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Mr. Anthony Karwiel
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7014

ENVIRONMENT

Subject:
Binghamton Court Street Former MGP Site
Susquehanna River Sediments
Pre-Design Investigation Letter Report

Date:
May 14, 2015

Contact:
David A. Cornell, P.G.

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Our ref:
B0013082.0012.00001

Dear Mr. Karwiel:

This letter presents the results of the Pre-Design Investigation (PDI) completed in connection with the Binghamton Court Street former manufactured gas plant (MGP) site (the "site") located in Binghamton, New York. The PDI was conducted by ARCADIS, on behalf of New York State Electric & Gas (NYSEG), between October 20 and November 6, 2014. The fieldwork was performed in accordance with the following correspondence:

- Pre-Design Work Plan (PDI Work Plan) dated June 6, 2014
- New York State Department of Environmental Conservation's (NYSDEC) approval letter to NYSEG dated July 28, 2014

The PDI objectives and background are provided below, followed by a discussion of the completed fieldwork and results of the PDI.

Objectives and Background

Prior to conducting the PDI, ARCADIS conducted a reconnaissance and sediment assessment at the site between March 11 and May 21, 2013 to determine whether regions of affected sediments documented in the 2002 Remedial Investigation (RI) still existed. The need for this assessment was precipitated by the occurrence of two major flood events that occurred after the RI. The assessment involved probing and sampling sediments along the same stretch of the Susquehanna River that was investigated during the RI, as well as investigating sediment depositional areas near the first downstream dam located approximately 3,300 feet downstream from the site. The results of the assessment were detailed in the Susquehanna River Sediment Assessment Report submitted to NYSDEC on August 19, 2013 (**Attachment A**).

The findings of the 2013 assessment indicated that the distribution of visual impacts observed in surficial sediments adjacent to and downstream from the site varied from the distribution of visual impacts documented in the RI.

As set forth in the June 2014 PDI Work Plan two areas in the Susquehanna River adjacent to the site, Area 1 and Area 2, were identified for remedial consideration and further evaluation in the PDI. The specific objectives of the PDI were to:

- evaluate the distribution of visual impacts (i.e., sheens, non-aqueous phase liquid [NAPL]) in deeper sediments in comparison to the impacts observed during previous investigations;
- assess the concentration and extent of MGP-related polycyclic aromatic hydrocarbons (PAHs) in sediments; and
- obtain the necessary geotechnical data to support a remedial design.

This letter report describes the PDI activities, provides the PDI sampling results from Area 1 and Area 2 adjacent to the site, and provides the revised horizontal and vertical extents of Area 1 and Area 2.

Pre-Design Sediment Drilling and Sampling

A total of 24 sediment borings were advanced during the PDI as shown on **Figure 1**. Sixteen (16) planned borings (PDI-SED-A to PDI-SED-P) and eight (8) contingency borings (PDI-SED-B-1, PDI-SED-E-1, PDI-SED-I-1, PDI-SED-L-1 through PDI-SED-L-3, PDI-SED-N-1, and PDI-SED-P-1) were installed. Boring logs are provided in **Attachment B**. The contingency borings were installed to further refine the extent where visual field observations were noted. Two planned borings (PDI-SED-H and PDI-SED-A) in Area 1 and two planned borings in Area 2 (PDI-SED-A and PDI-SED-M) were advanced to greater depths (20 to 30 feet below sediment surface [bss]) in order to gather additional subsurface geotechnical information (**Figure 1**).

Prior to initiating the sediment drilling activities, a utility clearance was performed.

Due to the heavily armored bottom of the Susquehanna River, borings were advanced by a barge-mounted Acker Ace drill rig using drive and wash methods. A rotary bit was also used to advance borings through obstructions. In order to minimize impacts to surface water during drilling, an oil absorbent boom was placed around the barge and a temporary casing was set into sediments prior to the advancement of all borings. Sediment samples were obtained continuously using a 3-inch diameter by 2-foot long split spoon sampler driven by a 300-pound hammer. With the exception of the geotechnical locations, most borings were advanced to depths between 4 and10 feet bss. Water depths, blow-counts, sample recoveries,

and/or any observed impacts produced by the drilling were also noted on the boring logs during the PDI.

Equipment used during the drilling program was decontaminated prior to, in between, and after all intrusive activities using an Alconox wash or by steam cleaning. Decontamination water, sediment cuttings and all investigation-derived waste (IDW) were containerized in 55-gallon drums for subsequent off-site disposal by NYSEG. Sediment borings were backfilled using a bentonite grout mixture or naturally by sediment collapse. The location and sediment surface elevations of each boring were surveyed by ARCADIS using a global positioning system (GPS) relative to North American Datum of 1983 (NAD 83) and North American Vertical Datum of 1988 (NAVD 88), respectively.

Recovered sediment samples were visually characterized for color, composition, and presence/absence of potential MGP-related impacts (i.e., NAPL, blebs, coating, sheens, staining, or odors) and headspace screened for volatile organic compounds using a photoionization detector (PID). A total of 73 sediment samples were submitted for laboratory analysis from the 24 borings advanced during the PDI. Sediment sampling intervals were selected for laboratory analysis based on predetermined depths described in the PDI Work Plan. When sediment samples exhibited field observations of potential impacts at the pre-determined termination depth, additional deeper intervals were sampled until at least 2 feet of visually clean sediment was encountered. Sediment samples were submitted to Accutest Laboratories for analysis of National Oceanic and Atmospheric Administration (NOAA) 34 PAHs using United States Environmental Protection Agency (USEPA) SW-846 Method 8270 and total organic carbon (TOC) using the Lloyd Kahn method.

ARCADIS validated the laboratory analytical data and prepared a data usability summary report (DUSR) for each individual sample delivery group (SDG) using the most-recent versions of the USEPA's Functional Guidelines (USEPA, 1999; 2002) and USEPA Region II standard operating procedures (SOPs) for data validation. The DUSRs include an assessment of data accuracy, precision, and completeness; significant quality assurance problems, solutions, corrections, and potential consequences; and analytical data validation reports. The results of the data validation have been incorporated into the analytical data presented in **Table 1**.

Pre-Design Investigation Results

The following discussion of the PDI results is divided into subsections based on the areas that were investigated, specifically Area 1 and Area 2 as defined in the PDI Work Plan. **Figure 1** provides the PDI boring locations, and **Table 1** provides the analytical data from the PDI.

Area 1

The sediments of Area 1 are primarily described as fine to coarse sands and fine to coarse gravels (PDI-SED-H through PDI-SED-P-1). There were also some notable silt lenses within the upper 2 to 3 feet at PDI-SED-I and PDI-SED-J. Field observations of potential impacts were noted at 8 of the 12 boring locations within or near Area 1. Field observations of potential impacts included NAPL blebs to trace blebs, light NAPL coating, staining, and sheens. In addition, trace sheens and MGP-like odors were observed. No saturated NAPL conditions were encountered. Total priority pollutant PAH (PrPAH) concentrations measured from sediment in this area ranged from 0.14 milligrams per kilogram (mg/kg) (PDI-SED-H) to 850 mg/kg (PDI-SED-J). A more comprehensive list of field observations and associated PrPAH concentrations for Area 1 are provided below.

Location	Field Observations (ft bss)	PrPAH mg/kg (feet bss)
PDI-SED-H	Faint MGP-like odor (24.0 to 27.4)	3.02 (0.0 to 0.5) 0.70 (0.5 to 1) 0.81 (1 to 2) 0.77 (2 to 3) 0.14 (3 to 4)
PDI-SED-I	Faint MGP-like odor (0 to 0.4) and (2.9 to 3.1)	51.4 (0 to 0.5) 381 (0.5 to 1) 1.5 (1 to 2) 1.4/ 0.75 (2 to 3) 0.48 (3 to 4)
PDI-SED-I-1	No obvious impacts	0.17 (0 to 2)
PDI-SED-J	Light NAPL coating, sheen, NAPL blebs, MGP-like odor (0 to 0.6) Faint MGP-like odor (2.6 to 6.9)	753/ 850 (1 to 2) 4.71 (2 to 3) 4.61 (3 to 4)
PDI-SED-K	Trace NAPL blebs, trace sheen, MGP-like odor (0.5 to 0.8) Trace NAPL blebs , sheen, MGP-like odor (2.0 to 2.9)	694 (1 to 2) 10.1 (2 to 3) 7.65 (3 to 4)
PDI-SED-L	Black staining, trace sheen (0.4 to 0.7) Trace sheen, faint MGP-like odor (2 to 2.7)	18.3 (0 to 0.5) 453 (0.5 to 1) 526 (1 to 2) 101 (2 to 3) 10.1 (3 to 4)
PDI-SED-L-1	Trace sheen (2 to 2.8) Trace sheen, trace NAPL blebs (4.3 to 4.8)	1.48 (5 to 6)
PDI-SED-L-2	Black staining, light NAPL coating, trace sheen, MGP-like odor (2.7 to 2.9) Faint MGP-like odor (4.2-4.5)	1.89 (0 to 2) 3.15 (2 to 3) 689 (3 to 4) 391 (4 to 6)

Location	Field Observations (ft bss)	PrPAH mg/kg (feet bss)
PDI-SED-L-3	No obvious impacts	1.49 (2 to 4)
PDI-SED-M	No obvious impacts	1.22 (2 to 3) 1.24 (3 to 4) 0.31 (4 to 5)
PDI-SED-N	NAPL blebs, MGP-like odor, trace sheen (0.2 to 2.7) Trace NAPL blebs, faint MGP-like odor (4 to 4.6)	226 (0 to 0.5) 72.0 (0.5 to 1) 79.5 (1 to 2) 4.62 (2 to 3) 0.54 (3 to 4) 0.71 (4 to 5) 0.27 (6 to 8)
PDI-SED-N-1	No obvious impacts	0.61 (0 to 2)
PDI-SED-O	No obvious impacts	1.24 (2 to 3) 0.23 (3 to 4) 0.52 (4 to 5)
PDI-SED-P	Black staining, faint MGP-like odor (0.4 to 0.7) Trace sheen (2 to 3)	0.89 (0 to 0.5) 1.52 (0.5 to 1) 4.66 (1 to 2) 5.83/ 4.03 (2 to 3) 14.2 (3 to 4) 12.5 (4 to 5)
PDI-SED-P-1	No obvious impacts	3.65 (0 to 2) 3.77 (2 to 4)

Area 2

The sediments of Area 2 are primarily described as fine to coarse sands and fine to coarse gravels (PDI-SED-A through PDI-SED-G). Borings PDI-SED-A, B and G contained MGP-like odors. PrPAH concentrations measured from sediment in this area ranged from 0.01 mg/kg (PDI-SED-A) to 2.38 mg/kg (PDI-SED-G). A more comprehensive list of field observations and associated Total PrPAH concentrations for Area 2 are detailed in the table below.

Location	Field Observations (ft bss)	Total PrPAH mg/kg (feet bss)
PDI-SED-A	Faint MGP-like odor (20 to 22)	0.02 (0 to 0.5) 0.01 (1 to 2) 0.01 (2-3) 0.01 (3-4)
PDI-SED-B	Faint MGP-like odor (2.0 to 2.4)	0.23 (1 to 2) 0.10 (2 to 3) 0.05 (3 to 4)
PDI-SED-B-1	No obvious impacts	NA
PDI-SED-C	No obvious impacts	0.14 (0 to 0.5) 0.15 (1 to 2) 0.27 (2 to 3) 0.18 (3 to 4)

Location	Field Observations (ft bss)	Total PrPAH mg/kg (feet bss)
PDI-SED-D	Trace sheen, faint MGP-like odor (0 to 3.1) Faint MGP-like odor (4.0 to 4.4)	0.18 (1 to 2) 0.31 (2 to 3) 0.38 (3 to 4)
PDI-SED-E	No obvious impacts	1.34 (0 to 4)
PDI-SED-E-1	No obvious impacts	NA
PDI-SED-F	Light to moderate NAPL coating, sheen, faint to strong MGP-like odor (28.4 to 29.5)	0.21 (0 to 0.5) 0.16 (1 to 2) 0.31 (2 to 3) 0.27 (3 to 4)
PDI-SED-G	No obvious impacts	2.36 (0 to 0.5) 0.44 (1 to 2) 2.38 (2 to 3) 1.09 (3 to 4)

In addition to the shallow impacts (<5 feet bss), three borings installed during the 2014 PDI also encountered deeper impacts in the sands and gravel well below the river bed. As detailed in the tables above and on the attached borings logs, locations PDI-SED-A (Area-2) and PDI-SED-H (Area-1) encountered faint MGP-like odors from 20 to 22 feet bss and from 24 to 27.4 feet bss, respectively. Additionally, an interval of NAPL coated sand and gravel was observed from 28.4 to 29.5 feet bss at boring location PDI-SED-F (Area-2), which corresponds to the interval immediately above the till. Due to the depth of these impacts, they are not contiguous to the shallow sediment impacts that resulted from historic storm water discharges. The interval with NAPL coating lies over 25 feet below the base of the river, and the faint MGP like odors were observed approximately 15 feet below the base of the river. Therefore, these deep impacts will not be included in the areas for remedial consideration.

Areas 1 and 2 Remedial Extents

The proposed areas for remedial consideration set forth in the PDI Work Plan were revised based on the PDI results, the 2013 assessment results, as well as previous investigation results. Specifically the following were included in the remedial extent:, field observations of NAPL blebs, coating, staining, and sheen (except for trace or slight sheen) ; TPAH16 concentrations greater than 4 mg/kg (i.e. Class B and C sediments per Table 5 of the NYSDEC Screening and Assessment of Contaminated Sediment (2014); and the presence of sheens during the 2013 assessment. **Figure 2** depicts the 2014 boring locations, the 2013 sediment probing and sample locations, historical sampling locations, and the newly defined areas for remedial consideration based on this PDI. The rationale for the remedial extents of Areas 1 and 2 is provided below.

Area 1

The horizontal extent of Area 1 is based on the field observations of no NAPL blebs, coating, staining, and sheens, and PrPAH concentrations at or less than 4 mg/kg at the following locations:

- SS-4, SS-3-8, SR-104, SD-04, H, I-1, SS-3-7, SS-3-4, L-3, SS-3-9, M, N-1, SS-3-10, O, P, P-1, BG-02, SR-101, and SS-3-14

The vertical extent of Area 1 is based on the field observations of no NAPL blebs, coating, staining, and sheens and PrPAH concentrations at or less than 4 mg/kg below field observations of potential impacts and PrPAH concentrations greater than 4 mg/kg at the following locations:

Location	Vertical Extent
I	1 foot
J	2 feet
SS-3-3	2 feet
K	3 feet
SS-3-1	3 feet
L	3 feet
L-1	5 feet
N	2 feet

Area 1 is depicted on **Figure 2,** and **Table 2** provides a detailed tabulation of the horizontal and vertical delineation of Area 1.

As shown on **Figure 2** and detailed in **Table 3**, two boring location (SS-3-12 and PDI-SED-P) where sheens were observed within the sediment were not included in Area 1 because the data from SS-3-12 collect in 1997 is superseded by 2014 boring location PDI-SED-O (no impacts and TPAH less than 4 mg/kg) leaving only boring location PDI-SED-P (trace sheen and TPAHs lower than 4 mg/kg in the upper 1 foot and 4.66 mg/kg in the 1 to 2 foot interval) surrounded by borings with no visible impacts and TPAHs lower than 4 mg/kg (PDI-SED-N1, SS-3-10, PDI-SED-L-3, PDI-SED-O, BG-02, SR-101, SS-3-14 and PDI-SED-P1).

Area 2

The horizontal extent of Area 2 is based on the field observations of no NAPL blebs, coating, staining, and sheens and PrPAH concentrations at or less than 4 mg/kg at the following locations:

- SS-12-5, A, B, B-1, SS-12-6, SR-103, SS-12-4, D, C, SS-12-2, E, E-1, SS-12-7, SS-9, G, and F

The vertical extent of Area 2 is assumed to be 1 foot based on the field observations and PrPAH concentrations from the previous investigations as none of the 2014 encountered potential impacts or contained PrPAH concentrations greater than 4 mg/kg. In two borings, SS-12-3 and SS-12-1, sheens were observed to 2 feet; however the PrPAH concentrations from the 1 to 2 foot interval were 2 and 2.3 mg/kg, respectively.

Area 2 is depicted on **Figure 2,** and **Table 3** provides a detailed tabulation of the horizontal and vertical delineation of Area 2.

Summary

Based on the results of the most recent investigations, NYSEG believes that sediments impacted with site related constituents have been adequately delineated. Therefore, with NYSDEC concurrence, NYSEG plans to move forward with a remedial design based on the vertical and horizontal removal of shallow sediments as described in this report and as depicted by Areas 1 and 2 detailed on **Figure 2**.

Please feel free to contact Tracy Blazicek (NYSEG) or me if you have any questions or comments.

Sincerely,

ARCADIS of New York, Inc.

David A. Cornell, P.G.
Senior Geologist

Attachments

Copies:
Tracy Blazicek, CHMM, NYSEG
Nancy Gensky, P.G., ARCADIS
Keith White, C.P.G., ARCADIS

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Tables

Table 1
Summary of Sediment Sample Analytical Results

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Location ID: Sample Depth(Feet): Date Collected:	NYSDEC Sed Class A	NYSDEC Sed Class C	Units	PDI-SED-A 0 - 0.5 10/31/14	PDI-SED-A 1 - 2 10/31/14	PDI-SED-A 2 - 3 10/31/14	PDI-SED-A 3 - 4 10/31/14	PDI-SED-B 1 - 2 10/23/14	PDI-SED-B 2 - 3 10/23/14	PDI-SED-B 3 - 4 10/23/14	PDI-SED-C 0 - 0.5 10/23/14	PDI-SED-C 1 - 2 10/23/14
CPAHs												
Acenaphthene	- -	- -	ug/kg	5.88	4.40 U	4.10 U	3.14 J	19.0 U	9.20	12.6	61.3	63.3 [86.4]
Acenaphthylene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	2.70 J	2.00 J	2.80 J	2.30 J [2.70 J]
Anthracene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	2.40 J	4.10 U	8.20	17.3 [18.5]
Benzo(a)anthracene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	13.2 J	4.10 J	4.10 U	4.20 J	4.40 U [3.90 U]
Benzo(a)pyrene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	16.8 J	5.70	4.10 U	5.40	4.40 U [3.90 U]
Benzo(b)fluoranthene	- -	- -	ug/kg	4.60 UJ	4.40 UJ	4.10 UJ	3.80 U	20.1	6.60	4.10 U	5.90	4.40 U [3.90 U]
Benzo(e)pyrene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	15.9 J	5.70	4.10 U	5.70	4.40 U [3.90 U]
Benzo(ghi)perylene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	12.0 J	4.40	4.10 U	4.90	4.40 U [3.90 U]
Benzo(k)fluoranthene	- -	- -	ug/kg	4.60 UJ	4.40 UJ	4.10 UJ	3.80 U	15.8 J	4.90	4.10 U	5.40	4.40 U [3.90 U]
C1-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.60 U	2.32 J	4.10 U	3.80 U	19.0 U	3.10 J	4.10 U	2.40 J	4.40 U [3.90 U]
C1-Fluoranthenes/Pyrenes	- -	- -	ug/kg	3.44 J	2.77 J	2.35 J	3.80 U	16.9 J	6.00	2.20 J	5.20	4.40 U [3.90 U]
C1-Fluorenes	- -	- -	ug/kg	5.78	3.46 J	4.10 U	3.80 U	19.0 U	4.00 J	6.00	6.70	10.5 [11.2]
C1-Naphthalenes	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	2.66 J	19.0 U	3.40 J	14.7	9.10	32.2 [38.8]
C1-Phenanthrenes/Anthracenes	- -	- -	ug/kg	2.56 J	3.93 J	2.90 J	3.80 U	22.5	6.00	3.90 J	3.80 J	4.40 [5.50]
C2-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	4.30 U	4.10 U	4.40 U	4.40 U [3.90 U]
C2-Fluorenes	- -	- -	ug/kg	4.31 J	3.97 J	4.10 U	3.80 U	19.0 U	2.80 J	4.10 U	3.20 J	3.60 J [3.90 U]
C2-Naphthalenes	- -	- -	ug/kg	4.05 J	4.13 J	2.83 J	3.63 J	13.0 J	5.40	12.2	17.6	41.3 [48.1]
C2-Phenanthrenes/Anthracenes	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	3.40 J	2.90 J	5.50	2.40 J [2.80 J]
C3-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	4.30 U	4.10 U	4.40 U	4.40 U [3.90 U]
C3-Fluorenes	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	4.30 U	4.10 U	4.40 U	4.40 U [3.90 U]
C3-Naphthalenes	- -	- -	ug/kg	2.96 J	2.59 J	2.68 J	2.60 J	19.0 UBJ	4.30 UB	5.60 UB	11.1 UB	20.5 [21.6]
C3-Phenanthrenes/Anthracenes	- -	- -	ug/kg	4.60 U	2.80 J	4.10 U	3.80 U	9.90 J	2.80 J	4.10 U	2.70 J	4.40 U [3.90 U]
C4-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	4.30 U	4.10 U	4.40 U	4.40 U [3.90 U]
C4-Naphthalenes	- -	- -	ug/kg	3.70 J	3.08 J	3.50 J	2.25 J	19.0 U	4.30 U	4.10 U	5.00	6.80 [7.20]
C4-Phenanthrenes/Anthracenes	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	4.30 U	4.10 U	4.40 U	4.40 U [3.90 U]
Chrysene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	14.4 J	6.10	4.10 U	4.40	4.40 U [3.90 U]
Dibenzo(a,h)anthracene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	4.30 U	4.10 U	4.40 U	4.40 U [3.90 U]
Fluoranthene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	40.9 J	14.4	4.10 U	11.5	4.40 U [3.90 U]
Fluorene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	19.0 U	4.30 U	4.10 U	2.40 J	4.80 [5.60]
Indeno(1,2,3-cd)pyrene	- -	- -	ug/kg	4.60 U	4.40 U	4.10 U	3.80 U	11.2 J	3.80 J	4.10 U	3.50 J	4.40 U [3.90 U]
Naphthalene	- -	- -	ug/kg	4.60 U	4.90	4.10 U	4.30	19.3 J	11.7	24.3	4.50	8.80 [11.3]
Perylene	- -	- -	ug/kg	4.60 U	109	4.10 U	3.80 U	16.7 J	6.40	4.10 U	3.70 J	4.40 U [3.90 U]
Phenanthrene	- -	- -	ug/kg	4.60 U	4.02 J	3.47 J	3.80 U	20.0 J	7.20	3.30 J	8.00	49.7 [41.5]
Pyrene	- -	- -	ug/kg	8.99	4.40 U	3.34 J	2.00 J	43.4 J	20.9	5.00	10.6	4.40 U [3.90 U]
Total PrPAHs	4,000	35,000	ug/kg	14.9	8.92 J	6.81 J	9.44 J	227 J	104 J	47.2 J	143 J	146 J [166 J]
Total Organic Carbon												
Total Organic Carbon	- -	- -	mg/kg	653	6,330	671	717	3,260	3,850	516	1,430	608 [767]
Percent Moisture												
Percent Solids	- -	- -	%	79.2	77.4	87.1	89.9	92.5	90.3	91.4	86.1	88.8 [89.5]

