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Remedial Investigation Report

Former Williamsburg Works MGP Site

Brooklyn, New York

Order on Consent
Site No. 224055
Index No. A2-0552-0606

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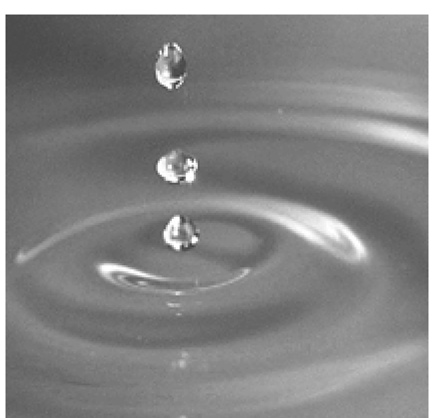

Qualified Environmental Professional's Certification

I, David B. Terry, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Report was prepared in accordance with applicable statues and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in accordance with the DER-approved work plans and DER-approved work plan modifications as discussed in this Report.

Date: January 31, 2015

David B. Terry, P.G., LEP
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Abbreviations and Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
AOC	Administrative Order on Consent
ASTM	ASTM International
BASE	Building Assessment and Survey Evaluation
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
BUG	Brooklyn Union Gas
CAMP	Community Air-Monitoring Plan
CBS	Chemical Bulk Storage
CC	Coal Carbonization
cm/s	Centimater per Second
COPCs	Contaminants of Potential Concern
CSM	Conceptual Site Model
CTC	Cost to Cure
CWG	Carbureted Water Gas
DNAPL	Dense Non-Aqueous Phase Liquid
DO	Dissolved Oxygen
EDR	Environmental Data Resources, Inc.
EEA	Energy and Environmental Analysts, Inc.
EFR	Enhanced Fluid Recovery
ESA	Environmental Site Assessment
FOIA	Freedom of Information Act
ft	feet
FWRIA	Fish and Wildlife Resources Impact Analysis
GEI	GEI Consultants, Inc.
GPR	Ground Penetrating Radar
GPS	Global Positioning System
HMW	High Molecular Weight
ID	Identification
ID	Inner Diameter
IDW	Investigation Derived Waste
IRM	Interim Remedial Measure
ISRP	Investigative Summary and Remedial Plan
LiRo	LiRo Engineers Inc.
LMW	Low Molecular Weight
LNAPL	Light Non-aqueous Phase Liquids
M&E	Metcalf and Eddy of New York, Inc.
MEK	2-Butanone
mg/kg	Milligrams per Kilogram
MGP	Manufactured Gas Plant
MOSF	Major Oil Storage Facility

MTBE	Methyl Tertiary Butyl Ether
NAPL	Non-aqueous Phase Liquids
NAVD	North American Vertical Datum
NGVD	National Geodetic Vertical Datum 1929
NWI	National Wetlands Inventory
NYC	New York City
NYCDDC	New York City Department of Design and Construction
NYCDGS	New York City Department of General Services
NYCDOS	New York City Department of Sanitation
NYSASP	New York State Analytical Services Protocol
NYSAWQS	New York State Ambient Water Quality Standards
NYSDEC	New York State Department of EnvironmentalConservation
NYSDOH	New York State Department of Health
NYLS	New York State Licensed Land Surveyor
ORC	Oxygen Release Compound
ORP	Oxidation-Reduction Potential
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PBS	Petroleum Bulk Storage
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethene
PDI	Pre-Design Investigation
PEL	Permissible Exposure Limit
PID	Photoionization Detector
ppm	Parts Per Million
PRP	Potentially Responsible Party
PSA	Preliminary Site Assessment
PVC	Polyvinyl Chloride
PWS	Public Water Supply
QA/QC	Quality Assurance/Quality Control
QHHEA	Qualitative Human Health Exposure Assessment
RCRA	Resource Conservation and Recovery
RES	Raritan Enviro Services, Inc.
RI	Remedial Investigation
RIWP	RI Work Plan
ROW	Right of Way
RSCOs	Recommended Soil Cleanup Objectives
Sanborn	Sanborn Fire Insurance
SCO	Soil Cleanup Objective
SCOPGQ	Soil Cleanup Objectives to Protect Groundwater Quality
SI	Site Investigation
SOCONY	Standard Oil Company of New York
SRI	Supplemental Remedial Investigation
SRIWP	SRI Work Plan
SSGVs	Saltwater Sediment Guidance Values

SVI	Soil Vapor Intrusion
SVOC	Semivolatile Organic Compound
STARS	Spill Technology and Remediation Series
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TBM	Tidal Benchmark
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TestAmerica	TestAmerica Laboratories
TGSCS	Technical Guidance for Screening Contaminated Sediments
TOC	Total Organic Carbon
TOGS	Technical and Operational Guidance Series
TPH	Total Petroleum Hydrocarbon
TPHC	Total Petroleum Hydrocarbon Content
TRC	TRC Environmental Corporation
TRPH	Total Recoverable Petroleum Hydrocarbon
UCM	Unresolved Complex Mixture
ug/L	Micrograms per Liter
URS	URS Corporation
USDOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

Executive Summary

On behalf of National Grid, GEI Consultants, Inc., P.C. (GEI) conducted a Remedial Investigation (RI) and prepared this RI report to describe environmental conditions at a portion of the former Williamsburg Works Manufactured Gas Plant (MGP) (the Site). National Grid is responsible for conducting the RI pertaining to the former MGP impacts because a subsidiary was formed by a merger that included the Williamsburg Gas Light Company, which constructed and initially operated the former Williamsburg Works MGP. The RI was conducted in accordance with an Order on Consent (AOC) and Administrative Settlement Index No. A2-0552-0606 between New York State Department of Environmental Conservation (NYSDEC) and The Brooklyn Union Gas Company (BUG) then d/b/a KeySpan Corporation and now d/b/a National Grid, and it was conducted in accordance with the NYSDEC-approved Remedial Investigation Work Plan (RIWP), RIWP Addenda, and Supplemental RIWP. Field activities were performed between June 2009 and December 2012.

