ARCADIS of New York, Inc.
6723 Towpath Road
P.O. Box 66
Syracuse
New York 13214-0066
Tel 315.446.9120
Fax 315.449.0017
www.arcadis-us.com

ENVIRONMENTAL

Mr. John Spellman, P.E.
Division of Environmental Remediation, 11th Floor
New York State Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7017

Subject:
NYSEG Clark Street Former MGP Site
Sediment PDI Summary Report

Date:
June 10, 2011

Contact:
Jason Brien, PE

Phone:
315.671.9114

Email:
jason.brien@arcadis-us.com

Our ref:
B0013091 #10

Dear Mr. Spellman:

This letter report has been prepared on behalf of NYSEG to summarize the activities and results of the sediment Pre-Design Investigation (PDI) completed at the Clark Street Former Manufactured Gas Plant (MGP) Site (the site) located in Auburn, New York. The objectives of the Sediment PDI were to:

- Delineate the extent of site-related impacts in Owasco Outlet (the outlet) sediment to the top of bedrock
- Refine the proposed sediment removal area (as necessary) presented in the February 2009, *Feasibility Study Report* (FS Report) (URS, 2009)

PDI activities were conducted during August and September 2010 in general accordance with the March 2009 New York State Department of Environmental Conservation (NYSDEC) Record of Decision (ROD) (NYSDEC, 2009) and the NYSDEC-approved February 2010 *Remedial Design Work Plan* (RDWP) (ARCADIS, 2010).

Similar sediment PDI activities were completed for the NYSEG McMaster Street Former MGP Site. A description of sediment PDI activities and results for the McMaster Street site is provided under separate cover. However, based on the spatial relation to the Clark Street Site (i.e., approximately 0.5 miles upstream of the Clark Street Site), McMaster Street sediment PDI results are incorporated, as appropriate, throughout this Clark Street Sediment PDI letter report.

PDI activities consisted of evaluating the background (i.e., upstream from the Clark Street former MGP property and downstream from the McMaster Street former MGP

property) sediment quality as well as sediment adjacent to and immediately downstream from the site to help delineate the extent of site-related impacts.

Prior to conducting the sediment PDI activities, ARCADIS notified the United States Army Corp of Engineers (USACE) and completed a self-governing Nationwide Permit 6 (NWP 6). Additionally, ARCADIS notified the City of Auburn of the outlet investigation activities and arrangements were made with the City of Auburn Department of Municipal Utilities to regulate outlet water levels from the Mill Street Dam during sediment investigation activities. ARCADIS cleared investigation activities with the Department of Municipal Utilities each day prior to entering the outlet and in turn, the Department of Municipal Utilities notified ARCADIS prior to flow increases within the outlet.

The following sections present descriptions of the sediment PDI activities, PDI results, and rationale (supported by the PDI results) that help to define the limits of the proposed sediment removal areas for the selected site remedy.

Background Sediment PDI Activities and Results

ARCADIS conducted background sediment sampling reconnaissance on August 11, 2010 to identify potential sampling locations. A figure and photographs documenting proposed background sediment sampling locations were provided to NYSDEC in an August 13, 2010 email and NYSDEC subsequently approved (with NYSDEC-requested modifications) the sampling locations via an August 19, 2010 email.

A total of 20 background sediment samples, including one duplicate sample, were collected from 16 sediment boring locations between the McMaster Street and Clark Street sites. Samples were collected from the main channel of the outlet and the adjacent former mill race approximately 100 feet downstream of the furthest downstream McMaster Street delineation sample to Clark Street remedial investigation sampling transect T-13. Background sediment samples were collected using stainless steel trowels at the locations shown on Figure 1. Sediment sampling locations were surveyed by ARCADIS on September 9 and 23, 2010.

ARCADIS field personnel collected sufficient sediment volume at each sampling location to facilitate splitting the samples for potential analysis at two separate laboratories. One of the split samples from each sampling location was submitted to TestAmerica, Inc. (TestAmerica) in Amherst, New York for analysis for the 17 priority pollutant polycyclic aromatic hydrocarbons (PAHs) using SW-846 Method 8270

(PAH-17).The other split sample from each sampling location was submitted to Alpha Analytical Laboratories (Alpha Analytical) in Mansfield, Massachusetts, where the samples were frozen and retained for potential analysis for forensic PAHs and saturated hydrocarbons (i.e., detailed forensic analyses).

Results obtained for the analysis of background sediment samples for PAH-17 compounds are provided in Table 1. Total PAH concentrations for Clark Street background sediment samples ranged from 2.2 to 230 milligrams per kilogram (mg/kg). Both the shallow (0 to 0.5 feet) and deeper (0.5 to 1.0 feet) sediment samples collected from background sampling location CSB-4 contained the highest concentration of PAHs in Clark Street background sediment samples. As noted in Table 2, no visual (i.e., sheens, stains, blebs, NAPL) impacts were observed in background sediment samples.

As described in the *Forensic Evaluation Summary*, included as Attachment 2, a preliminary forensic evaluation was conducted for each of the background sediment samples. Based on the results of the preliminary forensic evaluation, eight representative background samples were selected and released from archive for detailed forensic analysis (by Alpha Analytical) to facilitate a detailed forensic evaluation. Analytical results for the detailed forensic analyses are provided in Table 3. Results of the forensic evaluation indicated that Clark Street background samples had PAH composition similar to McMaster Street background samples (i.e., PAHs appear to originate almost exclusively from non-MGP-related pyrogenic combustion sources with negligible contributions from petroleum sources). Some samples contained a potential mixture of McMaster Street background PAHs with a possible contribution from PAHs consistent with a coal carbonization (i.e., the process used on the McMaster Street sit) coal tar.

Delineation Sampling Activities and Results

Delineation sediment sampling activities were conducted from August 30 to September 14, 2010. ARCADIS' drilling subcontractor, Parratt-Wolff, Inc. (Parratt-Wolff), completed 50 sediment borings along 18 sampling transects and at additional locations immediately adjacent to and downstream of the site. Sediment samples were collected with split barrel samplers driven to the top of bedrock using either a float-mounted tripod rig, a free-standing tripod rig, or an ATV-mounted rig, depending on the depth of water and accessibility of the sampling location. A total of 51 sediment samples were collected from the sediment boring locations at near-shore, mid-stream, and far-shore locations along the sampling transects. Each boring was

completed to the top of the bedrock surface (0.3 to 8.3 feet below sediment surface [bss]). An ARCADIS geologist measured and recorded the length of the sample recovered from each interval and visually characterized each sediment sample for sediment type and the presence of visible staining, sheen, NAPL, tar, and obvious odors. Delineation sediment boring locations are shown on Figure 2.

A rock core was completed at sampling location T-12(II)-B from 3.1 to 6.2 feet bss and T-5a-AA from 8.3 to 12.0 feet bss using NX size coring equipment (i.e., 3-inch diameter core barrel). The rock core was collected to confirm that the sediment borings were completed to the top of bed rock and not on boulders or cobbles. The depth to bedrock measured in sediment borings was compared to the elevation of bedrock measured in upland investigation locations (completed during the Remedial Investigation).

Similar to the background sampling activities, each delineation sediment sample was submitted to TestAmerica for laboratory analysis for PAH-17compounds. Split volumes of each sediment sample were submitted to Alpha Analytical, frozen, and retained pending release for potential detailed forensic analyses.

Geotechnical sediment samples were collected from sampling locations T-07-A and T-10a-A and submitted for particle grain-size testing at PW-Labs located in Syracuse, New York. The geotechnical testing results are provided in Table 4.

A summary of the visual impacts observed in Clark Street delineation samples is shown on Figure 3. As shown on Figure 3, the most significant visual impacts were observed at the following locations: T-04-A (3.5 to 4.3 feet), T-06a-A (0.5 to 5.8 feet), T-07-A (1.0 to 1.7 feet), and T-08a-A (3.0 to 5.5 feet). Note that the presence of NAPL at each samples location was observed in sediment samples collected immediately above the top of bedrock surface at depths greater than one feet bss. Additionally, NAPL was observed in the bedrock core at sampling location T-05a-AA at a depth of 11.0 to 11.7 feet bss (core completed from 8.3 to 12.0 feet bss).

Analytical results for delineation sediment samples are presented in Table 5. Total PAH concentrations for Clark Street delineation samples ranged from 0.24 to 34,000 mg/kg, with a mean of 89 mg/kg and a median of 15mg/kg. With the exception of sediment sample T-01-A (0 to 0.5 feet) that contained total PAHs at a concentration of 34,000 mg/kg, all other delineation sediment samples contained total PAHs at concentrations less or equal to 1,400 mg/kg. As indicated in the *Forensic Evaluation Summary* (Attachment 2), none of the Clark Street delineation samples were

released from archive for detailed forensic analyses. Based on the results of the preliminary forensic analysis completed for Clark Street delineation sediment samples, as well as the forensic evaluation results for McMaster Street background and delineation sediment samples, Clark Street delineation samples contained four potential compositions:

- Similar to Clark Street and McMaster Street background sediment, non-MGP related
- Unknown, different than background, non-MGP related
- Mixture of potential carbureted water gas (i.e., the MGP process used at the Clark Street site) coal tar and background
- Consistent with carbureted water gas coal tar

The PAH compositions of the delineation sediment samples are shown on Figure 3. As indicated in the *Forensic Evaluation Summary* (Attachment 2), the PAH compositions of Clark Street delineation samples reflect site-related (i.e., CWG MGP) or background (i.e., non-distinguishable pyrogenic) sources of PAHs (or a mixing of the two). With the exception of samples containing PAHs from a potential CWG coal tar-source, Clark Street delineation sediments contained total PAH concentrations within the range of PAHs detected in Clark Street and McMaster Street background samples and generally had PAH compositions similar to the PAH compositions of Clark Street and McMaster Street background sediment samples.

Sediment Removal Area Evaluation

Removal Area Criteria

The sediment removal areas presented in the FS Report (indicated as “ROD Removal Area” on Figure 4) were delineated based on the results of a forensic evaluation conducted during the Remedial Investigation. The ROD states “Sediments which contain visible tar, produce a tar-related sheen when agitated in water, or which contain site-related PAH compounds at levels above upstream background levels will be removed.”

No tar-related sheens were observed on the outlet water surface during drilling activities. Therefore, sediment removal criteria were established to include sediment that contains the following:

- Total PAHs at concentrations greater than a site-specific background concentration
- NAPL or visible tar

Consistent with interpretation of NAPL/tar at other NYSDEC-regulated sites, minor visual impacts (e.g., sheen and/or isolated blebs noted in sediment when the cores were processed) were not considered “NAPL or visible tar”.

PAH Background Determination

The site-specific Clark Street total PAH background concentration was determined using the total PAH concentrations detected in Clark Street PDI background sediment samples. Prior to calculating a background concentration, an interquartile range outlier test was conducted. The interquartile range is defined as the difference between the values (e.g., PAH concentrations) of the 75th percentile (third quartile) and the 25th percentile (first quartile) data points. Outliers would be considered those data points (i.e., concentrations) that fall further than one and a half times the interquartile range under the first quartile (the 25th percentile) or one and a half times the interquartile range over the third quartile (the 75th percentile). Based on the results of the interquartile range outlier test, the following Clark Street sediment samples were identified as potential outliers and therefore, were not used in the calculation of the Clark Street background PAH concentration:

- CSB-4 (0 to 0.5 feet) with a PAH concentration of 150 mg/kg
- CSB-4 (0.5 to 1.0 feet) with a PAH concentration of 230 mg/kg
- CSB-11 (0 to 0.5 feet) with a PAH concentration of 150 mg/kg
- CSB-14 (0 to 0.5 feet) with a PAH concentration of 140 mg/kg

A statistical background calculation sheet is included as Attachment 3. Consistent with background calculations completed at other NYSDEC-regulated sites, the Clark Street background concentration was defined as the 90th percentile of the data set

(i.e., the background concentrations). United States Environmental Protection Agency (USEPA) Pro UCL software was used to calculate a background concentration of 62 mg/kg.

Proposed Removal Areas

Thiessen polygons were used to estimate the limits of sediment impacted by MGP-related materials as a basis for identifying sediment removal areas and associated sediment quantities. Thiessen polygons were formed to enclose the space around each sediment sampling location using an algorithm in geographic information systems (GIS) software to calculate the midpoint between adjacent sampling locations and then connect these midpoints to form polygons. Any point inside a particular polygon is closer to the sampling location within that polygon than to any other sampling point, and therefore is considered to have the same characteristics of that sampling point within the polygon. Boundary lines for forming the polygons consisted of the outlet bank. Note that removal areas presented in the ROD were not used as polygon boundaries as the ROD removal areas were re-sampled as part of the PDI.

Based on a review of the Owasco Outlet PDI results, recommended sediment removal limits include material associated with several PDI sediment sampling locations. The sediment sampling locations recommended for removal, along with the rationale for removal, are presented in the following table.

Sediment Sampling Location	Rationale for Removal
T-01-A	34,000 mg/kg PAHs with a carbureted water gas composition observed from 0 to 0.5 feet bss.
T-01-C	860 mg/kg PAHs with a carbureted water gas composition from 0.0 to 0.5 feet bss.
T-02-A	1,400 mg/kg PAHs with a carbureted water gas composition observed from 0 to 0.5 feet bss.
T-04-A	140 mg/kg PAHs with a mixture of carbureted water gas and background composition observed from 3.5 to 4.3 feet bss.

Sediment Sampling Location	Rationale for Removal
T-05-C	340 mg/kg PAHs with a mixture of carbureted water gas ad background composition observed from 0.6 to 1.0 feet bss.
T-06a-A	NAPL observed at 2.0 feet and from 5.4 to 5.8 feet bss.
T-07-A	NAPL and 160 mg/kg PAHs with a carbureted water gas composition observed from 1.0 to 1.7 feet bss.
T-07A-A	230 mg/kg PAHs with a carbureted water gas composition observed from 0.5 to 1.0 feet bss.
T-08a-A	220 mg/kg PAHs with a carbureted water gas composition observed from 3.0 to 5.0 feet bss.
T-19-A	200 mg/kg PAHs with a mixture of carbureted water gas ad background composition observed from 0 to 0.5 feet bss.

Proposed sediment removal areas are shown on Figure 4. The proposed sediment removal would address sediment containing site-related PAHs at concentrations greater than background. Sediment sampling location T-12-C was excluded from removal because elevated PAH concentrations (i.e., 150 mg/kg from 1.0 to 3.0 feet bss) were attributed to unknown non-MGP-related sources. Additionally, the ROD removal area identified by Remedial Investigation sediment sample SED-12 was not included for removal based on the absence of visual impacts and total PAH concentrations below background in sediment samples collected from PDI location T-10a-A.

Schedule

NYSEG anticipates that upland PDI activities, as outlined in the RDWP, will be completed in the summer of 2011 and upland PDI Summary Reports are anticipated to be provided to the NYSDEC in late 2011.

Please do not hesitate to contact Mr. John Ruspantini of NYSEG at 607.762.8787 or the undersigned at 315.671.9114 if you have any questions or comments regarding the information presented in this letter or any other aspects of this project.

Sincerely,

ARCADIS of New York, Inc.

Jason Brien, P.E.
Senior Engineer

Copies:
Richard Jones, NYSDOH
John Ruspantini, NYSEG
Stuart D. Messur, ARCADIS
Margaret A. Carrillo-Sheridan, PE, ARCADIS (w/o enclosure)
Keith A. White, CPG, PG, ARCADIS (w/o enclosure)

Figures

1 Sediment PDI Background Total PAH Concentrations
2 Sediment PDI Delineation Sampling Locations
3 Sediment PDI Delineation Total PAH Concentrations
4 Proposed Removal Areas

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2 Background Sediment Summary
3 Background Sediment Forensic Analytical Summary
4 Geotechnical Testing Summary
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Attachments

1 Sediment Boring Logs
2 Forensic Evaluation Summary Memorandum
3 Statistical Background Calculation Sheet

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Tables

Table 1
Background PAH Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID: Sample Depth(Feet): Date Collected:	Units	CSB-1 0 - 0.5 8/18/2010	CSB-2 0 - 0.5 8/18/2010	CSB-2-DUP 0 - 0.5 8/18/2010	CSB-3 0 - 0.5 8/18/2010	CSB-4 0 - 0.5 8/18/2010	CSB-4 0.5 - 1 8/18/2010	CSB-5 0 - 0.5 8/18/2010	CSB-6 0 - 0.42 8/18/2010	CSB-7 0 - 0.3 8/18/2010	CSB-8 0 - 0.5 8/18/2010	CSB-8 0.5 - 1 8/18/2010
PAHs												
2-Methylnaphthalene	mg/kg	0.20 U	0.68 U	0.042 J	0.061 J	0.14 J	1.5	0.23 U	0.29 U	0.23 U	0.18 U	0.048 J
Acenaphthene	mg/kg	0.20 U	0.68 U	0.20 U	0.057 J	1.7	8.3	0.23 U	0.40	0.23 U	0.46	0.73
Acenaphthylene	mg/kg	0.20 U	0.68 U	0.15 J	0.60	1.7	2.1	0.23 U	0.38	0.23 U	0.23	0.34
Anthracene	mg/kg	0.22	1.8	0.77	1.6	5.6	12	0.42	1.8	0.66	0.91	1.8
Benzo(a)anthracene	mg/kg	0.98	6.9 J	1.9 J	4.6	13	16	1.8	5.1	2.3	1.7	4.3
Benzo(a)pyrene	mg/kg	1.1	6.2 J	1.7 J	3.7	11	14	1.9	4.8	2.0	1.6	4.1
Benzo(b)fluoranthene	mg/kg	0.60	4.6 J	1.2 J	3.1	9.0	10	1.4	3.6	1.4	0.93	3.2
Benzo(g,h,i)perylene	mg/kg	0.64	3.5 J	1.1 J	2.1	7.0	8.7	1.1	3.0	1.1	0.86	2.5
Benzo(k)fluoranthene	mg/kg	0.36	2.8 J	0.64 J	1.7	4.3	6.0	0.84	2.4	0.99	0.73	2.1
Chrysene	mg/kg	0.20	4.4 J	1.1 J	3.5	10	11	1.3	4.2	1.6	0.98	3.9
Dibenzo(a,h)anthracene	mg/kg	0.20 U	1.6 J	0.34 J	0.76	2.4	3.3	0.51	0.93	0.48	0.40	0.75
Dibenzofuran	mg/kg	0.20 U	0.68 U	0.20 U	0.22 U	0.63 U	2.3	0.23 U	0.29 U	0.23 U	0.18 U	0.061 J
Fluoranthene	mg/kg	2.0	15 J	4.9 J	10	32	45	4.6	14	5.9	4.3	13
Fluorene	mg/kg	0.20 U	0.40 J	0.27	0.47	2.2	7.0	0.15 J	0.80	0.24	0.44	1.0
Indeno(1,2,3-cd)pyrene	mg/kg	0.77	3.9 J	1.1 J	2.0	6.1	7.9	1.1	2.7	1.2	0.87	2.3
Naphthalene	mg/kg	0.20 U	0.68 U	0.20 U	0.22 UB	0.63 UB	2.5	0.23 U	0.29 UB	0.23 U	0.18 UB	0.22 UB
Phenanthrene	mg/kg	0.67	4.7	2.9	4.5	21	43	1.6	8.2	2.8	3.4	9.1
Pyrene	mg/kg	1.6	12 J	3.9 J	7.5	26	34	3.4	10	4.3	3.3	9.3
Total PAHs	mg/kg	9.1	68 J	22 J	46 J	150 J	230	20 J	62	25	21	59 J

Table 1
Background PAH Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID: / Sample Depth(Feet): / Date Collected:	Units	CSB-8 1 - 1.5 8/18/2010	CSB-9 0 - 0.25 8/18/2010	CSB-10 0 - 0.42 8/18/2010	CSB-11 0 - 0.5 8/18/2010	CSB-12 0 - 0.3 8/18/2010	CSB-13 0 - 0.25 8/18/2010	CSB-14 0 - 0.3 8/18/2010	CSB-15 0 - 0.5 8/18/2010	CSB-16 0 - 0.5 8/18/2010
PAHs										
2-Methylnaphthalene	mg/kg	0.081 J	0.19 U	0.39 U	1.4 U	0.43 U	0.20 U	0.42 U	0.69 U	0.51 U
Acenaphthene	mg/kg	0.21	0.19 U	0.39 U	1.4 U	0.43 U	0.20 U	2.1	0.69 U	0.51 U
Acenaphthylene	mg/kg	0.39	0.19 U	0.56	0.80 J	0.43 U	0.20 U	1.3	0.69 U	0.51 U
Anthracene	mg/kg	1.0	0.052 J	2.5	3.3	0.10 J	0.072 J	6.4	1.1	0.93
Benzo(a)anthracene	mg/kg	3.5	0.33	4.3	13	0.64	0.50	10	5.4	4.8
Benzo(a)pyrene	mg/kg	3.2	0.59	3.6	12	1.3	0.85	8.5	6.1	5.5
Benzo(b)fluoranthene	mg/kg	2.6	0.19 U	2.7	9.7	0.085 J	0.31	7.2	5.4	5.0
Benzo(g,h,i)perylene	mg/kg	2.1	0.13 J	2.5	6.0	0.27 J	0.41	5.6	4.1	4.2
Benzo(k)fluoranthene	mg/kg	1.9	0.10 J	1.4	5.4	0.11 J	0.22	3.4	2.5	2.2
Chrysene	mg/kg	3.3	0.19 U	2.4	11	0.43 U	0.20 U	7.9	4.6	4.7
Dibenzo(a,h)anthracene	mg/kg	0.88	0.19 U	0.82	3.0	0.43 U	0.35	2.0	2.5	1.3
Dibenzofuran	mg/kg	0.21 U	0.19 U	0.39 U	1.4 U	0.43 U	0.20 U	0.29 J	0.69 U	0.51 U
Fluoranthene	mg/kg	9.4	0.28	11	34	0.80	1.1	29	15	13
Fluorene	mg/kg	0.47	0.19 U	0.39 U	1.4 U	0.43 U	0.20 U	2.5	0.35 J	0.30 J
Indeno(1,2,3-cd)pyrene	mg/kg	1.9	0.37	2.3	6.7	0.87	0.61	5.0	4.4	3.9
Naphthalene	mg/kg	0.21 UB	0.19 U	0.39 UB	1.4 U	0.43 U	0.20 U	0.42 UB	0.69 U	0.51 U
Phenanthrene	mg/kg	5.2	0.19 U	5.1	18	0.43 U	0.20 U	23	4.5	4.4
Pyrene	mg/kg	7.0	0.36	8.4	25	0.60	0.79	22	11	10
Total PAHs	mg/kg	43 J	2.2 J	48	150 J	4.8 J	5.2 J	140 J	67 J	60 J

Notes:

1. Samples collected by ARCADIS on the dates indicated.
2. Samples analyzed by TestAmerica located in Amherst, NY.
3. J - Indicates that the analyte was detected at a concentration less than the Reporting Limit and greater than or equal to the Method Detection Limit. The concentration presented is estimated.
4. U - Indicates that the compound was analyzed for but not detected. The associated value is the compound quantitation limit.
5. B - Indicates that the compound was also detected in the laboratory blank sample.