See Notes on Page 9.

Table 1
Summary of Sediment Sample Analytical Results

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Location ID: / Sample Depth(Feet): / Date Collected:	NYSDEC Sed Class A	NYSDEC Sed Class C	Units	PDI-SED-C 2 - 3 10/23/14	PDI-SED-C 3 - 4 10/23/14	PDI-SED-D 1 - 2 10/23/14	PDI-SED-D 2 - 3 10/23/14	PDI-SED-D 3 - 4 10/23/14	PDI-SED-E 0 - 4 10/23/14	PDI-SED-F 0 - 0.5 10/29/14	PDI-SED-F 1 - 2 10/29/14	PDI-SED-F 2 - 3 10/29/14	PDI-SED-F 3 - 4 10/29/14
CPAHs													
Acenaphthene	- -	- -	ug/kg	98.1	53.1	38.9	78.5	103	208	65.7	66.0	130	134
Acenaphthylene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	3.40 J	55.0	7.19	3.91 J	7.87	9.45
Anthracene	- -	- -	ug/kg	29.1	17.4	18.6	36.3	41.9	65.7	13.8	10.6	27.8	15.8
Benzo(a)anthracene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	56.1	5.08	4.00 U	4.30 U	4.20 U
Benzo(a)pyrene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	45.4 J	5.62	4.00 U	4.30 U	4.20 U
Benzo(b)fluoranthene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	30.0 J	5.04 J	4.00 UJ	4.30 UJ	4.20 UJ
Benzo(e)pyrene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	39.4	4.18 J	4.00 U	4.30 U	4.20 U
Benzo(ghi)perylene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	24.2	3.47 J	4.00 U	4.30 U	4.20 U
Benzo(k)fluoranthene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	32.6	4.69 J	4.00 UJ	4.30 UJ	4.20 UJ
C1-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	36.6	2.70 J	4.00 U	4.30 U	4.20 U
C1-Fluoranthenes/Pyrenes	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	121	6.64	4.00 U	2.16 J	4.20 U
C1-Fluorenes	- -	- -	ug/kg	17.8 J	9.80	6.90	12.9 J	15.2	39.1	17.7	17.6	38.7	27.7
C1-Naphthalenes	- -	- -	ug/kg	57.8	39.1	42.1	53.6	81.8	91.5	6.01	9.86	18.0	30.5
C1-Phenanthrenes/Anthracenes	- -	- -	ug/kg	14.0 J	5.80	4.90	14.6	18.4	109	11.9	7.57	18.8	10.6
C2-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	21.0 U	4.20 U	4.00 U	4.30 U	4.20 U
C2-Fluorenes	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	8.30 J	3.70 J	52.9	11.4	8.89	16.4	10.8
C2-Naphthalenes	- -	- -	ug/kg	75.6	46.5	43.6	66.9	87.2	131	18.6	23.2	44.9	51.9
C2-Phenanthrenes/Anthracenes	- -	- -	ug/kg	18.0 U	4.20 U	2.30 J	6.60 J	4.20 U	69.4	4.33	2.45 J	3.70 J	4.20 U
C3-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	21.0 U	4.20 U	4.00 U	4.30 U	4.20 U
C3-Fluorenes	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	62.3	4.20 U	4.00 U	4.30 U	4.20 U
C3-Naphthalenes	- -	- -	ug/kg	32.7	18.1	14.3	24.5	26.1	82.1	19.8	16.6	42.7	29.0
C3-Phenanthrenes/Anthracenes	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	47.0	2.77 J	4.00 U	4.30 U	4.20 U
C4-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	21.0 U	4.20 U	4.00 U	4.30 U	4.20 U
C4-Naphthalenes	- -	- -	ug/kg	18.0 U	6.80	6.50	14.5	8.80	52.8	11.8	8.84	16.7	10.1
C4-Phenanthrenes/Anthracenes	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	21.0 U	4.20 U	4.00 U	4.30 U	4.20 U
Chrysene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	72.3	6.49	4.00 U	4.30 U	4.20 U
Dibenzo(a,h)anthracene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	21.0 U	4.20 U	4.00 U	4.30 U	4.20 U
Fluoranthene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	150	30.9	15.5	30.3	14.5
Fluorene	- -	- -	ug/kg	10.3 J	11.4	22.9	36.7	49.6	49.1	7.80	14.0	25.7	24.9
Indeno(1,2,3-cd)pyrene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	20.0 J	3.07 J	4.00 U	4.30 U	4.20 U
Naphthalene	- -	- -	ug/kg	13.4 J	13.0	10.9	14.0	16.7	144	6.84	18.4	16.9	22.6
Perylene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	15.5 J	4.20 U	4.00 U	4.30 U	4.20 U
Phenanthrene	- -	- -	ug/kg	119	80.2	84.0	145	166	174	17.7	18.7	41.2	34.0
Pyrene	- -	- -	ug/kg	18.0 U	4.20 U	4.40 U	13.0 U	4.20 U	213	30.7	15.0	28.2	12.8
Total PrPAHs	4,000	35,000	ug/kg	270 J	175	175	311	381 J	1,340 J	214 J	162 J	308	268
Total Organic Carbon													
Total Organic Carbon	- -	- -	mg/kg	530	625	692	477	534	13,400	2,430	2,460	2,900	771
Percent Moisture													
Percent Solids	- -	- -	%	86.2	90.8	89.2	87.4	84.4	90.1	92	91.8	90.3	90.5

See Notes on Page 9.

Table 1
Summary of Sediment Sample Analytical Results

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Location ID: / Sample Depth(Feet): / Date Collected:	NYSDEC Sed Class A	NYSDEC Sed Class C	Units	PDI-SED-G 0 - 0.5 10/23/14	PDI-SED-G 1 - 2 10/23/14	PDI-SED-G 2 - 3 10/23/14	PDI-SED-G 3 - 4 10/23/14	PDI-SED-H 0 - 0.5 10/21/14	PDI-SED-H 0.5 - 1 10/21/14	PDI-SED-H 1 - 2 10/21/14	PDI-SED-H 2 - 3 10/21/14	PDI-SED-H 3 - 4 10/21/14	PDI-SED-I 0 - 0.5 10/23/14
CPAHs													
Acenaphthene	- -	- -	ug/kg	46.8	17.2	336	35.3	23.5 J	5.10 U	4.50 J	5.90	4.90 U	4,770
Acenaphthylene	- -	- -	ug/kg	124	22.1	83.6	34.5	56.7 J	19.0	17.8	14.5	5.10	937
Anthracene	- -	- -	ug/kg	97.7	14.3	83.3	37.2	120	17.6	23.4	20.9	5.00	2,410 D
Benzo(a)anthracene	- -	- -	ug/kg	143	24.4	124	69.5	187 J	55.6	64.0	65.0	9.80	1,900
Benzo(a)pyrene	- -	- -	ug/kg	165	34.5	167	87.8	192 J	82.7	71.8	71.2	13.9	2,210
Benzo(b)fluoranthene	- -	- -	ug/kg	154	22.4	94.7	64.3	173 J	57.0	57.6	57.4	10.8	849 J
Benzo(e)pyrene	- -	- -	ug/kg	168	26.8	120	68.1	156 J	76.2	54.2	53.7	10.8	1,120 J
Benzo(ghi)perylene	- -	- -	ug/kg	129	22.8	96.9	59.0	117 J	55.9	39.3	47.6	8.60	1,010
Benzo(k)fluoranthene	- -	- -	ug/kg	149	23.5	106	66.7	167 J	53.7	59.8	54.7	11.0	1,150
C1-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	102	12.6	57.8	37.2	82.2 J	41.8	36.6	31.7	7.00	280
C1-Fluoranthenes/Pyrenes	- -	- -	ug/kg	184	35.2	163	78.8	189 J	75.8	73.8	64.6	12.3 UB	2,740
C1-Fluorenes	- -	- -	ug/kg	22.8	5.50	18.7	10.0	25.8	9.20 UB	9.60	7.00 UB	4.90 UB	704
C1-Naphthalenes	- -	- -	ug/kg	71.4	15.1	222	34.5	54.9	9.10	8.60	7.60	2.70 J	892
C1-Phenanthrenes/Anthracenes	- -	- -	ug/kg	160	20.7	93.9	64.0	178 J	37.5	47.0	37.9	8.20 UB	1,740
C2-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	53.1	7.00	26.6	16.6	33.7	18.5	15.3	15.2	4.40 J	31.2
C2-Fluorenes	- -	- -	ug/kg	25.1	7.90	21.2	12.2	28.1 J	18.5	18.5 UB	13.8 UB	4.90 UB	203
C2-Naphthalenes	- -	- -	ug/kg	62.1	14.2	98.9	30.1	46.5	14.1 UB	19.1 UB	12.7 UB	4.90 UB	1,080
C2-Phenanthrenes/Anthracenes	- -	- -	ug/kg	103	14.7	65.4	42.9	72.0	31.5	39.9	24.3	6.30 UB	167
C3-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	35.4	4.50 U	27.7	13.7	21.5	5.10 U	13.0	4.70 U	4.90 U	4.20 U
C3-Fluorenes	- -	- -	ug/kg	47.1	4.50 U	29.1	4.70 U	56.2 J	16.7	25.4	4.70 U	4.90 U	64.8
C3-Naphthalenes	- -	- -	ug/kg	45.7	11.2 UB	34.7	22.6	34.2	15.6 UB	22.5	12.8 UB	5.70 UB	174
C3-Phenanthrenes/Anthracenes	- -	- -	ug/kg	65.7	10.4	51.6	28.0	37.9	30.5	31.9	21.6	5.30 UB	22.5
C4-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	24.9	4.50 U	98.8	74.4	4.60 U	5.10 U	4.90 U	4.70 U	4.90 U	4.20 U
C4-Naphthalenes	- -	- -	ug/kg	33.1	11.1	21.5	15.9	19.7	15.0 UB	21.0	12.5 UB	5.40 UB	25.9
C4-Phenanthrenes/Anthracenes	- -	- -	ug/kg	20.5	4.90	23.3	10.5	17.4	38.7	22.8	10.9	4.90 U	4.20 U
Chrysene	- -	- -	ug/kg	158	25.4	121	67.4	216 J	78.1	77.4	75.3	12.5	1,640
Dibenzo(a,h)anthracene	- -	- -	ug/kg	29.4	4.70	18.9	14.9	32.5 J	12.2	10.0	14.2	3.00 J	159
Fluoranthene	- -	- -	ug/kg	319	46.2	231	131	527	59.8	127	123	16.0	7,110 D
Fluorene	- -	- -	ug/kg	29.7	6.20	27.3	13.8	54.4 J	7.20	9.60	6.20	4.90 U	2,610
Indeno(1,2,3-cd)pyrene	- -	- -	ug/kg	102	18.4	76.7	53.3	112 J	40.4	35.0	39.3	7.70	761
Naphthalene	- -	- -	ug/kg	173	61.3	308	116	177	29.7	34.2	14.7	4.50 J	384
Perylene	- -	- -	ug/kg	118	36.9	190	75.5	152	476	377	392	62.2	434
Phenanthrene	- -	- -	ug/kg	208	26.8	161	84.7	436 J	33.8	51.4	44.9	9.20 UB	12,700 D
Pyrene	- -	- -	ug/kg	336	67.6	348	151	431 J	95.5	122	114	17.5	10,800 D
Total PrPAHs	4,000	35,000	ug/kg	2,360	438	2,380	1,090	3,020	698	805 J	769	135 J	**51,400**
Total Organic Carbon													
Total Organic Carbon	- -	- -	mg/kg	8,770	3,070	6,040	3,880	11,900	14,700	13,700	8,860	1,250	6,440
Percent Moisture													
Percent Solids	- -	- -	%	84.7	80.4	83.2	83.2	76	69.6	75.5	77	80.3	84.6

See Notes on Page 9.

Table 1
Summary of Sediment Sample Analytical Results

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Location ID: Sample Depth(Feet): Date Collected:	NYSDEC Sed Class A	NYSDEC Sed Class C	Units	PDI-SED-I 0.5 - 1 10/23/14	PDI-SED-I 1 - 2 10/23/14	PDI-SED-I 2 - 3 10/23/14	PDI-SED-I 3 - 4 10/23/14	PDI-SED-I-1 0 - 2 11/05/14	PDI-SED-J 1 - 2 10/24/14	PDI-SED-J 2 - 3 10/24/14	PDI-SED-J 3 - 4 10/24/14
CPAHs											
Acenaphthene	- -	- -	ug/kg	34,500 D	134	215 J [87.5 J]	202	42.5	136,000 D [143,000 D]	885	3,020
Acenaphthylene	- -	- -	ug/kg	10,000 D	56.9	41.9 J [12.3 J]	3.40 J	11.0 U	7,250 [8,700]	88.5	29.5
Anthracene	- -	- -	ug/kg	18,000 D	66.3	47.4 J [27.2 J]	4.10 J	11.0 U	33,000 D [52,800 D]	184	45.9
Benzo(a)anthracene	- -	- -	ug/kg	8,750	67.3	61.2 J [20.6 J]	3.80 J	11.0 U	16,700 [19,800]	126	23.1
Benzo(a)pyrene	- -	- -	ug/kg	24,300 D	84.5	77.8 J [29.3 J]	5.40	6.24 J	19,800 J [23,800 J]	157	28.7
Benzo(b)fluoranthene	- -	- -	ug/kg	4,730 J	37.3	33.1 J [12.8 J]	3.60 J	11.0 U	7,730 J [9,620 J]	63.2	12.9
Benzo(e)pyrene	- -	- -	ug/kg	12,100 DJ	47.3	42.1 J [16.1 J]	2.70 J	11.0 U	9,710 [11,800]	79.1	15.6
Benzo(ghi)perylene	- -	- -	ug/kg	5,760	44.1	37.8 J [15.1 J]	4.60	11.0	7,420 [8,960]	69.1	13.5
Benzo(k)fluoranthene	- -	- -	ug/kg	5,570	45.7	40.1 J [15.0 J]	3.60 J	11.0 U	9,580 [11,400]	75.2	13.8
C1-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	1,560	13.4	12.1 [3.50 J]	4.40 U	11.0 U	3,100 [3,760]	22.1	5.50
C1-Fluoranthenes/Pyrenes	- -	- -	ug/kg	14,500	90.5	74.6 J [25.8 J]	5.00 UB	6.03 J	27,200 [33,200]	181	37.5
C1-Fluorenes	- -	- -	ug/kg	3,360	23.7	16.5 [10.4]	4.40 UB	11.0 U	8,870 [9,670]	54.0	29.5
C1-Naphthalenes	- -	- -	ug/kg	2,790	47.0	69.1 J [38.6 J]	126	14.9 B	36,300 [36,800]	213	1,020
C1-Phenanthrenes/Anthracenes	- -	- -	ug/kg	7,860	50.2	36.5 J [19.4 J]	5.20	7.86 JB	17,900 [20,600]	115	27.7
C2-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	157	4.50 U	4.60 U [4.40 U]	4.40 U	11.0 U	477 [605]	4.50 U	4.20 U
C2-Fluorenes	- -	- -	ug/kg	811	7.20 UB	5.10 UB [4.40 U]	4.40 UB	11.0 U	1,890 [2,130]	11.6	5.40
C2-Naphthalenes	- -	- -	ug/kg	4,220	55.3	56.7 J [31.0 J]	8.20 UB	14.9 B	13,600 [14,600]	96.3	364
C2-Phenanthrenes/Anthracenes	- -	- -	ug/kg	905	8.30 UB	7.50 UB [4.30 J]	2.40 J	11.0 U	2,180 [2,540]	16.4	6.60
C3-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.40 U	4.50 U	4.60 U [4.40 U]	4.40 U	11.0 U	122 [46.0 U]	4.50 U	4.20 U
C3-Fluorenes	- -	- -	ug/kg	194	4.50 U	4.60 U [4.40 U]	4.40 U	11.0 U	362 [526]	4.50 U	4.20 U
C3-Naphthalenes	- -	- -	ug/kg	613	16.4 UB	9.00 UB [4.90 UB]	4.40 UB	10.7 JB	1,450 [1,620]	10.0 UB	22.7
C3-Phenanthrenes/Anthracenes	- -	- -	ug/kg	80.3	4.50 U	4.60 UB [4.40 U]	2.20 J	11.0 U	321 [399]	3.80 J	2.50 J
C4-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.40 U	4.50 U	4.60 U [4.40 U]	4.40 U	11.0 U	46.0 U [46.0 U]	4.50 U	4.20 U
C4-Naphthalenes	- -	- -	ug/kg	82.2	6.10 UB	4.60 U [4.00 J]	4.50 UB	7.00 JB	233 [259]	5.80	6.80
C4-Phenanthrenes/Anthracenes	- -	- -	ug/kg	4.40 U	4.50 U	4.60 U [4.40 U]	4.40 U	11.0 U	139 [135]	3.20 J	4.20 U
Chrysene	- -	- -	ug/kg	7,240	55.9	43.6 J [21.1 J]	5.80	7.11 J	14,100 [19,000]	119	17.5
Dibenzo(a,h)anthracene	- -	- -	ug/kg	887	6.30	5.00 [2.60 J]	11.0	11.1	1,320 [1,590]	9.70	4.20 U
Fluoranthene	- -	- -	ug/kg	53,500 D	167	128 J [72.6 J]	7.90	11.0 U	46,700 [52,000]	388	75.3
Fluorene	- -	- -	ug/kg	20,300 D	69.6	99.3 J [45.4 J]	8.10	11.0	42,300 [44,800]	357	466
Indeno(1,2,3-cd)pyrene	- -	- -	ug/kg	4,550	33.8	27.5 J [12.1 J]	7.00	11.0 U	6,410 [7,660]	58.8	10.2
Naphthalene	- -	- -	ug/kg	241	64.7	67.2 [79.1]	181	52.9	173,000 D [201,000 D]	493	345
Perylene	- -	- -	ug/kg	1,910	19.9	13.5 [8.70]	124	109	2,980 [3,330]	24.3	84.6
Phenanthrene	- -	- -	ug/kg	102,000 D	322	274 [185]	14.2	12.4	162,000 D [169,000 D]	1,050	395
Pyrene	- -	- -	ug/kg	81,000 D	247	201 J [109 J]	11.4	12.3	69,400 [77,100]	591	114
Total PrPAHs	4,000	35,000	ug/kg	**381,000**	1,500	1,400 [747 J]	477 J	167 J	**753,000 [850,000]**	**4,710**	**4,610**
Total Organic Carbon											
Total Organic Carbon	- -	- -	mg/kg	5,950	801	1,220 [1,020]	6,600	NA	21,700 [13,800]	930	2,130
Percent Moisture											
Percent Solids	- -	- -	%	89	82.6	82.1 [83.4]	79.8	88.6	79.8 [86.1]	82.7	85.4

See Notes on Page 9.