The Site is located in the Williamsburg neighborhood of Brooklyn, New York and consists of four parcels (Parcels 1 through 4) located along North 12th and North 11th Streets, Kent Avenue and the East River (Figure 1). Two additional parcels located to the south (Parcel 5) and to the north (Parcel 6), have relevance to the RI, because of their historic use as a refinery (discussed below) and the extent of contamination associated with local industry.

The Site and adjacent properties are currently zoned for industrial use and have been part of an industrialized area of Brooklyn dating back to at least the mid-1800s. The former MGP extended from the East River to beyond Kent Avenue and was surrounded to the north (Parcel 6), northeast (25 Kent Avenue), and the south (Parcel 5) by the former Pratt Works Williamsburg site (aka Astral Oil Works). The Pratt Works refinery was originally constructed circa 1867, and eventually merged with Standard Oil Company of New York, which became Exxon Mobil. The former Pratt Works was one of the earliest and largest refinery facilities in New York and contained dozens of bulk petroleum storage tanks. Parcel 6 fronting on North 12th Street has been operated as a Major Oil Storage Facility (MOSF) until very recently. This property has been operated by Pratt Works, Exxon Mobil, Standard Oil, Bayside Fuel Oil, TransGas Energy Systems, Paragon Oil Co. a Division of Texaco, Inc., and Motiva. National Grid and NYSDEC are aware of substantial petroleum impacts located on the North 12th Street MOSF site (Parcel 6).

RI activities and prior and contemporary investigations have been completed on only two out of the four site parcels and the adjacent rights of way. As the following figure illustrates, and as summarized below, the parcels that have not yet been investigated represent data gaps for nature and extent of impacts and Conceptual Site Model (CSM) associated with the former MGP and impacts that are commingled from other historic sources as well as recent land uses that likely contributed to non-MGP impacts commingling with impacts related to the former MGP.

The investigation was conducted by GEI on the following parcels:

- Parcel 1 [Block 2288 Lot 1] consists of a warehouse building used as a photography studio.
- Parcel 2 [Block 2287 Lot 1] is currently an open paved property owned by New York City (NYC) and is used by the Department of Parks and Recreation as a parking lot and concert venue. Prior to its current use, NYC Department of Sanitation occupied the property, operated petroleum underground and aboveground storage tanks (USTs and ASTs), and performed remedial actions associated with releases from the tanks.
- Parcel 6 [Block 2277 Lot 1], located to the north of the former MGP footprint, is the former Pratt Works site and most recently a MOSF.
- RI evaluations have been performed in the rights-of-way of North 12th Street, North 11th Street, Kent Avenue, and Wythe Avenue.

The RI was also advised by investigation findings performed by others related to site redevelopment and pre-design investigations for the 50 Kent IRM.

In accordance with the approved RIWP, the following parcels were not investigated due to current use:

- Parcel 3 [Block 2287 Lot 16] and Parcel 4 [Block 2287 Lot 30] consist of warehouse buildings owned by CitiStorage and are used for document storage. Access for investigation was not secured from CitiStorage due to the use of the buildings.

The following parcel and area could not be investigated due to the current property uses:

- Parcel 5 [Block 2294 Lots 1 and 5], located to the south, was also part of the former Pratt Works, and is owned by CitiStorage.
- A portion of Parcel 6 [Block 2277 Lot 1] along the East River, located to the north of the former MGP footprint. This parcel was also part of the former Pratt Works site and was most recently a MOSF.

The former Williamsburg Works MGP manufactured and distributed gas for use by businesses and residences from circa 1850 until at least 1930. The Williamsburg Works MGP was dismantled sometime between 1935 and 1941, and the property was subsequently subdivided, sold to third parties by BUG, (now d/b/a National Grid). By 1946, portions of the Site had been redeveloped for industrial and commercial uses. Neither BUG nor National Grid has had control of the Site since 1947. Other historic property uses include a toluol plant constructed by the U.S. government during World War I and use by the U.S. Navy in 1945.

The RI evaluated the nature and extent of potential impacts from the accessible portions of the MGP, identified impacts associated with other sources including the former Pratt Works parcels, and evaluated the potential human health and ecological risks associated with the identified impacts.

Tar was a by-product of manufacturing gas and is a dense non-aqueous phase liquid (DNAPL), with a density generally greater than water. MGP-related tar and its chemical constituents were the primary focus of the RI. In addition to tar, environmental impacts related to oil storage, gas purification, and lead sources were evaluated as part of the RI. Materials from gas purification were not encountered during the RI.

The RI delineated the lateral and vertical extent of impacts associated with the former MGP within Parcels 1, 2, and a portion of Parcel 6, and the adjacent rights-of-way (Plate 2). Parcels 3, 4, and 5 have not been investigated because investigation was not possible at this time due to building use. DNAPL was encountered in subsurface soil within and around the gasholder foundations on Parcels 1 and 2. Tar appears to have migrated from the Parcel 2 source area vertically and laterally to the northwest through coarse-grained material to the extent described below.

The vertical extent of tar migration, as defined by the RI, appears to be limited by an underlying clay layer. Visible impacts were not observed below the clay layer during the RI.

The lateral extent of tar migration from the Parcel 2 source area has been defined to the north, extending to North 12th Street and onto the southern portion of Parcel 6, to the east, extending to Parcel 1, and to the south, extending to North 11th Street and onto the northern property boundary of Parcel 5. The former Pratt Works properties (Parcels 5 and 6 and 25 Kent Avenue) appear to be a source of tar and other impacts that have commingled with MGP-related impacts to the north and south. The extent of tar impacts on-site remains a data gap because Parcels 3 and 4 were not included in the RIWP for investigation at this time due to the current property use, as agreed to with NYSDEC during initial Site meetings. Tar impacts were commingled with petroleum-impacted soil and fill at depths from ground surface to greater than 40 feet. Petroleum impacts are likely associated with multiple sources including historic on-site fuel storage, off-site refining, fuel storage and distribution operations at the adjacent former Pratt Works (Parcels 5 and 6 and 25 Kent Avenue), oil use and storage during New York City Department of Sanitation (NYCDOS) operations, and placement of urban fill over the history of the Site. The extent of the petroleum impacts remains a data gap because Parcels 3, 4, (on-site) and 5 (off-site Pratt Works) have not been investigated yet.

