	2-4	1.2	5, 12, 12, 1	24	60.2			White material, loose and in dense chunks below 2.0' bgs.	
5		3	4-6	0.6	2, 1, 5, 7	6	27.3			Light brown to light gray fine to medium SAND, some Cinders and Ash, trace coarse Gravel, loose, dry to moist.	
		4	6-8	0.8	5, 8, 12, 17	20	11.3			Brown fine to coarse SAND, little Silt, little coarse Gravel, trace blue coloration, faint petroleum-type odor, moderate loose to medium dense, dry to moist.	
	835	5	8-10	0.3	70, 50/0.4, -, -	NA	4.9			Large Cobble stuck in tip of spoon from 8.0' - 10' bgs.	
10		6	10-12	1.2	26, 24, 23, 21	47	3.8			Brown fine to coarse SAND and fine to coarse subangular to subrounded GRAVEL, trace red Brick fragments, dense, no apparent odor, dry to moist.	
	830	7	12-14	1.4	41, 21, 15, 18	36	2.8			Olive-brown SILT, little fine to medium Gravel, trace orange-brown discoloration, stiff, non-plastic, moist.	
										Gray subrounded COBBLES.	
15		8	14-16	0.9	85, 50/0.3, -, -	NA	512			Brown SILT, some fine to coarse subrounded Gravel, little fine to medium Sand, trace Cobbles, very dense, hard, non-plastic, moist.	

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Remarks:

bgs = below ground surface; NA = Not Available/Applicable; ND = Not Detected; AMSL = Above Mean Sea Level.

Humidity may affect PID readings, meter slowly rising as readings are being taken.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-23**

Borehole Depth: 16' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	1.7	24 21 21 29	42	9.3			Light olive-brown fine to coarse SAND and SILT, little fine to coarse subrounded Gravel, dense, moist.	Borehole backfilled with Bentonite to grade.
	825	10	18-20	0.7	25 31 52 60	83	21.3			Light brown-gray SILT, little fine to medium Sand, little fine to coarse Gravel, very dense, hard, non-plastic, moist. [Till?]	
20											
	820										
25											
	815										
30											
	810										
35											

BBL an ARCADIS company

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

Humidity may affect PID readings, meter slowly rising as readings are being taken.

Project: 130.55
Data File:SB-23.dat

Template:J:/Rockware/Logplot2001/Logfiles/13055/NYSEG_boring_well.ldf
Date: 6/30/06

Date Start/Finish: 5/23/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763748.528
Easting: 1001498.718
Casing Elevation: NA

Borehole Depth: 42.3' below grade
Surface Elevation: 842.46' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: SB-24

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	0-14	NA	NA	NA	NA			Blind drill to Holder Floor.	Borehole backfilled with Bentonite to grade.
	840										
5											
	835										
10											
	830									Orange BRICK, moderate odor. [Possible Holder Floor]	
										CONCRETE, trace bleb on top of Concrete, little sheen.	
15		1	14-16	1.2	142 92 50/0.2 -	NA	178 256			Gray turning olive Silty fine to coarse SAND and fine to coarse angular Gravel, little Cobbles, moderate odor, non-plastic, moist.	

Remarks:

bgs = below ground surface; NA = Not Available/Applicable; ND = Not Detected; AMSL = Above Mean Sea Level.

Soil samples collected from 18' - 20' bgs for TCLP Benzene, Reactivity, Total Sulfur, Flash Point, and PCBs; and from 30' - 32' bgs for BTEX, PAH, and total Cyanide.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-24**

Borehole Depth: 42.3' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Stratigraphic Description	Well/Boring Construction
	825	2	16-18	0.5	31 27 35 22	62	176		Gray turning olive Silty fine to coarse SAND and fine to coarse angular Gravel, little Cobbles, moderate odor, non-plastic, moist.	
20		3	18-20	2.0	17 18 21 18	39	171 16.1	X	Alternating bands of olive and dark gray coloration Silty fine SAND, some to little fine to coarse subangular Gravel, trace sheen, faint to moderate odor, non-plastic, moist.	Borehole backfilled with Bentonite to grade.
		4	20-22	1.7	11 16 12 14	28	7.7 24		Gray Silty fine SAND and fine to coarse subangular GRAVEL, trace medium Sand and Cobbles, faint odor, non-plastic, saturated. Gray Silty fine SAND, trace medium Sand, non-plastic, saturated.	
	820	5	22-24	1.0	16 26 20 19	46	21		Brown Silty fine SAND, some fine to coarse subangular Gravel, non-plastic, saturated.	
25		6	24-26	1.3	18 33 50/0.4 -	NA	0.8 0.1		Brown fine Sandy SILT, some fine to coarse subrounded fine to coarse multicolored Gravel, trace Cobbles, non-plastic, wet. [Possible Till]	
	815	7	26-28	1.0	80 38 25 27	73	20.4			
		8	28-30	1.4	10 19 20 21	39	2.0			
30		9	30-32	1.3	28 45 50/0.5 -	NA	ND	X		
	810	10	32-34	1.2	61 42 50/0.2 -	NA	ND			
35		11	34-36	0.7	41 50/0.4 - -	NA	ND		Saturated below 34' bgs.	

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

Soil samples collected from 18' - 20' bgs for TCLP Benzene, Reactivity, Total Sulfur, Flash Point, and PCBs; and from 30' - 32' bgs for BTEX, PAH, and total Cyanide.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-24

Borehole Depth: 42.3' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	805	12	36-38	0.0	50/0.2	NA	NA			No Recovery.	Borehole backfilled with Bentonite to grade.
40		13	38-40	0.0	50/0.2	NA	NA				
		14	40-42	0.0	100/0.4	NA	NA				
	800	15	42-42.3	0.0	100/0.3	NA	NA				
45											
	795										
50											
	790										
55											

BBL® an ARCADIS company

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

Soil samples collected from 18' - 20' bgs for TCLP Benzene, Reactivity, Total Sulfur, Flash Point, and PCBs; and from 30' - 32' bgs for BTEX, PAH, and total Cyanide.

Date Start/Finish: 5/26/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763748.417
Easting: 1001510.594
Casing Elevation: NA

Borehole Depth: 31.3' below grade
Surface Elevation: 842.33' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: SB-25

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			Auger to 12' bgs.	Borehole backfilled with Bentonite to grade.
	840										
5											
	835										
10											
	830	1	12-12.5	0.5	85/0.5	NA	0.6			Brown Silty fine SAND, some Cobbles, little fine to coarse Gravel.	
15										Auger refusal at 14' bgs. Piece of rebar or steel cable wrapped around lead auger. Moved back 8' and readvanced hole (See log for SB-25A).	

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

Date Start/Finish: 5/25/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-56 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763748.417 **Easting:** 1001510.594 **Casing Elevation:** NA **Borehole Depth:** 31.3' below grade **Surface Elevation:** 842.33' AMSL **Descriptions By:** Dave Cornell	**Well/Boring ID:** SB-25A **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			Auger to 14' bgs.	Borehole backfilled with Bentonite to grade.
	840										
5											
	835										
10											
	830										
15		1	14-16	2.0	105 69 120 138	189	58.2 1004 268	X		Brown Silty fine to coarse SAND, some to little fine to coarse subangular Gravel and Brick, faint odor, non-plastic, saturated. Gray fine Sandy fine to medium subangular GRAVEL, trace Silt, very dense, moderate sheen and odor, non-plastic, moist. Olive-gray SAND and SILT, some fine to coarse Gravel, moderate odor.	

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

Soil samples collected from 14.6' - 16' and 26' - 28' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-25A**

Borehole Depth: 31.3' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	2	16-18	1.7	60 38 35 36	73	297 215			Olive-gray fine SAND and SILT, some fine to coarse subrounded Gravel, dense, faint to moderate odor, non-plastic, moist. [Possible Till]	
		3	18-20	1.5	9 9 9 12	18	28.2			Dark gray Silty fine to medium SAND, some fine to coarse subrounded Gravel, loose, faint odor, trace sheen, non-plastic, saturated.	Borehole backfilled with Bentonite to grade.
20		4	20-22	1.4	11 14 17 21	31	2.7 1.3			Olive-gray fine Sandy SILT, some fine to coarse subrounded multicolored Gravel, very faint odor, non-plastic, moist to wet. [Till] Trace Cobbles and Clay, wet below 20' bgs.	
	820	5	22-24	1.0	45 21 21 25	42	1.5			Faint odor in slough water below 22' bgs.	
25		6	24-26	0.5	52 50/0.3 - -	NA	0.8				
	815	7	26-28	1.1	28 35 19 29	54	1.6	X		Gray fine to coarse SAND, little subrounded Cobbles and fine to coarse Gravel, non-plastic, saturated.	
		8	28-30	1.5	25 39 92 -	NA	2.0			Gray-brown fine Sandy SILT, some fine to coarse subrounded multicolored Gravel, little Cobbles, trace Clay, faint odor coming from slough water, non-plastic, wet. [Till]	
30		9	30-32		30 62 50/0.2 -	NA	ND				
	810										
35											

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

Soil samples collected from 14.6' - 16' and 26' - 28' bgs for TCL VOCs, TCL SVOCs, total Cyanide and RCRA Metals.

Date Start/Finish: 6/5/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763702.694
Easting: 1001584.287
Casing Elevation: NA

Borehole Depth: 32' below grade
Surface Elevation: 846.06' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: **SB-26**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	NA	NA	NA	NA	NA			CONCRETE.	
	845	1	0.5-2	0.6	3 3 3	NA	ND			Brown fine to medium SAND, some fine to coarse subrounded Gravel, trace Cinders and coarse Sand, non-plastic, moist.	
		2	2-4	0.8	2 2 3 3	5	ND				Borehole backfilled with Bentonite to grade.
5		3	4-6	1.1	2 2 3 2	5	ND			Trace Brick below 4.0' bgs. Increased Cinder content below 4.7' bgs.	
	840	4	6-8	1.2	4 5 5 15	10	ND			Decreasing Cinder content, trace Cobble below 6.0' bgs.	
		5	8-10	1.5	6 5 8 10	13	ND			Brown fine Sandy SILT, some fine to coarse subangular Gravel, trace Cobbles and Clay, non-plastic, moist.	
10	835	6	10-12	1.1	11 13 7 10	20	ND 0.4			Gray color, faint petroleum-like odor, possible MGP-like odor, wet below 11' bgs.	
		7	12-14	1.3	4 5 6 6	11	2.9 6.7			Gray fine Sandy SILT, trace Gravel to 12.5' bgs, possible faint petroleum-like odor and MGP-like odor. Trace Roots and Root scars below 12.5' bgs.	
15		8	14-16	1.9	3 2 3 3	5	2.3 1.2			Dark gray-brown SILT, little to trace Clay, trace fine Sand, very faint petroleum-like odor, slightly plastic, wet. Gray color below 15' bgs.	

BBL® an ARCADIS company

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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: SB-26

Borehole Depth: 32' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	830	9	16-18	1.7	3 4 5 5	9	0.8 ND			Gray SILT, little Clay, slightly plastic, saturated.	Borehole backfilled with Bentonite to grade.
20		10	18-20	2.0	2 2 3 5	5	ND			Gray SILT, trace fine Sand and Clay, non-plastic, saturated.	
	825	11	20-22	1.9	4 8 8 8	16	ND			Gray-brown fine Sandy SILT, trace Clay, mottled, non-plastic, saturated.	
		12	22-24	2.0	7 10 10 7	20	ND			Gray-brown layers of fine Sandy SILT interbedded with layers of Silty fine SAND, mottled, non-plastic, saturated.	
25		13	24-26	0.8	4 4 5 4	9	ND			Brown-gray Silty fine to coarse SAND, some fine to coarse subrounded multicolored Gravel, little Cobbles, non-plastic, saturated.	
	820	14	26-28	0.7	4 6 7 11	13	ND				
		15	29-30	1.2	25 21 8 10	29	ND				
30	815	16	30-32	1.0	15 11 15 15	26	ND			Brown-gray fine to medium Sandy SILT, some fine to coarse subrounded multicolored Gravel, trace coarse Sand and Cobbles, non-plastic, saturated. [Possible Till]	
35											

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

Project: 130.55
Data File:SB-26.dat

Template:J:/Rockware/Logplot2001/Logfiles/13055/NYSEG_boring_well.ldf
Date: 7/11/06

Date Start/Finish: 6/5/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-56
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763706.933
Easting: 1001541.032
Casing Elevation: NA

Borehole Depth: 30' below grade
Surface Elevation: 843.16' AMSL

Descriptions By: Dave Cornell

Well/Boring ID: SB-27

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		1	0-2	0.8	10 12 9 9	21	ND			Brown Silty fine to medium SAND, some fine to coarse Gravel, non-plastic, moist. Dark gray-brown fine to medium SAND and CINDERS, little Slag, trace white Ash-like material, non-plastic, moist.	
	840	2	2-4	1.1	4 5 7 5	12	ND			White Ash-material from 2.4' - 2.6' bgs.	Borehole backfilled with Bentonite to grade.
5		3	4-6	1.0	9 3 4 9	7	ND			Wet to saturated below 4.0' bgs.	
		4	6-8	0.7	9 7 8 5	15	ND			Brown fine to coarse SAND, some fine to coarse subrounded Gravel, little Cobbles, little Silt, non-plastic, moist to wet.	
	835	5	8-10	1.0	6 7 7 5	14	ND			Saturated below 8.0' bgs.	
10		6	10-12	0.4	3 3 3 3	6	1.7			Dark gray SILT, trace Clay, fine Sand, and Organics, faint MGP-like odor, slightly plastic, moist.	
	830	7	12-14	2.0	4 7 7 8	14	12.8			Brown SILT, trace Clay and fine Sand, trace darkstaining, faint MGP-like odor, non-plastic, wet.	
15		8	14-16	0.7	1 1 1 2	2	8.8			Slightly plastic to non-plastic, moist to wet below 14' bgs.	

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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **SB-27**

Borehole Depth: 30' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	2.0	3 4 5 6	9	3.1 345			Brown SILT, trace Clay and fine Sand, faint MGP-like odor, slightly plastic, wet to saturated. Brown-gray Silty fine SAND, little bedding with fine Sandy Silt, little gray staining, moderate MGP-like odor, non-plastic, saturated. Trace sheen below 17.5' bgs. Moderate sheen below 18' bgs.	Borehole backfilled with Bentonite to grade.
	825	10	18-20	0.4	4 9 5 6	14	73.1				
20		11	20-22	1.3	8 5 3 3	8	387 540			Gray Silty fine to coarse SAND, some fine to coarse subrounded Gravel, loose, moderste sheen, non-plastic, saturated. Olive-brown Silty fine to medium SAND, some fine to coarse subrounded Gravel, trace Cobbles and coarse Sand, moderate MGP-like odor, non-plastic, saturated.	
	820	12	22-24	1.0	4 7 6 6	13	301				
25		13	24-26	0.0	5 6 7 9	13	NA			No Recovery.	
		14	26-28	0.4	10 18 24 24	42	16.9			Olive-brown Silty fine to medium SAND, some fine to coarse subrounded Gravel, trace Cobbles and coarse Sand, non-plastic, saturated.	
	815	15	29-30	1.3	22 26 20 20	46	7.6			Brown-gray Silty fine to medium SAND, some fine to coarse subrounded Gravel, trace coarse Sand and Cobbles, non-plastic, saturated. [Possible Till]	
30											
	810										
35											

BBL® an ARCADIS company

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

Date Start/Finish: 6/4/07
Drilling Company: Arcadis-BBL
Driller's Name: J. Gutkowski
Drilling Method: Direct Push
Sampling Method: 4' Macro Core

Northing: 763663.34
Easting: 1001560.90
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 842.6' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **SB-29**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845							
0		1	0-4	2.8	0.0		ASPHALT	Borehole backfilled with Bentonite to grade.
							Dark gray to black fine to coarse SAND, little fine to medium sub-rounded Gravel, Cinder-like and Ash-like material, non-plastic, damp.	
	840						White and gray fine to medium SAND, little fine sub-rounded Gravel, trace Silt, non-plastic, damp.	
							Brown fine to coarse SAND, little fine to medium sub-rounded and sub-angular Gravel, trace Silt, non-plastic, damp.	
5		2	4-8	2.0	0.0		Brown fine SAND and SILT, non-plastic, damp.	
	835						Brown fine SAND, little fine to medium sub-rounded Gravel and Silt, non-plastic, damp.	
10		3	8-12	2.0	0.0		Black fine SAND, little fine to medium sub-rounded Gravel and medium to coarse Sand, non-plastic, trace sheen, tar-like odor, wet.	
	830	4	12-16	2.0	0.6		Brown fine SAND and SILT, trace fine Gravel, non-plastic, wet.	
15								

ARCADIS BBL
Infrastructure, environment, facilities

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

Refusal at 2' bgs for two attempts.

Client: New York State Electric and Gas

Well/Boring ID: **SB-29**

Borehole Depth: 20' bgs

Site Location:
Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	5	16-20	4.0	0.1		Brown fine SAND and SILT, trace Clay, fine to medium Gravel at (17' bgs), slightly plastic, trace tar-like material at (16-16.5' bgs), tar-like odor, wet.	Borehole backfilled with Bentonite to grade.
20							End of Boring 20' bgs.	
	820							
25								
	815							
30								
	810							
35								

ARCADIS BBL
Infrastructure, environment, facilities

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

Refusal at 2' bgs for two attempts.

Date Start/Finish: 6/4/07
Drilling Company: Arcadis-BBL
Driller's Name: J. Gutkowski
Drilling Method: Direct Push
Sampling Method: 4' Macro Core

Northing: 763644.41
Easting: 1001567.90
Casing Elevation: NA

Borehole Depth: 20' bgs
Surface Elevation: 843.1' AMSL

Descriptions By: Levia Terrell

Well/Boring ID: **SB-30**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845							
0		1	0-4	2	0.0		ASPHALT Dark gray to black fine to coarse SAND and fine to medium GRAVEL, little Ash-like and Cinder-like material, trace Brick, non-plastic, damp. [FILL]. Dark gray fine to medium GRAVEL, little fine to coarse Sand, trace Ash-like material, non-plastic, damp.	Borehole backfilled with Bentonite to grade.
	840							
5		2	4-8	2.1	0.0		Brown fine SAND and SILT, trace Brick, non-plastic, damp. Brown fine to coarse SAND and fine to medium sub-rounded GRAVEL, little Silt, trace Cinder-like material, non-plastic, damp.	
	835							
10		3	8-12	2.0	0.0		Brown and gray fine SAND and SILT, trace Clay, fine to medium sub-rounded Gravel, Cinder-like material, Wood, Organic material, slightly plastic, wet.	
	830							
15		4	12-16	1.6	0.0		WOOD (all 1.6 feet of recovery), petroleum-like odor, sheen, wet.	

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

ARCADIS BBL
Infrastructure, environment, facilities

Client: New York State Electric and Gas

Well/Boring ID: **SB-30**

Site Location:
Washington Street
Binghamton, New York

Borehole Depth: 20' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	5	16-20	2.5	0.0		Light brown and gray fine SAND and SILT, trace Clay, angular Gravel at 18.5' bgs, slightly plastic, trace sheen, slight petroleum-like odor, wet.	Borehole backfilled with Bentonite to grade.
20							End of Boring 20' bgs.	
	820							
25								
	815							
30								
	810							
35								

ARCADIS BBL
Infrastructure, environment, facilities

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

Date Start/Finish: 6/4/07 **Drilling Company:** Arcadis-BBL **Driller's Name:** J. Gutkowski **Drilling Method:** Direct Push **Sampling Method:** 4' Macro Core	**Northing:** 763653.66 **Easting:** 1001543.94 **Casing Elevation:** NA **Borehole Depth:** 20' bgs **Surface Elevation:** 842.6' AMSL **Descriptions By:** Levia Terrell	**Well/Boring ID:** **SB-31** **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845							
0							ASPHALT	
		1	0-4	2.3	0.0		Dark gray to black fine to coarse SAND and fine to medium sub-angular GRAVEL, non-plastic, damp.	
	840						Black CINDER-like and ASH-like material, trace Brick, non-plastic, damp.	Borehole backfilled with Bentonite to grade.
5		2	4-8	1.5	0.0		Light brown fine to coarse SAND and fine to medium sub-rounded GRAVEL, CINDER-like and ASH-like material, trace Brick, non-plastic, damp.	
	835						Light brown and dark gray fine to coarse SAND, some fine to medium sub-rounded Gravel, trace Silt, non-plastic, damp.	
10		3	8-12	3.3	2.1		Dark gray and brown SILT, trace Clay, and fine Sand, trace tar-like material throughout, slightly plastic, damp.	
	830	4	12-16	4.0	0.6		Light brown SILT, trace Clay, and fine Sand, trace tar-like material throughout, slightly plastic, tar-like odor, trace sheen, damp.	
15								

ARCADIS BBL
Infrastructure, environment, facilities

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

Client: New York State Electric and Gas

Well/Boring ID: **SB-31**

Site Location:
Washington Street
Binghamton, New York

Borehole Depth: 20' bgs

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	5	16-20	4.0	0.0		Gray and light brown SILT, trace Clay, fine Sand, and tar-like material at (18-19' bgs), slightly plastic, tar-like odor, trace sheen, wet.	Borehole backfilled with Bentonite to grade.
20							End of Boring 20' bgs.	
	820							
25								
	815							
30								
	810							
35								

ARCADIS BBL
Infrastructure, environment, facilities

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

Dunn Geoscience Corporation Amherst, NY 14228 (716)691-3866	Test Boring Log	Boring No. MW-1

PROJECT: WEHLE ELECTRIC COMPANY				Sheet 1 OF 2
CLIENT: JAECKLE FLEISCHMANN				Job. No. 40032-00100
DRILLING CONTRACTOR: INTERFACE SERVICES INC.				Meas. Pt. El.
PURPOSE: MONITORING WELL INSTALLATION				Gr. Elev.
DRILLING METHOD: 4¼" I.D. HSA	SAMPLE	CORE	CASING	Datum
DRILL RIG TYPE: DEEP ROCK — TYPE	Split Spoon			Date Started: 3/26/91
GROUNDWATER DEPTH: — DIAM.	2.0"			Date Finished: 3/27/91
MEAS. POINT: — WEIGHT	140 lbs			Driller: G. HICKS
DATE OF MEAS.: — FALL	30"			Geologist: D. ROWLINSON

Depth (Feet)	Sample Numbers	Blow Counts	Unified Classification	Geologic Description	Remarks
				Asphalt	
	S-1	8 / 9 / 10 / 8		FILL: Br blk tn $ a, cm(+) f S, l mf G -brick frags noted (Damp)	Recovery = 1.1' HNU = Bckgrd
	S-2	3 / 4 / 4 / 6		-dk br $ s, cmf S, l mf G -brick frags noted (moist)	Recovery = 0.6' HNU = Bckgrd
5	S-3	1 / 2 / 3 / 1		-br cmf(-) G a, c(+) mf S, + $ -subangular gravel (Wet)	Recovery = 0.4' HNU = Bckgrd
	S-4	1 / 2 / 5 / 8		-br c(+) m S, + $, s mf G -brick frags noted (Wet)	Recovery = 0.2' HNU = Bckgrd
10	S-5	7 / 8 / 50/.3		-br tn blk rd cm(+) f G s, c(+) mf S (wet)	Recovery = 0.8' HNU = Bckgrd
	S-6	20 / 24 / 38 / 50/.3		Dk br cm(+) f G s, cmf S, l $ -subrounded gravel (Damp)	Recovery = 1.4' HNU = Bckgrd
	S-7	7 / 35 / 35 / 28		-br blk cm(+) f G a, c(+) mf S, l $ -subrounded gravel (Damp)	Recovery = 1.6' HNU = Bckgrd
15	S-8	8 / 22 / 20 / 17		-dk br $ a(+), mf S, s mf G -subrounded gravel (Damp)	Recovery = 1.1' HNU = Bckgrd
	S-9	5 / 11 / 10 / 8		Lt br mf S (Damp) -br c(+) mf S, l m f(+) G (Wet)	Recovery = 1.5' HNU = Bckgrd
20	S-10	3 / 5			Recovery = 1.2'

Dunn Geoscience Corporation Amherst, NY 14228 (716) 691-3866	Test Boring Log	Boring No. MW-1
PROJECT: WEHLE ELECTRIC COMPANY		Sheet 2 of 2
CLIENT: JAECKLE FLEISCHMANN		Job No. 40032-00100

Depth (Feet)	Sample Number	Blow Counts	Unified Classification	Visual Log Description	Geologic Description	Remarks
20	S-10	11-41			Br c(+) mfS, +fG (Wet)	HNu = Bckgrd
	S-11	12-32 33-35			Lt br ~~tn~~ Cy $l, mfG subangular gravel (Wet)	Recovery = 1.3' HNu = Bckgrd
	S-12	10-22 25-28			~~Lt~~ brtn Cy $ s(+), cS, s ~~mf(+)~~G Lt gr c(+) mfS, s mf(+)G (Wet)	Recovery = 1.3' HNu = Bckgrd
25					BORING TERMINATED @ 25.0'	
30						
35						

Dunn Geoscience Corporation Amherst, NY 14228 (716)691-3866	Test Boring Log			Boring No. MW-2
PROJECT: WEHLE ELECTRIC COMPANY				Sheet 1 of 2
CLIENT: JAECKLE FLEISCHMANN				Job. No. 40032-00100
DRILLING CONTRACTOR: INTERFACE SERVICES INC.				Meas. Pt. El.
PURPOSE: MONITORING WELL INSTALLATION				Gr. Elev.
DRILLING METHOD: 4 1/4" I.D. HSA	SAMPLE	CORE	CASING	Datum
DRILL RIG TYPE: DEEP ROCK / TYPE	Split Spoon			Date Started: 3/26/91
GROUNDWATER DEPTH: / DIAM.	2.0"			Date Finished: 3/26/91
MEAS. POINT: / WEIGHT	140 lbs			Driller: G. HICKS
DATE OF MEAS.: / FALL	30"			Geologist: D. ROWLINSON

Depth (Feet)	Sample Numbers	Blow Counts	Unified Classification	Geologic Description	Remarks
				Asphalt	
	S-1	3, 4, 2, 3		FILL: br $ a, c(+) mf S, +f G, brick fragments (wet)	Recovery = 0.8' HNU = 1 ppm
	S-2	3, 2, 1, 2		Lt br $ S, cmf S, +f G (wet)	Recovery = 0.4' HNU = Bckgrd
5	S-3	3, 1, 5, 15		- br $ a, cmf S, l mf G - subrounded Gravel (moist)	Recovery = 0.6' HNU = Bckgrd
	S-4	4, 4, 8, 6		- br gr $ a(+), cmf S, l cmf G - rounded gravel (wet)	Recovery = 0.7' HNU = Bckgrd
10	S-5	4, 4, 15, 16		Br cmf G s, cmf S, + $ - rounded gravel (Damp)	Recovery = 0.8' HNU = Bckgrd
	S-6	3, 7, 4, 1		Br $ S, c(+) mf G, wood fragments noted (wet)	Recovery = 1.2' HNU = Bckgrd
	S-7	2, 1, 6, 5		- gr br $, mottling (wet)	Recovery = 1.9' HNU = Bckgrd
15	S-8	3, 4, 5, 5			Recovery = 1.6' HNU = Bckgrd
	S-9	2, 2, 5, 5			Recovery = 1.4' HNU = Bckgrd
20	S-10	4, 3		- br gr $ l, f S (wet) - gr f S noted	Recovery = 1.7'

Dunn Geoscience Corporation Amherst, NY 14228 (716) 691-3866	Test Boring Log	Boring No. MW-2
PROJECT: WEHLE ELECTRIC COMPANY		Sheet 2 of 2
CLIENT: JAECKLE FLEISCHMANN		Job No. 40032-00100

Depth (Feet)	Sample Number	Blow Counts	Unified Classification	Visual Log Description	Geologic Description	Remarks
20	S-10	4-1			Br-tn $ a, fS (wet)	HNU = Bckgrd
	S-11	6-5 6-6			Br mf(+) G s, fS, + $	Recovery = 1.4' HNU = Bckgrd
					BORING TERMINATED @ 23.0'	
25						
30						
35						

Dunn Geoscience Corporation Amherst, NY 14228 (716)691-3866	Test Boring Log	Boring No. MW-3
PROJECT: WEHLE ELECTRIC COMPANY		Sheet 1 of 2
CLIENT: JAECKLE FLEISCHMANN		Job. No. 40032-00100
DRILLING CONTRACTOR: INTERFACE SERVICES INC.		Meas. Pt. El.
PURPOSE: MONITORING WELL INSTALLATION		Gr. Elev.

DRILLING METHOD: 4 1/4" I.D. HSA		SAMPLE	CORE	CASING	Datum
DRILL RIG TYPE: DEEP ROCK	TYPE	Split Spoon			Date Started: 3/28/91
GROUNDWATER DEPTH:	DIAM.	2.0"			Date Finished: 3/28/91
MEAS. POINT:	WEIGHT	140 lbs.			Driller: G. HICKS
DATE OF MEAS.:	FALL	30"			Geologist: D. ROWLINSON

Depth (Feet)	Sample Numbers	Blow Counts	Unified Classification	Geologic Description	Remarks
	S-1	7 5 4 2		FILL: Gr br blk $ a, cS, sf G -charcoal like resin noted (Damp)	Recovery = 1.1' HNU = Bckgrd
	S-2	3 1 11 6		-gr blk wh or mf(+) G s(+), cmf S, l $ (moist)	Recovery = 0.8' HNU = Bckgrd
5	S-3	2 2 4 5		- br blk $ s, c(+) mf S, t mf G -slight asphalt odor noted (wet)	Recovery = 0.6' HNU = Bckgrd
	S-4	1 1 2 5		-dk br blk $ s(+), mf G, wood fragments noted -hydrocarbon odor noted, black staining (wet)	Recovery = 0.4' HNU = 10 ppm
10	S-5	5 4 4 4		- dk ~~br~~ blk $ l, mf S, oil staining noted (wet)	Recovery = 1.1' HNU = 15 ppm
	S-6	4 4 5 2		Dk gr br $, oil noted (moist)	Recovery = 0.6' HNU = 5 ppm
	S-7	1 4 6 7		- lt gr br $, oil-tar noted (moist)	Recovery = 1.8' HNU = 140 ppm
15	S-8	1 2 4 6			Recovery = 1.8' HNU = 40 ppm
	S-9	2 4 6 8		- lt br $ (moist) - dk gr $ (wet)	Recovery = 1.8' HNU = 10 ppm
20	S-10	3 4			Recovery = 1.8'

Dunn Geoscience Corporation Amherst, NY 14228 (716) 691-3866	Test Boring Log	Boring No. MW-3
PROJECT: WEHLE ELECTRIC COMPANY		Sheet 2 of 2
CLIENT: JAECKLE FLEISCHMANN		Job No. 40032-00100

Depth (Feet)	Sample Number	Blow Counts	Unified Classif-ication	Visual Log Description	Geologic Description	Remarks
20	S-10	4-6			DKgr mf G&,$ -dkgr mf(+)GS, cmS (wet)	HNU= 5ppm
	S-11	1-5 10-8			Ltbr cy $&, mf G (wet)	Recovery= 1.6' HNU= 2ppm
	S-12	8-10 12-18			Ltbr c m(+) f G &, mfS, +$ (wet)	Recovery= 0.5' HNU= 1ppm
25					BORING TERMINATED @ 25.0'	
30						
35						

DUNN GEOSCIENCE CORPORATION

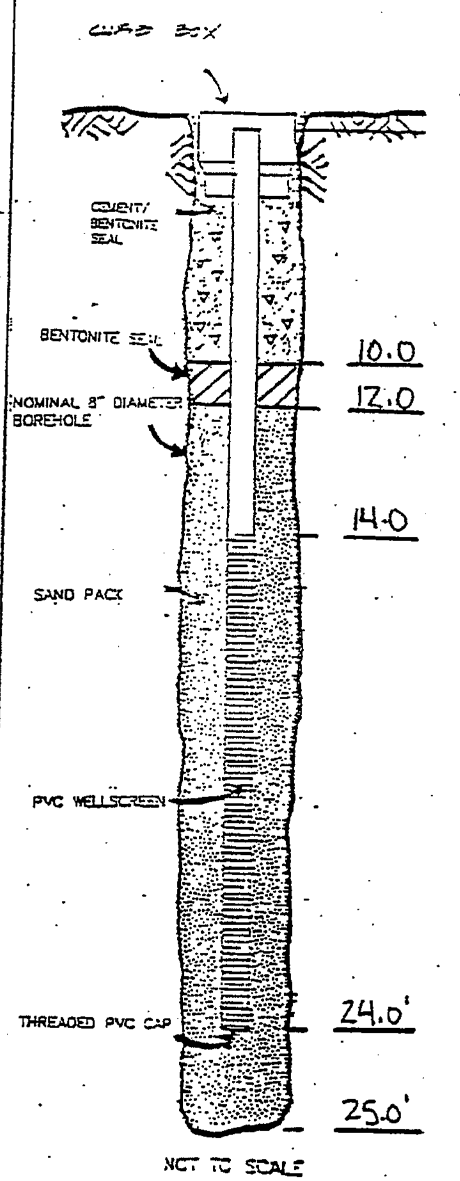
MONITORING WELL COMPLETION LOG

WELL NO. MW-1

DUNN GEOSCIENCE CORPORATION
495 COMMERCE DRIVE
AMHERST, NEW YORK 14150
(716) 691-3866
FAX (716) 691-3884

Project: Wehle Electric Company
Client: Jaeckle-Fleischmann
Location: Binghamton, N.Y.
Project No.: 40032-00100
Date Drilled: 3/26/91
Date Developed: 4/11/91

CONSTRUCTION DETAIL



Inspector: D. RAWLINSON
Drilling Contractor: INTERFACE SERVICES, INC.

Type of Well: 2.0" PVC Monitoring Well
Static Water Level: 18.23' Date: 5-9-91
Measuring Point (M.P.): TOP PVC
Total Depth of Well: 24.0'

Drilling Method
Type: Hollow Stem Auger Diameter: 4 1/4" I.D.
Casing:

Sampling Method
Type: Split Spoon Diameter: 2.0"
Weight: 140 lbs Fall: 30"
Interval: 2 feet

Settling Tube
Material: Diameter:
Length: Joint Type:

Riser Pipe Left in Place
Material: PVC Diameter: 2.0"
Length: 14.0' Joint Type: Flush-Threaded

Screen
Material: PVC Diameter: 2.0"
Slot Size: 0.20" Length: 10.0'
Stratigraphic Unit Screened:

Filter Pack
Sand: X Gravel: Natural:
Grade: #1
Amount: Interval: 25.0' -> 12.0'

Seal(s)
Type: Bentonite Pellets Interval: 12.0 -> 10.0'
Type: Cement/Bentonite Grout Interval: 10.0' -> surface
Type: Interval:

Locking Casing ☒ Yes ☐ No
Notes:

Date Start/Finish: 6/15/06 - 6/16/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-57
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763803.573
Easting: 1001520.505
Casing Elevation: 845.67' AMSL

Borehole Depth: 26' below grade
Surface Elevation: 845.95' AMSL

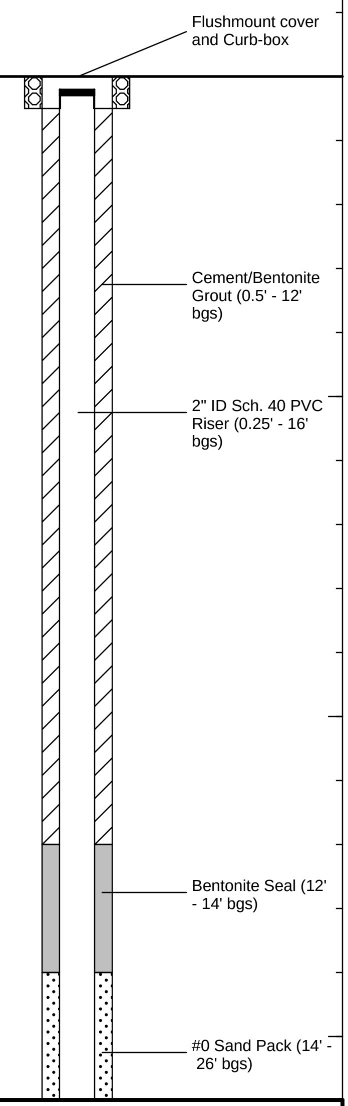
Descriptions By: Dave Cornell

Well/Boring ID: MW-1R

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	NA	NA	NA	NA	NA			Blind Drill to 26' bgs.	
	845										
5											
	840										
10											
	835										
15											
	830										



BBL® an ARCADIS company

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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-1R**

Borehole Depth: 26' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		NA	NA	NA	NA	NA	NA			Blind Drill to 26' bgs.	#0 Sand Pack (14' - 26' bgs)
20	825										2" ID Sch. 40 0.010"-Slot PVC Screen (16' - 26' bgs)
25	820										
30	815										
35	810										

BBL® an ARCADIS company

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

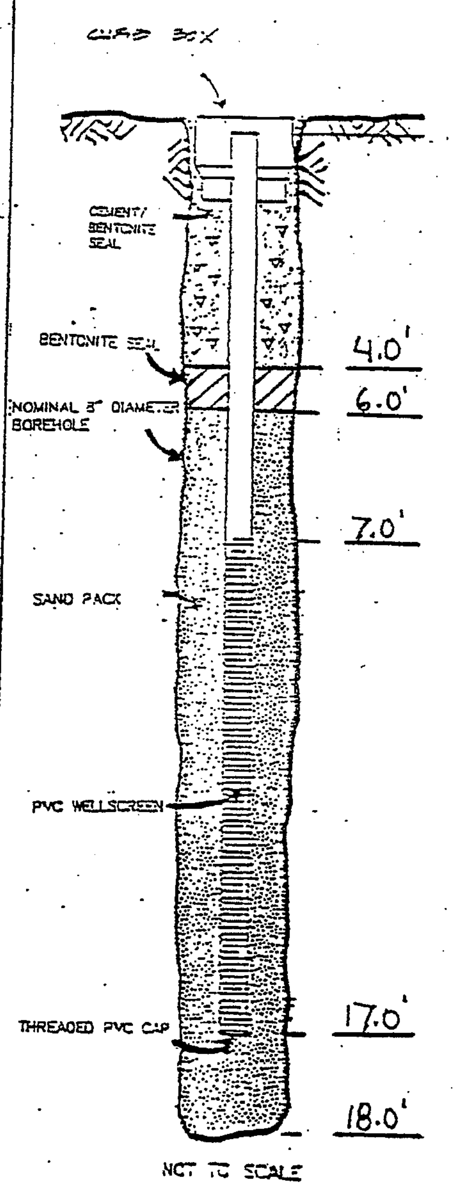
MONITORING WELL COMPLETION LOG

WELL NO. MW-2

DUNN GEOSCIENCE CORPORATION
495 COMMERCE DRIVE
AMHERST, NEW YORK 14150
(716) 691-3866
FAX (716) 691-3884

Project: Wehle Electric Company
Client: Jaeckle-Fleischmann
Location: Binghamton, N.Y.
Project No.: 40037-00100
Date Drilled: 3/26/91
Date Developed: 4/11/91

CONSTRUCTION DETAIL



Inspector: D. ROWLINSON
Drilling Contractor: INTERFACE SERVICES, INC.