Table 1
Summary of Sediment Sample Analytical Results

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Location ID: / Sample Depth(Feet): / Date Collected:	NYSDEC Sed Class A	NYSDEC Sed Class C	Units	PDI-SED-K 1 - 2 10/28/14	PDI-SED-K 2 - 3 10/28/14	PDI-SED-K 3 - 4 10/28/14	PDI-SED-L 0 - 0.5 10/24/14	PDI-SED-L 0.5 - 1 10/24/14	PDI-SED-L 1 - 2 10/24/14	PDI-SED-L 2 - 3 10/24/14	PDI-SED-L 3 - 4 10/24/14	PDI-SED-L-1 5 - 6 10/28/14	PDI-SED-L-2 0 - 2 11/05/14
CPAHs													
Acenaphthene	- -	- -	ug/kg	86,700	1,030	853	507	54,800	50,500	12,100	1,960	115	124
Acenaphthylene	- -	- -	ug/kg	10,400	175	124	301 J	12,400	18,100	3,360	356	45.6	189
Anthracene	- -	- -	ug/kg	62,800 D	673	683	690 J	38,200	47,600 D	8,160	713	41.2	77.6
Benzo(a)anthracene	- -	- -	ug/kg	26,900	544	375	1,300	11,500	16,600	3,280	330	4.40 U	12.0 U
Benzo(a)pyrene	- -	- -	ug/kg	30,000	552	373	1,480 J	8,470 J	13,400 J	2,540 J	269 J	4.40 U	12.0 U
Benzo(b)fluoranthene	- -	- -	ug/kg	12,300	267	164	1,260 J	4,730 J	6,670 J	1,270 J	123 J	4.40 U	12.0 U
Benzo(e)pyrene	- -	- -	ug/kg	14,600	294	186	1,040 J	4,690	6,640	1,280 J	138 J	4.40 U	12.0 U
Benzo(ghi)perylene	- -	- -	ug/kg	9,770	199	118	766	2,850	3,940	754	88.0	4.40 U	12.0 U
Benzo(k)fluoranthene	- -	- -	ug/kg	15,500	349	230	1,150 J	5,280	7,370	1,450 J	165 J	4.40 U	12.0 U
C1-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	7,000	191	126	494 J	8,100	12,200	2,380	225	4.40 U	12.0 U
C1-Fluoranthenes/Pyrenes	- -	- -	ug/kg	47,100	829	571	1,470	30,200	44,200	8,520	792	122	7.83 J
C1-Fluorenes	- -	- -	ug/kg	12,500	171	133	315	43,200	39,300	6,920	702	53.3	24.2
C1-Naphthalenes	- -	- -	ug/kg	33,900	194	182	333	4,070	10,700	2,400	260	9.64	89.1
C1-Phenanthrenes/Anthracenes	- -	- -	ug/kg	32,900	639	492	956	78,900	95,500	19,500	1,640	68.2	52.8
C2-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	1,670	47.7	29.5	186 J	4,050	4,290	783	78.9	4.40 U	12.0 U
C2-Fluorenes	- -	- -	ug/kg	3,800	79.0	56.9	343	18,700	21,900	4,060	376	25.8	6.66 JB
C2-Naphthalenes	- -	- -	ug/kg	18,700	208	175	505	65,100	55,900	11,900	1,150	32.7	69.2
C2-Phenanthrenes/Anthracenes	- -	- -	ug/kg	6,390	191	141	608	22,200	30,000	5,700	498	29.8	12.0 U
C3-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	463	15.4	7.50	102 J	2,860	1,220	100 U	19.4	4.40 U	12.0 U
C3-Fluorenes	- -	- -	ug/kg	874	97.8	49.4	361	4,230	6,080	1,410	84.6	4.40 U	12.0 U
C3-Naphthalenes	- -	- -	ug/kg	4,380	112	93.3	434	60,300	46,000	9,110	825	33.2	23.4 B
C3-Phenanthrenes/Anthracenes	- -	- -	ug/kg	1,540	60.2	37.6	368	6,660	8,050	1,460	136	4.06 J	12.0 U
C4-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	551	14.8	8.00	73.4 J	2,090	464	100 U	4.70 U	4.40 U	12.0 U
C4-Naphthalenes	- -	- -	ug/kg	1,090	43.5	29.8	337 J	13,700	15,400	2,940	249	10.5	8.68 JB
C4-Phenanthrenes/Anthracenes	- -	- -	ug/kg	585	15.3	10.8	110	1,590	1,290	245	20.9	4.40 U	12.0 U
Chrysene	- -	- -	ug/kg	28,200	544	500	1,460	10,900	14,400	2,970	303	4.40 U	12.0 U
Dibenzo(a,h)anthracene	- -	- -	ug/kg	2,270	51.1	31.1	248	1,040	1,390	274	27.6	4.40 U	12.0 U
Fluoranthene	- -	- -	ug/kg	58,800	1,290	887	2,670	41,000	33,500	7,370	693	422	210
Fluorene	- -	- -	ug/kg	44,100	444	343	500	63,600	52,400	11,400	1,050	117	58.7
Indeno(1,2,3-cd)pyrene	- -	- -	ug/kg	8,940 J	180	109	771	2,810	3,900	741	79.1	4.40 U	12.0 U
Naphthalene	- -	- -	ug/kg	42,200	281	239	631 J	1,470	3,100	681	119	20.5	400
Perylene	- -	- -	ug/kg	4,190	96.1	69.3	403	1,550	2,200	444 J	48.9	4.40 U	12.0 U
Phenanthrene	- -	- -	ug/kg	168,000 D	1,740	1,350	1,830 J	146,000	210,000 D	35,000	2,870	59.8	561
Pyrene	- -	- -	ug/kg	87,500	1,830	1,270	2,710	48,100	43,100	9,950	948	658	266
Total PrPAHs	4,000	35,000	ug/kg	**694,000**	**10,100**	**7,650**	**18,300**	**453,000**	**526,000**	**101,000**	**10,100**	1,480	1,890
Total Organic Carbon													
Total Organic Carbon	- -	- -	mg/kg	16,600	4,110	1,350	24,600	40,700	37,900	9,070	3,140	1,340	NA
Percent Moisture													
Percent Solids	- -	- -	%	76.6	84.8	86.3	83.8	80.8	84.1	85.6	81.9	84	89

See Notes on Page 9.

Table 1
Summary of Sediment Sample Analytical Results

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Location ID: / Sample Depth(Feet): / Date Collected:	NYSDEC Sed Class A	NYSDEC Sed Class C	Units	PDI-SED-L-2 2 - 3 11/05/14	PDI-SED-L-2 3 - 4 11/05/14	PDI-SED-L-2 4 - 6 11/05/14	PDI-SED-L-3 2 - 4 11/05/14	PDI-SED-M 2 - 3 10/29/14	PDI-SED-M 3 - 4 10/29/14	PDI-SED-M 4 - 5 10/29/14	PDI-SED-N 0 - 0.5 10/24/14	PDI-SED-N 0.5 - 1 10/24/14	PDI-SED-N 1 - 2 10/24/14
CPAHs													
Acenaphthene	- -	- -	ug/kg	149	32,300	14,700	133	38.9	48.1	38.3	19,000	7,330	7,980
Acenaphthylene	- -	- -	ug/kg	349	75,900	34,800	122	46.2 J	28.5	8.62 J	5,790	2,450	2,750
Anthracene	- -	- -	ug/kg	137	37,700	17,800	63.3	55.0 J	97.4	15.5 J	16,400	5,510	6,320
Benzo(a)anthracene	- -	- -	ug/kg	2.93 J	20,500	9,670	22.0	72.4 J	72.7	15.4 J	10,300	2,850	3,050
Benzo(a)pyrene	- -	- -	ug/kg	4.50 U	24,400	11,400	22.3	132 J	106	26.8	14,400 J	2,840 J	2,770 J
Benzo(b)fluoranthene	- -	- -	ug/kg	4.50 U	8,480	3,870	8.04 J	69.7 J	66.1	13.4 J	6,250 J	1,420 J	1,250 J
Benzo(e)pyrene	- -	- -	ug/kg	4.50 U	12,300	5,940	16.6	91.3 J	74.2	16.9 J	7,740 J	1,440 J	1,420 J
Benzo(ghi)perylene	- -	- -	ug/kg	4.50 U	11,400	5,540	13.0	77.8	61.9	15.7 J	6,550	947	918
Benzo(k)fluoranthene	- -	- -	ug/kg	4.50 U	12,700	6,190	17.2	74.8 J	66.9	14.5 J	7,070 J	1,600 J	1,650 J
C1-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.50 U	6,110	2,360	8.77 J	45.8 J	26.2	17.0 U	3,090	1,840	1,950
C1-Fluoranthenes/Pyrenes	- -	- -	ug/kg	25.6	24,500	10,900	34.5	110 J	96.2	20.8	15,500	6,360	6,930
C1-Fluorenes	- -	- -	ug/kg	43.0	9,650	4,120	29.3	18.9 J	15.8	9.29 J	5,660	4,250	4,500
C1-Naphthalenes	- -	- -	ug/kg	169	71,700	33,600	97.0	9.52	13.1	17.0 U	4,430	2,250	2,630
C1-Phenanthrenes/Anthracenes	- -	- -	ug/kg	109	29,400	12,700	60.1	68.3 J	51.8	15.1 J	16,200	12,500	14,000
C2-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.50 U	1,720	660	12.0 U	40.1 J	15.4	17.0 U	742	622	653
C2-Fluorenes	- -	- -	ug/kg	9.37 B	2,560	1,110	9.91 JB	26.2 J	20.5	17.0 U	2,950	2,610	3,010
C2-Naphthalenes	- -	- -	ug/kg	141	39,100	15,400	76.5	17.3 J	15.9	12.9 J	8,410	6,170	6,580
C2-Phenanthrenes/Anthracenes	- -	- -	ug/kg	9.17	6,080	2,510	13.3	42.6 J	23.1	17.0 U	4,270	3,850	4,260
C3-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.50 U	410 U	430 U	12.0 U	43.4 J	17.6	17.0 U	224	161	213
C3-Fluorenes	- -	- -	ug/kg	4.50 U	705	373 J	12.0 U	31.1 J	19.7	17.0 U	928	848	834
C3-Naphthalenes	- -	- -	ug/kg	32.0 B	7,390	3,080	33.4 B	24.6 J	14.9	10.7 J	5,090	5,110	5,260
C3-Phenanthrenes/Anthracenes	- -	- -	ug/kg	4.50 U	1,270	489	12.0 U	37.6 J	17.1	9.05 J	1,140	965	1,110
C4-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.50 U	410 U	430 U	12.0 U	26.9 J	14.6	17.0 U	110 U	82.0 U	366
C4-Naphthalenes	- -	- -	ug/kg	6.74 B	1,540	636	10.3 JB	21.2 J	12.9	14.5 J	1,890	2,000	2,010
C4-Phenanthrenes/Anthracenes	- -	- -	ug/kg	4.50 U	326 J	430 U	12.0 U	24.9 J	8.69	17.0 U	245	167	206
Chrysene	- -	- -	ug/kg	4.87	20,700	12,600	33.9	92.0 J	87.0	18.5	11,000	2,710	2,850
Dibenzo(a,h)anthracene	- -	- -	ug/kg	4.50 U	1,630	717	12.0 U	12.9	10.8	17.0 U	1,070	284	250
Fluoranthene	- -	- -	ug/kg	303	59,100	29,300	100	145	158	31.4	25,600	6,370	6,830
Fluorene	- -	- -	ug/kg	107	42,700	17,900	72.3	15.6	20.3	17.0 U	10,700	5,710	6,480
Indeno(1,2,3-cd)pyrene	- -	- -	ug/kg	4.50 U	8,160	3,810	12.0 U	60.3 J	49.8	11.8 J	5,110	880	845
Naphthalene	- -	- -	ug/kg	704	86,200	104,000	417	37.1	56.4	28.6	2,920	2,250	1,890
Perylene	- -	- -	ug/kg	4.50 U	3,680	1,750	9.56 J	68.7	175	65.8	2,130 J	510 J	477 J
Phenanthrene	- -	- -	ug/kg	988	157,000	72,900	295	84.2 J	89.5	22.0	46,300	20,700	24,700
Pyrene	- -	- -	ug/kg	404	90,000	45,500	174	209	221	45.4	37,800	8,140	8,930
Total PrPAHs	4,000	35,000	ug/kg	3,150 J	**689,000**	**391,000**	1,490 J	1,220 J	1,240	306 J	**226,000**	**72,000**	**79,500**
Total Organic Carbon													
Total Organic Carbon	- -	- -	mg/kg	NA	NA	NA	NA	2,230	3,650	1,610	14,400	5,610	9,710
Percent Moisture													
Percent Solids	- -	- -	%	89.1	83.4	91.2	89.1	85.2	87.4	83.7	88.3	90.8	88

See Notes on Page 9.

Table 1
Summary of Sediment Sample Analytical Results

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Location ID: / Sample Depth(Feet): / Date Collected:	NYSDEC Sed Class A	NYSDEC Sed Class C	Units	PDI-SED-N 2 - 3 10/24/14	PDI-SED-N 3 - 4 10/24/14	PDI-SED-N 4 - 5 10/27/14	PDI-SED-N 6 - 8 10/27/14	PDI-SED-N-I 0 - 2 10/27/14	PDI-SED-O 2 - 3 10/27/14	PDI-SED-O 3 - 4 10/27/14	PDI-SED-O 4 - 5 10/27/14	PDI-SED-P 0 - 0.5 10/28/14	PDI-SED-P 0.5 - 1 10/28/14
CPAHs													
Acenaphthene	- -	- -	ug/kg	889	30.2	176 J	26.8	18.1	456	11.7	23.5	7.82	25.3
Acenaphthylene	- -	- -	ug/kg	123	27.7	16.7 J	11.9	20.5	16.1	8.30 UB	8.90 UB	17.6	106
Anthracene	- -	- -	ug/kg	313	35.9	42.5 J	19.4	18.3	36.3	15.6	31.3	16.6	71.6
Benzo(a)anthracene	- -	- -	ug/kg	183	33.7	22.1 J	12.3	36.6	43.3	12.9	22.9	61.9	102
Benzo(a)pyrene	- -	- -	ug/kg	213 J	36.8 J	16.9 J	10.2	35.0	49.8	16.0	30.7	83.2	127
Benzo(b)fluoranthene	- -	- -	ug/kg	99.5 J	17.9 J	9.50 J	5.90	39.4	23.4	7.90	14.3	77.3	104
Benzo(e)pyrene	- -	- -	ug/kg	117 J	19.1 J	9.60 J	6.00	40.0	28.4	9.70	19.0	68.2	105
Benzo(ghi)perylene	- -	- -	ug/kg	90.7	13.8 J	5.70	3.60 J	26.2	21.0	7.80	15.0	50.8	80.3
Benzo(k)fluoranthene	- -	- -	ug/kg	123 J	21.1 J	12.1 J	6.90	40.0	27.9	9.30	16.9	72.6	96.5
C1-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	83.0	22.9	14.9 J	9.40	25.1	18.9	5.80	4.70	26.6	89.6
C1-Fluoranthenes/Pyrenes	- -	- -	ug/kg	328	70.3	58.1 J	29.7	57.2	68.9	20.3	29.0	58.5	176
C1-Fluorenes	- -	- -	ug/kg	138	18.7	27.8 J	20.0	9.27	18.2	4.70	5.80	6.34	31.3
C1-Naphthalenes	- -	- -	ug/kg	241	14.1 J	59.5 J	16.2	20.2	16.0	2.50 J	5.80	15.2	24.8
C1-Phenanthrenes/Anthracenes	- -	- -	ug/kg	492	64.0	72.8 J	51.2	28.9	35.5	11.5 UB	15.7	30.5	97.5
C2-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	25.6	16.0 U	4.80 J	3.70 J	15.4	5.80	4.30 U	4.40 U	13.2	69.5
C2-Fluorenes	- -	- -	ug/kg	107	21.0	16.5 J	13.1	16.2	10.7	3.30 J	4.40 U	8.63	39.7
C2-Naphthalenes	- -	- -	ug/kg	210	18.6	66.5 J	21.7	30.6	16.8	5.70 UB	4.90 UB	16.6	31.9
C2-Phenanthrenes/Anthracenes	- -	- -	ug/kg	167	27.2	24.8 J	18.9	22.8	16.0	6.50	3.70 J	18.4	112
C3-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.30 U	16.0 U	4.20 U	4.20 U	17.3	4.00 U	4.30 U	4.40 U	10.2	70.9
C3-Fluorenes	- -	- -	ug/kg	40.3	16.0 U	4.20 U	4.20 U	18.3	4.00 U	4.30 U	4.40 U	4.80 U	52.4
C3-Naphthalenes	- -	- -	ug/kg	129	19.9	36.7 J	22.5	14.6	9.50 UB	4.30 UB	4.40 UB	13.0 UB	36.0
C3-Phenanthrenes/Anthracenes	- -	- -	ug/kg	46.0	15.3 J	12.1 J	6.80	16.9	9.30	2.80 J	2.40 J	10.2	77.3
C4-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	4.30 U	16.0 U	4.20 U	4.20 U	17.0	4.00 U	4.30 U	4.40 U	4.80 U	57.0
C4-Naphthalenes	- -	- -	ug/kg	64.6	16.0 U	15.3 J	13.4	11.0	5.60	4.30 U	4.40 U	9.22	27.6
C4-Phenanthrenes/Anthracenes	- -	- -	ug/kg	23.9	16.0 U	3.20 J	4.20 U	9.20	4.00 U	4.30 U	4.40 U	4.66 J	32.7
Chrysene	- -	- -	ug/kg	189	33.7	23.1 J	13.0	56.8	49.7	13.9	24.1	65.2	126
Dibenzo(a,h)anthracene	- -	- -	ug/kg	19.7	16.0 U	2.60 J	2.40 J	6.65	4.70	4.30 U	4.40 U	13.8	24.6
Fluoranthene	- -	- -	ug/kg	420	66.4	53.4 J	32.7	86.8	91.7	29.8	74.2	142	197
Fluorene	- -	- -	ug/kg	230	15.2 J	71.1 J	15.3	16.3	20.0	6.00	14.0	7.97	28.0
Indeno(1,2,3-cd)pyrene	- -	- -	ug/kg	77.0	13.7 J	5.10 J	3.50 J	20.9	16.4	5.50	9.50	44.5	67.0 J
Naphthalene	- -	- -	ug/kg	268	22.8	56.2 J	12.8	15.0	146	6.70	30.3	25.1	23.7
Perylene	- -	- -	ug/kg	149	16.0 U	4.30 J	4.20 U	9.63	162	7.30	7.80	26.8	39.9
Phenanthrene	- -	- -	ug/kg	792	65.7	126 J	52.3	62.1	79.8	29.6	89.1	57.1	111
Pyrene	- -	- -	ug/kg	586	101	73.6 J	44.1	109	155	48.0	115	143	226
Total PrPAHs	4,000	35,000	ug/kg	**4,620**	536 J	713 J	273 J	608	1,240	229	520	886	1,520
Total Organic Carbon													
Total Organic Carbon	- -	- -	mg/kg	3,540	877	470	618	3,210	2,640	821	708	42,300	108,000
Percent Moisture													
Percent Solids	- -	- -	%	89.3	88.6	95.2	87	85.5	89.2	89.2	90.2	79.7	85.1

See Notes on Page 9.