Table 2
Background Sediment Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location	Probing Depth (feet)	Sediment Description
CSB-1	0.5	Gray fine to coarse SAND, some fine to coarse subrounded Gravel, trace Glass and Brick
CSB-2	0.5	Dark gray SILT and fine SAND, little Organics and medium Sand.
CSB-3	0.5	Gray brown fine to medium SAND, little coarse Sand and fine to medium Gravel, trace Shell fragments.
CSB-4	1	Dark gray fine to coarse SAND and ORGANICS, little Silt and Shell fragments, decreasing organics with depth.
CSB-5	0.6	Dark gray fine to coarse SAND , little fine Gravel, trace Shells and Glass.
CSB-6	0.4	Dark gray brown fine SAND, some Silt, little Organics, trace medium to coarse Sand and fine Gravel, trace Shells.
CSB-7	0.3	Gray to brown fine to medium SAND, little coarse Sand, fine to subrounded Gravel, trace Shells.
CSB-8	1.5	Gray to brown fine to coarse SAND, little fine to medium subrounded Gravel, trace Silt and Organics,trace Brick and Shells, little Silt below 1.0 feet
CSB-8	1.5	Gray to brown fine to coarse SAND, little fine to medium subrounded Gravel, trace Silt and Organics,trace Brick and Shells, little Silt below 1.0 feet
CSB-8	1.5	Gray to brown fine to coarse SAND, little fine to medium subrounded Gravel, trace Silt and Organics,trace Brick and Shells, little Silt below 1.0 feet
CSB-9	0.3	Brown fine to coarse SAND, some fine to coarse subrounded Gravel, trace Silt and Glass.
CSB-10	0.4	Gray fine to coarse subraounded GRAVEL, trace Brick and Silt.
CSB-11	0.5	Gray SILT and fine SAND, little Organics, organic odor.
CSB-12	0.3	Gray medium to fine SAND, little fine to medium subrounded Gravel, coarse Sand, trace Shells.
CSB-13	0.3	Gray to brown fine to coarse SAND, some fine to coarse subrounded Gravel, trace Shells and Brick.
CSB-14	0.3	Brown fine to coarse SAND, some medium to fine Gravel, trace Shells and Brick fragments.
CSB-15	0.5	Gray brown fine SAND and SILT, trace Organics and fine Gravel.
CSB-16	0.5	Dark gray SILT and SAND, little Organics, trace fine Gravel and Shells.

Table 3
Background Sediment Detailed Forensic Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID: / Sample Depth(Feet): / Date Collected:	Units	CSB-2 0 - 6 8/18/2010	CSB-4 0 - 0.5 8/18/2010	CSB-4 0.5 - 1 8/18/2010	CSB-8 0.5 - 1 8/18/2010	CSB-10 0 - 5 8/18/2010	CSB-11 0 - 6 8/18/2010	CSB-14 0 - 4 8/18/2010	CSB-15 0 - 6 8/18/2010
Forensic PAHs									
cis/trans-Decalin	mg/kg	0.0095 U	0.021 U	0.0066	0.0023 J	0.0024 J	0.020 U	0.0065 J	0.015 U
C1-Decalins	mg/kg	0.011	0.021 J	0.0099	0.0055	0.0037	0.013 J	0.0090 J	0.0081 J
C2-Decalins	mg/kg	0.024	0.036	0.016	0.0079	0.0061	0.020 U	0.018	0.015 U
C3-Decalins	mg/kg	0.0095 U	0.021 U	0.0065 U	0.0040 U	0.0035 U	0.020 U	0.012 U	0.015 U
C4-Decalins	mg/kg	0.0095 U	0.021 U	0.0065 U	0.0040 U	0.0035 U	0.020 U	0.012 U	0.015 U
Benzothiophene	mg/kg	0.010	0.050	0.035	0.024	0.011	0.018 J	0.037	0.0090 J
C1-Benzo(b)thiophenes	mg/kg	0.018	0.045	0.029	0.014	0.0096	0.035	0.030	0.022
C2-Benzo(b)thiophenes	mg/kg	0.014	0.059	0.036	0.019	0.0092	0.035	0.052	0.020
C3-Benzo(b)thiophenes	mg/kg	0.20 G	0.19	0.11 G	0.044 G	0.024 G	0.20 G	0.066	0.069 G
C4-Benzo(b)thiophenes	mg/kg	0.021	0.056	0.027	0.014	0.0093	0.034	0.031	0.022
Naphthalene	mg/kg	0.19	0.94	0.63	0.47	0.19	0.41	0.68	0.17
C1-Naphthalenes	mg/kg	0.15	0.51	0.38	0.18	0.063	0.42	0.28	0.16
C2-Naphthalenes	mg/kg	0.21	1.0	0.62	0.31	0.095	0.62	0.76	0.28
C3-Naphthalenes	mg/kg	0.21	1.1	0.62	0.30	0.094	0.51	0.78	0.38
C4-Naphthalenes	mg/kg	0.15	0.67	0.35	0.14	0.066	0.31	0.33	0.36
1,1'-Biphenyl	mg/kg	0.075	0.24	0.16	0.090	0.037	0.14	0.21	0.088
Dibenzofuran	mg/kg	0.23	1.1	1.2	0.46	0.10	0.70	1.1	0.24
Acenaphthylene	mg/kg	0.22	1.0	1.2	0.30	0.12	0.81	0.58	0.44
Acenaphthene	mg/kg	0.40	2.2	1.1	0.70	0.11	0.94	1.8	0.50
Fluorene	mg/kg	0.49	2.1	1.2	0.81	0.12	1.0	1.9	0.52
C1-Fluorenes	mg/kg	0.18	1.0	0.39	0.31	0.061	0.35	0.75	0.26
C2-Fluorenes	mg/kg	0.24	1.1	0.70	0.21	0.074	0.53	0.51	0.32
C3-Fluorenes	mg/kg	0.59	2.3	1.8	0.30	0.16	1.7	0.74	1.0
Anthracene	mg/kg	1.2	6.0	5.0	1.8	0.35	2.8	3.1	1.3
Phenanthrene	mg/kg	4.8	23	25	6.0	1.4	15	12	7.2
C1-Phenanthrenes/Anthracenes	mg/kg	1.6	12	6.8	2.0	0.53	4.4	4.1	3.0
C2-Phenanthrenes/Anthracenes	mg/kg	0.86	6.4	3.1	0.81	0.29	1.9	1.8	1.5
C3-Phenanthrenes/Anthracenes	mg/kg	0.36	2.5	1.2	0.29	0.13	0.77	0.67	0.63
C4-Phenanthrenes/Anthracenes	mg/kg	0.16	0.81	0.38	0.10	0.078	0.31	0.22	0.31
Retene	mg/kg	0.16	0.58	0.13	0.031	0.12	0.25	0.11	0.63
Dibenzothiophene	mg/kg	0.27	1.3	1.4	0.39	0.080	0.86	0.70	0.35
C1-Dibenzothiophenes	mg/kg	0.14	1.1	0.62	0.18	0.055	0.40	0.36	0.19
C2-Dibenzothiophenes	mg/kg	0.14	1.1	0.43	0.12	0.052	0.31	0.25	0.20
C3-Dibenzothiophenes	mg/kg	0.16	0.99 G	0.24	0.083	0.043	0.28	0.17	0.22
C4-Dibenzothiophenes	mg/kg	0.073	0.28	0.083	0.036	0.027	0.15	0.096	0.12
Benzo(b)fluorene	mg/kg	0.86	2.6	0.79	0.77	0.19	0.75	1.5	1.1
Fluoranthene	mg/kg	8.2	33	33	6.8	2.0	21	14	13
Pyrene	mg/kg	6.8	31	25	5.7	1.7	17	10	11

Table 3
Background Sediment Detailed Forensic Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID: / Sample Depth(Feet): / Date Collected:	Units	CSB-2 0 - 6 8/18/2010	CSB-4 0 - 0.5 8/18/2010	CSB-4 0.5 - 1 8/18/2010	CSB-8 0.5 - 1 8/18/2010	CSB-10 0 - 5 8/18/2010	CSB-11 0 - 6 8/18/2010	CSB-14 0 - 4 8/18/2010	CSB-15 0 - 6 8/18/2010
Forensic PAHs (cont'd)									
C1-Fluoranthenes/Pyrenes	mg/kg	2.9	14	6.5	2.5	0.76	5.0	5.4	4.3
C2-Fluoranthenes/Pyrenes	mg/kg	1.5	8.4	6.8	0.91	0.35	5.0	2.1	2.3
C3-Fluoranthenes/Pyrenes	mg/kg	0.60	3.2	2.3	0.34	0.16	1.7	0.82	0.82
C4-Fluoranthenes/Pyrenes	mg/kg	0.47	2.0	1.3	0.24	0.12	1.1	0.60	0.73
Naphthobenzothiophenes	mg/kg	0.94	3.8	3.1	0.59	0.21	2.5	1.2	1.6
C1-Naphthobenzothiophenes	mg/kg	0.37	1.8	0.96	0.21	0.091	0.78	0.51	0.52
C2-Naphthobenzothiophenes	mg/kg	0.31	0.99	0.44	0.13	0.085	0.52	0.40	0.44
C3-Naphthobenzothiophenes	mg/kg	0.27	0.67	0.27	0.12	0.099	0.46	0.40	0.40
C4-Naphthobenzothiophenes	mg/kg	0.21	0.40	0.13	0.073	0.080	0.33	0.30	0.29
Benzo(a)anthracene	mg/kg	3.6	18	14	3.1	0.91	9.0	6.2	5.0
Chrysene/Triphenylene	mg/kg	4.2	18	14	2.8	0.97	10	5.9	6.6
C1-Chrysenes	mg/kg	1.4	8.2	4.6	1.1	0.37	3.0	2.5	1.9
C2-Chrysenes	mg/kg	0.66	3.7	2.0	0.48	0.21	1.5	1.2	0.92
C3-Chrysenes	mg/kg	0.59	2.4	1.5	0.37	0.17	1.2	0.97	0.75
C4-Chrysenes	mg/kg	0.32	1.0	0.80	0.16	0.094	0.63	0.41	0.40
Benzo(b)fluoranthene	mg/kg	3.9	14	12	2.3	0.80	9.9	5.1	5.9
Benzo(k)fluoranthene	mg/kg	3.2	14	8.9	2.3	0.76	7.2	5.3	5.5
Benzo[a]fluoranthene	mg/kg	0.60	2.8	0.0035 J	0.54	0.13	1.3	1.3	0.75
Benzo[e]pyrene	mg/kg	2.7	11	7.5	1.7	0.60	6.4	3.8	4.3
Benzo(a)pyrene	mg/kg	4.1	19	11	3.0	0.87	9.0	6.9	6.0
Perylene	mg/kg	1.0	4.4	3.0	0.80	0.23	2.5	1.7	1.5
Indeno(1,2,3-cd)pyrene	mg/kg	2.8	11	8.0	1.9	0.64	6.7	4.1	4.5
Dibenzo(a,h)anthracene	mg/kg	0.65	2.7	2.5	0.46	0.15	1.7	0.94	0.98
Benzo(g,h,i)perylene	mg/kg	2.7	10	7.1	1.8	0.62	6.2	3.7	4.4
1-Methylnaphthalene	mg/kg	0.12	0.42	0.30	0.14	0.047	0.38	0.25	0.11
2-Methylnaphthalene	mg/kg	0.13	0.42	0.32	0.16	0.056	0.30	0.20	0.14
2,6-Dimethylnaphthalene	mg/kg	0.091	0.42	0.28	0.16	0.046	0.24	0.44	0.11
2,3,5-Trimethylnaphthalene	mg/kg	0.026	0.22	0.13	0.061	0.016	0.083	0.16	0.069
Carbazole	mg/kg	0.48	1.3	1.8	0.34	0.090	1.9	0.49	0.82
4-Methyldibenzothiophene	mg/kg	0.044	0.35	0.18	0.049	0.015	0.11	0.082	0.057
2/3-Methyldibenzothiophene	mg/kg	0.060	0.39	0.24	0.071	0.020	0.15	0.13	0.077
1-Methyldibenzothiophene	mg/kg	0.018	0.13	0.073	0.023	0.0083	0.055	0.055	0.025
3-Methylphenanthrene	mg/kg	0.37	2.7	1.7	0.45	0.11	1.0	0.95	0.58
2/4-Methylphenanthrene	mg/kg	0.49	3.4	2.2	0.60	0.16	1.4	1.3	0.90
2-Methylanthracene	mg/kg	0.15	1.1	0.64	0.24	0.051	0.29	0.43	0.19
9-Methylphenanthrene	mg/kg	0.29	2.4	1.2	0.35	0.097	0.75	0.78	0.47
1-Methylphenanthrene	mg/kg	0.32	2.0	1.1	0.29	0.10	0.87	0.61	0.80

Table 3
Background Sediment Detailed Forensic Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID: / Sample Depth(Feet): / Date Collected:	Units	CSB-2 0 - 6 8/18/2010	CSB-4 0 - 0.5 8/18/2010	CSB-4 0.5 - 1 8/18/2010	CSB-8 0.5 - 1 8/18/2010	CSB-10 0 - 5 8/18/2010	CSB-11 0 - 6 8/18/2010	CSB-14 0 - 4 8/18/2010	CSB-15 0 - 6 8/18/2010
Saturated Hydrocarbons									
2,6,10 Trimethyldodecane (1380)	mg/kg	0.0502 J	0.0691 J	0.0188 J	0.0186 J	0.0136 J	0.0437 J	0.0462 J	0.0301 J
2,6,10 Trimethyltridecane (1470)	mg/kg	0.267 J	0.844 J	0.833	0.275 J	0.104 J	0.785 J	0.461 J	0.372 J
n-Decane	mg/kg	0.0416 J	2.09 U	0.0461 J	0.0373 J	0.0342 J	0.0536 J	0.118 J	0.0587 J
n-Docosane (C22)	mg/kg	0.256 J	1.34 J	0.656	0.135 J	0.124 J	0.522 J	0.254 J	0.316 J
n-Dodecane	mg/kg	0.0492 J	0.115 J	0.0565 J	0.0492 J	0.0645 J	0.0933 J	0.0866 J	0.0859 J
n-Dotriacontane (C32)	mg/kg	0.381 J	0.519 J	0.287 J	0.396 U	0.121 J	0.634 J	0.426 J	0.556 J
n-Eicosane (C20)	mg/kg	0.217 J	0.594 J	0.400 J	0.136 J	0.181 J	0.697 J	1.16 U	0.482 J
n-Heneicosane (C21)	mg/kg	0.209 J	0.272 J	0.541 J	0.170 J	0.112 J	0.385 J	1.16 U	0.479 J
n-Hentriacontane (C31)	mg/kg	4.56	2.80	0.577 J	0.396 U	0.164 J	9.44	0.515 J	7.11
n-Heptacosane (C27)	mg/kg	2.54	2.99	0.285 J	0.0995 J	0.0875 J	4.96	0.132 J	5.32
n-Heptadecane (C17)	mg/kg	0.641 J	0.314 J	0.175 J	0.0543 J	0.183 J	1.00 J	0.236 J	0.758 J
n-Heptatriacontane (C37)	mg/kg	0.482 J	2.09 U	0.650 U	0.396 U	0.145 J	0.920 J	0.558 J	1.51 U
n-Hexacosane (C26)	mg/kg	0.427 J	1.16 J	0.592 J	0.121 J	0.136 J	0.431 J	0.127 J	0.572 J
n-Hexadecane (C16)	mg/kg	0.947 U	2.01 J	1.23	0.831	0.187 J	1.00 J	1.89	0.547 J
n-Hexatriacontane (C36)	mg/kg	0.139 J	2.09 U	0.0864 J	0.396 U	0.0757 J	0.286 J	0.229 J	0.255 J
n-Nonacosane (C29)	mg/kg	7.60	14.7	9.59	1.96	0.898	18.1	4.12	13.9
n-Nonadecane (C19)	mg/kg	0.131 J	0.327 J	0.194 J	0.0539 J	0.0927 J	0.268 J	0.103 J	0.142 J
n-Nonatriacontane (C39)	mg/kg	0.947 U	2.09 U	0.650 U	0.396 U	0.349 U	1.99 U	1.16 U	1.51 U
n-Octacosane (C28)	mg/kg	0.947 U	2.09 U	0.590 J	0.396 U	0.0722 J	1.48 J	1.16 U	0.957 J
n-Octadecane (C18)	mg/kg	5.16 C	26.2 C	27.9 C	7.33 C	1.49 C	16.9 C	14.0 C	7.68 C
n-Octatriacontane (C38)	mg/kg	0.947 U	2.09 U	0.650 U	0.396 U	0.349 U	1.99 U	1.16 U	1.51 U
Nonane	mg/kg	0.947 U	2.09 U	0.650 U	0.396 U	0.349 U	1.99 U	1.16 U	1.51 U
Norpristane (1650)	mg/kg	0.207 J	1.11 J	0.931	0.412	0.0886 J	0.451 J	0.915 J	0.145 J
n-Pentacosane (C25)	mg/kg	6.03 C	23.0 C	17.8 C	3.62 C	1.22 C	14.8 C	7.62 C	10.0 C
n-Pentadecane (C15)	mg/kg	0.292 JG	2.38 G	1.27 G	0.781 G	0.193 JG	1.09 JG	2.00 G	0.654 JG
n-Pentatriacontane (C35)	mg/kg	0.954	1.52 J	0.861	0.396 U	0.159 J	3.64	0.400 J	2.66
n-Tetracontane (C40)	mg/kg	0.947 U	2.09 U	0.650 U	0.396 U	0.349 U	1.99 U	1.16 U	1.51 U
n-Tetracosane (C24)	mg/kg	0.172 J	0.291 J	0.245 J	0.129 J	0.0669 J	0.302 J	0.194 J	0.250 J
n-Tetradecane (C14)	mg/kg	0.0880 J	0.130 J	0.0669 J	0.0527 J	0.0666 J	0.0775 J	0.0786 J	0.0753 J
n-Tetratriacontane (C34)	mg/kg	0.812 J	0.643 J	0.333 J	0.396 U	0.159 J	2.92	0.378 J	1.45 J
n-Triacontane (C30)	mg/kg	0.811 J	0.708 J	0.142 J	0.128 J	0.218 J	1.67 J	0.946 J	1.26 J
n-Tricosane (C23)	mg/kg	0.255 J	3.12	1.28	0.318 J	0.0662 J	1.33 J	0.598 J	0.478 J
n-Tridecane (C13)	mg/kg	0.0965 JB	0.184 J	0.101 J	0.0852 JB	0.0896 JB	0.141 J	0.146 J	0.142 J
n-Tritriacontane (C33)	mg/kg	1.88	1.18 J	0.650 U	0.396 U	0.234 J	2.36	0.554 J	2.42

Table 3
Background Sediment Detailed Forensic Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID: / Sample Depth(Feet): / Date Collected:	Units	CSB-2 0 - 6 8/18/2010	CSB-4 0 - 0.5 8/18/2010	CSB-4 0.5 - 1 8/18/2010	CSB-8 0.5 - 1 8/18/2010	CSB-10 0 - 5 8/18/2010	CSB-11 0 - 6 8/18/2010	CSB-14 0 - 4 8/18/2010	CSB-15 0 - 6 8/18/2010
Saturated Hydrocarbons (cont'd)									
Phytane	mg/kg	1.04	5.09	4.94	1.83	0.311 J	2.45	2.98	1.25 J
Pristane	mg/kg	0.166 J	0.345 J	0.146 J	0.0555 J	0.0547 J	0.133 J	0.136 J	0.0783 J
n-Undecane	mg/kg	0.0483 J	0.0733 J	0.0578 J	0.0468 J	0.0457 J	0.0775 J	0.0751 J	0.0723 J
Total Petroleum Hydrocarbons (C9-C44)	mg/kg	796	1,820	904	311	305	1,780	781	1,340
Total Saturated Hydrocarbons	mg/kg	36.0	94.0	72.3	18.7	7.26	89.4	40.4	60.6

Notes:
1. Samples collected by ARCADIS on the dates indicated.
2. Samples analyzed by Alpha Analytical located in Mansfield, MA.
3. J - Indicates that the analyte was detected at a concentration less than the Reporting Limit and greater than or equal to the Method Detection Limit. The concentration presented is esti
4. U - Indicates that the compound was analyzed for but not detected. The associated value is the compound quantitation limit.
5. C - indicates that another compound is likely co-eluting with this n-alkane. The presence of the co-eluding compound likely biases the concentration of this n-alkane high.
6. B - Indicates that the compound was also detected in the laboratory blank sample.
7. G - Indicates probable matrix interference in PAH alkyl group quantification.

Table 4
Geotechnical Testing Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Sample	Sieve Size - Percent Passing Sieve													
	2"	1.5"	1"	0.75"	0.5"	0.375"	0.25"	#4	#10	#30	#40	#60	#100	#200
T-10a-A	100	100	94.0	81.6	71.4	59.5	43.0	35.6	25.8	22.6	21.6	18.0	12.6	5.1
T-7-A	100	100	97.6	86.5	72.9	67.3	57.2	49.8	12.8	12.0	9.4	6.7	5.0	2.9

Notes:
1. Samples collected by ARCADIS.
2. Samples tested by PW Labs located in Syracuse, NY.