Type of Well: 2.0" PVC Monitoring Well
Static Water Level: 13.29' Date: 5-9-91
Measuring Point (M.P.): TOP PVC
Total Depth of Well: 17.0'

Drilling Method
Type: Hollow Stem Auger Diameter: 4 1/4" I.D.
Casing:

Sampling Method
Type: Split Spoon Diameter: 2.0"
Weight: 140 lbs Fall: 30"
Interval: 2 feet

Settling Tube
Material: Diameter:
Length: Joint Type:

Riser Pipe Left in Place
Material: PVC Diameter: 2.0"
Length: 7.0' Joint Type: Flush-Threaded

Screen
Material: PVC Diameter: 2.0"
Slot Size: 0.20" Length: 10.0'
Stratigraphic Unit Screened:

Filter Pack
Sand: X Gravel: Natural:
Grade: #1
Amount: Interval: 18.0 -> 6.0'

Seal(s)
Type: Bentonite Pellets Interval: 6.0'->4.0'
Type: Cement/Bentonite Grout Interval: 4.0' ->surface
Type: Interval:

Locking Casing: ☒ Yes ☐ No
Notes:

FORM54 - 9/88

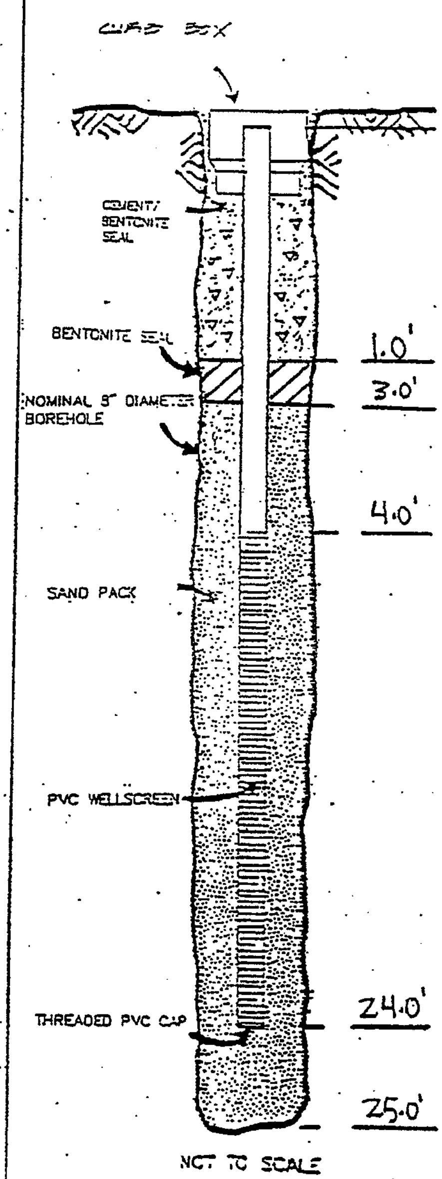
MONITORING WELL COMPLETION LOG

WELL NO. MW-3

DUNN GEOSCIENCE CORPORATION
495 COMMERCE DRIVE
AMHERST, NEW YORK 14150
(716) 691-3866
FAX (716) 691-3884

Project: Wehle Electric Company
Client: Jaeckle-Fleischmann
Location: Binghamton, N.Y.
Project No.: 40032-00100
Date Drilled: 3/28/91
Date Developed: 4/11/91

CONSTRUCTION DETAIL



Inspector: D. ROWLINSON
Drilling Contractor: INTERFACE SERVICES, INC.

Type of Well: 2.0" PVC Monitoring Well
Static Water Level: 15.10' Date: 5-9-91
Measuring Point (M.P.): TOP PVC
Total Depth of Well: 24.0'

Drilling Method
Type: Hollow Stem Auger Diameter: 4 1/4" I.D.
Casing:

Sampling Method
Type: Split Spoon Diameter: 2.0"
Weight: 140 lbs Fall: 30"
Interval: 2 feet

Settling Tube
Material: Diameter:
Length: Joint Type:

Riser Pipe Left in Place
Material: PVC Diameter: 2.0"
Length: 4.0' Joint Type: Flush-Threaded

Screen
Material: PVC Diameter: 2.0"
Slot Size: 0.20" Length: 20.0'
Stratigraphic Unit Screened:

Filter Pack
Sand: X Gravel: Natural:
Grade: #1
Amount: Interval: 25.0' → 3.0'

Seal(s)
Type: Bentonite Pellets Interval: 3.0' → 1.0'
Type: Cement/Bentonite Grout Interval: 1.0' → Surface
Type: Interval:

Locking Casing ☒ Yes ☐ No
Notes:

FORM54 - 9/88

Date Start/Finish: 6/6/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-57
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763864.483
Easting: 1001455.244
Casing Elevation: 843.62' AMSL

Borehole Depth: 25' below grade
Surface Elevation: 844.19' AMSL

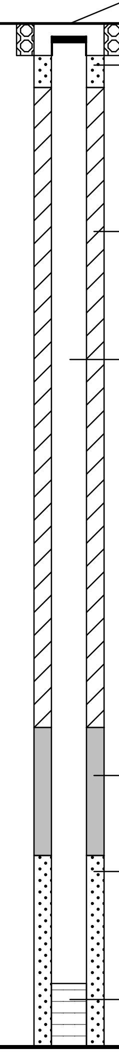
Descriptions By: Dave Cornell

Well/Boring ID: **MW-4**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			Blind Drill to 18' bgs.	
	840										
5											
	835										
10											
	830										
15											



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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: MW-4

Borehole Depth: 25' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		NA	NA	NA	NA	NA	NA			Blind Drill to 18' bgs.	#0 Sand Pack (13' - 25' bgs)
	825	1	18-20	0.0	50/0.3	NA	NA			No Recovery.	
20		2	20-22	1.2	33 24 24 20	48	ND			Brown fine to medium SAND, multicolored fine to medium angular to well rounded GRAVEL, and shattered Cobbles, dense, wet.	2" ID Sch. 40 0.010"-Slot PVC Screen (15' - 25' bgs)
		3	22-24	1.4	14 14 25 18	39	ND				
	820										
25											
	815										
30											
	810										
35											

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

Project: 130.55
Data File:MW-4.dat

Template:J:/Rockware/Logplot2001/Logfiles/13055/NYSEG_boring_well.ldf
Date: 7/11/06

Date Start/Finish: 6/8/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-57
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763766.52
Easting: 1001444.884
Casing Elevation: 842.32' AMSL

Borehole Depth: 26' below grade
Surface Elevation: 842.72' AMSL

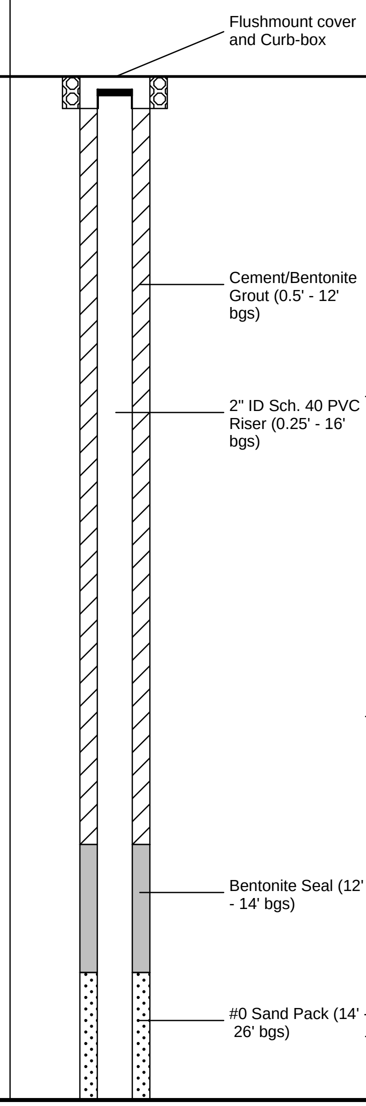
Descriptions By: Jason Sents

Well/Boring ID: **MW-5**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			Blind Drill to 26' bgs. See logs for MW-5D and SB-22 for geologic descriptions.	
	840										
-5											
	835										
10											
	830										
15											



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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-5**

Borehole Depth: 26' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		NA	NA	NA	NA	NA	NA			Blind Drill to 26' bgs. See logs for MW-5D and SB-22 for geologic descriptions.	
	825										2" ID Sch. 40 0.010"-Slot PVC Screen (16' - 26' bgs)
20											#0 Sand Pack (14' - 26' bgs)
	820										
25											
	815										
30											
	810										
35											

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

Date Start/Finish: 6/7/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-57
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763767.321
Easting: 1001441.932
Casing Elevation: 842.58' AMSL

Borehole Depth: 42.5' below grade
Surface Elevation: 842.81' AMSL

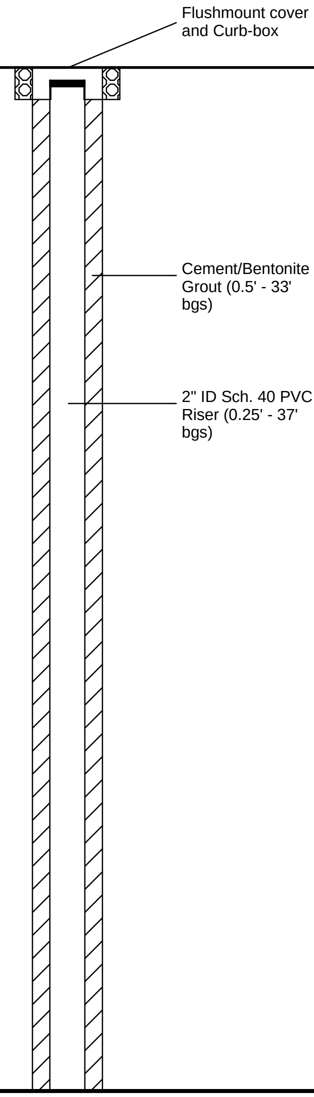
Descriptions By: Jason Sents

Well/Boring ID: MW-5D

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			Blind Drill to 38' bgs.	
	840										
5											
	835										
10											
	830										
15											



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

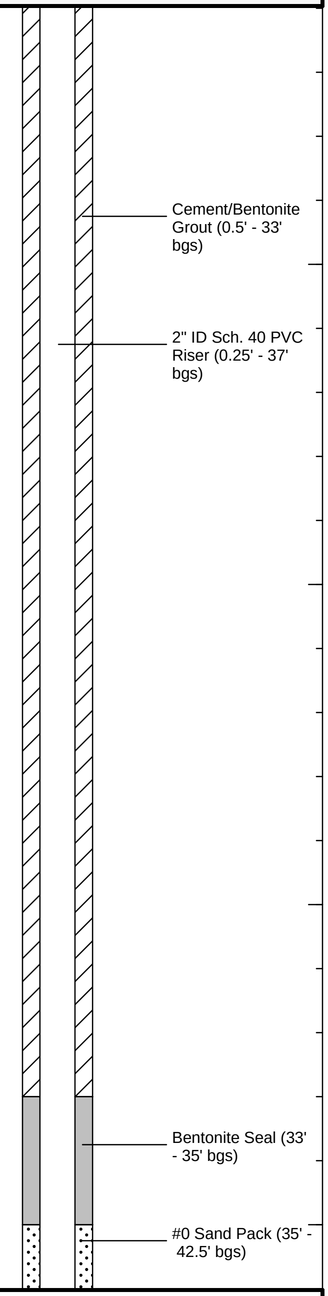
Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-5D**

Borehole Depth: 42.5' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		NA	NA	NA	NA	NA	NA			Blind Drill to 38' bgs.	
	825										
20											
	820										
25											
	815										
30											
	810										
35											



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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-5D**

Borehole Depth: 42.5' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	805	NA	NA	NA	NA	NA	NA			Blind Drill to 38' bgs.	2" ID Sch. 40 PVC Riser (0.25' - 37' bgs)
40		1	38-40	0.3	50/0.4	NA	ND			Gray fine Sandy SILT, some to little fine to coarse Gravel, non-plastic, saturated. (Cobble in shoe)	#0 Sand Pack (35' - 42.5' bgs)
		2	40-42	0.5	82/0.5	NA	ND			Gray fine Sandy SILT, little medium Sand and fine to coarse subangular Gravel.	2" ID Sch. 40 0.010"-Slot PVC Screen (37' - 42' bgs)
	800	3	42-42.5	0.2	50/0.3	NA	ND			Possible faint odor below 42' bgs.	
45	795										
50	790										
55											

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Remarks:
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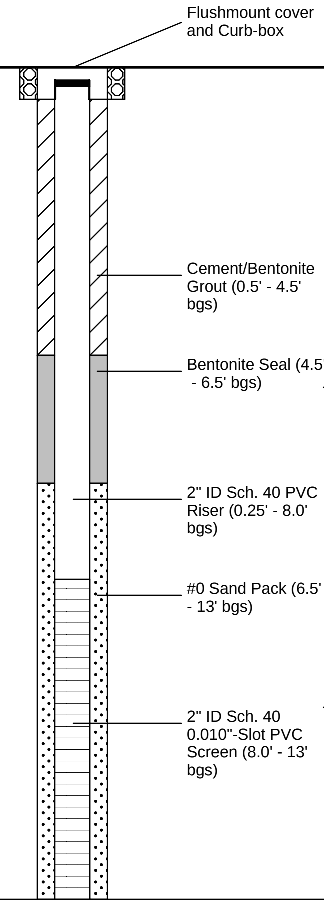
Project: 130.55
Data File:MW-5D.dat

Template:J:/Rockware/Logplot2001/Logfiles/13055/NYSEG_boring_well.ldf
Date: 7/11/06

Date Start/Finish: 6/12/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-57 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763645.293 **Easting:** 1001463.257 **Casing Elevation:** 842.61' AMSL **Borehole Depth:** 13' below grade **Surface Elevation:** 842.10' AMSL **Descriptions By:** Dave Cornell	**Well/Boring ID:** **MW-6S** **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH / ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
845										
0	NA	NA	NA	NA	NA	NA			Blind Drill to 13' bgs. See logs for MW-6 for geologic descriptions.	
840										
5										
835										
10										
830										
15										



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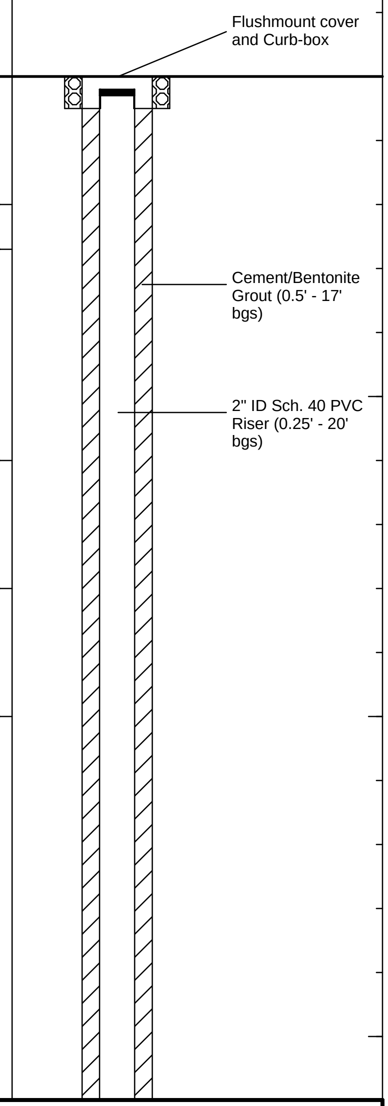
Remarks:
bgs = below ground surface; NA = Not Available/Applicable; ND = Not Detected; AMSL = Above Mean Sea Level.

Date Start/Finish: 6/12/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-57 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763642.305 **Easting:** 1001464.171 **Casing Elevation:** 842.13' AMSL **Borehole Depth:** 30' below grade **Surface Elevation:** 842.65' AMSL **Descriptions By:** Dave Cornell	**Well/Boring ID:** **MW-6** **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	845									
0		NA	0-2	NA	NA	NA	NA			ASPHALT and Subbase.
	840	1	2-4	1.2	3 2 2 1	4	ND			Black CINDERS and SLAG, non-plastic, moist. Brown Silty fine to medium SAND, little fine Brick fragments, non-plastic, moist. Trace coarse rounded Gravel below 4.0' bgs.
5		2	4-6	0.2	2 2 2 1	4	ND			
	835	3	6-8	0.4	1 1 1 1	2	ND			Brown fine SAND and SILT, trace Organics and Fire Brick, non-plastic, moist.
		4	8-10	0.3	4 21 11 3	32	ND			WOOD, non-plastic, saturated.
10		5	10-12	0.5	4 3 2 2	5	ND			Gray SILT, little Clay, trace fine Sand and Organics, slightly plastic, saturated.
	830	6	12-14	0.5	4 3 3 3	6	ND			Little to trace Clay, trace Root scars below 12' bgs.
15		7	14-16	1.3	3 3 3 3	6	ND			Brown-gray color, mottled below 14' bgs.

Well/Boring Construction



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Remarks:
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Client:
New York State Electric and Gas

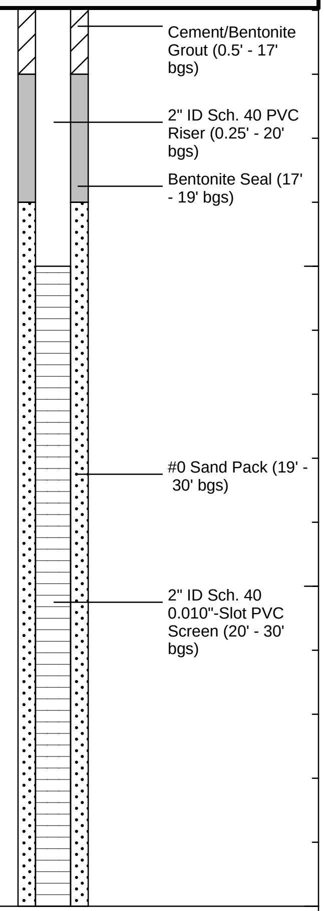
Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-6**

Borehole Depth: 30' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	825	8	16-18	1.9	4, 5, 6, 7	11	ND			Brown-gray SILT, little to trace Clay, trace fine Sand and Root scars, slightly plastic, saturated.
20		9	18-20	0.6	2, 6, 7, 10	13	ND			Brown-gray SILT, trace Clay and fine Sand, mottled, non-plastic, saturated.
		10	20-22	1.4	7, 8, 16, 16	24	ND			Brown-gray Silty fine SAND, some fine to coarse multicolored Gravel, trace medium Sand, non-plastic, saturated.
	820									Brown SILT and fine SAND, some to little fine to coarse multicolored subrounded imbedded Gravel, dense, non-plastic, wet. [Possible Till]
		11	22-24	1.6	14, 13, 15, 21	28	ND			Gray Silty fine SAND, some imbedded fine to coarse subrounded multicolored Gravel, little medium Sand, non-plastic, wet to saturated. [Possible Till]
25		12	24-26	0.3	67/0.5	NA	ND			COBBLE, non-plastic, saturated.
	815	13	26-28	1.5	15, 16, 21, 50/0.3	37	ND			Brown-gray SILT and fine SAND, some imbedded fine to coarse subrounded multicolored Gravel, trace Cobbles, non-plastic, wet. [Till]
30		14	28-30	1.5	39, 34, 67, -	NA	ND			
	810									
35										

Well/Boring Construction



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

Date Start/Finish: 6/12/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-57
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763540.348
Easting: 1001507.77
Casing Elevation: 842.62' AMSL

Borehole Depth: 23' below grade
Surface Elevation: 842.07' AMSL

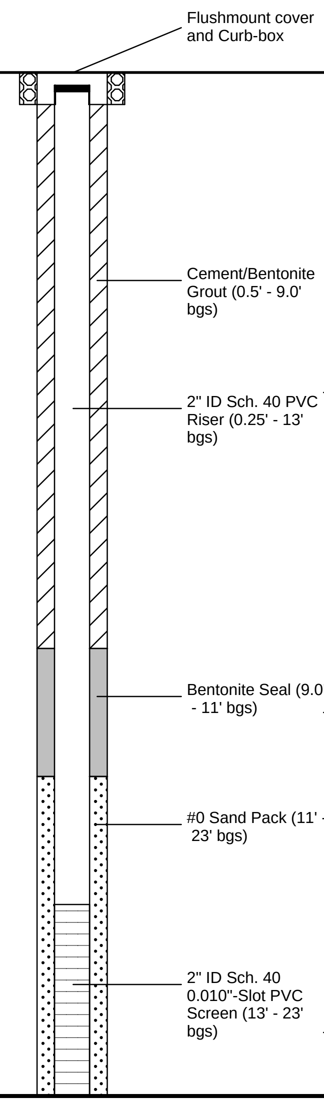
Descriptions By: Jason Sents

Well/Boring ID: **MW-7**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										
0		NA	NA	NA	NA	NA	NA			Blind Drill to 23' bgs. See logs for MW-7D for geologic descriptions.	
	840										
5											
	835										
10											
	830										
15											



BBL® an ARCADIS company

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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-7**

Borehole Depth: 23' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		NA	NA	NA	NA	NA	NA			Blind Drill to 23' bgs. See logs for MW-7D for geologic descriptions.	
	825										2" ID Sch. 40 0.010"-Slot PVC Screen (13' - 23' bgs)
20											#0 Sand Pack (11' - 23' bgs)
	820										
25											
	815										
30											
	810										
35											

BBL® an ARCADIS company

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

Date Start/Finish: 6/8/06 - 6/9/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-57
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763539.805
Easting: 1001502.974
Casing Elevation: 841.51' AMSL

Borehole Depth: 48' below grade
Surface Elevation: 841.91' AMSL

Descriptions By: Dave Cornell/Jason Sents

Well/Boring ID: **MW-7D**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	NA	NA	NA	NA	NA			Blind Drill to 8.0' bgs.	Flushmount cover and Curb-box
	840										Cement/Bentonite Grout (0.5' - 33' bgs)
5											2" ID Sch. 40 PVC Riser (0.25' - 37' bgs)
	835									Crushed ASPHALT.	
		1	8-10	1.2	6, 4, 6, 7	10	1.7			Brown fine to medium SAND and SILT, little crushed stone, soft, damp. [Fill]	
10		2	10-12	0.0	11, 3, 3, 3	6	NA			No Recovery.	
	830	3	12-14	1.5	3, 3, 3, 7	6	2.8			Gray SILT, little Clay and possible Organic matter, trace Rootlets, odor, very soft, damp.	
15		4	14-16	0.2	2, 2, 2, 3	4	ND			Brown-gray SILT, little to trace Clay and fine Sand, slightly plastic, moist.	

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Remarks:
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Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-7D**

Borehole Depth: 48' below grade

Depth markers: 20, 25, 30, 35. Elevation markers: 825, 820, 815, 810.

Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Stratigraphic Description
5	16-18	0.3	10, 10, 17, 17	22	ND		Brown-gray SILT, little to trace Clay and fine Sand, non-plastic, moist to wet.
6	18-20	0.9	2, 3, 4, 9	7	ND		Gray Silty fine to coarse SAND and fine to coarse subrounded GRAVEL, trace Cobbles, non-plastic, saturated.
7	20-22	1.0	12, 10, 9, 16	19	ND		Increased Silt content below 20' bgs.
8	22-24	1.0	10, 10, 13, 17	23	ND		Brown Silty fine to coarse SAND, trace fine Gravel, non-plastic, saturated.
9	24-26	0.2	7, 14, 17, 15	31	ND		
10	26-28	1.2	10, 10, 10, 10	20	ND		Little fine to coarse subrounded Gravel below 26' bgs.
11	28-30	1.4	4, 5, 21, 6	26	ND		Brown-gray fine Sandy SILT, some imbedded fine to coarse subrounded multicolored Gravel, trace Cobbles, non-plastic, wet. [Till]
12	30-32	0.9	18, 50/0.4, -, -	NA	ND		
13	32-34	0.8	14, 50/0.3, -, -	NA	ND		
14	34-36	1.2	31, 44, 50/0.2, -	NA	ND		Wet to saturated below 34' bgs.

Well/Boring Construction

- Cement/Bentonite Grout (0.5' - 33' bgs)
- 2" ID Sch. 40 PVC Riser (0.25' - 37' bgs)
- Bentonite Seal (33' - 35' bgs)
- #0 Sand Pack (35' - 43' bgs)

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

Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-7D**

Borehole Depth: 48' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	805	15	36-38	1.3	37 45 50/0.3 -	NA	ND			Gray fine Sandy SILT, some imbedded fine to coarse subrounded multicolored Gravel, trace Cobbles, non-plastic, saturated. [Till]	2" ID Sch. 40 PVC Riser (0.25' - 37' bgs); #0 Sand Pack (35' - 43' bgs)
		16	38-40	0.8	24 50/0.3 - -	NA	ND				
40		17	40-42	0.5	64/0.5	NA	ND			Trace Clay, wet below 40' bgs.	2" ID Sch. 40 0.010"-Slot PVC Screen (37' - 42' bgs)
	800	18	42-44	0.4	67/0.5	NA	ND			Gray SILT, some fine to coarse subangular Gravel (Shale), little Cobbles and fine Sand, trace Clay, non-plastic, wet. [Till]	
45		19	44-46	0.4	36 50/0.3 - -	NA	ND			Trace to little Cobbles, trace fine Sand below 44' bgs.	Bentonite Chips (43' - 48' bgs)
	795	20	46-48	0.2	91/0.5	NA	ND				
50											
	790										
55											

BBL® an ARCADIS company

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

Date Start/Finish: 6/13/06
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: M. Marshall
Drilling Method: Hollow Stem Auger
Bit Size: NA
Auger Size: 4-1/4" ID
Rig Type: Mobile B-57
Sampling Method: 2' x 2"/3" Split Spoon

Northing: 763798.968
Easting: 1001677.654
Casing Elevation: 845.60' AMSL

Borehole Depth: 27' below grade
Surface Elevation: 845.87' AMSL

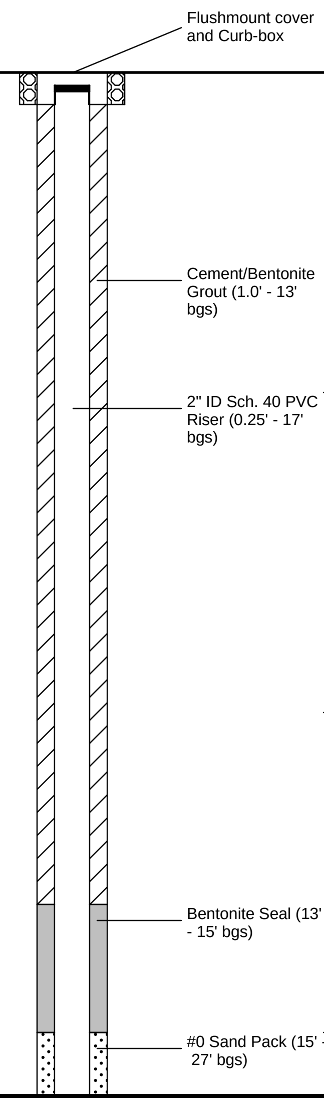
Descriptions By: Dave Cornell

Well/Boring ID: **MW-8**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0		NA	NA	NA	NA	NA	NA			Blind Drill to 27' bgs.	
	845										
5											
	840										
10											
	835										
15											
	830										



BBL® an ARCADIS company

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

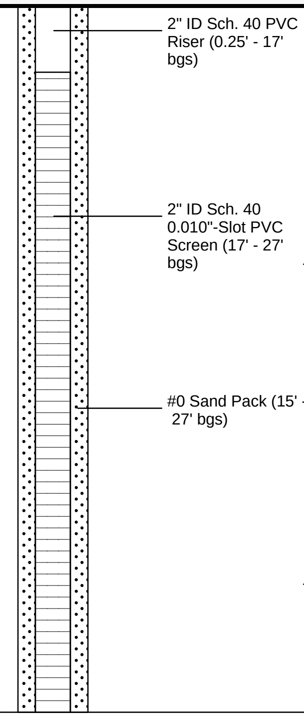
Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-8**

Borehole Depth: 27' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		NA	NA	NA	NA	NA	NA			Blind Drill to 27' bgs.	
20	825										
25	820										
30	815										
35	810										



BBL® an ARCADIS company

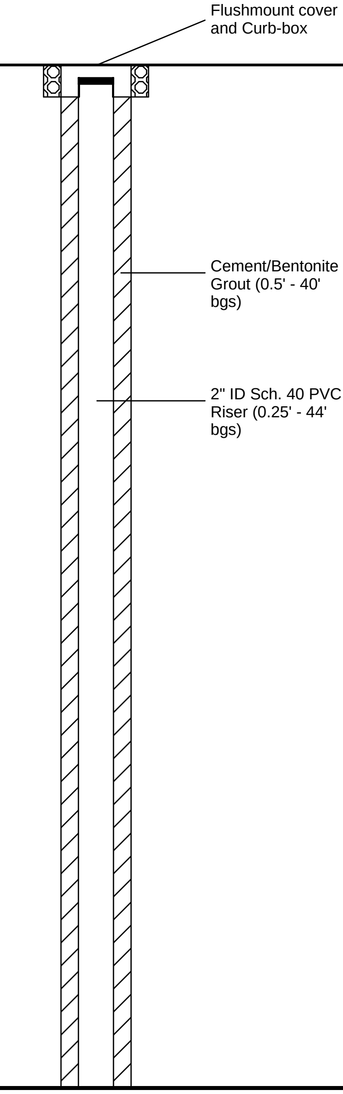
Remarks:
bgs = below ground surface; NA = Not Available/Applicable; ND = Not Detected; AMSL = Above Mean Sea Level.

Project: 130.55
Data File:MW-8.dat

Template:J:/Rockware/Logplot2001/Logfiles/13055/NYSEG_boring_well.ldf
Date: 7/11/06

Date Start/Finish: 6/7/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-57 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763758.21 **Easting:** 1001677.701 **Casing Elevation:** 844.84' AMSL **Borehole Depth:** 49' below grade **Surface Elevation:** 845.45' AMSL **Descriptions By:** Jason Sents	**Well/Boring ID:** **MW-8D** **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	845	NA	NA	NA	NA	NA	NA			Blind Drill to 49' bgs.	
5	840										
10	835										
15	830										



BBL® an ARCADIS company

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

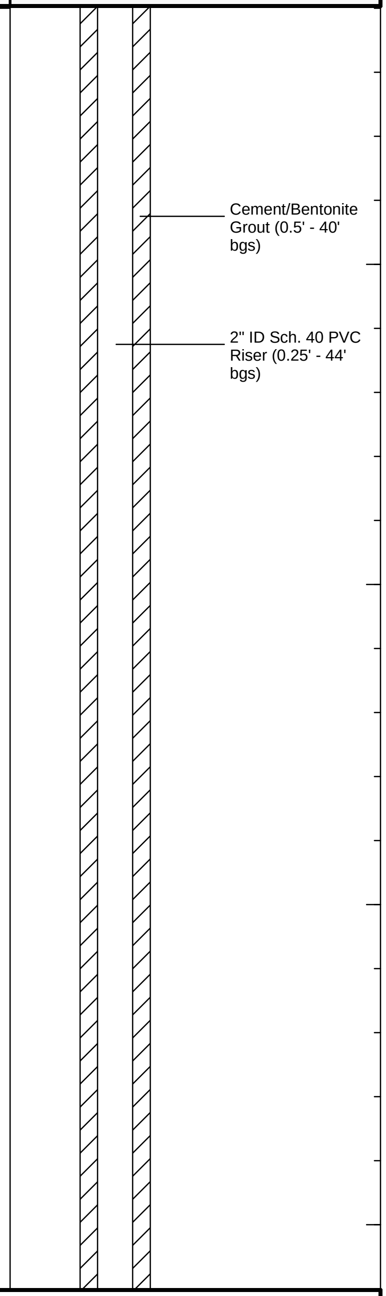
Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-8D**

Borehole Depth: 49' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		NA	NA	NA	NA	NA	NA			Blind Drill to 49' bgs.	
20	825										
25	820										
30	815										
35	810										



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Remarks:
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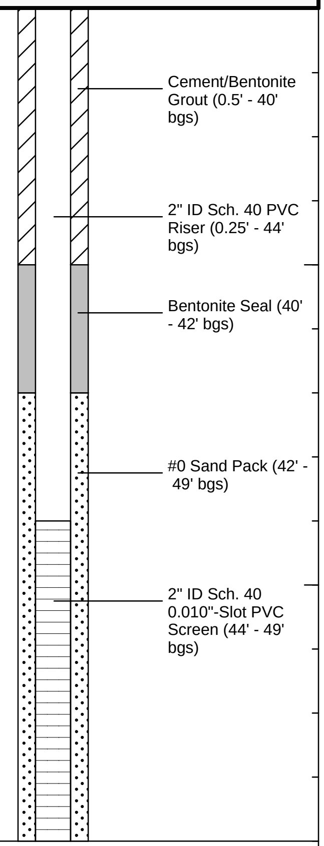
Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **MW-8D**

Borehole Depth: 49' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		NA	NA	NA	NA	NA	NA			Blind Drill to 49' bgs.	
40	805										
45	800										
50	795										
55	790										



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Remarks:
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Date Start/Finish: 6/4/07-6/5/07
Drilling Company: Arcadis-BBL
Driller's Name: J. Gutkowski
Drilling Method: Direct Push
Sampling Method: 4' Macro Core

Northing: 763687.53
Easting: 1001548.65
Casing Elevation: 842.04' AMSL

Borehole Depth: 20' bgs
Surface Elevation: 842.4' AMSL

Descriptions By: Levia Terrell

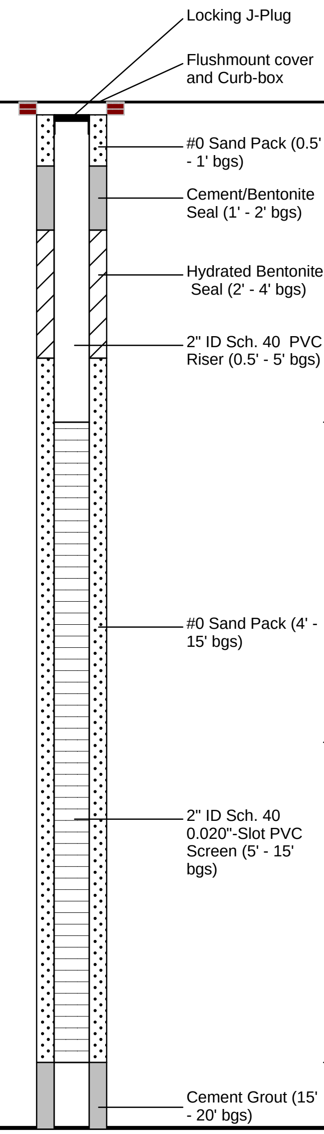
Well/Boring ID: **MW-09/SB-28**

Client: New York State Electric and Gas

Location: Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description
	845						
0							ASPHALT
		1	0-4	2.0	0.0		Gray and light brown fine to coarse SAND, some fine to medium sub-rounded and sub-angular Gravel, little Silt, non-plastic, damp.
	840						Light brown fine SAND and SILT, little fine sub-rounded Gravel, non-plastic, damp.
5							Black fine to coarse SAND and fine to medium sub-rounded GRAVEL, trace Silt, non-plastic, strong tar-like odor, wet.
							Red BRICK, damp.
		2	4-8	2.0	0.4		WOOD, sheen, tar-like odor, wet.
	835						Red BRICK, some tar-like material in sampler liner, tar-like odor. 8-8.5' bgs
10		3	8-12	2.0	79.4		Light brown SILT and fine SAND, trace Clay, little tar-like material, tar-like odor, slightly plastic, wet.
	830	4	12-16	3.7	0.9		Light brown SILT, little fine Sand and little tar-like material throughout, trace Clay, tar-like odor, slightly plastic, damp.
15							

Well/Boring Construction



ARCADIS BBL
Infrastructure, environment, facilities

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

Client: New York State Electric and Gas

Well/Boring ID: **MW-09/SB-28**

Borehole Depth: 20' bgs

Site Location:
Washington Street
Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Geologic Column	Stratigraphic Description	Well/Boring Construction
16–20	825	5	16-20	4.0	0.0		Light brown and gray SILT, little fine Sand, trace Clay, slightly plastic, damp. Trace tar-like material from 16-16.5' bgs.	2" ID Sch. 40 PVC Sump (15' - 17' bgs); Cement Grout (15' - 20' bgs)
20							End of Boring 20' bgs.	

Depth scale: 20, 25, 30, 35. Elevation scale: 825, 820, 815, 810.