The presence of additional non-MGP related chemicals including metals, solvents, pesticides, and polychlorinated biphenyls (PCBs) in soils on the Site and adjacent to the Site further confirm the presence and commingling of multiple sources of impacts that require further evaluation.

The lateral extent of impacts in sediments west of the Site was investigated and delineated to the satisfaction of NYSDEC. The source of the sediment impacts is not clear, however, and may relate to multiple releases from origins beyond the MGP, the former Pratt Works operations, and outfalls to the East River. Further forensic evaluation will be necessary to assess the contribution of sediment impacts associated with these potential sources.

Groundwater flows to the northwest toward the East River during both high and low tides. Groundwater moving through the soil impacts related to the MGP and non-MGP sources likely results in dissolved-phase benzene, toluene, ethylbenzene, xylene (BTEX) and low molecular weight polycyclic aromatic hydrocarbons (PAHs) discharge to the River. Any dissolved phase contaminants that may enter the East River are likely to be mitigated rapidly by processes of biodegradation, volatilization, and dilution. There are no drinking water wells within a quarter mile of the Site.

A qualitative assessment of human health exposures to contaminants of potential concern (COPCs) in all media at the area investigated determined that:

- There is limited potential for site users to come into contact with COPCs in excess of the screening values.

- Potential risk associated with surface soil impacts are similar to any urban area and are not related to former MGP operations.

- Greater risk may exist if future construction and utility workers potentially uncover soils and come into contact with impacted soil or groundwater. In these cases, appropriate impacted-material management methods are necessary.

- A complete exposure pathway for chlorinated and other non-MGP volatile organic compounds (VOCs) within indoor air at Parcel 1 was identified during the RI. These compounds are not related to MGP operations, but are related to recent use activities at Parcel 1. Trichloroethene (TCE), carbon tetrachloride, and tetrachloroethene (PCE) concentrations in the indoor air may require that reasonable and practical actions be taken to identify source(s) and reduce exposures by others according to New York State Department of Health (NYSDOH) soil vapor guidance. A complete exposure pathway for MGP-related VOCs was not identified within indoor air.

A Part 1 Fish and Wildlife Resource Impact Analysis (FWRIA) identified COPCs within subsurface soil and sediments of the area investigated. The FWRIA determined the potential risks to on-site and off-site terrestrial and aquatic receptors. Buildings and paved ground surfaces at the area investigated provide limited habitat for terrestrial wildlife receptors. However, the East River located west, and Bushwick Inlet located north to northeast of the area investigated, are significant ecological resources. They both provide habitat for a variety of aquatic flora and fauna, as well as semi-aquatic wildlife. BTEX, PAHs, PCBs, metals, and pesticides were identified as COPCs in surface sediments; the source of these COPCs requires further assessment. The Part 1 FWRIA indicates potential for adverse effects to fish and wildlife resources near the area investigated.

GEI, on behalf of National Grid, already has used the RI data and information in this report to develop a Pre-Design Investigation (PDI) Work Plan Parcel 2. The PDI work plan was approved by NYSDEC and has been implemented by URS Corporation on behalf of National Grid. The PDI generated data to support an Interim Remedial Measure (IRM). The RI findings will be used to guide potential future remedial decision making at other parcels as the property redevelopment uses are better understood.

The nature and extent of impacts has been adequately evaluated for Parcels 1, 2, and a portion of Parcel 6. The RI remains incomplete, however, because investigation at on-site Parcels 3 and 4 and a portion of Parcel 6 was not included in the RIWP because access was not possible at this time due to building use. Further investigation is also needed to determine the extent and contribution of impacts associated with off-site Parcels 5 and 6 (Pratt Works).

1. Introduction

On behalf of National Grid, GEI Consultants, Inc., P.C. (GEI) conducted a Remedial Investigation (RI) and prepared this RI report to describe environmental conditions at a portion of the former Williamsburg Works Manufactured Gas Plant (MGP) Site in Brooklyn, Kings County, New York (the Site). National Grid is responsible for conducting the RI of the former MGP because a subsidiary was formed by a merger that included the Williamsburg Gas Light Company, which constructed and initially operated the former Williamsburg Works MGP. This RI report describes the work performed in accordance with the approved RI Work Plans (RIWPs), the environmental conditions encountered, a description of nature and extent, and potential risks to human health and the environment at a portion of the Site.

In February 2007, The Brooklyn Union Gas Company (BUG) then d/b/a KeySpan Corporation and now National Grid and the New York State Department of Environmental Conservation (NYSDEC) entered into an Order on Consent (AOC) and Administrative Settlement Index No. A2-0552-0606(the Order) to evaluate environmental conditions at a number of sites. The former Williamsburg Works MGP was identified in Table 3 of the AOC; however, the Site was not covered under the Order. In August of 2007, there was a modification that added the former Williamsburg Works MGP to the Order. The former Williamsburg Works MGP is referenced as Site No. 224055 in the AOC and the NYSDEC's Environmental Site Remediation Database.

This RI was conducted pursuant to the executed modification to the AOC and administrative settlement. The RI was also conducted in accordance with applicable guidelines of the NYSDEC and the New York State Department of Health (NYSDOH) including:

- New York State Department of Environmental Conservation, *DER-10 Technical Guidance for Site Investigation and Remediation*. 2002 and updated 2010.
- New York State Department of Health. 2006. *Guidance for Evaluating Soil Vapor Intrusion in the State of New York.* October 2006.