Table 1
Summary of Sediment Sample Analytical Results

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Location ID: Sample Depth(Feet): Date Collected:	NYSDEC Sed Class A	NYSDEC Sed Class C	Units	PDI-SED-P 1 - 2 10/28/14	PDI-SED-P 2 - 3 10/28/14	PDI-SED-P 3 - 4 10/28/14	PDI-SED-P 4 - 5 10/28/14	PDI-SED-P-1 0 - 2 11/05/14	PDI-SED-P-1 2 - 4 11/05/14
CPAHs									
Acenaphthene	- -	- -	ug/kg	123	92.7 J [51.0 J]	60.0	152	99.2	201
Acenaphthylene	- -	- -	ug/kg	354	395 [242]	1,440	851	376	78.3
Anthracene	- -	- -	ug/kg	260	485 J [242 J]	1,020	817	185	220
Benzo(a)anthracene	- -	- -	ug/kg	355	432 [311]	1,290	1,020	152	221
Benzo(a)pyrene	- -	- -	ug/kg	428	496 [331]	1,470	1,060	167	219
Benzo(b)fluoranthene	- -	- -	ug/kg	307	341 [224]	846	741	110	182
Benzo(e)pyrene	- -	- -	ug/kg	303	350 [223]	864	654	110	150
Benzo(ghi)perylene	- -	- -	ug/kg	210	211 [165]	610	440	93.4	118
Benzo(k)fluoranthene	- -	- -	ug/kg	285	365 [229]	900	719	125	196
C1-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	294	372 J [214 J]	1,050	696	85.7	94.2
C1-Fluoranthenes/Pyrenes	- -	- -	ug/kg	724	816 [551]	2,470	1,760	206	202
C1-Fluorenes	- -	- -	ug/kg	115	149 [139]	246	342	51.4	63.3
C1-Naphthalenes	- -	- -	ug/kg	86.6	55.1 [52.8]	74.1	277	184	149
C1-Phenanthrenes/Anthracenes	- -	- -	ug/kg	322	377 [236]	1,430	1,040	185	302
C2-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	188	264 J [99.3 J]	397	331	55.6	47.1
C2-Fluorenes	- -	- -	ug/kg	195	286 [186]	438	498	33.6	98.1
C2-Naphthalenes	- -	- -	ug/kg	104	97.7 J [55.2 J]	98.5	226	108	167
C2-Phenanthrenes/Anthracenes	- -	- -	ug/kg	353	336 [226]	1,070	787	95.3	207
C3-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	158	212 J [51.1 J]	125	159	72.1	33.2
C3-Fluorenes	- -	- -	ug/kg	168	188 J [84.3 J]	235	211	37.7	78.6
C3-Naphthalenes	- -	- -	ug/kg	130	102 J [54.8 J]	130	180	53.5	420
C3-Phenanthrenes/Anthracenes	- -	- -	ug/kg	285	267 J [137 J]	439	344	190	87.1
C4-Benzo(a)anthracenes/Chrysenes	- -	- -	ug/kg	95.3	242 J [54.7 J]	77.8	102	39.0	4.30 U
C4-Naphthalenes	- -	- -	ug/kg	131	119 J [70.2 J]	183	202	36.5	585
C4-Phenanthrenes/Anthracenes	- -	- -	ug/kg	124	111 J [40.0 J]	89.7	90.7	422	25.2
Chrysene	- -	- -	ug/kg	376	514 [327]	1,220	978	217	259
Dibenzo(a,h)anthracene	- -	- -	ug/kg	67.7	77.0 [50.6]	183	153	24.6	36.1
Fluoranthene	- -	- -	ug/kg	522	695 [528]	1,380	1,630	396	544
Fluorene	- -	- -	ug/kg	98.6	118 [132]	178	302	131	141
Indeno(1,2,3-cd)pyrene	- -	- -	ug/kg	184 J	206 J [156]	514 J	406 J	86.1	110
Naphthalene	- -	- -	ug/kg	88.0	67.1 [93.8]	81.7	303	391	278
Perylene	- -	- -	ug/kg	114	208 J [107 J]	304	264	41.6	76.2
Phenanthrene	- -	- -	ug/kg	264	386 [274]	634	848	634	503
Pyrene	- -	- -	ug/kg	742	948 [678]	2,380	2,040	460	468
Total PrPAHs	4,000	35,000	ug/kg	**4,660**	**5,830 [4,030]**	**14,200**	**12,500**	3,650	3,770
Total Organic Carbon									
Total Organic Carbon	- -	- -	mg/kg	13,700	26,200 [30,500]	8,780	7,440	NA	NA
Percent Moisture									
Percent Solids	- -	- -	%	84.7	84.6 [88.2]	87.5	89.1	94.5	86.9

See Notes on Page 9.

Table 1
Summary of Sediment Sample Analytical Results

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

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

Table 2
Horizontal and Vertical Delineation – Area 1

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Area 1			
Previous Investigation Location	**Visual Observations (ft bss)**	**Total PAHs mg/kg (ft bss)**	**Delineation**
SS-4	None (0-0.9)	0.24 (0-0.9)	Use for horizontal delineation
SS-3-8	None (0-0.5, 1-2)	ND (0-0.5, 1-2)	Use for horizontal delineation
SR-104	Slight Sheen (0-2) None (2-6)	0.57 (0-1)	Use for horizontal delineation
SD-04	Trace Sheen (0-2)	1.48 (0-0.5) 0.11 (0.5-1)	Use for horizontal delineation
H	Faint MGP-like odors 24-27.4	3.02 (0-0.5) 0.70 (0.5-1) 0.81 (1-2) 0.77 (2-3) 0.14(3-4)	Use for horizontal delineation
SS-3-5	Sheen (0-0.5, 1-2) None (2-3)	230 (0-0.5) 340 (1-2)	Use for vertical delineation (2 feet)
I	Faint MGP-like odor (0-0.4 and 2.9-3.1)	51.4 (0-0.5) 381 (0.5-1) 1.5 (1-2) 1.4 (2-3) 0.48 (3-4)	Use for vertical delineation (1 foot)
I-1	None	0.17(0-2)	Use for horizontal delineation.
SS-3-6	Slight sheen (0-0.5, 1-2, 2-3)	130 (0-0.5) 12 (1-2)	Use for vertical delineation (1 foot)
SS-3	Sheen (0-0.5, 0.5-1)	1979 (0-1)	
J	Light NAPL coating, sheen, NAPL blebs, MGP-like odor (0-0.6) Faint MGP like odor (2.6-6.9)	753/ 850 (1-2) 4.71 (2-3) 4.61 (3-4)	Use for vertical delineation (2 feet)
SS-3-3	Sheen (0-0.5, 1-2, 2-4)	31/26 (0-0.5) 720 (1-2) 2 (3-4)	Use for vertical delineation (2 feet)
SS-3-7	None (0-0.5, 1-2)	1.8 (0-0.5) 2.9 (1-2)	Use for horizontal delineation
SS-3-4	None (0-0.5, 1-2)	2.6 (0-0.5) 6.5 (1-2)	Use for horizontal delineation
SD-05	None (0-0.5)	245 (0-0.8)	
SED-2	NA	4230 (0-0.5)	
K	Trace NAPL blebs, trace sheen MGP like odor (0.5-0.8) Trace blebs, sheen, MGP-like odor (2-2.9)	694 (1-2) 10.1 (2-3) 7.65 (3-4)	Use for vertical delineation (3 feet)
SS-3-1	Sheen (0-0.5, 1-2, 2-3) None (3-4)	360 (0-0.5) 1,092 (1-2) 4.1 (3-4)	Use for vertical delineation (3 feet)
SR-102	Staining/ Sheen (0-2) Slight Sheen (8-14) None (2-8, 14- 36)	308/108 (0-2)	
SS-3-2	Sheen (0-0.5)	430 (0-0.5)	
L	Black staining, trace sheen, (0.4-0.7) Trace sheen, faint MGP like odor (2-2.7)	18.3 (0-0.5) 453 (0.5-1) 526 (1-2) 101 (2-3) 10.1 (3-4)	Use for vertical delineation (3 feet)

Table 2
Horizontal and Vertical Delineation – Area 1

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Area 1			
Previous Investigation Location	**Visual Observations (ft bss)**	**Total PAHs mg/kg (ft bss)**	**Delineation**
L-1	Trace sheen (2-2.8) Trace sheen, trace NAPL bleb (4.3-4.8)	1.48 (5-6)	Use for vertical delineation (5 feet)
L-2	Black staining, light NAPL coating, MGP-like odor, trace sheen (2.7-2.9) Faint MGP-like odor (4.2-4.5)	1.89 (0-2) 3.15(2-3) 689 (3-4) 391 (4-6)	
L-3	None	1.49(2-4)	Use for horizontal delineation
SS-3-9	None	ND (0-0.5) 7.2J (1-2)	Use for horizontal delineation
SS-3-11	Slight Sheen (0-0.5) Sheen (1-2) None (2-3)	170 (0-0.5) 140(1-2) 62 (3-4)	
M	None (0-20)	1.22 (2-3) 1.24 (3-4) 0.31 (4-5)	Use for horizontal delineation
N	NAPL blebs, trace sheen, MGP like odor (0.2-2.7) Trace NAPL bleb, faint MGP-like odor (4-4.6)	226 (0-0.5) 72 (0.5-1) 79.5 (1-2) 4.6 (2-3) 0.54(3-4) 0.71 (4-5) 0.27 (6-8)	Use for vertical delineation (2 feet)
N-1	None (0-4)	0.61 (0-2)	Use for horizontal delineation
SS-3-10	None (0-0.5, 1-2)	0.54 (0-0.5) 0.18 (1-2)	Use for horizontal and vertical delineation
SS-3-12	Sheen (0-0.5, 1-2) Slight Sheen (2-3)	26 (0-0.5) 170 (1-2)	Use for vertical delineation (2 feet)
O	None (0-6)	1.24 (2-3) 0.23 (3-4) 0.52 (4-5)	Use for horizontal delineation.
P	Black staining, faint MGP-like odor (0.4-0.7) Trace sheen (2-3)	0.886 (0-0.5) 1.52 (0.5-1) 4.66 (1-2) 5.83/ 4.03 (2-3) 14.2 (3-4) 12.5 (4-5)	Use for vertical delineation (1 foot)
P-1	None	3.65 (0-2) 3.77(2-4)	Use for horizontal delineation.
BG-02	None	1.28 (0-0.2)	Use for horizontal delineation
SR-101	Little Sheen (0-2) None (2-36)	1.3 (0-2)	Use for horizontal delineation
SS-3-14	None (0-0.5, 1-2)	1 (0-0.5) 1.6 (1-2)	Use for horizontal delineation

Table 3
Horizontal and Vertical Delineation – Area 2

Susquehanna River Sediments Pre-Design Investigation Letter Report
Binghamton Court Street Former MGP Site

Area 2			
Location	**Field Observations (ft bss)**	**Total PAHs mg/kg (ft bss)**	**Extent**
SS-12-5	None (0-0.5, 1-2)	ND (0-0.5) 0.31/ND (1-2)	Use for horizontal delineation
SD-01	Little Sheen (0-0.5)	10.7/20.4 (0-0.5)	
A	Faint MGP-like odor (20-22)	0.02 (0-0.5) 0.01 (1-2) 0.01 (2-3) 0.01 (3-4)	Use for horizontal delineation
B	Faint MGP-like odor (2-2.4)	0.23 (1-2) 0.10 (2-3) 0.05(3-4)	Use for horizontal delineation
B-1	None	NA	Use for horizontal delineation
SS-12-6	None (0-0.5, 1-2)	ND (0-0.5, 1-2)	Use for horizontal delineation
SS-12-3	Sheen (0-0.5, 1-2)	2.1 (0-0.5) 2 (1-2)	Use for horizontal delineation
SR-103	None (0-5.5)	ND (0-0.5, 1-2)	Use for horizontal delineation
SS-12-4	None (0-0.5, 1-2)	0.05 (0-0.5) 0.31 (1-2)	Use for horizontal delineation
SD-02	None (0-0.5)	93.8(0-0.5)	
SS-11	Heavy Sheen (0-0.4, 0.4-0.6)	301 (0-0.6)	
D	Trace sheen, faint MGP odor (0-3.1) Faint MGP like odor (4-4.4)	0.18 (1-2) 0.31 (2-3) 0.38 (3-4)	Use for horizontal delineation
SS-12-1	Heavy Sheen (0-0.5,1- 2) None (2-3)	5.7 (0-0.5) 2.3 (1-2) 0.06 (3-4)	Use for vertical delineation (1 foot)
C	None	0.14/ 0.166 (0-0.5) 0.15(1-2) 0.27 (2-3) 0.18(3-4)	Use for horizontal delineation
SS-12-2	None (0-0.5, 1-2)	0.15 (0-0.5) 0.11 (1-2)	Use for horizontal and vertical delineation
SS-10	Heavy Sheen (0-0.7)	26 (0-0.7)	
E	None	1.34 (0-4)	Use for horizontal delineation
E-1	None	NA	Use for horizontal delineation
SS-12-7	None (0-0.5, 1-2)	0.22 (0-0.5) 0.18 (1-2)	Use for horizontal delineation
SS-9	Heavy Sheen (0-0.7)	16 (0-0.7)	
G	None – short boring (recovery only to 2.6 feet)	2.36 (0-0.5) 0.44 (1-2) 2.38 (2-3) 1.09 (3-4)	Use for horizontal delineation
F	Sheen, light to moderate NAPL coating, faint to moderate odor (28.4-29.5 feet	0.21 (0-0.5) 0.16 (1-2) 0.31 (2-3) 0.27 (3-4)	Use for horizontal delineation

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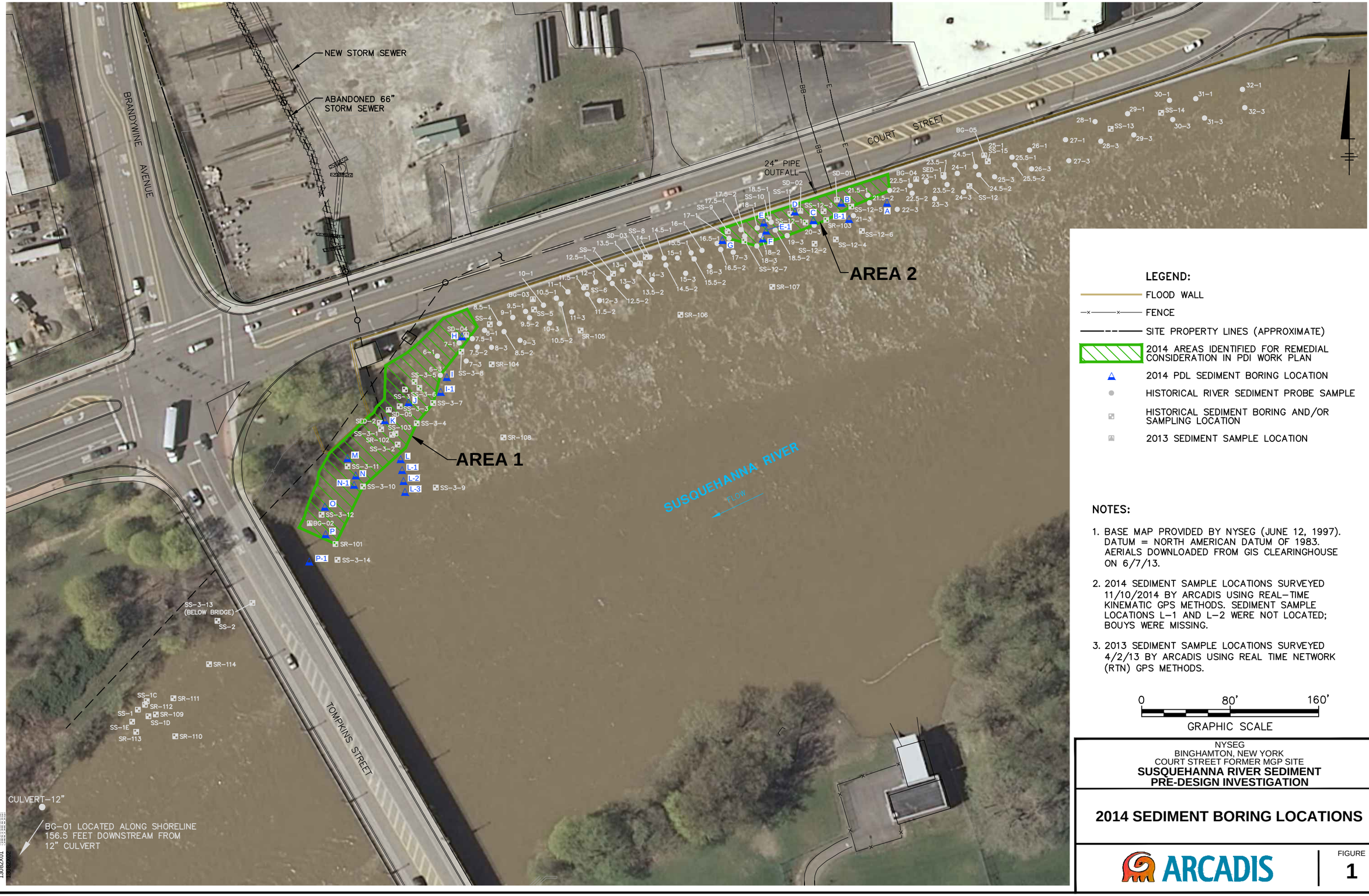
Figures



LEGEND:

- FLOOD WALL
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- 2014 AREAS IDENTIFIED FOR REMEDIAL CONSIDERATION IN PDI WORK PLAN
- 2014 PDL SEDIMENT BORING LOCATION
- HISTORICAL RIVER SEDIMENT PROBE SAMPLE
- HISTORICAL SEDIMENT BORING AND/OR SAMPLING LOCATION
- 2013 SEDIMENT SAMPLE LOCATION

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997). DATUM = NORTH AMERICAN DATUM OF 1983. AERIALS DOWNLOADED FROM GIS CLEARINGHOUSE ON 6/7/13.
2. 2014 SEDIMENT SAMPLE LOCATIONS SURVEYED 11/10/2014 BY ARCADIS USING REAL–TIME KINEMATIC GPS METHODS. SEDIMENT SAMPLE LOCATIONS L–1 AND L–2 WERE NOT LOCATED; BOUYS WERE MISSING.
3. 2013 SEDIMENT SAMPLE LOCATIONS SURVEYED 4/2/13 BY ARCADIS USING REAL TIME NETWORK (RTN) GPS METHODS.