ARCADIS BBL
Infrastructure, environment, facilities

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

Date Start/Finish: 6/16/06 **Drilling Company:** Parratt-Wolff, Inc. **Driller's Name:** M. Marshall **Drilling Method:** Hollow Stem Auger **Bit Size:** NA **Auger Size:** 4-1/4" ID **Rig Type:** Mobile B-57 **Sampling Method:** 2' x 2"/3" Split Spoon	**Northing:** 763499.482 **Easting:** 1001737.138 **Casing Elevation:** 841.87' AMSL **Borehole Depth:** 24' below grade **Surface Elevation:** 842.12' AMSL **Descriptions By:** Jason Sents	**Well/Boring ID:** PZ-1 **Client:** New York State Electric and Gas **Location:** Washington Street Binghamton, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	845										Flushmount cover and Curb-box
0		1	0-2	1.3	12 26 20 36	46	ND			Brown Silty fine SAND, little Orgnaics (Grass, Roots), non-plastic, moist.	
	840									Brown Silty fine to medium SAND, little fine to medium Gravel and coarse Sand, trace Roots, non-plastic, moist.	
		2	2-4	1.0	8 10 12 13	22	ND				Cement/Bentonite Grout (0.5' - 10' bgs)
5		3	4-6	0.6	12 8 8 9	16	ND				2" ID Sch. 40 PVC Riser (0.25' - 14' bgs)
	835	4	6-8	1.5	4 5 6 6	11	ND			BRICK, non-plastic, moist.	
		5	8-10	0.4	7 4 4 3	8	ND			Dark brown Silty fine to medium SAND, little fine to medium subrounded Gravel, non-plastic, moist.	
10		6	10-12	1.6	3 2 2 3	4	ND			Gray SILT and fine SAND, non-plastic, moist. Possibly wet below 11' bgs.	Bentonite Seal (10' - 12' bgs)
	830	7	12-14	1.4	2 3 3 3	6	ND			Gray SILT, little Clay, trace fine Sand, mottled, slightly plastic, moist.	#0 Sand Pack (12' - 24' bgs)
15		8	14-16	1.6	1/1.0 1/1.0	1	ND			Gray SILT, little fine Sand, trace Clay, soft, slightly plastic, wet to saturated.	2" ID Sch. 40 0.010"-Slot PVC Screen (14' - 24' bgs)

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Client:
New York State Electric and Gas

Site Location:
Washington Street
Binghamton, New York

Well/Boring ID: **PZ-1**

Borehole Depth: 24' below grade

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blows / 6 Inches	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825	9	16-18	1.7	1/1.0 1/1.0	1	ND			Gray SILT, little fine Sand, trace Clay, soft, slightly plastic, saturated.	
		10	18-20	2.0	1 1 1 1	2	ND			Brown SILT, little to trace Clay and fine Sand, slightly plastic, saturated. Fine Sand seams at 18.9' and 19.2' bgs.	2" ID Sch. 40 0.010"-Slot PVC Screen (14' - 24' bgs)
20		11	20-22	2.0	3 5 21 16	26	ND			Gray Silty fine to medium SAND, non-plastic, saturated.	#0 Sand Pack (12' - 24' bgs)
	820	12	22-24	1.7	10 7 10 8	17	ND			Brown Silty fine to coarse SAND and fine to coarse subrounded GRAVEL, non-plastic, saturated. Trace Cobbles below 22' bgs.	
25											
	815										
30											
	810										
35											

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Transmitted Via E-Mail and U.S. Mail

November 30, 2006

Ms. Kiera Becker
Engineering Geologist I
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 11th Floor
Albany, NY 12233-7014

Re: New York State Electric & Gas Corporation
Washington Street Former MGP Site
Binghamton, New York
Revised Vapor Intrusion Evaluation Letter Report
Index No. A7-0518-0505
BCP Site #C704046
BBL Project #: 0130.13055 #5

Dear Ms. Becker:

This letter is submitted on behalf of New York State Electric & Gas Corporation (NYSEG) and summarizes the results of vapor intrusion evaluation activities performed at the American Automobile Association (AAA) building located at 21 Washington Street in Binghamton, New York. The letter was originally submitted to the NYSDEC on June 6, 2006, and has been revised based on NYSDEC comments presented in a letter dated September 7, 2006.

The AAA building is located just south of the Washington Street former manufactured gas plant (MGP) site (refer to Figure 1 for the building location). The vapor intrusion evaluation activities described herein were conducted as an element of the remedial investigation (RI) of the Washington Street former MGP, which is being performed under the New York State Brownfield Cleanup Program (BCP). The vapor intrusion evaluation activities included implementation of the following:

- a building reconnaissance/integrity survey to evaluate the potential for volatile organic compounds (VOCs), if present in the subsurface, to enter the building;

- a product inventory to identify potential sources of VOCs that could contribute to VOC levels inside the building; and

- subslab vapor, indoor air, and ambient air sampling to evaluate the presence and extent of VOCs in soils below the building and the air inside and outside the building.

6723 Towpath Road • P.O. Box 66 • Syracuse, NY 13214-0066
Tel (315) 446-9120 • Fax (315) 449-4111 • www.bbl-inc.com • Offices Nationwide

The vapor intrusion evaluation activities were performed in accordance with:

- Section 6 of the *Remedial Investigation Work Plan* prepared by Blasland, Bouck & Lee, Inc. (BBL, November 2005); and
- The Vapor Intrusion Evaluation Work Plan presented in a letter from BBL to the NYSDEC dated February 28, 2006.

NYSDEC approval of the Vapor Intrusion Evaluation Work Plan is provided in a letter dated March 14, 2006.

Relevant background information is presented below, followed by a summary of the vapor intrusion evaluation work activities and results.

BACKGROUND

The AAA building is an approximately 85-year old, two-story brick-faced structure with a partial basement. The main floor of the building is used as a travel center, and the basement and upstairs are used primarily for storage. The AAA building is generally occupied six days per week, including Monday through Friday from 8:30 a.m. until 6:00 p.m. and Saturday from 9:00 a.m. until 5:00 p.m. AAA has approximately 15 employees working in the building during the week and two employees on the weekend. Based on available Sanborn® mapping, the building was used as part of a plumbing supply business from the 1950s through at least 1970. The owner indicates that the building may also have been used at one time as an auto sales/service station. More detailed information about the building layout and construction is provided below.

VAPOR INTRUSION EVALUATION WORK ACTIVITIES

The building reconnaissance/integrity survey, product inventory, and sampling activities performed as part of the vapor intrusion evaluation are summarized below.

Building Reconnaissance and Integrity Survey

On February 23, 2006, representatives from AAA, NYSEG, the NYSDEC, the New York State Department of Health (NYSDOH), and BBL performed a building reconnaissance to: (1) observe the building layout and construction; (2) identify locations where VOCs (if present in the subsurface) could potentially enter the building; and (3) select subslab vapor and indoor air sampling locations. Following the reconnaissance, NYSEG and BBL met with the building owner to complete the questionnaire portion (Sections 1 through 9) of the NYSDOH's Indoor Air Quality Questionnaire and Building Inventory form, included as Appendix B to the NYSDOH document titled *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, dated October 2006 (the "NYSDOH Soil Vapor Intrusion Guidance").

The layout of the AAA building main floor and basement are shown on the BBL field sketches included in Attachment A. Photographs of the basement and first floor taken by BBL during the reconnaissance are included in Attachment B. The second floor of the building was not observed during the reconnaissance. The completed Indoor Air Quality Questionnaire is included in Attachment C.

As shown on the field sketches, the main floor of the AAA building contains a lobby/main office, an executive office, a conference room, two break rooms, two storage rooms, a loading dock area, and three washrooms. The basement extends beneath the northern and eastern sections of the building and is used primarily for storage. The second floor of the building contains an apartment that was not in use (other than for storage) at the time of the site visit. An elevator shaft along the west side of the building extends from below the basement level to the second floor. The owner reports that water has been encountered at the bottom of the elevator shaft, but the remainder of the basement is generally dry.

The main floor is constructed of reinforced concrete that is reportedly 1-foot thick, and the basement floor is constructed of concrete that (based on BBL measurements obtained during sampling) is approximately 9- to 12-inches thick. Based on BBL's observations, cracks up to approximately ¼-inch thick are present in various areas of the basement floor, and an approximately 2-inch diameter hole is present in the center of the floor (the owner is not aware of the purpose of the hole). A floor drain in the center of the basement floor discharges to the municipal sewer system, and a funnel-shaped drain in the northeastern portion of the building connects to subsurface drainage piping. The funnel-shaped drain is not used by the building owner, and its former use is unknown. These cracks, holes, drains were identified as potential pathways for vapor migration that were taken into consideration in selecting sampling locations.

Various gas-powered equipment is stored within the building, including a generator and snow-blower in the loading dock area (back of the building), a snow-blower near the entrance to the basement, and a power washer on the second floor. More detailed information about the building construction, use, and maintenance is provided on the Indoor Air Quality Questionnaire included in Attachment C.

Product Inventory Activities

Following NYSDEC approval of the Vapor Intrusion Evaluation Work Plan, BBL personnel returned to the building on March 24, 2006 and completed the remaining portion of the Indoor Air Quality Questionnaire and Building Inventory form (the Product Inventory section). The inventory was performed to document products potentially containing VOCs that are used, handled, or stored in the building. Products identified in the basement include various cleaners, deicer, gasoline, oil, grease, primers, paints, paint/varnish remover, roof cement/sealants, and weed killer. Products identified in the first floor of the building generally include gasoline, typical household window/bathroom/carpet cleaners, contact cement, glue, inks, paints, markers, air fresheners, and hair sprays. BBL used a photoionization detector (PID) capable of measuring VOCs at the parts per billion level (i.e., a ppbRAE) to evaluate the presence of VOCs originating from the containers. The various products that were observed and the corresponding container sizes, quantities, container conditions, manufacturer's names, chemical ingredients, and PID readings, are listed on the Product Inventory Form included in Attachment C.

Subslab Vapor and Indoor/Outdoor Air Sampling

After the product inventory activities were completed, BBL used the ppbRAE to screen the cracks, drains, and hole in the basement floor. No elevated PID readings were obtained. BBL then installed subslab vapor sample collection points at three locations in the basement (as identified in the NYSDEC-approved Vapor Intrusion Evaluation Work Plan) on a Friday afternoon, March 24, 2006. Each point was installed by coring through the floor slab using a hammer drill equipped with a 5/8-inch diameter pulverizing bit, and then inserting a section of ¼-inch outside diameter Teflon® tubing with an attached stainless steel soil vapor tip/screen assembly into the corehole. The annular space between the tubing and the corehole was sealed with hydrated bentonite. After the tubing was secured in the corehole, the exposed end was sealed via crimping. Actual sampling was performed on the following Monday, March 27, 2006 (after the building had been vacant for the weekend) in an effort to minimize the potential influence of daily business activities inside the building on the sampling results. A total of nine samples (plus one blind duplicate) were collected, as follows:

- Co-located subslab vapor and indoor air samples were collected from three basement locations (locations SS-1/IA-1, SS-2/IA-2 and SS-3/IA-3).
- Indoor air samples were collected from two first-floor locations (locations IA-4 and IA-5).
- An ambient (outdoor) air sample was collected from a roof-top location (location AA-1).

The blind duplicate sample (sample DUP-1) was collected at sampling location SS-2. The subslab vapor, indoor air, and ambient air sampling locations are shown on the field sketch in Attachment A. A sample summary, which identifies the sampling locations and rationale, is presented below.

Sample ID	Sampling Location	Sampling Rationale
SS-1/IA-1	Basement entrance	• Evaluate conditions in the portion of the basement closest to the former gas holders and near the existing elevator shaft pit. • Assess potential influences from past oil storage (reportedly in drums) in the area. • Assess potential influences from the current/recent storage of gas-powered equipment (snow-blower) and gas cans in the area.
SS-2/IA-2	Northern portion of the basement, located adjacent to a floor drain	• Evaluate a potential pathway for subsurface vapors potentially originating from the former MGP site and/or from beneath the building (from past discharges into the floor drain) to enter the basement.
SS-3/IA-3	Southern portion of the basement, near the boiler	• Evaluate conditions near the location of the existing gas-fired boiler (the former location for a coal-burning boiler). • Provide subslab vapor/indoor air data coverage across the basement.
IA-4	First floor executive office, northeast corner	• Evaluate VOC concentrations in the occupied portion of the building. • Assess potential vapor migration from the basement.
IA-5	First floor main office/lobby, southwest corner	

Each sample and a "blind" sample duplicate were collected using a 6-liter SUMMA® canister with an attached pre-set flow regulator after purging vapor from the sample tubing/stainless steel screen. A stainless steel "T" was used at sampling location SS-2 to split the vapor stream into two SUMMA® canisters – one for the sample and one for the duplicate. Photographs taken during sampling are included in Attachment B.

The SUMMA® canisters provided by the laboratory were batch-certified-clean and had an initial vacuum of approximately 28.5- to 30-inches of mercury (in. of Hg). Flow regulators were pre-set by the laboratory to provide a uniform sample collection over an approximate 8-hour sampling period (e.g., a flow rate of approximately 12 milliliters/minute). The valve on the SUMMA® canister was closed when approximately

2.5- to 6.0-in. of Hg vacuum remained in the canister, leaving a vacuum in the canister as a means for the laboratory to verify the canister did not leak while in transit. Four sets of vacuum readings were obtained in connection with sampling and analysis: (1) following cleaning for shipping to the field; (2) prior to sampling, with all the connections made to ensure no leaks; (3) at the end of sampling; and (4) prior to analysis in the laboratory. The first three sets of vacuum readings are presented on the field sampling logs included as Attachment D. Vacuum readings obtained immediately prior to analysis in the laboratory are presented in Attachment E.

A tracer gas (helium) was used in connection with the subslab vapor sampling to provide a means to evaluate whether the subslab vapor sample was diluted by surface air. A 5-gallon plastic pail was placed over the subslab sampling location, and hydrated bentonite was used to create a seal between the pail and the concrete floor and around the penetration for the sample tubing (at the top of the pail). Prior to sampling, helium was introduced into the pail through a fitting on the side of the pail. The helium levels in the purge gas and in the pail (prior to and immediately after sampling) were measured using a gas detector. Helium levels measured in connection with the sampling are summarized on the field sampling logs included in Attachment D. As indicated on the logs, the helium levels measured after sampling were slightly lower than before. Helium was not identified in the purge effluent at any of the subslab sampling locations.

After sampling was completed, the coreholes for the subslab vapor sampling were restored using hydraulic cement. The subslab vapor and indoor/ambient air samples were submitted to Severn Trent Laboratories, Inc. (STL) of Knoxville, Tennessee for laboratory analysis in accordance with United States Environmental Protection Agency (USEPA) Compendium Method TO-15, titled "*Determination of VOCs In Air Collected In Specially-Prepared Canisters And Analyzed By Gas Chromatography/Mass Spectrometry (GC/MS)"*. STL-Knoxville is certified in the State of New York to perform air sample analyses. Each sample was analyzed for VOCs included in the laboratory's standard TO-15 Target Analyte List, plus n-alkanes and VOC tentatively-identified compounds (TICs) to provide additional data (if needed) to help differentiate between potential sources. The subslab vapor samples were also analyzed for helium. The laboratory analytical results were validated by BBL.

VAPOR INTRUSION EVALUATION RESULTS

Validated subslab vapor, indoor air, and ambient air analytical results for VOCs are presented in Table D-1. The validated subslab vapor analytical results for helium are presented in Table D-2. Copies of the analytical data validation reports are included on the CD provided with the *Remedial Investigation Report* (BBL, November 2006).

Based on review of the validated analytical results, four or more VOCs were identified in each subslab vapor and indoor air sample collected as part of the vapor intrusion evaluation. New York State does not currently have standards, criteria, or guidance values for concentrations of compounds in subsurface vapors. The concentrations identified in the indoor air samples are all less than potential screening values used for the evaluation, including: (1) the NYSDOH indoor air guideline values presented in Section 3.2.5 of the NYSDOH Soil Vapor Intrusion Guidance; and (2) the 90th percentile of background indoor air levels observed by the USEPA in public and commercial office buildings as referenced in Section 3.2.4 of the NYSDOH Soil Vapor Intrusion Guidance.

Only one VOC (dichlorodifluoromethane) was identified in the outdoor air sample. The helium tracer gas was not detected in any of the subslab vapor samples, which indicates that the subslab vapor samples were not diluted by surface air during sample collection. In addition, the vacuum inside the canisters at the end of sampling and prior to laboratory analysis were comparable, meaning that samples were not diluted between sample collection and sample analysis.

Based on the comparison of the compounds and concentrations identified in the subslab vapor samples vs. the indoor air samples, it appears that the VOCs identified in indoor air may be primarily related to activities inside the building, with little or no contribution from the subsurface. This observation is supported by the following:

- Six VOCs (carbon tetrachloride, chloroform, 1,3-dichlorobenzene, naphthalene, tetrachloroethene, and 1,1,1-trichloroethane) were detected in the subslab vapor samples, but not in any of the indoor air samples. The absence of these compounds in the basement indoor air samples indicates that the basement floor slab is limiting any vapor intrusion.

- Several aromatic compounds (benzene, toluene, ethylbenzene, xylenes, and 1,2,4-trimethylbenzene) and several aliphatic organic compounds (n-butane, n-octane, and pentane) were detected in both the subslab and indoor air samples. With two minor exceptions, these VOC constituents common to both the subslab and indoors were identified at lower concentrations subslab than indoors: (1) Benzene was identified at a higher concentration in subslab vapor sample SS-1 than in co-located indoor air sample IA-1, but the benzene concentrations identified in the two other basement indoor air samples were higher than the concentration in sample SS-1; and (2) n-Octane was identified at a higher concentration in subslab vapor sample SS-2 than in co-located indoor air sample IA-2, but the n-octane concentrations identified in both indoor air samples on the first floor were higher than the concentration in sample SS-2. The data also shows that two aliphatic organic compounds (n-heptane, n-hexane) were detected only in the indoor air samples. As indicated in the NYSDOH Soil Vapor Intrusion Guidance, petroleum products (including gasoline) are a potential source of these aromatic and aliphatic organic compounds. As noted on the Product Inventory Form in Attachment C, a gasoline-powered generator, two gasoline-powered snow-blowers, and three gasoline storage cans were observed in the building at the time of sampling. The lower concentrations subslab vs. indoors supports that these VOCs may be primarily related to indoor sources.

- The remaining detected VOCs include chloromethane, dichlorodifluoromethane, and trichlorofluoromethane. Chloromethane was identified indoors only. Dichlorodifluoromethane was identified in each of the subslab vapor samples, each of the basement indoor air samples, and the outdoor air sample at concentrations that were consistent from location to location (with a range of 2.2 to 2.8 micrograms per cubic meter [$\mu g/m^3$] indoors and subslab). Trichlorofluoromethane, similar to dichlorodifluoromethane, was identified in each of the subslab vapor samples and the basement indoor air samples at concentrations that were consistent from location to location (with a range of 1.2 to 1.3 $\mu g/m^3$), except at location SS-1, where the result was 32 $\mu g/m^3$. This additional data supports VOC attenuation by the floor slab and the presence of indoor sources.

The validated analytical results for the vapor intrusion evaluation indicate that VOC contributions from below the basement floor slab or from the use/storage/handling of various products containing VOCs inside the AAA building are not significantly affecting the indoor air quality. Based on these findings, no further vapor intrusion investigation or remedial activities are proposed for the AAA building.

Please do not hesitate to contact Mr. Tracy L. Blazicek of NYSEG at (607) 762-8839 (tlblazicek@ nyseg.com) or the undersigned at (315) 671-9441 (JCB@BBL-inc.com) if you have any questions or require additional information.

Sincerely,

BLASLAND, BOUCK & LEE, INC.

John C. Brussel

John C. Brussel, P.E.
Senior Engineer

JCB/MSH/ams
Enclosures

cc: Ms. Julia M. Guastella, New York State Department of Health
Mr. Tracy L. Blazicek, CHMM, New York State Electric & Gas Corporation
Mr. Keith A. White, CPG, BBL, an ARCADIS company

Tables

TABLE 1

SUBSLAB VAPOR, INDOOR AIR, & AMBIENT AIR VOC ANALYTICAL RESULTS (ug/m^3)

VAPOR INTRUSION EVALUATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	USEPA Indoor Air Background Level	NYSDOH Indoor Air Guidance Value	SS-1	IA-1	SS-2	IA-2	SS-3	IA-3	IA-4	IA-5	AA-1
Volatile Organic Compounds (VOCs)											
1,1,1-Trichloroethane	20.6	- -	40	<0.20	<0.20 [<0.20]	<0.20	<0.20	<1.1	<0.80	<0.80	<0.20
1,1,2,2-Tetrachloroethane	- -	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<1.4	<0.80	<0.80	<0.20
1,1,2-Trichloro-1,2,2-trifluoroethane	- -	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<1.5	<0.80	<0.80	<0.20
1,1,2-Trichloroethane	<1.5	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<1.1	<0.80	<0.80	<0.20
1,1-Dichloroethane	<0.7	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.81	<0.80	<0.80	<0.20
1,1-Dichloroethene	<1.4	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.79	<0.80	<0.80	<0.20
1,2,4-Trichlorobenzene	<6.8	- -	<1.0	<1.0	<1.0 [<1.0]	<1.0	<1.0	<7.4	<4.0	<4.0	<1.0
1,2,4-Trimethylbenzene	9.5	- -	<0.20	<0.20	<0.20 [<0.20]	2.8	1.3	2.4	<0.80	<0.80	<0.20
1,2-Dibromoethane (EDB)	<1.5	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<1.5	<0.80	<0.80	<0.20
1,2-Dichloro-1,1,2,2-tetrafluoroethane	- -	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<1.4	<0.80	<0.80	<0.20
1,2-Dichlorobenzene	<1.2	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<1.2	<0.80	<0.80	<0.20
1,2-Dichloroethane	<0.9	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.81	<0.80	<0.80	<0.20
1,2-Dichloropropane	<1.6	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.92	<0.80	<0.80	<0.20
1,3,5-Trimethylbenzene	3.7	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.98	<0.80	<0.80	<0.20
1,3-Dichlorobenzene	<2.4	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	2.3	<1.2	<0.80	<0.80	<0.20
1,4-Dichlorobenzene	5.5	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<1.2	<0.80	<0.80	<0.20
Benzene	9.4	- -	0.89	<0.20	<0.20 [<0.20]	2.6	<0.20	2.3	<0.80	<0.80	<0.20
Bromomethane	<1.7	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.78	<0.80	<0.80	<0.20
Carbon tetrachloride	<1.3	- -	2.4	<0.20	<0.20 [<0.20]	<0.20	<0.20	<1.3	<0.80	<0.80	<0.20
Chlorobenzene	<0.9	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.92	<0.80	<0.80	<0.20
Chloroethane	<1.1	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.53	<0.80	<0.80	<0.20
Chloroform	1.1	- -	<0.20	<0.20	4.2 [4.2]	<0.20	<0.20	<0.98	<0.80	<0.80	<0.20
Chloromethane	3.7	- -	<0.50	1.2	<0.50 [<0.50]	<0.50	<0.50	1.1	<2.0	<2.0	<0.50
cis-1,2-Dichloroethene	<1.9	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.79	<0.80	<0.80	<0.20
cis-1,3-Dichloropropene	<2.3	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.91	<0.80	<0.80	<0.20
Dichlorodifluoromethane	16.5	- -	2.4	2.2	2.4 [2.3]	2.2	2.8	2.2	<0.80	<0.80	1.9
Ethylbenzene	5.7	- -	<0.20	<0.20	1.1 [<0.20]	2.1	0.88	1.8	<0.80	<0.80	<0.20
Hexachlorobutadiene	<6.8	- -	<1.0	<1.0	<1.0 [<1.0]	<1.0	<1.0	<11	<4.0	<4.0	<1.0
Isopropylbenzene	- -	- -	<0.40	<0.40	<0.40 [<0.40]	<0.40	<0.40	<2.0	<1.6	<1.6	<0.40
Methyl tert-butyl ether	11.5	- -	<1.0	<1.0	<1.0 [<1.0]	<1.0	<1.0	<3.6	<4.0	<4.0	<1.0
Methylene chloride	10	60	<0.50	<0.50	<0.50 [<0.50]	<0.50	<0.50	<1.7	<2.0	<2.0	<0.50
m-Xylene & p-Xylene	22.2	- -	1.2	<0.20	3.7 [0.90]	7.0	2.8	6.1	<0.80	<0.80	<0.20
Naphthalene	5.1	- -	3.4	<0.50	<0.50 [<0.50]	<0.50	<0.50	<2.6	<2.0	<2.0	<0.50
n-Butane	- -	- -	1.5	50	<0.40 [<0.40]	41	2.2	40	170	270	<0.40
n-Decane	17.5	- -	<1.0	<1.0	<1.0 [<1.0]	<1.0	<1.0	<5.8	<4.0	<4.0	<1.0
n-Dodecane	- -	- -	<1.0	<1.0	<1.0 [<1.0]	<1.0	<1.0	<7.0	<4.0	<4.0	<1.0
n-Heptane	- -	- -	<0.50	<0.50	<0.50 [<0.50]	3.0	<0.50	3.4	18	15	<0.50
n-Hexane	10.2	- -	<0.50	<0.50	<0.50 [<0.50]	5.1	<0.50	4.2	<2.0	<2.0	<0.50
n-Octane	- -	- -	<0.40	<0.40	7.3 [2.6]	2.9	3.4	3.1	9.1	10	<0.40
Nonane	7.8	- -	<0.50	<0.50	<0.50 [<0.50]	<0.50	<0.50	<2.6	<2.0	<2.0	<0.50
n-Undecane	22.6	- -	<1.0	<1.0	<1.0 [<1.0]	<1.0	<1.0	<6.4	<4.0	<4.0	<1.0
o-Xylene	7.9	- -	<0.20	<0.20	1.1 [<0.20]	2.7	1.2	2.4	<0.80	<0.80	<0.20
Pentane	- -	- -	<1.0	5.0	<1.0 [<1.0]	17	<1.0	14	<4.0	<4.0	<1.0

TABLE 1

SUBSLAB VAPOR, INDOOR AIR, & AMBIENT AIR VOC ANALYTICAL RESULTS (ug/m^3)

VAPOR INTRUSION EVALUATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	USEPA Indoor Air Background Level	NYSDOH Indoor Air Guidance Value	SS-1	IA-1	SS-2	IA-2	SS-3	IA-3	IA-4	IA-5	AA-1
VOCs (Continued)											
Styrene	1.9	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.85	<0.80	<0.80	<0.20
Tetrachloroethene	15.9	100	6.7	<0.20	8.3 [7.1]	<0.20	16	<1.4	<0.80	<0.80	<0.20
Toluene	43	- -	1.7	<0.20	4.7 J [3.5 J]	15	2.9	14	19	21	<0.20
trans-1,3-Dichloropropene	<1.3	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.91	<0.80	<0.80	<0.20
Trichloroethene	4.2	5	<0.20 J	<0.20 J	<0.20 J [<0.20 J]	<0.20 J	<0.20 J	<1.1 J	<0.80 J	<0.80 J	<0.20 J
Trichlorofluoromethane	18.1	- -	32	1.2	1.3 [1.2]	1.2	1.2	1.2	<0.80	<0.80	<0.20
Vinyl chloride	<1.9	- -	<0.20	<0.20	<0.20 [<0.20]	<0.20	<0.20	<0.51	<0.80	<0.80	<0.20
VOC Tenatatively Identified Compounds (TICs)											
1,2,3-Trimethylbenzene	- -	- -	ND	ND	ND [ND]	ND	ND	ND	ND	ND	ND
1-Methylnaphthalene	- -	- -	ND	ND	ND [ND]	ND	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	- -	- -	ND	ND	ND [ND]	ND	ND	ND	ND	ND	ND
2,3-Dimethylheptane	- -	- -	ND	ND	ND [ND]	ND	ND	ND	ND	ND	ND
2,3-Dimethylpentane	- -	- -	ND	ND	ND [ND]	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	- -	- -	ND	ND	ND [ND]	ND	ND	ND	ND	ND	ND
Butylcyclohexane	- -	- -	ND	ND	ND [ND]	ND	ND	ND	ND	ND	ND
Indane	- -	- -	ND	ND	ND [ND]	ND	ND	ND	ND	ND	ND
Indene	- -	- -	ND	ND	ND [ND]	ND	ND	ND	ND	ND	ND
Isopentane	- -	- -	ND	45	ND [ND]	110	ND	84	ND	ND	ND

Notes:

1. Samples were collected by Blasland, Bouck & Lee, Inc. (BBL) on March 27, 2006 from the AAA Building at 21 Washington Street in Binghamton, NY.
2. Samples were analyzed for volatile organic compounds (VOCs) by Severn Trent Laboratories, Inc. (STL) of Knoxville, Tennessee using United States Environmental Protection Agency (USEPA) Compendium Method TO-15.
3. Sample designations indicate the following:
   - "SS" = subslab vapor sample;
   - "IA" = indoor air sample; and
   - "AA" = ambient (outdoor) air sample.
4. "USEPA Indoor Air Background Levels" are the 90th percentile of background indoor air levels observed by the USEPA in public and commercial office buildings, per USEPA database information referenced in Section 3.2.4 of the "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (NYSDOH, October 2006).
5. "NYSDOH Indoor Air Guidance Value" is from the "Guidance for Evaluating Soil Vapor in the State of New York" (NYSDOH, October 2006).
6. Concentrations reported in micrograms per cubic meter (ug/m^3).
7. < = Not detected at or above the associated reporting limit.
8. J - Indicates an estimated value.
9. ND - Not Detected.
10. TIC = Tentatively Identified Compound.
11. -- = Comparison value not available.
12. Field duplicate sample results are presented in brackets.
13. Results have been validated by BBL.
14. NA = Not available.

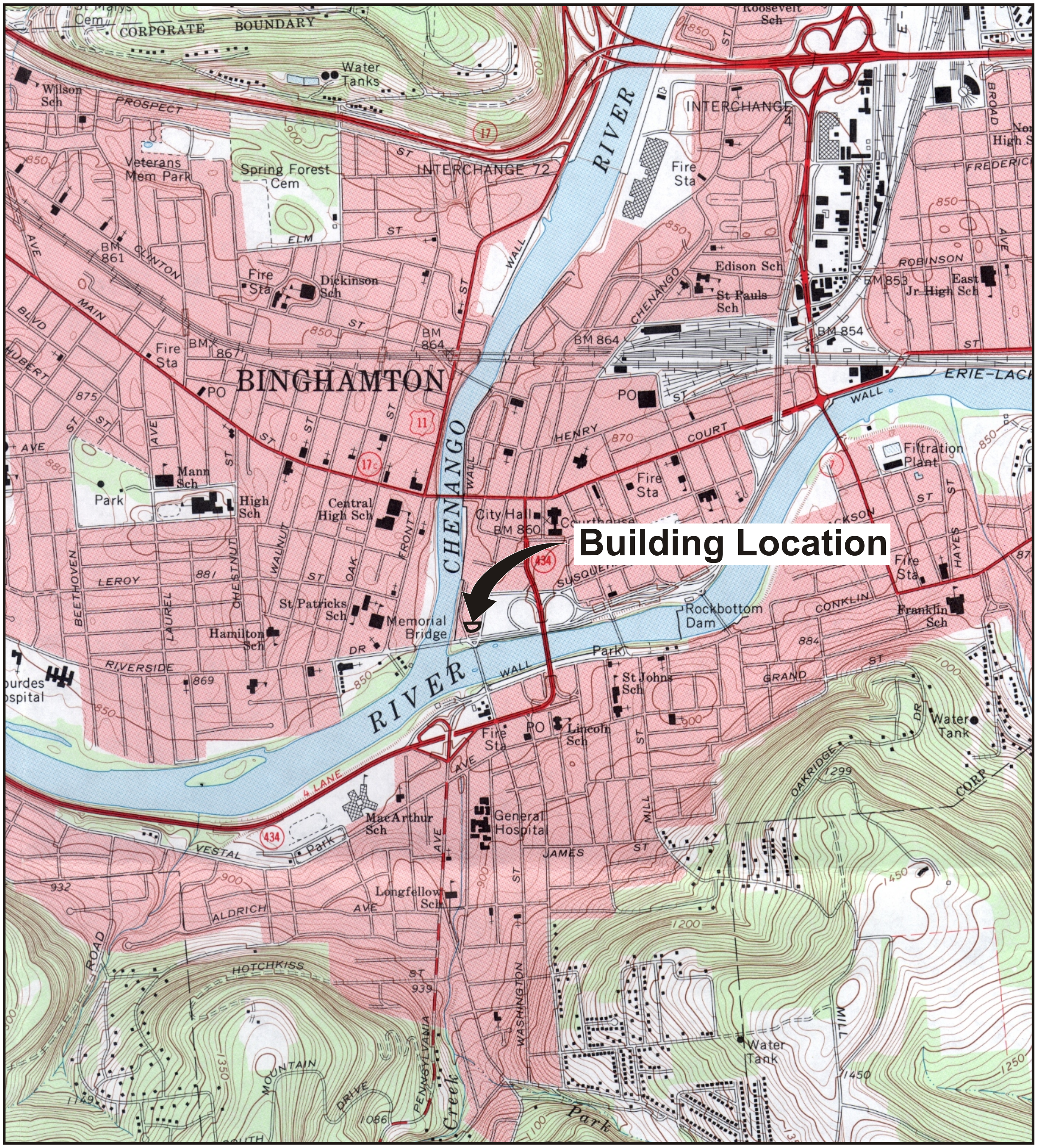
TABLE 2
SUBSLAB VAPOR HELIUM ANALYTICAL RESULTS (% v/v)

VAPOR INTRUSION EVALUATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	SS-1	SS-2	SS-3
Helium	<2.4 J	<2.4 J [<2.4 J]	<2.6 J

Notes:
1. Samples were collected by Blasland, Bouck & Lee, Inc. (BBL) on March 2, 2006 from the AAA Building at 21 Washington Street in Binghamton, NY.
2. Samples were analyzed for helium by Severn Trent Laboratories, Inc. (STL) of Knoxville, Tennessee using ASTM Method D1946.
3. Concentrations reported in percent volume (% v/v).
4. < = Not detected at or above the associated reporting limit.
5. J - Indicates an estimated value.
6. Field duplicate sample results are presented in brackets.
7. Results have been validated by BBL.

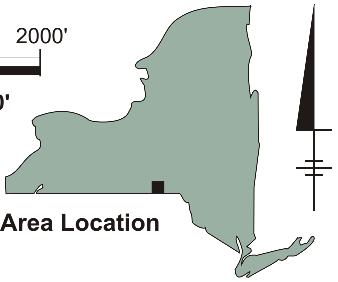
Figure



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., BINGHAMTON, NY, 1968, PHOTOINSPECTED 1976.