Table 5
Delineation Sediment PAH Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID:		T-01-A	T-01a-B	T-01-B	T-01-C	T-02-A	T-02-B	T-03-A	T-03-C
Sample Depth(Feet):		0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0.5 - 1
Date Collected:	Units	8/31/2010	9/3/2010	8/31/2010	8/31/2010	8/31/2010	8/31/2010	8/31/2010	8/31/2010
PAHs									
2-Methylnaphthalene	mg/kg	150 J	0.20 U	0.22 UJ	0.59 J	1.8 J	0.21 UJ	0.21 UJ	0.023 J
Acenaphthene	mg/kg	3,700 J	0.20 U	0.18 J	21	46	0.11 J	0.39	0.76
Acenaphthylene	mg/kg	330 J	0.20 U	0.10 J	12	22	0.33	0.098 J	0.0052 J
Anthracene	mg/kg	4,100 J	0.14 J	0.56	62	110	0.55	0.27	0.090
Benzo(a)anthracene	mg/kg	1,500 J	0.72	1.3	65	89	2.0	1.0	0.022
Benzo(a)pyrene	mg/kg	1,600 J	0.78	1.4	70	83	1.9	0.83	0.015 J
Benzo(b)fluoranthene	mg/kg	1,300 J	0.97	1.3	51	51	2.1	0.96	0.017 J
Benzo(g,h,i)perylene	mg/kg	800 J	0.57	0.99	34	38	1.3	0.60	0.014 J
Benzo(k)fluoranthene	mg/kg	350 DJ	0.44	0.82	12	20	0.77	0.47	0.025
Chrysene	mg/kg	1,700 J	0.80	1.3	59	66	1.9	0.87	0.016 J
Dibenzo(a,h)anthracene	mg/kg	48 J	0.20 U	0.23	2.7	2.6	0.42	0.18 J	0.0044 J
Dibenzofuran	mg/kg	170 J	0.20 U	0.22 U	1.5	5.1	0.12 J	0.057 J	0.0063 J
Fluoranthene	mg/kg	3,500 J	1.6	2.6	130	170	4.3	1.8	0.11
Fluorene	mg/kg	1,700 J	0.20 U	0.12 J	14	40	0.25	0.11 J	0.35
Indeno(1,2,3-cd)pyrene	mg/kg	610 J	0.59	1.0 J	28 J	30 J	1.3 J	0.57 J	0.012 J
Naphthalene	mg/kg	190 J	0.20 UB	0.069 J	2.2	0.59 J	0.21 U	0.15 J	0.43
Phenanthrene	mg/kg	7,500 J	0.77	1.3	130	340	3.0	1.1	0.52
Pyrene	mg/kg	5,100 J	1.4	2.4	170	240	3.6	1.7	0.13
Total PAHs	mg/kg	34,000 J	8.8 J	16 J	860 J	1,400 J	24 J	11 J	2.5 J

Table 5
Delineation Sediment PAH Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID:		T-04-A	T-04-B	T-04-C	T-05-A	T-05a-A	T-05a-AA	T-05a-B	T-05a-C
Sample Depth(Feet):		3.5 - 4.3	0 - 0.5	0 - 0.5	0 - 0.5	1 - 3.2	7 - 8.3	0 - 0.6	0 - 0.5
Date Collected:	Units	9/1/2010	9/1/2010	9/1/2010	9/1/2010	9/9/2010	9/14/2010	9/9/2010	9/9/2010
PAHs									
2-Methylnaphthalene	mg/kg	3.9	0.049 J	0.21 U	0.029 J	0.035	0.020 U	0.031 J	0.018 U
Acenaphthene	mg/kg	14	0.15 J	0.18 J	0.092 UB	1.7	0.20	0.087 J	0.11
Acenaphthylene	mg/kg	1.4 J	0.19 U	0.077 J	0.054 J	0.42	0.063	0.058 J	0.018 U
Anthracene	mg/kg	5.5 J	0.17 J	0.43	0.12	1.4	0.12	0.18	0.0087 J
Benzo(a)anthracene	mg/kg	6.3 J	0.78	1.7	0.40	1.4	0.16	0.82	0.054
Benzo(a)pyrene	mg/kg	6.4 J	0.85	1.9	0.34	1.3	0.12	0.91	0.063
Benzo(b)fluoranthene	mg/kg	4.8 J	0.87	2.2	0.39	0.93	0.10 JY	1.1	0.070
Benzo(g,h,i)perylene	mg/kg	3.3 J	0.60	1.3	0.22	0.64	0.053	0.57	0.042
Benzo(k)fluoranthene	mg/kg	1.2 J	0.59 J	0.84 J	0.20 J	0.26	0.070 JY	0.41	0.039
Chrysene	mg/kg	4.6 J	0.96	1.9	0.31	1.4 J	0.19	0.99	0.063
Dibenzo(a,h)anthracene	mg/kg	0.21 J	0.18 J	0.34	0.076 J	0.020 U	0.020 U	0.099 U	0.018 U
Dibenzofuran	mg/kg	0.73	0.19 U	0.073 J	0.042 J	0.11	0.0073 J	0.052 J	0.018 U
Fluoranthene	mg/kg	15	2.0	4.1	0.64	3.3	0.31	1.9	0.11
Fluorene	mg/kg	6.1 J	0.094 J	0.16 J	0.054 J	1.3	0.17	0.087 J	0.018 U
Indeno(1,2,3-cd)pyrene	mg/kg	2.6 J	0.60	1.2	0.20	0.53	0.042 J	0.58	0.037
Naphthalene	mg/kg	16	0.20	0.21 U	0.092 UB	0.22	0.0077 J	0.093 J	0.019
Phenanthrene	mg/kg	29 D	0.98	1.9	0.35	5.5 D	0.49	1.1	0.052
Pyrene	mg/kg	17	1.4	3.0	0.48	4.5 J	0.47	1.5	0.093
Total PAHs	mg/kg	140 J	10 J	21 J	3.9 J	25 J	2.6 J	10 J	0.76 J

Table 5
Delineation Sediment PAH Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID:		T-05-C	T-06-A	T-06a-A	T-06-B	T-07-A	T-07a-A	T-07a-B	T-07-C
Sample Depth(Feet):		0.5 - 1	0 - 0.5	5 - 5.8	0 - 0.5	1 - 1.7	0.5 - 1	0 - 0.5	0 - 0.5
Date Collected:	Units	9/1/2010	9/1/2010	9/10/2010	9/1/2010	9/2/2010	9/10/2010	9/2/2010	9/2/2010
PAHs									
2-Methylnaphthalene	mg/kg	0.12 J	0.31	0.020	0.23 U	5.8	0.39 U	0.20 U	0.10 U
Acenaphthene	mg/kg	2.5	0.23 UB	0.0048 J	0.23 UB	6.7	1.2	0.20 UB	0.10 UB
Acenaphthylene	mg/kg	5.3	0.25	0.18	0.23 U	6.5	11	0.098 J	0.10 U
Anthracene	mg/kg	19	0.65	0.073	0.31	8.8	18	0.28	0.090 J
Benzo(a)anthracene	mg/kg	31	2.2	0.10	1.8	7.6	15	1.4	0.48
Benzo(a)pyrene	mg/kg	33	2.1	0.087	2.1	8.3	17	1.3	0.47
Benzo(b)fluoranthene	mg/kg	23	2.2	0.16	2.5	5.8	13 JY	1.4	0.46
Benzo(g,h,i)perylene	mg/kg	17	1.3	0.12	1.8	4.2	8.0	0.69	0.39
Benzo(k)fluoranthene	mg/kg	6.5	0.71	0.049	1.2	1.4	9.6 JY	0.63 J	0.34
Chrysene	mg/kg	27	2.2	0.15	2.3	6.8	12	1.3	0.53
Dibenzo(a,h)anthracene	mg/kg	0.41 U	0.20 U	0.019 U	0.23 U	0.19 U	0.39 U	0.20 U	0.10 U
Dibenzofuran	mg/kg	0.17 J	0.088 J	0.0037 J	0.049 J	0.80	0.78	0.20 U	0.10 U
Fluoranthene	mg/kg	57	4.7	0.13	4.6	17	26	2.9	1.2
Fluorene	mg/kg	2.6	0.19 J	0.019 U	0.099 J	6.7	4.6	0.20 U	0.029 J
Indeno(1,2,3-cd)pyrene	mg/kg	14	1.1	0.089	1.4	3.4	5.4	0.67	0.10 U
Naphthalene	mg/kg	0.48 UB	1.9	0.035	0.23 U	15	1.6	0.20 U	0.10 U
Phenanthrene	mg/kg	32	2.7	0.089	1.8	32	40	1.1	0.48
Pyrene	mg/kg	70	4.1	0.21	3.5	23	48	2.2	0.86
Total PAHs	mg/kg	340 J	27 J	1.5 J	23 J	160	230 J	14 J	5.3 J

Table 5
Delineation Sediment PAH Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID:		T-08-A	T-08-A(II)	T-08a-A	T-08a-A-DUP	T-09-A	T-09-C
Sample Depth(Feet):		0 - 0.5	1 - 3	3 - 5	3 - 5	0 - 0.5	0 - 0.5
Date Collected:	Units	9/2/2010	9/10/2010	9/3/2010	9/3/2010	9/2/2010	9/7/2010
PAHs							
2-Methylnaphthalene	mg/kg	0.091 U	0.020 U	2.0	1.8	0.20 U	0.025 J
Acenaphthene	mg/kg	0.091 UB	0.060	20	18	0.20 UB	0.15
Acenaphthylene	mg/kg	0.091 U	0.039	3.2	2.7	0.084 J	0.14
Anthracene	mg/kg	0.18	0.020 U	15	13	0.27	0.63
Benzo(a)anthracene	mg/kg	0.65	0.015 J	13	11	0.70	3.1
Benzo(a)pyrene	mg/kg	0.62	0.012 J	13	12	0.75	4.2 J
Benzo(b)fluoranthene	mg/kg	0.75	0.022	9.9	11 JY	0.69	5.1 J
Benzo(g,h,i)perylene	mg/kg	0.46	0.011 J	7.3	6.6	0.47	2.9
Benzo(k)fluoranthene	mg/kg	0.33	0.021	2.3	9.3 JY	0.51 J	1.5
Chrysene	mg/kg	0.69	0.020	11	9.9	0.71	3.8
Dibenzo(a,h)anthracene	mg/kg	0.091 U	0.020 U	0.34 U	0.40 U	0.12 J	0.12 U
Dibenzofuran	mg/kg	0.027 J	0.020 U	0.98	0.83	0.080 J	0.082 J
Fluoranthene	mg/kg	1.7	0.029	27	23	1.7	7.7
Fluorene	mg/kg	0.059 J	0.17	9.5	8.2	0.14 J	0.23
Indeno(1,2,3-cd)pyrene	mg/kg	0.45	0.0093 J	5.8	5.0	0.47	2.5 J
Naphthalene	mg/kg	0.091 UB	0.020 U	2.6	1.9	0.20 UB	0.066 J
Phenanthrene	mg/kg	0.89	0.020 U	44	40	0.93	3.5
Pyrene	mg/kg	1.2	0.045	34	30	1.2	5.9
Total PAHs	mg/kg	8.0 J	0.45 J	220	200 J	8.8 J	42 J

Table 5
Delineation Sediment PAH Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID:		T-10-A	T-10a-A	T-10a-C	T-10-B	T-10-C	T-11(II)-A	T-11(II)-C	T-11-A
Sample Depth(Feet):		0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.8	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Date Collected:	Units	9/9/2010	9/10/2010	9/10/2010	9/9/2010	9/13/2010	9/8/2010	9/8/2010	9/8/2010
PAHs									
2-Methylnaphthalene	mg/kg	0.019 U	0.023	0.074 J	0.020 J	0.11 U	0.020 U	0.20 U	0.0064 J
Acenaphthene	mg/kg	0.019	0.019 U	0.48	0.057 J	0.21	0.020 U	0.043 J	0.015 J
Acenaphthylene	mg/kg	0.019 U	0.22	0.035 J	0.094 U	0.10 J	0.0069 J	0.20 U	0.036
Anthracene	mg/kg	0.019 U	0.077	0.65	0.17	1.0	0.0081 J	0.19 J	0.20
Benzo(a)anthracene	mg/kg	0.017 J	0.16	1.1	0.65	2.8	0.044	0.66	0.88
Benzo(a)pyrene	mg/kg	0.020	0.11	1.2	0.70	2.7	0.056 J	0.56 J	0.88 J
Benzo(b)fluoranthene	mg/kg	0.023	0.29 JY	1.3	0.80	3.2	0.068 J	0.64 J	0.95 J
Benzo(g,h,i)perylene	mg/kg	0.014 J	0.13	0.64	0.41	1.8	0.041	0.32	0.42
Benzo(k)fluoranthene	mg/kg	0.023	0.21 JY	0.50	0.35	0.89	0.033	0.36	0.33
Chrysene	mg/kg	0.021	0.23	1.2	0.75	2.9	0.043	0.55	0.74
Dibenzo(a,h)anthracene	mg/kg	0.019 U	0.019 U	0.094 U	0.094 U	0.11 U	0.020 U	0.20 U	0.019 U
Dibenzofuran	mg/kg	0.019 U	0.019 U	0.27	0.056 J	0.13	0.020 U	0.20 U	0.020
Fluoranthene	mg/kg	0.035	0.17	3.0	1.6	6.5	0.074	1.0	1.5
Fluorene	mg/kg	0.019 U	0.019 U	0.46	0.074 J	0.31	0.020 U	0.066 J	0.050
Indeno(1,2,3-cd)pyrene	mg/kg	0.012 J	0.11	0.60	0.42	1.7 J	0.038 J	0.32 J	0.46 J
Naphthalene	mg/kg	0.014 J	0.028	0.094 U	0.061 J	0.054 J	0.020 U	0.20 U	0.019
Phenanthrene	mg/kg	0.017 J	0.13	2.6	0.96	3.6	0.027	0.57	0.48
Pyrene	mg/kg	0.028	0.39	2.1	1.2	4.9	0.067	0.86	1.3
Total PAHs	mg/kg	0.24 J	2.3 J	16 J	8.3 J	33 J	0.51 J	6.1 J	8.3 J

Table 5
Delineation Sediment PAH Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID: / Sample Depth(Feet): / Date Collected:	Units	T-11-C 0 - 0.5 9/8/2010	T-12(II)-A 0 - 0.5 9/8/2010	T-12(II)-B 0 - 0.5 9/14/2010	T-12(II)-C 0 - 0.5 9/8/2010	T-12-A 0 - 0.5 9/8/2010	T-12a-C 0 - 0.5 9/13/2010	T-12-C 1 - 3 9/8/2010
PAHs								
2-Methylnaphthalene	mg/kg	0.0087 J	0.053 J	0.070 J	0.11 U	0.13	0.094 U	0.25
Acenaphthene	mg/kg	0.031	0.17	0.56	0.030 J	0.37	0.094 U	2.0 J
Acenaphthylene	mg/kg	0.040	0.084 J	0.31	0.11 U	0.21	0.094 U	1.1 J
Anthracene	mg/kg	0.13	0.40	1.9	0.12	0.90	0.046 J	11
Benzo(a)anthracene	mg/kg	0.53	1.0	3.9	0.53	2.8	0.24 J	13
Benzo(a)pyrene	mg/kg	0.58 J	1.1 J	3.6	0.64 J	3.5 J	0.28	12 J
Benzo(b)fluoranthene	mg/kg	0.61 J	1.2 J	3.5	0.84 J	4.0 J	0.30	13 J
Benzo(g,h,i)perylene	mg/kg	0.28	0.60	2.2	0.41	1.8	0.21	5.0 J
Benzo(k)fluoranthene	mg/kg	0.17	0.50	1.5	0.28	1.2	0.19	4.3 J
Chrysene	mg/kg	0.42	0.95	3.4	0.53	2.7	0.28	11
Dibenzo(a,h)anthracene	mg/kg	0.019 U	0.10 U	0.096 U	0.11 U	0.13 U	0.094 U	0.093 U
Dibenzofuran	mg/kg	0.019	0.13	0.34	0.023 J	0.29	0.094 U	1.9
Fluoranthene	mg/kg	0.84	2.0	8.3	1.1	5.9	0.52 J	28 D
Fluorene	mg/kg	0.043	0.20	0.77	0.11 U	0.44	0.094 U	4.8 J
Indeno(1,2,3-cd)pyrene	mg/kg	0.27 J	0.67 J	2.2 J	0.45 J	2.1 J	0.20 J	5.7 J
Naphthalene	mg/kg	0.019	0.13	0.22	0.11 U	0.30	0.094 U	0.34 J
Phenanthrene	mg/kg	0.30	1.4	6.0	0.54	3.6	0.24 J	18
Pyrene	mg/kg	0.80	1.6	6.6	0.86	4.4	0.43	19
Total PAHs	mg/kg	5.1 J	12 J	45 J	6.4 J	35 J	2.9 J	150 J

Table 5
Delineation Sediment PAH Analytical Summary

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Location ID:		T-17-A	T-17-B	T-18-A	T-18-B	T-19-A	T-19-C
Sample Depth(Feet):		0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5
Date Collected:	Units	8/30/2010	8/30/2010	8/30/2010	8/30/2010	8/30/2010	8/30/2010
PAHs							
2-Methylnaphthalene	mg/kg	0.41 UJ	0.20 UJ	0.22 J	0.36 UJ	0.35 J	0.18 UJ
Acenaphthene	mg/kg	0.41 U	0.29	1.1	0.31 J	3.2	0.11 J
Acenaphthylene	mg/kg	0.41 U	0.092 J	0.22 J	0.13 J	0.79	0.11 J
Anthracene	mg/kg	0.17 J	0.36	1.1	0.93	8.1	0.15 J
Benzo(a)anthracene	mg/kg	1.5	1.2	4.2	4.0	16	0.75
Benzo(a)pyrene	mg/kg	1.7	1.3	4.0	4.0	15	0.84
Benzo(b)fluoranthene	mg/kg	2.2	1.3	5.0	4.6	15	0.85
Benzo(g,h,i)perylene	mg/kg	1.5	0.94	3.0	2.6	9.1	0.58
Benzo(k)fluoranthene	mg/kg	0.99	0.73	2.0	1.6	4.9	0.38
Chrysene	mg/kg	1.7	1.3	4.3	4.2	15	0.72
Dibenzo(a,h)anthracene	mg/kg	0.33 J	0.073 J	0.86	0.71	2.1	0.14 J
Dibenzofuran	mg/kg	0.41 U	0.065 J	0.41 J	0.15 J	1.5	0.18 U
Fluoranthene	mg/kg	3.0	2.8	8.7	9.2	34	1.1
Fluorene	mg/kg	0.41 U	0.19 J	0.77	0.37	3.4	0.18 U
Indeno(1,2,3-cd)pyrene	mg/kg	1.3 J	0.77 J	2.7 J	2.4 J	8.7 J	0.49 J
Naphthalene	mg/kg	0.41 U	0.12 J	0.72	0.11 J	0.91	0.18 U
Phenanthrene	mg/kg	1.0	1.7	5.8	5.1	29	0.45
Pyrene	mg/kg	2.5	2.7	8.3	7.7	34	1.2
Total PAHs	mg/kg	18 J	16 J	53 J	48 J	200 J	7.9 J

Notes:
1. Samples collected by ARCADIS on the dates indicated.
2. Samples were analyzed by TestAmerica, Inc. located in Amherst, NY.
3. B - Indicates that the analyte was also detected in the associated method blank.
4. D - Indicates that the compound was quantitated using a secondary dilution.
5. J - Indicates that the analyte was detected at a concentration less than the Reporting Limit and greater than or equal to the Method Detection Limit. The concentration presented is estimated.
6. U - Indicates that the compound was analyzed for but not detected. The associated value is the compound quantitation limit.
7. Y - Isomers benzo(b)fluoranthene and benzo(k)fluoranthene could not be resolved due to the lack of chromatographic resolution.

ARCADIS

Figures

STATE PRISON

VENICE STREET

WASHINGTON STREET

OWASCO OUTLET

ROUTE 5 & 20

ROUTE 5 & 20

T-13

T-14

T-15

T-16

CSB-01

CSB-02

CSB-03

CSB-04

CSB-05

CSB-06

CSB-07

CSB-08

CSB-09

CSB-10

CSB-11

CSB-12

CSB-13

CSB-14

CSB-15

CSB-16

CSB-16	
Depth(Feet)	Total PAHs
0 - 0.5	60 J

CSB-15	
Depth(Feet)	Total PAHs
0 - 0.5	67 J

CSB-14	
Depth(Feet)	Total PAHs
0 - 0.3	140 J

CSB-13	
Depth(Feet)	Total PAHs
0 - 0.25	5.2 J

CSB-12	
Depth(Feet)	Total PAHs
0 - 0.3	4.8 J

CSB-10	
Depth(Feet)	Total PAHs
0 - 0.42	48

CSB-08	
Depth(Feet)	Total PAHs
0 - 0.5	21
0.5 - 1	59 J
1 - 1.5	43 J

CSB-11	
Depth(Feet)	Total PAHs
0 - 0.5	150 J

CSB-09	
Depth(Feet)	Total PAHs
0 - 0.25	2.2 J

CSB-06	
Depth(Feet)	Total PAHs
0 - 0.42	62

CSB-07	
Depth(Feet)	Total PAHs
0 - 0.3	25

CSB-05	
Depth(Feet)	Total PAHs
0 - 0.5	20 J

CSB-04	
Depth(Feet)	Total PAHs
0 - 0.5	150 J
0.5 - 1	230

CSB-03	
Depth(Feet)	Total PAHs
0 - 0.5	46 J

CSB-02	
Depth(Feet)	Total PAHs
0 - 0.5	68 J [22 J]

CSB-01	
Depth(Feet)	Total PAHs
0 - 0.5	9.1

LEGEND:

- PDI SEDIMENT SAMPLING LOCATION
- REMEDIAL INVESTIGATION SEDIMENT SAMPLING TRANSECT
- EDGE OF WATER

NOTES:

1. BASE MAP ADAPTED FROM A DRAWING BY URS, DATED 7/13/2006.
2. BACKGROUND PDI SEDIMENT SAMPLING CONDUCTED BY ARCADIS IN AUGUST 2010.
3. SEDIMENT SAMPLING LOCATIONS SURVEYED BY ARCADIS IN SEPTEMBER AND OCTOBER 2010. ALL OTHER LOCATIONS ARE APPROXIMATE.
4. INSUFFICIENT SEDIMENT DEPOSITION TO FACILITATE SAMPLING WITHIN THE NORTHERN REACH OF OWASCO OUTLET.
5. J = ESTIMATED VALUE.
6. DUPLICATE RESULTS ARE SHOWN IN BRACKETS.

0 120' 240'

GRAPHIC SCALE

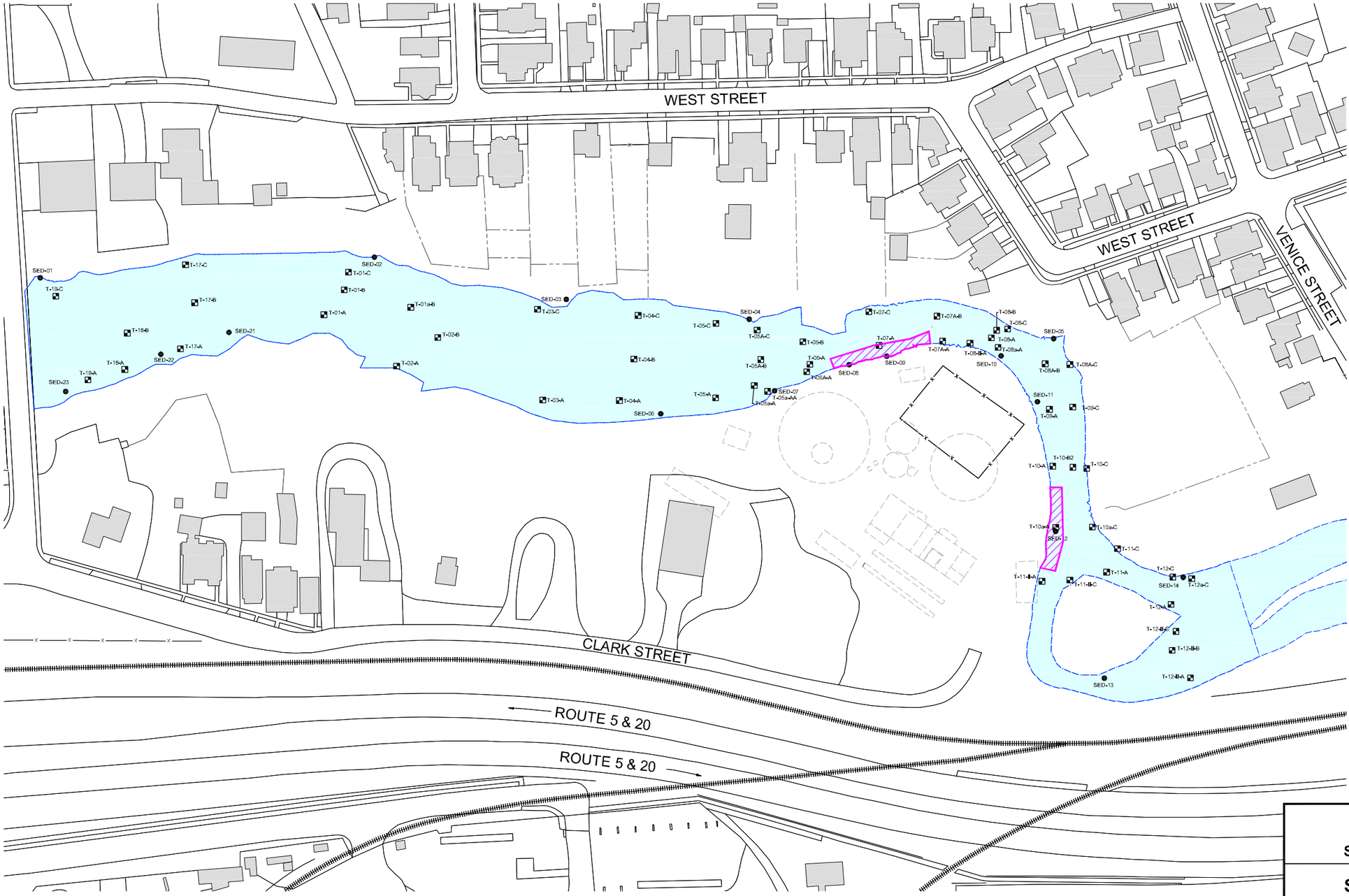
NYSEG
CLARK STREET FORMER MGP SITE
AUBURN, NEW YORK

SEDIMENT PDI SUMMARY REPORT

SEDIMENT PDI BACKGROUND TOTAL PAH CONCENTRATIONS

ARCADIS

FIGURE
1



LEGEND:

- 2010 PDI SEDIMENT SAMPLING LOCATION
- 2004 SEDIMENT SAMPLING LOCATION
- EDGE OF WATER
- FORMER MGP STRUCTURE
- FENCE
- ROD REMOVAL AREA

NOTES:

1. BASE MAP ADAPTED FROM A DRAWING BY URS, DATED 7/13/2006.
2. DELINEATION PDI SEDIMENT SAMPLING CONDUCTED BY ARCADIS IN AUGUST AND SEPTEMBER 2010.
3. SEDIMENT LOCATIONS SURVEYED BY ARCADIS IN SEPTEMBER AND OCTOBER 2010. ALL OTHER LOCATIONS ARE APPROXIMATE.