Figure 1 shows the location and footprint of the former Williamsburg Works MGP. The former Williamsburg Works MGP was located in an industrial area along the East River and the former MGP occupies four current properties along North 12th and North 11th Streets, Kent Avenue, and the East River. As discussed below in Section 1.2.1, these properties are all owned by third-parties, including private entities and the City of New York.

GEI and GEI's subcontractors completed the RI field activities between June 2009 and December 2012. RI activities were completed in accordance with the NYSDEC-approved RI work plan, addenda, and Supplemental RI (SRI) work plan and are summarized below in Section 1.1. Work plans, work plan approval letters, and field change orders are provided in Appendix A.

1.1 Remedial Investigation Objectives and Scope

The purpose of the RI was to generate sufficient data to define the nature and extent of soil, groundwater, sub-slab vapor and/or sediment impacts resulting from the former Williamsburg Works MGP operations. The RI also uses the findings of the investigation to evaluate the potential risks to human health, and the environment through completion of a Qualitative Human Health Exposure Assessment (QHHEA) and a Part 1 Fish and Wildlife Resource Impact Analysis (FWRIA).

In order to achieve this purpose, several objectives were established, as follow:

- Identify and investigate potential historic MGP structures.
- Characterize the hydrogeology of the Site.
- Identify, quantify, and delineate MGP-related chemical impacts including volatile and semi-volatile organic compounds (VOCs and SVOCs, respectively) and inorganic compounds, such as cyanide; compare their concentrations to NYSDEC standards.
- Identify, quantify, and delineate non-aqueous phase liquid (NAPL) in subsurface soil and groundwater.
- Evaluate potential soil vapor intrusion of MGP-related compounds into modern on-site buildings.
- Evaluate the potential for off-site migration of MGP-related NAPL and chemical compounds.
- Complete a QHHEA to evaluate potential risk to humans.
- Complete a Part 1FWRIA to evaluate the potential for impacts to wildlife resources.

During the course of performing the RI fieldwork, impacts including petroleum-related odors, sheen, and staining in soil was encountered. These impacts are un-related to the MGP and attributed to sources including the former New York City Department of Sanitation (NYCDOS) garage at Parcel 2, and with Pratt Works, Exxon Mobil, Standard Oil Company of New York (SOCONY), TransGas Energy Systems, Paragon Oil Co. a Division of Texaco, Inc., Motiva, and Bayside Fuel Oil's operations adjacent to the Site. See Figure 2 showing the location of these historic petroleum facilities relative to the MGP parcels and petroleum plume locations identified by Metcalf and Eddy of New York during previous investigations.

In assessing the impacts related to the former Williamsburg Works MGP, GEI also reviewed and evaluated the findings of investigation activities conducted by others on and adjacent to the Site. These other investigations are identified and summarized in subsection 1.5. Where boring logs were available, soil classifications and visual impact observations are included in the Site-wide evaluation, completed as part of this RI. Pertinent portions of other investigation documents are included in Appendix B.

The Site location is depicted in Figure 1 and the Parcels included within the Site are shown in Figure 3. The former Williamsburg Works MGP property was subdivided and sold to third parties in the years following decommissioning and is now comprised of four properties that encompass approximately 5.7 acres. Three of the four properties are contiguous and collectively they are bordered by the East River, North 11th and North 12th Streets and Kent Avenue. The fourth Parcel is located on the southeast side of Kent Avenue between North 11th and North 12th Streets. Parcel IDs have been assigned to each property included in this RI for ease of reference throughout this report and shown in Figure 3. The Parcel IDs, addresses, and tax map information for these properties are listed below.

Parcel ID	Address	Current Owner	Block	Lot
Within Former Williamsburg Works MGP Footprint				
Parcel 1	35 Kent Avenue Brooklyn, NY	35 Kent Avenue, LLC	2288	1
Parcel 2	21 North 12th Street (50 Kent Avenue), Brooklyn, NY	Parks and Recreation	2287	1
Parcel 3	20 North 12th Street Brooklyn, NY	New 10th Street, LLC	2287	16
Parcel 4	2 North 11th Street Brooklyn, NY	New 10th Street, LLC	2287	30
Outside Former Williamsburg Works MGP Footprint				
Parcel 5	16 North 11th Street Brooklyn, NY	New 10th Street, LLC	2294	1
	33 North 10th Street Brooklyn, NY	New 10th Street, LLC	2294	5
Parcel 6	1-26 North 12th Street Brooklyn, NY	North 12th Street Properties, LLC	2277	1
Source: New York City Oasis Map http://www.oasisnyc.net/map.aspx accessed 7/28/2014				

The Site is located within a dense urban area of mixed commercial, industrial, and residential land use. Parcels 5 and 6, located adjacent to the former MGP footprint, to the north and south, respectively, have a long history of industrial activity including oil refining, storage, and distribution. The current Site conditions are shown in Plate 1 and are discussed in subsection 1.2.1.3.

1.1.1 Williamsburg Works MGP Site History

The history of the former Williamsburg Works MGP and surrounding area was developed through the review of selected historical maps, photographs, historic drawings from BUG, available Ordnance Department of the War Department files, available Sanborn Fire Insurance (Sanborn) maps, and information presented in previous reports. Historic structures and sample locations are shown in Plate 2. Select historical drawings, photographs, and Sanborn maps are included in Appendix C.

1.1.1.1 Pre-MGP Operational History

A 1766 map depicted the former marsh and shorelines surrounding the Site and Bushwick Creek (Appendix C). According to this map, the Creek extended to the east along North 14 and North 15 Street with the shoreline recessed to First Avenue (now Kent Avenue). As such, Parcels 1 and 2 were partially submerged and Parcels 3 and 4 comprised the shoreline and were likely continually flooded. An 1844 navigation map of the East River depicted a similar configuration of the historic shoreline and depth of water, referred to as Bushwick Inlet, over what was later developed into the Site. Sometime between 1849 and 1855, filling of approximately 20 feet, extended the land area westward into the East River. Over time, Bushwick Creek was filled and reshaped into what is now Bushwick Inlet.