2000' 0 2000'

Approximate Scale: 1" = 2000'



Area Location

NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

VAPOR INTRUSION EVALUATION

AAA BUILDING LOCATION

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers, scientists, economists

FIGURE 1

05/25/05 SYR-D85-DJH
13055004/13055n01.cdr

Attachments

Attachment A

AAA Building Floor Plan Sketches

an ARCADIS company

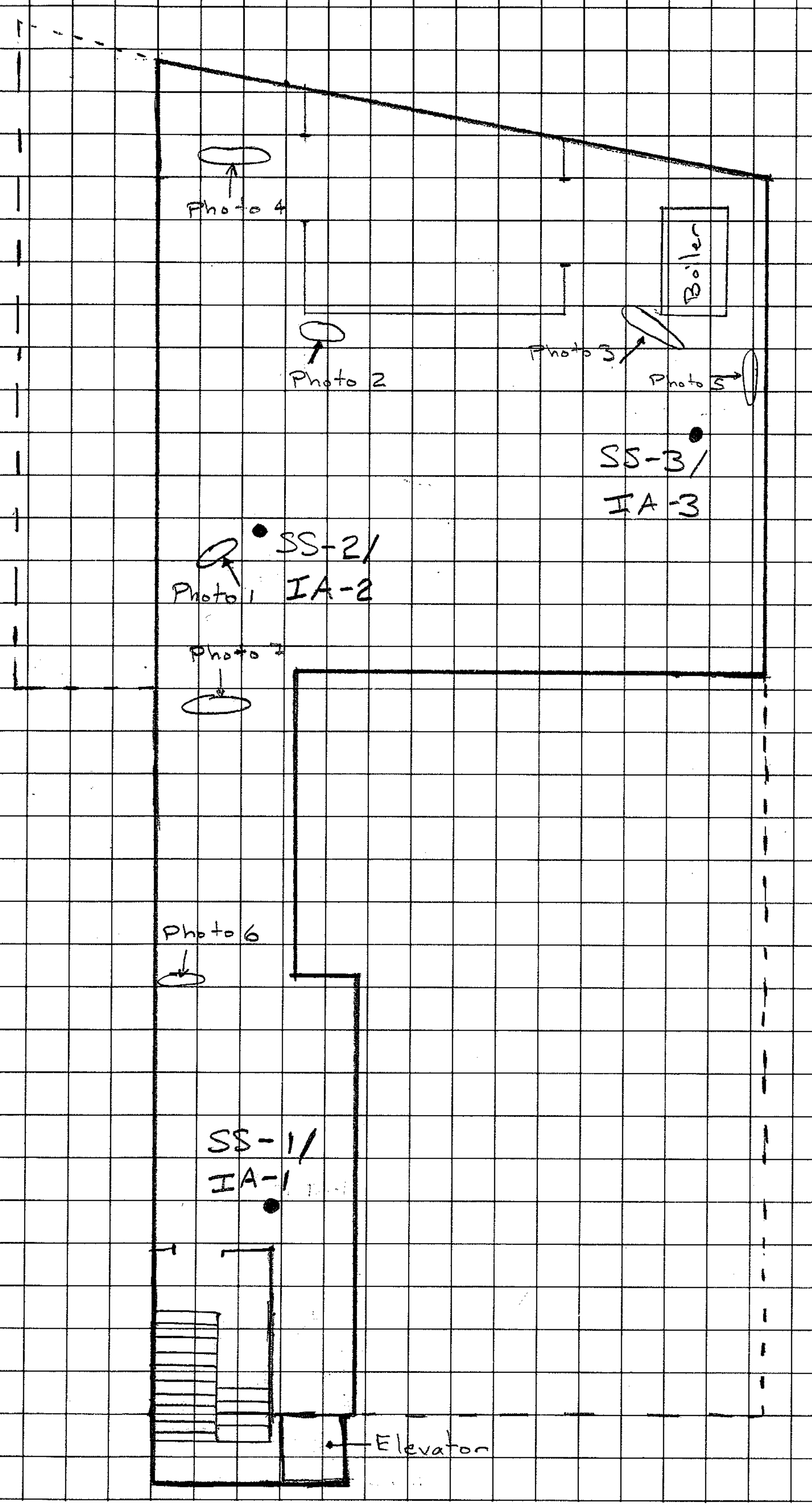
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Basement Sketch - Not To Scale

SUBJECT	PROJ. NO.	BY	DATE	SHEET
AAA Building, 21 Washington Street	13055	CSA	4/21	1/2

CALCS. BY ______ ; DATE ______ CHECKED BY ______ ; DATE ______

Not To Scale



Not To Scale

New York State Electric & Gas Corporation
Washington Street Former MGP
Binghamton, New York

Vapor Intrusion Evaluation
Sampling Locations - Basement

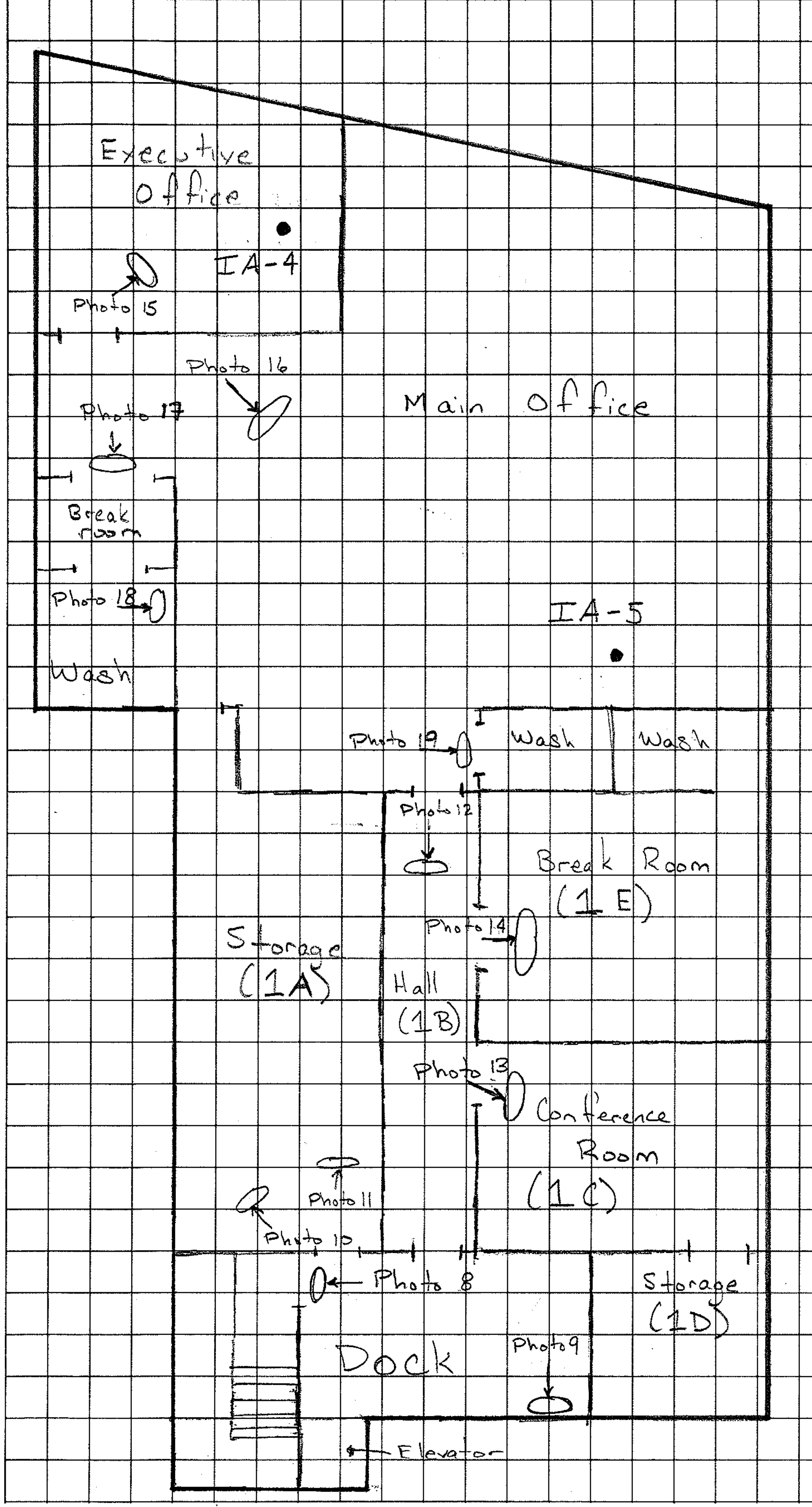
BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

First Floor Sketch - Not To Scale

SUBJECT	PROJ. NO.	BY	DATE	SHEET
AAA Building, 21 Washington Street	13055	CSA	4/21	2/2

CALCS. BY ________ ; DATE ________ CHECKED BY ________ ; DATE ________

Not To Scale



Not To Scale

New York State Electric & Gas Corporation
Washington Street Former MGP
Binghamton, New York

Vapor Intrusion Evaluation
Sampling Locations - First Floor

Attachment B

Photographs of AAA Building & Sampling in-Progress

Photo 1
Floor Drain Near Sampling Location SS-2/IA-2 – Basement
Northside of Basement – Looking Northeast

Photo 2
Drain Funnel – Basement
Northeast Portion of Basement – Looking Southeast

Photo 3
Natural Gas Fired Boiler – Basement
Southeast Corner of Basement – Looking Southeast

Photo 4
East Wall, Northern Portion – Basement
Northeast Portion of Basement – Looking East

Photo 5
Southern Wall – Basement
Near Sampling Location SS-3/IA-3 – Looking South

Photo 6
Storage Area, Vicinity of Sampling Location SS-1/IA-1 – Basement
Basement Entrance Area – Looking West

ATTACHMENT B-1 – PHOTOS OF AAA BUILDING
(TAKEN DURING FEBRUARY 23, 2006 PRE-SAMPLING VISIT)
21 WASHINGTON STREET
BINGHAMTON, NEW YORK

Photo 7
Entrance Hallway – Basement
Near Sampling Location SS-2/IA-2 – Looking West

Photo 8
Dock, Storage Shelves – First Floor, Westside
Looking North

Photo 9
Dock, Miscellaneous Storage – First Floor, Westside
Looking West

ATTACHMENT B-1 – PHOTOS OF AAA BUILDING
(TAKEN DURING FEBRUARY 23, 2006 PRE-SAMPLING VISIT)
21 WASHINGTON STREET
BINGHAMTON, NEW YORK

Photo 10
Storage Room (1A) – First Floor, Northwest Corner
Looking North

Photo 11
Storage Room (1A) – First Floor, Northwest Corner
Looking East

Photo 12
Hallway between Dock and Main Office (1B) – First Floor
Looking West

Photo 13
Conference Room (1C) – First Floor, Southwest Corner
Looking South

Photo 14
Break Room (1E) – First Floor, Southside
Looking South

Photo 15
Executive Office – First Floor, Northeast Corner
Looking Southeast

Photo 16
Main Office – First Floor, Southeast Corner
Looking Southwest

Photo 17
Break Room and Washroom Near Executive Office – First Floor, Northside
Looking West

Photo 18
Sealed Vent in Washroom Near Executive Office – First Floor, Northside
Looking South

Photo 19
Main Office Washroom – First Floor, Southside
Looking South

ATTACHMENT B-2 – PHOTOS OF SAMPLING IN-PROGRESS (MARCH 27, 2006)
AAA BUILDING VI SAMPLING
21 WASHINGTON STREET
BINGHAMTON, NEW YORK

Photo 1
Sampling Location SS-1/IA-1 – Basement
Basement Entrance Area – Looking Southwest

Photo 2
Sampling Location SS-2/IA-2 – Basement
Northside of Basement – Looking Northwest

Photo 3
Sampling Location SS-3/IA-3 – Basement
Southside of Basement – Looking Southwest

Photo 4
Sampling Location SS-3/IA-3 – Basement
Southside of Basement – Looking East

Photo 5
Sampling Location IA-4 – Executive Office, First Floor
Northeast Corner – Looking North

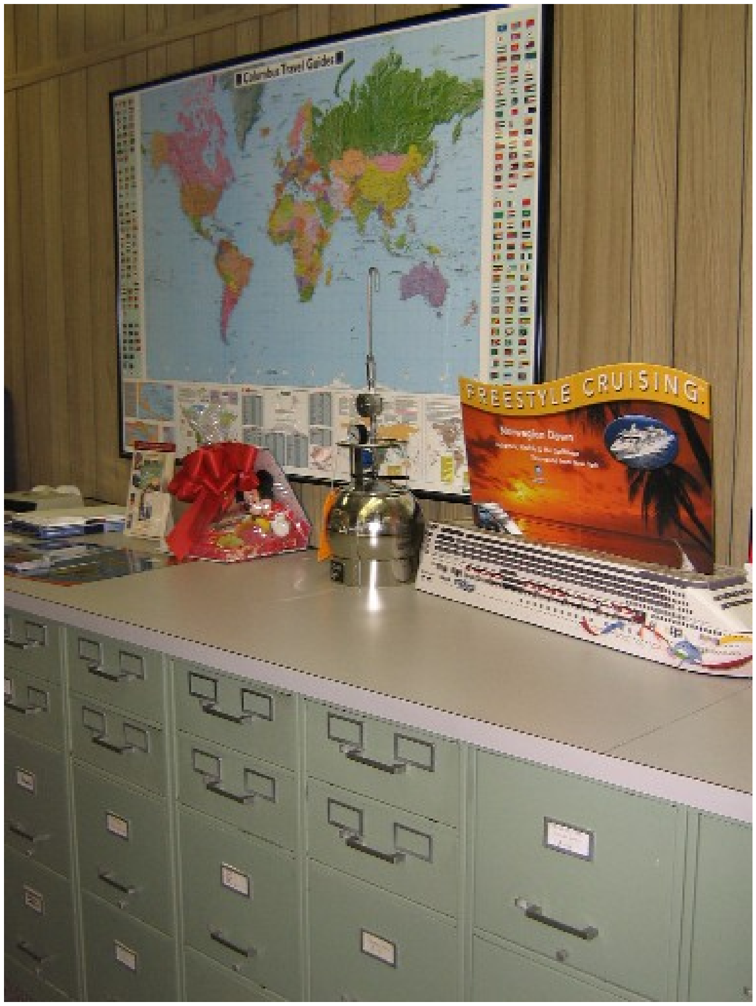


Photo 6
Sampling Location IA-5 – Main Office, First Floor
Looking Southwest

Photo 7
Sampling Location AA-1 – Roof-Top
Southwest Corner – Looking Southwest

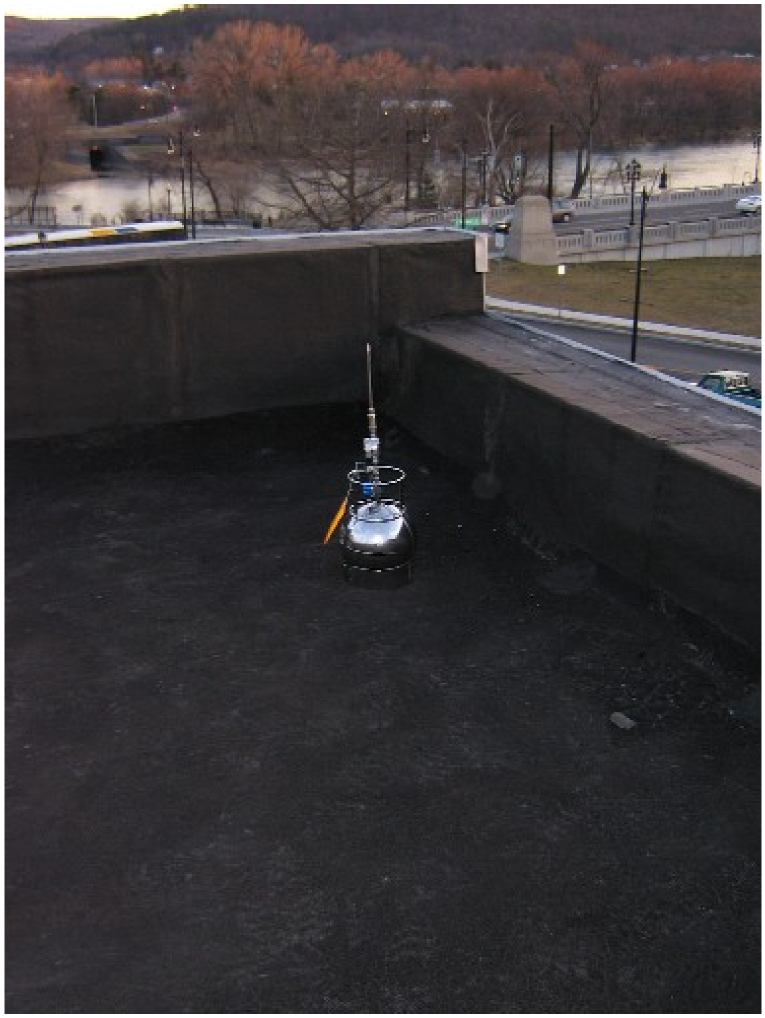


Photo 8
Sampling Location AA-1 – Roof-Top
Southwest Corner – Looking Southwest

Attachment C

NYSDOH Indoor Air Quality Questionnaire and Building Inventory Forms

BBL®
an ARCADIS company

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name John Brussel Date/Time Prepared 2/23/06 11:00 - 11:45 a.m.

Preparer's Affiliation BBL Phone No. (315) 671-9441

Purpose of Investigation Evaluate the potential vapor intrusion pathway as part of the Remedial Investigation of the NYSEG Washington Street former MGP

1. OCCUPANT:

Interviewed: Y / N (Y circled)

Last Name: Jacobs First Name: Richard

Address: 21 Washington Street, Binghamton, NY 13901

County: Broome

Home Phone: – Office Phone: (607) 722-7255

Number of Occupants/persons at this location 15 +/- Age of Occupants 20s - 50s +/-

2. OWNER OR LANDLORD: (Check if same as occupant ✓)

Interviewed: Y / N

Last Name: ______ First Name: ______

Address: ______

County: ______

Home Phone: ______ Office Phone: ______

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

Residential	School	Commercial/Multi-use
Industrial	Church	Other: ______

If the property is residential, type? (Circle appropriate response) NA

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:_______

If multiple units, how many? ________

If the property is commercial, type?

Business Type(s) AAA office building

Does it include residences (i.e., multi-use)? Y / N   If yes, how many? 1 on 2nd floor no longer in use.

Other characteristics:

Number of floors 3 (Basement, Main Floor, & 2nd Floor)   Building age 85 years or more

Is the building insulated? Y / N   How air tight? Tight / Average / Not Tight
Average or below-average (single pane glass, cools quickly when heat turned back in winter)

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

< Responses marked w/ an * are based on interview w/ owner & visual observations during building tour on 2/23/06 >

Airflow between floors

* Not expected to be significant considering the concrete flooring of the main level is approx. 1-foot thick & there are no obvious vents between the basement & main level.

Airflow near source

* Anticipate limited airflow in basement, except possibly near the elevator shaft during elevator operation (elevator used approx. once per day between 1st & 2nd floors -- elevator not used to access basement due to warped doors in basement from past water damage) or near boiler if indoor air is source of combustion air. No heat in basement

Outdoor air infiltration

* Outside walls were "re-done" approx. 10 yrs. ago -- no obvious leaks.
* Opening in one of the first floor bathroom walls has been covered w/ cardboard & duct tape to seal draft.

Infiltration into air ducts

--

5. **BASEMENT AND CONSTRUCTION CHARACTERISTICS** (Circle all that apply)

a. Above grade construction: wood frame concrete stone brick + stucco & clay construction tile in walls

b. Basement type: full – full height beneath ½ of building crawlspace slab other ______

c. Basement floor: concrete – w/ noticeable cracks & approx. 2"ϕ hole in center of basement dirt stone other ______

d. Basement floor: generally uncovered covered covered with boxes/items in storage in some areas

e. Concrete floor: unsealed sealed sealed with ______

f. Foundation walls: mainly poured block stone other → cinderblock along east side of bldg. (NE part of basement)

g. Foundation walls: unsealed sealed sealed with paint

h. The basement is: wet damp dry moldy – although owner reports seepage occasionally occurs along base of wall, which has been patched. Seepage water evaporates quickly.

i. The basement is: finished unfinished partially finished

j. Sump present? Y N sump formerly located beyond east wall was filled in during Fall 2005 when new sidewalks were installed along Washington Street (basement formerly extended further toward street). "Sump never used to have water."

k. Water in sump? Y / N / not applicable

Basement/Lowest level depth below grade: 6 +/- (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

① Cracks generally ¼" +/- or less at various locations
② Floor drain along ~~west~~ north side of basement (~6"ϕ)
③ Metal basin/drain in center portion of basement (12" × 12" +/-)
④ ~~Approx 2" dia. hole in center of basement floor~~
⑤ Water in elevator shaft pit

6. **HEATING, VENTING and AIR CONDITIONING** (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation – 2nd floor	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation – 1st floor	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other ______

– 1st floor, oil-filled electric units, some w/ fans (personal space heaters)
NO KEROSENE HEATERS

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: Two (2) 5-gal tanks for main floor bathrooms (heaters in basement) – Electric & One (1) 40-gal. tank for 2nd floor (not in use) – Gas-fired

Boiler/furnace located in: Basement Outdoors Main Floor Other ______

Air conditioning: Central Air Window units Open Windows None

condenser along side of bldg.; cooling unit in back of bldg.

None of windows in main level open

4

Are there air distribution ducts present? Y N

in ceiling for A/c only (no heat)

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

Ducts in good condition, where visible. Owner reports that there are no issues w/ tightness of duct joints.

Note: Chimney is along south side of bldg & 10' +/- higher than roof.

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

1 time per week to access storage

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
Basement	Storage / vacant
1st Floor	Office (15 employees +/-) ← Hours : M-F 8:30-5 or 6 p.m. Sat. 9:00 - 5:00 p.m (1-2 people)
2nd Floor	Vacant / storage
3rd ~~Floor~~	—
4th ~~Floor~~	—

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage? Y / N

b. Does the garage have a separate heating unit? Y / N / NA

c. Are petroleum-powered machines or vehicles stored in the ~~garage~~ building (e.g., lawnmower, atv, car) Y / N / NA

Please specify
- power washer in 2nd floor
- 1 generator in back room on 1st floor
- 1 snowblower on 1st floor
- 1 snowblower in basement

d. Has the building ever had a fire? Y / N When? ____________

e. Is a kerosene or unvented gas space heater present? Y / N Where? ____________

f. Is there a workshop or hobby/craft area? Y / N Where & Type? ____________

g. Is there smoking in the building? Y / N How frequently? ____________

h. Have cleaning products been used recently? Y / N When & Type? ____________

- Clorox is used approx. 2-3 times per week
- Unknown product used during bathroom floor covering removal after sewer backup problem

Most likely by women in office

i. Have cosmetic products been used recently? Y / N When & Type? ______

5

j. Has painting/staining been done in the last 6 months? Y / N Where & When? ______

k. Is there new carpet, drapes or other textiles? Y / N Where & When? New carpet to be installed in April 2006

l. Have air fresheners been used recently? Y / N When & Type? Aerosol-type in bathroom in use during 2/23/06 visit

m. Is there a kitchen exhaust fan? Y / N If yes, where vented? ______

n. Is there a bathroom exhaust fan? Y / N If yes, where vented? Space btwn. ceiling & 2nd floor; possibly outside

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type? Spray applied to outside of building ~~approx.~~ last year to combat bugs "from river"

Are there odors in the building? Y / N
If yes, please describe: ______

Do any of the building occupants use solvents at work? Y / N possibly ① nail polish / remover & ② "white-out" (liquid paper correction fluid)
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? ______

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Owner reports that none of the employees works at a dry-cleaning facility.

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: ______
Is the system active or passive? Active/Passive NA

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: ______

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: ______

10. RELOCATION INFORMATION (for oil spill residential emergency) NA

a. Provide reasons why relocation is recommended: ______

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

12. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM

Make & Model of field instrument used: ____

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

Product Inventory Form: AAA Building, 21 Washington Street, Binghamton, New York

Make & Model of Field Instrument Used: RAE Systems – ppbRAE
List specific products found in the residence that have the potential to affect indoor air quality

Location	Product Description	Size (units)	Condition*	Manufacturer	Field Instrument Reading (ppb)	Product Ingredients	CAS #	Photo** (Y/N)
BE	Dryvit	17 5-gal.	UO/U	Dryvit Systems, Inc. One Energy Way, W. Warwick, RI	6,800			Y
BE	Rug Cleaner	1 can	U	CVS Wausocket, RI	0			N
BE	Engine Oil	1 bottle	U	Quaker State	144			N
BE	PB	1 can	U	B'Laster, Cleveland, OH	3,600	Aromatic hydrocarbon Surfactant Petroleum oil CO_2 Propellant Propylene Glycol Ether	64742-94-5 68131-40-8 64742-53-6 124-38-9 57018-52-7	N
BE	"Great Stuff"	1 can	UO	Polyurethane Foam, DOW Chemical	3,704			N
BE	White Lube Grease	1 can	U	CRC Industries	555	Ph: #800-521-3168 (tech) #800-727-8963 (cust. serv) Mineral oil Isohexane n-Hexane Propane Isobutane	 64741-96-4 107-83-5 110-54-3 74-98-6 75-28-5	N
BE	De-icer	1 can	U	TradCo Corp., Akron, OH	116	Water Methanol Carbon dioxide Ethylene Glycol	7732-18-5 67-56-1 123-38-9 107-21-1	N
BE	Paint/Varnish Remover	1 can	U	Sterling Clark Lurton Co., Malden, MA	2,400	_ylene Chloride Methanol Toluene	 67-56-1 108-88-3	N

Notes:
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Product Inventory Form: AAA Building, 21 Washington Street, Binghamton, New York

Make & Model of Field Instrument Used: RAE Systems – ppbRAE
List specific products found in the residence that have the potential to affect indoor air quality

Location	Product Description	Size (units)	Condition*	Manufacturer	Field Instrument Reading (ppb)	Product Ingredients	CAS #	Photo** (Y/N)
BE	Spray Paint	1 can	U	Pro Hardware, Inc., Stamford, CT	9,600	Pigment:carbon black silicates Non-volatile vehicle: soya alkyd resin additives Volatile vehicle: aromatic hydrocarbon ketone petroleum distillate Propellant: propane hydrocarbon		N
BE	Rust Tough Hammer	1 can	U	Sherwin Williams	6,500			N
BE	Latex Paint	3 cans	U	Dutch Boy, Sherwin Williams	0	Ethylene Glycol Vinyl Polymer Water Quartz Cristobalite Third can has all of the above plus amorphous diatomaceous earth	107-21-1 Unknown 7732-18-5 14808-60-7 14464-46-1 7631-86-9	N
BE	Floor Paint	1 can	U	Benjamin Moore	0	Stoddard Solvent Calcium Carbonate Carbon Black Titanium Dioxide Soya Alkyd Resin	8052-41-3 1317-65-3 1333-86-4 13463-67-7 66070-60-8	N
BE	Primer	1 can	U	Zinsser & Co., Somerset, NJ	0	Naphtha Solvent Alkyd Resin Titanium Dioxide Aluminum Silicate Calcium Carbonate	8030-6 -- 13463-67-7 1332-58-7 1317-65-3	N
BE	Spray Paint	1 can	U	Dutch Boy, Sherwin Williams	1,400	Aliphatic Hydrocarbons Ketones Toluene Xylene		N

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Make & Model of Field Instrument Used: RAE Systems – ppbRAE
List specific products found in the residence that have the potential to affect indoor air quality

Location	Product Description	Size (units)	Condition*	Manufacturer	Field Instrument Reading (ppb)	Product Ingredients	CAS #	Photo** (Y/N)
BE	Latex Paint	1 can	U	Enterprise Paint Co., Wheeling, IL	0	Titanium Dioxide (Type III) Vinyl Acetate Additives Glycol Water		N
BE	Plastic Roof Cement	1 can	U	Gardnerasphalt.com	81	Asphalt Stoddard Solvent Cellulose Fiber Silicate Material Chrysotile Mineral Fiber	8052-42-4 8052-41-3 65996-61-4 7631-86-9 1332-21-4	N
BE	Acrylic/Latex Paint	3 cans	U	Behr Corp., Santa Ana, CA	0	Ethylene Glycol		N
BE	Gas Can	1 gal	U		190			N
BE	Gas Can	2 gal	U		0			N
BE	Gas Can	5 gal	U		458			N
BE	Snowblower	--	U	MTD Yard Machine	0			N
BD	Roof Sealant	2 cans	U	Henry Co., Huntington Park, CA	6,500	Asphalt Petroleum Distillate Synthetic Fiber Clay Amine Salt Calcium Carbonate	8052-42-4 8052-41-3 9004-34-6 12174-11-7 28701-67-9 1317-65-3	N
BD	Roundup Weed Killer	1 bottle	U	Monsanto, Marysville, OH	0	Glyphosphate, Isopropylamine Salt Triclopyr, Trietylamine, Salt		N
BD	Grass Killer	1 bottle	U	Ortho Group	0	Oxyfluorfen Glyphosphate Isopropylamine Salt		N
Dock	Roof Sealant	4 cans	U	Henry Co., Huntington Park, CA	1,500			N

Notes:
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Product Inventory Form: AAA Building, 21 Washington Street, Binghamton, New York

Make & Model of Field Instrument Used: RAE Systems – ppbRAE
List specific products found in the residence that have the potential to affect indoor air quality

Location	Product Description	Size (units)	Condition*	Manufacturer	Field Instrument Reading (ppb)	Product Ingredients	CAS #	Photo** (Y/N)
Dock	Bleach	3 bottles	U	Dolgen Corp., Goodlettsville, TN	0			N
Dock	Gas Generator	--	U	Wacker	0			N
1A	Adhesive Spray	1 can	U	Delta Technical Coatings	6,100	(deltacrafts.com) Hexane Acetone		N
1A	Poster Paints	6 tubes	U	Prism Tempera Palmer, Troy, MI	0			N
1A	Acrylic Paints	10 tubes	U	Golden Artist Colors, New Berlin, NY	0	Acrylic Polymer Emulsion		N
1A	Art/Craft Glue	1	U	Lepages	0			N
1A	Bingo Marker	1	U	Primo CJ Venne LLC, Levittown, PA	0			N
1A	Glass Cleaner	1	U	Brawn Peagsus Int., Fort Washington, PA	0			N
1A	Contact Cement	1	U	DAP, Baltimore, MD	2,691			N
1B	Postage Meter Ink	4 bottles	U	Neo-Post, Hayward, CA	0			N
1B	Postage Meter Ink	1	U	Pittney Bowes	300			N
1D	Hi-Liter	50	UO	Avery Dennison Corp.	0			N
1D	Wite-Out	4	UO	Bic USA, Inc.	0			N
1D	Lysol Disinfectant	1	U	Lysol	0	Dimethyl Benzyl Ammonium Saccharinate Ethanol		N
1D	Bleach	1	U	Comet	0	Sodium Dichloro-s-triazinetrione dihydrate		N
1D	Windex	1	U	Windex, S.C. Johnson	0			N
1D	Cleaning Polish	1	U	Guardsman Chemical Coatings, Grand Rapids, MI	0			N
1D	Bathroom Cleaner	1	U	Comet	0	Citric Acid		N

Notes:
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Make & Model of Field Instrument Used: RAE Systems – ppbRAE
List specific products found in the residence that have the potential to affect indoor air quality

Location	Product Description	Size (units)	Condition*	Manufacturer	Field Instrument Reading (ppb)	Product Ingredients	CAS #	Photo** (Y/N)
1D	"Cleanup"	1	U	Clorox (sodium hypochlorox)	0			N
1D	Carpet Cleaner	1	U	Resolve, Montvale, NJ	0			N
1D	Softsoap	1	U	Colgate-Palmolive, New York, NY	0	Triclosan Water Sodium Laureth Sulfate Cocomidopropyl Betaine Sodium Chloride Decyl Glucoside Fragrance DMDM Hydartoin PEG-120 Methyl Glucose Dioleate Tetrasodium EDTA Citric Acid Sodium Sulfate Poly-Quaternium-7 Poloxamer 124 PEG-7 Glyceryl Cocoate		N
1D	Lime-A-Way	1	U	Benekiser, Greenwich, CT	0			N
1D	"The Works"	1	U	HomeCare Labs, Lawrenceville, GA	0	www.theworksworks.com		N
1D	Carpet Cleaner	1	U	Steam Way	0	Fluorosurfactant Sodium Laurel Sulfate Resin Propylene Glycol Methyl Ether Dipropylene Ether Ammonium Hydroxide Water		N
1E	Isolpropyl Alcohol	2	U	CVS	20			N

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Make & Model of Field Instrument Used: RAE Systems – ppbRAE
List specific products found in the residence that have the potential to affect indoor air quality

Location	Product Description	Size (units)	Condition*	Manufacturer	Field Instrument Reading (ppb)	Product Ingredients	CAS #	Photo** (Y/N)
1E	Air Freshener	1	U	Wizard	50			N
1E	Disinfectant Spray	1	U	CVS, Woonsocket, RI	0	n-Alkyl dimethyl benzyl ammonium chlorides n-Alkyl ethyl benzyl ammonium chlorides Ethyl Alcohol		N
1E	Hair Spray	1	U	LANZA	202			N
1E	Hair Spray	1	U	Clairol	0	Water Dimethyl Ether Alcohol Denat Diglycol/CHDM/Isophthalates/SIP Copolymer Octyl-acrylamide/acrylates/butylaminoethyl methacrylate copolymer Octyl methoxycinnamate Panthenol Dimethicone copolyol Fragrance Acetamide MEA Glycereth-7 Triacetate Aminomethyl Propanol		N
1E	Miracle-Gro	1	U	Miracle-Gro	0			N
1E	Dishwasher Soap	1	U	“Sunsations” Huish Detergents, Salt Lake City, UT	0	Sodium Carbonate Sodium Silicate Enzymes		N
1E	Wasp Killer	1	U	Enforcer Products, Cartersville, GA	102	Tetramethrin Sumithrin	7696-12-0 26002-0-2	N
1E	Furniture Polish	1	U	S.C. Johnson, Racine, WI	0			N
1E	Tub Cleaner	1	U	Lysol, Parsippany, NJ	0			N
1E	Stain Remover	1	U	Resolve, Wayne, NJ	0			N

Notes:
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List specific products found in the residence that have the potential to affect indoor air quality

Location	Product Description	Size (units)	Condition*	Manufacturer	Field Instrument Reading (ppb)	Product Ingredients	CAS #	Photo** (Y/N)
1E	"Scrubbing Bubbles"	1	U	S.C. Johnson, Racine, WI	1312	n-Alkyl dimethyl benzyl ammonium chlorides n-Alkyl dimethyl ethylbenzyl ammonium chlorides Ammonium chlorides		N
1E	Dish Soap	1	U	Ajax Colgate-Palmolive	120			N
EW	Drain Cleaner	1	U	Draino Drackett Products Co., Cincinnati, OH	0			N
EW	Scratch Cover/Wood Treatment	1	U	Reckitt & Coleman, Wayne, NJ	0			N
EW	Baking Soda	1	U	Armand-Hammer	0			N
EW	Windex	1	U	S.C. Johnson	0			N
MO	Eyeglass Cleaner	1	U	Clarity Brand Products, Cleveland, OH	0			N
MO	Hand Lotion	1	U	Suave	0			N
MO	Stamp Pad Ink	1	U	Sanford, Bellwood, IL	114			N
MO	Super Glue	1	U	Cyanoacrylate	188			N
MO	Wrinkle Guard	12	U	Alberto-Culver, Melrose Park, IL	0			N
MO	Wite-Out	25	U	Bic USA	0			N
MO	Hi-Liter	50	U	Avery Dennison	0			N
MO	Clorine	10	U	Chlorox	0			N
EO	Bag Balm	1 can	U	Bag Balm	0	8-hydroxyquinoline sulfate		N

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Attachment D

Field Sampling Logs

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Soil Gas Sample Collection Log

Sample ID: SS-1

Client:	NYSEG	**Date/Day:**	03/27/06- Monday
Project:	Washington Street	**Weather:**	Clear-Sunny
Location:	Binghamton, NY	**Temperature:**	50's F
Project #:	13055.002	**Wind Speed/Direction:**	NW 12-18 mph
Samplers:	A. Amell	**Subcontractor:**	-
Logged By:	A. Amell	**Equipment:**	AMS Purge system, ppb RAE
Coordinates:	Entry of Basement	**Moisture Content of Sampling Zone (circle one):**	Dry / Moist
Sampling Depth:	9"		
Probe (circle one):	Permanent / Temporary	**Approximate Purge Volume:**	50 ml
Time of Collection:	Start: 1030 Finish: 1904	**Background PID Ambient Air Reading:**	0

Nearby Groundwater Monitoring Wells/Water Levels:

Well ID	Depth to Groundwater (feet)
MW-3	DTW 6.36 DTB 19.25
MW-2	DTW 17.19 DTB 17.25

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 0178

Flow Controller ID: K151

Tracer Gas Information (if applicable)

Tracer Gas: Helium

Canister Pressure (inches Hg):		
Reported By Laboratory	Measured Prior to Sample Collection	Measured Following Sample Collection
1.0 mmHg	-28.5	-2.5

Tracer Gas Concentration (if applicable):		
Measured in Purge Effluent	Measured in 'Concentrated' Area Prior to Sample Collection	Measured in 'Concentrated' Area Following Sample Collection
0%	64.8%	59.0%

General Observations/Notes:

Approximating One-Well Volume (for purging):
When using 1¼-inch "Dummy Point" and a 6-inch sampling interval, the sampling space will have a volume of approximately 150 mL.
Each foot of ¼-inch tubing will have a volume of approximately 10 mL.

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Soil Gas Sample Collection Log

Sample ID: SS-2, SS- DUP -1

Client:	NYSEG	**Date/Day:**	03/27/06- Monday
Project:	Washington Street	**Weather:**	Clear- Sunny
Location:	Binghamton, NY	**Temperature:**	50's F
Project #:	13055.002	**Wind Speed/Direction:**	NW 12-18 mph
Samplers:	A. Amell	**Subcontractor:**	-
Logged By:	A. Amell	**Equipment:**	AMS Purge System, ppb RAE
Coordinates:	Basement next to drain	**Moisture Content of Sampling Zone (circle one):**	Dry / Moist
Sampling Depth:	9"		
Probe (circle one):	Permanent / Temporary	**Approximate Purge Volume:**	50 mL
Time of Collection:	Start: 0953 Finish: 1856	**Background PID Ambient Air Reading:**	0

Nearby Groundwater Monitoring Wells/Water Levels:

Well ID	Depth to Groundwater (feet)
MW-3	DTW 6.36 DTB 19.25
MW-2	DTW 17.19 DTB 17.25

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 12257/ 2956 (DUP-1)

Flow Controller ID: K270/ K101 (DUP-1)

Tracer Gas Information (if applicable)

Tracer Gas: Helium

Canister Pressure (inches Hg):

Reported By Laboratory	Measured Prior to Sample Collection	Measured Following Sample Collection
SS-2 = 0.62 mmHg	-30	-3
DUP-1 = 0.62 mmHg	-30	-2.5

Tracer Gas Concentration (if applicable):

Measured in Purge Effluent	Measured in 'Concentrated' Area Prior to Sample Collection	Measured in 'Concentrated' Area Following Sample Collection
0%	23.4%	23.1%

General Observations/Notes:

*2.6' from drain (to the west)

Approximating One-Well Volume (for purging):
When using 1¼-inch "Dummy Point" and a 6-inch sampling interval, the sampling space will have a volume of approximately 150 mL.
Each foot of ¼-inch tubing will have a volume of approximately 10 mL.

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Soil Gas Sample Collection Log

Sample ID: SS-3

Client:	NYSEG	**Date/Day:**	03/27/06- Monday
Project:	Washington Street	**Weather:**	Clear-sunny
Location:	Binghamton, NY	**Temperature:**	50° F (outside)
Project #:	13055.002	**Wind Speed/Direction:**	NW 12-18 mph
Samplers:	A. Amell	**Subcontractor:**	-
Logged By:	A. Amell	**Equipment:**	AMS Purge System, ppb RAE
Coordinates:	Basement next to heater	**Moisture Content of Sampling Zone (circle one):**	Dry / Moist
Sampling Depth:	12"		
Probe (circle one):	Permanent / Temporary	**Approximate Purge Volume:**	50 mL
Time of Collection:	Start: 1010 Finish: 1833	**Background PID Ambient Air Reading:**	0

Nearby Groundwater Monitoring Wells/Water Levels:

Well ID	Depth to Groundwater (feet)
MW-3	DTW 6.36 DTB 19.25
MW-2	DTW 17.19 DTB 17.25

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 2986

Flow Controller ID: K240

Tracer Gas Information (if applicable)

Tracer Gas: Helium

Canister Pressure (inches Hg):		
Reported By Laboratory	**Measured Prior to Sample Collection**	**Measured Following Sample Collection**
0.53 mmHg	-30	-3

Tracer Gas Concentration (if applicable):		
Measured in Purge Effluent	**Measured in 'Concentrated' Area Prior to Sample Collection**	**Measured in 'Concentrated' Area Following Sample Collection**
0%	22.9%	19.4%

General Observations/Notes:

Approximating One-Well Volume (for purging):
When using 1¼-inch "Dummy Point" and a 6-inch sampling interval, the sampling space will have a volume of approximately 150 mL.
Each foot of ¼-inch tubing will have a volume of approximately 10 mL.