0 120' 240'

GRAPHIC SCALE

NYSEG
CLARK STREET FORMER MGP SITE
AUBURN, NEW YORK
SEDIMENT PDI SUMMARY REPORT

SEDIMENT PDI DELINEATION SAMPLING LOCATIONS

ARCADIS

FIGURE
2

SED-03	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	3.4
Total Non-Carc PAHs	3.3
Total PAHs	6.8
Total SVOCs	6.8
Misc	
Total Cyanide	ND

T-04-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	21 J	BG	
0.5 - 0.8			

T-03-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1	2.5 J	BG	
1 - 1.4			

SED-02	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	1.8
Total Non-Carc PAHs	1.3
Total PAHs	3.1
Total SVOCs	3.1
Misc	
Total Cyanide	ND

T-01a-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	8.8 J	BG	
0.5 - 1			
1 - 3			
3 - 5			

T-01-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	16 J	BG	
0.5 - 0.9			

T-01-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	860 J	CWG	
0.5 - 1			

T-17-C			
Depth(Feet)	Total PAHs	Source	Impacts

T-17-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	18 J	BG	
0.5 - 1			
1 - 1.5			

SED-07	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	2.8
Total Non-Carc PAHs	2.3
Total PAHs	5.1
Total SVOCs	5.1
Misc	
Total Cyanide	0.029

T-05-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1	340 J	BG*, CWG	0.6 - 1
1 - 1.7			

T-05a-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.6	10 J	BG	

T-05a-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	0.76 J	BG	
0.5 - 1.3			

SED-04	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	4.5
Total Non-Carc PAHs	5.4
Total PAHs	9.8
Total SVOCs	10
Misc	
Total Cyanide	ND

T-06-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	23 J	BG	
0.5 - 1			

SED-06	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	0.20
SVOCs	
Total Carc PAHs	66
Total Non-Carc PAHs	107
Total PAHs	173
Total SVOCs	176
Misc	
Total Cyanide	0.003

T-07-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	5.3 J	BG	

T-07-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1			
1 - 1.7	160	CWG	1.5-1.7

T-07a-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	14 J	BG	
0.5 - 1			

T-07a-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1	230 J	CWG	
1 - 3			
3 - 3.8			

T-08-IIA			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1			
1 - 3	0.45 J	BG	

T-08-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	8.0 J	BG	

T-08-B			
Depth(Feet)	Total PAHs	Source	Impacts

T-08a-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1			
1 - 3			
3 - 5	220 [200 J]	CWG	3.2-4.0
5 - 5.5			

T-08-C			
Depth(Feet)	Total PAHs	Source	Impacts

SED-10	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	3.5
Total Non-Carc PAHs	4.7
Total PAHs	8.2
Total SVOCs	8.7
Misc	
Total Cyanide	ND

SED-05	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	46
Total Non-Carc PAHs	61
Total PAHs	107
Total SVOCs	111
Misc	
Total Cyanide	ND

T-08a-B			
Depth(Feet)	Total PAHs	Source	Impacts

T-08a-C			
Depth(Feet)	Total PAHs	Source	Impacts

T-10-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	33 J	BG	
0.5 - 1			
1 - 3			
3 - 5			
5 - 7			
7.5 - 8.5	debris-like material		
8.5 - 11.5	bedrock core		

SED-14	
Depth(Feet)	
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	9.3
Total Non-Carc PAHs	15
Total PAHs	25
Total SVOCs	25
Misc	
Total Cyanide	ND

T-12a-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	2.9 J	BG	
0.5 - 1			
1 - 3			

SED-23	
Depth(Feet)	Total PAHs
0 - 0.5	139

SED-22	
Depth(Feet)	Total PAHs
0 - 1	22

SED-21	
Depth(Feet)	Total PAHs
0 - 1	69

T-01-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	34,000 J	CWG	
0.5 - 1			

T-17-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	18 J	BG	
0.5 - 1			
1 - 2			

T-02-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	1,400 J	CWG	
0.5 - 1			
1 - 2.4			

T-18-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	48 J	BG	
0.5 - 1			
1 - 2.9			

T-02-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	24 J	BG	
0.5 - 1			
1 - 2.4			

T-18-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	53 J	BG*, CWG	
0.5 - 1			
1 - 2.9			

T-03-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	11 J	BG	
0.5 - 1			
1 - 1.8			

T-19-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	200 J	BG*, CWG	
0.5 - 1			
1 - 2.5			

T-04-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	10 J	BG	

T-19-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	7.9 J	BG	
0.5 - 1			
1 - 1.5			

SED-01	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	14
Total Non-Carc PAHs	22
Total PAHs	36
Total SVOCs	206
Misc	
Total Cyanide	ND

T-04-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1			
1 - 3			
3 - 3.5			
3.5 - 4.3	140 J	BG*, CWG	

SED-06	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	5.4
Total Non-Carc PAHs	6.8
Total PAHs	12
Total SVOCs	12
Misc	
Total Cyanide	ND

T-05-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	3.9 J	BG	
0.5 - 1			
1 - 1.9			

T-05a-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1			
1 - 3.2	25 J	BG	

T-05a-AA			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1			
1 - 3			
3 - 5			
5 - 7			3.0-4.0
7 - 8.3	2.6 J	BG	6.0-7.0
8.3-12	bedrock core		11 - 11.2

SED-09	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	0.43
SVOCs	
Total Carc PAHs	21
Total Non-Carc PAHs	44
Total PAHs	65
Total SVOCs	67
Misc	
Total Cyanide	7.8

T-06-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	27 J		

T-06a-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1			0.7-1.0
1 - 3			2.0
3 - 5			
5 - 5.8	1.5 J	BG	5.4-5.8

SED-12	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	1.5
Total Non-Carc PAHs	2.2
Total PAHs	3.7
Total SVOCs	3.8
Misc	
Total Cyanide	ND

T-10a-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	16 J	BG	

T-11-II-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	0.51 J	BG	
0.5 - 1			
1 - 3			
3 - 3.5			

T-11-II-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	6.1 J	BG	
0.5 - 1			
1 - 3.2			

T-11-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	5.1 J	BG	
0.5 - 1			
1 - 3			
3 - 3.5			

T-11-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	8.3 J	BG	
0.5 - 1			
1 - 3.2			

SED-11	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	0.91
Total Non-Carc PAHs	0.97
Total PAHs	1.9
Total SVOCs	2.0
Misc	
Total Cyanide	ND

T-09-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	8.8 J	BG	
0.5 - 1			
1 - 3			
3 - 5			
5 - 5.5			

T-09-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	42 J	BG	
0.5 - 1			
1 - 3			
3 - 4.5			

T-10-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	0.24 J	BG	
0.5 - 1			
1 - 2.7			

T-10-B			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.8	8.3 J	BG	

T-10a-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	2.3 J	BG	
0.5 - 1			
1 - 2.5			

SED-13	
Depth(Feet)	0'-0.5'
VOCs	
Total BTEX	ND
SVOCs	
Total Carc PAHs	2.9
Total Non-Carc PAHs	2.9
Total PAHs	5.9
Total SVOCs	6.8
Misc	
Total Cyanide	ND

T-12-C			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5			
0.5 - 1			
1 - 3	150 J	BG, UNK	
3 - 3.8			

T-12-IIA			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	12 J	BG	
0.5 - 1			

T-12-IIB			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	45 J	BG	
0.5 - 1			
1 - 3.1			
3.1 - 8.3	bedrock core		

T-12-IIC			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	6.4 J	BG	
0.5 - 1.2			

T-12-A			
Depth(Feet)	Total PAHs	Source	Impacts
0 - 0.5	35 J	BG	
0.5 - 1			
1 - 2			

LEGEND:

- 2010 PDI SEDIMENT SAMPLING LOCATION
- 2004 SEDIMENT SAMPLING LOCATION
- EDGE OF WATER
- FORMER MGP STRUCTURE
- FENCE
- ROD REMOVAL AREA
- NO OBVIOUS IMPACTS
- MGP-LIKE ODOR
- SHEENS OR STAINING
- BLEBS
- NAPL
- NO SEDIMENT

BG-PAH – PAH COMPOSITION SIMILAR TO BACKGROUND

BG UNK – UNKNOWN PAH COMPOSITION, DIFFERENT THAN BACKGROUND, NOT MGP-RELATED

BG*, CWG – MIXTURE OF POTENTIAL CARBURETED WATER GAS AND BACKGROUND PAH COMPOSITION

CWG – CARBURETED WATER GAS PAH COMPOSITION

J – ESTIMATED VALUE

ND – NON-DETECT

NOTES:

1. BASE MAP ADAPTED FROM A DRAWING BY URS, DATED 7/13/2006.
2. DELINEATION PDI SEDIMENT SAMPLING CONDUCTED BY ARCADIS IN AUGUST AND SEPTEMBER 2010.
3. SEDIMENT LOCATIONS SURVEYED BY ARCADIS IN OCTOBER 2010. ALL OTHER LOCATIONS ARE APPROXIMATE.

0 120' 240'

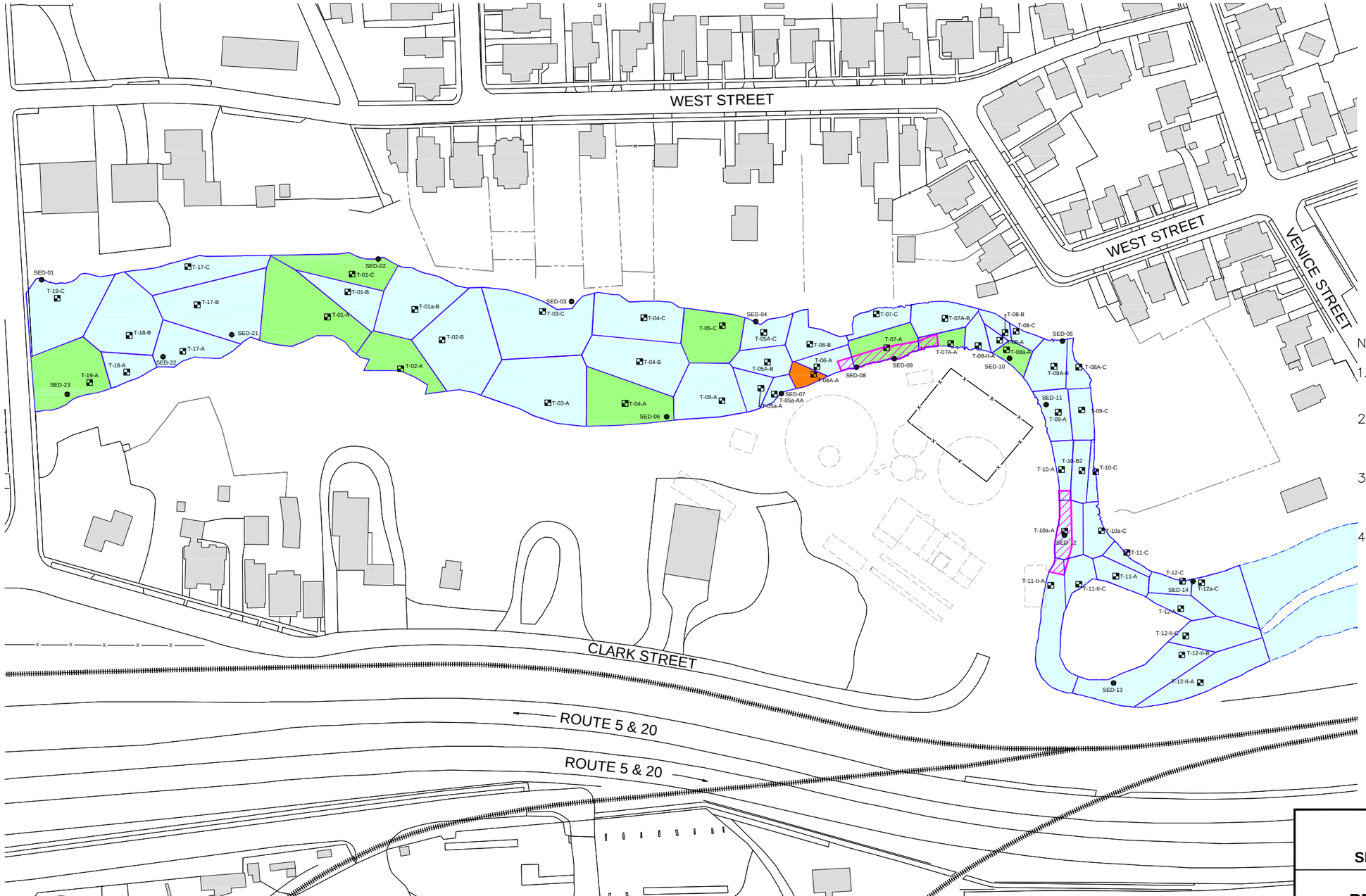
GRAPHIC SCALE

NYSEG
CLARK STREET FORMER MGP SITE
AUBURN, NEW YORK
SEDIMENT PDI SUMMARY REPORT

SEDIMENT DELINEATION PAH TOTAL CONCENTRATIONS

ARCADIS

FIGURE
3



LEGEND:

- 2010 PDI SEDIMENT SAMPLING LOCATION
- 2004 SEDIMENT SAMPLING LOCATION
- EDGE OF WATER
- FORMER MGP STRUCTURE
- FENCE
- ROD REMOVAL AREA
- REMOVAL BASED ON NAPL OR VISUAL TAR
- REMOVAL BASED ON PAH CONCENTRATIONS

NOTES:

1. BASE MAP ADAPTED FROM A DRAWING BY URS, DATED 7/13/2006.
2. DELINEATION PDI SEDIMENT SAMPLING CONDUCTED BY ARCADIS IN AUGUST AND SEPTEMBER 2010.
3. SEDIMENT LOCATIONS SURVEYED BY ARCADIS IN OCTOBER 2010. ALL OTHER LOCATIONS ARE APPROXIMATE.
4. THE AREA REPRESENTED BY SEDIMENT SAMPLE T-06A-A IS PROPOSED FOR REMOVAL BASED ON THE PRESENCE OF NAPL. HOWEVER, AS SHOWN ON FIGURE 3, THE SAMPLE COLLECTED AND ANALYZED AT THIS LOCATION CONTAINED A LOW CONCENTRATION OF TOTAL PAHS (1.5 MG/KG) AND BASED ON A FORENSIC EVALUATION, THE PAHS APPEARED TO BE COMPOSITIONALLY SIMILAR TO THOSE OBSERVED IN BACKGROUND SEDIMENT SAMPLES.

0 120' 240'

GRAPHIC SCALE

NYSEG
CLARK STREET FORMER MGP SITE
AUBURN, NEW YORK
SEDIMENT PDI SUMMARY REPORT

PROPOSED REMOVAL AREAS

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FIGURE
4

CITY: SYRACUSE, NY DIV/GROUP: ENV/CADD DB: W. JONES, P. LISTER, A.Schilling PM/TM: J. BRIEN LYR: ON=*;OFF=*REF, (FRZ)
G:\ENVCAD\SYRACUSE\ACTIVE\00130\49000\40000\13DWG\13049G12.DWG LAYOUT: 4SAVED: 6/10/2011 9:51 AM ACADVER: 18.0S (LMS TECH) PAGESETUP: ---PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 6/10/2011 9:51 AM BY: SCHILLING, ADAM
XREFS: IMAGES:
1309 1X02

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Attachment 1

Sediment Boring Logs

Date Start/Finish:	8/31/2010	**Northing:**	1069033.9	**Boring ID:**	**T-01-A**
Drilling Company:	Parratt-Wolff	**Easting:**	823317.8	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	6.01 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	654.5 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	1.1 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	655	1	0-1	1.0	8 18	26	6.7	X		Dark Gray to black fine SAND and SILT, little fine to medium subangular Gravel and Organics, moderate MGP-like odor, sheen, dark staining.	Backfilled to sediment surface with bentonite chips
										Fine to coarse subangular GRAVEL, little to some fine Sand and Silt, saturated, non-plastic, moderate MGP-like odor, trace sheen.	
		2	1-3	NR	50/0.1	NA	2.6			End of boring at 1.1 feet bss. Split Spoon refusal at 1.1 feet bss.	
5	650										
10	645										
15	640										

ARCADIS
Infrastructure, environment, buildings

Remarks: bss = below sediment surface; ND = non-detect; NA = not available/applicable; AMSL = Above Mean Sea Level; NR = No Recovery;
Coordinates are based on the North American Datum of 1983, New York Central Zone, provided by others.
Elevations are based on the North American Vertical Datum of 1988, provided by others.

Analytical sample T-01-A collected at (0-0.5')

Date Start/Finish:	9/3/2010	**Northing:** 1068395.6	**Boring ID:** **T-1a-B**
Drilling Company:	Parratt-Wolff	**Easting:** 820346.4	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 2.0 feet	
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:** 624.5 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:** 5.2 feet bss	
Rig Type:	Barge Mounted Tripod	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-1	1.0	8 17	NA	ND			Gray to brown fine SAND and fine to medium subangular GRAVEL, trace Silt (and trace Organics 0-0.2' bss), saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	1-3	2.0	50 38 41 52	79	ND			Similar Soils, trace fire Brick, trace red Brick, saturated, non-plastic.	
5	620	3	3-5	2.0	65 43 51 87	94	ND			Gray to brown fine to coarse SAND and fine GRAVEL, saturated, non-plastic. Little Wood (4.7-5 feet bss).	
		4	5-7	NR	100/.2	NA	NA			End of boring at 5.2 feet bss. Split spoon refusal at 5.2 feet bss.	
10	615										
15	610										

ARCADIS
Infrastructure, environment, buildings

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Elevations are based on the North American Vertical Datum of 1988, provided by others.

Analytical sample T-1a-B collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-3'), (3-5')

Date Start/Finish:	8/31/2010	**Northing:** 1068415.3	**Boring ID:** **T-01-B**
Drilling Company:	Parratt-Wolff	**Easting:** 820271.0	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 3.41 feet	
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:** 624.0 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:** 0.9 feet bss	
Rig Type:	Barge Mounted Tripod	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-1	0.9	28 38	66	ND			Dark Gray to brown fine SAND and SILT, little fine to medium subangular Gravel and Organics, saturated, non-plastic. Fine to coarse subangular GRAVEL, and fine Sand, little Silt, trace organics, saturated, non-plastic. End of boring at 0.9 feet bss. Split Spoon refusal at 0.9 feet bss.	Backfilled to sediment surface with bentonite chips
5	620										
10	615										
15	610										

ARCADIS
Infrastructure, environment, buildings

Remarks: bss = below sediment surface; ND = non-detect; NA = not available/applicable; AMSL = Above Mean Sea Level; NR = No Recovery;
Second attempt at this location due to low recovery on the first attempt.
Coordinates are based on the North American Datum of 1983, New York Central Zone, provided by others.
Elevations are based on the North American Vertical Datum of 1988, provided by others.

Analytical sample T-01-B collected at (0-0.5')

Date Start/Finish:	8/31/2010	**Northing:**	1068435.3	**Boring ID:**	**T-01-C**
Drilling Company:	Parratt-Wolff	**Easting:**	820275.8	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	4.21 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	623.1 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	1.2 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-2	1.0	4 28 50/0.1	NA	ND	X		Fine to medium subangular GRAVEL and fine to coarse SAND, trace Silt and Wood Chips, saturated, non-plastic. End of boring at 1.2 feet bss. Split Spoon refusal at 1.2 feet bss.	Backfilled to sediment surface with bentonite chips
	620										
5											
	615										
10											
	610										
15											

ARCADIS
Infrastructure, environment, buildings

Remarks: bss = below sediment surface; ND = non-detect; NA = not available/applicable; AMSL = Above Mean Sea Level
Second attempt at this location due to no recovery on the first attempt.
Coordinates are based on the North American Datum of 1983, New York Central Zone, provided by others.
Elevations are based on the North American Vertical Datum of 1988, provided by others.

Analytical sample T-01-C collected at (0-0.5')

Date Start/Finish:	8/31/2010	**Northing:**	1068329.0	**Boring ID:**	**T-02-A**
Drilling Company:	Parratt-Wolff	**Easting:**	820330.5	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.60 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	623.7 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	2.4 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	0.8	11 14	NA	ND			Fine to coarse gray to brown SAND and GRAVEL, trace Organics, red Brick, and Silt, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	1-3	1.4	12 26 50/0.3	NA	ND			End of boring at 2.4 feet bss. Split Spoon refusal at 2.4 feet bss.	
5	620										
10	615										
	610										
15											

ARCADIS
Infrastructure, environment, buildings

Remarks: bss = below sediment surface; ND = non-detect; NA = not available/applicable; AMSL = Above Mean Sea Level; NR = No Recovery;
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Elevations are based on the North American Vertical Datum of 1988, provided by others.

Analytical sample T-02-A collected at (0-0.5')

Date Start/Finish:	8/31/2010	**Northing:**	1068361.3	**Boring ID:**	**T-02-B**
Drilling Company:	Parratt-Wolff	**Easting:**	820377.0	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.47 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	623.3 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	2.8 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	0.9	17 31	NA	ND			Fine to coarse GRAVEL and fine to coarse SAND, trace Silt and Organics, saturated, non-plastic.	
		2	1-3	1.4	16 28 36 50/0.2	64	ND			End of boring at 2.8 feet bss. Split Spoon refusal at 2.8 feet bss.	Backfilled to sediment surface with bentonite chips
	620										
5											
	615										
10											
	610										
15											

ARCADIS
Infrastructure, environment, buildings

Remarks: bss = below sediment surface; ND = non-detect; NA = not available/applicable; AMSL = Above Mean Sea Level; NR = No Recovery;
Coordinates are based on the North American Datum of 1983, New York Central Zone, provided by others.
Elevations are based on the North American Vertical Datum of 1988, provided by others.

Analytical sample T-02-B collected (0-0.5')

Date Start/Finish:	8/31/2010	**Northing:**	1068290.6	**Boring ID:**	**T-03-A**
Drilling Company:	Parratt-Wolff	**Easting:**	820496.0	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	2.51 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.1 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	2.2 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	1.0	10 22	NA	ND			Dark gray to brown fine SAND and fine to medium subangular GRAVEL, little Silt, trace red Brick and Organics, saturated, non-plastic	Backfilled to sediment surface with bentonite chips
		2	1-3	0.8	30 53 50/0.2	NA	ND			End of boring at 2.2 feet bss. Split Spoon refusal at 2.2 feet bss.	
	620										
5											
	615										
10											
	610										
15											

ARCADIS
Infrastructure, environment, buildings

Remarks: bss = below sediment surface; ND = non-detect; NA = not available/applicable; AMSL = Above Mean Sea Level; NR = No Recovery;
Coordinates are based on the North American Datum of 1983, New York Central Zone, provided by others.
Elevations are based on the North American Vertical Datum of 1988, provided by others.