1.1.1.2 MGP Operational History

The Williamsburg Gas Light Company was incorporated in 1850 (Murphy, 1995) and was the first known operator of the Williamsburg Works MGP. The Williamsburg Works MGP was first shown on the 1887 Sanborn map. At that time, the gas production facilities were isolated to Parcels 2, 3, and 4 and consisted of coal gas production facilities including a retort house, an engine room, a meter house, and a condenser house.

Gas storage and purification facilities included three gas holders, a governor house, a purifying house, two tar tanks, scrubbers and lime houses on the 1887 Sanborn map. These structures are shown in Plates 1 and 2. Two of the gasholders were identified as relief holders built in 1863 and 1868 with two lifts each, and had 315,000 and 306,000 cubic feet capacities in the 2009 New York State Archives document. The third gasholder, built in 1884, was constructed with three lifts, and had a 460,000 cubic feet capacity. All holders were constructed with subsurface brick tanks and concrete foundations. The three holders are identified as Relief Holder, Holder No. 1, and Holder No. 2, respectively, on the 1921 BUG drawing. In 1888, an additional holder was built at Parcel 1. It had a capacity of 1,100,000 cubic feet and three lifts. The holder was constructed with subsurface brick and a concrete foundation (New York State Archives, 2009). It was identified as Holder No. 3 on the 1921 BUG drawing.

In 1895, the Williamsburg Gas Light Company and several other Brooklyn gas manufacturing companies merged to form BUG. The 1905 Sanborn map indicated the former MGP was renamed the BUG Williamsburg Branch, and another shows an additional gas holder, identified in the 2009 New York Archives document as No. 3, located at Parcel 1 across Kent Avenue from the original three holders.

According to the 1905 Sanborn map, the gas production facilities at Parcel 4 remained relatively unchanged, since construction, with the exception of the addition of iron tanks and a pump house. One circular gas tank, a generator house, a condenser house, and exhauster houses were added at Parcel 3. The purifying houses were added at Parcel 4. Based on the addition of a generator house, it appears that conversion to carbureted water gas processes were underway.

The northeast corner of Parcel 2, along Kent Avenue, appears to be used for storage with several small sheds and buildings. One of the buildings is described as "DILAP'D" suggesting the building was in a dilapidated condition.

A 1908 BUG drawing shows an excavation plan for a pump house, settling tank, and oil separator to be built on the southern portion of Parcel 4. Two pipe oil conduits are shown running across the parcel, which apparently connect the Pratt Works facilities, adjacent to the north and south of the Site, to each other. Figure 2 shows historical non-MGP structures including the Pratt pipe oil conduits.

The Parcel 1 property originally contained six parcels; five of the smaller parcels were sold from the Brooklyn Union Gas Company to Richard S. Hager and Clara L Hager around 1910. The 1905 Sanborn map does not show evidence of MGP operation within the five smaller parcels; by 1916 the five small and 1 larger parcel making up Parcel 1 all appear to be used for MGP operations.

By 1916, the Sanborn indicates the former Williamsburg Works MGP continued water gas production as evidenced by the addition of generators and conversion of the retort house to a generator house at Parcel 3. A pump house and oil separator, similar to those shown in the 1908 BUG drawing, as well as two additional oil tanks and a tar slop tank are shown at Parcel 4. An additional tank was added on Parcel 1; the tank is identified as a gasometer on the Sanborn map and as a gas oil tank in a later 1921 BUG drawing (Plates 1 and 2).

The northeast corner of Parcel 2 was described in the 1916 Sanborn as used for "Contractor Storage. The former building described as "DILAP'D" had been removed. It does not appear this area of the property was used for former MGP activities. However, review of title search information for Parcel 2 did not indicate this area was ever a subdivided or a separate property. It is likely that portions of the property were owned or operated by multiple parties.

During World War I the United States government, acting through the Ordnance Department of the War Department, constructed a toluol manufacturing plant within the Williamsburg Works MGP property. The limits of the toluol manufacturing operations were not determined. Review of a title search performed on Parcel 2 indicated the United States of America owned this property from May 29, 1919 to October 31, 1921. These ownership dates post-date documented toluol operations as discussed below. Review of title search information for Parcels 1, 3, and 4 did not document ownership by the United States of America at any time during their history. However, these operations likely occurred on at least three of the four Site Parcels as discussed below.

Construction of the toluol plant began in April 19, 1918. Pipes and other service lines were installed during construction as described by the NYC Board of Estimate and Apportionment:

- Six pipelines under and along the northerly sidewalk of North 11th Street, between the East River and Kent Avenue and under and along the westerly sidewalk of Kent Avenue and North 11th Street.
- Sixteen pipelines under and across Kent Avenue, about midway between North 11th Street and North 12th Street. These pipelines were likely installed within Parcels 1 and 2.

The toluol plant began operations on October 8, 1918 and was discontinued shortly thereafter, between November 19 and 22, 1918. The toluol plant was rated to scrub 16,000 million cubic feet of water gas per day. The estimated annual pure toluol production was 407,000 gallons, however, given the short period of operation actual production was 39,829 gallons (see table below).

In addition to toluol, other petroleum distillates were produced as reported by the Ordnance Department structures likely associated with the toluol plant:

Month	Light Oil (Produced)	Crude Benzol (Produced)	Crude Toluol (Produced)	Solvent Naphtha (Produced)
October	94,881	17,806	8,706	2,875
November	106,625	54,127	31,121	39,658
Total	201,406	71,933	39,829	42,553

The toluol plant included the following equipment and operations:

- A gas scrubbing system with two benzol vaporizers and one catch scrubber for gas enrichment.
- A wash oil stripping system with two wash-oil stills and two light-oil stills.