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Indoor/Ambient Air Sample Collection Log

Sample ID: IA-1

Client:	NYSEG	**Date/Day:**	03/27/06- Monday
Project:	Washington Street	**Sample Intake Height:**	2.2'
Location:	Binghamton, NY	**Subcontractor:**	-
Project #:	13055.002	**Miscellaneous Equipment:**	
Samplers:	A. Amell		
Coordinates:	Entry of Basement	**Time Start:**	1030 -30
Outdoor/Indoor:	Indoor	**Time Stop:**	1814 -4.0

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (F or C)	Relative Humidity (%)	Air Speed (ft/min)	Pressure Differential (inches of H_2O)	PID (ppm or ppb)
1030	-30	60°	40%	0	-	0
1353	-20	60°	40%	0	-	0
1524	-15	60°	40%	0	-	0
1611	-12.5	60°	40%	0	-	0
1814	-4.0	60°	40%	0	-	0

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 12460

Flow Controller ID: K218

General Observations/Notes:

Vacuum of Canister by Lab → 0.68 mmHg
* Small Draft Inward from Basement door

Please record current weather information including wind speed and direction, ambient temperature, barometric pressure and relative humidity via weather stations at the site, or other suitable information source (e.g., wunderground.com).

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Indoor/Ambient Air Sample Collection Log

Sample ID: IA-2

Client:	NYSEG	**Date/Day:**	03/27/06- Monday
Project:	Washington Street	**Sample Intake Height:**	2.2'
Location:	Binghamton, NY	**Subcontractor:**	-
Project #:	13055.002	**Miscellaneous Equipment:**	ppb RAE
Samplers:	A. Amell		
Coordinates:	Basement next to drain	**Time Start:**	0953 -30
Outdoor/Indoor:	Indoor	**Time Stop:**	1907 -3.0

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (F or C)	Relative Humidity (%)	Air Speed (ft/min)	Pressure Differential (inches of H_2O)	PID (ppm or ppb)
0953	-30	60°	40%	0	-	0
1340	-18.5	60°	40%	0	-	0
1523	-13	60°	40%	0	-	0
1613	-10.5	60°	40%	0	-	0
1907	-3.0	60°	40%	0	-	0

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 1377

Flow Controller ID: K102

General Observations/Notes:

Vacuum of Canister by Lab → 0.53 mmHg

Please record current weather information including wind speed and direction, ambient temperature, barometric pressure and relative humidity via weather stations at the site, or other suitable information source (e.g., wunderground.com).

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Indoor/Ambient Air Sample Collection Log

Sample ID: IA-3

Client:	NYSEG	**Date/Day:**	03/27/06- Monday
Project:	Washington Street	**Sample Intake Height:**	2.2'
Location:	Binghamton, NY	**Subcontractor:**	-
Project #:	13055.002	**Miscellaneous Equipment:**	ppb RAE
Samplers:	A. Amell		
Coordinates:	Basement next to heater	**Time Start:**	1011 -30
Outdoor/Indoor:	Indoor	**Time Stop:**	1819 -6.0

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (F or C)	Relative Humidity (%)	Air Speed (ft/min)	Pressure Differential (inches of H_2O)	PID (ppm or ppb)
1011	-30	60°	40%	0	-	0
1311	-21.5	60°	40%	0	-	0
1524	-15.5	60°	40%	0	-	0
1612	-13.5	60°	40%	0	-	0
1819	-6.0	60°	40%	0	-	0

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 12829

Flow Controller ID: K099

General Observations/Notes:

Vacuum of canister by lab → 0.75 mmHg

Please record current weather information including wind speed and direction, ambient temperature, barometric pressure and relative humidity via weather stations at the site, or other suitable information source (e.g., wunderground.com).

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Indoor/Ambient Air Sample Collection Log

Sample ID: IA-4

Client:	NYSEG	**Date/Day:**	03/27/06-Monday
Project:	Washington Street	**Sample Intake Height:**	4.3' from floor
Location:	Binghamton, NY	**Subcontractor:**	-
Project #:	13055.002	**Miscellaneous Equipment:**	ppb RAE
Samplers:	A. Amell		
Coordinates:	1st Floor – office (Exc.)	**Time Start:**	0913 -29
Outdoor/Indoor:	Indoor	**Time Stop:**	1806 -2.5

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (F or C)	Relative Humidity (%)	Air Speed (ft/min)	Pressure Differential (inches of H_2O)	PID (ppm or ppb)
0913	-29	75°	40%	0	-	0
1045	-25	75°	40%	0	-	0
1300	-18	75°	40%	0	-	0
1552	-9.5	75°	40%	0	-	0
1806	-2.5	75°	40%	0	-	0

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 02639

Flow Controller ID: K231

General Observations/Notes:

Vacuum of canister by lab → 1.0 mmHg
Vacuum of canister @ start → -29 in Hg

Please record current weather information including wind speed and direction, ambient temperature, barometric pressure and relative humidity via weather stations at the site, or other suitable information source (e.g., wunderground.com).

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Indoor/Ambient Air Sample Collection Log

Sample ID: IA-5

Client:	NYSEG	**Date/Day:**	03/27/06- Monday
Project:	Washington Street	**Sample Intake Height:**	5.5' from floor
Location:	Binghamton, NY	**Subcontractor:**	-
Project #:	13055.002	**Miscellaneous Equipment:**	ppb RAE
Samplers:	A. Amell		
Coordinates:	1st Floor –Main Office	**Time Start:**	0912 -29
Outdoor/Indoor:	Indoor	**Time Stop:**	1807 -2.5

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (F or C)	Relative Humidity (%)	Air Speed (ft/min)	Pressure Differential (inches of H_2O)	PID (ppm or ppb)
0912	-29	75° F	40%	0	-	0
1043	-25	75° F	40%	0	-	0
1255	-18	75° F	40%	0	-	0
1551	-9.5	75° F	40%	0	-	0
1807	-2.5	75° F	40%	0	-	0

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 3391

Flow Controller ID: K150

General Observations/Notes:

Initial Vacuum of Canister by lab → 0.60 mmHg
Start Vacuum of Canister → -29.0 in Hg

Please record current weather information including wind speed and direction, ambient temperature, barometric pressure and relative humidity via weather stations at the site, or other suitable information source (e.g., wunderground.com).

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Indoor/Ambient Air Sample Collection Log

Sample ID: AA-1

Client:	NYSEG	**Date/Day:**	03/27/06
Project:	Washington Street	**Sample Intake Height:**	1.9' from roof surface
Location:	Binghamton, NY	**Subcontractor:**	-
Project #:	13055.002	**Miscellaneous Equipment:**	-
Samplers:	A. Amell		
Coordinates:	Rooftop SW Corner	**Time Start:**	0916 -28.5
Outdoor/Indoor:	Outdoor	**Time Stop:**	1729 -2.5

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (F or C)	Relative Humidity (%)	Air Speed (ft/min)	Pressure Differential (inches of H_2O)	PID (ppm or ppb)
0916	-28.5	50° F	40%	12-18 mph	-	0
1136	-21.5	50° F	40%	12-18 mph	-	0
1607	-7.0	50° F	40%	12-18 mph	-	0
1712	-4.0	50° F	40%	12-18 mph	-	0
1729	-2.5	50° F	40%	12-18 mph	-	0

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 11361

Flow Controller ID: K230

General Observations/Notes:

* Full-sun on roof and tar smell is very prevalent
* 32.6 ft to roof from ground on west side of building

Please record current weather information including wind speed and direction, ambient temperature, barometric pressure and relative humidity via weather stations at the site, or other suitable information source (e.g., wunderground.com).

Attachment E

Laboratory Post-Sampling SUMMA®
Canister Vacuum Readings

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SEVERN TRENT STL

STL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921

Tel: 865 291 3000 Fax: 865 584 4315
www.stl-inc.com

ANALYTICAL REPORT

Energy East MGP

Lot #: H6C290126

Chris Angier

Blasland, Bouck & Lee, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse, NY 13214

SEVERN TRENT LABORATORIES, INC.

Scott A. Harris
Project Manager

April 14, 2006

ANALYTICAL METHODS SUMMARY

H6C290126

PARAMETER	ANALYTICAL METHOD
Volatile Organics by TO15	EPA-2 TO-15

References:

EPA-2 "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air", EPA-625/R-96/010b, January 1999.

SAMPLE SUMMARY

H6C290126

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
H157M	001	IA-1	03/27/06	10:30
H157W	002	IA-2	03/27/06	09:53
H1574	003	IA-3	03/27/06	10:11
H1575	004	IA-4	03/27/06	09:13
H1576	005	IA-5	03/27/06	09:12
H158C	006	SS-DUP-1	03/27/06	
H158F	007	SS-1	03/27/06	10:30
H158G	008	SS-2	03/27/06	09:53
H158J	009	SS-3	03/27/06	10:10
H158K	010	AA-1	03/27/06	09:16

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H6C290126

The results reported herein are applicable to the samples submitted for analysis only.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Subcontract

The following analyses were performed by STL Burlington Laboratory, 208 South Park Drive, Suite 1, Colchester, VT 05446, (802) 655-1203, Chris Oullette, Laboratory Director: Helium (ASTM D1946).

Quality Control

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

STL Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Cert. #05-043-0, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Cert. #PH-0223, Florida DOH Cert. #E87177, Georgia DNR Cert. #906 (SDWA, expires 6/24/05), Hawaii DOH, Illinois EPA Cert. #000687, Indiana DOH Cert. #C-TN-02, Iowa DNR Cert. #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab ID #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH Cert. #LA030024, Maryland DHMH Cert. #277, Massachusetts DEP Cert. #M-TN009, Michigan DEQ Lab ID #9933, New Jersey DEP Cert. #TN001, New York DOH Lab #10781, North Carolina DPH Lab ID #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Cert. #CL0059, Oklahoma DEQ ID #9415, Pennsylvania DEP Cert. #68-00576, South Carolina DHEC Lab ID #84001001, Tennessee DOH Lab ID #02014, Utah DOH Cert. # QUAN3, Virginia DGS Lab ID #00165, Washington DOE Lab #C120, West Virginia DEP Cert. #345, Wisconsin DNR Lab ID #998044300, US Army Corps of Engineers, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

STL Knoxville
TO-14/TO-15 Canister Dilution Log

Initial Dilution								Subsequent Dilution						Subsequent Dilution					
Analyst/Date	Tedlar Bag Time	Pbarr (in)	Lot #	Work Order #	Can #	Initial Press Pi (in)	Final Press. Pf (psig)	Analyst/Date	I/S	Pbarr (in)	To Can #	Vol. (mL)	Final Press. Pf (psig)	Analyst/Date	I/S	Pbarr (in)	To Can #	Vol. (mL)	Final Press. Pf (psig)
HMT 3-29-06	NA	30.24	C290156	H16FG	12212	-5.8	–												
				FH	D162	-21.0	2.2												
				FJ	11286	-19.6	1.2												
				FK	6383	-14.1	2.2												
				FL	6387	-2.5	–												
				FP	6396	–	0.0												
				FQ	12179	-26.2	3.2												
				FT	12327	-23.0	1.8												
				FV	6388	-39	–												
				FW	12181	-15.1	2.8												
				F2	~~1044~~ 1044	-10.8	3.0												
					1009	-17.5	1.2												
				FS	1349	-12.2	2.0												
			C290126	H157M	12460	-2.2	–												
				7W	13777	-1.4	–												
				74	12829	-4.9	–												
				75	02639	-2.2	–												
				76	3391	-2.6	–												
				8C	2956	-1.9	–												
				8F	0178	-2.7	–												
				8G	12257	-1.9	–												
				8J	2986	-3.4	–												
				8K	11361	-1.5	–												

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Infrastructure, environment, facilities

ARCADIS of New York, Inc.
6723 Towpath Road
Syracuse
New York 13214-0066
Tel 315.446.9120
Fax 315.449.4111
www.arcadis-us.com

Ms. Kiera Becker
Engineering Geologist I
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 11th Floor
Albany, NY 12233-7014

ENVIRONMENT

Subject:
New York State Electric & Gas Corporation
Washington Street Former MGP Site
Binghamton, New York
"On The Roxx" Vapor Intrusion Evaluation
Index No. A7-0518-0505
BCP Site #C704046

Date:
April 13, 2007

Contact:
John C. Brussel, PE

Phone:
315.671.9441

Email:
John.Brussel@arcadis-us.com

Our ref:
0130.13079 # 5

Dear Ms. Becker:

This letter is submitted on behalf of New York State Electric & Gas Corporation (NYSEG) and presents laboratory analytical results for vapor intrusion evaluation activities performed at the "On the Roxx" building located at 35 Washington Street in Binghamton, New York. The building is located just north of the Washington Street former manufactured gas plant (MGP) site. The vapor intrusion evaluation activities were conducted as an element of the remedial investigation (RI) of the Washington Street former MGP, which is being performed under the New York State Brownfield Cleanup Program. Sampling activities were performed as requested in Comment 1 of a letter from the New York State Department of Environmental Conservation (NYSDEC) to NYSEG dated January 11, 2007.

The building owner, the proprietor of On the Roxx restaurant, and representatives from NYSEG performed a building reconnaissance on January 23, 2007 to select subslab vapor and indoor air sampling locations. The layout of the building's main floor and the sampling locations are shown on the ARCADIS BBL field sketch included in Attachment A.

On February 12, 2007, ARCADIS BBL conducted a building walk-through and interviewed the proprietor of the restaurant to complete the NYSDOH Indoor Air Quality Questionnaire, included as Appendix B to the NYSDOH document titled *Guidance for Evaluating Soil Vapor Intrusion in the State of New York*, dated October

2006 (the "NYSDOH Soil Vapor Intrusion Guidance"). The completed questionnaire is included in Attachment B. Following the building walk-through, sample collection was conducted in accordance with the procedures detailed in the *Vapor Intrusion Evaluation Work Plan* presented in a letter from ARCADIS BBL to the NYSDEC dated February 28, 2006, with the following modification: during this event, samples were collected over a 24-hour sampling period (e.g., flow regulators were pre-set by the laboratory to provide a flow rate of approximately 4.2 milliliters per minute). Please note that the work plan dated February 28, 2006 was for soil vapor intrusion testing conducted at the AAA building located on the south side of the Washington Street former MGP site. With the modification noted above, the work plan was applicable for the soil vapor intrusion testing required at On the Roxx.

Sample collection at On the Roxx concluded on February 13, 2007. Photographs taken by ARCADIS BBL during the sampling activities are included in Attachment C. Copies of the field sampling logs are presented in Attachment D.

Laboratory analysis of the samples was performed by Severn Trent Laboratories, Inc. (STL) of Knoxville, Tennessee using United States Environmental Protection Agency (USEPA) Compendium Method TO-15. The laboratory analytical data report is provided on the attached compact disc. Data validation was performed by ARCADIS BBL in accordance with the USEPA National Functional Guidelines dated October 1999. The data validation report is included in Attachment E.

Several constituents were identified in vapor samples collected beneath the building foundation slab, in the air inside the building, and in ambient air. It was not possible to attribute the constituents to a particular source. New York State does not currently have standards, criteria, or guidance values (SCGs) for concentrations of compounds in subsurface vapors. The concentrations identified in indoor air are all less than the NYSDOH indoor air guidance values presented in Section 3.2.5 of the NYSDOH Soil Vapor Intrusion Guidance. In addition, the concentrations identified in indoor air are all less than or generally consistent with the 90th percentile of background indoor air levels observed by the USEPA in public and commercial office buildings as referenced in Section 3.2.4 of the NYSDOH Soil Vapor Intrusion Guidance. Based on the investigation results, soil vapor intrusion does not appear to be occurring at the "On the Roxx" building. Based on these findings, no further vapor intrusion investigation or remedial activities are proposed for the "On The Roxx" building.

Please do not hesitate to contact Mr. Tracy L. Blazicek of NYSEG at 607.762.8839 (tlblazicek@nyseg.com) or the undersigned at 315.671.9441 (John.Brussel@arcadis-us.com) if you have any questions or require additional information.

Sincerely,

ARCADIS of New York, Inc.

John C. Brussel

John C. Brussel
Senior Engineer II

Copies:
Ms. Julia M Guastella, New York State Department of Health
Mr. Tracy L. Blazicek, CHMM, New York State Electric & Gas Corporation
Mr. Keith A. White, CPG, ARCADIS BBL
Mr. Christopher S. Angier, ARCADIS BBL

Table

TABLE 1
SUBSLAB VAPOR, INDOOR AIR, & AMBIENT AIR VOC ANALYTICAL RESULTS
FOR THE "ON THE ROXX" RESTAURANT (ug/m3)

VAPOR INTRUSION EVALUATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

	USEPA Indoor Air Background Level	NYSDOH Indoor Air Guidance Value	VOC Analytical Results (ug/m^3)		
Sample ID:			**AA-1**	**IA-1**	**SS-1**
Volatile Organic Compounds (VOCs)					
1,1,1-Trichloroethane	20.6	- -	<1.1	<1.1 [<1.1]	<1.1
1,1,2,2-Tetrachloroethane	- -	- -	<1.4	<1.4 [<1.4]	<1.4
1,1,2-Trichloro-1,2,2-trifluoroethane	- -	- -	0.60 J	0.64 J [0.60 J]	0.70 J
1,1,2-Trichloroethane	<1.5	- -	<1.1	<1.1 [<1.1]	<1.1
1,1-Dichloroethane	<0.7	- -	<0.81	<0.81 [<0.81]	<0.81
1,1-Dichloroethene	<1.4	- -	<0.79	<0.79 [<0.79]	<0.79
1,2,4-Trichlorobenzene	<6.8	- -	<7.4	<7.4 [<7.4]	<7.4
1,2,4-Trimethylbenzene	9.5	- -	0.23 J	0.51 J [0.50 J]	0.57 J
1,2-Dibromoethane (EDB)	<1.5	- -	<1.5	<1.5 [<1.5]	<1.5
1,2-Dichloro-1,1,2,2-tetrafluoroethane	- -	- -	<1.4	<1.4 [<1.4]	<1.4
1,2-Dichlorobenzene	<1.2	- -	<1.2	<1.2 [<1.2]	<1.2
1,2-Dichloroethane	<0.9	- -	<0.81	<0.81 [<0.81]	<0.81
1,2-Dichloropropane	<1.6	- -	<0.92	<0.92 [<0.92]	<0.92
1,3,5-Trimethylbenzene	3.7	- -	<0.98	<0.98 [<0.98]	<0.98
1,3-Dichlorobenzene	<2.4	- -	<1.2	0.44 J [<1.2]	<1.2
1,4-Dichlorobenzene	5.5	- -	<1.2	0.45 J [0.37 J]	0.45 J
Benzene	9.4	- -	0.93	2.2 [2.1]	1.9
Bromomethane	<1.7	- -	<0.78	<0.78 [<0.78]	<0.78
Carbon disulfide	4.2	- -	<1.6	<1.6 [0.098 J]	0.11 J
Carbon tetrachloride	<1.3	- -	0.54 J	0.55 J [0.49 J]	0.51 J
Chlorobenzene	<0.9	- -	<0.92	<0.92 [<0.92]	<0.92
Chloroethane	<1.1	- -	<0.53	<0.53 [<0.53]	<0.53
Chloroform	1.1	- -	<0.98	2.6 [2.7]	2.6
Chloromethane	3.7	- -	1.2	1.8 [1.8]	1.8
cis-1,2-Dichloroethene	<1.9	- -	<0.79	<0.79 [<0.79]	<0.79
cis-1,3-Dichloropropene	<2.3	- -	<0.91	<0.91 [<0.91]	<0.91
Dichlorodifluoromethane	16.5	- -	2.4	3.6 [3.4]	3.6
Ethylbenzene	5.7	- -	0.30 J	0.53 J [0.48 J]	0.57 J
Hexachlorobutadiene	<6.8	- -	<11	<11 [<11]	<11
Isopropylbenzene	- -	- -	<2.0	<2.0 [<2.0]	<2.0
Methyl tert-butyl ether	11.5	- -	NA	NA	NA
Methylene chloride	10	60	0.48 J	0.61 J [0.60 J]	0.80 J
m-Xylene & p-Xylene	22.2	- -	0.92	1.5 [1.4]	1.6
Naphthalene	5.1	- -	<2.6	0.32 J [0.36 J]	0.39 J
n-Butane	- -	- -	3.4	5.3 [5.1]	5.7
n-Decane	17.5	- -	0.62 J	<5.8 [<5.8]	<5.8
n-Dodecane	- -	- -	<7.0	<7.0 [0.40 J]	<7.0
n-Heptane	- -	- -	0.62 J	1.6 J [1.3 J]	1.8 J
n-Hexane	10.2	- -	18	0.79 J [0.75 J]	29
n-Octane	- -	- -	<1.9	0.69 J [0.61 J]	0.79 J
Nonane	7.8	- -	<2.6	0.37 J [0.32 J]	0.51 J
n-Undecane	22.6	- -	<6.4	0.63 J [0.69 J]	1.2 J
o-Xylene	7.9	- -	0.35 J	0.51 J [0.50 J]	0.52 J
Pentane	- -	- -	1.4 J	6.6 [7.0]	8.5
Styrene	1.9	- -	<0.85	0.65 J [0.36 J]	0.64 J
Tetrachloroethene	15.9	100	<1.4	0.54 J [0.53 J]	0.55 J
Toluene	43	- -	1.4	3.2 [2.8]	3.8
trans-1,3-Dichloropropene	<1.3	- -	<0.91	<0.91 [<0.91]	<0.91
Trichloroethene	4.2	5	<1.1	<1.1 [<1.1]	<1.1
Trichlorofluoromethane	18.1	- -	1.2	2.7 [2.5]	2.7
Vinyl chloride	<1.9	- -	<0.51	<0.51 [<0.51]	<0.51
Supplemental VOCs					
3-Chloropropene	- -	- -	<0.63	<0.63 [<0.63]	<0.63
alpha-Methylstyrene	- -	- -	<1.9	<1.9 [<1.9]	<1.9
Cyclohexane	- -	- -	<1.7	<1.7 [<1.7]	0.42 J
1,3-Butadiene	- -	- -	<0.88	0.87 J [0.90]	0.78 J
Benzylchloride	- -	- -	<2.1	<2.1 [<2.1]	<2.1
Bromodichloromethane	- -	- -	<1.3	<1.3 [<1.3]	<1.3
Bromoform	- -	- -	<2.1	<2.1 [<2.1]	<2.1

TABLE 1
SUBSLAB VAPOR, INDOOR AIR, & AMBIENT AIR VOC ANALYTICAL RESULTS
FOR THE "ON THE ROXX" RESTAURANT (ug/m3)

VAPOR INTRUSION EVALUATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	USEPA Indoor Air Background Level	NYSDOH Indoor Air Guidance Value	VOC Analytical Results (ug/m^3) AA-1	IA-1	SS-1
Supplemental VOCs (cont'd)					
Chlorodibromomethane	- -	- -	<1.7	<1.7 [<1.7]	<1.7
Chlorodifluoromethane	- -	- -	0.78	1.1 [1.1]	1.3
Methylene bromide	- -	- -	<2.8	<2.8 [<2.8]	<2.8
n-Propylbenzene	- -	- -	<2.0	<2.0 [<2.0]	<2.0
trans-1,2-Dichloroethylene	- -	- -	<0.79	<0.79 [<0.79]	<0.79
VOC Tenatively Identified Compounds (TICs)					
1,2,3-Trimethylbenzene	- -	- -	ND	ND [ND]	ND
1-Methylnaphthalene	- -	- -	NA	NA	NA
2,2,4-Trimethylpentane	- -	- -	ND	ND [ND]	ND
2,3-Dimethylheptane	- -	- -	ND	ND [ND]	ND
2,3-Dimethylpentane	- -	- -	ND	ND [ND]	ND
2-Methylnaphthalene	- -	- -	ND	ND [ND]	ND
Butylcyclohexane	- -	- -	ND	ND [ND]	ND
Indane	- -	- -	ND	ND [ND]	ND
Indene	- -	- -	ND	ND [ND]	ND
Isopentane	- -	- -	ND	140 [130]	150
Thiopene	- -	- -	ND	ND [ND]	ND
Totals					
Total BTEX	- -	- -	3.9 J	7.9 J [7.3 J]	8.4 J
Total VOCs	- -	- -	35 J	180 J [170 J]	220 J

Notes:
1. Samples were collected by ARCADIS BBL on February 13, 2007 from the On the Roxx Restaurant at 35 Washington Street in
2. Samples were analyzed for volatile organic compounds (VOCs) by Severn Trent Laboratories, Inc. (STL) of Knoxville, Tennessee using United States Environmental Protection Agency (USEPA) Compendium Method TO-15.
3. Sample designations indicate the following:
   - "SS" = subslab vapor sample;
   - "IA" = indoor air sample; and
   - "AA" = ambient (outdoor) air sample.
4. "USEPA Indoor Air Background Levels" are the 90th percentile of background indoor air values observed by the USEPA in public and commercial office buildings, per USEPA database information referenced in Section 3.2.4 of the "Guidance for Evaulationg Soil Vapor Intrusion in the State of New York" (NYSDOH, October 2006).
5. "NYSDOH Indoor Air Guidance Value" is from the "Guidance for Evaluating Soil Vapor in the State of New York" (NYSDOH, October 2006
6. Concentrations reported in micrograms per cubic meter (ug/m^3).
7. < = Not detected at or above the associated reporting limit.
8. J - Indicates an estimated value.
9. ND - Not Detected.
10. TIC = Tentatively Identified Compound.
11. -- = Comparison value not available.
12. NA = Analysis not performed for this compound (not analyzed).
13. Field duplicate sample results are presented in brackets.
14. Results have been validated by ARCADIS BBL.

ARCADIS BBL

Attachment A

On The Roxx Building Sketch

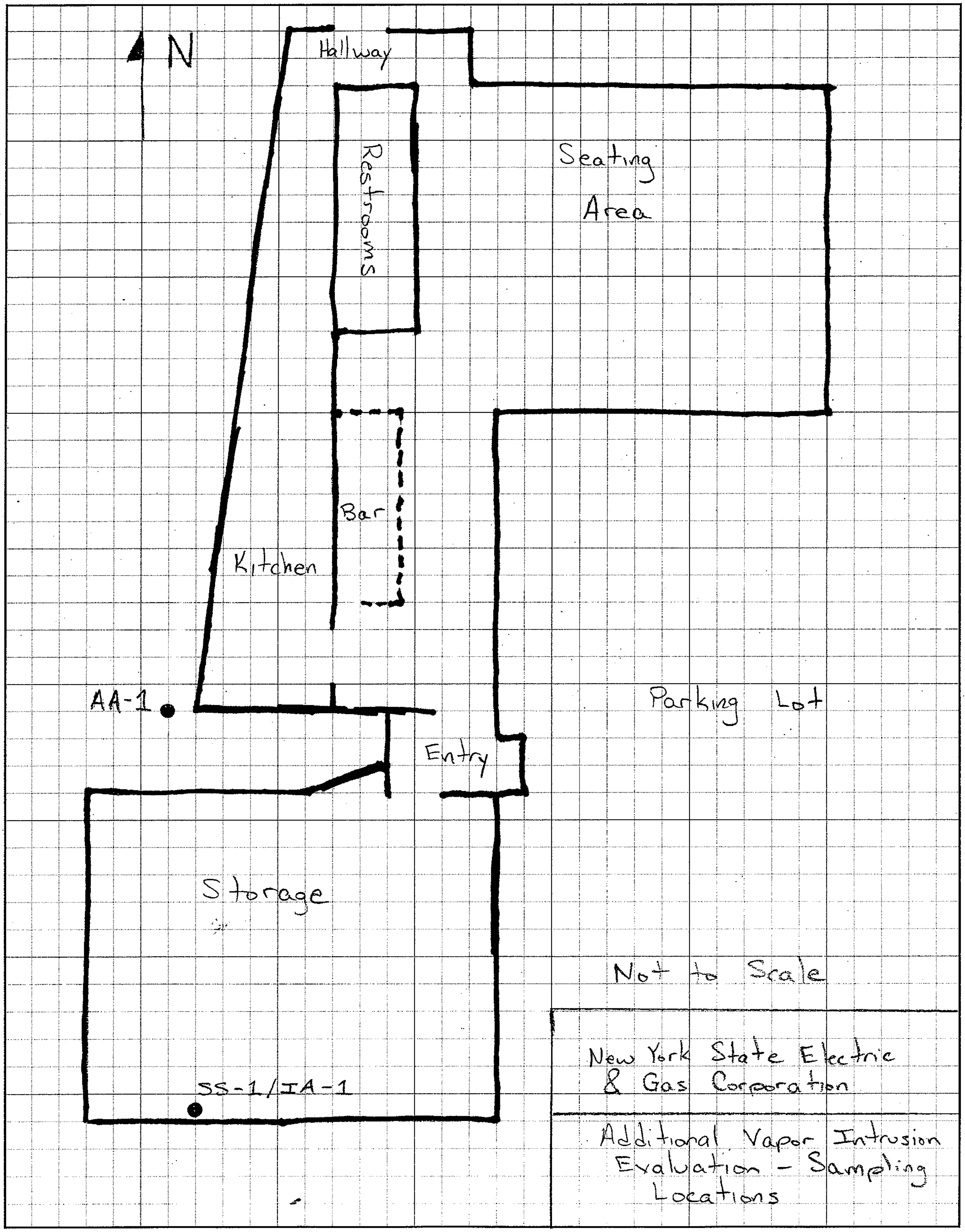
ARCADIS BBL

SUBJECT: Floor Plan Sketch
On the Roxx, 35 Washington St
JOB NO:

BY: CSA DATE: 2/13/07
CHKD: DATE:

PAGE

SHEET 1/1



ARCADIS BBL

Attachment B

NYSDOH Indoor Air Quality Questionnaire and Building Inventory Forms

NEW YORK STATE DEPARTMENT OF HEALTH
INDOOR AIR QUALITY QUESTIONNAIRE AND BUILDING INVENTORY
CENTER FOR ENVIRONMENTAL HEALTH

This form must be completed for each residence involved in indoor air testing.

Preparer's Name Chris Angier Date/Time Prepared 2/12/2007 2:10 - 2:45

Preparer's Affiliation ARCADIS BBL Phone No. (315) 671-9158

Purpose of Investigation Evaluate potential vapor intrusion

1. OCCUPANT:

Interviewed: Y / N

Last Name: Fish First Name: Mary

Address: 35 Washington Street

County: Broome

Home Phone: (607) 722-6453 Office Phone: (607) 722-3606

Number of Occupants/persons at this location 5 Age of Occupants 19 - 37

2. OWNER OR LANDLORD: (Check if same as occupant ___)

Interviewed: Y / N

Last Name: ____ First Name: ____

Address: ____

County: ____

Home Phone: ____ Office Phone: ____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response)

2nd Floor		1st Floor
Residential	School	Commercial/Multi-use
Industrial	Church	Other: ____

If the property is residential, type? (Circle appropriate response)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouses/Condos
Modular	Log Home	Other:________

If multiple units, how many? 3 - 4

If the property is commercial, type?

Business Type(s) Bar & Restaurant

Does it include residences (i.e., multi-use)? Y N   If yes, how many? 3 - 4

Other characteristics:

Number of floors 2   Building age 50 ±

Is the building insulated? Y N   How air tight? Tight / Average / Not Tight

4. AIRFLOW

Use air current tubes or tracer smoke to evaluate airflow patterns and qualitatively describe:

Airflow between floors

Minimal

Airflow near source

Outdoor air infiltration

"Drafty" windows and doors

Infiltration into air ducts

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply)

a. Above grade construction:	wood frame	concrete	stone	brick
b. Basement type:	full	crawlspace	slab	other ________
c. Basement floor:	concrete	dirt	stone	other ________
d. Basement floor:	uncovered	covered	covered with tile in kitchen, carpet in restaurant, uncovered in prep room	
e. Concrete floor:	unsealed	sealed	sealed with ________	
f. Foundation walls:	poured	block	stone	other ________
g. Foundation walls:	unsealed	sealed	sealed with ________	
h. The basement is:	wet	damp	dry	moldy
i. The basement is:	finished	unfinished	partially finished	
j. Sump present?	Y / N			
k. Water in sump?	Y / N / not applicable			

Basement/Lowest level depth below grade: At grade (feet)

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, drains)

Minor cracking observed in prep room

6. HEATING, VENTING and AIR CONDITIONING (Circle all that apply)

Type of heating system(s) used in this building: (circle all that apply – note primary)

Hot air circulation	Heat pump	Hot water baseboard	
Space Heaters	Stream radiation	Radiant floor	
Electric baseboard	Wood stove	Outdoor wood boiler	Other ________

The primary type of fuel used is:

Natural Gas	Fuel Oil	Kerosene
Electric	Propane	Solar
Wood	Coal	

Domestic hot water tank fueled by: Natural Gas

Boiler/furnace located in: Basement | Outdoors | Main Floor | Other________

Air conditioning: Central Air | Window units | Open Windows | None

Are there air distribution ducts present? Y / N

Describe the supply and cold air return ductwork, and its condition where visible, including whether there is a cold air return and the tightness of duct joints. Indicate the locations on the floor plan diagram.

Suppy ducts in drop ceiling, duct joints not observed

7. OCCUPANCY

Is basement/lowest level occupied? Full-time Occasionally Seldom Almost Never

→ Bar / Restaurant

Level	**General Use of Each Floor (e.g., familyroom, bedroom, laundry, workshop, storage)**
~~Basement~~	Slab-on-grade, no basement
1st Floor	Bar and restaurant
2nd Floor	Apartments
3rd Floor	
4th Floor	

8. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

a. Is there an attached garage?	Y / N
b. Does the garage have a separate heating unit?	Y / N / NA
c. Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, atv, car)	Y / N / NA Please specify
d. Has the building ever had a fire?	Y / N When?
e. Is a kerosene or unvented gas space heater present?	Y / N Where?
f. Is there a workshop or hobby/craft area?	Y / N Where & Type?
g. Is there smoking in the building?	Y / N How frequently?
h. Have cleaning products been used recently?	Y / N When & Type? Daily, Clorox, etc.
i. Have cosmetic products been used recently?	Y / N When & Type?

j. Has painting/staining been done in the last 6 months? Y / N Where & When? Portion of floor in prep room

k. Is there new carpet, drapes or other textiles? Y / N Where & When? ______

l. Have air fresheners been used recently? Y / N When & Type? Lysol spray, routinely used

m. Is there a kitchen exhaust fan? Y / N If yes, where vented? Outside

n. Is there a bathroom exhaust fan? Y / N If yes, where vented? Outside

o. Is there a clothes dryer? Y / N If yes, is it vented outside? Y / N

p. Has there been a pesticide application? Y / N When & Type? 1 per month, unknown

Are there odors in the building? Y / N
If yes, please describe: Food odors

Do any of the building occupants use solvents at work? Y / N
(e.g., chemical manufacturing or laboratory, auto mechanic or auto body shop, painting, fuel oil delivery, boiler mechanic, pesticide application, cosmetologist

If yes, what types of solvents are used? ______

If yes, are their clothes washed at work? Y / N

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry-cleaning regularly (weekly) No
Yes, use dry-cleaning infrequently (monthly or less) Unknown
Yes, work at a dry-cleaning service

Is there a radon mitigation system for the building/structure? Y / N Date of Installation: ______
Is the system active or passive? Active/Passive

9. WATER AND SEWAGE

Water Supply: Public Water Drilled Well Driven Well Dug Well Other: ______

Sewage Disposal: Public Sewer Septic Tank Leach Field Dry Well Other: ______

10. RELOCATION INFORMATION (for oil spill residential emergency)

a. Provide reasons why relocation is recommended: ______

b. Residents choose to: remain in home relocate to friends/family relocate to hotel/motel

c. Responsibility for costs associated with reimbursement explained? Y / N

d. Relocation package provided and explained to residents? Y / N

11. FLOOR PLANS → Refer to Attached Sketch

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note.

Basement:

First Floor:

12. OUTDOOR PLOT → See Attached Sketch

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (industries, gas stations, repair shops, landfills, etc.), outdoor air sampling location(s) and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the locations of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.

13. PRODUCT INVENTORY FORM → Refer to Attached List

Make & Model of field instrument used: ______________________________

List specific products found in the residence that have the potential to affect indoor air quality.