0 80' 160'

GRAPHIC SCALE

NYSEG
BINGHAMTON, NEW YORK
COURT STREET FORMER MGP SITE
SUSQUEHANNA RIVER SEDIMENT PRE-DESIGN INVESTIGATION

2014 SEDIMENT BORING LOCATIONS

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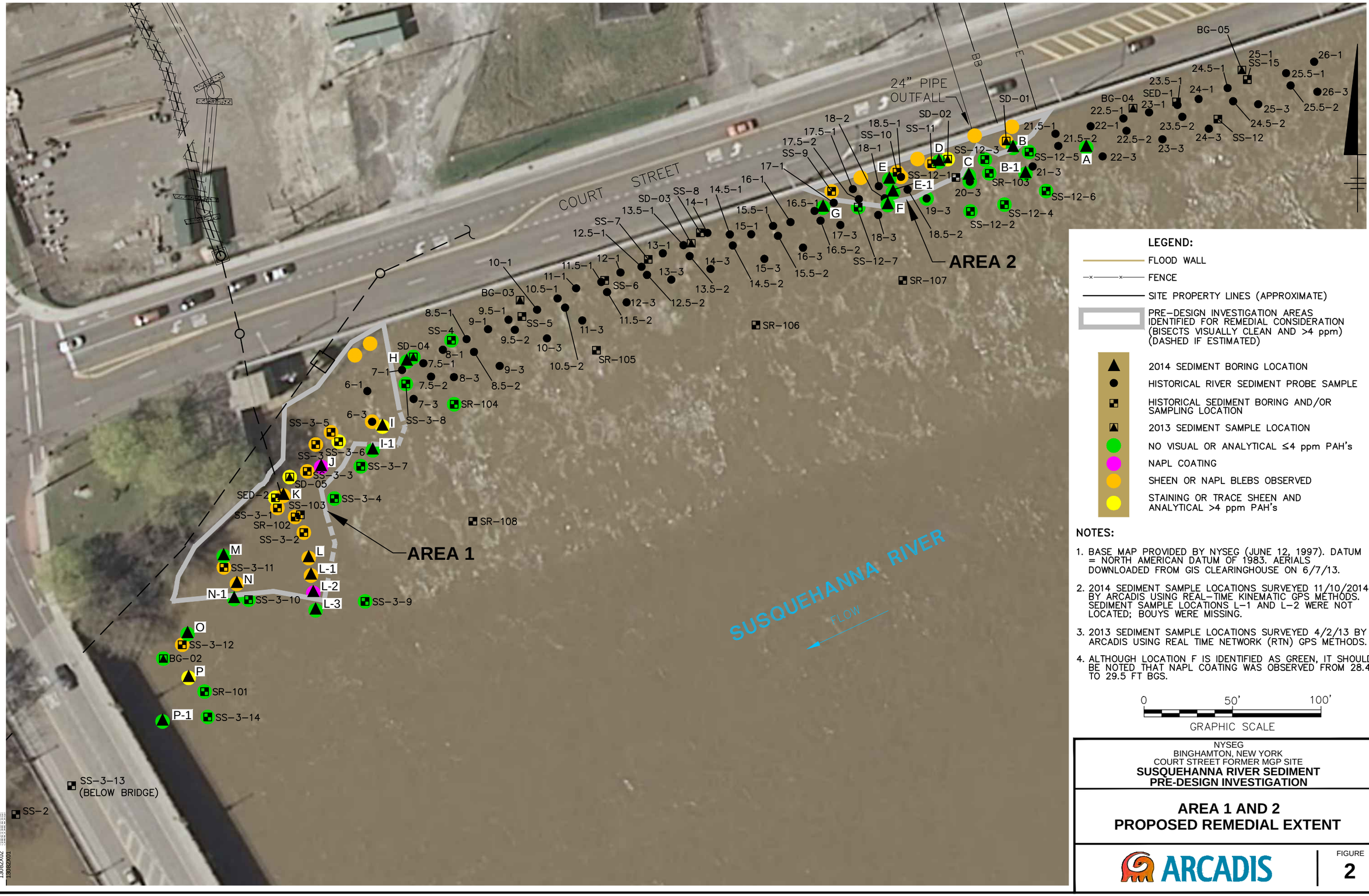
FIGURE 1



LEGEND:

- FLOOD WALL
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- PRE-DESIGN INVESTIGATION AREAS IDENTIFIED FOR REMEDIAL CONSIDERATION (BISECTS VISUALLY CLEAN AND >4 ppm) (DASHED IF ESTIMATED)
- 2014 SEDIMENT BORING LOCATION
- HISTORICAL RIVER SEDIMENT PROBE SAMPLE
- HISTORICAL SEDIMENT BORING AND/OR SAMPLING LOCATION
- 2013 SEDIMENT SAMPLE LOCATION
- NO VISUAL OR ANALYTICAL ≤4 ppm PAH's
- NAPL COATING
- SHEEN OR NAPL BLEBS OBSERVED
- STAINING OR TRACE SHEEN AND ANALYTICAL >4 ppm PAH's

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997). DATUM = NORTH AMERICAN DATUM OF 1983. AERIALS DOWNLOADED FROM GIS CLEARINGHOUSE ON 6/7/13.
2. 2014 SEDIMENT SAMPLE LOCATIONS SURVEYED 11/10/2014 BY ARCADIS USING REAL-TIME KINEMATIC GPS METHODS. SEDIMENT SAMPLE LOCATIONS L-1 AND L-2 WERE NOT LOCATED; BOUYS WERE MISSING.
3. 2013 SEDIMENT SAMPLE LOCATIONS SURVEYED 4/2/13 BY ARCADIS USING REAL TIME NETWORK (RTN) GPS METHODS.
4. ALTHOUGH LOCATION F IS IDENTIFIED AS GREEN, IT SHOULD BE NOTED THAT NAPL COATING WAS OBSERVED FROM 28.4 TO 29.5 FT BGS.

0 50' 100'

GRAPHIC SCALE

NYSEG
BINGHAMTON, NEW YORK
COURT STREET FORMER MGP SITE
SUSQUEHANNA RIVER SEDIMENT PRE-DESIGN INVESTIGATION

AREA 1 AND 2 PROPOSED REMEDIAL EXTENT

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FIGURE 2

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Attachment A

Susquehanna River Sediment Assessment Report

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Tel 315.446.9120
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Mr. Anthony Karwiel
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7014

ENVIRONMENT

Subject:
Binghamton Court Street Former MGP Site
Susquehanna River
Sediment Assessment Report

Date:
August 19, 2013

Contact:
David A. Cornell, P.G.

Phone:
315.671.9379

Email:
David.Cornell@arcadis-us.com

Our ref:
B0013082 #2.04

Dear Mr. Karwiel:

This letter presents the results of a sediment assessment completed in connection with the Court Street former manufactured gas plant (MGP) site (the "site") located in Binghamton, New York. The sediment assessment was conducted by ARCADIS, on behalf of NYSEG, between March 11 and May 21, 2013. Due to inclement weather, the fieldwork was performed over three separate mobilizations. The assessment was conducted in accordance with the following correspondence:

- Court Street – Sediment Assessment Work Plan dated August 1, 2012;
- New York State Department of Environmental Conservation's (NYSDEC) comment email dated September 20, 2012;
- ARCADIS' Response to comments email dated September 25, 2012 to NYSDEC;
- NYSDEC, NYSEG and ARCADIS conference call on December 11, 2012; and
- ARCADIS' email to NYSDEC summarizing the agreed upon scope between NYSEG and NYSDEC dated January 4, 2013.

A discussion of the assessment objectives is provided below, followed by a discussion of the completed fieldwork and results of the assessment.

Objectives and Background

The objective of the work was to reassess the quality of sediments in the Susquehanna River adjacent to the site. The purpose for the reassessment was to evaluate potential changes in the distribution and presence of MGP-impacted

sediments that were observed approximately 11 years ago (as documented in the 2002 Remedial Investigation [RI] Report). NYSEG believes that changes in the sediment deposits may have resulted from two significant high-flow events that have occurred in the Susquehanna River near the site over the past 11 years. Information on these two record-setting, 100+ year floods is presented in the following table:

Susquehanna River at Binghamton Flooding Events	
Date	**Flood Crest Stage**
June 28, 2006	25.0 feet
September 8, 2011	25.7 feet

Notes:
Flood stage data obtained from the United States Geologic Survey (USGS) web page: http://www.usgs.gov/water/.
Flood stage is 14.0 feet. No other historical crests occurred above 14 feet between 2002 and 2013.

These high-flow events may have affected the distribution and quality of sediments near the site. The following is a list of major flooding events and annual high flow events that have occurred near the site since the RI was completed.

Susquehanna River at Conklin Annual High Flow Events		
Date	**Gauge Height (feet)**	**Streamflow (cfs)**
March 27, 2002	12.09	23,700
March 23, 2003	14.73	33,500
September 18, 2004	19.01	54,700
April 3, 2005	18.08	49,400
June 28, 2006	25.02	76,800
March 28, 2007	12.64	25,100
March 9, 2008	14.26	30,700
March 11, 2009	12.33	24,100
January 25, 2010	13.39	27,600
September 8, 2011	23.94	72,100
January 28, 2012	9.08	15,000

Notes:
Due to available data, the Conklin gauge was used for annual high flows.
Gauge height data obtained from the USGS web page: http://www.usgs.gov/water/.

Two interim remedial actions have also been performed on the upland portion of the site that were designed to mitigate potential transport of non-aqueous phase liquid (NAPL) to the river. These include the passive NAPL barrier that was installed between the former MGP site and the river in 2006, and replacement of the 66-inch storm sewer in 2012 which potentially served as a historical conduit for NAPL migration to the river. The mitigation of these potential NAPL sources to the river

could also have an impact on the distribution of MGP-related impacts in present-day river sediments.

Sediment Probing and Reconnaissance

Sediment probing and reconnaissance was conducted along the same area (north bank) of the Susquehanna River that was investigated during the RI (Figure 1). This area extends from approximately 100 feet upstream of the 24-inch outfall (near river sediment probe sample 32-1) to approximately 150 feet downstream of the Tompkins Street Bridge (near sediment sampling location SS-1E), for a total of approximately 900 feet of river reach. The assessment included probing along transects perpendicular to the river bank on 25-foot spacings across the entire investigated reach. Spot probing was also completed between transects. Impacts (i.e., staining, sheen or NAPL) observed at any probing location were further delineated radially from that point with additional probing in an attempt to define the approximate lateral extent of impacts. Specific attention was paid to the four "potential areas of sediment to be addressed" discussed in a February 2003 meeting between NYSDEC, NYSEG and ARCADIS (formerly BBL). These areas are depicted on Figure 1 as Areas A, B, C and D.

Additionally, as requested by NYSDEC, spot probing was also conducted at the first two major sediment depositional areas downstream from Area A. These areas were identified by continuous spot probing between the Tompkins Street Bridge and the downstream dam located approximately 3,300 feet downstream of the site. The two downstream depositional areas depicted on Figure 2 were identified as the "south shore bend area" and the "downstream dam/abutment structure area.

Probing was performed by manually pushing a 1/2-inch diameter steel rod into the sediments until the rod could not be advanced further. Water depth, sediment thickness, general sediment description (by sight and feel), and any observed impacts produced by the probing were recorded in the field log book. In addition to probing, the assessment also included manually overturning rocks, cobbles, and/or debris to determine if potential MGP-related materials were present beneath these objects.

Sediment Sampling

Twelve sediment samples (plus quality assurance/quality control [QA/QC] samples) were collected from 10 sampling locations (SD-1 through SD-5 and BG-1 through BG-5) within visually impacted and unimpacted areas identified during the probing and reconnaissance work. Sample locations identified with an SD prefix were collected from visually impacted areas or from areas previously identified to contain impacted sediments. Sample locations identified with a BG prefix were collected from visually unimpacted areas. All 12 samples were analyzed for polycyclic aromatic

hydrocarbons (PAHs) using United States Environmental Protection Agency (USEPA) Method SW8270C and total organic carbon (TOC) by the Lloyd-Kahn method. Sediment sampling locations are shown on Figures 1, 2 and 3.

Sediment sampling at each location was initially attempted by manually driving a 4-foot long steel barrel (i.e., Macrocore®) containing a 2-inch diameter disposable liner and sampling shoe (to hold sediment in the tubing) into the sediment until refusal was encountered. If the sampling method described above was unsuccessful at penetrating the sediment surface or collecting adequate sample volume, then samples were collected using a grab sampler (stainless steel scoop).

Sediment samples were described with respect to predominant sediment types, texture and color. In addition, the presence of odors, sheens, tar, and discoloration were also recorded (if any observed). Sediment probing and sampling observations are summarized in Table 1.

Data Validation

ARCADIS validated the laboratory analytical data and prepared a data usability summary report (DUSR) for each individual sample delivery group (SDG) using the most-recent versions of the USEPA's Function Guidelines (USEPA, 1999; 2002) and USEPA Region II SOPs for data validation. The DUSRs include an assessment of data accuracy, precision, and completeness; significant quality assurance problems, solutions, corrections, and potential consequences; and analytical data validation reports. The results of the data validation have been incorporated into the analytical data presented in Table 2.

Survey

All probing and sampling locations, as well as newly-identified outfalls were surveyed using a survey-grade global positioning system (GPS) device. The horizontal position of each survey point was surveyed in reference to the North American Datum of 1983 (NAD 83). The elevation of the sediment surface at each survey point was surveyed in reference to the North American Vertical Datum of 1988 (NAVD 88).

Sediment Assessment Findings

The following discussion of the 2013 sediment assessment findings is divided into subsections based on the areas that were investigated. Figures 1 and 3 were developed to support the discussion. Figure 1 depicts the 2013 sediment sampling locations and visual observations (red hatched areas) as well as historical sampling locations from the 2002 RI and “potential areas of sediment to be addressed”

(orange hatched areas) established in 2003. The 2013 sediment sampling analytical results are summarized in green text boxes on Figure 3. The total PAH (TPAH) concentrations shown on Figure 3 are a summation of the 17 total priority pollutant PAHs. Figure 3 also depicts the historical analytical results and TPAH isoconcentration contours established during the 2002 RI.

Area A

Observations made during the RI fieldwork described Area A as a soft sediment deposit containing a sheen in the upper approximate 1-foot of sediment. TPAH concentrations measured during the RI from the upper 2 feet of sediment in this area ranged from 1.1 parts per million (ppm) (SR-111) to 45 ppm (SS-1D).

During the 2013 assessment, extensive probing was conducted within and near the edges of Area A. A soft sediment deposit could not be identified and no sample could be collected. Only trace amounts of sand (<0.1 feet) between cobbles, boulders and gravel were identified during the probing in this area. Additionally, no sheens were observed at any of the locations in this area during the 2013 probing event. One analytical sample (BG-1) was collected from the first area containing recoverable sediment (described as a fine-to-medium sand and gravel with little silt), approximately 250 feet downstream from Area A. The TPAH concentration in that sample was 3 ppm.

Area B

During the RI, sheens and elevated PAHs were observed in the upper approximately two feet of sediments in this area, which is located near the outfall of the 66-inch storm sewer that drains stormwater from a large portion of the City of Binghamton. Sediment samples collected from this area during the RI contained TPAH concentrations between 0.54 ppm (SS-3-10) and 1,979 ppm (SS-3).

During the 2013 assessment, extensive probing was conducted in Area B. Sediment depths encountered during the probing and sampling were less than one foot and sediments were generally described as sand and gravel with little silt. Sheens were not generated at any sediment probing/sampling location in this area. Two analytical samples [BG-2 (0-0.2') and SD-5 (0-0.5')] were collected within Area B. The TPAH concentration at BG-2 was 1.3 ppm and the TPAH concentration at SD-5 was 240 ppm. Although the TPAH concentration at BG-2 is less than the range of isoconcentration contours depicted on Figure 3 (originally presented in the RI report), sample SD-5 falls within the concentration range for that location.

The fact that no sheens were generated in Area B during the 2013 probing assessment suggests that the condition of the sediment in this area has improved since the RI. Nevertheless, sample SD-5 contained a significant concentration of PAHs, and is consistent with the concentration estimated to be at that location during the RI. The potential source of the PAHs was not determined, and could either be MGP-related or related to the storm sewer, which drains a large portion of the City of Binghamton and could serve as a source of PAHs unrelated to the site. Conversely, at sampling location BG-2, the TPAH concentration of 1.3 ppm is considerably lower than the 20-100 ppm that was estimated to be there during the RI (Figure 3).

It is important to note that when Area B was investigated during the RI, both manual probing and split-spoon sampling from a barge–mounted drill rig were used. With the river bottom in this area being somewhat armored, it is possible that some of the impacted sediment identified using the drilling rig during the RI may still be present but was unable to be penetrated by the recent manual probing.

Area C

The RI fieldwork identified an isolated area of sheen-producing sediments in Area C. A sample collected at SS-6 during the RI contained 35 ppm of TPAH. The 2013 probing of the sediments in this area produced no sheens. Riverbed material encountered during the probing was described as sand, gravel and cobbles with little to no silt and penetration depths of 0.2 feet or less. Analytical samples collected just upstream (SD-3) and downstream (BG-3) of Area C contained TPAH concentrations of 1.6 ppm and 0.97 ppm, respectively. These concentrations are similar to or less than TPAH concentrations documented during the RI.

Area D

Area D comprises a region of sheen-producing sediments identified during the RI. The area is located around and downstream of the outfall of an apparently inactive 24-inch pipe. TPAH concentrations in sediment samples collected during the RI ranged from below detection limits (SS-12-5) to 301 ppm (SS-11).

The extent of sheen-producing sediments observed during the 2013 assessment is depicted on Figure 1 as Area F. As shown on Figure 1, the boundaries of Areas F and D are similar, although the upstream extent of sheen-producing sediments has decreased slightly. Likewise, sediment samples collected in 2013 at locations SD-1 and SD-2 contained 11 ppm and 83ppm of TPAH, respectively, which is consistent with the sampling results reported in the RI Report for Area D. Therefore, Area D appears to remain relatively unchanged between the RI fieldwork and the 2013 assessment fieldwork.

New Area E

As depicted on Figure 1, a new area (Area E) of sediments that produced a sheen during probing was observed during the 2013 assessment. Area E is a square-shaped area that is approximately 30 feet wide and is located 30 to 40 feet upstream of Area B. Two sediment samples were collected at sediment sampling location SD-4 at different depths. The sample collected from 0 to 0.5 feet below the sediment surface (ft bss) contained a TPAH concentration of 1.5 ppm, and the sample collected from 0.5 to 1.0 ft bss contained 0.11 ppm of TPAH. Although recent and historical TPAH concentrations within Area E are low, visible sheens in shallow sediments are present.

Downstream Depositional Areas

As requested by NYSDEC, additional probing was conducted during the assessment to locate the first two depositional areas downstream from Area A. The two downstream areas identified during the fieldwork are shown on Figure 2 as the *South Shore Bend Area* and the *Downstream Dam/Abutment Structure Area.* Both of these areas were extensively probed and visual impacts were not observed in either area. Probing depths ranged between 0 and 1.5 feet. Sediments consisted of sands and gravels with varying amounts of silt.

Please feel free to contact Tracy Blazicek (NYSEG) or me if you have any questions or comments.

Sincerely,

ARCADIS of New York, Inc.