- A light-oil fractioning system with two crude still tanks, two rectifying columns, two dephlegamators, and two crude coolers.
- Storage capacity of four 40,000 gallon and five 20,000-gallon vertical steel tanks.

The toluol equipment layout and operational boundaries were not available as part of this review. However, a BUG drawing, dated July 27th, 1921, suggested remnants of the equipment remained nearly three years after the operations ceased. The following features in the 1921 BUG drawing appear to from the toluol plant.

- Two scrubbers and a catch scrubber to the east of North 11th Street between the East River and Kent Avenue (Parcel 3). The drawing indicated these scrubbers were not in use. The number and type of scrubbers matches those used in the former toluol operation.
- A still house, with the note "Apparatus Dismantled", was located on the northeast corner of Parcel 2. The still house was located in the area of Parcel 2 that did not appear to be used for former MGP activities in previous Sanborn maps. This still house may have been used to house the wash oil and light-oil fractioning stills.
- Five tanks within two tank pits were located in the eastern and western corners of Parcel 1. The tank number and sizes are consistent with the 20,000-gallon vertical tanks described in the toluol operations. This tank configuration is also consistent with surveys review of other nearby toluol operations (Ordnance Department, unknown year).
- The pipelines and former toluol structures noted, suggest the former toluol operations extended to at least Parcels 1 through 3 and possibly onto Parcel 4.

Also, a survey made for Chemical Equipment Corporation dated September 10th, 1920 showed a tank and 3-story iron structure on Parcel 2 near the corner of N. 12th Street and Kent Avenue.

From 1920-1930, based on data for the available years, annual Williamsburg Works MGP continued to produce millions of cubic feet of gas:

Year	Gas Production (million cubic feet)
1920	6.7
1925	5.2
1926	6.0
1927	5.7
1928	3.4
1929	2.2
1930	2.0
1935	Used as standby

Gas production information was not available for the Williamsburg Works MGP before 1920, between 1931 and 1934, and after 1935. The MGP was likely decommissioned after BUG switched to a consolidated manufacturing approach in the 1920s.

The Williamsburg Works MGP ceased operation and the MGP structures were dismantled prior to 1941, as evidenced by the vacant lots shown in the 1941 Sanborn map.

A summary of former use information is provided in the table below.

Parcel ID	Property Information	Former Gas Plant Use
Parcel 1	35 Kent Avenue [Block 2288, Lot 1]	Holder No. 3, Tank No. 12-a gas oil tank, a coal bin, a storage shed, and pipelines and five 20,000-gallon vertical steel tanks within two tank pits associated with the toluol plant
Parcel 2	21 North 12th Street (50 Kent Avenue) [Block 2287, Lot 1]	Holder No. 1, Holder No. 2, a Relief Holder, purifying, condenser, exhauster, lime, and meter houses, salt water condensers, storage sheds, storage buildings, and pipelines and a still house associated with the toluol plant
Parcel 3	20 North 12th Street [Block 2287, Lot 16]	One circular iron gas tank, generator, condenser, and exhauster houses, a retort house, an engine room, an oil separator, office and storage space, blacksmith, paint, machine and carpentry shops, and pipelines, two banzol vaporizers and a catch scrubber for gas enrichment associated with the toluol plant
Parcel 4	2 North 11th Street [Block 2287, Lot 30]	Coal shed, iron and wooden tar tanks, (3) gas oil tanks (4) tar tanks, an oil separator, purifying houses, a tar slop tank, and pump house

1.1.1.3 Post-MGP Operation

Subsequent to dismantlement, the former Williamsburg Works MGP property was subdivided and redeveloped for commercial, industrial and manufacturing uses. A brief history of the post-MGP use was developed from available BUG and Sanborn maps and is presented below by Site-specific Parcel IDs and tax lot. All of these properties are currently owned by third parties.

BUG drawing 1G122 dated June 23, 1909 and retraced October 5, 1939 includes hand written notes indicating Block 2287 (Parcels 2 through 4) was leased by the United States Navy beginning on July 1, 1945, with permission to stay until June 30, 1946 or six months after the end of the war. The same lease was noted for Block 2288 (Parcel 1), with a cancelation of the lease in June of 1946. Title searches for former MGP Parcels 1 through 4 did not indicate purchase of property by the United States Government between 1945 and 1946. The use and activity at the Site, if any, by the United States Navy is unknown. The Parcels were then under contract of sale in May 1946 with the condition that a railroad connection could be extended to the property. The connection was unable to be made and the contract was canceled as noted in the 1946 BUG drawing, which is included in Appendix C.

A July 1946 BUG drawing, 1G122, retraced July 16, 1946, which includes subsequent hand notes, indicates that modern-day Block 2287 Lot 1 (Parcel 2) was sold on January 30,1946, and that modern-day Block 2287 Lots Lot 16 and 30 (Parcels 3 and 4 respectively) were under contract for expected closing sale by February 1947. Block 2288 Lot 1 (Parcel 1) was sold on May 27, but the year is not legible.

- Parcel 1 [Block 2288 Lot 1]: The larger parcel within Parcel 1, still owned by BUG, was sold to Jerome Zirinsky in 1948. According to Sanborn maps, the property was developed as a beverage warehouse and garage in 1951 and had a gasoline storage tank. Subsequent Sanborn maps, 1965, 1978, and 1979 indicated the property use as a garage. Mr. Zirinsky was involved in property ownership until 1979 when the property was sold to NYC Industrial Development Agency. Colonial Mirror and Glass Corp. purchased the property on May 7, 1996. Colonial Mirror and Glass Corp. formerly operated a garage at the property. January 7, 2002 Colonial Mirror and Glass Corp. sold the property to George and Abe Weiner, aka, Abraham individually and as trustees of the Colonial trust. In August of 2013 Amazon opened a photography studio at the property.