Location	Product Description	Size (units)	Condition*	Chemical Ingredients	Field Instrument Reading (units)	Photo ** Y / N

* Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**
** Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

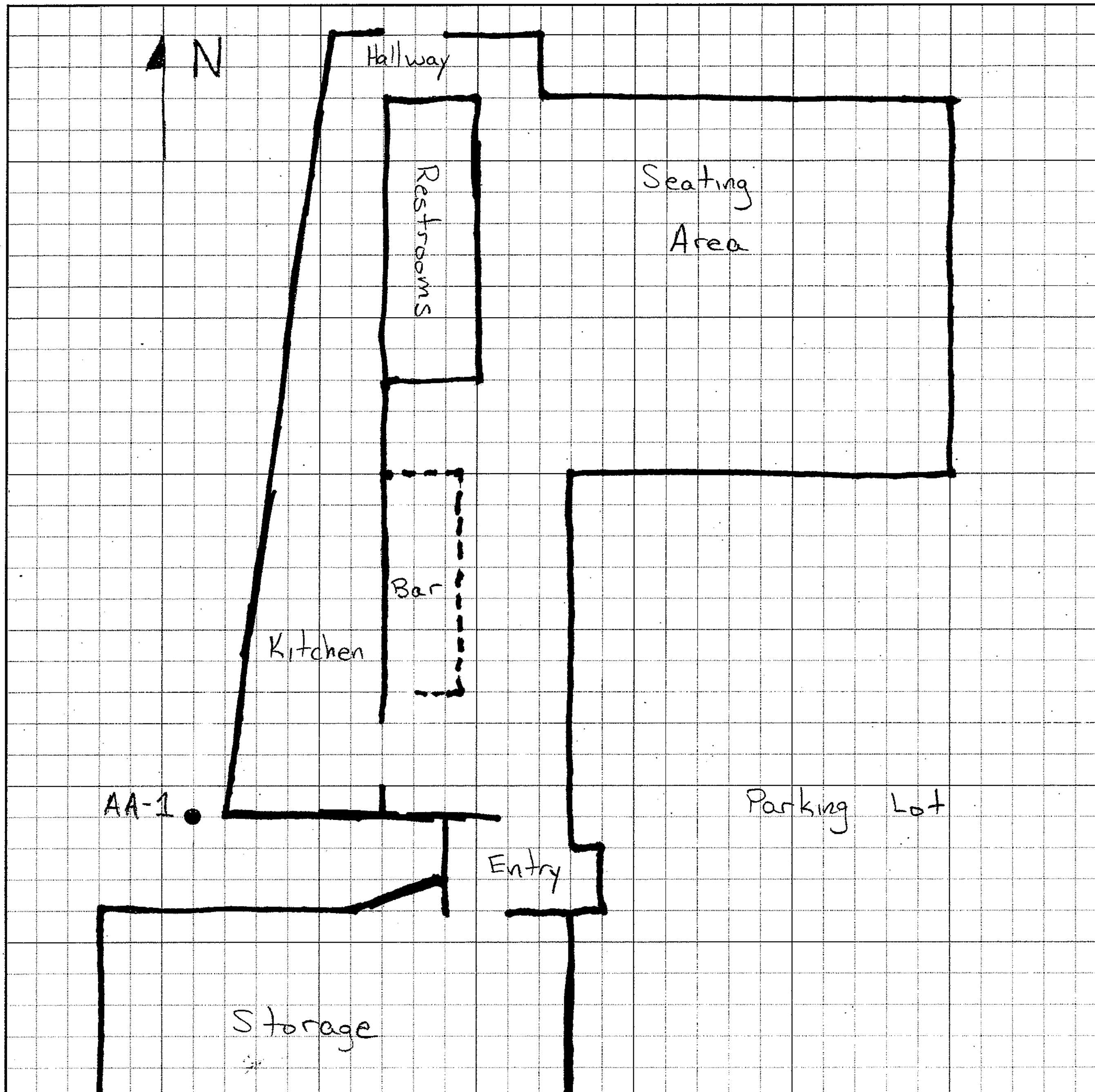
ARCADIS BBL

SUBJECT: Floor Plan Sketch
On the Roxx, 35 Washington St
JOB NO:

BY: CSA DATE: 2/13/07
CHKD: DATE:

PAGE

SHEET 1/1



Not to Scale

New York State Electric & Gas Corporation

Additional Vapor Intrusion Evaluation - Sampling Locations

AGM Form 30
12-01

Product Inventory Form: On The Roxx, Restaurant & Bar, 35 Washington Street, Binghamton, New York

Make & Model of Field Instrument Used: RAE Systems – ppbRAE
List specific products found in the residence that have the potential to affect indoor air quality

Location	Product Description	Size (units)	Condition*	Manufacturer	Field Instrument Reading (ppb)	Product Ingredients	CAS #	Photo** (Y/N)
Prep Room	Lundmark Carpet and Rug Shampoo	1 bottle	UO	Lundmarkwax.com	70			N
Prep Room	Clorox Disinfectant Spray	3 cans	UO	Clorox	75	Octyl decyl dimethyl ammonium chloride Dioctyl dimethyl ammonium chloride Didecyl dimethyl ammonium chloride Alkyl dimethyl benzyl ammonium chlorides Ethanol		N
Prep Room	Clorox Bathroom Cleaner	1 bottle	U	Clorox	75	n-Alkyl dimethylbenzene ammonium chloride n-Alkyl dimethyl ethylbenzene ammonium chloride		N
Prep Room	Oxy Carpet Cleaner	1 bottle	U	Family Dollar, Charlotte, NC	120			N
Prep Room	TAT ant killer	1 can	UO		40		8003-34-7 113-48-4 52645-53-1	N
Prep Room	Stainless Steel Cleaner	1 can	U	Magic American Products Cleveland, OH (212) 464-2353	20			N
Prep Room	Simoniz Vinyl Cleaner	1 bottle	U	SAS Group, Tarrytown, NY	40			N
Prep Room	Ultra Butane Fuel	1 can	U		80			N
Prep Room	Carpet Extraction Cleaner	1 bottle	U	www.proforcecleaners.com	15			N
Prep Room	Clorox Disinfecting Wipes	1 package	UO	Clorox	15	n-Alkyl Benzyl Ammonium Chloride		N
Prep Room	Sanitizing Solution	1 box of tablets	U	Steramine	15			N

Notes:
1. * - Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D).**
2. ** - Photographs of the **front and back** of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

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Attachment C

Photographs of Sampling In Progress

Photo 1
Sampling Location SS-1
Slab Penetration Sealed with Beeswax

Photo 2
Sampling Location SS-1
Helium Trap Setup

Photo 3
Sampling Location SS-1
Helium Added to the Trap

Photo 4
Sampling Locations SS-1 and IA-1
Sample Collection

Photo 5
Sampling Location IA-1
"T" Connection Used to Collect a Blind Duplicate Sample

Photo 6
Sampling Location AA-1
Ambient Air Sample West of the "On The Roxx" Building

Photo 8
Sampling Location SS-1
Post-Sampling – Area Cleaned and Restored

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Attachment D

Field Sampling Logs

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Infrastructure, environment, facilities

Indoor/Ambient Air Sample Collection Log

Sample ID: AA-1

Client:	NYSEG	**Date/Day:**	2/12/07 - 2/13/07
Project:	Washington St	**Sample Intake Height:**	4.5'
Location:	Binghamton NY	**Subcontractor:**	–
Project #:	13079	**Miscellaneous Equipment:**	–
Samplers:	SPS		
Coordinates:		**Time Start:**	2/12/07 1500
Outdoor/Indoor:	Outdoor	**Time Stop:**	2/13/07 1500

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (F or C)	Relative Humidity (%)	Air Speed (ft/~~min~~) mph	Barometric Pressure	PID (ppm or ppb)
2/12 1500	-29	25 °F	64	12	30.15	6
2/13 1340	-6	17 °F	34	6	30.23	3
1500	-4	21 °F	22	10	30.21	5

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 02644

Flow Controller ID: K292

General Observations/Notes:

VACUUM ON CANISTER REPORTED BY LAB: 0.44

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Infrastructure, environment, facilities

Indoor/Ambient Air Sample Collection Log

Sample ID: IA-1

Client:	NYSEG	**Date/Day:**	2/12/07 - 2/13/07
Project:	Washington Street	**Sample Intake Height:**	3.8'
Location:	Binghamton, NY	**Subcontractor:**	—
Project #:	13079	**Miscellaneous Equipment:**	—
Samplers:	SPS		
Coordinates:		**Time Start:**	1510 2/12/07
Outdoor/Indoor:	Indoor	**Time Stop:**	1510 2/13/07

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (F or C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure	PID (ppm or ppb)
2/12 1510	-30	67.5 °F				10
2/13 1345	- 5.5	67.5 °F				54
1510	- 4.5	67.5 °F				

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 6613

Flow Controller ID: K167

General Observations/Notes:

VACUUM ON CANISTER REPORTED BY LAB: 0.42

ARCADIS BBL
Infrastructure, environment, facilities

Indoor/Ambient Air Sample Collection Log

Sample ID: DUP-1

Client:	NYSEG	**Date/Day:**	2/12/07 - 2/13/07
Project:	Washington St	**Sample Intake Height:**	3.8'
Location:	Binghamton, NY	**Subcontractor:**	-
Project #:	13079	**Miscellaneous Equipment:**	-
Samplers:	SPS		
Coordinates:		**Time Start:**	1510 2/12/07
Outdoor/Indoor:	Indoor	**Time Stop:**	1510 2/13/07

Instrument Readings:

Time	Canister Pressure (inches Hg)	Temperature (F or C)	Relative Humidity (%)	Air Speed (ft/min)	Barometric Pressure	PID (ppm or ppb)
2/12 1510	-30	67.5 °F				10
2/13 1345	- 5.8	67.5 °F				54
1510	- 4.6	67.5 °F				

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 6645

Flow Controller ID: K291

General Observations/Notes:

PARENT LOCATION: IA-1

VACUUM ON CANISTER REPORTED BY LAB: 0.47

ARCADIS BBL
Infrastructure, environment, facilities

Sub Slab Sample Collection Log

Sample ID: SS-1

Client:	NYSEG	**Date/Day:**	2/12/07 - 2/13/07
Project:	Washington Street	**Boring Equipment:**	Hilti Hammer Drill
Location:	Binghamton, NY	**Sealant:**	Beeswax
Project #:	B0013079	**Tubing Information:**	1/4" ID TEFLON LINED
Time of Collection:	Start: 1503 2/12/07 Finish: 1503 2/13/07	**Miscellaneous Equipment:**	—
Samplers:	SPS		
Sample Point Location:	Kitchen Prep Area	**Moisture Content of Sampling Zone (circle one):**	Dry / Moist
Sampling Depth:	~2" below slab	**Approximate Purge Volume & Method:**	120 cc w/ SYRINGE
Probe (circle one):	Permanent / Temporary	**Subcontractor:**	—

Canister Pressure (inches Hg):		
Reported By Laboratory	**Measured Prior to Sample Collection**	**Measured Following Sample Collection**
0.45	-29.5	-6.0

Tracer Gas Concentration (if applicable):		
Measured in Purge Effluent	**Measured in 'Concentrated' Area Prior to Sample Collection**	**Measured in 'Concentrated' Area Following Sample Collection**
0	125 ppm	0 ppm

SUMMA Canister Information

Size (circle one): 1 L 6 L

Canister ID: 6137

Flow Controller ID: K293

General Observations/Notes:

CANISTER PRESSURE @ 1345: -7.0

Approximating One-Well Volume (for purging):
When using a 5/8-inch drill bit, each vertical inch of open space will have a volume of approximately 5 mL (e.g., a 2-inch sampling interval has a volume of approximately 10 mL). Each foot of ¼-inch tubing will have a volume of approximately 10 mL.

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Attachment E

Analytical Data Validation Report

DATA USABILITY SUMMARY REPORT

NYSEG
WASHINGTON STREET SVI

BINGHAMTON, NEW YORK

SDG #H7B140182

AIR VOLATILE ANALYSES

Analyses performed by:

Severn Trent Laboratories
Knoxville, Tennessee

Review performed by:

ARCADIS BBL
Infrastructure, environment, facilities

Syracuse, New York
Report #6730R

Summary

The following is an assessment of the data package for Sample Delivery Group (SDG) #H7B140182 for sampling from the NYSEG Washington Street Site . Included with this assessment are the corrected sample results, the sample compliance report and the chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Date	Analysis				
				VOC	SVOC	PCB	MET	MISC
AA-1	JPE0F1AD	Air	2/13/2007	X				
IA-1	JPE0J1AD	Air	2/13/2007	X				
SS-1	JPE0K1AD	Air	2/13/2007	X				
DUP-1	JPE0N1AD	Air	2/13/2007	X				

Note:

1. Sample location DUP-1 is the field duplicate of parent sample location IA-1.

AIR VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

Introduction

Analyses were performed according to (United Stated Environmental Protection Agency) USEPA Method TO-15. Data were reviewed in accordance with USEPA National Functional Guidelines of October 1999.

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

J The compound was positively identified; however, the associated numerical value is an estimated concentration only.

B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.

JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

E The compound was quantitated above the calibration range.

D Concentration is based on a diluted sample analysis.

UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.

R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
Method TO-15	Air	14 days from collection to analysis	Ambient temperature

All samples were analyzed within the specified holding times.

2. Blank Contamination

Quality assurance blanks (i.e., method, trip, and rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure contamination of samples during shipment. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the method detection limit (MDL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

No compounds were detected in the associated blanks.

3. Mass Spectrometer Tuning

Mass spectrometer performance was acceptable.

System performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method specifies percent relative standard deviation (%RSD) and relative response factor (RRF) limits for select compounds only. A technical review of the data applies limits to all compounds with no exceptions.

All target compounds associated with the initial calibration standards must exhibit a %RSD less than the control limit (30%) or a correlation coefficient greater than 0.99 and an RRF value greater than control limit (0.05).

4.2 Continuing Calibration

All target compounds associated with the continuing calibration standard must exhibit a percent difference (%D) less then the control limit (30%) and RRF value greater than control limit (0.05).

All calibration criteria were within the control limits.

5. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within control limits.

6. Internal Standard Performance

Internal standard performance criteria insure that the GC/MS sensitivity and response are stable during every sample analysis. The criteria requires the internal standard compounds associated with the VOC exhibit area counts that are not greater than 40% or less than 40% of the area counts of the associated continuing calibration standard.

All internal standard responses were within control limits.

7. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The compounds associated with the LCS analysis must exhibit a percent recovery within the laboratory-established acceptance limits.

All compounds associated with the LCS analysis exhibited recoveries within the control limits.

8. Laboratory Duplicates (Laboratory Replicates)

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 20% for air matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of one times the RL is applied for air matrices.

Laboratory duplicates were not performed as part of this SDG.

9. Field Duplicate Analysis

Field duplicate analysis is used to assess the precision and accuracy of the field sampling procedures and analytical method. A control limit of 20% for air matrices, 50% for water matrices and 100% for soil matrices is applied to the RPD between the parent sample and the field duplicate.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
IA-1/DUP-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.64 J	0.6 J	AC
	1,2,4-Trimethylbenzene	0.51 J	0.5 J	AC
	1,3-Butadiene	0.87 J	0.9	AC
	1,3-Dichlorobenzene	0.44 J	ND(1.2)	AC
	1,4-Dichlorobenzene	0.45 J	0.37 J	AC
	Benzene	2.2	2.1	AC
	Carbon disulfide	ND(1.6)	0.098 J	AC
	Carbon tetrachloride	0.55 J	0.49 J	AC
	Chlorodifluoromethane	1.1	1.1	AC
	Chloroform	2.6	2.7	AC
	Chloromethane	1.8	1.8	AC
	Dichlorodifluoromethane	3.6	3.4	AC
	Ethylbenzene	0.53 J	0.48 J	AC
	Isopentane	140 J	130 J	AC
	Methylene chloride	0.61 J	0.6 J	AC
	m-Xylene & p-Xylene	1.5	1.4	AC
	Naphthalene	0.32 J	0.36 J	AC
	n-Butane	5.3	5.1	3.8 %
	n-Dodecane	ND(7.0)	0.4 J	AC
	n-Heptane	1.6 J	1.3 J	AC
	n-Hexane	0.79 J	0.75 J	AC
	n-Octane	0.69 J	0.61 J	AC
	Nonane	0.37 J	0.32 J	AC
	n-Undecane	0.63 J	0.69 J	AC
	o-Xylene	0.51 J	0.5 J	AC
	Pentane	6.6	7.0	AC
	Styrene	0.65 J	0.36 J	AC
	Tetrachloroethene	0.54 J	0.53 J	AC
	Toluene	3.2	2.8	AC
	Trichlorofluoromethane	2.7	2.5	AC

ND = Not detected.
AC = The field duplicate RPD is acceptable when the RPD between parent sample and field duplicate sample is less than one times the RL and where the parent sample and/or duplicate concentration is less than five times the RL.

The calculated RPDs between the parent sample and field duplicate were acceptable.

10. Compound Identification

Compounds are identified on the GC/MS by using the analytes relative retention time and ion spectra.

All identified compounds met the specified criteria.

11. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

CORRECTED SAMPLE ANALYSIS DATA SHEETS

STL Buffalo

Client Sample ID: AA-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 001 Work Order # JPE0F1AD Matrix.........: AIR

Date Sampled...: 2/13/07 Date Received..: 2/14/07
Prep Date.........: 2/15/07 Analysis Date.. 2/15/07
Prep Batch #.....: 7050355
Dilution Factor.: 1 Method............. TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)		REPORTING LIMIT (ug/m3)
Dichlorodifluoromethane	**0.49**	**0.20**	**2.4**		**0.99**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.20	ND		1.4
Chloromethane	**0.58**	**0.50**	**1.2**		**1.0**
Vinyl chloride	ND	0.20	ND		0.51
n-Butane	**1.4**	**0.40**	**3.4**		**0.95**
Bromomethane	ND	0.20	ND		0.78
Chloroethane	ND	0.20	ND		0.53
Trichlorofluoromethane	**0.21**	**0.20**	**1.2**		**1.1**
Pentane	**0.47** J	**1.0**	**1.4**	J	**3.0**
1,1-Dichloroethene	ND	0.20	ND		0.79
1,1,2-Trichloro-1,2,2-trifluoroethane	**0.079** J	**0.20**	**0.60**	J	**1.5**
Methylene chloride	**0.14** J	**0.50**	**0.48**	J	**1.7**
n-Hexane	**5.2**	**0.50**	**18**		**1.8**
1,1-Dichloroethane	ND	0.20	ND		0.81
cis-1,2-Dichloroethene	ND	0.20	ND		0.79
Chloroform	ND	0.20	ND		0.98
1,1,1-Trichloroethane	ND	0.20	ND		1.1
Carbon tetrachloride	**0.085** J	**0.20**	**0.54**	J	**1.3**
Benzene	**0.29**	**0.20**	**0.93**		**0.64**
1,2-Dichloroethane	ND	0.20	ND		0.81
n-Heptane	**0.15** J	**0.50**	**0.62**	J	**2.0**
Trichloroethene	ND	0.20	ND		1.1
1,2-Dichloropropane	ND	0.20	ND		0.92
cis-1,3-Dichloropropene	ND	0.20	ND		0.91
Toluene	**0.38**	**0.20**	**1.4**		**0.75**
n-Octane	ND	0.40	ND		1.9
trans-1,3-Dichloropropene	ND	0.20	ND		0.91
1,1,2-Trichloroethane	ND	0.20	ND		1.1
Tetrachloroethene	ND	0.20	ND		1.4
1,2-Dibromoethane (EDB)	ND	0.20	ND		1.5
Chlorobenzene	ND	0.20	ND		0.92
Ethylbenzene	**0.069** J	**0.20**	**0.30**	J	**0.87**
m-Xylene & p-Xylene	**0.21**	**0.20**	**0.92**		**0.87**
Nonane	ND	0.50	ND		2.6
o-Xylene	**0.080** J	**0.20**	**0.35**	J	**0.87**
Styrene	ND	0.20	ND		0.85
Cumene	ND	0.40	ND		2.0
1,1,2,2-Tetrachloroethane	ND	0.20	ND		1.4
1,3,5-Trimethylbenzene	ND	0.20	ND		0.98

STL Buffalo

Client Sample ID: AA-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 001 **Work Order #** JPE0F1AD **Matrix.........:** AIR

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
n-Decane	ND	1.0	ND	5.8
1,2,4-Trimethylbenzene	**0.048** J	**0.20**	**0.23** J	**0.98**
1,3-Dichlorobenzene	ND	0.20	ND	1.2
1,4-Dichlorobenzene	ND	0.20	ND	1.2
1,2-Dichlorobenzene	ND	0.20	ND	1.2
n-Undecane	ND	1.0	ND	6.4
n-Dodecane	ND	1.0	ND	7.0
1,2,4-Trichlorobenzene	ND	1.0	ND	7.4
Hexachlorobutadiene	ND	1.0	ND	11
Naphthalene	ND	0.50	ND	2.6
Benzyl chloride	ND	0.40	ND	2.1
n-Propylbenzene	ND	0.40	ND	2.0
Methyl tert-butyl ether	ND	1.0	ND	3.6
alpha-Methylstyrene	ND	0.40	ND	1.9
Chlorodifluoromethane	**0.22**	**0.20**	**0.78**	**0.71**
Bromodichloromethane	ND	0.20	ND	1.3
Bromoform	ND	0.20	ND	2.1
1,3-Butadiene	ND	0.40	ND	0.88
Carbon disulfide	ND	0.50	ND	1.6
Dibromochloromethane	ND	0.20	ND	1.7
3-Chloropropene	ND	0.20	ND	0.63
Cyclohexane	ND	0.50	ND	1.7
Dibromomethane	ND	0.40	ND	2.8
trans-1,2-Dichloroethene	ND	0.20	ND	0.79

TENTATIVELY INDENTIFIED COMPOUND	RESULT	UNITS
butylcyclohexane	ND	ppb(v/v)
indane	ND	ppb(v/v)
indene	ND	ppb(v/v)
isopentane	ND	ppb(v/v)
thiophene	ND	ppb(v/v)
1-methylnaphthalene	ND	ppb(v/v)
1,2,3-trimethylbenzene	ND	ppb(v/v)
2-methylnaphthalene	ND	ppb(v/v)
2,2,4-trimethylpentane	ND	ppb(v/v)
2,3-dimethylheptane	ND	ppb(v/v)
2,3-dimethylpentane	ND	ppb(v/v)

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
1,2-Dichloroethane-d4	99	70 - 130

STL Buffalo

Client Sample ID: AA-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 001 **Work Order #** JPE0F1AD **Matrix........:** AIR

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
Toluene-d8	104	70 - 130
4-Bromofluorobenzene	99	70 - 130

Qualifiers

J Estimated result. Result is less than RL.

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

STL Buffalo

Client Sample ID: IA-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 002 **Work Order #** JPE0J1AD **Matrix........:** AIR

Date Sampled...: 2/13/07 **Date Received..:** 2/14/07
Prep Date.........: 2/15/07 **Analysis Date..** 2/15/07
Prep Batch #.....: 7050355
Dilution Factor.: 1 **Method.............** TO-15

PARAMETER	RESULTS (ppb(v/v))		REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)		REPORTING LIMIT (ug/m3)
Dichlorodifluoromethane	**0.72**		**0.20**	**3.6**		**0.99**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND		0.20	ND		1.4
Chloromethane	**0.86**		**0.50**	**1.8**		**1.0**
Vinyl chloride	ND		0.20	ND		0.51
n-Butane	**2.2**		**0.40**	**5.3**		**0.95**
Bromomethane	ND		0.20	ND		0.78
Chloroethane	ND		0.20	ND		0.53
Trichlorofluoromethane	**0.48**		**0.20**	**2.7**		**1.1**
Pentane	**2.2**		**1.0**	**6.6**		**3.0**
1,1-Dichloroethene	ND		0.20	ND		0.79
1,1,2-Trichloro-1,2,2-trifluoroethane	**0.083**	J	**0.20**	**0.64**	**J**	**1.5**
Methylene chloride	**0.18**	J	**0.50**	**0.61**	**J**	**1.7**
n-Hexane	**0.22**	J	**0.50**	**0.79**	**J**	**1.8**
1,1-Dichloroethane	ND		0.20	ND		0.81
cis-1,2-Dichloroethene	ND		0.20	ND		0.79
Chloroform	**0.54**		**0.20**	**2.6**		**0.98**
1,1,1-Trichloroethane	ND		0.20	ND		1.1
Carbon tetrachloride	**0.087**	J	**0.20**	**0.55**	**J**	**1.3**
Benzene	**0.69**		**0.20**	**2.2**		**0.64**
1,2-Dichloroethane	ND		0.20	ND		0.81
n-Heptane	**0.38**	J	**0.50**	**1.6**	**J**	**2.0**
Trichloroethene	ND		0.20	ND		1.1
1,2-Dichloropropane	ND		0.20	ND		0.92
cis-1,3-Dichloropropene	ND		0.20	ND		0.91
Toluene	**0.84**		**0.20**	**3.2**		**0.75**
n-Octane	**0.15**	J	**0.40**	**0.69**	**J**	**1.9**
trans-1,3-Dichloropropene	ND		0.20	ND		0.91
1,1,2-Trichloroethane	ND		0.20	ND		1.1
Tetrachloroethene	**0.080**	J	**0.20**	**0.54**	**J**	**1.4**
1,2-Dibromoethane (EDB)	ND		0.20	ND		1.5
Chlorobenzene	ND		0.20	ND		0.92
Ethylbenzene	**0.12**	J	**0.20**	**0.53**	**J**	**0.87**
m-Xylene & p-Xylene	**0.34**		**0.20**	**1.5**		**0.87**
Nonane	**0.071**	J	**0.50**	**0.37**	**J**	**2.6**
o-Xylene	**0.12**	J	**0.20**	**0.51**	**J**	**0.87**
Styrene	**0.15**	J	**0.20**	**0.65**	**J**	**0.85**
Cumene	ND		0.40	ND		2.0
1,1,2,2-Tetrachloroethane	ND		0.20	ND		1.4
1,3,5-Trimethylbenzene	ND		0.20	ND		0.98

STL Buffalo

Client Sample ID: IA-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 002 **Work Order #** JPE0J1AD **Matrix.........:** AIR

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)		REPORTING LIMIT (ug/m3)
n-Decane	ND	1.0	ND		5.8
1,2,4-Trimethylbenzene	**0.10** J	**0.20**	**0.51**	**J**	**0.98**
1,3-Dichlorobenzene	**0.073** J	**0.20**	**0.44**	**J**	**1.2**
1,4-Dichlorobenzene	**0.075** J	**0.20**	**0.45**	**J**	**1.2**
1,2-Dichlorobenzene	ND	0.20	ND		1.2
n-Undecane	**0.099** J	**1.0**	**0.63**	**J**	**6.4**
n-Dodecane	ND	1.0	ND		7.0
1,2,4-Trichlorobenzene	ND	1.0	ND		7.4
Hexachlorobutadiene	ND	1.0	ND		11
Naphthalene	**0.060** J	**0.50**	**0.32**	**J**	**2.6**
Benzyl chloride	ND	0.40	ND		2.1
n-Propylbenzene	ND	0.40	ND		2.0
Methyl tert-butyl ether	ND	1.0	ND		3.6
alpha-Methylstyrene	ND	0.40	ND		1.9
Chlorodifluoromethane	**0.31**	**0.20**	**1.1**		**0.71**
Bromodichloromethane	ND	0.20	ND		1.3
Bromoform	ND	0.20	ND		2.1
1,3-Butadiene	**0.39** J	**0.40**	**0.87**	**J**	**0.88**
Carbon disulfide	ND	0.50	ND		1.6
Dibromochloromethane	ND	0.20	ND		1.7
3-Chloropropene	ND	0.20	ND		0.63
Cyclohexane	ND	0.50	ND		1.7
Dibromomethane	ND	0.40	ND		2.8
trans-1,2-Dichloroethene	ND	0.20	ND		0.79

TENTATIVELY INDENTIFIED COMPOUND	RESULT	UNITS
butylcyclohexane	ND	ppb(v/v)
indane	ND	ppb(v/v)
indene	ND	ppb(v/v)
isopentane	46 J	ppb(v/v)
thiophene	ND	ppb(v/v)
1-methylnaphthalene	ND	ppb(v/v)
1,2,3-trimethylbenzene	ND	ppb(v/v)
2-methylnaphthalene	ND	ppb(v/v)
2,2,4-trimethylpentane	ND	ppb(v/v)
2,3-dimethylheptane	ND	ppb(v/v)
2,3-dimethylpentane	ND	ppb(v/v)

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
1,2-Dichloroethane-d4	102	70 - 130

STL Buffalo

Client Sample ID: IA-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 002 **Work Order #** JPE0J1AD **Matrix.........:** AIR

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
Toluene-d8	104	70 - 130
4-Bromofluorobenzene	100	70 - 130

Qualifiers

J Estimated result. Result is less than RL.

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

STL Buffalo

Client Sample ID: SS-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 003 **Work Order #** JPE0K1AD **Matrix........:** AIR

Date Sampled...: 2/13/07 **Date Received..:** 2/14/07
Prep Date.........: 2/15/07 **Analysis Date..** 2/15/07
Prep Batch #.....: 7050355
Dilution Factor.: 1 **Method.............** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)		REPORTING LIMIT (ug/m3)
Dichlorodifluoromethane	**0.73**	**0.20**	3.6		**0.99**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.20	ND		1.4
Chloromethane	**0.88**	**0.50**	**1.8**		**1.0**
Vinyl chloride	ND	0.20	ND		0.51
n-Butane	**2.4**	**0.40**	5.7		**0.95**
Bromomethane	ND	0.20	ND		0.78
Chloroethane	ND	0.20	ND		0.53
Trichlorofluoromethane	**0.47**	**0.20**	2.7		**1.1**
Pentane	**2.9**	**1.0**	**8.5**		**3.0**
1,1-Dichloroethene	ND	0.20	ND		0.79
1,1,2-Trichloro-1,2,2-trifluoroethane	**0.091** J	**0.20**	**0.70**	J	**1.5**
Methylene chloride	**0.23** J	**0.50**	**0.80**	J	**1.7**
n-Hexane	**8.3**	**0.50**	**29**		**1.8**
1,1-Dichloroethane	ND	0.20	ND		0.81
cis-1,2-Dichloroethene	ND	0.20	ND		0.79
Chloroform	**0.53**	**0.20**	**2.6**		**0.98**
1,1,1-Trichloroethane	ND	0.20	ND		1.1
Carbon tetrachloride	**0.081** J	**0.20**	**0.51**	J	**1.3**
Benzene	**0.61**	**0.20**	**1.9**		**0.64**
1,2-Dichloroethane	ND	0.20	ND		0.81
n-Heptane	**0.45** J	**0.50**	**1.8**	J	**2.0**
Trichloroethene	ND	0.20	ND		1.1
1,2-Dichloropropane	ND	0.20	ND		0.92
cis-1,3-Dichloropropene	ND	0.20	ND		0.91
Toluene	**1.0**	**0.20**	**3.8**		**0.75**
n-Octane	**0.17** J	**0.40**	**0.79**	J	**1.9**
trans-1,3-Dichloropropene	ND	0.20	ND		0.91
1,1,2-Trichloroethane	ND	0.20	ND		1.1
Tetrachloroethene	**0.081** J	**0.20**	**0.55**	J	**1.4**
1,2-Dibromoethane (EDB)	ND	0.20	ND		1.5
Chlorobenzene	ND	0.20	ND		0.92
Ethylbenzene	**0.13** J	**0.20**	**0.57**	J	**0.87**
m-Xylene & p-Xylene	**0.38**	**0.20**	**1.6**		**0.87**
Nonane	**0.097** J	**0.50**	**0.51**	J	**2.6**
o-Xylene	**0.12** J	**0.20**	**0.52**	J	**0.87**
Styrene	**0.15** J	**0.20**	**0.64**	J	**0.85**
Cumene	ND	0.40	ND		2.0
1,1,2,2-Tetrachloroethane	ND	0.20	ND		1.4
1,3,5-Trimethylbenzene	ND	0.20	ND		0.98

STL Buffalo

Client Sample ID: **SS-1**

GC/MS Volatiles

Lot-Sample # H7B140182 - 003 **Work Order #** JPE0K1AD **Matrix........:** AIR

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
n-Decane	ND	1.0	ND	5.8
1,2,4-Trimethylbenzene	**0.12** J	**0.20**	**0.57 J**	**0.98**
1,3-Dichlorobenzene	ND	0.20	ND	1.2
1,4-Dichlorobenzene	**0.075** J	**0.20**	**0.45 J**	**1.2**
1,2-Dichlorobenzene	ND	0.20	ND	1.2
n-Undecane	**0.19** J	**1.0**	**1.2 J**	**6.4**
n-Dodecane	**0.098** J	**1.0**	**0.68 J**	**7.0**
1,2,4-Trichlorobenzene	ND	1.0	ND	7.4
Hexachlorobutadiene	ND	1.0	ND	11
Naphthalene	**0.075** J	**0.50**	**0.39 J**	**2.6**
Benzyl chloride	ND	0.40	ND	2.1
n-Propylbenzene	ND	0.40	ND	2.0
Methyl tert-butyl ether	ND	1.0	ND	3.6
alpha-Methylstyrene	ND	0.40	ND	1.9
Chlorodifluoromethane	**0.36**	**0.20**	**1.3**	**0.71**
Bromodichloromethane	ND	0.20	ND	1.3
Bromoform	ND	0.20	ND	2.1
1,3-Butadiene	**0.35** J	**0.40**	**0.78 J**	**0.88**
Carbon disulfide	**0.037** J	**0.50**	**0.11 J**	**1.6**
Dibromochloromethane	ND	0.20	ND	1.7
3-Chloropropene	ND	0.20	ND	0.63
Cyclohexane	**0.12** J	**0.50**	**0.42 J**	**1.7**
Dibromomethane	ND	0.40	ND	2.8
trans-1,2-Dichloroethene	ND	0.20	ND	0.79

TENTATIVELY INDENTIFIED COMPOUND	RESULT	UNITS
butylcyclohexane	ND	ppb(v/v)
indane	ND	ppb(v/v)
indene	ND	ppb(v/v)
isopentane	50 J	ppb(v/v)
thiophene	ND	ppb(v/v)
1-methylnaphthalene	ND	ppb(v/v)
1,2,3-trimethylbenzene	ND	ppb(v/v)
2-methylnaphthalene	ND	ppb(v/v)
2,2,4-trimethylpentane	ND	ppb(v/v)
2,3-dimethylheptane	ND	ppb(v/v)
2,3-dimethylpentane	ND	ppb(v/v)

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
1,2-Dichloroethane-d4	100	70 - 130

STL Buffalo

Client Sample ID: SS-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 003 **Work Order #** JPE0K1AD **Matrix.........:** AIR

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
Toluene-d8	103	70 - 130
4-Bromofluorobenzene	100	70 - 130

Qualifiers

J Estimated result. Result is less than RL.

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

STL Buffalo

Client Sample ID: DUP-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 004 **Work Order #** JPE0N1AD **Matrix........:** AIR

Date Sampled...: 2/13/07 **Date Received..:** 2/14/07
Prep Date.........: 2/15/07 **Analysis Date..** 2/15/07
Prep Batch #.....: 7050355
Dilution Factor.: 1 **Method.............** TO-15

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)	REPORTING LIMIT (ug/m3)
Dichlorodifluoromethane	**0.69**	**0.20**	**3.4**	**0.99**
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ND	0.20	ND	1.4
Chloromethane	**0.88**	**0.50**	**1.8**	**1.0**
Vinyl chloride	ND	0.20	ND	0.51
n-Butane	**2.2**	**0.40**	**5.1**	**0.95**
Bromomethane	ND	0.20	ND	0.78
Chloroethane	ND	0.20	ND	0.53
Trichlorofluoromethane	**0.45**	**0.20**	**2.5**	**1.1**
Pentane	**2.4**	**1.0**	**7.0**	**3.0**
1,1-Dichloroethene	ND	0.20	ND	0.79
1,1,2-Trichloro-1,2,2-trifluoroethane	**0.079** J	**0.20**	**0.60 J**	**1.5**
Methylene chloride	**0.17** J	**0.50**	**0.60 J**	**1.7**
n-Hexane	**0.21** J	**0.50**	**0.75 J**	**1.8**
1,1-Dichloroethane	ND	0.20	ND	0.81
cis-1,2-Dichloroethene	ND	0.20	ND	0.79
Chloroform	**0.55**	**0.20**	**2.7**	**0.98**
1,1,1-Trichloroethane	ND	0.20	ND	1.1
Carbon tetrachloride	**0.078** J	**0.20**	**0.49 J**	**1.3**
Benzene	**0.65**	**0.20**	**2.1**	**0.64**
1,2-Dichloroethane	ND	0.20	ND	0.81
n-Heptane	**0.31** J	**0.50**	**1.3 J**	**2.0**
Trichloroethene	ND	0.20	ND	1.1
1,2-Dichloropropane	ND	0.20	ND	0.92
cis-1,3-Dichloropropene	ND	0.20	ND	0.91
Toluene	**0.75**	**0.20**	**2.8**	**0.75**
n-Octane	**0.13** J	**0.40**	**0.61 J**	**1.9**
trans-1,3-Dichloropropene	ND	0.20	ND	0.91
1,1,2-Trichloroethane	ND	0.20	ND	1.1
Tetrachloroethene	**0.078** J	**0.20**	**0.53 J**	**1.4**
1,2-Dibromoethane (EDB)	ND	0.20	ND	1.5
Chlorobenzene	ND	0.20	ND	0.92
Ethylbenzene	**0.11** J	**0.20**	**0.48 J**	**0.87**
m-Xylene & p-Xylene	**0.32**	**0.20**	**1.4**	**0.87**
Nonane	**0.061** J	**0.50**	**0.32 J**	**2.6**
o-Xylene	**0.11** J	**0.20**	**0.50 J**	**0.87**
Styrene	**0.084** J	**0.20**	**0.36 J**	**0.85**
Cumene	ND	0.40	ND	2.0
1,1,2,2-Tetrachloroethane	ND	0.20	ND	1.4
1,3,5-Trimethylbenzene	ND	0.20	ND	0.98

STL Buffalo

Client Sample ID: DUP-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 004 **Work Order #** JPE0N1AD **Matrix.........:** AIR

PARAMETER	RESULTS (ppb(v/v))	REPORTING LIMIT (ppb(v/v))	RESULTS (ug/m3)		REPORTING LIMIT (ug/m3)
n-Decane	ND	1.0	ND		5.8
1,2,4-Trimethylbenzene	**0.10** J	**0.20**	**0.50**	**J**	**0.98**
1,3-Dichlorobenzene	ND	0.20	ND		1.2
1,4-Dichlorobenzene	**0.062** J	**0.20**	**0.37**	**J**	**1.2**
1,2-Dichlorobenzene	ND	0.20	ND		1.2
n-Undecane	**0.11** J	**1.0**	**0.69**	**J**	**6.4**
n-Dodecane	**0.057** J	**1.0**	**0.40**	**J**	**7.0**
1,2,4-Trichlorobenzene	ND	1.0	ND		7.4
Hexachlorobutadiene	ND	1.0	ND		11
Naphthalene	**0.068** J	**0.50**	**0.36**	**J**	**2.6**
Benzyl chloride	ND	0.40	ND		2.1
n-Propylbenzene	ND	0.40	ND		2.0
Methyl tert-butyl ether	ND	1.0	ND		3.6
alpha-Methylstyrene	ND	0.40	ND		1.9
Chlorodifluoromethane	**0.31**	**0.20**	**1.1**		**0.71**
Bromodichloromethane	ND	0.20	ND		1.3
Bromoform	ND	0.20	ND		2.1
1,3-Butadiene	**0.41**	**0.40**	**0.90**		**0.88**
Carbon disulfide	**0.032** J	**0.50**	**0.098**	**J**	**1.6**
Dibromochloromethane	ND	0.20	ND		1.7
3-Chloropropene	ND	0.20	ND		0.63
Cyclohexane	ND	0.50	ND		1.7
Dibromomethane	ND	0.40	ND		2.8
trans-1,2-Dichloroethene	ND	0.20	ND		0.79

TENTATIVELY INDENTIFIED COMPOUND	RESULT	UNITS
butylcyclohexane	ND	ppb(v/v)
indane	ND	ppb(v/v)
indene	ND	ppb(v/v)
isopentane	44 J	ppb(v/v)
thiophene	ND	ppb(v/v)
1-methylnaphthalene	ND	ppb(v/v)
1,2,3-trimethylbenzene	ND	ppb(v/v)
2-methylnaphthalene	ND	ppb(v/v)
2,2,4-trimethylpentane	ND	ppb(v/v)
2,3-dimethylheptane	ND	ppb(v/v)
2,3-dimethylpentane	ND	ppb(v/v)

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
1,2-Dichloroethane-d4	102	70 - 130

STL Buffalo

Client Sample ID: DUP-1

GC/MS Volatiles

Lot-Sample # H7B140182 - 004 **Work Order #** JPE0N1AD **Matrix.........:** AIR

SURROGATE	PERCENT RECOVERY	LABORATORY CONTROL LIMITS (%)
Toluene-d8	106	70 - 130
4-Bromofluorobenzene	98	70 - 130

Qualifiers

J Estimated result. Result is less than RL.