David A. Cornell, P.G.
Senior Geologist

Attachments

Copies:
Keith White, C.P.G., ARCADIS
Tracy Blazicek, CHMM, NYSEG

Table 1
Summary of Susquehanna River Sediment Probing and Sampling Assessment Conducted 4/1/13-4/3/13

NYSEG - Court Street Former MGP Site
Binghamton, New York

Sampling or Probing Transect Location	Date	Probing Depth (feet)	Water Depth (feet)	Northing	Easting	Sediment/ Ground Elevation	Sampling Method	Location Description	Sediment Description	Impacts Observed
Sediment Sampling Locations										
BG-1	4/2/13	0.5	1	766188.0	1006043.1	832.6	Trowel	West of Tompkins St. bridge, 200' downstream from Tompkins St. bridge, edge of north bank.	Brown fine SAND and fine GRAVEL, little Silt.	No Obvious Impacts
BG-2	4/2/13	0.2	2.5	766574.2	1006372.7	832.6	Trowel	East of Tompkins St. bridge, 20' upstream from Tompkins St. bridge, edge of north bank, 100' downstream from 66"outfall pipe.	Brown fine SAND and fine GRAVEL, little Silt.	No Obvious Impacts
BG-3	4/2/13	1.5	1	766776.9	1006574.5	832.8	MacroCore	East of Tompkins St. bridge, 320' upstream from Tompkins St. bridge, edge of north bank, 160' upstream from 66"outfall pipe.	Brown fine to medium SAND and GRAVEL, little Silt, Cobbles.	No Obvious Impacts
BG-4	4/2/13	0.5	1.5	766885.5	1006921.2	832.7	Trowel	East of Tompkins St. bridge, edge of north bank, 140' upstream from 24" RCP outfall pipe.	Brown fine to medium SAND and GRAVEL, little Silt, Cobbles.	No Obvious Impacts
BG-5	4/2/13	0.5	1	766907.1	1006982.8	832.7	Trowel	East of Tompkins St. bridge, edge of north bank, 240' upstream from 24" RCP outfall pipe.	Brown fine to medium SAND and GRAVEL, little Silt, Cobbles.	No Obvious Impacts
SD-1	4/2/13	0.5	3	766866.9	1006849.5	832.7	MacroCore	East of Tompkins St. bridge, edge of north bank, 20' upstream from 24" RCP outfall pipe.	Brown SILT, little fine Sand, fine Gravel, Wood debris.	Little sheen, MGP-like odor
SD-2	4/2/13	0.5	3	766856.7	1006816.4	832.6	MacroCore	East of Tompkins St. bridge, edge of north bank, 20' downstream from 24" RCP outfall pipe.	Brown SILT, little Organics (roots), fine Sand, fine to medium Gravel.	Sheen; moderate to strong MGP-like odor
SD-3	4/2/13	1	2.5	766809.1	1006671.3	832.8	MacroCore	East of Tompkins St. bridge, edge of north bank, 150' downstream from 24" RCP outfall pipe.	Brown fine to medium SAND, some Silt, fine to medium Gravel.	No Obvious Impacts
SD-4	4/2/13	2	1	766744.8	1006514.1	832.7	MacroCore	260' East of Tompkins St. bridge, 100' upstream from 66" outfall pipe, edge of north bank	Brown fine to medium SAND, some Silt, fine to medium Gravel.	Trace sheen
SD-5	4/2/13	0.5	3	766676.9	1006444.2	832.8	MacroCore	160' East of Tompkins St. bridge, edge of north bank, at 66"outfall pipe.	Brown fine SAND and SILT, over Gravel.	No Obvious Impacts
Transect Locations										
T-00	3/11/13	0.2	6-8	766678.1	1006442.8	832.2	--	160' East of Tompkins St. bridge, edge of north bank, at 66"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles	No Obvious Impacts
T-01	3/11/13	0.2-0.5	1-3	766715.3	1006461.0	832.3	--	East of Tompkins St. bridge, 25' East (upstream) of 66"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles	No Obvious Impacts
T-02	3/11/13	0-1.7	1-3	766732.1	1006479.9	832.2	--	East of Tompkins St. bridge, 50' upstream from 66"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles	No Obvious Impacts
T-03	3/11/13	0.3-2.0	1.5-2.7	766741.3	1006497.6	832.3	--	75' upstream from 66"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles	No Obvious Impacts

See Assumptions and Notes on Page 2.

Table 1
Summary of Susquehanna River Sediment Probing and Sampling Assessment Conducted 4/1/13-4/3/13

NYSEG - Court Street Former MGP Site
Binghamton, New York

Sampling or Probing Transect Location	Date	Probing Depth (feet)	Water Depth (feet)	Northing	Easting	Sediment/ Ground Elevation	Sampling Method	Location Description	Sediment Description	Impacts Observed
Transect Locations (Cont.)										
T-04	3/11/13	0.2-1.5	0.3-2.0	766756.7	1006521.7	832.4	--	100' upstream from 66"outfall pipe.	SAND & GRAVEL, some Silt, little Cobbles	Trace sheen 5 to 6 ft from shore
T-05	3/11/13	0.1-0.5	1-3	766771.7	1006545.6	832.1	--	125' upstream from 66"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles	Trace sheen 5 to 10 ft from shore; Sheen ends between T-4 and T-5
T-06	3/11/13	0.2-0.6	0.8-3.5	766778.0	1006569.0	831.8	--	150' upstream from 66"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles	No Obvious Impacts
T-07	3/11/13	0.0-1.0	0.7-2.8	766787.3	1006591.8	833.0	--	175' upstream from 66"outfall pipe.	SAND & GRAVEL, some Silt, little Cobbles	No Obvious Impacts
T-08	3/11/13	0.1-1.0	0.6-2.5	766795.5	1006618.4	832.1	--	200' upstream from 66"outfall pipe.	SAND & GRAVEL, some Silt, little Cobbles	No Obvious Impacts
T-09	3/11/13	0.8-1.0	1-2	766802.4	1006641.3	832.2	--	225' upstream from 66"outfall pipe.	SAND & GRAVEL, some Silt, little Cobbles	No Obvious Impacts
T-10	3/11/13	1.5	2.0	766810.1	1006664.5	832.4	--	250' upstream from 66"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles	Trace sheen during probing; could not recreate sheen by additional probing.
T-11	3/11/13	0.2	1.0	766817.2	1006689.0	832.2	--	275' upstream from 66"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles, trace Concrete	No Obvious Impacts
T-12	3/11/13	0.1-0.2	0.3-2.5	766825.4	1006713.0	832.2	--	300' upstream from 66"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles, trace Concrete	No Obvious Impacts
T-13	3/11/13	0.0-0.3	0.7-3.5	766831.8	1006736.3	832.0	--	100' West (downstream) from 24"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles, trace Concrete	No Obvious Impacts
T-14	3/11/13	0.2	2.5	766840.6	1006760.7	832.3	--	75' downstream from 24"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles, trace Concrete	Sheen observed between 0 anf 5 ft from wall
T-15	3/11/13	0.5	1.0	766847.5	1006784.4	832.1	--	50' downstream from 24"outfall pipe.	SAND & GRAVEL, little Cobbles, trace Concrete	Sheen observed between 0 anf 10 ft from wall
T-16	3/11/13	0.3	3.0	766856.3	1006808.4	832.1	--	25' downstream from 24"outfall pipe.	SAND & GRAVEL, little Cobbles	Sheen observed between 0 anf 15 ft from wall
T-17	3/11/13	0.5	2.0	766864.2	1006832.6	832.4	--	Adjacent 24"outfall pipe.	SAND & GRAVEL, little Cobbles	Sheen observed between 0 anf 5 ft from wall
T-18	3/11/13	0.6	1.5	766871.0	1006855.8	832.3	--	25' East (upstream) 24"outfall pipe.	SAND & GRAVEL, little Cobbles	Sheen observed between 0 anf 5 ft from wall
T-19	3/11/13	0.2	0.8-3.0	766879.3	1006879.6	832.3	--	50' Upstream from 24"outfall pipe.	SAND & GRAVEL, little Cobbles, trace Concrete	No Obvious Impacts
T-20	3/11/13	0.0-0.3	0.5	766887.1	1006903.6	832.3	--	75' upstream from 24"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles	No Obvious Impacts
T-21	3/11/13	0.1-0.4	0.0-1.5	766894.2	1006926.8	832.2	--	100' Upstream from 24"outfall pipe.	SAND & GRAVEL, little Silt & Cobbles	No Obvious Impacts

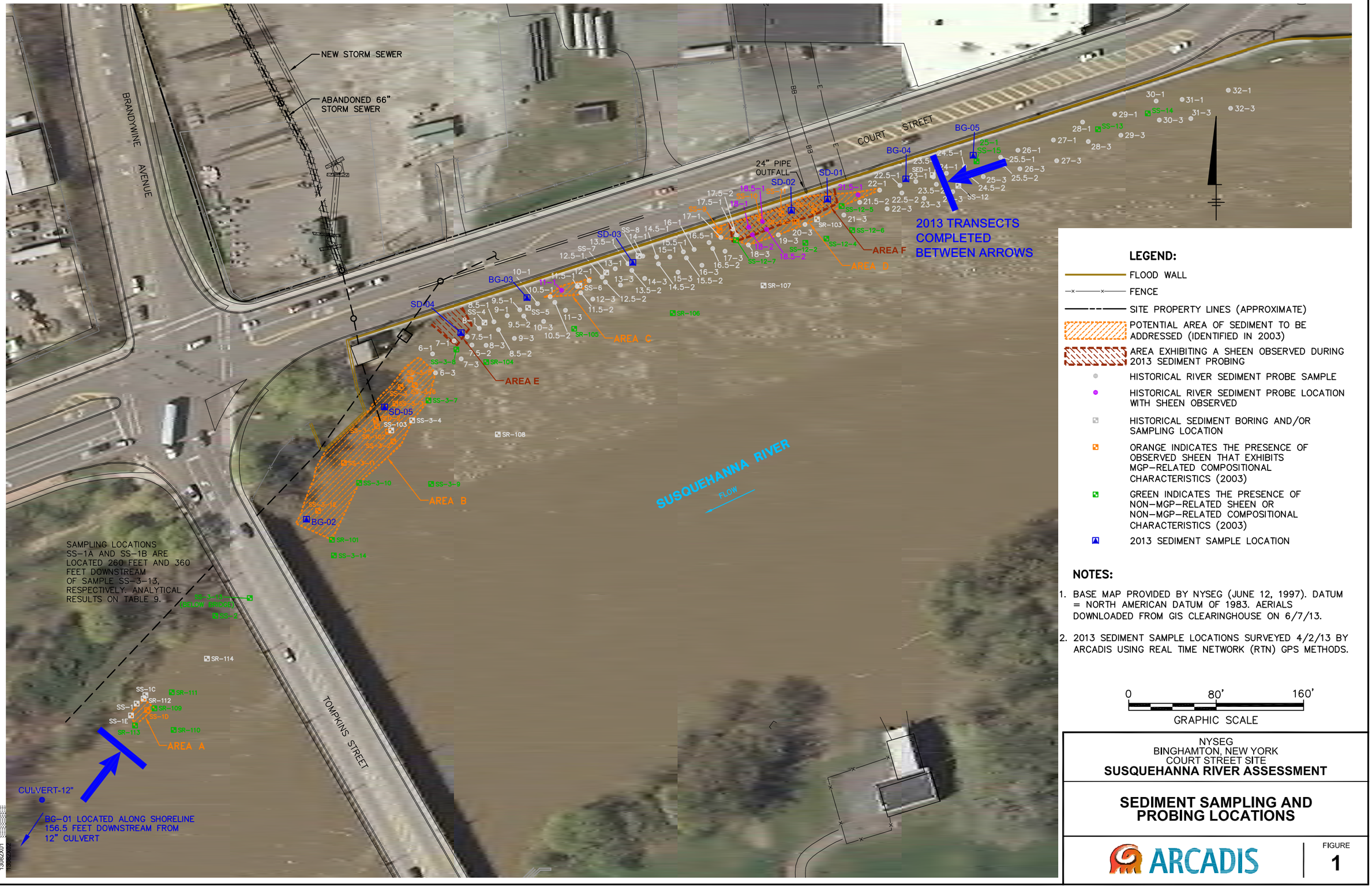
Assumptions and Notes:
*Probing was performed by manually pushing a 1/2-inch diameter steel rod until rod could not be advanced any further.
*In addition to probing, a 2-inch diameter hand auger and shovel were used at select locations.
*RCP = Reinforced Concrete Pipe

Table 2
Summary of Sediment Sample Analytical Results

NYSEG - Court Street Former MGP Site
Binghamton, New York

Location ID: Sample Depth(Feet): Date Collected:	Units	BG-1 0 - 0.5 04/02/13	BG-2 0 - 0.2 04/02/13	BG-3 0 - 0.5 04/02/13	BG-3 0.5 - 1 04/02/13	BG-4 0 - 0.5 04/02/13	BG-5 0 - 0.5 04/02/13	SD-1 0 - 0.5 04/02/13	SD-2 0 - 0.5 04/02/13	SD-3 0 - 0.5 04/02/13	SD-4 0 - 0.5 04/02/13	SD-4 0.5 - 1 04/02/13	SD-5 0 - 0.8 04/02/13
2-Methylnaphthalene	ug/kg	11 U	6.7	3.1 J	2.8 J	2.9 U	6 J	97.4 [232]	11,200	7.4	2.4 U	2.3 U	1,450
Acenaphthene	ug/kg	11 U	9.5	2.9 J	2.5 J	7.8	3.4 J	992 [1,020]	10,200	13.1	2.4 U	2.3 U	24,500
Acenaphthylene	ug/kg	69.5	31.1	29.8	42.2	37.2	20.8	502 [423]	3,780	50.1	24.4	3.2 J	6,300
Anthracene	ug/kg	91.9	34.5	42.2	23.4	61.1	20.8	598 [769]	4,090	47	26.9	3.4 J	23,100
Benzo(a)anthracene	ug/kg	250	96.9	54.7	65.7	204	74.9	462 [1,790]	3,320	128	132	5	11,900
Benzo(a)pyrene	ug/kg	301	143	87.3	113	231	92.8	619 [2,100]	4,020	199	176	11.7	15,200
Benzo(b)fluoranthene	ug/kg	250	98.1	51.6	72.3	178	83.7	271 [1,350]	1,510	111	102	4.1 J	5,740
Benzo(e)pyrene	ug/kg	236	95.3	62	84.1	146	70.9	388 [1,250]	2,190	135	117	10.1	7,440
Benzo(ghi)perylene	ug/kg	224	97.1	65.1	89.3	133	67.3	560 [1,220]	2,920	134	119	10.6	7,000
Benzo(k)fluoranthene	ug/kg	229	113	78.6	105	199	76	415 [1,350]	2,210	146	158	11.6	7,570
C1-Benzo(a)anthracenes/Chrysenes	ug/kg	139	47.9	32.5	38.9	96.2	36.9	305 [1,230]	2,250	60	50.2	2.3 U	3,260
C1-Fluoranthenes/Pyrenes	ug/kg	183	70.7	50.1	58.9	142	50.3	678 [1,380]	5,290	105	71.2	8	15,400
C1-Fluorenes	ug/kg	20.6 J	6.1	4.6 J	4.3 J	8.5	3.8 J	249 [141]	2,440	9.3	2.5 J	2.3 U	3,780
C1-Naphthalenes	ug/kg	15.2 J	7.1	5.5	4.6	3.5 J	7.5	575 [752]	16,000	9.8	2.9 J	2.3 U	3,680
C1-Phenanthrenes/Anthracenes	ug/kg	110	32.4	26.4	27.4	79.7	32.6	763 [742]	6,590	36.8	38.3	2.3 U	8,900
C2-Benzo(a)anthracenes/Chrysenes	ug/kg	114	22.3	18.7	22.8	40.3	22.5	175 [929]	1,100	27.3	23.4	2.3 U	687
C2-Fluorenes	ug/kg	24.4	6	2.6 U	4.3 J	10.1	6.2	221 [116]	2,060	12.2	2.4 U	2.3 U	852
C2-Naphthalenes	ug/kg	52	12.4 B	12.5 B	10.2 B	8.6 B	14.2 B	1,040 [676]	14,700	13.5 B	2.4 U	2.3 U	4,540
C2-Phenanthrenes/Anthracenes	ug/kg	79	19	19	19.7	45.5	22.8	378 [617]	3,340	29.9	24	2.3 U	1,310
C3-Benzo(a)anthracenes/Chrysenes	ug/kg	180	13.9	2.6 U	2.2 U	16.3	14.1	83.4 [634]	399	11.3	2.4 U	2.3 U	248
C3-Fluorenes	ug/kg	11 U	2.5 U	2.6 U	2.2 U	4.8 J	3 U	133 [125]	1,300	12.5	2.4 U	2.3 U	218
C3-Naphthalenes	ug/kg	40.8	8.5	8.7	8.6	9.9	10.3	754 [379]	8,760	16.5	7.6	2.3 U	1,030
C3-Phenanthrenes/Anthracenes	ug/kg	30.2	6.9	8.6	9.7	16.1	10.7	178 [474]	1,560	17.5	10.6	2.3 U	288
C4-Benzo(a)anthracenes/Chrysenes	ug/kg	126	2.5 U	2.6 U	2.2 U	2.9 U	3 U	13 U [464]	23 U	2.2 U	2.4 U	2.3 U	155
C4-Naphthalenes	ug/kg	26.4	5.2	8.9	5.4	9.6	7.7	472 [220]	5,440	19.5	5.7	2.3 U	231
C4-Phenanthrenes/Anthracenes	ug/kg	11 U	2.5 U	4.6 J	3.7 J	2.9 U	3 U	80.6 [369]	450	8.9	9.1	2.3 U	140
Chrysene	ug/kg	269	116	87.5	97.2	243	98.3	520 [1,900]	3,360	149	163	11.9	13,100
Dibenzo(a,h)anthracene	ug/kg	62.2	21.6	14.9	19.8	43.5	19.5	85 [358]	479	28.7	28.2	2.3 U	1,390
Fluoranthene	ug/kg	448	154	81.6	107	377	133	1,190 [2,090]	6,340	171	190	10.8	24,200
Fluorene	ug/kg	11 U	4.4 J	5.7	2.2 U	10.4	4.2 J	320 [301]	3,480	5.8	3.1 J	2.3 U	12,500
Indeno(1,2,3-cd)pyrene	ug/kg	185	80.4	53.2	72	125	57.3	347 [1,050]	2,010	104	99.9	6.8	5,390
Naphthalene	ug/kg	13 J	39.8	4.1 J	4.6	4.5 J	7.2	380 [723]	13,500	28.1	6.3	2.3 U	1,730
Perylene	ug/kg	86.3	31.4	20.6	25.8	52.3	21.7	155 [566]	587	47.7	41.1	4.1 J	1,820
Phenanthrene	ug/kg	158	66.1	35.6	36.2	175	58.5	1,540 [1,310]	11,000	51.8	50.4	7.6	47,100
Pyrene	ug/kg	405	167	96.7	124	313	119	1,800 [2,460]	10,400	247	204	20.9	37,100
Total NOAA 34 PAHs	ug/kg	4,420 J	1,660 J	1,070 J	1,300 J	3,030 J	1,270 J	17,200 [31,300]	157,000	2,190	1,890 J	130 J	298,000
Total Priority Pollutant (17) PAHs	ug/kg	2,960 J	1,280 J	795 J	977 J	2,340 J	943 J	10,700 [20,400]	93,800	1,620	1,480 J	108 J	245,000
General Chemistry													
Percent Solids	%	81.4	72.1	77.6	78.8	66.7	58.5	73.2 [76.6]	84.7	78	77.3	80.4	74.4
Total Organic Carbon	mg/kg	19,400	11,100	3,730	2,110	12,600	18,300	12,900 [9,850]	19,300	6,080	9,740	3,380	26,500

Notes:
B = The constituent detected in an associated blank; its presence in the sample is suspect.
J = Indicates an estimated concentration.
U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.



LEGEND:

- FLOOD WALL
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- POTENTIAL AREA OF SEDIMENT TO BE ADDRESSED (IDENTIFIED IN 2003)
- AREA EXHIBITING A SHEEN OBSERVED DURING 2013 SEDIMENT PROBING
- HISTORICAL RIVER SEDIMENT PROBE SAMPLE
- HISTORICAL RIVER SEDIMENT PROBE LOCATION WITH SHEEN OBSERVED
- HISTORICAL SEDIMENT BORING AND/OR SAMPLING LOCATION
- ORANGE INDICATES THE PRESENCE OF OBSERVED SHEEN THAT EXHIBITS MGP-RELATED COMPOSITIONAL CHARACTERISTICS (2003)
- GREEN INDICATES THE PRESENCE OF NON-MGP-RELATED SHEEN OR NON-MGP-RELATED COMPOSITIONAL CHARACTERISTICS (2003)
- 2013 SEDIMENT SAMPLE LOCATION

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997). DATUM = NORTH AMERICAN DATUM OF 1983. AERIALS DOWNLOADED FROM GIS CLEARINGHOUSE ON 6/7/13.
2. 2013 SEDIMENT SAMPLE LOCATIONS SURVEYED 4/2/13 BY ARCADIS USING REAL TIME NETWORK (RTN) GPS METHODS.

0 80' 160'

GRAPHIC SCALE

NYSEG
BINGHAMTON, NEW YORK
COURT STREET SITE
SUSQUEHANNA RIVER ASSESSMENT

SEDIMENT SAMPLING AND PROBING LOCATIONS

ARCADIS

FIGURE 1

LEGEND:

- 2013 SEDIMENT SAMPLING LOCATIONS
- DOWNSTREAM DEPOSITIONAL AREAS

NOTE:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997). DATUM = NORTH AMERICAN DATUM OF 1983. AERIALS DOWNLOADED FROM GIS CLEARINGHOUSE ON 6/7/13.