Analytical sample T-03-A collected at (0-0.5')

Date Start/Finish:	8/31/2010	**Northing:**	1068393.3	**Boring ID:**	**T-03-C**
Drilling Company:	Parratt-Wolff	**Easting:**	820490.0	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.01 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	623.2 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	1.4 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	1.0	10 22	NA	ND			Brown fine SAND and SILT, little to some fine to medium subangular Gravel, little Organics, trace Clay (increasing clay content with depth), saturated, non-plastic, faint MGP-like odor (0.5-1.0' bgs).	Backfilled to sediment surface with bentonite chips
		2	1-3	0.4	50/0.4	NA	ND			Fine to coarse subangular GRAVEL, little fine Sand and Organics, saturated, non-plastic, no odor. End of boring at 1.4 feet bss. Split Spoon refusal at 1.4 feet bss.	
	620										
5											
	615										
10											
	610										
15											

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Analytical sample T-03-C collected at (0.5-1')

Date Start/Finish:	9/1/2010	**Northing:**	1068290.1	**Boring ID:**	**T-04-A**
Drilling Company:	Parratt-Wolff	**Easting:**	820582.8	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	2.67 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.4 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	5.3 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	1.0	10 35	NA	ND			Brown fine to medium SAND and GRAVEL, trace Organics and red Brick, saturated, non-plastic.	
		2	1-3	0.4	52 36 41 55	77	ND			Brown fine to medium SAND and GRAVEL, trace Clay and Silt, trace Organics and red Brick, saturated, non-plastic.	
										Brown fine to medium SAND and GRAVEL, trace Organics and red Brick, saturated, non-plastic, very faint MGP-like odor throughout, little to trace NAPL blebs.	
		3	3-5	1.3	38 41 50/0.3	NA	12.3			Brown CLAY, trace fine Sand and Gravel, trace NAPL blebs (4.5 to 5.3 feet bgs).	
	620									End of boring at 5.3 feet bss. Split Spoon refusal at 5.3 feet bss.	
5											Backfilled to sediment surface with bentonite chips
	615										
10											
	610										
15											

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Analytical sample T-04-A collected at (3.5-4.3')
Archive samples collected at (0-0.5'), (0.5-1'), (1-3'), (3-3.5')

Date Start/Finish:	9/1/2010	**Northing:**	1068336.9	**Boring ID:**	**T-04-B**
Drilling Company:	Parratt-Wolff	**Easting:**	820599.3	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.07 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	623.6 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	0.5 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	0.5	45 50/0	NA	ND	X		Dark gray to brown fine to medium SAND and GRAVEL, trace Silt and Organics, saturated, non-plastic. End of boring at 0.5 feet bss. Split Spoon refusal at 0.5 feet bss.	Backfilled to sediment surface with bentonite chips
	620										
5											
	615										
10											
	610										
15											

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Analytical sample T-04-B collected at (0-0.5')

Date Start/Finish:	9/1/2010	**Northing:**	1068386.3	**Boring ID:**	**T-04-C**
Drilling Company:	Parratt-Wolff	**Easting:**	820604.0	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.51 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.2 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	0.8 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	0.8	55 70/0.3	NA	ND			Fine to coarse subangular GRAVEL and fine to coarse SAND, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
										Gray to brown CLAY, little fine Sand and Silt, trace Organics and fine to medium Gravel, saturated, non-plastic.	
										End of boring at 0.8 feet bss.	
										Split Spoon refusal at 0.8 feet bss.	
	620										
5											
	615										
10											
	610										
15											

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Analytical sample T-04-C collected at (0-0.5')
Archive sample collected at (0.5-0.8')

Date Start/Finish:	9/1/2010	**Northing:** 1068293.0	**Boring ID:** **T-05-A**
Drilling Company:	Parratt-Wolff	**Easting:** 820691.8	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 2.0 feet	
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:** 625.0 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:** 1.9 feet bss	
Rig Type:	Barge Mounted Tripod	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-1	1.0	17 20	NA	ND			Dark gray to brown fine to coarse SAND and subangular GRAVEL, little coarse Gravel, trace Silt and fire Brick, saturated, non-plastic. Fire BRICK (0.8-1 feet bss).	Backfilled to sediment surface with bentonite chips
		2	1-3	0.9	75 75/0.4	NA	ND			End of boring at 1.9 feet bss. Split Spoon refusal at 1.9 feet bss.	
5	620										
10	615										
15	610										

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Analytical sample T-05-A collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-1.9')

Date Start/Finish:	9/9/2010	**Northing:** 1068300.4	**Boring ID:** **T-5a-A**
Drilling Company:	Parratt-Wolff	**Easting:** 820750.5	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 0.81 feet	
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:** 626.2 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:** 3.2 feet bss	
Rig Type:	Barge Mounted Tripod	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0											
	625	1	0-2	2.0	49 85 65 60	150	ND			Gray fine to medium SAND, little fine to medium subangular Gravel and Silt, trace Organics, saturated, non-plastic. Fine to coarse SAND and fine GRAVEL, little red Brick, trace fire Brick, saturated, non-plastic. Moderate MGP-like odor from 2.0 to 3.2 feet bss.	Backfilled to sediment surface with bentonite chips
		2	2-4	1.2	38 43 100/.2	NA	0.7			Rock in tip of spoon. End of boring at 3.2 feet bss. Split Spoon refusal at 3.2 feet bss.	
5	620										
10	615										
15											

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Analytical sample T-5a-A collected at (1-3.2')
Archive samples collected at (0-0.5'), (0.5-1')

Date Start/Finish: 9/14/2010 **Drilling Company:** Parratt-Wolff **Driller's Name:** Doug Richmond **Drilling Method:** Direct Push/Rock Coring **Rig Type:** Diedrich D-90 ATV **Sampling Method:** 3" x 2' SS/ 5' HX Corebarrel	**Northing:** 1068300.4 **Easting:** 820750.5 **Water Depth:** NA **Borehole Depth:** 12.0 feet bgs **Surface Elevation:** 626.2 feet AMSL **Descriptions By:** Marcus Eriksson	**Boring ID:** **T-5a-AA** **Client:** NYSEG **Site Location:** Clark Street Former MGP Site Auburn, New York

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	N - Value / RQD (%)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Bedrock Fractures	Stratigraphic Description	Boring Construction
0	625	1	0-2	2.0	NA	ND				Brown fine SAND, little Organics, fine to medium Gravel, moist, non-plastic.	
										Brown fine SAND, little Silt, Organics, and fine to medium subangular Gravel, saturated, non-plastic.	
		2	2-4	2.0	NA	ND				Organic odor from 2.0 to 3.6 feet bss.	
5	620	3	4-6	0.6	NA	ND				Brown fine SAND and SILT, little fine to medium subangular Gravel, trace Organics (Peat), saturated, non-plastic, faint MGP-like odor (3.6-4.0' bss). Red Brick in tip of spoon. Trace NAPL blebs from 6.0-7.0 feet bss. Faint MGP-like odor from 6-8.3 feet bss.	Backfilled to sediment surface with bentonite chips
		4	6-8	1.0	NA	ND				Stiffens, more till-like. Refusal at 8.3 feet bss. Begin Rock Coring at 8.3 feet bss.	
10	615	Run #1		NA		ND			HZ HZ	Dark gray to Black (N2.5) BEDROCK. Horizontal fractures at 11', 11.2' bss. Broken zone from 11-11.2' bss, trace to little NAPL. Moderate NAPL-blebs in recirculation tub at 11' bss.	
										End of boring at 12.0 feet bss.	
15											

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Analytical sample T-5a-AA collected at (7-8.3')
Archive samples collected at (0-0.5'), (0.5-1'), (1-3'), (5-7')

Date Start/Finish:	9/9/2010	**Northing:**	1068336.4	**Boring ID:**	**T-5a-B**
Drilling Company:	Parratt-Wolff	**Easting:**	820743.0	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	2.47 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.1 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	0.6 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-2	0.6	85 100/.1	NA	ND			Fine to medium subrounded GRAVEL, little fine to coarse Sand, trace red Brick, saturated, non-plastic. End of boring at 0.6 feet bss. Split Spoon refusal at 0.6 feet bss.	Backfilled to sediment surface with bentonite chips
	620										
5											
	615										
10											
	610										
15											

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Analytical sample T-5a-C collected at (0-0.6')

Date Start/Finish:	9/9/2010	**Northing:**	1068369.7	**Boring ID:**	**T-5a-C**
Drilling Company:	Parratt-Wolff	**Easting:**	820738.8	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.0 feet (dry)		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.3 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	1.3 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-2	1.3	43 90 60	NA	ND			Fine to medium subangular GRAVEL and fine to coarse SAND, trace Glass, saturated, non-plastic. Brown fine SAND and SILT, little fine to medium Gravel, little to trace Clay, saturated, non-plastic, till-like. End of boring at 1.3 feet bss. Split Spoon refusal at 1.3 feet bss.	Backfilled to sediment surface with bentonite chips
5	620										
10	615										
15	610										

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Analytical sample T-5a-C collected at (0-0.5')
Archive sample collected at (0.5-1.3')

Date Start/Finish:	9/1/2010	**Northing:**	1068377.3	**Boring ID:**	**T-05-C**
Drilling Company:	Parratt-Wolff	**Easting:**	820692.2	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	2.42 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	625.1 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	1.7 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-1	1.7	24 43 55 60/0.2	97	ND			Gray fine to coarse GRAVEL and fine to coarse SAND, trace Silt and Organics, saturated, non-plastic, stiffens with depth, faint MGP-like odor from 0.6 to 1.0 feet bss. Gray to brown CLAY. little fine Sand, trace Silt, fine to medium Gravel, and Organics, saturated, moderately plastic. End of boring at 1.7 feet bss. Split Spoon refusal at 1.7 feet bss.	Backfilled to sediment surface with bentonite chips
5	620										
10	615										
15	610										

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Analytical sample T-05-C collected at (0.5-1')
Archive samples collected at (0-0.5'), (1-1.7')

Date Start/Finish:	9/1/2010	**Northing:** 1068331.0	**Boring ID:** **T-06-A**
Drilling Company:	Parratt-Wolff	**Easting:** 820798.7	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 2.0 feet	
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:** 624.7 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:** 0.7 feet bss	
Rig Type:	Barge Mounted Tripod	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-1	0.5	40 70/0.2	NA	ND	X		Fine to medium subangular GRAVEL and SAND, little red Brick, trace Silt and Organics, saturated, non-plastic End of boring at 0.7 feet bss. Split Spoon refusal at 0.7 feet bss.	Backfilled to sediment surface with bentonite chips
5	620										
10	615										
15	610										

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Two attempts were made at this location.
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Analytical sample T-06-A collected at (0-0.5')

Date Start/Finish:	9/10/2010	**Northing:**	1068322.5	**Boring ID:**	**T-6a-A**
Drilling Company:	Parratt-Wolff	**Easting:**	820795.0	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.91 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.5 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	5.8 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-2	2.0	41 30 31 45	61	6.7			Brown to gray fine SAND and SILT, little Organics and fine to medium subangular Gravel, saturated, non-plastic.	
										Brown to gray fine SAND and fine subangular GRAVEL, trace red Brick and Organics, saturated, non-plastic, little to trace Sheen, trace to little NAPL blebs from 0.7 to 1.2 feet bgs.	
		2	2-4	2.0	33 43 37 40	80	0.8			Brown fine SAND, little fine to medium Gravel, saturated, non-plastic, little to trace Sheen, trace NAPL at 2.0 feet bgs.	Backfilled to sediment surface with bentonite chips
5	620	3	4-6	1.8	44 46 65 100/.3	111	17.6			Heavy NAPL throughout (5.4-5.8 feet bgs).	
										End of boring at 5.8 feet bss.	
										Split Spoon refusal at 5.8 feet bss.	
10	615										
15	610										

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Analytical sample T-6a-A collected at (5-5.8')
Archive samples collected at (0-0.5'), (0.5-1'), (1-3'), (3-5')

Date Start/Finish:	9/1/2010	**Northing:** 1068356.5	**Boring ID:** **T-06-B**
Drilling Company:	Parratt-Wolff	**Easting:** 820790.7	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 2.8 feet	
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:** 624.7 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:** 1.0 feet bss	
Rig Type:	Barge Mounted Tripod	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-1	1.0	52 40 100/0.1	NA	ND			Gray fine to coarse GRAVEL, some to little fine to medium Sand, trace Silt and Organics, saturated, non-plastic End of boring at 1.1 feet bss. Split Spoon refusal at 1.1 feet bss.	Backfilled to sediment surface with bentonite chips
5	620										
10	615										
15	610										

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Analytical sample T-06-B collected at (0-0.5')
Archive sample collected at (0.5-1')

Date Start/Finish:	9/2/2010	**Northing:**	1068352.4	**Boring ID:**	**T-07-A**
Drilling Company:	Parratt-Wolff	**Easting:**	820876.9	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	1.45 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	625.5 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	1.7 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-1	1.0	27 49	NA	ND			Fine to coarse to subangular GRAVEL, little fine to medium Sand, trace Silt and Organics, saturated, non-plastic, faint to moderate MGP-like odor from 1.0 to 1.7 feet bss.	Backfilled to sediment surface with bentonite chips
		2	1-3	0.7	75 50/0.2	NA	8.5			Gray to brown CLAY, little fine Sand and fine to medium subrounded Gravel, till-like, trace (one) NAPL bleb.	
5	620									End of boring at 1.7 feet bss. Split Spoon refusal at 1.7 feet bss.	
10	615										
15	610										

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Analytical sample T-07-A collected at (1-1.7')
Archive samples collected at (0-0.5'), (0.5-1')

Date Start/Finish:	9/10/2010	**Northing:**	1068357.2	**Boring ID:**	**T-7a-A**
Drilling Company:	Parratt-Wolff	**Easting:**	820949.1	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.4 feet		
Drilling Method:	Direct Push	**Sediment Surface Elevation:**	626.5 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	3.8 feet bss		
Rig Type:	Tractor Mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0									
	625	1	0-2	1.5	ND			Fine to medium subangular GRAVEL, little fine to coarse Sand, trace red Brick and Silt, saturated, non-plastic, faint MGP-like odor from 0.5 to 1 feet bss.	
								Brown fine SAND, little to some Silt, trace Clay and fine to medium Gravel, saturated, non-plastic.	
								Increasing stiffness from 2.0-3.4 feet bss.	Backfilled to sediment surface with bentonite chips
		2	2-4	1.8	ND			Gray to brown fine SAND and CLAY, little Silt and fine to medium subangular Gravel, Rock Fragments in tip of spoon, saturated, non-plastic, till-like.	
5								End of boring at 3.8 feet bss.	
	620							Split Spoon refusal at 3.8 feet bss.	
10									
	615								
15									

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Analytical sample T-7a-A collected at (0.5-1')
Archive samples collected at (0-0.5'), (1-3'), (3-3.8')

Date Start/Finish:	9/2/2010	**Northing:** 1068385.5	**Boring ID:** **T-7a-B**
Drilling Company:	Parratt-Wolff	**Easting:** 820942.6	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 2.91 feet	
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:** 623.8 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:** 1.1 feet bss	
Rig Type:	Barge Mounted Tripod	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

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
	625										
0		1	0-1	1.0	14 55 100/.1	NA	ND			Gray to brown fine to coarse SAND and GRAVEL, trace red Brick and Silt, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
										End of boring at 1.1 feet bss.	
										Split Spoon refusal at 1.1 feet bss.	
	620										
5											
	615										
10											
	610										
15											

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Analytical sample T-7a-B collected at (0-0.5')
Archive sample collected at (0.5-1')

Date Start/Finish:	9/2/2010	**Northing:**	1068390.5	**Boring ID:**	**T-07-C**
Drilling Company:	Parratt-Wolff	**Easting:**	820865.5	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.5 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.9 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	0.6 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-1	1.0	72 75/0.1	NA	ND			Fine to coarse to subangular GRAVEL, some fine Sand, little Silt, trace Clay and Organics, saturated, non-plastic. End of boring at 0.6 feet bss. Split Spoon refusal at 0.6 feet bss.	Backfilled to sediment surface with bentonite chips
5	620										
10	615										
15	610										

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Analytical sample T-07-C collected at (0-0.5')

Date Start/Finish:	9/10/2010	**Northing:**	1068350.1	**Boring ID:**	**T-8-A(II)**
Drilling Company:	Parratt-Wolff	**Easting:**	821011.9	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.6 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	627.7 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	3.0 feet bss		
Rig Type:	Tractor Mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0	630								
0		1	0-2	2.0	ND			Fine to medium subangular GRAVEL and fine to coarse SAND, trace red Brick, saturated, non-plastic. Faint MGP-like odor from 1.0-3.0 feet bss.	Backfilled to sediment surface with bentonite chips
5	625	2	2-4	1.0	ND			End of boring at 3.0 feet bss. Split Spoon refusal at 3.0 feet bss.	
10	620								
15	615								

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Analytical sample T-8-A(II) collected at (1-3');
Archive samples collected at (0-0.5'), (0.5-1')

Date Start/Finish:	9/2/2010	**Northing:**	1068361.0	**Boring ID:**	**T-08-A**
Drilling Company:	Parratt-Wolff	**Easting:**	821004.1	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	NA		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.2 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	0.7 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	0.5	65 75/0.2	NA	ND			Fine to coarse to subangular GRAVEL, some fine Sand, little Silt, trace Clay and Organics, saturated, non-plastic. End of boring at 0.7 feet bss. Split Spoon refusal at 0.7 feet bss.	Backfilled to sediment surface with bentonite chips
	620										
5											
	615										
10											
	610										
15											

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Analytical sample T-08-A collected at (0-0.7')

Date Start/Finish:	9/3/2010	**Northing:** 1068355.1	**Boring ID:** **T-8a-A**
Drilling Company:	Parratt-Wolff	**Easting:** 820980.0	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 0.0 feet (dry)	
Drilling Method:	Direct Push	**Sediment Surface Elevation:** 625.8 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:** 5.5 feet bss	
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0	625	1	0-1	1.0	ND			Gray to brown fine to coarse SAND and fine subangular GRAVEL, trace red Brick and fire Brick, moist, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	1-2	1.0	ND			Saturated and moderate MGP-like odor from 2 to 3.2 feet bss.	
		3	2-4	2.0	13.4			Brown fine SAND and SILT, little fine to medium Gravel, trace Organics and Clay, saturated, non-plastic, little NAPL blebs throughout, heavy Sheen.	
5	620	4	4-5.5	1.5	9.8			Brown fine SAND, little Silt and fine to medium subrounded Gravel, saturated, non-plastic, moderate sheen, trace NAPL blebs.	
								Bedrock / End of boring at 5.5 feet bss.	
								Split Spoon refusal at 5.5 feet bss.	
10	615								
15	610								

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Analytical sample T-8a-A collected at (3-5'); DUP-C-1-9310
Archive samples collected at (0-0.5'), (0.5-1'), (1-3'), (5-5.5')

Date Start/Finish:	9/2/2010	**Northing:**	1068371.0	**Boring ID:**	**T-08-C**
Drilling Company:	Parratt-Wolff	**Easting:**	821022.5	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.5 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.0 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	0.3 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625										
		1	0-1	ND	50/0.3	NA	NA			No Recovery. Exposed bedrock at 0.3 feet bgs. End of boring at 0.3 feet bss. Split Spoon refusal at 0.3 feet bss.	Backfilled to sediment surface with bentonite chips
5	620										
10	615										
15	610										

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No sample collected at T-08-C

Date Start/Finish:	9/2/2010	**Northing:**	1068280.0	**Boring ID:**	**T-09-A**
Drilling Company:	Parratt-Wolff	**Easting:**	821070.0	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	2.21 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.6 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	4.1 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	1.0	52 58	NA	ND			Gray to brown fine to medium SAND and GRAVEL, trace Silt and Organics, saturated, non-plastic.	
		2	1-3	2.0	38 57 61 52	118	ND			Gray to brown CLAY and fine SAND (increasing CLAY content percentage with depth, decreasing Sand and stiffness with depth), little fine to medium subround Gravel, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		3	3-5	1.1	51 57 56/0.1	NA	ND			End of boring at 4.1 feet bss. Split Spoon refusal at 4.1 feet bss.	
5	620										
10	615										
15	610										

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Analytical sample T-09-A collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-3'), (3-4.1')

Date Start/Finish:	9/7/2010	**Northing:**	1068282.7	**Boring ID:**	**T-09-C**
Drilling Company:	Parratt-Wolff	**Easting:**	821096.3	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.45 feet		
Drilling Method:	Direct push	**Sediment Surface Elevation:**	625.4 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	4.5 feet bss		
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0	625	1	0-2	2.0	ND			Fine to medium SAND, some fine to medium subangular Gravel, trace Silt, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	2-4	1.0	ND				
5	620	3	4-6	0.5	ND			Brown fine SAND and SILT, little Clay, fine to medium subangular Gravel, saturated, non-plastic, till-like. End of boring at 4.5 feet bss. Split Spoon refusal at 4.5 feet bss.	
10	615								
15	610								

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Analytical sample T-09-C collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-3'), (3-4.5')

Date Start/Finish:	9/9/2010	**Northing:**	1068215.7	**Boring ID:**	**T-10-A**
Drilling Company:	Parratt-Wolff	**Easting:**	821073.9	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	2.91 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	625.1 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	2.7 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-2	2.0	27 47 29 20	76	ND			Fine to medium subangular GRAVEL and fine to coarse SAND, trace Silt, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
										Brown fine SAND, little fine to medium Gravel, trace Organics, Clay, and Silt, saturated, non-plastic.	
		2	2-4	0.7	85 100/.2	NA	ND			End of boring at 2.7 feet bss. Split Spoon refusal at 2.7 feet bss.	
5	620										
10	615										
15	610										

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Analytical sample T-10-A sample collected at (0-0.5')
Archive samples collected at (0.5-1), (1-2.7')

Date Start/Finish:	9/10/2010	**Northing:**	1068172.3	**Boring ID:**	**T-10a-A**
Drilling Company:	Parratt-Wolff	**Easting:**	821067.4	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.7 feet	**Location:**	Clark Street Former MGP Site Auburn, New York
Drilling Method:	Direct Push	**Sediment Surface Elevation:**	NA		
Casing Size:	NA	**Borehole Depth:**	2.5 feet bss		
Rig Type:	Tractor Mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0	0	1	0-2	2.0	ND			Fine to medium subangular GRAVEL, little fine Sand, saturated, non-plastic. Brown fine SAND, little Silt, Clay, and fine to medium subrounded Gravel, saturated, non-plastic, till-like. Rock Chips in tip of spoon.	Backfilled to sediment surface with bentonite chips
		2	2-4	0.5	ND			End of boring at 2.5 feet bss. Split Spoon refusal at 2.5 feet bss.	
5	-5								
10	-10								
15	-15								

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Analytical sample T-10a-A collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-2.5')

Date Start/Finish:	9/10/2010	**Northing:**	1068182.5	**Boring ID:**	**T-10a-C**
Drilling Company:	Parratt-Wolff	**Easting:**	821116.6	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.6 feet		
Drilling Method:	Direct Push	**Sediment Surface Elevation:**	627.6 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	0.5 feet bss		
Rig Type:	Tractor Mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0	0	1	0-2	0.5	ND			Fine to medium subangular GRAVEL, little fine to coarse Sand, trace Silt, Rock Chips in tip of spoon, saturated, non-plastic. End of boring at 0.5 feet bss. Refusal at 0.5 feet bss.	Backfilled to sediment surface with bentonite chips
5	-5								
10	-10								
15	-15								

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Analytical sample T-10a-C collected at (0-0.5')

Date Start/Finish:	9/9/2010	**Northing:**	1068214.4	**Boring ID:**	**T-10-B**
Drilling Company:	Parratt-Wolff	**Easting:**	821096.5	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.0 feet (dry)		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.6 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	0.8 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-2	0.8	50 100/.4	NA	ND			Fine to medium subangular GRAVEL and fine to coarse SAND, trace Silt, saturated, non-plastic. End of boring at 0.8 feet bss. Split Spoon refusal at 0.8 feet bss.	Backfilled to sediment surface with bentonite chips
5	620										
10	615										
15	610										

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Analytical sample T-10-B collected at (0-0.8')

Date Start/Finish:	9/8/2010	**Northing:**	1068085.4	**Boring ID:**	**T-11(II)-A**
Drilling Company:	Parratt-Wolff	**Easting:**	821061.6	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.6 feet		
Drilling Method:	Direct push	**Sediment Surface Elevation:**	626.7 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	3.5 feet bss		
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0									
	625	1	0-2	2.0	ND			Brown fine to medium SAND, some fine to medium subangular Gravel, trace red Brick, saturated, non-plastic.	
								Brown fine SAND, little fine to medium Gravel, Silt and Clay, saturated, non-plastic.	
		2	2-4	1.5	ND				
								End of boring at 3.5 feet bss.	
								Refusal at 3.5 feet bss.	
5									
	620								
10									
	615								
15									