- Parcel 2 [Block 2287 Lot 1]: Brooklyn Union Gas Company sold the property to Kent Industrial Corp. on July 22, 1946. A warehouse/industrial building was constructed by 1951 and was occupied by the Ferro-Co. Corp. for sheet metal product manufacturing. By 1965, the building was occupied by Commercial Corrugated Container Corp. On June 2, 1971, the property was owned by American Sandfill and Marine Corp. By 1978, the property was occupied by a New York City Department of Sanitation garage, which occupied the property until February 2009 when the building was demolished. The Parcel is currently a vacant, fenced lot used by the

New York City Department of Parks and Recreation as a parking lot and an outdoor concert space during the summer.

- Parcel 3 [Block 2287 Lot 16]: The property was sold by the Brooklyn Union Gas Company to Havemeyer and Elder Inc. on January 31, 1947. Again, the property was purchased possibly to extend the Brooklyn Eastern District Terminal operations. Paragon Oil Co. Inc. purchased the property from the Brooklyn Eastern District Terminal on August 14, 1958. The 1965 Sanborn depicts two railroad spurs, a repair shop, office, scale, and scrap metal storage on the property. By 1978, the property and buildings were vacant except for the office. Texaco Inc. sold the property to Bridge Lumber Co. Inc. on May 24, 1982 which then sold the property to the New York City Industrial Development Agency on October 5, 1982. In 1983, the buildings were demolished and the property was used for parking. In March 26, 1987, the property was repurchased by the Bridge Lumber Co. Inc. which sold it to the R.A.R Realty Corp. on the same day. The current warehouse building was constructed in 1985 and used for lumber storage from 1988 until 1995 according to Sanborn maps. An underground storage tank (UST), used as an oil/water separator for rainwater runoff from delivery trucks by the lumber company, was identified beneath the floor of the building in a 1998 Phase I EAS conducted by EEA (later discussed in subsection 1.5.1.3). CitiStorage currently uses the building for document storage.

- Parcel 4 [Block 2287 Lot 30]: According to the title search, the property was sold from the Brooklyn Union Gas Company to Havemeyer and Elder Inc. on January 31, 1947. Havemeyer& Elder purchased multiple properties along the East River to expand their railroad terminal, the Brooklyn Eastern District Terminal. The 1965 Sanborn figure depicted three railroad spurs extending into the property from the west. Brooklyn Eastern District Terminal sold the property to Paragon Oil Company Inc. on August 14, 1958. The Sanborn maps depict oil truck parking operations occurred from approximately 1978 until 1982. Texaco Inc. sold the property to The Bridge Lumber Company Inc. on May 24, 1982. The current warehouse building was constructed in 1985, and used for lumber storage from 1988 until 1995 according to Sanborn maps. CitiStorage currently uses the building for offices and document storage.

1.1.2 Non-MGP Parcel Histories

The history of the properties surrounding the former Williamsburg Works MGP is important to understanding the environment at the Site. A brief history of the surrounding area was developed through the review of selected historical maps, photographs, historic drawings from BUG, available Sanborn maps, and information presented in previous reports. Select historical drawings, photographs, and Sanborn maps are included in Appendix C.

1.1.2.1 Parcel 5

Parcel 5, located to the south of the former MGP footprint (Block 2294 Lots 1 and 5) contained historic manufacturing and oil operations. Pratt Manufacturing occupied the property in 1887 (Sanborn map), with the exception of a row of residential buildings along Kent Avenue. A large section in the center of the property noted the storage of oil in barrels.

On the 1905 Sanborn map, SOCONY appeared to operate along the eastern side of the property, Pratt Works appeared to operate in the central portion, and the residential buildings were still present along Kent Avenue. SOCONY and Pratt Works (acquired by SOCONY in 1874) both performed oil refining operations (Tarbell, 1904) (Explosion, 1880). The SOCONY portion contained 11 tanks marked as refined oil storage and one unmarked iron tank. The Pratt Works portion of the property noted barrel storage and shipping, as well as barrel printing and storage.

SOCONY and Pratt Works continued to occupy the property in the 1916 Sanborn map. By then, the unmarked iron tank was removed and four more oil storage tanks were present. The storage capacity of the six of the refined oil tanks were provided and ranged from 14,000 to 375 petroleum barrels (BBLS).

The 1941 Sanborn indicates the property was occupied by the Brooklyn Eastern District Terminal as a rail-marine terminal. The 1941 Sanborn indicates the oil storage tanks, depicted in the 1916 Sanborn, have been removed. The Brooklyn Eastern District Terminal sill occupied multiple properties for railroad transmission to the west along the East River. The property was used primarily for bulk flour storage. This replaced the cooperage, coal pockets, and refinery previously on the property. The map provided building construction dates ranging from 1912 to 1921. The former SOCONY and Pratt Works tanks have been removed. One chemical storage building was depicted to the southwest of the property along North 10th Street.

Property operations remained very similar as depicted in the 1982 Sanborn map. One exception was the additional railroad lines and spurs through the northern portion of the property into the former Williamsburg MGP property. Additional buildings were constructed to the north, adjacent to the railroad spurs, for lockers and general storage.

1.1.2.2 Parcel 6

Parcel 6 located north of the MGP footprint at Block 2277 Lot 1 has also been used for manufacturing, as a refinery, and as an oil terminal. Until recently, the property was used as an oil storage facility. This property has been operated by Pratt Works, SOCONY, Exxon Mobil, Paragon Oil Co. (a Division of Texaco, Inc.), Bayside Fuel Oil, TransGas Energy

Systems, and Motiva. The property currently contains multiple tenants and is used for truck parking and rental studios.

Charles Pratt and Company began operations at the Astral Oil Works, a kerosene refinery, in 1867 (Wilson, 1918). The refinery was located between N. 12th Street, 1st Avenue (now Kent Avenue), the East River and Newtown Creek (Explosion, 1880). Around 1875, barges delivered feedstock oil to the plant where it was pumped through pipes and into receiving tanks. The oil was then distilled leaving a solid residue byproduct (Forbes 1959). By 1872, the Astral Oil Works was rated at a capacity of 1,500 barrels of oil per day, making it one of the three largest oil companies around Manhattan. Astral Oil Works became part of the Standard Oil Trust in 1874 (Tarbell, 1904) (Explosion, 1880). Circa 1883, oil was also delivered to the facility via pipeline from the Standard Oil Works on Newtown Creek (Brooklyn Daily Eagle, 1883).