0 400' 800'

GRAPHIC SCALE

NYSEG
BINGHAMTON, NEW YORK
COURT STREET SITE
SUSQUEHANNA RIVER ASSESSMENT

DOWNSTREAM DEPOSITIONAL AREAS

ARCADIS

FIGURE
2

SD-2	
Constituent	(0–0.5')
TOTAL PAHs	93.8

SS-12-1			
Constituent	(0–0.5')	(1–2')	(2–3')
TOTAL PAHs	5.7 J	2.3 J	0.062 J

SS-12-5			
Constituent	(0–0.5')	(1–2')	(1–2') DUP
TOTAL PAHs	ND	0.31 J	ND

SS-12-6		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	ND	ND

SS-11	
Constituent	(0–0.6')
TOTAL PAHs	301

SS-12-3		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	2.1 J	2 .0 J

SD-1		
Constituent	(0–0.5')	(0–0.5') DUP
TOTAL PAHs	10.7	20.4

SS-12-4		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	0.051 J	0.31 J

SS-10		
Constituent	(0–0.7')	(0–0.8') DUP
TOTAL PAHs	26	26

BG-4	
Constituent	(0–0.5')
TOTAL PAHs	2.34 J

SS-12-7		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	0.22 J	0.18 J

SED-1	
Constituent	(0–0.3')
TOTAL PAHs	0.33

SS-8	
Constituent	(0–1')
TOTAL PAHs	12

SS-9	
Constituent	(0–0.7')
TOTAL PAHs	16

SS-12	
Constituent	(0–0.8')
TOTAL PAHs	41

SD-3	
Constituent	(0–0.5')
TOTAL PAHs	1.62

BG-5	
Constituent	(0–0.5')
TOTAL PAHs	0.94 J

SS-7	
Constituent	(0–0.9')
TOTAL PAHs	4.8

HENRY STREET

BG-3		
Constituent	(0–0.5')	(0.5–1.0')
TOTAL PAHs	0.79 J	0.97 J

SS-6	
Constituent	(0–0.5')
TOTAL PAHs	35

SS-15	
Constituent	(0–0.8')
TOTAL PAHs	1.7

SS-4	
Constituent	(0–0.9')
TOTAL PAHs	0.24

SS-5	
Constituent	(0–0.8')
TOTAL PAHs	1.7

SS-13	
Constituent	(0–0.8')
TOTAL PAHs	0.10

SS-14	
Constituent	(0–1')
TOTAL PAHs	0.14

NEW STORM SEWER

ABANDONED 66" STORM SEWER

SS-3	
Constituent	(0–1')
TOTAL PAHs	1979

SD-4		
Constituent	(0–0.5')	(0.5–1.0')
TOTAL PAHs	1.48 J	0.11 J

SS-3-3				
Constituent	(0–0.5')	(0–0.5') DUP	(1–2')	(3–4')
TOTAL PAHs	31 J	26 J	720 J	2.0 J

24" PIPE OUTFALL

24" PIPE

SS-12-2		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	0.15 J	0.11 J

SS-3-4		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	2.6 J	6.5 J

SD-5	
Constituent	(0–0.8')
TOTAL PAHs	245

SR-107	
Constituent	(0–2')
TOTAL PAHs	ND

SR-102		
Constituent	(0–2')	(0–2') DUP
TOTAL PAHs	308	108

SR-106	
Constituent	(0–2')
TOTAL PAHs	0.26

BRANDYWINE AVE.

BG-2	
Constituent	(0–0.2')
TOTAL PAHs	1.28 J

SR-105	
Constituent	(0–2')
TOTAL PAHs	ND

SS-3-13		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	0.041 J	2.0 J

SS-3-8		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	ND	ND

SS-2	
Constituent	(0–0.5')
TOTAL PAHs	1.6

SR-104	
Constituent	(0–1')
TOTAL PAHs	0.57

SS-3-5		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	230 J	340 J

SR-111	
Constituent	(0–2')
TOTAL PAHs	1.1

SS-3-6		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	130 J	12 J

SUSQUEHANNA RIVER

FLOW

SR-112	
Constituent	(0–2')
TOTAL PAHs	14

SS-3-7		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	1.8 J	2.9 J

TOMPKINS STREET

SR-108		
Constituent	(0–2')	(0–2') DUP
TOTAL PAHs	12	ND

SS-1	
Constituent	(0–0.8')
TOTAL PAHs	4.8

SAMPLING LOCATIONS SS-1A AND SS-1B ARE LOCATED 260 FEET AND 360 FEET DOWNSTREAM OF SAMPLE SS-3-13, RESPECTIVELY. ANALYTICAL RESULTS ON TABLE 9.

SS-3-13 (BELOW BRIDGE)

SED-2	
Constituent	(0–0.5')
TOTAL PAHs	4230

SS-3-14		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	1.0 J	1.6 J

SR-113	
Constituent	(0–2')
TOTAL PAHs	2.7

SS-3-1			
Constituent	(0–0.5')	(1–2')	(3–4')
TOTAL PAHs	360 J	1,092 J	4.1 J

SR-109		
Constituent	(0–2')	(4–6')
TOTAL PAHs	33	ND

SR-101	
Constituent	(0–2')
TOTAL PAHs	1.3

SS-3-10		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	0.54 J	0.18 J

BG-1		
Constituent	(0–0.5')	
TOTAL PAHs	2.96 J	

SS-1D	
Constituent	(0–0.7')
TOTAL PAHs	45

SR-110	
Constituent	(0–2')
TOTAL PAHs	ND

SS-3-12		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	26 J	170 J

SS-3-11			
Constituent	(0–0.5')	(1–2')	(2–3')
TOTAL PAHs	170 J	140 J	62 J

SS-3-9		
Constituent	(0–0.5')	(1–2')
TOTAL PAHs	ND	7.2 J

SS-3-2	
Constituent	(0–0.5')
TOTAL PAHs	430 J

BG-1 LOCATED 232' DOWNSTREAM

BG-01 BG-02 BG-03 BG-04 BG-05 SD-01 SD-02 SD-03 SD-04 SD-05

LEGEND:

- FLOOD WALL
- RAILROAD TRACK
- FENCE
- SITE PROPERTY LINES (APPROXIMATE)
- SURFACE ELEVATION CONTOUR (FT. AMSL)
- 20 — 20 TOTAL PAH ISOCONCENTRATION LINES FOR UPPERMOST RIVERBED SAMPLES
- STAFF GAUGE
- HISTORICAL RIVER SEDIMENT PROBE LOCATIONS
- SEDIMENT BORING AND/OR SAMPLING LOCATION
- GREEN INDICATES PRESENCE OF OBSERVED SHEEN
- SD-04 ● 2013 SEDIMENT SAMPLING LOCATION

SS-1	
Constituent	(0–0.8')
TOTAL PAHs	4.8

SAMPLE ID
SAMPLE DEPTH IN FEET
CONCENTRATIONS ARE mg/Kg (ppm)
ND – NOT DETECTED
J – ESTIMATED VALUE
DUP – DUPLICATE SAMPLE
2013 RESULTS ARE SHADED WITH GREEN

NOTES:

1. BASE MAP PROVIDED BY NYSEG (JUNE 12, 1997).
2. SURFACE ELEVATIONS DIGITIZED FROM CITY OF BINGHAMTON MAP, SHEET 303, FLOWN DECEMBER 2, 1973 AND MAPPED APRIL 1, 1974.
3. TOTAL PAH CONCENTRATIONS REPRESENT THE 17 PRIORITY POLLUTANT PAHs.

0 100' 200'
GRAPHIC SCALE

NYSEG
BINGHAMTON, NEW YORK
COURT STREET SITE
SUSQUEHANNA RIVER ASSESSMENT

SEDIMENT SAMPLE ANALYTICAL RESULTS

ARCADIS

FIGURE 3

Attachment B

Boring Logs

Date Start/Finish: 10/31/14 - 11/4/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: L. Pech
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon, 300lb Hammer
Sampling Method 2:

Northing: 766863.201
Easting: 1006894.753
Sediment Surface Elevation: 826.85'
Borehole Depth: 30'
Water Depth: 4.2'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-A
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0										
		1	0-2	1.4	2 2 3 2	5	0.0			Brown fine to coarse subangular GRAVEL, some fine to medium Sand, loose, wet. Gray medium SAND, little to trace Silt, trace fine Sand, loose, wet. Brown fine SAND, little Silt, loose, wet.
	825									
		2	2-4	1.4	3 22 24 22	46	0.0			Gray fine SAND, some Silt, trace Organics (leaf litter), loose wet. Gray to brown fine to coarse SAND and fine to coarse subangular GRAVEL, trace Silt, loose, wet.
5		3	4-6	0.5	12 41 36 26	77	0.0			Brown fine to medium SAND and fine to medium subangular GRAVEL, trace Silt, loose, wet.
	820	4	6-8	0.7	23 11 5 3	16	0.0			Brown fine to medium SAND, little to trace fine to medium Gravel, loose, wet.
		5	8-10	0.3	45 55 38 40	93	0.0			Brown fine to coarse SAND, some fine to medium subangular Gravel, loose, wet.
10		6	10-12	0.9	12 10 8 10	17	0.0			Brown fine SAND, trace medium Sand, loose, wet.
	815	7	12-14	1.4	7 9 9 12	18	0.0			
15		8	14-16	1.2	5 5 6 5	11	0.0			
					5					

Well/Boring Construction: Borehole backfilled with portland cement and bentonite grout mixture

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Client: NYSEG

Well/Boring ID: PDI-SED-A

Borehole Depth: 30'

Location:
Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	810	9	16-18	1.8	7 9 9	16	0.0				
		10	18-20	1.2	3 5 6 6	11	0.0			Brown fine SAND, little medium Sand, loose, wet.	
20		11	20-22	1.2	6 10 13 6	23	5.1			Brown fine SAND, little medium Sand, trace Silt, faint MGP-like odor, loose, wet.	
	805	12	22-24	2.0	6 6 7 7	13	0.0			Brown fine SAND, little to trace medium Sand, trace Silt, no odors, loose, wet.	Borehole backfilled with portland cement and bentonite grout mixture
25		13	24-26	0.3	10 10 13 7	23	0.0				
	800	14	26-28	1.0	20 14 11 9	25	0.0			Gray to gray/brown fine to medium SAND and fine to coarse subangular to subround GRAVEL, loose, wet.	
		15	28-30	0.8	14 14 16 14	30	0.0			End of boring at 30.0' bss.	
30											
	795										
35											

Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

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Date Start/Finish: 10/23/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon
Sampling Method 2:

Northing: 766863.076
Easting: 1006853.354
Sediment Surface Elevation: 825.75'
Borehole Depth: 4.0'
Water Depth: 8.0'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-B
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	825	1	0-2	0.3	15 45 26 21	71	0.0			Gray fine to coarse subangular GRAVEL, some fine to medium Sand, loose, wet.	
		2	2-4	0.4	14 19 26 28	45	0.0			Gray to brown fine to coarse subangular GRAVEL and fine to coarse SAND, trace Silt, faint MGP-like odor, loose, wet. End of boring at 4.0' bss.	Borehole backfilled with bentonite pellets.
5	820									Boring attepmted 2 times due to no recovery during the first attempt.	
10	815										
15	810										

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Samples collected using a 140 lb hammer.

Date Start/Finish: 11/5/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: L. Pech
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,300lb Hammer
Sampling Method 2:

Northing: 766848.366
Easting: 1006860.415
Sediment Surface Elevation: 820.35'
Borehole Depth: 4.0'
Water Depth: 10.7'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-B-1
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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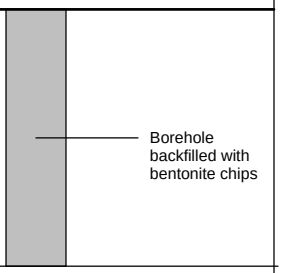
DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	820	1	0-2	0.4	78 12 6 5	18	0.0			Gray fine to coarse subangular to subround GRAVEL, trace fine Sand, wet.
		2	2-4	0.8	8 6 9 12	15	0.0			Brown fine SAND, some fine to coarse subangular Gravel, trace Silt, loose, wet. End of boring at 4.0' bss.
5	815									
10	810									
15	805									



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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-2.0', and 2.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Date Start/Finish: 10/23/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon
Sampling Method 2:

Northing: 766847.342
Easting: 1006828.295
Sediment Surface Elevation: 821.45'
Borehole Depth: 4.0'
Water Depth: 6.5'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-C
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	820	1	0-2	0.8	8 12 19 26	31	0.0			Brown to gray fine to coarse SAND and fine to coarse subangular GRAVEL, trace Silt, loose, wet.	Borehole allowed to naturally collapse
		2	2-4	0.9	25 29 34 19	63	0.0			End of boring at 4.0' bss.	
5	815										
10	810										
15											

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Samples collected using a 140 lb hammer.

Date Start/Finish: 10/23/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon
Sampling Method 2:

Northing: 766855.196
Easting: 1006811.432
Sediment Surface Elevation: 828.15'
Borehole Depth: 6.0'
Water Depth: 5.0'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-D
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	830										
0		1	0-2	0.9	2 1 1 1	2	0.0			Gray to brown fine to coarse SAND and medium to coarse subangular GRAVEL, trace silt, faint MGP-like odor, trace iridescent sheens, loose, wet.	
	825	2	2-4	1.1	1 3 8 12	11	0.0				Borehole backfilled with bentonite pellets
5		3	4-6	0.4	12 10 5 7	15	0.0			Gray fine to medium SAND, trace fine Gravel , faint MGP-like odor, loose, wet. End of boring at 6.0' bss.	
	820										
10											
	815										
15											

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 1.0-2.0', 2.0-3.0', 3.0-4.0' and 4.0-6.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Samples collected using a 140 lb hammer.

Date Start/Finish: 10/23/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 4' Split Spoon
Sampling Method 2:

Northing: 766845.173
Easting: 1006783.390
Sediment Surface Elevation: 828.65'
Borehole Depth: 4.0'
Water Depth: 4.5'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-E
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	830										
0		1	0-4	0.5	1 1 1 1 1 2 1 1	2 3	0.0			Gray fine to medium subround GRAVEL, trace fine Sand, very loose, wet. End of boring at 4.0' bss.	Borehole allowed to naturally collapse
	825										
5										Boring attempted three times due to lack of recovery on the first two attempts. Utilized a 4' split spoon in an attempt to achieve greater recovery.	
	820										
10											
	815										
15											

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Samples collected using a 300 lb hammer.

Date Start/Finish: 11/5/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: L. Pech
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,300lb Hammer
Sampling Method 2:

Northing: 766837.864
Easting: 1006785.477
Sediment Surface Elevation: 823.65'
Borehole Depth: 4.0'
Water Depth: 7.4'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-E-1
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825										
0		1	0-2	0.2	WH 1 2 3	3	0.0			Multicolored medium to coarse subangular GRAVEL, wet.	Borehole backfilled with bentonite chips
										Gray medium SAND, trace fine subangular Gravel, loose, wet.	
		2	2-4	0.9	30 2 3 3	5	0.0			Gray to brown fine to medium SAND, some fine to medium subangular Gravel, trace Silt, loose, wet. Brown fine to medium SAND, trace fine subangular Gravel, loose, wet. End of boring at 4.0' bss.	
	820										
5											
	815										
10											
	810										
15											

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery; WH= Weight of Hammer
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-2.0', 2.0-3.0' and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Date Start/Finish: 10/29/14 - 10/31/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Bill Rice
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon, 300lb Hammer
Sampling Method 2:

Northing: 766830.737
Easting: 1006782.501
Sediment Surface Elevation: 822.35'
Borehole Depth: 30'
Water Depth: 8.7'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-F
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	830										
0		1	0-2	1.2	5 5 8 9	13	0.0			Multicolored fine to coarse subangular to subround GRAVEL, some fine to coarse Sand, loose, wet. Gray COBBLE in nose of split spoon. Gray fine to coarse subangular GRAVEL, some fine to medium Sand, loose, wet.	
		2	2-4	1.5	12 151 12 17	27	0.0			Lense of tan Silty SAND, some fine to medium Gravel, moist. Gray fine to coarse SAND and fine to coarse subangular GRAVEL, loose, saturated.	
	825									Reddish brown fine to medium SAND and fine to coarse subangular to subround GRAVEL, loose, wet.	
5		3	4-6	NR	NA	NA	NA			Roller bit past due to gravel stuck between bit and 4" casing	
		4	6-8	NR	9 6 6 5	12	NA			No Recovery.	
	820	5	8-10	0.8	8 8 12 14	20	0.0			Multicolored fine to coarse subround GRAVEL, some to little fine Sand, loose, wet.	Borehole backfilled with portland cement and bentonite grout mixture
10		6	10-12	1.8	15 10 10 11	20	0.0			Dark Gray fine to medium SAND, trace fine to medium subangular Gravel, loose, wet. Multicolored fine to coarse subround GRAVEL, some to little fine Sand, trace Silt, loose, wet.	
		7	12-14	0.7	13 10 9 10	19	0.0				
	815				14					Lense of brown fine SAND, trace fine Gravel, wet.	
15		8	14-16	1.0	10 9 12	19	0.0			Gray fine to medium SAND, some fine to coarse subangular Gravel, trace Silt, loose, wet.	
					12					No Recovery.	

Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

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Client: NYSEG

Well/Boring ID: PDI-SED-F

Borehole Depth: 30'

Location:
Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	NR	12 11 12	23	NA			Gray fine to medium SAND, some fine to coarse subangular Gravel, trace Silt, loose, wet.	
	810	10	18-20	1.1	12 10 9 8	19	0.0			Gray to brown fine to coarse SAND and fine to coarse subangular GRAVEL, trace Silt, loose, wet.	
20		11	20-22	0.3	7 6 5 5	11	0.0			Multicolored medium to coarse GRAVEL, trace fine Sand, loose, wet.	
		12	22-24	0.2	10 7 6 7	13	0.0				Borehole backfilled with portland cement and bentonite grout mixture
	805	13	24-26	1.0	5 5 6 5	11	0.0			Multicolored fine to coarse subangular to subround GRAVEL, little fine to coarse Sand, loose, wet.	
25		14	26-28	0.5	12 9 9 12	18	0.0				
										Gray fine to medium SAND, trace fine Gravel, trace iridescent sheens, faint MGP-like odor, wet.	
					12					Gray fine to medium SAND and fine to medium subangular GRAVEL, MGP-like odor, irridescent sheen, light brown NAPL coating with trace blebs, wet.	
	800	15	28-30	1.7	10 11 10	21	196			Gray medium to coarse GRAVEL, some fine to medium Sand, moderate black to brown NAPL coating, strong MGP-like odor, wet.	
30										Brown Silty CLAY, little medium to coarse Gravel, little fine Sand, Till-like, low plasticity, moist. ~~NAPL coating edge of Gravels for from 29.3 to 29.5' bss, with no impacts~~ observed below 29.5' bss. End of boring at 30.0' bss.	
	795										
35											

Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

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Date Start/Finish: 10/23/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon
Sampling Method 2:

Northing: 766829.317
Easting: 1006745.946
Sediment Surface Elevation: 828.55'
Borehole Depth: 4.0'
Water Depth: 4.5'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-G
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	830										
0		1	0-2	0.5	2 2 4 4	6	0.0			Gray fine to coarse GRAVEL, some fine to medium Sand, little Silt, loose, wet.	
										Blue to gray Silty SAND, little fine to medium subangular Gravel, loose, wet.	Borehole allowed to naturally collapse
		2	2-4	0.6	3 2 4 5	6	0.0			Gray medium to coarse SAND and fine to coarse subangular GRAVEL, loose, wet.	
	825									End of boring at 4.0' bss.	
5										Boring attempted twice due to lack of recovery on the first attempt.	
	820										
10											
	815										
15											

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Samples collected using a 300 lb hammer.