Backfilled to sediment surface with bentonite chips

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Analytical sample T-11(II)-A collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-3'), (3-3.5')

Date Start/Finish:	9/8/2010	**Northing:**	1068086.7	**Boring ID:**	**T-11(II)-C**
Drilling Company:	Parratt-Wolff	**Easting:**	821093.2	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	NA		
Drilling Method:	Direct push	**Sediment Surface Elevation:**	626.7 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	3.2 feet bss		
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0									
		1	0-2	2.0	ND			Brown fine to coarse SAND and fine to medium subangular GRAVEL, trace red Brick, saturated, non-plastic.	
	625							Gray to brown fine SAND, little fine to medium subrounded Gravel and Clay, saturated, moderately plastic, till-like.	Backfilled to sediment surface with bentonite chips
		2	2-4	1.2	ND			Increase in Clay content with depth.	
								End of boring at 3.2 feet bss.	
								Refusal at 3.2 feet bss.	
5									
	620								
10									
	615								
15									

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Analytical sample T-11(II)-C collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-3.2')

Date Start/Finish:	9/8/2010	**Northing:** 1068095.7	**Boring ID:** **T-11-A**
Drilling Company:	Parratt-Wolff	**Easting:** 821134.8	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 0.6 feet	
Drilling Method:	Direct push	**Sediment Surface Elevation:** 629 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:** 3.5 feet bss	
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0									
		1	0-2	1.7	ND			Fine to medium subangular GRAVEL and brown fine to coarse SAND, trace Silt and fire Brick, saturated, non-plastic.	
	625							Brown SILT and fine SAND, little Clay and fine to medium subrounded Gravel, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	2-4	1.5	ND			Gray to brown fine SAND and CLAY, little fine to medium subround Gravel, Rock Fragments in tip of spoon, saturated, non-plastic, very stiff, till-like.	
								End of boring at 3.5 feet bss.	
								Refusal at 3.5 feet bss.	
5									
	620								
10									
	615								
15									

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Remarks: bss = below sediment surface; ND = non-detect; NA = not available/applicable; AMSL = Above Mean Sea Level;
Coordinates are based on the North American Datum of 1983, New York Central Zone, provided by others.
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Analytical sample T-11-A collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-3.2')

Date Start/Finish:	9/8/2010	**Northing:**	1068086.7	**Boring ID:**	**T-11-C**
Drilling Company:	Parratt-Wolff	**Easting:**	821093.2	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.40 feet		
Drilling Method:	Direct push	**Sediment Surface Elevation:**	626.7 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	3.5 feet bss		
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0	626	1	0-2	1.3	ND			Fine to medium subangular GRAVEL and fine to medium SAND, trace Silt, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
	625	2	2-4	1.5	ND			Fine SAND and CLAY, little Silt and fine to medium subrounded Gravel, saturated, non-plastic, till-like.	
5	620							End of boring at 3.5 feet bss. Refusal at 3.5 feet bss.	
10	615								
15									

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Analytical sample T-11-C collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-3'), (3-3.5')

Date Start/Finish:	9/8/2010	**Northing:**	1067975.9	**Boring ID:**	**T-12(II)-A**
Drilling Company:	Parratt-Wolff	**Easting:**	821229.8	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.8 feet		
Drilling Method:	Direct push	**Sediment Surface Elevation:**	628.6 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	1.0 feet bss		
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
	630								
0		1	0-2	1.0	ND			Gray to brown fine to medium SAND and fine to medium subangular GRAVEL, trace red Brick, trace Silt, saturated, non-plastic. BEDROCK in tip of spoon. End of boring at 1.0 feet bss. Refusal at 1.0 feet bss.	Backfilled to sediment surface with bentonite chips
	625								
5									
	620								
10									
	615								
15									

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Analytical sample T-12(II)-A collected at (0-0.5')
Archive sample collected at (0.5-1')

Date Start/Finish: 9/13/2010	**Northing:** 1068007.2	**Boring ID:** **T-12(II)-B**
Drilling Company: Parratt-Wolff	**Easting:** 821208.9	
Driller's Name: Doug Richmond	**Water Depth:** NA	**Client:** NYSEG
Drilling Method: Direct Push/Rock Coring	**Borehole Depth:** 8.3 feet bgs	
Rig Type: Diedrich D-90 ATV	**Surface Elevation:** 629.5 feet AMSL	**Site Location:** Clark Street Former MGP Site Auburn, New York
Sampling Method: 3" x 2' SS/ 5' HX Corebarrel	**Descriptions By:** Marcus Eriksson	

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	N - Value / RQD (%)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Bedrock Fractures	Stratigraphic Description	Boring Construction
	630										
0		1	0-2	2.0	NA	ND				Brown fine SAND and SILT, little Organics, fine to medium Gravel, saturated, non-plastic.	
										Fine to medium subangular GRAVEL and fine to medium SAND, little red Brick, trace fire Brick, saturated, non-plastic, stiff.	
		2	2-4	1.1	NA	ND				Possible BEDROCK in tip of spoon. Begin Rock Coring at 3.0 feet bss.	
	625	Run# 1	3.1-6.2	3.0	65%	ND			HZ HZ HZ HZ HZ HZ HZ HZ HZ	Dark gray to Black (N2.5) BEDROCK. Horizontal fractures at 3.4, 3.6, 4.1, 4.5, 4.7, 5.1, 5.3, 5.7, 6.2, 6.5, and 7.4 feet bss.	Backfilled to sediment surface with bentonite chips
5		Run# 2	6.2-8.3	2.0	83%	ND			HZ		
										End of boring at 8.3 feet bss.	
	620										
10											
	615										
15											

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Remarks: bgs = below ground surface; ND = non-detect; NA = not available/applicable; AMSL = Above Mean Sea Level; HZ = Horizontal Fracture.
Coordinates are based on the North American Datum of 1983, New York Central Zone, provided by others.
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Analytical sample T-12(II)-B collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-3.1')

Date Start/Finish:	9/8/2010	**Northing:**	1068028.6	**Boring ID:**	**T-12(II)-C**
Drilling Company:	Parratt-Wolff	**Easting:**	821213.4	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.2 feet		
Drilling Method:	Direct push	**Sediment Surface Elevation:**	629.3 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	1.2 feet bss		
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0	630	1	0-2	1.2	ND			Brown fine to medium SAND and fine to medium subangular GRAVEL, little red Brick, trace Silt, saturated, non-plastic. BEDROCK in tip of spoon. End of boring at 1.2 feet bss. Refusal at 1.2 feet bss.	Backfilled to sediment surface with bentonite chips
5	625								
10	620								
15	615								

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Analytical sample T-12(II)-C collected at (0-0.5')
Archive sample collected at (0.5-1')

Date Start/Finish:	9/8/2010	**Northing:**	1068059.1	**Boring ID:**	**T-12-A**
Drilling Company:	Parratt-Wolff	**Easting:**	821207.7	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.62 feet		
Drilling Method:	Direct push	**Sediment Surface Elevation:**	629.9 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	2.0 feet bss		
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0	630	1	0-2	2.0	ND			Red BRICK and fire BRICK, little fine Sand and fine to medium Gravel, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
								Brown fine SAND and fine to medium GRAVEL, little Silt, saturated, non-plastic, (WOOD from 1.1 to 1.2 feet bgs).	
								Gray to brown SILT, little fine to medium Sand and fine to medium subangular Gravel, saturated, non-plastic.	
								End of boring at 2.0 feet bss.	
								Refusal at 2.0 feet bss.	
5	625								
10	620								
15	615								

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Analytical sample T-12-A collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-2')

Date Start/Finish:	9/13/2010	**Northing:**	1068088.3	**Boring ID:**	**T-12a-C**
Drilling Company:	Parratt-Wolff	**Easting:**	821231.2	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.6 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	629.6 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	3.0 feet bss		
Rig Type:	Direct Push	**Descriptions By:**	Josh Oliver		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
	630								
0		1	0-2	1.1	ND			Gray to brown fine to medium SAND and fine to medium subangular GRAVEL, little colored Glass, trace Silt, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	2-4	1.0	ND			Gray to brown fine SAND and CLAY, some fine subangular Gravel, trace Silt, till-like.	
								End of boring at 3.0 feet bss.	
								Refusal at 3.0 feet bss.	
5	625								
10	620								
15	615								

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Analytical sample T-12a-C collected at (0-0.5')
Archive samples collected at (0.5-1'), (1-3')

Date Start/Finish:	9/8/2010	**Northing:**	1068090.2	**Boring ID:**	**T-12-C**
Drilling Company:	Parratt-Wolff	**Easting:**	821209.7	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	0.51 feet		
Drilling Method:	Direct push	**Sediment Surface Elevation:**	629.9 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	NA	**Borehole Depth:**	3.8 feet bss		
Rig Type:	Tractor-mounted Geoprobe	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Boring Construction
0	630								
		1	0-2	1.5	ND			Fine to coarse subangular GRAVEL and fine to medium SAND, trace Sheen and faint MGP-like odor 1 to 3 feet bgs, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	2-4	1.8	ND			Brown fine SAND, trace fine Gravel, very stiff.	
								Gray to brown fine SAND, some to little Clay and fine to medium Gravel, till-like.	
								End of boring at 3.8 feet bss.	
5	625							Refusal at 3.8 feet bss.	
10	620								
15	615								

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Analytical sample T-12-C collected at (1-3')
Archive samples collected at (0-0.5'), (0.5-1'), (3-3.8')

Date Start/Finish:	8/30/2010	**Northing:**	1068348.5	**Boring ID:**	**T-17-A**
Drilling Company:	Parratt-Wolff	**Easting:**	820025.3	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.1 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.0 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	1.8 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	0.9	6 18	24	ND			Brown fine SAND, little Silt, Organics, trace fine subangular Gravel, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	1-3	0.9	20 50/0.3	NA	ND			Brown SILT and fine SAND, trace fine Gravel and Organics, trace Rock in tip of spoon, saturated, non-plastic.	
										End of boring at 1.8 feet bss.	
										Split Spoon refusal at 1.8 feet bss.	
5	620										
	615										
10											
	610										
15											

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Analytical sample T-17-A collected at (0-0.5')

Date Start/Finish:	8/30/2010	**Northing:**	1068400.8	**Boring ID:**	**T-17-B**
Drilling Company:	Parratt-Wolff	**Easting:**	820101.7	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	5.53 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	623.4 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	1.8 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-1	0.9	13 18	31	ND	X		Dark gray to brown fine to medium SAND, some fine to medium subangular Gravel, little Silt, trace red Brick and Organics, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	1-3	0.5	50/0.3	NA	ND			End of boring at 1.8 feet bss. Split Spoon refusal at 1.8 feet bss.	
	620										
5											
	615										
10											
	610										
15											

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Analytical sample at T-17-B collected at (0-0.5')

Date Start/Finish:	8/30/2010	**Northing:** 1068348.5	**Boring ID:** **T-17-C**
Drilling Company:	Parratt-Wolff	**Easting:** 820025.3	**Client:** NYSEG
Driller's Name:	Doug Richmond	**Water Depth:** 3.1 feet	
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:** 624.5 feet AMSL	**Location:** Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:** 0 feet bss	
Rig Type:	Barge Mounted Tripod	**Descriptions By:** Marcus Eriksson	
Sampling Method:	3 inch x 2 feet Split Spoon		

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
	625										
0		1	0-1	ND	27 50/0.3	NA	NA			No recovery, refusal.	
5	620										
10	615										
15	610										

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No sample collected at T-17-C

Date Start/Finish:	8/30/2010	**Northing:**	1068325.2	**Boring ID:**	**T-18-A**
Drilling Company:	Parratt-Wolff	**Easting:**	820022.5	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.5 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.1 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	2.8 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-2	1.0	WH WH WH 7	NA	ND	X		Dark brown to gray SILT, little fine Sand and Organics, trace to little fine to medium subangular Gravel, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	2-4	NA	26 50/0.4	NA	ND			End of boring at 2.8 feet bss. Split Spoon refusal at 2.8 feet bss.	
	620										
5											
	615										
10											
	610										
15											

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Analytical sample T-18-A collected at (0-0.5')

Date Start/Finish:	8/30/2010	**Northing:**	1068366.4	**Boring ID:**	**T-18-B**
Drilling Company:	Parratt-Wolff	**Easting:**	820025.3	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	3.52 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.4 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	2.9 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	625	1	0-1	0.9	WH WH WH 2	NA	ND			Dark gray to brown SILT, little fine Sand, Organics, and fine to medium subangular Gravel, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
		2	1-3	1.0	5 7 7 50/0.4	14	ND			Fine subangular GRAVEL, some fine Sand, little Silt, trace to little red Brick, saturated, non-plastic.	
										End of boring at 2.9 feet bss.	
										Split Spoon refusal at 2.9 feet bss.	
5	620										
10	615										
15	610										

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Analytical sample T-18-B collected at (0-0.5')

Date Start/Finish:	8/30/2010	**Northing:**	1068313.3	**Boring ID:**	**T-19-A**
Drilling Company:	Parratt-Wolff	**Easting:**	819980.6	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	2.6 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	624.0 feet AMSL	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	2.5 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

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
	625										
0		1	0-2	1.5	3 2 4 5	6	ND			Dark brown to gray SILT, some fine Sand, Organics (roots and peat), trace fine Gravel, saturated, non-plastic.	Backfilled to sediment surface with bentonite chips
										Dark brown to gray SILT, some fine Sand, Organics (roots and peat), trace fine to medium sub-angular Gravel, saturated, non-plastic.	
		2	2-4	0.4	50/0.4	NA	ND			End of boring at 2.5 feet bss. Split Spoon refusal at 2.5 feet bss.	
	620										
5											
	615										
10											
	610										
15											

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Analytical sample T-19-A collected at (0-0.5')

Date Start/Finish:	8/30/2010	**Northing:**	1068408.1	**Boring ID:**	**T-19-C**
Drilling Company:	Parratt-Wolff	**Easting:**	819944.2	**Client:**	NYSEG
Driller's Name:	Doug Richmond	**Water Depth:**	6.5 feet		
Drilling Method:	140 lb. Hammer	**Sediment Surface Elevation:**	NA	**Location:**	Clark Street Former MGP Site Auburn, New York
Casing Size:	4 inch	**Borehole Depth:**	1.5 feet bss		
Rig Type:	Barge Mounted Tripod	**Descriptions By:**	Marcus Eriksson		
Sampling Method:	3 inch x 2 feet Split Spoon				

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Recovery (feet)	Blow Counts	N - Value	PID Headspace (ppm)	Analytical Sample	Geologic Column	Stratigraphic Description	Well/Boring Construction
0	0	1	0-1	0.8	57 13	NA	ND			Fine to coarse subangular GRAVEL, little Silt and fine Sand, trace Organics, saturated, non-plastic	Backfilled to sediment surface with bentonite chips
		2	1-3	0.5	75/0.4	NA	ND			End of boring at 1.5 feet bss. Split Spoon refusal at 1.5 feet bss.	
5	-5										
10	-10										
15	-15										

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Analytical sample T-19-C collected at (0-0.5')

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Attachment 2

Forensic Evaluation
Summary Memorandum

ARCADIS of New York, Inc
6723 Towpath Road
P O Box 66
Syracuse
New York 13214-0066
Tel 315 446 9120
Fax 315 449 0017

MEMO

To:
File

Copies:
Stu Messur, ARCADIS
Jason Brien, PE, ARCADIS

From:
Ted Sauer, PhD
Jason Golubski, PE

Date:
June 8, 2011

ARCADIS Project No.:
B0013091

Subject:
NYSEG Clark Street Sediment Pre-Design Investigation
Forensic Evaluation Summary

This memorandum presents the results of the forensic evaluation completed as part of the sediment pre-design investigation (PDI) for the NYSEG Clark Street Former Manufactured Gas Plant (MGP) Site (the site) located in Auburn, New York.

The New York State Department of Environmental Conservation (NYSDEC) Record of Decision (ROD) (NYSDEC, 2009) requires that "*Sediments which contain visible tar, produce a tar-related sheen when agitated in water, or which contain site-related* [polycyclic aromatic hydrocarbons] *PAH compounds at levels above upstream background levels will be removed"*. A PDI was conducted in August and September 2010 to delineate the extent of MGP-related impacts in sediment near the NYSEG Clark Street site. As part of the sediment PDI, a forensic evaluation was conducted to assess the potential sources of PAHs detected in Owasco Outlet (outlet) sediment. A summary of the sediment sampling activities, forensic evaluation procedures, and forensic evaluation results are presented below.

Note that sediment PDI activities for the NYSEG McMaster Street Former MGP Site were conducted concurrent with the Clark Street sediment PDI. Although a summary of the forensic evaluation for McMaster Street sediment is presented under separate cover, McMaster Street forensic evaluation results are incorporated, as appropriate, throughout this Clark Street forensic evaluation summary.

Sediment Sampling and Analysis Summary

As part of the Clark Street sediment PDI, a total of 20 background sediment samples (including duplicates) were collected from 16 sampling locations between the McMaster Street and Clark Street sites. Samples were collected from the main channel of the outlet and the adjacent former mill race approximately 100 feet downstream of the furthest downstream McMaster Street delineation sample to Clark Street remedial investigation sampling transect T-13. Sediment samples collected between the two sites are considered Clark Street background samples.

A total of 51 delineation sediment samples (including duplicates) were collected from 50 sampling locations immediately adjacent to and downstream of the Clark Street site (to the Division Street bridge). Samples from both Clark Street background and Clark Street delineation areas were submitted for analysis for the 17 priority pollutant PAHs using USEPA SW-846 Method 8270 (PAH-17). A subset of eight background samples were selected for more detailed hydrocarbon analysis that included analysis for parent and alkyl group PAH concentrations (i.e., forensic PAHs) by modified EPA Method 8270C, and total hydrocarbon concentrations (i.e., forensic TPHs) by modified EPA Method 8015.

Forensic Evaluation Procedures

The forensic evaluation was conducted in general accordance with the *Remedial Design Work Plan* (RDWP) (ARCADIS, 2010) and consisted of a preliminary forensic evaluation of all sediment samples using the PAH-17 results, which was supplemented by the results of the forensic PAH and TPH analyses of selected Clark Street background samples. The preliminary forensic evaluation consisted of:

- Reviewing the total ion chromatograms (TICs) generated by the PAH-17 analysis to determine the presence of petroleum or other organic-type material in the river sediments.

- Plotting PAH diagnostic ratios (e.g., fluoranthene/pyrene [Fl/Py], benzo(a)anthracene/ chrysene [BAA/C]) to determine PAH compositional groupings to identify potential PAH sources in the sediments.

- Assessing the spatial relationships of PAH compositions and concentrations in the sediments upstream and adjacent to the site.

Based on the preliminary forensic analysis of the Clark Street sediment samples, eight Clark Street background samples were selected for forensic PAH and TPH analysis. Samples with similar characteristics (i.e., similar PAH concentration, PAH composition, and spatial relation in the outlet) were grouped and select samples that represent the sample groups were analyzed for forensic PAHs and TPH.

Forensic Evaluation Results

The results for the forensic evaluations conducted for Clark Street background and delineation samples are summarized in the following subsections.

Clark Street Background Sediment

Total PAH concentrations for the Clark Street background samples were generally less than 100 milligrams per kilogram (mg/kg), with four samples (collected from background sampling locations CSB-4, CSB-11, and CSB-14) containing total PAHs at concentrations ranging from 140 to 230 mg/kg. Each of the Clark Street background sediment samples contained total PAHs at concentrations less than the highest total PAH concentration detected in McMaster Street background samples (i.e., 300 mg/kg). Additionally, the elevated PAH concentrations (i.e., 590 to 3,000 mg/kg) observed in McMaster Street delineation samples were not observed in Clark Street background samples, suggesting that mass quantities MGP-impacted sediment containing high PAH concentrations at McMaster Street has not been transported beyond the concrete dam downstream of the McMaster Street site.

The PAH compositional distributions of the eight background samples submitted for forensic analyses (Figures 1a thru 1h) each showed PAH compositions characteristic of PAHs originating from pyrogenic sources (Stout et al., 2002). Obvious evidence of PAHs originating from petroleum sources was not observed in these samples. The pyrogenic PAH compositions and concentrations of these samples were also consistent with PAH compositions and concentrations observed in McMaster Street background samples.

The PAH compositional characteristics of the Clark Street background samples are represented in the double ratio plot (BAA/C vs. Fl/Py) presented as Figure 2. In general, Clark Street background samples had PAH compositional characteristics similar to either McMaster Street background or delineation sediment samples. Clark Street background samples CSB-4 and CSB-14 contained elevated concentrations of PAHs (i.e., 140 to 230 mg/kg) and appeared to contain a contribution of PAHs consistent with a coal carbonization (i.e., the process used at the McMaster Street site) coal tar. However, these elevated PAH concentration samples had total PAH concentrations within the range of total PAHs detected in McMaster Street background sediments. Remaining Clark Street background samples appear to contain a mix of pyrogenic combustion-related PAHs. A distinguishable specific source cannot be identified.

Clark Street Delineation Sediment

As shown on Figure 3, with the exception of four samples with total PAH concentrations ranging from 340 to 34,000 mg/kg, Clark Street delineation samples contained total PAHs at concentrations within the range of Clark Street (and McMaster Street) background samples. Although a majority of Clark Street delineation

samples contained PAH compositions and total PAH concentrations similar to the McMasters Street background sediment samples, select Clark Street delineation samples contained a distinctively different PAH composition not evident in any of the upstream area sediments of the river. As shown on Figure 3, the four samples containing elevated concentrations of PAHs located near the Clark Street site had diagnostic ratio Fl/Py values less than 0.8. Additionally, in the PAH double ratio plot for the Clark Street delineation samples shown on Figure 4, many sediment samples collected near the site are clustered in the area of the plot with Fl/Py ratios between 0.7 and 0.8. These sediments appear to contain PAHs from another distinctive source with a compositional characteristic consistent with that of coal tar residual originating from a carbureted water gas (CWG) MGP process. This process was used at the Clark Street site and was different than the MGP process used at the McMaster Street site where the coal carbonization (CC) process was employed. Clark Street delineation samples containing total PAHs at concentrations greater than 150 mg/kg generally contained a PAH composition similar to that of CWG coal tar.

The PAH compositions of Clark Street delineation samples reflect site-related (i.e., CWG MGP) or background (i.e., non-distinguishable pyrogenic) sources of PAHs (or a mixing of the two). With the exception of samples containing PAHs from a potential CWG coal tar-source, Clark Street delineation sediments contained total PAH concentrations within the range of PAHs detected in Clark Street and McMaster Street background samples and generally had PAH compositions similar to the PAH compositions of Clark Street and McMaster Street background sediment samples. Potential PAH sources in Clark Street delineation samples were identified based on a comparison of PAH analytical results for Clark Street background samples and McMaster Street background, delineation, and NAPL samples. The potential PAH sources identified for Clark Street delineation samples are summarized in the following table.