The 'Result' in ug/m3 is calculated using the following equation: Amount Found(before rounding)*(Molecular Weight/24.45)

The 'Reporting Limit' in ug/m3 is calculated using the following equation: (Reporting Limit(before rounding) * Dilution Factor) * (Molecular Weight/24.45)

SAMPLE COMPLIANCE REPORT

SAMPLE COMPLIANCE REPORT

Sample Delivery Group	Sampling Date	Protocol	Sample ID	Matrix	Compliancy[1]					Noncompliance
					VOC	SVOC	PCB/PEST /HERB	MET	MISC	
H7B140182	2/13/2007	TO-15	AA-1	Air	Yes	--	--	--	--	
H7B140182	2/13/2007	TO-15	IA-1	Air	Yes	--	--	--	--	
H7B140182	2/13/2007	TO-15	SS-1	Air	Yes	--	--	--	--	
H7B140182	2/13/2007	TO-15	DUP-1	Air	Yes	--	--	--	--	

1 Samples which are compliant with no added validation qualifiers are listed as "yes". Samples which are non-compliant or which have added qualifiers are listed as "no". A "no" designation does not necessarily indicate that the data have been rejected or are otherwise unusable.

CHAIN OF CUSTODY

STL Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
phone 865-291-3000 fax 865-584-4315

Canister Samples Chain of Custody Record 17B140182

SEVERN TRENT **STL**

Severn Trent Laboratories, Inc. (STL) assumes no liability with respect to the collection and shipment of these samples.

Client Contact Information	Project Manager: JOHN BRUSBEL	Sampled By: SPS	1 of 1 COCs
Company: ARCADIS BBL	Phone:		
Address: 6723 TOWPATH RD	Site Contact: CHRIS ANGIER		
City/State/Zip: SYRACUSE NY 13214	STL Contact: JAMIE MCKINNEY		
Phone: (315) 446-2570			
FAX:			
Project Name: HONYSEG VI RI	Analysis Turnaround Time		
Site: WASHINGTON ST (BINGHAMTON, NY)	Standard (Specify) 2 week		
PO # B0013075	Rush (Specify)		

Sample Identification	Sample Date(s)	Time Start	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-15	TO-14A	EPA 3C	EPA 25C	ASTM D-1946	Other (Please specify in notes section)	Sample Type	Indoor Air	Ambient Air	Soil Gas	Landfill Gas	Other (Please specify in notes section)
AA-1	02/12/07 – 02/13/07	1500	1500	-29	-4.0	K292	02644	X								X			
IA-1	↓	1510	1510	-30	-4.5	K167	6613	X							X				
SS-1	↓	1503 ~~1503~~ ~~1510~~ SPS	1505	-29.5	-6.0	K293	6137	X											X
DUP-1	↓	~~1503~~ 1510	1510	-30	-4.6	K291	6645	X							X				

Temperature (Fahrenheit)

	Interior	Ambient	
Start			
Stop			

Pressure (Inches of Hg)

	Interior	Ambient	
Start			
Stop			

OTHER = SUB-SLAB

Rec'd Temp Ambient

Custody seals intact
D.A.F. 2-14-07

2 boxes FedEx # 8574 4645 1006/090

Rec'd 4-cans + 1 CAN
4-flow 3/1 run
+ TEES/candy canes

Special Instructions/QC Requirements & Comments:

Canisters Shipped by:	Date/Time:	Canisters Received by:
Samples Relinquished by: [signature]	Date/Time: 02/13/07 1700	Received by: [signature] 2/13/07 1700
Relinquished by: [signature]	Date/Time: 02/13/07 1830	Received by: [signature] 2-14-07 11:15

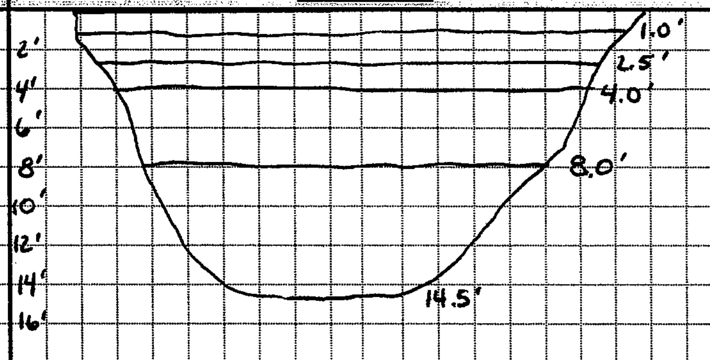
Lab Use Only Shipper Name: Opened by: Condition:

BBL® BLASLAND, BOUCK & LEE, INC. *engineers, scientists, economists*	**Test Pit Log**
	Test Pit ID: TP- 01

Client:	New York State Electric and Gas	**Date:**	6/6/06
Project:	Washington Street	**Weather:**	Partly Cloudy
Location:	Binghamton, New York	**Temperature:**	65° F
Project #:	13055.003	**Wind:**	NA
Geologist:	Dave Cornell	**Subcontractor:**	Parratt-Wolff
Coordinates:	NA	**Equipment:**	NA

Sketch of Test Pit Layout:

Plan View	Profile View



Test Pit Dimensions:	**17'**	**Total Depth:**	**14.5'**	**Depth to Water:**	**NA**

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0.0' – 1.0'	0.0	Brown, silty, cmf SAND, some cmf subrounded GRAVEL, little cobbles, trace course sand	None
1.0' – 2.5'	0.0	3 layers of ASPHALT (~0.2' thick) with subbase between	None
2.5' – 4.0'	0.0	Brown-gray silty mf SAND and cmf subangular, little cobbles (M,NP)	None
4.0' – 8.0'	0.0	(Debris) wood, little metal, concrete, cfm SAND, cmf subrounded GRAVEL, trace Insulation, Carpet, roofing conduit, Steel Pipe (1.5"), trace wire and netting. Begin seeing rock below 6.5' bgs Smooth concrete pieces at 8 ft. bgs, possible old floor or fill.	None
8.0' – 14.5'	0.0	Possible native material below 8.5'-9.0' bgs. Brown Silty cmf SAND and cmf subrounded to rounded GRAVEL, little cobbles. Becoming moist to wet at 13.5 ft. bgs	None

Notes:

bgs = below ground surface; NA = Not Available/Not Applicable.

Photograph Summary:

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Test Pit Log

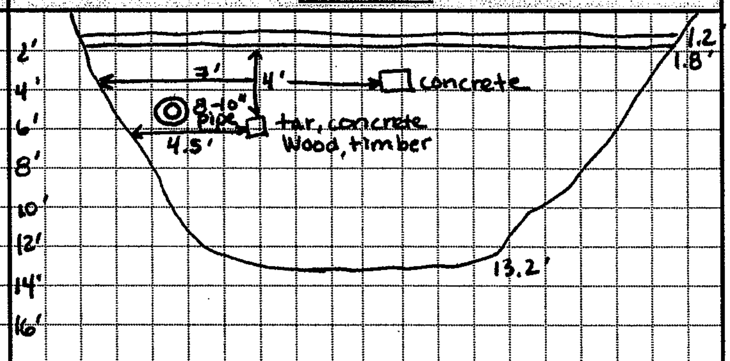
Test Pit ID: TP- 02

Client:	New York State Electric and Gas	**Date:**	6/6/06
Project:	Washington Street	**Weather:**	Partly Cloudy
Location:	Binghamton, New York	**Temperature:**	65° F
Project #:	13055.003	**Wind:**	NA
Geologist:	Dave Cornell	**Subcontractor:**	Parratt-Wolff
Coordinates:	NA	**Equipment:**	NA

Sketch of Test Pit Layout:

Plan View

Profile View



Test Pit Dimensions:	15'	**Total Depth:**	13.2'	**Depth to Water:**	NA

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0.0' – 1.2'	0.0	ASPHALT (0.0-0.3') Brown silty cmf SAND, some cmf rounded GRAVEL (subbase)	None
1.2' – 1.8'	0.0	Dark brown SILT, trace to little f. SAND, trace brick, and cmf GRAVEL	None
1.8' – 13.2'	0.0	Brown, silty, cmf SAND and cmf, rounded GRAVEL, little to some cobbles (M, NP). Concrete (formed), possible support structure at 3 ft bgs and 7 ft. in from the east side. 8-10" Clay pipe, tar staining on inside at 4-5 ft. bgs on east side of pit. Tar, concrete, wood, and timber with PID reading of 185 ppm at 5.8 ft. bgs and 4.5 ft. from east side.	None

Notes:

bgs = below ground surface; NA = Not Available/Not Applicable.

Photograph Summary:

#65	taken at surface
#66	Clay pipe at 4-5 ft. bgs
#67	Clay pipe at 4-5 ft. bgs
#68	Tar, concrete, wood and timber at 5.8 ft. bgs
#69	Tar, concrete, wood and timber at 5.8 ft. bgs
#70	Tar, concrete, wood and timber at 5.8 ft. bgs
#72	Clay pipe at 4-5 ft. bgs
#73	Tar, concrete, wood and timber at 5.8 ft. bgs

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Test Pit Log

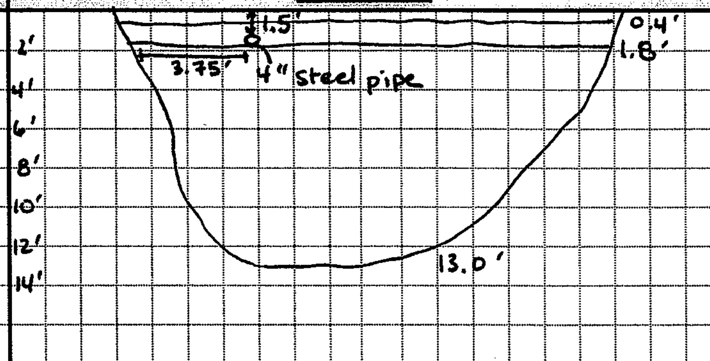
Test Pit ID: TP-03

Client:	New York State Electric and Gas	**Date:**	6/6/06
Project:	Washington Street	**Weather:**	Partly Cloudy
Location:	Binghamton, New York	**Temperature:**	65° F
Project #:	13055.003	**Wind:**	NA
Geologist:	Dave Cornell	**Subcontractor:**	Parratt-Wolff
Coordinates:	NA	**Equipment:**	NA

Sketch of Test Pit Layout:

Plan View

Profile View



Test Pit Dimensions:	14'	**Total Depth:**	13.0'	**Depth to Water:**	NA

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0.0' – 0.4'	0.0	Concrete	None
0.4' – 1.8'	0.0	SLAG, CINDERS, and ASH like material 4" Steel Pipe at 1.5 ft. bgs and 3.75 ft. from west side	None
1.8' – 13.0'	0.0	Brown, silty, cmf SAND and cmf, rounded GRAVEL, little rounded Cobbles (M, NP)	None

Notes:

bgs = below ground surface; NA = Not Available/Not Applicable.

Photograph Summary:

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Test Pit Log

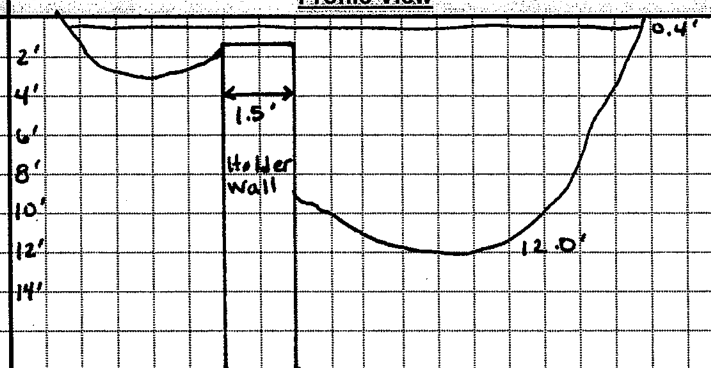
Test Pit ID: TP- 04

Client:	New York State Electric and Gas	**Date:**	6/6/06
Project:	Washington Street	**Weather:**	Partly Cloudy
Location:	Binghamton, New York	**Temperature:**	65° F
Project #:	13055.003	**Wind:**	NA
Geologist:	Dave Cornell	**Subcontractor:**	Parratt-Wolff
Coordinates:	NA	**Equipment:**	NA

Sketch of Test Pit Layout:

Plan View

Profile View



Test Pit Dimensions:	14'	**Total Depth:**	12.0'	**Depth to Water:**	NA

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0.0' – 0.4'	0.0	Concrete	None
0.4' – 12.0'	0.0	~ 1.5 ft. Holder wall (brick)	None
0.4' – 3.5'	0.0	West of holder Brown, cmf SAND and CINDERS	None
0.4' – 12.0'	0.0	East of holder Brown, cmf SAND, little cmf subrounded GRAVEL, little to some Brick (increasing with depth), trace CINDERS. ~6" Steel pipe (debris backfill)	None

Notes:

bgs = below ground surface; NA = Not Available/Not Applicable.

Photograph Summary:

#86	Taken at surface
#87	Taken at surface

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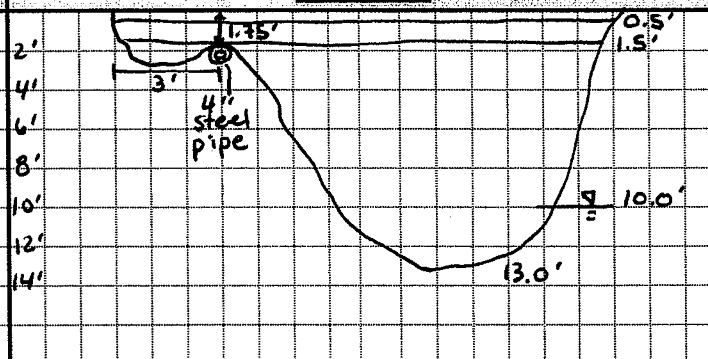
Test Pit Log

Test Pit ID: TP- 05

Client:	New York State Electric and Gas	**Date:**	6/7/06
Project:	Washington Street	**Weather:**	NA
Location:	Binghamton, New York	**Temperature:**	NA
Project #:	13055.003	**Wind:**	NA
Geologist:	Dave Cornell	**Subcontractor:**	Parratt-Wolff
Coordinates:	NA	**Equipment:**	NA

Sketch of Test Pit Layout:

Plan View	Profile View
	

Test Pit Dimensions:	13'	**Total Depth:**	13.0'	**Depth to Water:**	10.0'

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0.0' – 0.5'	0.0	Concrete	None
0.5' – 1.5'	0.0	Gray CINDERS, little mf SAND, SLAG and ASH like material 4" steel pipe (running N-S) at 1.75' bgs and 3' from west side.	None
1.5' – 13.0'	0.0	Brown, cmf SAND, little to some Brick, trace SILT and cmf GRAVEL	None

Notes:

bgs = below ground surface; NA = Not Available/Not Applicable.

Photograph Summary:

#89	4" steel pipe at 1.75' bgs
#90	4" steel pipe at 1.75' bgs

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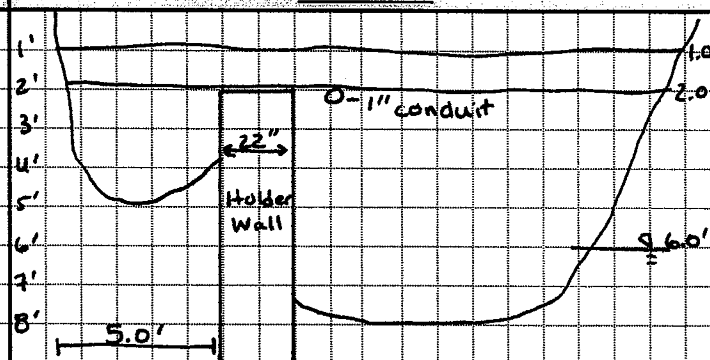
Test Pit Log

Test Pit ID: TP- 06

Client:	New York State Electric and Gas	**Date:**	6/7/06
Project:	Washington Street	**Weather:**	NA
Location:	Binghamton, New York	**Temperature:**	NA
Project #:	13055.003	**Wind:**	NA
Geologist:	Dave Cornell	**Subcontractor:**	Parratt-Wolff
Coordinates:	NA	**Equipment:**	NA

Sketch of Test Pit Layout:

Plan View	Profile View
	

Test Pit Dimensions:	18'	Total Depth:	8.0'	Depth to Water:	6.0'

Depth Interval (feet)	PID Screening Result (ppm)	Description of Soil/Material	Samples Collected
0.0' – 1.0'	0.0	ASPHALT	None
1.0' – 2.0'	0.0	Concrete Slab pieces	None
2.0' – 8.0'	0.0	22" Holder Wall (Brick) at 5.0' from North side.	None
2.0' – 5.0'	0.0	North of Holder Wall Brown, cmf SAND, some cmf subrounded GRAVEL and Cobbles, little Brick Concrete (possible fill) below 5.0' bgs	None
2.0' – 6.0'	0.0	South of Holder Wall Brown, cmf SAND, cmf subrounded to rounded GRAVEL, little Cobbles 1" conduit (running NE-SW) at approximately 2.0' bgs	None
6.0' – 8.0'	76 at 6.0' bgs 68 at 8.0' bgs	Saturated below 6.0' bgs and containing petroleum like odor	None

Notes:

bgs = below ground surface; NA = Not Available/Not Applicable.

Photograph Summary:

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APPENDIX F
SPECIFIC CAPACITY DATA

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample Location	Purging Method	Mean Pumping Rate (gpm)	Time (Minutes)	Depth to Water (Feet)
MW-1R[A]	Peristaltic	0.049	0	17.93
			5	17.93
			10	17.93
			15	17.93
			20	17.93
			25	17.93
			30	17.93
			35	17.93
			40	17.93
MW-4	Grundfos	0.349	0	16.58
			2	16.81
			3	16.85
			4	16.90
			5	16.91
			6	16.95
			7	16.96
			8	16.96
			9	16.97
			12	17.00
			15	17.00
			18	17.01
			21	17.01
			24	17.02
MW-5	Grundfos	0.833	0	15.67
			1	15.96
			2	15.99
			3	16.00
			4	16.01
			5	16.01
			6	16.01
			7	16.03
MW-5D	Grundfos	0.112	0	15.98
			1	16.79
			2	16.92
			3	17.14
			4	17.20
			5	17.08
			6	17.19
			7	17.19
			8	17.20

APPENDIX F
SPECIFIC CAPACITY DATA

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample Location	Purging Method	Mean Pumping Rate (gpm)	Time (Minutes)	Depth to Water (Feet)
MW-6S	Grundfos	0.536	0	7.85
			1	8.10
			2	8.29
			3	8.49
			4	8.65
			5	8.90
			6	9.20
			7	9.56
			8	9.93
MW-6	Peristaltic	0.119	0	15.04
			5	16.81
			10	17.46
			15	17.94
			20	17.90
			25	18.07
			30	18.41
			35	18.58
			40	18.66
			45	18.72
MW-7	Peristaltic	0.108	0	14.68
			5	14.70
			10	14.71
			15	14.74
			20	14.75
			25	14.76
			30	14.77
			35	14.77
			40	14.77
			45	14.77
			50	14.77
			55	14.77
			60	14.77
			65	14.77
MW-7D	Grundfos	0.250	0	14.97
			3	15.73
MW-8	Peristaltic	0.099	0[B]	18.64
			14	18.67
			19	18.68
			24	18.70
			29	18.71
			34	18.69
			39	18.69
			44	18.69
			49	18.69

APPENDIX F
SPECIFIC CAPACITY DATA

REMEDIAL INVESTIGATION REPORT
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample Location	Purging Method	Mean Pumping Rate (gpm)	Time (Minutes)	Depth to Water (Feet)
MW-8D	Peristaltic	0.026	0	18.41
			5	18.44
			10[B]	18.44
			31	18.44
			36	18.44
			41	18.62
			46	18.62
			51	18.62
			56	18.62

Notes:

1. Field parameters recorded during groundwater sampling (peristaltic) or purging (Grudnfos).
2. Time reported in minutes after pumping started.
3. Mean pumping rate is reported in gallons per minute.
4. Depth to water is reported in feet to the water level from the marked measuring point at the top of the well.
5. [A] = For the purposes of calculating a soil conductivity value, a drop in water level of 0.01-feet was assumed.
6. [B] = A problem with the pump was encountered, and fixed by the time of the next recorded measurement.

APPENDIX G
FORENSIC DATA ANALYSIS

REMEDIAL INVESTIGATION
NEW YORK STATE ELECTRIC & GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Introduction

Soil core samples were collected from 25 locations at the New York State Electric & Gas Corporation (NYSEG) Former Manufactured Gas Plant (MGP) Site on Washington Street in Binghamton, New York (site). Subsections of the core samples were selected for analysis based principally on the results of field photoionization detector (PID) readings. In addition, surface sediment samples were collected on the banks of the Chenango River immediately west of the former MGP site. Samples were analyzed for 16 priority pollutant polycyclic aromatic hydrocarbons (PAHs), plus 2-methylnaphthalene and dibenzofuran. Metals, volatile organic compounds (VOCs), and other semivolatile organic compounds (SVOCs) were also analyzed in these samples. The results of these analyses are provided in Tables 10 through 13 of the *Remedial Investigation Report* (BBL, 2006).

This forensic evaluation focused on identifying potential sources for hydrocarbons and PAHs in the soil and sediment samples. In addition to the priority pollutant PAHs, information from the gas chromatographs (i.e., GC fingerprints) generated as part of the SVOC (PAH) analysis was used to help identify the general type of petroleum (e.g., gasoline and diesel) in the samples. The presence of petroleum products in samples is depicted by unresolved complex mixtures (UCMs) or humps in the GC fingerprint. Priority pollutant PAHs have limited usefulness in identifying sources of hydrocarbons in environmental samples and a more extensive list of PAHs is required to differentiate the types and sources of hydrocarbons. However, a combination of priority pollutant PAH results, GC fingerprints, benzene, toluene, ethylbenzene, and xylenes (BTEX) results, and core field observations were used to evaluate potential sources of hydrocarbons in the samples. PAH concentrations, total BTEX concentrations, field observations, and GC fingerprint interpretations are presented in Table G-1. Samples that contained negligible or non-detectable amounts of PAHs were not included in Table G-1.

Sample stations were grouped together according to their approximate locations to certain historical features at the site to assist with the forensic evaluation (i.e. all the sample stations located under former Holder #1 were grouped together). The groupings followed the general direction of the groundwater flow from upgradient locations at the eastern portion of the site to the river bank locations west of the site. The centerline consisted of the upgradient former Holder #1 area to the relative downgradient former 'Office' area. Samples in the areas north of the centerline and south of the centerline were also grouped together. The sediment along the banks of the river made up the last grouping. The groupings are provided in the notes of Table G-1.

Forensic Discussion

For each sample, PAH diagnostic ratios were calculated with the diagnostic ratios fluoranthene/pyrene and benzo(a)anthracene/chrysene being the most useful in the evaluation (Yunker et al., 2002). Due to the way diagnostic PAH concentrations are determined in EPA SVOC Method 8270 method, the response area counts from the laboratory quantitation reports were used instead of the calculated concentrations to reduce the variability in the PAH ratio calculations. Even though fluoranthene and pyrene resolve very close to each other in the chromatogram of the analysis, fluoranthene and pyrene concentrations are determined using two different internal standards which produce unnecessary variability in the calculation of the diagnostic ratio of the two PAHs.

Scatter plots using total PAHs (16 priority pollutant PAHs) concentrations and the diagnostic ratio results were generated to assist in visually observing differences in the PAH compositions of the samples. These plots are presented in Figures G-1, G-2, and G-3.

In Figure G-1, total PAH (TPAH) concentrations are plotted versus one of the diagnostic ratios fluoranthene/pyrene. Most of the samples contain TPAH concentrations less than 10 milligrams per kilogram (mg/kg), as observed in Figure G-1, which is generally considered 'background' concentration levels for most soils and sediment. TPAH concentrations in this background range would represent PAHs from a variety of low-level sources that include anthropogenic and natural combustion sources. Generally, any specific point sources contributing PAHs at this concentration level would have combined compositional features that would be difficult to distinguish from background PAHs.

The initial evaluation of the PAH data did not include samples with TPAH concentrations less than 10 mg/kg. PAH compositional differences in samples, which would indicate possible different PAH sources at the site, were more easily distinguishable after removing the background-level TPAH samples. The double ratio plot of two diagnostic ratios, fluoranthene/pyrene and benzo(a)anthracene/chrysene (Figure G-2), is shown without samples that had TPAH concentrations less than 10 mg/kg.

The Figure G-2 diagnostic ratio plot indicates a possible source of PAHs originating from underneath former Holder #2 at a depth of 14- to 16-feet below ground surface (bgs), where the PAH concentrations are elevated (see Figure G-1) and the compositional characteristics are similar (grouping in upper right corner). The material at these locations is coal tar originating from the coal carbonization MGP process, due to the relatively high TPAH concentrations and the fluoranthene/pyrene ratios being greater than 1.0.

Figure G-2 also presents soil samples with elevated TPAH concentrations, which are grouped together in an area of the plot where fluoranthene/pyrene ratios are less than 1.0. These samples were collected in areas north and south of the former holders where impacts are generally constricted to surface soils (0.5- to 2-feet bgs). There appears to be a common source of hydrocarbons in these surface soils which is probably coal tar derived from the carbureted water gas (CWG) process (fluoranthene/pyrene ratios are less than 1.0). In Figure G-2, one sample, SB-14, appeared to have a PAH characteristic consistent with a petroleum source which, as discussed later, contained appreciable amounts of two types of fuel oils.

With the same diagnostic ratios, all the samples collected at the site, except those with negligible and non-detect concentrations of priority pollutant PAHs (TPAH <1 mg/kg), were included in a double ratio plot shown in Figure G-3 to identify additional samples that are possibly associated with a common impact source. Considering the two different potential sources identified in Figure G-2, most of the soil samples fall within the circle of former Holder #2 affected subsurface soils. The PAHs associated with former Holder #2 could be a potential source of low-level, background concentration range PAHs in subsurface soils in some areas north and south of former Holder #2, but since the PAH concentrations are so low (<10 mg/kg) the source of PAHs could be from a variety of background combustion sources . On the other hand, the common source of hydrocarbons in affected surface soils identified in Figure G-2 seems to have limited influence on the remaining surface and subsurface soils at the site.

For the sediment samples, only one of the eight locations (SD-5) had TPAH concentrations above background. At this location, the source of elevated PAHs may be coal tar identified with the affected surface soil samples at the site (Figure G-2). The other bank sediments, however, have TPAH concentrations within the expected background range for Chenango River sediments. Although upstream sediments were not sampled, except for perhaps SD-1 and SD-2 which were located in the upstream portion of the site, the general hydrocarbon compositions, depicted by the GC fingerprints, and varying PAH characteristics in these bank sediments are probably consistent with what would be expected of background sediments upstream of the site.

Many of the soil samples with low TPAH concentrations contained a small amount of residual, heavy oil-type petroleum (e.g., lubrication oil), indicated by the UCM or hump in the heavy oil range of the GC fingerprint. Only one soil sample at SB-14 (16- 18-feet bgs) contained appreciable amounts of petroleum. Both No. 2 fuel oil (e.g., diesel) and heavy oil were present in the sample, depicted by a bimodal UCM (two 'humps') in the sample GC fingerprint. The petroleum in the sample influenced the PAH diagnostic ratios of the sample to position the sample in the 'possible petroleum signature' area of Figure G-2. The TPAH concentration for this sample was approximately 14 mg/kg, just above background level, of which 10 mg/kg was naphthalene. The high ratio of naphthalene to TPAH indicates a petroleum source is probable. Deeper soil at the sample location SB-14 (26- to 28-feet bgs) had the similar heavy oil GC fingerprint (no diesel) but with negligible amounts of priority pollutant PAHs (<1 mg/kg TPAH).

Elevated PAH (and BTEX) concentrations were evident at only one groundwater location, MW-5D. From the GC fingerprint, petroleum did not appear to be present. The presence of BTEX and PAHs in the MW-5D sample was probably due to a coal carbonization-type coal tar product, due to the fluoranthene to pyrene ratio exceeding 1.0.

Summary

Two potential sources of coal tar type material were identified in small areas of the site. One was underneath former Holder #2 at 14- to 16-feet bgs, and the other was a common source of impacts in surface soils in areas north and south of the former holders. Other than these impacted areas, most of the PAH concentrations in soils at the site were negligible or within the range of background (<10 mg/kg). As a result, multiple background sources of hydrocarbons would be major contributors to these low-level PAH concentrations at the site. Most of the elevated PAH concentration samples contained a small amount of residual heavy-type oil (e.g., lubrication oil). However, at SB-14 (16- to 18–feet bgs), relatively large amounts of both diesel type and heavy oil were present; the diesel was not present at a deeper subsection (26- 28-feet bgs) at the same location. SB-14 (16- to 18-feet bgs) was the only sample location that contained diesel.

Except for perhaps one location (SD-5), PAH concentrations in sediment samples adjacent to the former site were within the expected background range for Chenango River sediments (<10 mg/kg). The general hydrocarbon compositions and PAH characteristics appeared to be consistent with what would be expected of Chenango River sediments. Sediment sample SD-5 appeared to contain some low-level coal tar residue. Also, at nearby monitoring well MW-5D, coal tar BTEX and PAHs were present in the groundwater. This was the only monitoring well at the site that contained coal tar material in the groundwater.

Reference:

Yunker, M.B et al. 2002. PAHs in the Fraser River basin: a critical appraisal of PAH ratios as indicators of PAH source and composition. Org. Geochem. 33: 489-515.

TABLE G-1
PAHs IN SOIL AND SEDIMENT

FORENSIC DATA ANALYSIS
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	SB-8 (ND:24-26)	SB-1 (ND:24-26)		SB-2 (ND:28-30)	SB-3 (ND:30-32)		SB-17	SB-18	SB-19	SB-24
Sample Depth(Feet):	22 - 24	8 - 10.4	20 - 20.5	20 - 22	20 - 20.5	22.4 - 23.2	14 - 16	14 - 16	14 - 16	30 - 32
Date Collected:	05/12/06	05/08/06	05/08/06	05/10/06	05/11/06	05/11/06	05/16/06	05/15/06	05/15/06	05/24/06
Location Notes	1	2	2	2	2	2	3	3	3	3
PAHs (ppm)										
2-Methylnaphthalene	0.023	0	12	0.058	5.8	0.029	57	180	86	0
Acenaphthene	0.04	0.23	**32**	0.04	2.6	0	8	13	**94**	0.033
Acenaphthylene	0	0	6.7	0.031	10	0.042	53	99	31	0.024
Anthracene	0.21	0.32	28	0.056	8.8	0.062	37	67	77	0.074
Benzo(a)anthracene	0.67	0.4	***31***	0.076	***23***	0.11	***28***	***50***	***61***	0.072
Benzo(a)pyrene	0.8	0.34	***37***	0.084	***28***	0.13	***18***	***33***	***46***	0.055
Benzo(b)fluoranthene	1	0.56	***46***	0.11	***48***	0.2	***20***	***35***	***44***	0.059
Benzo(ghi)perylene	0.43	0.24	26	0.067	18	0.096	6.1	10	17	0.019
Benzo(k)fluoranthene	**1.1**	0.57	**47**	0.11	**49**	0.21	**6.3**	**11**	**16**	0.019
Chrysene	0.6	0.35	**31**	0.065	**33**	0.14	**22**	**40**	**51**	0.062
Dibenzo(a,h)anthracene	0.18	0	***4.2***	0	***4.5***	0.019	***42***	***42***	***44***	0
Dibenzofuran	0.042	0	8.9	0	9.5	0.033	34	69	66	0.023
Fluoranthene	0.59	0.83	100	0.2	87	0.4	50	94	**120**	0.14
Fluorene	0.054	0.24	24	0.051	12	0.057	**56**	**100**	**110**	0.06
Indeno(1,2,3-cd)pyrene	0.41	0.2	***19***	0.049	***18***	0.081	***5.9***	***10***	***15***	0.022
Naphthalene	0.026	0	**46**	0.092	**25**	0.078	**330**	***510***	**220**	0
Phenanthrene	0.49	1	**130**	0.23	99	0.45	100	**190**	**230**	0.2
Pyrene	0.62	0.83	**110**	0.22	74	0.39	45	84	**130**	0.12
Total PAH 16	7.22	6.11	717.9	1.481	539.9	2.465	827.3	1388	1306	0.959
Total Carcinogenic PAHs	4.8	2.4	220	0.49	200	0.89	140	220	280	0.29
Concentration Ratios										
Fl/Py	0.95	1.00	0.91	0.91	1.18	1.03	1.11	1.12	0.92	1.17
BAA/C	1.12	1.14	1.00	1.17	0.70	0.79	1.27	1.25	1.20	1.16
BAA/BAP	0.84	1.18	0.84	0.90	0.82	0.85	1.56	1.52	1.33	1.31
Fl/Py >10mg/kg TPAH			0.91		1.18		1.11	1.12	0.92	
Miscellaneous										
%N	0	0	6	6	5	3	40	37	17	0
BTEX				8.0	25	2	130	140	79	
Field Observation	Petroleum-like odor	Faint petroleum-like odor	No observation recorded	Moderate petroleum-like odor	MGP-like odor	Moderate petroleum-like odor	Moderate to strong odor, sheen	Moderate to strong odor	Moderate to strong odor	No observation recorded
GC Fingerprint Evaluation	Large UCM (hump) in heavy oil range	Background UCM with small peaks in diesel range	Peaks but no petroleum UCM. Coal tar	Background UCM with gasoline	Peaks, probably coal tar, with UCM in heavy oil range	Background UCM	Peaks but no petroleum UCM. Coal tar	Peaks but no petroleum UCM. Coal tar	Peaks but no petroleum UCM. Coal tar	Background UCM
Area Counts										
Fluoranthene	389,716	50,630	482,446	117,803	2,622,009	252,322	185,089	348,643	455,383	95,512
Fluoranthene (>10 ppm TPAH)			482,446		2,622,009		185,089	348,643	455,383	
Pyrene	407,771	51,761	541,747	141,692	2,170,180	242,769	150,401	284,047	421,154	79,477
Benzo(a)anthracene	392,241	22,496	140,251	43,969	600,776	61,017	88,973	159,552	190,598	44,792
Chrysene	334,886	18,170	130,122	35,276	830,043	71,585	64,906	118,623	148,433	36,473
Benzo(a)pyrene	483,901	17,713	145,471	73,855	775,279	67,885	60,911	112,316	151,076	37,169
Fl/Py	0.96	0.98	0.89	0.83	1.21	1.04	1.23	1.23	1.08	1.20
Fl/Py (>10ppm TPAH)			0.89		1.21		1.23	1.23	1.08	
BAA/C	1.17	1.24	1.08	1.25	0.72	0.85	1.37	1.35	1.28	1.23
BAA/BAP	0.81	1.27	0.96	0.60	0.77	0.90	1.46	1.42	1.26	1.21