Date Start/Finish: 10/21/14-10/22/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon
Sampling Method 2:

Northing: 766742.183
Easting: 1006510.461
Sediment Surface Elevation: 830.45'
Borehole Depth: 30'
Water Depth: 2.3'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-H
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	830	1	0-2	0.6	9 9 19 25	28	0.0			Gray to brown fine SAND, some to little fine to medium subround Gravel, little Organics (leaves, wood), wet.	
										Gray fine SAND, some Silt, loose, wet.	
		2	2-7	2.1	35 31 20 20 54 20 15 17 17 12	51	0.0			Gray fine SAND, some Silt, trace Organics (leaves), loose, wet.	
										Light gray to orange mottled Silty CLAY, little fine to medium Gravel, trace Organics, trace Sand, nonplastic, moist to wet.	
5	825									Gray medium to coarse subangular GRAVEL, some fine Sand, little lenses of Silt, loose, wet.	
		3	7-9	0.8	41 22 21 15	43	0.0			Gray fine to coarse subangular GRAVEL, little fine to medium Sand, loose, wet.	
10	820	4	9-11	NR	11 11 10 10	21	NA			No Recovery.	
		5	11-13	0.6	17 9 10 12	19	0.0			Gray fine to coarse subangular GRAVEL, trace fine to coarse Sand, loose, wet.	
		6	13-15	0.9	19 18 15 30	33	0.0			Mulitcolored (red, brown, and gray) subangular to subround medium to coarse GRAVEL, trace fine Sand, loose, wet.	
15	815	7	15-17	1.3	40 40	74	0.0				Borehole backfilled with Bentonite chips
		7	15-17	1.3	34	74	0.0				

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Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 0.5-1.0', 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Sample collected using a 300lb hammer from 19-31' bss.

Client: NYSEG

Well/Boring ID: PDI-SED-H

Borehole Depth: 30'

Location:
Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
					23						
		8	17-19	0.9	47 38 36 33	74	0.0				
		9	19-21	1.3	32 15 12 10	27	0.0			Gray fine SAND, little Silt, trace fine subangular Gravel, moderately dense, wet. Dark gray medium SAND, trace fine subangular Gravel, loose, wet.	
20	810									Roller bit to 22.0' bgs	
		10	22-24	1.7	13 15 14 12	29	0.0			Dark gray fine to medium SAND, loose, wet.	
25	805	11	24-26	2.0	13 14 17 16	31	0.0			Dark gray fine to medium SAND, trace fine Gravel, faint MGP-like odor, wet.	
		12	26-28	1.4	5 5 7 12	12	0.0			Dark gray fine to medium SAND, trace Silt, faint MGP-like odor, loose, wet.	
		13	28-30	1.8	8 8 12 19	20	0.0			Dark gray fine to medium SAND, little fien to medium subround Gravel, trace Silt, loose, wet. End of boring at 30.0' bss.	
30	800										
35											

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Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 0.5-1.0', 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Sample collected using a 300lb hammer from 19-31' bss.

Date Start/Finish: 10/23/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon
Sampling Method 2:

Northing: 766705.429
Easting: 1006496.644
Sediment Surface Elevation: 826.05'
Borehole Depth: 4.0'
Water Depth: 2.4'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-I
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	825	1	0-2	0.4	20 46 21 8	67	0.0			Gray to brown fine to medium SAND, some fine to medium subangular Gravel, trace Organics (leaves), faint MGP-like odor, loose, wet.	
					5 11					Gray-blue mottled Silty CLAY, trace fine to medium subround Gravel, stiff, nonplastic, moist.	Borehole backfilled with bentonite chips
		2	2-4	1.1	8 7	19	0.0			Gray Sandy SILT, little fine to medium subround Gravel, stiff, moist. Gray fine to medium SAND and fine to medium subangular GRAVEL, loose, faint MGP-like odor, wet.	
5	820									End of boring at 4.0' bss.	
10	815										
15											

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Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 1.0-2.0', 2.0-3.0', and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Samples collected using a 300 lb hammer.

Date Start/Finish: 11/5/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: L. Pech
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,300lb Hammer
Sampling Method 2:

Northing: 766691.998
Easting: 1006491.175
Sediment Surface Elevation: 824.45'
Borehole Depth: 4.0'
Water Depth: 6.6'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-I-1
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH / ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
825 / 0										
	1	0-2	0.4	3 4 4 4	8	0.0			Gray fine to coarse subangular GRAVEL, little fine to medium Sand, trace Silt, loose, wet.	
	2	2-4	1.2	7 5 2 2	7	0.0			Gray fine to coarse SAND and fine to coarse subangular GRAVEL, loose, wet. End of boring at 4.0' bss.	Borehole backfilled with bentonite chips
820 / 5										
815 / 10										
810 / 15										

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery; WH= Weight of Hammer
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-2.0', 2.0-3.0' and 3.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Date Start/Finish: 10/24/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon
Sampling Method 2:

Northing: 766682.572
Easting: 1006462.011
Sediment Surface Elevation: 827.75'
Borehole Depth: 4.0'
Water Depth: 3.3'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-J
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH / ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
830									
0	1	0-2	0.7	12 20 19 11	67	155.7			Gray coarse subangular GRAVEL, little fine to medium Sand, light brown NAPL coating with NAPL blebs (0.01" diameter), MGP-like odor, sheens, loose, wet. Gray-blue SILT, trace subround Gravel, trace Clay, stiff, moist.
825	2	2-4	0.9	6 7 10 8	19	1.8			Gray fine to medium SAND, some fine to coarse subangular Gravel, trace Silt, faint MGP-like odor, loose, wet.
5	3	4-6	NR	12 7 9 15		NA			No Recovery.
820	4	6-8	0.9	14 44 50/.3-10/.2 8		0.0			Gray fine to coarse subangular GRAVEL, little fine to medium Sand, faint MGP-like odor, no visual impacts, loose, wet. Begin using 300 lb hammer at 7.3' bss. End of boring at 8.0' bss.
10									
815									
15									

Well/Boring Construction: Borehole backfilled with bentonite chips

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Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 1.0-2.0', 2.0-3.0',3.0-4.0' and 6-8'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Samples collected using a 300 lb hammer at 7.3' bss.

Date Start/Finish: 10/28/15
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Bill Rice
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,300lb Hammer
Sampling Method 2:

Northing: 766666.288
Easting: 1006440.644
Sediment Surface Elevation: 828.45'
Borehole Depth: 8.0'
Water Depth: 2.6'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-K
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	830										
0											
		1	0-2	1.3	21 30 15 16	45	43.3			Gray SILT, little Organics (leaves), trace fine Sand, trace Clay, soft, wet. Gray to dark gray fine to medium SAND, some fine to medium subangular Gravel, MGP-like odor, trace iridescent sheens, trace NAPL blebs, black staining, loose, wet.	
		2	2-4	0.9	8 12 10 10	22	19.3			Gray Silty SAND, some fine to medium subangular Gravel, trace Organics (wood), wet. Gray medium to coarse subangular GRAVEL, little fine Sand, trace Silt, wet. Brown fine to medium subangular GRAVEL, some fine to coarse Sand, trace NAPL blebs, iridescent sheens, MGP-like odor, wet.	
	825										
5		3	4-6	0.5	18 31 23 30	54	2.7				Borehole backfilled with bentonite chips
		4	6-8	NR	9 8 8 10	16	NA			No Recovery.	
	820	5	8-10	0.4	26 23 24 31	47	0.0			Brown coarse subangular GRAVEL, trace fine Sand, trace Silt, loose, no obvious impacts wet. End of boring at 10.0' bss.	
10											
	815										
15											

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Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 1.0-2.0', 2.0-3.0', 3.0-4.0', 4.0-6.0' and 8.0-10.0' bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Date Start/Finish: 10/24/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon
~~Sampling Method 2:~~

Northing: 766631.071
Easting: 1006454.929
Sediment Surface Elevation: 822.45'
Borehole Depth: 6.0'
Water Depth: 8.6'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-L
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH / ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
825										
0										
	1	0-2	0.7	22 36 46 25	72	4.7			Gray fine to coarse SAND, some fine to coarse subangular Gravel, trace Silt, loose, wet. Black medium to coarse SAND (stained), little fine subangular Gravel, trace sheens, black staining, loose, wet.	
820									Gray coarse GRAVEL, little Silt, little fine Sand, faint MGP-like odor, moist to wet.	
	2	2-4	0.7	22 13 16 25	29	0.0			Gray medium to coarse GRAVEL, little fine Sand, trace Silt, faint MGP-like odor, trace iridescent sheen, loose, moist. Begin using 300 lb hammer at 4.0' bss.	Borehole backfilled with bentonite chips
5	3	4-6	0.6	14 7 3 2	10	0.0			Light brown to tan fine to coarse subangular GRAVEL, little fine Sand, trace Silt, loose, wet. End of boring at 6.0' bss.	
815										
10										
810										
15										

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Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 0.5-1.0', 1.0-2.0', 2.0-3.0',3.0-4.0', and 4.0-6.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Samples collected using a 300 lb hammer beginning at 4.0' bss.

Date Start/Finish: 10/28/15
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Bill Rice
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,300lb Hammer
Sampling Method 2:

Northing: NA
Easting: NA
Sediment Surface Elevation: NA
Borehole Depth: 8.0'
Water Depth: 10.0'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-L-1
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	0	1	0-2	0.7	15, 11, 20, 17	31	0.0			Brown fine to coarse SAND and fine to coarse subangular GRAVEL, loose, wet.
		2	2-4	0.8	14, 16, 19, 16	35	0.0			Dark gray fine to medium SAND, some Silt, black staining, thin lense (<0.01' thick) of brown to black light NAPL coating, MGP-like odor, trace sheens, loose, wet.
										Red COBBLE.
5	-5	3	4-6	1.2	17, 9, 14, 16	23	0.0			Gray fine SAND, some fine to medium Gravel, trace Silt, faint MGP-like odor, no visual impacts, loose, wet.
				0.6	22, 19, 23, 14	42	0.0			End of boring at 8.0' bss.
10	-10									
15	-15									

Well/Boring Construction: Borehole backfilled with bentonite chips

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Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-2.0', 2.0-4.0', 4.0-5.0', 5.0-6.0' and 6.0-8.0' bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Date Start/Finish: 11/5/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: L. Pech
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,300lb Hammer
Sampling Method 2:

Northing: NA
Easting: NA
Sediment Surface Elevation: NA
Borehole Depth: 6.0'
Water Depth: 10.5
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-L-2
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0										
		1	0-2	0.7	8 8 17 12	31	0.0			Brown fine to coarse SAND and fine to coarse subangular GRAVEL, loose, wet.	
		2	2-4	0.9	8 11 10 10	35	0.0			Dark gray fine to medium SAND, some Silt, black staining, thin lense (<0.01' thick) of brown to black light NAPL coating, MGP-like odor, trace sheens, loose, wet. Red COBBLE.	Borehole backfilled with bentonite chips
5	-5	3	4-6	0.5	36 26 20 25	23	0.0			Gray fine SAND, some fine to medium Gravel, trace Silt, faint MGP-like odor, no visual impacts, loose, wet.	
10	-10										
15	-15										

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Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-2.0', 2.0-4.0', 4.0-5.0', 5.0-6.0' and 6.0-8.0' bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Date Start/Finish: 11/5/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: L. Pech
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,300lb Hammer
Sampling Method 2:

Northing: 766601.485
Easting: 1006458.844
Sediment Surface Elevation: 820.15'
Borehole Depth: 4.0'
Water Depth: 10.9'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-L-3
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	820	1	0-2	NR	6 9 4 4	13	NA			No Recovery, Cobble stuck in nose of split spoon.	
		2	2-4	0.6	6 2 2 1	4	0.0			Multicolored fine to coarse subangular GRAVEL, little fine to medium Sand, loose, no obvious impacts, wet. End of boring at 4.0' bss.	Borehole backfilled with bentonite chips
5	815										
10	810										
15	805										

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Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 2.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Date Start/Finish: 10/29/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Bill Rice
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon, 300lb Hammer
Sampling Method 2:

Northing: 766632.108
Easting: 1006406.850
Sediment Surface Elevation: 829.15'
Borehole Depth: 20'
Water Depth: 1.9'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-M
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
	830									
0		1	0-2	0.9	57 23 36 23	59	0.0			Gray fine to coarse GRAVEL, some fine to coarse Sand, trace Silt, dense, wet.
		2	2-4	0.4	22 20 15 7	35	0.0			
	825	3	4-6	0.9	5 5 6 5	11	0.0			Gray medium SAND, some to little fine to medium subangular Gravel, loose, wet.
5		4	6-8	0.4	7 6 8 8	14	0.0			Brown fine to medium SAND and fine to coarse subangular GRAVEL, trace Silt, loose, wet.
	820	5	8-10	0.8	5 6 6 8	12	0.0			Gray fine to coarse SAND and fine to coarse subangular GRAVEL, trace Silt, loose, wet.
10		6	10-12	0.9	23 30 15 15	45	0.0			Gray fine to coarse SAND and multicolored fine to coarse subangular GRAVEL, trace Silt, stiff, wet.
		7	12-14	0.8	9 6 7 9	13	0.0			Gray fine to coarse SAND and fine to coarse subangular GRAVEL, loose, wet.
	815	8	14-16	NR	18 15 14 15	29	NA			No Recovery.
15					16					Brown fine to coarse subangular GRAVEL, some to little fine to medium Sand,

Well/Boring Construction: Borehole backfilled with portland cement and bentonite grout mixture

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 2.0-3.0', 3.0-4.0', and 4.0-5.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Sample collected using a 140lb hammer from 0-0.5' bss.

Client: NYSEG

Well/Boring ID: PDI-SED-M

Borehole Depth: 20'

Location:
Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
		9	16-18	0.7	13 13 14	26	0.0			trace Silt, loose, wet.	
	810	10	18-20	1.5	13 13 16 20	29	0.0			Gray fine to medium SAND, little fine to medium subangular Gravel , trace Silt, loose, wet. Multicolored fine to medium subangular GRAVEL, little fine Sand, trace Silt, loose, wet.	Borehole backfilled with portland cement and bentonite grout mixture
20										End of boring at 20.0' bss.	
	805										
25											
	800										
30											
	795										
35											

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Remarks: bss = below sediment surface; NA = Not Applicable/Available; AMSL = Above Mean Sea Level; NR = No Recovery
Coordinates are based on the North American Datum of 1983, NEW YORK EASTERN Zone, U.S. Survey Foot.
Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 2.0-3.0', 3.0-4.0', and 4.0-5.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Sample collected using a 140lb hammer from 0-0.5' bss.

Date Start/Finish: 10/24/14-10/27/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Joel Rauscher
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,140lb Hammer
Sampling Method 2:

Northing: 766616.465
Easting: 1006414.322
Sediment Surface Elevation: 824.65'
Borehole Depth: 8.0'
Water Depth: 6.4'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-N
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825										
0		1	0-2	0.8	36 25 49 50	74	4.1			Gray coarse GRAVEL, trace fine Sand, black NAPL blebs (<0.01" diameter), MGP-like odor, loose, wet. Gray fine to coarse SAND and fine to coarse subangular GRAVEL, NAPL blebs (<0.01" diameter, abundant), MGP-like odor, trace iridescent sheen, wet.	
		2	2-4	1.1	22 10 8 11	18	3.2			Lense of tan medium SAND. Brown fine to coarse GRAVEL and fine to coarse SAND, loose, wet. Used 300 lb hammer from 2.0- 4.0' bss.	
	820	3	4-6	0.6	28 21 15 19	36	0.0			Multicolored (Gray, red, and brown) fine subangular to subround GRAVEL, some to little fine Sand, trace medium Gravel, trace Fill (steel bolt), trace NAPL blebs (<0.01" diameter), faint MGP-like odor, loose, wet.	Borehole backfilled with bentonite chips
5		4	6-8	0.8	17 17 16 19	33	0.0			Brown to gray fine to medium SAND, little fine subangular Gravel, trace Silt, loose, wet. End of boring at 8.0' bss.	
	815										
10											
	810										
15											

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The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-0.5', 0.5-1.0', 1.0-2.0', 2.0-3.0',3.0-4.0', 4.0-5.0', 5.0-6.0', and 6.0-8.0' bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Date Start/Finish: 10/27/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Bill Rice
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,140lb Hammer
Sampling Method 2:

Northing: 766607.914
Easting: 1006412.756
Sediment Surface Elevation: 824.65'
Borehole Depth: 4.0'
Water Depth: 6.4'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-N-1
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
	825										
0		1	0-2	0.6	15 18 23 18	41	0.0			Gray fine to coarse subangular GRAVEL, little fine to medium Sand, loose, wet.	Borehole backfilled with bentonite chips
		2	2-4	0.7	12 9 9 18	18	0.0			End of boring at 4.0' bss.	
5	820										
10	815										
15	810										

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Elevations are based on the North American Vertical Datum of 1988.
The coordinates and elevations were obtained using Real-Time Kinematic GPS Methods.
Analytical samples collected from 0-2.0', and 2.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.

Date Start/Finish: 10/27/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Bill Rice
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,140lb Hammer
Sampling Method 2:

Northing: 766588.109
Easting: 1006386.385
Sediment Surface Elevation: 827.55'
Borehole Depth: 4.0'
Water Depth: 3.5'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-O
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH / ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
830									
0									
	1	0-2	1.0	42 100 38 28	138	0.0			Dark gray fine to medium SAND and fine to coarse subangular GRAVEL, little Silt, trace red Brick, trace Organics (leaves), loose, wet. Dark gray fine to medium SAND, some to little fine to coarse subangular Gravel, trace Silt, loose, wet.
825	2	2-4	1.8	38 27 30 39	57	0.0			Dark gray fine to coarse SAND and fine to coarse subangular GRAVEL, trace Silt, trace red Brick, dense, wet. Gray to brown fine to medium SAND and fine to coarse subangular GRAVEL, little Silt, dense, wet.
5	3	4-6	0.9	40 25 27 30	52	0.0			Gray to brown fine to coarse GRAVEL, some fine to medium Sand, trace Silt, loose, wet. End of boring at 6.0' bss.
820									
10									
815									
15									

Well/Boring Construction: Borehole backfilled with bentonite chips

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Analytical samples collected from 2.0-3.0', 3.0-4.0', and 4.0-5.0' bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Used 300lb Hammer from 1.0-4.0' bss.

Date Start/Finish: 10/28/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: Bill Rice
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,140lb Hammer
Sampling Method 2:

Northing: 766563.317
Easting: 1006387.029
Sediment Surface Elevation: 824.85'
Borehole Depth: 6.0'
Water Depth: 6.2'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-P
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

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DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	825	1	0-2	0.7	28 70 38 65	108	0.0			Gray coarse subangular GRAVEL, some red Brick [Fill], trace fine Sand, wet. Dark gray medium to coarse subangular GRAVEL, some fine to medium Sand, trace Silt, black staining, faint MGP-like odor, wet.	
		2	2-4	1.0	71 42 22 31	64	0.0			Gray to brown fine to coarse subangular GRAVEL, some fine to medium SAND, trace Silt, trace Fill [Glass, red Brick], trace iridescent sheen, wet.	Borehole backfilled with bentonite chips
5	820	3	4-6	0.5	22 18 25 19	43	0.0			Gray to brown fine to coarse subangular GRAVEL, some fine to medium SAND, trace Silt, trace Fill [Glass, red Brick], wet. End of boring at 6.0' bss.	
10	815										
15	810										

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Analytical samples collected from 0-0.5', 0.5-1.0', 1.0-2.0', 2.0-3.0', 3.0-4.0', and 4.0-5.0' bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.
Used 300lb Hammer from 2.5-6.0' bss.

Date Start/Finish: 11/5/14
Drilling Company: Parratt-Wolff, Inc.
Driller's Name: L. Pech
Rig Type: Barge-mounted Acker Ace
Sampling Method: 3" x 2' Split Spoon,300lb Hammer
Sampling Method 2:

Northing: 766538.636
Easting: 1006372.263
Sediment Surface Elevation: 824.95'
Borehole Depth: 4.0'
Water Depth: 6.1'
Descriptions By: Will Stephens

Well/Boring ID: PDI-SED-P-1
Client: NYSEG
Location: Court Street
Binghamton, New York
Susquehanna River

DRAFT

DEPTH	ELEVATION	Sample Run Number	Sample Interval	Recovery (feet)	Blow Counts	N - Value*	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description
0	825	1	0-2	0.4	10 10 4 6	14	0.0			Multicolored fine to medium subangular GRAVEL, little fine Sand, loose, wet.
		2	2-4	0.8	7 12 12 10	24	0.0			Gray fine to coarse subangular GRAVEL and fine to coarse SAND, trace Silt, loose, wet. End of boring at 4.0' bss.
5	820									
10	815									
15	810									

Well/Boring Construction: Borehole backfilled with bentonite chips

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Analytical samples collected from 0-2.0', and 2.0-4.0'bss.
Samples were analyzed for NOAA 34 PAH and TOC analyses via the Lloyd Kahn Method.