Potential PAH Sources	PAH Concentration Range (mg/kg)	Clark Street Delineation Sample Locations
Unknown, different than background, non-MGP-related	150	T-12-C (1-3')
Mixture of potential carbureted water gas coal tar and background	50 to 340	T-4-A (3.5-4.3'), T-5-C (0.5-1'), T-18-A (0-0.5'), and T-19-A (0-0.5')
Consistent with carbureted water gas coal tar	160 to 34,000	T-1-A (0-0.5'), T-1-C (0-0.5'), T-2-A (0-0.5'), T-7-A (1-1.7'), T-7A-A (0.5-1'), and T-8A-A (3-5')
Consistent with Clark Street and McMaster Street background samples	0.24 to 48	T-1-B (0-0.5'), T-1a-B (0-0.5'), T-2-B (0-0.5'), T-3-A (0-0.5'), T-3-C (0.5-1'), T-4-B (0-0.5'), T-4-C (0-0.5'), T-5-A (0-0.5'), T-5a-A (1-3.2') T-5a-B (0-0.6'), T-5a-C (0-0.5'), T-5a-AA (7-8.3'), T-6a-A (5-5.8'), T-6-A (0-0.5'), T-6-B (0-0.5'), T-7-C (0-0.5'), T-7a-B (0-0.5'), T-8(II)-A (1-3'), T-8-A (0-0.5'), T-9-A (0-0.5'), T-9-C (0-0.5'), T-10-A (0-0.5'), T-10-B (0-0.8'), T-10-C (0-0.5'), T-10a-A (0-0.5'), T-10a-C (0-0.5'), T-11-A (0-0.5'), T-11-C (0-0.5'), T-11(II)-A (0-0.5'), T-11(II)-C (0-0.5'), T-12-A (0-0.5'), T-12a-C (0-0.5'), T-12(II)-A (0-0.5'), T-12(II)-B (0-0.5'), T-12(II)-C (0-0.5'), T-17-A (0-0.5'), T-17-B (0-0.5'), T-18-B (0-0.5'), and T-19-C (0-0.5')

References

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

Figure 1a. PAH Distribution of CSB-2 (0-0.5')

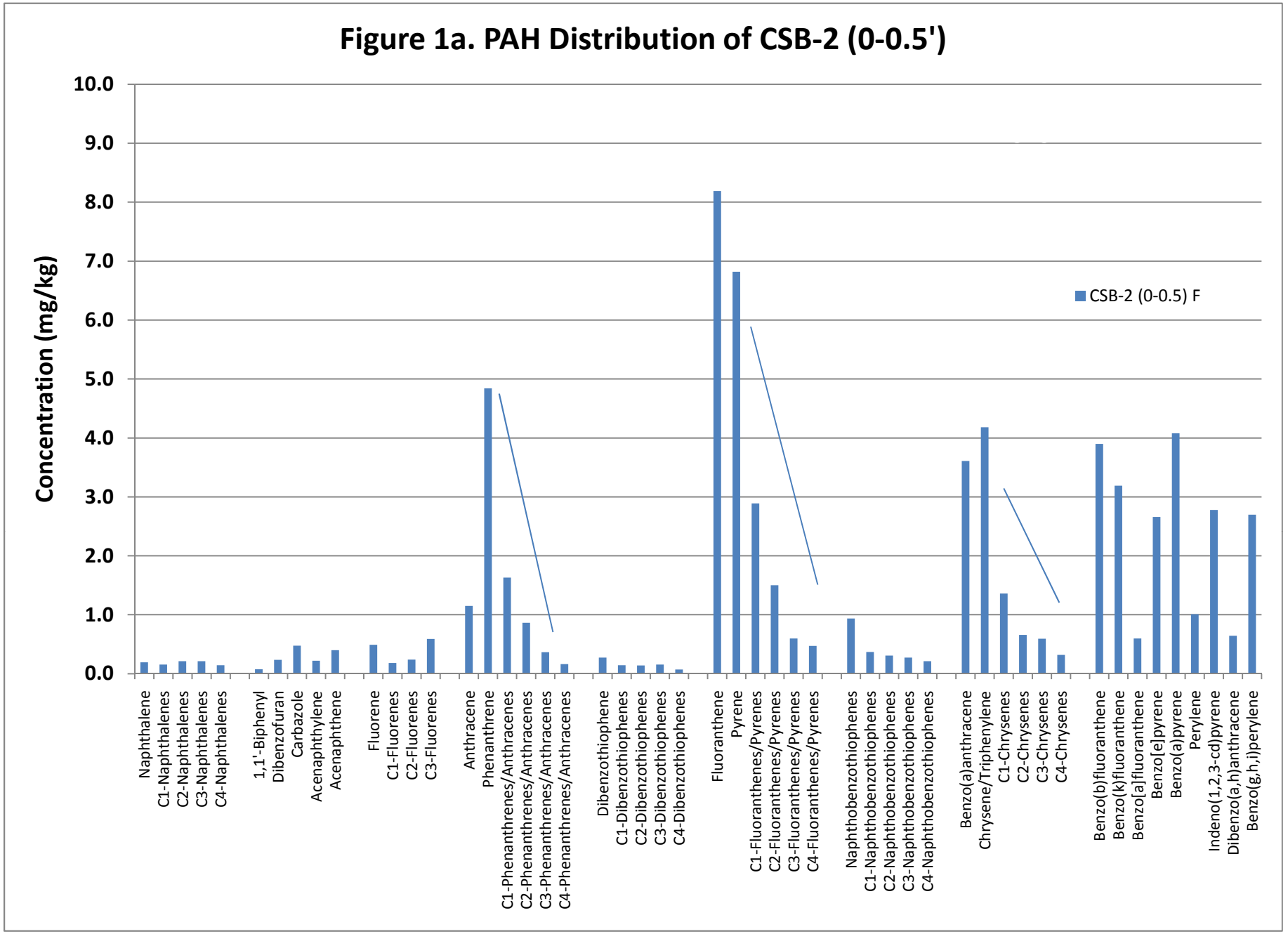


Figure 1b. PAH Distribution of CSB-4 (0-0.5')

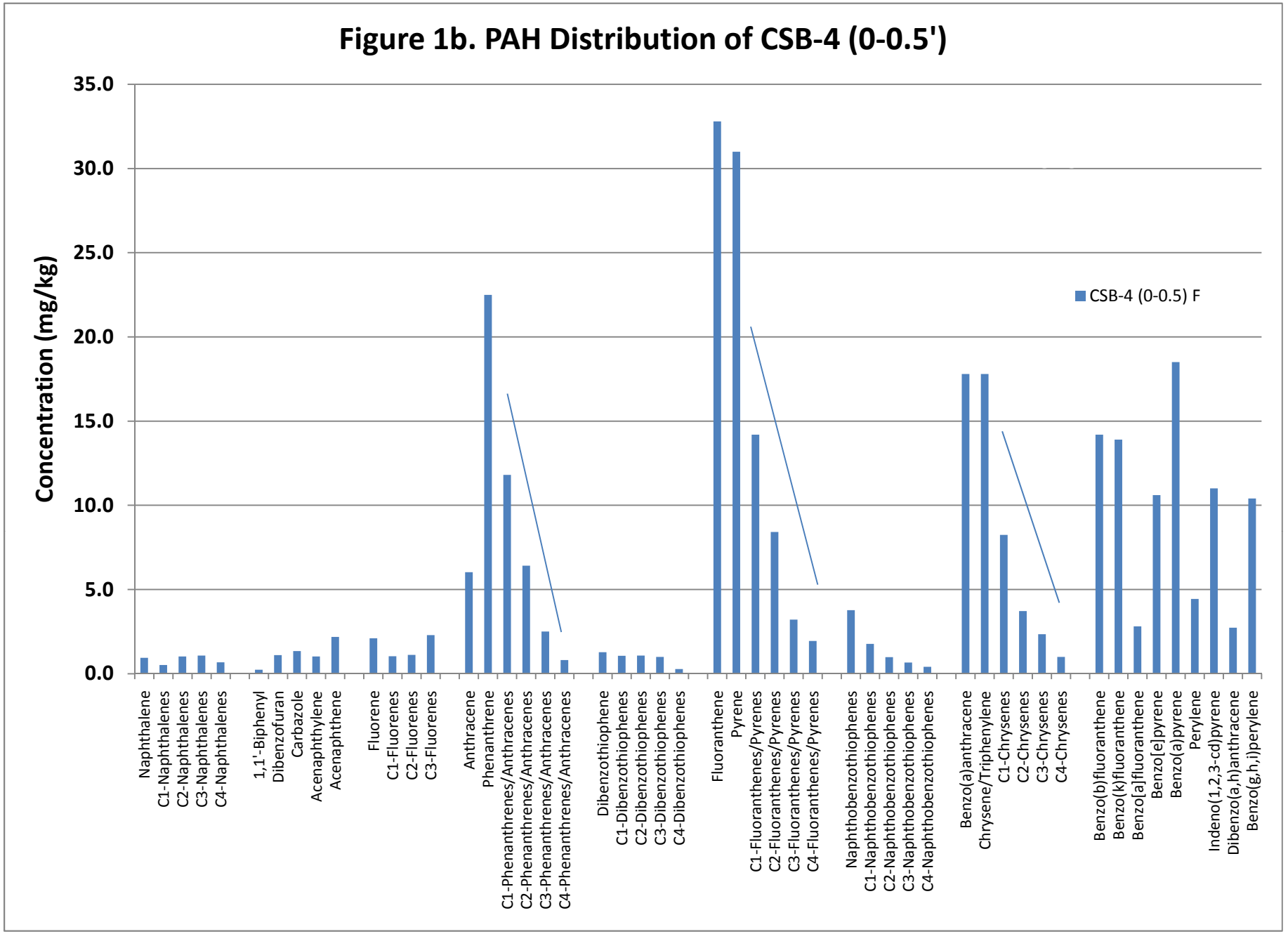


Figure 1c. PAH Distribution of CSB-4 (0.5-1')

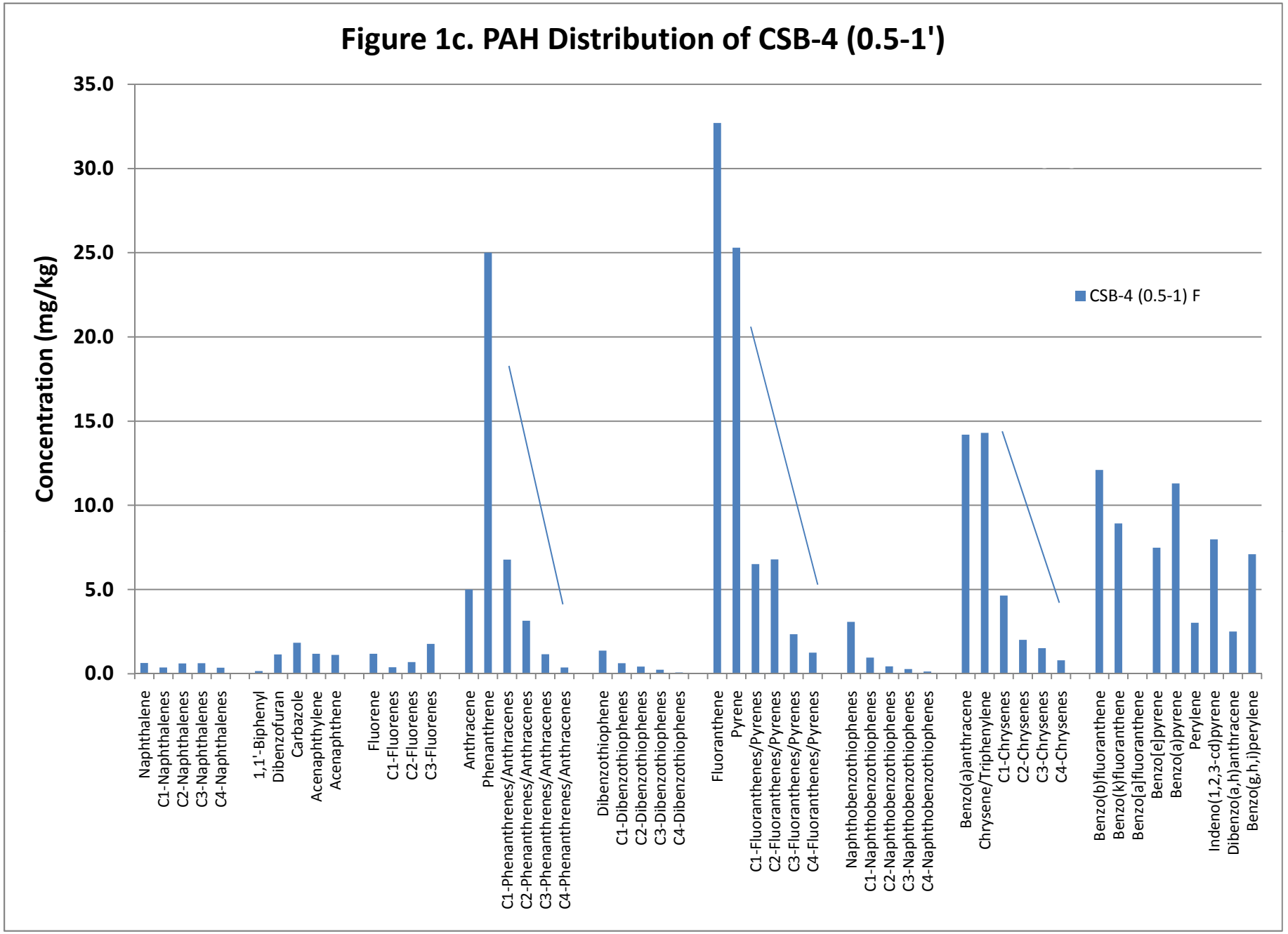


Figure 1d. PAH Distribution of CSB-8 (0.5-1')

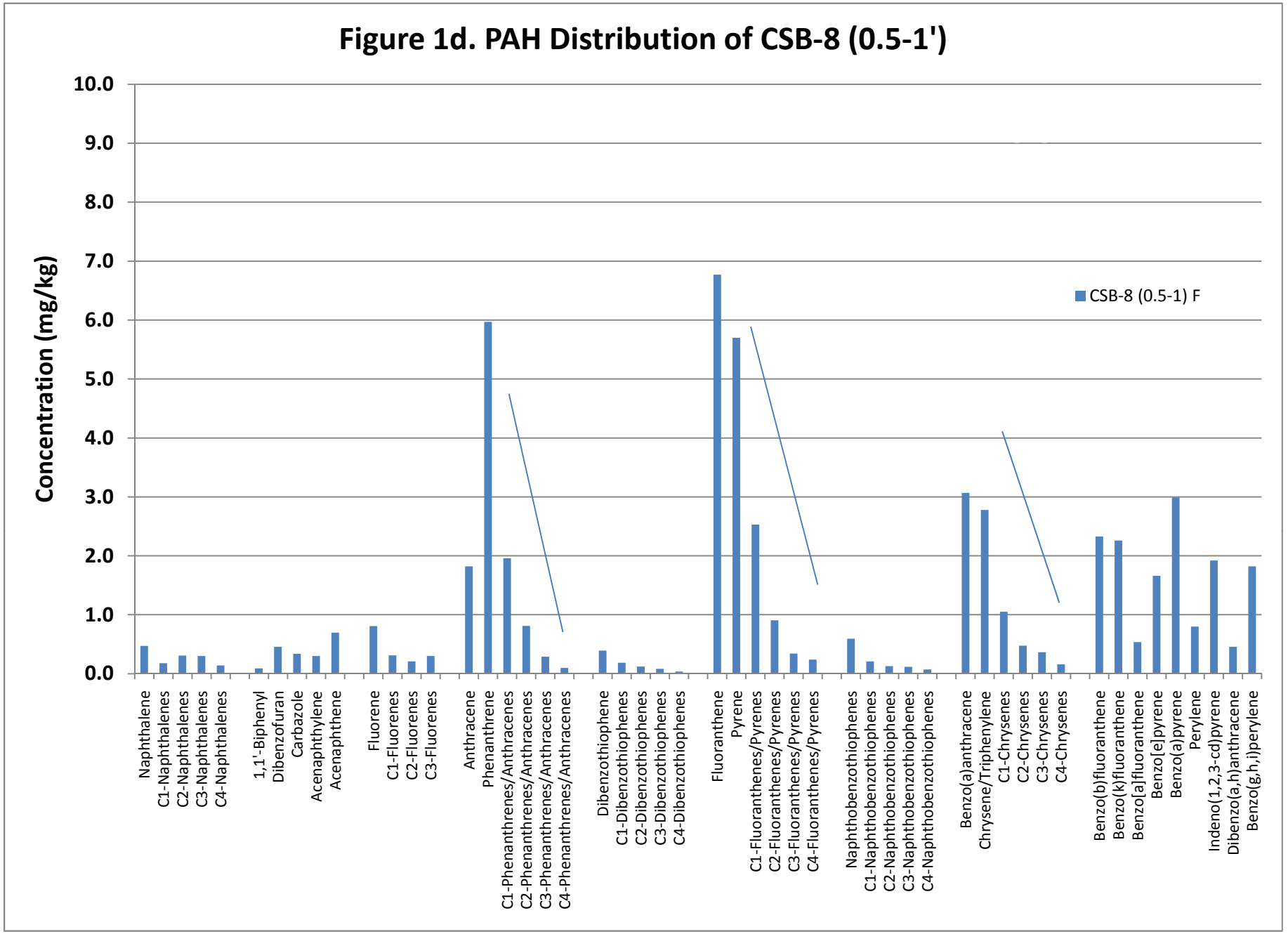


Figure 1e. PAH Distribution of CSB-10 (0-0.42')

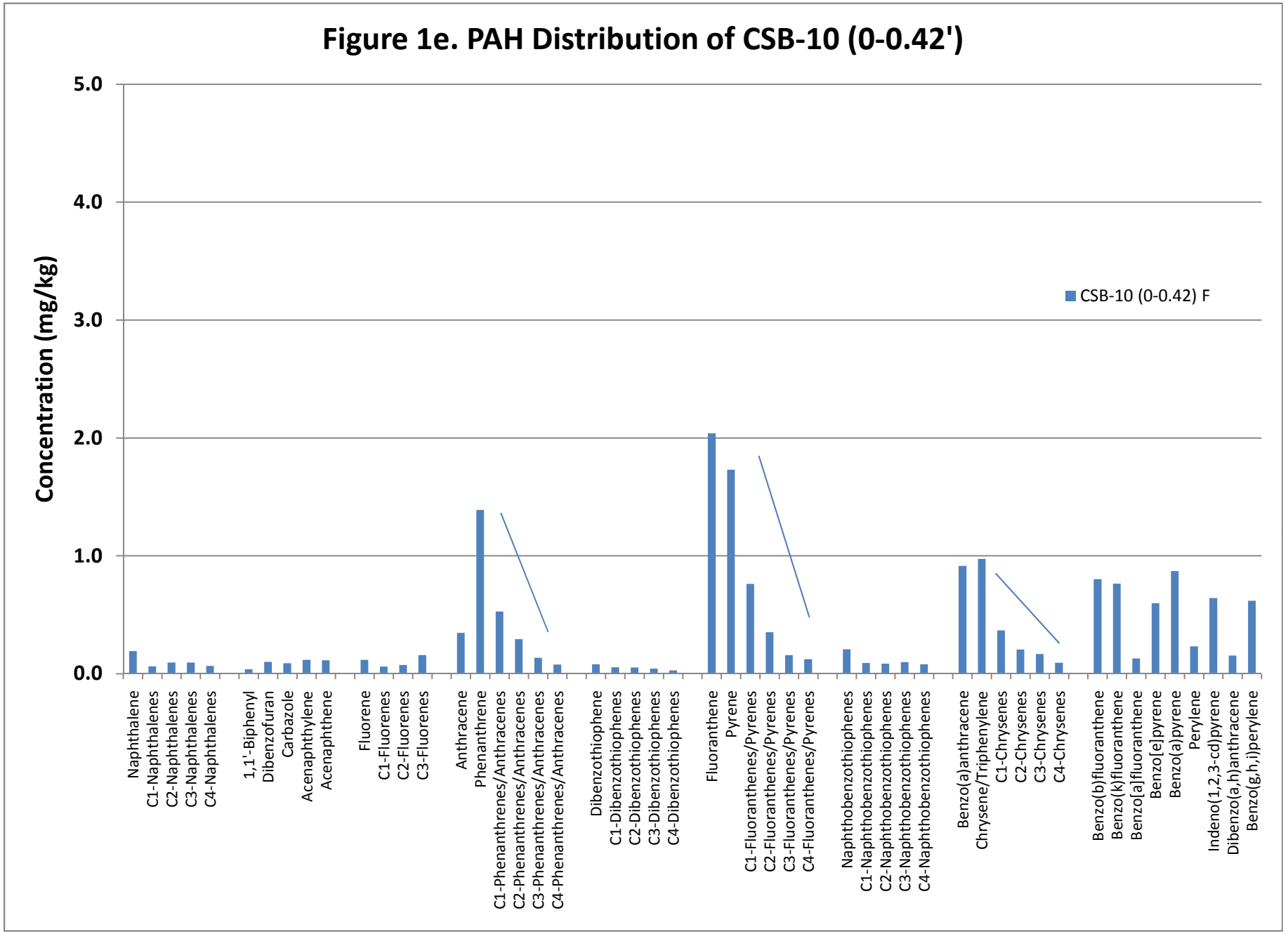


Figure 1f. PAH Distribution of CSB-11(0-0.5')

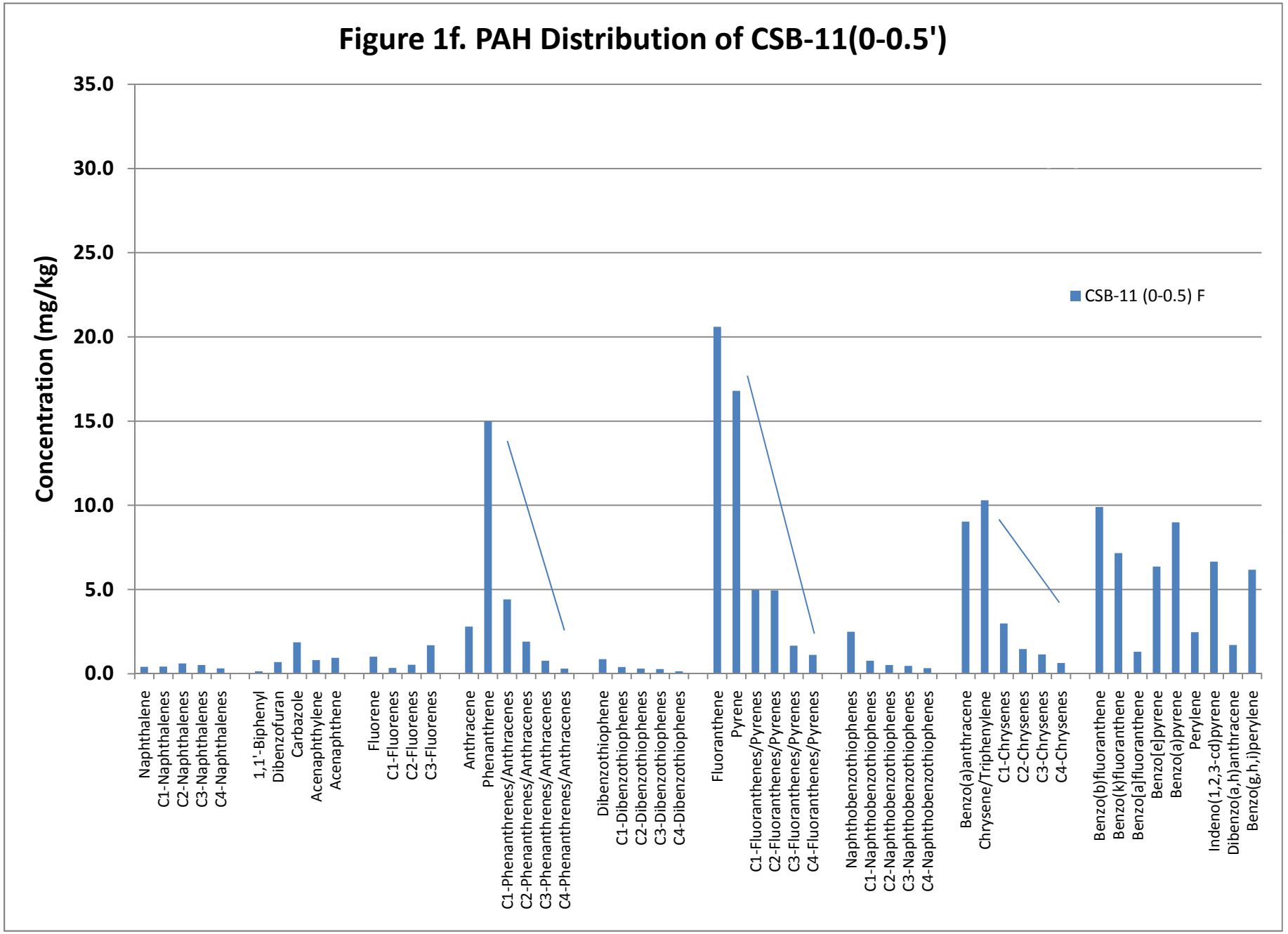


Figure 1g. PAH Distribution of CSB-14 (0-0.3')