TABLE G-1
PAHs IN SOIL AND SEDIMENT

FORENSIC DATA ANALYSIS
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	SB-25A		SB-20		SB-22 (ND:2-4)	SB-6		SB-7		SB-4		
Sample Depth(Feet):	14.6 - 16	26 - 28	0.8 - 2	16 - 18	14 - 16	0.5 - 2	20 - 22	24 - 25	36 - 37.2	0.5 - 2	16 - 18	16 - 18 Dup
Date Collected:	05/26/06	05/26/06	05/24/06	05/24/06	05/22/06	05/17/06	05/17/06	06/13/06	06/13/06	05/23/06	05/23/06	05/23/06
Location Notes	3	3	4	4	4	5	5	5	5	6	6	6
PAHs (ppm)												
2-Methylnaphthalene	27	0	0	0	0	0	0	0.14	0.41	0	0.042	0
Acenaphthene	2.5	0.018	0	0	0	1.5	0	0	0.1	0	0.03	0
Acenaphthylene	15	0	0	0.37	0	0	0	0.021	0.055	0	0.13	0.048
Anthracene	12	0.04	0	0.35	0	2.1	0.098	0.026	0	0	0.31	0.11
Benzo(a)anthracene	***9.3***	0.04	0.092	**1.7**	0.07	***12***	0.23	0.059	0	0.93	0.55	0.25
Benzo(a)pyrene	***7***	0.03	0.12	***2.2***	0.11	***27***	0.22	0.052	0	***1.1***	0.52	0.24
Benzo(b)fluoranthene	***7.4***	0.042	0.19	**2.4**	0.13	***26***	0.34	0.06	0	**1.7**	0.59	0.27
Benzo(ghi)perylene	2.8	0	0.089	1.7	0.08	33	0.16	0.03	0	1	0.34	0.14
Benzo(k)fluoranthene	**2.4**	0.044	0.2	**2.5**	0.14	**7.5**	0.34	0.024	0	**1.8**	0.18	0.088
Chrysene	**7.6**	0.032	0.083	**1.3**	0.07	**11**	0.2	0.049	0	0.81	0.46	0.22
Dibenzo(a,h)anthracene	***1.2***	0	0.025	0.27	0	***7.8***	0.048	0	0	0.25	0.092	0.04
Dibenzofuran	10	0	0	0	0	0	0	0.023	0.058	0	0.11	0.028
Fluoranthene	18	0.073	0.14	2.6	0.1	10	0.37	0.11	0	1.4	1.3	0.57
Fluorene	17	0.034	0	0.042	0	0	0.031	0.019	0.033	0	0.16	0.048
Indeno(1,2,3-cd)pyrene	**2.8**	0	0.082	**1.2**	0.06	***26***	0.14	0.03	0	**0.84**	0.32	0.14
Naphthalene	**56**	0.023	0	0	0.051	0	0	1.2	3.8	0	0.053	0
Phenanthrene	30	0.09	0.066	0.18	0.028	5.8	0.23	0.072	0.025	0.4	1	0.36
Pyrene	15	0.06	0.14	4.2	0.16	12	0.36	0	0	1.3	1.1	0.46
Total PAH 16	206	0.526	1.227	21.012	0.999	181.7	2.767	1.752	4.013	11.53	7.135	2.984
Total Carcinogenic PAHs	38	0.19	0.79	12	0.58	120	1.5	0.27	0	7.4	2.7	1.3
Concentration Ratios												
Fl/Py	1.20	1.22	1.00	0.62	0.63	0.83	1.03			1.08	1.18	1.24
BAA/C	1.22	1.25	1.11	1.31	1.00	1.09	1.15	1.20		1.15	1.20	1.14
BAA/BAP	1.33	1.33	0.77	0.77	0.64	0.44	1.05	1.13		0.85	1.06	1.04
Fl/Py >10mg/kg TPAH	1.2			0.62		0.83				1.08		
Miscellaneous												
%N	27	4	0	0	5	0	0	68	95	0	1	0
BTEX	20											
Field Observation	Moderate sheen and odor	Faint odor from slough water	No observation recorded	No observation recorded	No observation recorded	No observation recorded	No observation recorded	Moderate petroleum-like odor	No observation recorded	No observation recorded	No observation recorded	No observation recorded
GC Fingerprint Evaluation	Peaks, probably coal tar, with large hump in heavy oil range	Small UCM in heavy oil range	Background UCM	Peaks but no petroleum UCM. Coal tar	Nothing	Peaks from coal tar with UCM in heavy oil range	Small UCM in heavy oil range	Background UCM	Nothing	Peaks but no petroleum UCM. Probable coal tar	Peaks with small UCM in heavy oil range	Dup
Area Counts												
Fluoranthene	2,458,136	43,837	84,342	1,619,250	59,692	104,336	78,010	41,074	1,160	88,977	838,981	
Fluoranthene (>10 ppm TPAH)	2,458,136			1,619,250		104,336				88,977		
Pyrene	2,105,396	38,569	84,414	2,641,020	95,341	111,063	69,081	34,104	792	90,833	724,827	
Benzo(a)anthracene	1,190,799	23,213	51,933	968,822	38,322	105,016	41,649	21,569	1,508	57,294	334,519	
Chrysene	933,958	17,387	44,538	720,669	36,259	92,107	33,724	16,756	1,890	47,543	268,712	
Benzo(a)pyrene	978,484	15,906	58,588	1,147,814	52,300	208,453	32,142	16,407	1,264	71,928	332,688	
Fl/Py	1.17	1.14	1.00	0.61	0.63	0.94	1.13	1.20	1.46	0.98	1.16	
Fl/Py (>10ppm TPAH)	1.17			0.61		0.94				0.98		
BAA/C	1.28	1.34	1.17	1.34	1.06	1.14	1.23	1.29	0.80	1.21	1.24	
BAA/BAP	1.22	1.46	0.89	0.84	0.73	0.50	1.30	1.31	1.19	0.80	1.01	

TABLE G-1
PAHs IN SOIL AND SEDIMENT

FORENSIC DATA ANALYSIS
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	**SB-11 (ND: 20-22)**	**SB-13**		**SB-21**		**SB-14 (ND:26-28)**	**SB-16 (ND:22-24)**	**SD-1**	**SD-1**	**SD-2**	**SD-3**
Sample Depth(Feet):	**2 - 4**	**12 - 14**	**16 - 18**	**0.5 - 2**	**20 - 22**	**16 - 18**	**0.5 - 2**	**0 - 2**	**0 - 2 Dup**	**0 - 2**	**0 - 2**
Date Collected:	**06/06/06**	**05/30/06**	**05/30/06**	**05/16/06**	**05/17/06**	**05/31/06**	**06/02/06**	**08/04/06**	**08/04/06**	**08/04/06**	**08/04/06**
Location Notes	6	7	7	7	7	8	8	9	9	9	9
PAHs (ppm)											
2-Methylnaphthalene	0	50	0	0	0	20	0.75	0	0	0	0
Acenaphthene	0.034	8.1	0	0	0.027	0.14	0.48	0	0	0	0
Acenaphthylene	0.14	27	0.03	0	0.21	0.36	11	0	0	0	0
Anthracene	0.18	22	0.039	0	0.38	0.19	4.5	0	0	0	0.16
Benzo(a)anthracene	0.52	***16***	0.04	**1.4**	0.86	0.18	***12***	0.42	0.54	0.3	0.94
Benzo(a)pyrene	0.49	***12***	0.026	***1.8***	0.72	0	***27***	0.4	0.46	0.32	0.93
Benzo(b)fluoranthene	0.89	***13***	0.033	**2.5**	**1.1**	0	***29***	0.51	0.63	0.62	1.1
Benzo(ghi)perylene	0.39	6.1	0	1.2	0.44	0.12	41	0.32	0.34	0.32	0.66
Benzo(k)fluoranthene	**0.89**	**4.5**	0	0.59	**1.2**	0	**30**	0.2	0.24	0.64	0.39
Chrysene	0.48	**12**	0.027	**1.3**	0.64	0.26	**12**	0.36	0.62	0.35	0.71
Dibenzo(a,h)anthracene	0.073	***2.3***	0	0.3	0.13	0	***2.4***	0	0	0	0.16
Dibenzofuran	0.05	21	0.033	0	0.03	0.44	0	0	0	0	0
Fluoranthene	0.95	37	0.069	2	1.8	0.36	73	0.69	1.1	0.63	1.4
Fluorene	0.07	27	0.036	0	0.14	0.62	3.1	0	0	0	0
Indeno(1,2,3-cd)pyrene	0.23	***6***	0	**0.92**	0.42	0	***23***	0.26	0.29	0.27	0.53
Naphthalene	0.052	**180**	0	0	0	10	1.5	0	0		0
Phenanthrene	0.67	68	0.11	0.54	0.75	0.98	61	0.39	0.48	0.26	0.62
Pyrene	0.82	30	0.063	1.9	1.6	0.65	**120**	0.59	0.84	0.51	1.2
Total PAH 16	6.879	471	0.473	14.45	10.417	13.86	450.98	4.14	5.54	4.22	8.8
Total Carcinogenic PAHs	3.6	66	0.13	8.8	5.1	0.44	140	2.2	2.8	2.5	4.8
Concentration Ratios											
Fl/Py	1.16	1.23	1.10	1.05	1.13	0.55	0.61	1.17	1.31	1.24	1.17
BAA/C	1.08	1.33	1.48	1.08	1.34	0.69	1.00	1.17	0.87	0.86	1.32
BAA/BAP	1.06	1.33	1.54	0.78	1.19		0.44	1.05	1.17	0.94	1.01
Fl/Py >10mg/kg TPAH		1.23		1.05		0.55	0.61				
Miscellaneous											
%N	1	38	0	0	0	72	0	0	0	0	0
BTEX		94				100					
Field Observation	No observation recorded	NAPL through stringers	Faint odor, sheen; trace stain	No observation recorded	No observation recorded	Strong petroleum-like odor	No observation recorded				
GC Fingerprint Evaluation	Small UCM in heavy oil range	Peaks but no petroleum UCM. Coal tar	Nothing	Small UCM in heavy oil range	Peaks but no petroleum UCM. Probable coal tar	HUGE bimodial humps in diesel and heavy oil range. 26-28: huge hump in heavy oil range	Peaks but no petroleum UCM. Coal tar	Small peaks with possible small hump in late heavy oil range or probable column bleed	DUP	Similar to SD-1	Similar to SD-1
Area Counts											
Fluoranthene	260,986	1,227,449	13,516	49,125	355,128	74,363	814,266	75,289		78,322	156,974
Fluoranthene (>10 ppm TPAH)		1,227,449		49,125		74,363	814,266				
Pyrene	242,290	1,033,817	10,881	52,649	301,381	152,206	1,072,365	70,198		68,023	158,604
Benzo(a)anthracene	146,785	499,484	6,336	37,204	146,379	38,827	94,561	46,304		37,234	112,285
Chrysene	123,420	356,361	4,106	30,797	103,251	52,021	91,092	40,967		44,324	86,495
Benzo(a)pyrene	80,918	341,656	3,477	33,831	102,210	0	168,896	42,387		38,764	108,353
Fl/Py	1.08	1.19	1.24	0.93	1.18	0.49	0.76	1.07		1.15	0.99
Fl/Py (>10ppm TPAH)		1.19		0.93		0.49	0.76				
BAA/C	1.19	1.40	1.54	1.21	1.42	0.75	1.04	1.13		0.84	1.30
BAA/BAP	1.81	1.46	1.82	1.10	1.43		0.56	1.09		0.96	1.04

TABLE G-1
PAHs IN SOIL AND SEDIMENT

FORENSIC DATA ANALYSIS
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Sample ID:	SD-4	SD-5	SD-6	SD-7	SD-8	MW-5D	SB-9 (ND:10-12)
Sample Depth(Feet):	0 - 2	0 - 2	0 - 2	2-12	0 - 2	ppb	8 - 10
Date Collected:	08/04/06	08/04/06	08/04/06	08/03/06	08/03/06	07/26/06	05/25/06
Location Notes	9	9	9	9	9		ALL SB-10 ND
PAHs (ppm)							
2-Methylnaphthalene	0	0.24	0	0	0	120	0
Acenaphthene	0	0.58	0	0.025	0.025	63	0
Acenaphthylene	0	0	0	0	0.035	15	0
Anthracene	0	1	0	0.074	0.1	11	0
Benzo(a)anthracene	0.28	1.8	0.25	0.24	0.27	1	0.029
Benzo(a)pyrene	0.27	1.3	0.24	0.25	0.26	0.5	0.024
Benzo(b)fluoranthene	0.39	1.7	0.32	0.18	0.24	0	0.044
Benzo(ghi)perylene	0.25	0.78	0.22	0.21	0.2	0	0
Benzo(k)fluoranthene	0	0.54	0.12	0.2	0.2	0	0.046
Chrysene	0.27	1.5	0.23	0.24	0.31	0.9	0
Dibenzo(a,h)anthracene	0	0	0	0.058	0.069	0	0
Dibenzofuran	0	0	0	0	0	24	0
Fluoranthene	0.48	3.3	0.48	0.45	0.61	7	0.037
Fluorene	0	0.52	0	0.027	0.049	40	0
Indeno(1,2,3-cd)pyrene	0.2	0.7	0.17	0.17	0.17	0	0
Naphthalene	0	0	0	0	0	670	0
Phenanthrene	0.25	4.2	0.24	0.27	0.46	38	0
Pyrene	0.45	2.9	0.4	0.42	0.5	5	0.037
Total PAH 16	2.84	20.82	2.67	2.814	3.498	851.4	0.217
Total Carcinogenic PAHs	1.4	7.5	1.3	1.3	1.5	2.4 J	0.14
Concentration Ratios							
Fl/Py	1.07	1.14	1.20	1.07	1.22	1.40	1.00
BAA/C	1.04	1.20	1.09	1.00	0.87	1.11	
BAA/BAP	1.04	1.38	1.04	0.96	1.04	2.00	1.21
Fl/Py >10mg/kg TPAH		1.14					
Miscellaneous							
%N	0	0	0	0	0	79	0
BTEX						440 ug/L	
Field Observation							
GC Fingerprint Evaluation	Similar to SD-1	Peaks but no petroleum UCM. Coal tar	Similar to SD-1	Similar to SD-1	Small peaks with small UCM in heavy oil range, different than SD-1	Peaks but no petroleum UCM. Coal tar	
Area Counts							
Fluoranthene	66,077	270,879	84,420	150,363	156,788		
Fluoranthene (>10 ppm TPAH)		270,879					
Pyrene	65,019	282,270	76,111	148,953	139,625		
Benzo(a)anthracene	37,811	156,425	44,738	81,672	73,602		
Chrysene	36,635	140,814	41,421	79,246	79,619		
Benzo(a)pyrene	34,296	106,831	41,054	83,981	68,982		
Fl/Py	1.02	0.96	1.11	1.01	1.12		
Fl/Py (>10ppm TPAH)		0.96					
BAA/C	1.03	1.11	1.08	1.03	0.92		
BAA/BAP	1.10	1.46	1.09	0.97	1.07		

TABLE G-1
PAHs IN SOIL AND SEDIMENT

FORENSIC DATA ANALYSIS
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

Notes:

1. Location Notes:
   - 1: Upgradient of holders (SB-8 and [SB-12]).
   - 2: Under Holder # 1 (SB-1, SB-2, and SB-3).
   - 3: Under Holder # 2 (SB-17, SB-18, SB-19, SB-24, and SB-25A).
   - 4: Near Office, Downgradient of Holder # 2 (SB-20 and SB-22).
   - 5: North of Holders (SB-6 and SB-7).
   - 6: North of Office (SB-4, SB-11, and [SB-5]).
   - 7: South of Holder # 2 (SB-13, SB-21, [SB-9], and [SB-23]).
   - 8: Outside Former Site, South (SB-14, SB-16, [SB-10], and [SB-15]).
   - 9: Sediment along Bank of River (SD-1 through SD-8).
   - Locations in brackets had negligible or non-detect total PAHs.
2. Total PAH cells outlined with heavy bold text indicate background range concentrations for TPAH (<10 mg/kg TPAH).
3. Soil Exceedences:
   - Bold font indicates that the result exceeds the 6 NYCRR Part 375 Unrestricted Use Guidance Value.
   - Italic font indicates that the result exceeds the 6 NYCRR Part 375 Commercial Guidance Value.
   - Shading indicates that the result exceeds the 6 NYCRR Part 375 Industrial Guidance Value.
4. Groundwater Exceedences:
   - TAGM 4046 Water Quality Standards and Guidance Values are from the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) titled "Determination of Soil Cleanup Objectives and Cleanup Levels," HWR-94-4046 (TAGM 4046) dated January 24, 1994.
5. PID = Photo-ionization Detector.
6. SB-10 had high PID from 10 to 24 ft but no PAHs or GC large UCM in two samples.
7. SB-12 had high PID from 20 to 28 ft but no PAHs or large GC UCM in samples.
8. SB-15 had high PID from 18 to 22 ft but no PAHs or large GC UCM in samples.
9. SB = Soil boring.
10. ND = Not detected.
11. SD = Sediment.
12. MW = Monitoring well.
13. PAH = Polycyclic aromatic hydrocarbon.
14. TPAH = Total PAHs.
15. Fl = Fluoranthene.
16. Py = Pyrene.
17. BAA = Benzo(a)anthracene.
18. C = Chrysene.
19. BAP = Benzo(a)pyrene.
20. BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes.
21. GC = Gas chromatographs.
22. Pb = Lead.
23. Ba = Barium.
24. UCM = Unresolved complex mixtures.
25. MGP = Manufactured gas plant.
26. NAPL = Non-aqueous phase liquid.
27. DUP = Field duplicate.
28. %N = The percent naphthalene in respect to PAHs.
29. = Not applicable.

FIGURE G-1
DOUBLE DIAGNOSTIC PLOT EXCLUDING BACKGROUND VALUES

FORENSIC DATA ANALYSIS
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

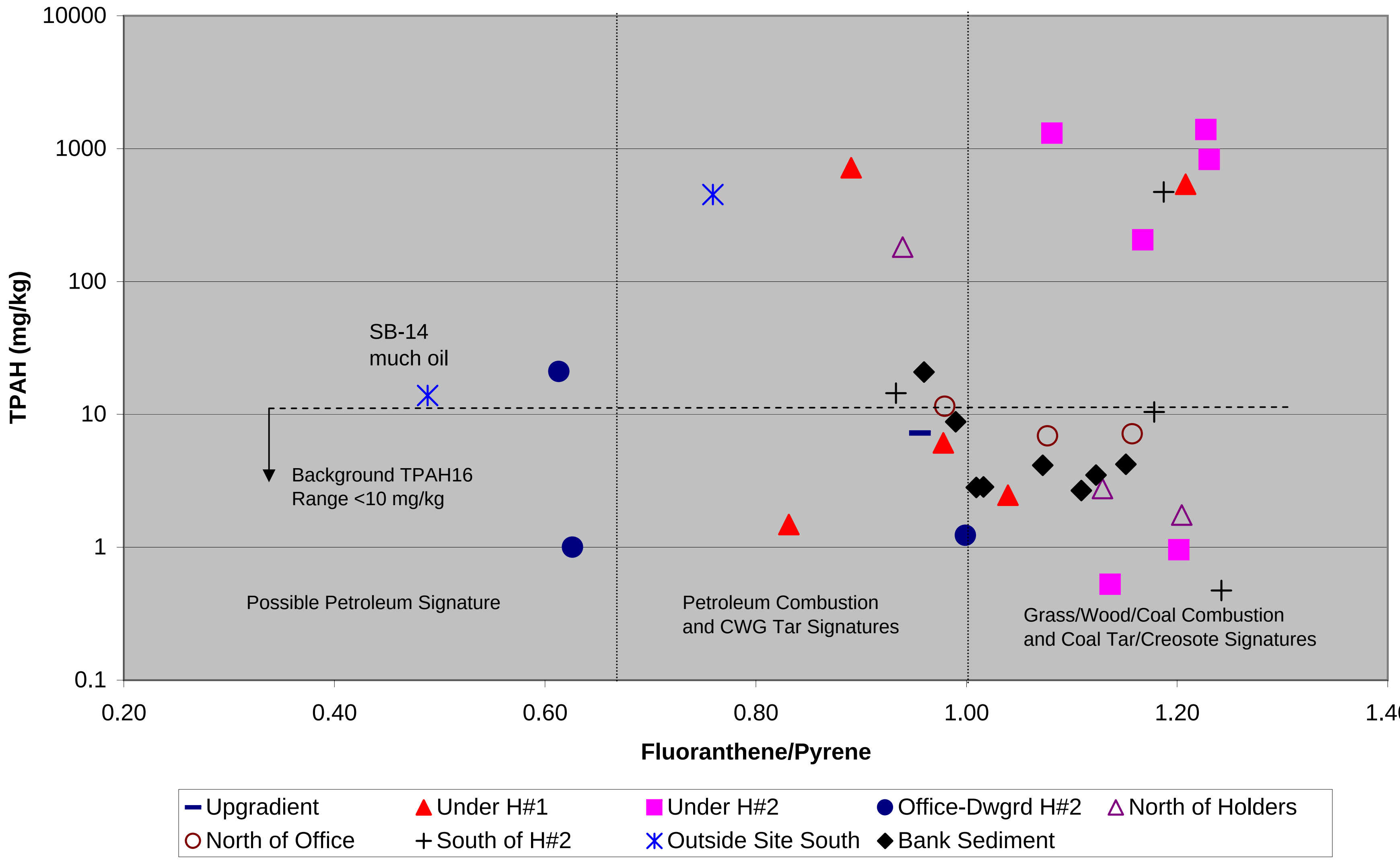


FIGURE G-2
DOUBLE DIAGNOSTIC PLOT EXCLUDING BACKGROUND VALUES

FORENSIC DATA ANALYSIS
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK

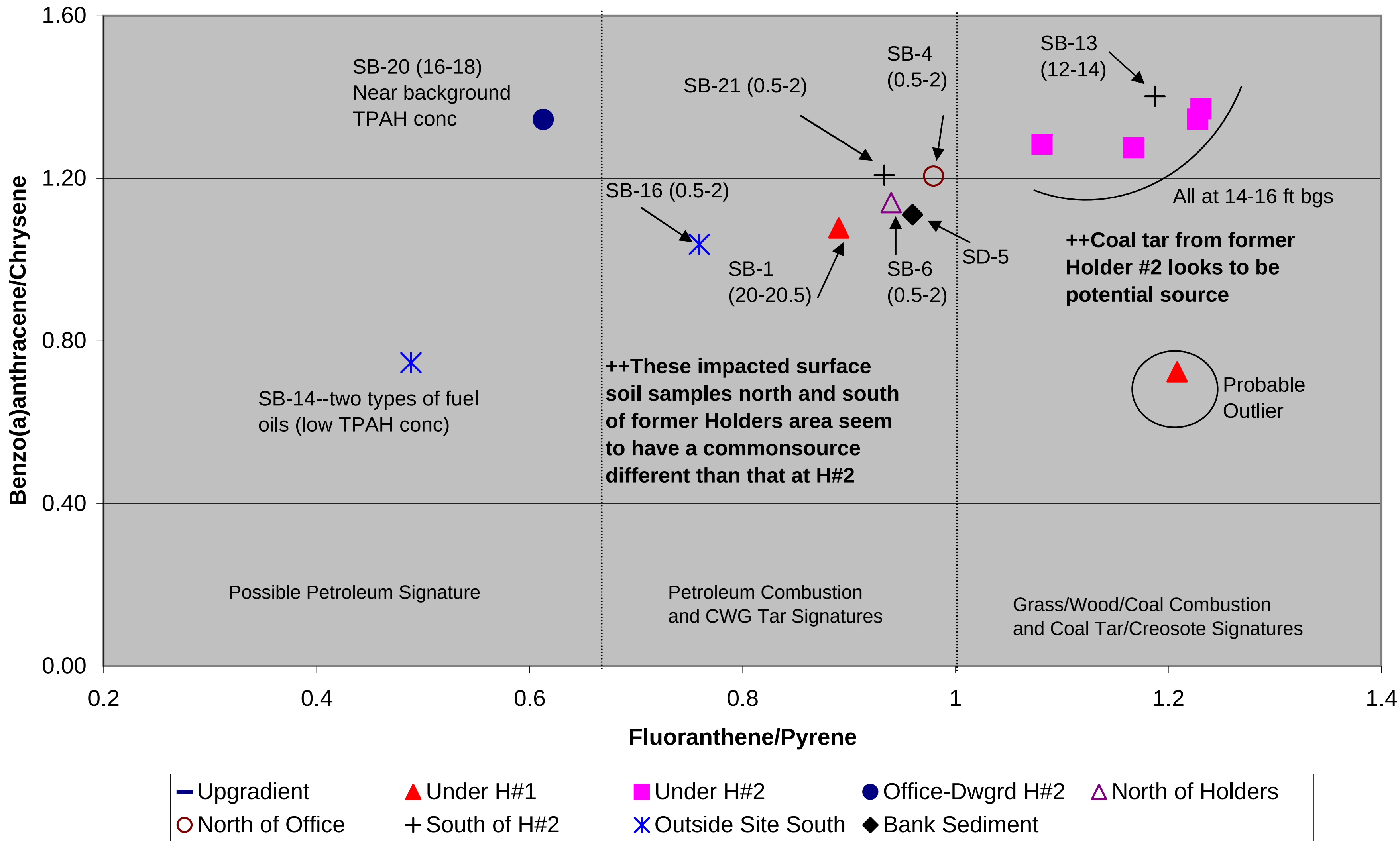
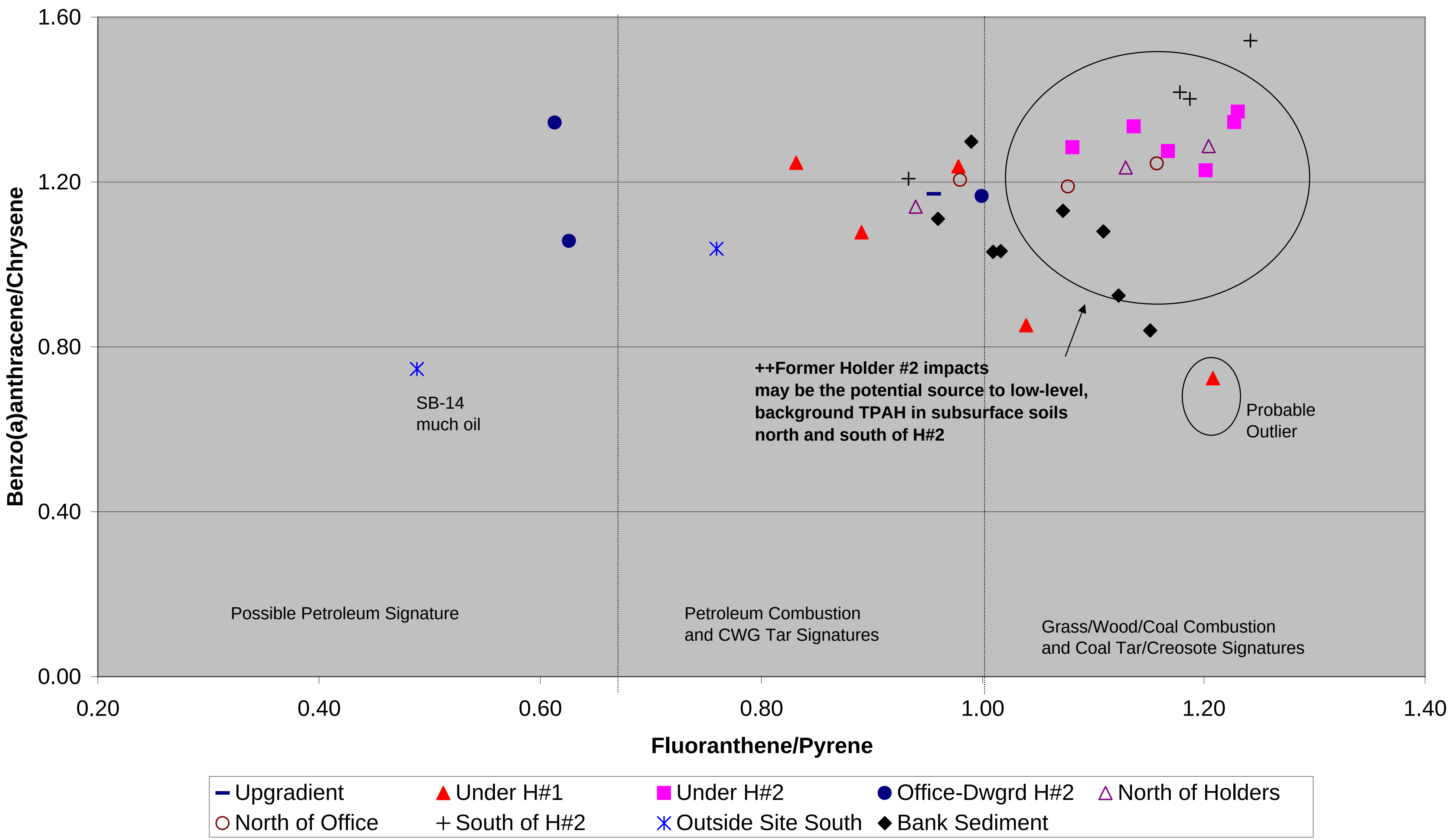


FIGURE G-3
DOUBLE DIAGNOSTIC PLOT DETECTED VALUES

FORENSIC DATA ANALYSIS
NEW YORK STATE ELECTRIC AND GAS CORPORATION
WASHINGTON STREET FORMER MGP SITE
BINGHAMTON, NEW YORK



FAX TRANSMITTAL RE: LISTED SPECIES REQUEST

U.S. FISH AND WILDLIFE SERVICE
New York Field Office
3817 Luker Road, Cortland, NY 13045
Phone: (607) 753-9334 Fax: (607) 753-9699

October 20, 2006

To: Jason C. Vogel

This responds to your September 29, 2006, request for listed species information in the vicinity of the former NYSEG MGP site on Washington Street in the City of Binghamton, Broome County, New York.

Except for occasional transient individuals, no Federally-listed or proposed endangered or threatened species under our jurisdiction are known to exist within the project impact area. In addition, no habitat in the project impact area is currently designated or proposed "critical habitat" in accordance with provisions of the Endangered Species Act (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*). Therefore, no further ESA coordination or consultation with the U.S. Fish and Wildlife Service (Service) is required. Should project plans change, or if additional information on listed or proposed species or critical habitat becomes available, this determination may be reconsidered. The most recent compilation of Federally-listed and proposed endangered and threatened species in New York is available for your information.* Until the proposed project is complete, we recommend that you check our website every 90 days from the date of this letter to ensure that listed species presence/absence information for the proposed project is current.* Should our determination change and any part of the proposed project be authorized, funded, or carried out, in whole or in part, by a Federal agency, further consultation between the Service and that Federal agency pursuant to the ESA may be necessary. We highly recommend that you check our website before submitting future requests.*

The above comments pertaining to endangered species under our jurisdiction are provided as technical assistance pursuant to the ESA. This response does not preclude additional Service comments under other legislation.

For additional information on fish and wildlife resources or State-listed species, we suggest you contact the appropriate New York State Department of Environmental Conservation regional office(s) and New York Natural Heritage Program Information Services.*

Thank you for your time. If you require additional information please contact me at (607) 753-9334. Future correspondence with us on this project should reference project file 70003.

Sincerely,

Robyn A. Niver
Endangered Species Biologist

*Additional information referred to above may be found on our website at:
http://www.fws.gov/northeast/nyfo/es/section7.htm

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
New York Natural Heritage Program
625 Broadway, 5th floor, Albany, New York 12233-4757
Phone: (518) 402-8935 • **FAX:** (518) 402-8925
Website: www.dec.state.ny.

Denise M. Sheehan
Commissioner

November 3, 2006

Jason C Vogel
Blasland, Bouck & Lee, Inc
6723 Towpath Rd, Bx 66
Syracuse, NY 13214-0066

Dear Mr. Vogel:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to an Environmental Assessment for the proposed Remedial Investigation, Project 13055.004, area as indicated on the map you provided, including a 2 mile radius, located on Washington Street, City of Binghamton, Broome County.

Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. The information contained in this report is considered sensitive and should not be released to the public without permission from the New York Natural Heritage Program.

The presence of rare species may result in this project requiring additional permits, permit conditions, or review. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement on presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

Sincerely,
Tara Seoane
Tara Seoane, Information Services
NY Natural Heritage Program

jp

Enc.
cc: Reg. 7, Wildlife Mgr.
Reg. 7, Fisheries Mgr.
Peter Nye, Endangered Species Unit, Albany

Natural Heritage Report on Rare Species and Ecological Communities

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor,
Albany, NY 12233-4757
(518) 402-8935

HISTORICAL RECORDS

The following plants and animals were documented in the vicinity of the project site at one time, but have not been documented there since 1979 or earlier.
There is no recent information on these plants and animals in the vicinity of the project site and their current status there is unknown. In most cases the precise location of the plant or animal in this vicinity at the time it was last documented is also unknown.
If appropriate habitat for these plants or animals is present in the vicinity of the project site, it is possible that they may still occur there.

Natural Heritage Report on Rare Species and Ecological Communities

AMPHIBIANS

Cryptobranchus alleganiensis

Hellbender

NY Legal Status: Special Concern
Federal Listing:
Last Report: 1931-10

NYS Rank: S2 - Imperiled
Global Rank: G3G4 - Vulnerable
EO Rank: Historical, no recent information

Office Use
10966

County: Broome
Town: Vestal, City Of Binghamton, Conklin, Union
Location: Susquehanna River Binghamton
Directions: A hellbender was collected from the Susquehanna River in the city of Binghamton.
General Quality and Habitat: The rank is based on the draft state element occurrence rank specifications. A rank of 'F' is not assigned because the entire site was not surveyed in 1991. The Susquehanna River is a large river that flows west through the City of Binghamton. Currently several dams cross the river that were most likely not present when the specimen was collected. In the vicinity of the Rock Bottom Dam, the substrate is cobble and there are many large flat stones greater than two feet maximum width. There is a deep plunge pool at the base of the dam.

DRAGONFLIES and DAMSELFLIES

Ophiogomphus howei

Pygmy Snaketail

NY Legal Status: Special Concern
Federal Listing:
Last Report: -----05-30

NYS Rank: S1 - Critically imperiled
Global Rank: G3 - Vulnerable
EO Rank: Historical, no recent information

Office Use
9404
M

County: Broome
Town: Vestal, City Of Binghamton
Location: Susquehanna River Binghamton
Directions: Binghamton.
General Quality and Habitat:

2 Records Processed

Natural Heritage Report on Rare Species and Ecological Communities

NY Natural Heritage Program, NYS DEC, 625 Broadway, 5th Floor, Albany, NY
12233-4757
(518) 402-8935

~This report contains **SENSITIVE** information that should not be released to the public without permission from the NY Natural Heritage Program.
~Refer to the User's Guide for explanations of codes, ranks and fields.
~Location maps for certain species and communities may not be provided 1) if the species is vulnerable to disturbance, 2) if the location and/or extent is not precisely known, 3) if the location and/or extent is too large to display, and/or 4) if the animal is listed as Endangered or Threatened by New York State.

Natural Heritage Report on Rare Species and Ecological Communities

BIRDS

Falco peregrinus

Peregrine Falcon

NY Legal Status:	Endangered	**NYS Rank:**	S3B - Vulnerable	Office Use 5207
Federal Listing:		**Global Rank:**	G4 - Apparently secure	
Last Report:	**	**EO Rank:**	**	ESU

County: Broome
Town: City Of Binghamton
Location: At, or in the vicinity of, the project site.
Directions: **
General Quality and Habitat: **For information on the population at this location and management considerations, please contact the NYS DEC Regional Wildlife Manager for the Region where the project is located, or the NYS DEC Endangered Species Unit at 518-402-8859.

BIVALVE MOLLUSKS

Lampsilis cariosa

Yellow Lampmussel

NY Legal Status:	Unlisted	**NYS Rank:**	S3 - Vulnerable	Office Use 9200
Federal Listing:		**Global Rank:**	G3G4 - Vulnerable	
Last Report:	1997-07-30	**EO Rank:**	Fair or Poor	

County: Broome, Chenango
Town: Fenton, Barker, Greene, Dickinson, Chenango, City Of Binghamton
Location: Chenango River And Tioughnioga River, Chenango River Chenango Forks Islands, Chenango River
Directions: Mussels have been found at four locations in the Chenango River and one location in the Tioughnioga River. In the Chenango River, mussels are located between Chenango Forks and the city of Binghamton. Mussels are also found in the Tioughnioga River near Itaska.
General Quality and Habitat: Between one and two mussels were found at each of four locations. The status of this species at the city of Binghamton is not known. The Chenango River is a wide river, approximately 200-300 feet wide in most areas and mostly 0.4-3.0 feet deep. At Chenango Forks Islands there are island complexes that create riffle and run habitat with a large, wide pool downstream. Submerged aquaticvegetation is scattered. A narrow buffer strip of trees and riparian vegetation borders the river. Associated species: Elliptio complanata, Alasmidonta marginata, Alasmidonta undulata, Lampsilis radiata, and empty valves of Anodonta cataracta.

2 Records Processed

USERS GUIDE TO NY NATURAL HERITAGE DATA

New York Natural Heritage Program, 625 Broadway, 5th Floor, Albany, NY 12233-4757 phone: (518) 402-8935

NATURAL HERITAGE PROGRAM: The NY Natural Heritage Program is a partnership between the NYS Department of Environmental Conservation (NYS DEC) and The Nature Conservancy. Our mission is to enable and enhance conservation of rare animals, rare plants, and significant communities. We accomplish this mission by combining thorough field inventories, scientific analyses, expert interpretation, and the most comprehensive database on New York's distinctive biodiversity to deliver the highest quality information for natural resource planning, protection, and management.

DATA SENSITIVITY: The data provided in the report are ecologically sensitive and should be treated in a sensitive manner. The report is for your in-house use and should **not** be released, distributed or incorporated in a public document without prior permission from the Natural Heritage Program.

EO RANK: A letter code for the quality of the occurrence of the rare species or significant natural community, based on population size or area, condition, and landscape context.

A-E = Extant: A=Excellent, B=Good, C=Fair, D=Poor, E=Extant but with insufficient data to assign a rank of A-D.
F = Failed to find. Did not locate species during a limited search, but habitat is still there and further field work is justified.
H = Historical. Historical occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.
U = Extant/Historical status uncertain.
Blank = Not assigned.

LAST REPORT: The date that the rare species or significant natural community was last observed at this location, as documented in the Natural Heritage databases. The format is most often YYYY-MM-DD.

NY LEGAL STATUS – Animals:

Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E - **Endangered Species**: any species which meet one of the following criteria:
- Any native species in imminent danger of extirpation or extinction in New York.
- Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T - **Threatened Species**: any species which meet one of the following criteria:
- Any native species likely to become an endangered species within the foreseeable future in NY.
- Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC - **Special Concern Species**: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P - **Protected Wildlife** (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U - **Unprotected** (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.

G - **Game** (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NY LEGAL STATUS – Plants:

The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9-1503.

E - **Endangered Species**: listed species are those with:
- 5 or fewer extant sites, or
- fewer than 1,000 individuals, or
- restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
- species listed as endangered by U.S. Dept. of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.

T - **Threatened**: listed species are those with:
- 6 to fewer than 20 extant sites, or
- 1,000 to fewer than 3,000 individuals, or
- restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or
- listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.