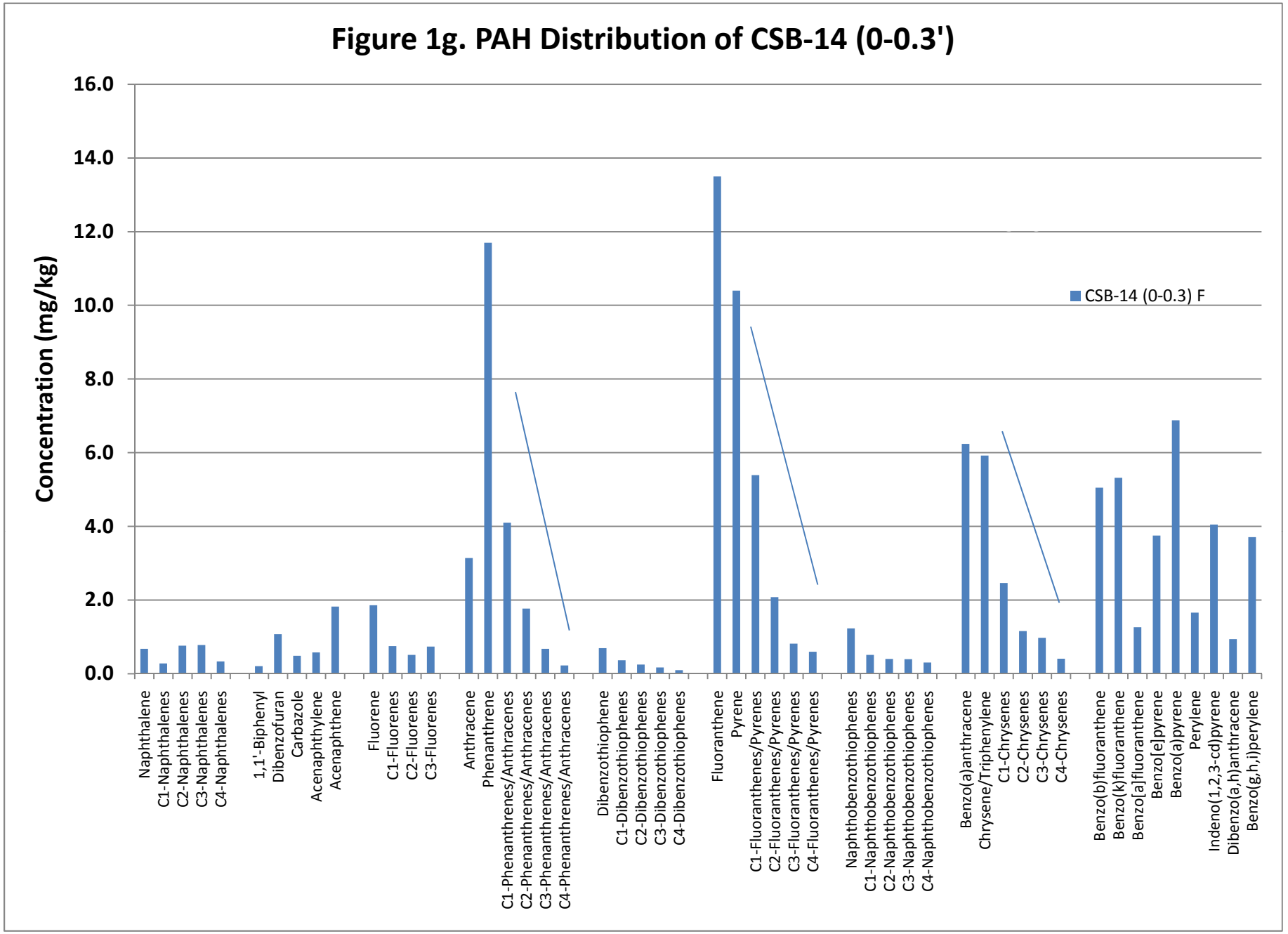


Figure 1h. PAH Distribution of CSB-15 (0-0.5')

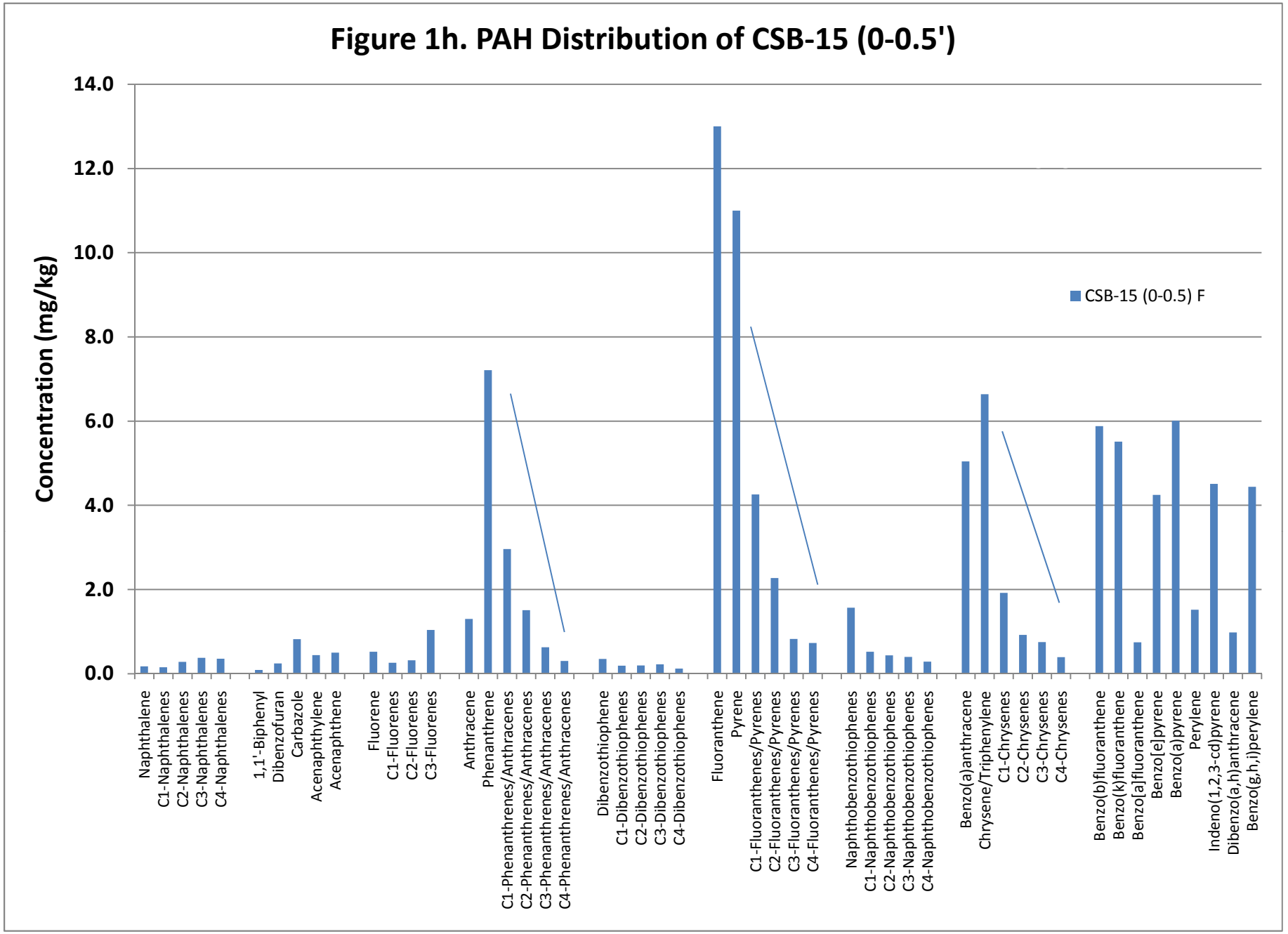


Figure 2. PAH Diagnostic Ratio Plot - BAA/C vs Fl/Py
NYSEG Clark St Background Sediment with Forensic Results

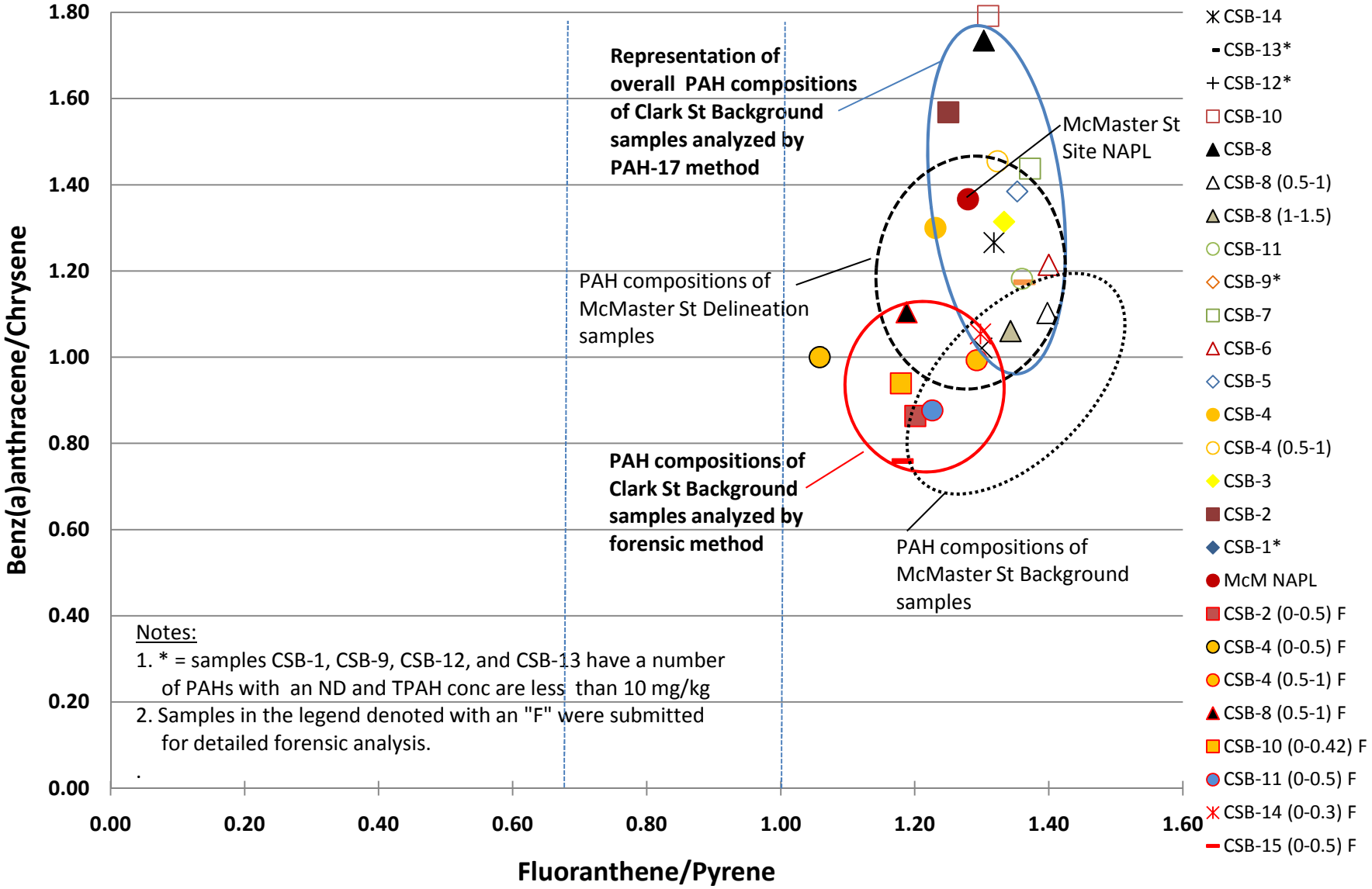


Figure 3. PAH Diagnostic Ratio Plot - Total PAHs vs Fl/Py
NYSEG Clark St Delineation Sediment

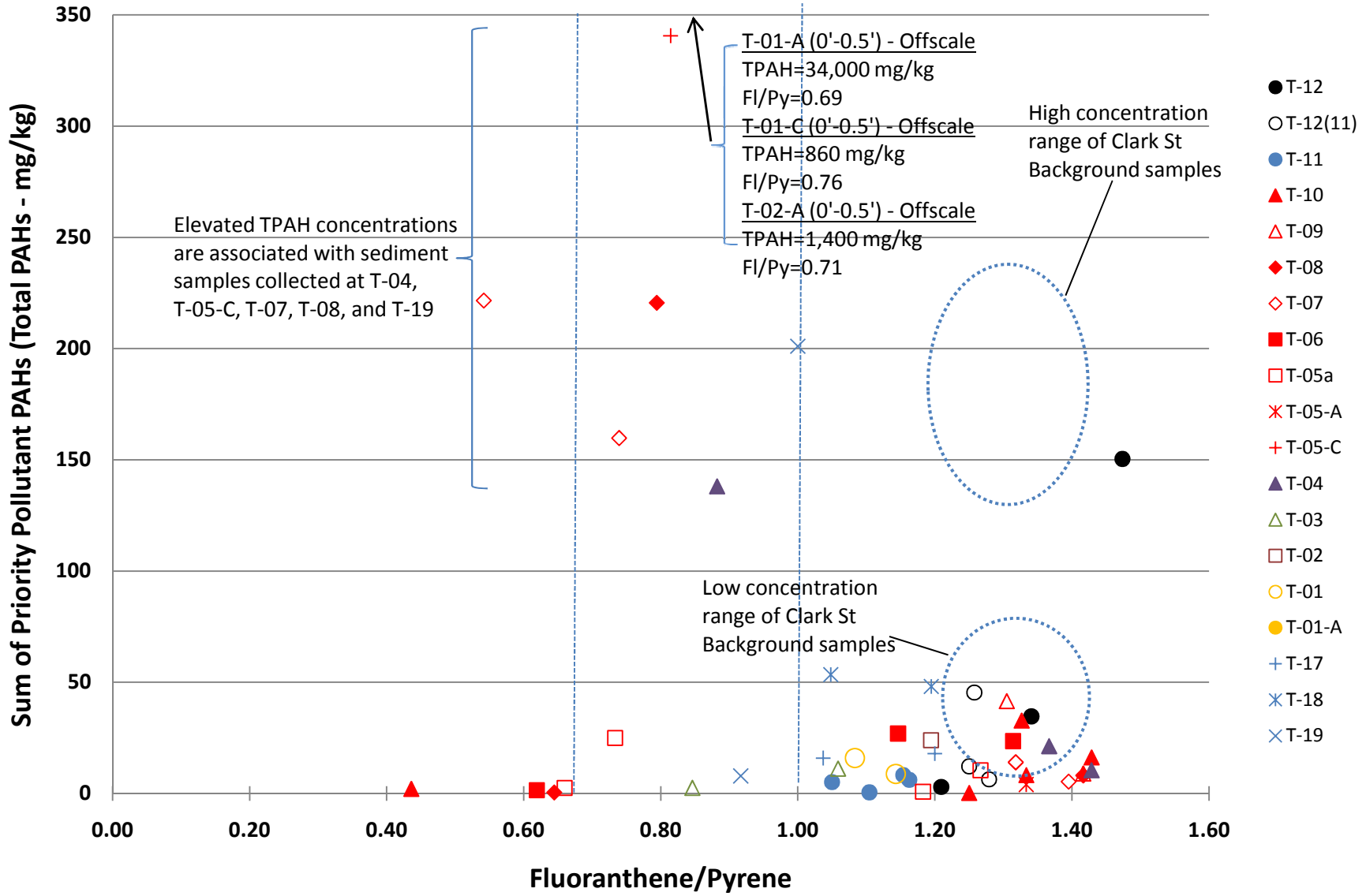
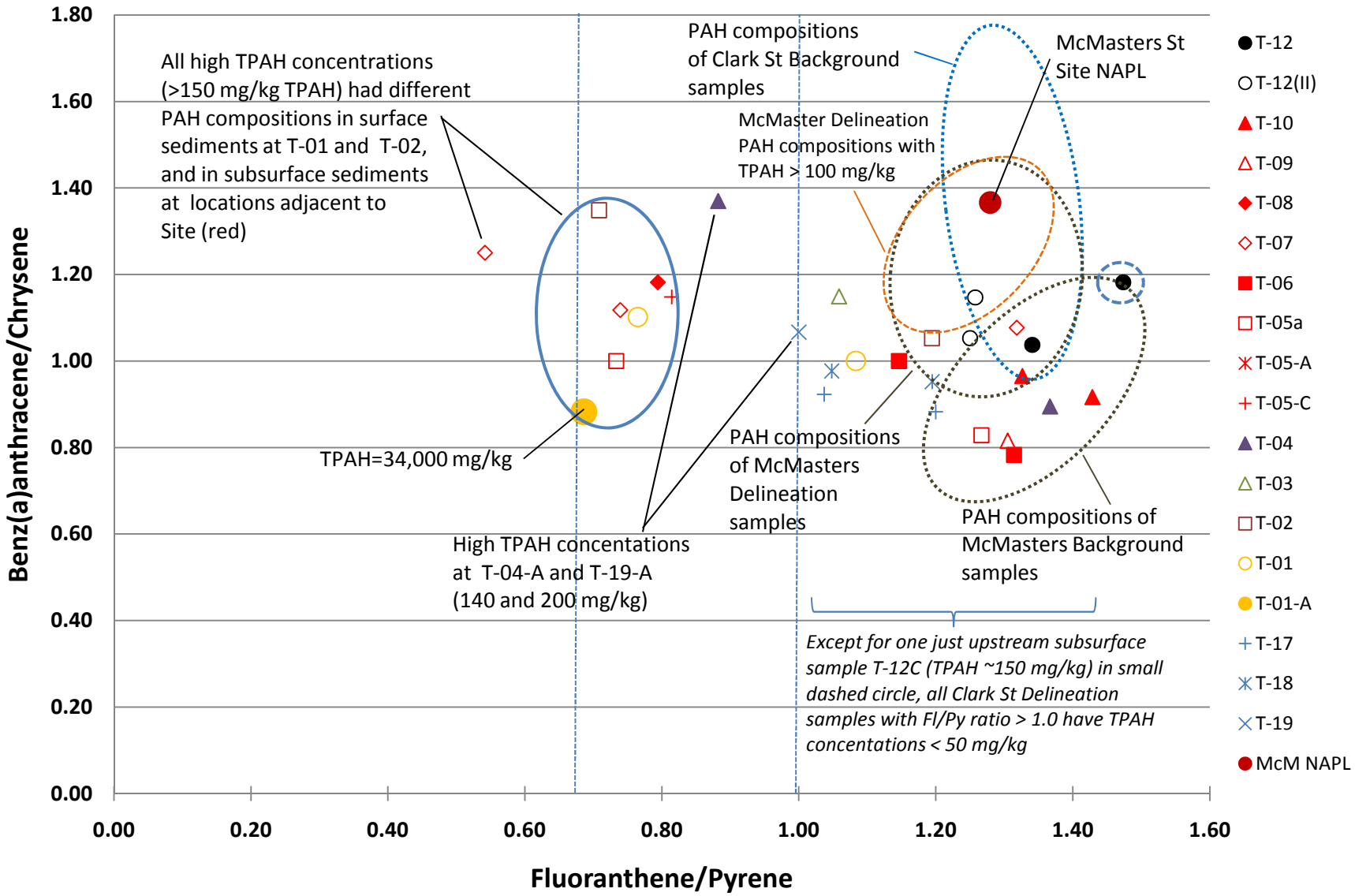


Figure 4. PAH Diagnostic Ratio Plot - BAA/C vs Fl/Py of Samples >10 mg/kg TPAH
NYSEG Clark St Delineation Sediment



ARCADIS

Attachment 3

Statistical Background
Calculation Sheet

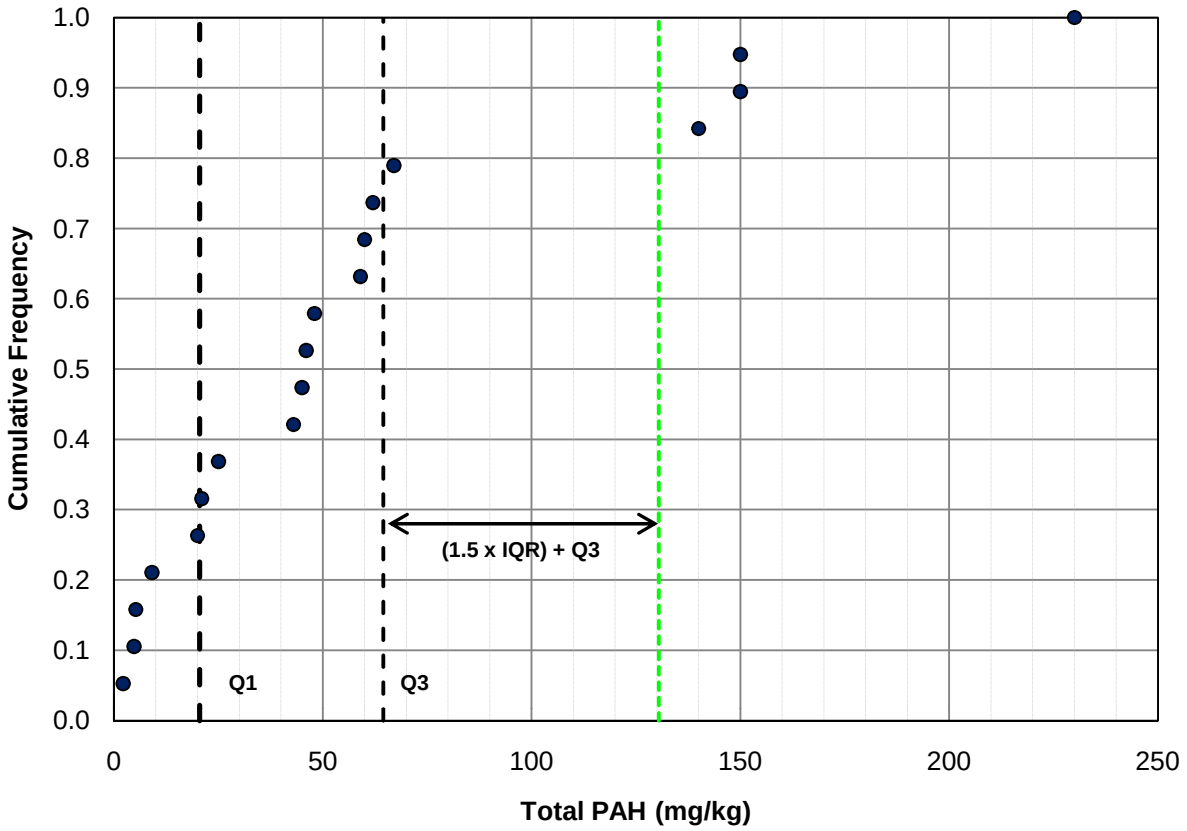
Attachment 3
Statistical Background Calculation Sheet

Sediment Pre-Design Investigation
NYSEG - Clark Street Former Manufactured Gas Plant Site - Auburn, New York

Quartile Calculations (mg/kg):

1st Quartile (Q1)	20.5
3rd Quartile (Q3)	64.5
Interquartile Range (IQR)	44.0

Note: Summary Statistics generated using USEPA ProUCL (v. 4.00.05) software (USEPA, 2010).



Suspected Statistical Outliers (mg/kg):

CSB-4	150 J
CSB-4	230
CSB-11	150 J
CSB-14	140 J

Suspected outliers identified as results greater than 1.5 times the IQR (1) over the Q3 or (2) under Q1.

Summary Statistics:

75th percentile (all data) = 64.5 mg/kg
90th percentile (suspected outliers removed) = 61.2 mg/kg