The Astral Oil Works had the rated capacity of a daily output of illuminating oils in excess of 1,100 barrels, or about 1,200 barrels of refined oils of all kinds, including naphthas. The process used four horizontal cylindrical stills surrounded by brick masonry each charging 830 barrels. A flow chart of the operations is provided in Appendix C. According to this graphic, the process yielded approximately 1.5 percent gasoline, 1 percent naphthas, and 66 percent kerosene in the form of either the highly refined "Astra" illuminating oil or ordinary grade illuminating oil. Acids and caustics were added to remove the impurities following the distillation. Six additional small, horizontal cylindrical stills also took charges of 50 barrels each. In addition, Pratt used several small steam stills which were used exclusively to refine gasoline and naphthas (Williamson et al, 1959).

The 1887 Sanborn map identifies the use of the property by Pratt Manufacturing. The northwestern section of the property was used primarily for manufacturing tin cans, boxes and barrels. The southeastern portion of the property contained the majority of the oil refining operations. There were several tanks depicted on the property, including: five labeled as tar tanks, others labeled as gasoline, oil, and others without labels. The five tar tanks include: three round tanks and one rectangular tank in the center of the property, and one round tank in the southeast corner of the property, near the intersection of North 12th Street and Kent Avenue. The purpose of storing tar on the property is unclear. Depending on oil prices, plants were known to alternate between the use of coal and crude petroleum as feed stocks (Gesner 1865). This coal distillation process is very similar to the MGP coal carbonization process, and the tar produced from both processes would be chemically similar (Scientific American 1974). The tar tanks may have been used as a result of coal distillation or as fuel to heat the boilers. Coal trestles from the east and west and south lead to a coal bin located in the center of the property. Coal was also the source of heat for the refining process. The property across the street from Kent Avenue, identified as Block 2282, Lot 1 is also owned and operated by Pratt Manufacturing.

Several additional tanks were shown in the 1905 Sanborn map with the caption SOCONY. The round tar tank in the southeast corner and the rectangular tar tank in the center of the property formerly shown in the 1887 map were no longer depicted. The remaining three tanks formerly labeled as tar were labeled as metal clad and metal lined on wood frame tanks, without indication of their contents. There were six iron tanks containing naphtha at the corner of N. 12 Street and Kent Avenue. The coal trestle which extended from the north and south of the property in the 1887 Sanborn map was replaced with a coal bin with two large coal piles in the center of the property. A 16-foot-wide underground tunnel approved for construction in 1882 connects Parcel 6 with the property across Kent Avenue. The tunnel was used to contain pipes for the conveyance of oil, steam, water, foam, etc. between the properties (City of New York, 1921).

Multiple newspaper articles dated between 1871 and 1910 document the occurrence of several fires at the plant that resulted in burning of tar and oil tanks and releases of product to the environment. On one occasion, the entire property was destroyed. The NY Times 1873 article titled “Great Fire” references constant bursting of stills with flames and sparks drifting toward the gas works facility. The New York Times Article published on May 10, 1910 documents several explosions followed by a catastrophic fire within the canning and filling building located on the western portion of the parcel, near the East River. Another article cites drainage from the SOCONY as the source of fire on Bushwick Creek (New York Times, 1909).

The 1941 Sanborn map indicates the property was used by SOCONY and Pratt Works. Industrial property use was reduced with the construction of buildings used for office space, a restaurant, club house, and automobile storage. The former stills located along the southeast corner of the property were no longer depicted. The majority of tanks were located in the center of the property with no description of their contents.

The 1951 Sanborn map depict similar property use as the 1941 Sanborn. However, the phrase, “not in use,” was noted above the SOCONY name. A 1954 aerial photograph confirmed the removal of the refining stills and equipment located in the southeastern portion of property.

The 1965 Sanborn maps depicted a substantial change in property structures and ownership. The property was used by Paragon Oil Company Division of Texaco Inc. and all but one formerly existing building appears to have been removed as well as all the former tanks. Ten new tanks were shown:

- Four 500,000 gallon tanks for gasoline,
- One 212,000-gallon tank for kerosene,
- One 1,050,000-gallon tank for No. 2 fuel oil,

- One 840,000-gallon tank for No. 4 fuel oil,
- Two 212,000 gallon tanks for diesel oil, and
- One 1,206,000-gallon tank for No. 6 fuel oil.

A truck loading area is shown on the eastern portion of the property.

The 1978 Sanborn map notes the addition of a garage on the eastern portion of the property. Structures appear to be similar to the current property layout. Property conditions remain unchanged through the 1982 Sanborn map. Sometime after 1982, the property was converted for use by Bayside Fuel. The ten tanks and truck loading area are currently present and were in use through 2011, until Bayside Fuel began dismantlement. The NYSDEC Bulk Storage Database lists Bayside Fuel as Major Oil Storage Facility (MOSF) Site Number 2-1240. The site status is currently listed as active with an expiration date of 03/31/2015. Bayside Fuel is also listed as Chemical Bulk Storage (CBS) with site number 2-000222, which expired on 02/08/2004.

Currently a building located south of the tanks, which remained through the property transformation, was used as office and warehouse storage space for Bayside Fuel and the upper floors rented out as studio space. The garage is still active on the eastern portion of the property. Bayside Fuel operations are in the process of being dismantled.

This history of this property for a variety of oil-related industries and manufacturing processes indicates it is a potential additional NAPL source area. Additional information on the environmental conditions at this property is discussed in subsections 1.4.2 and 1.5.

Chemical data analysis of soil, sediment, and NAPL samples was conducted by Exponent to provide an understating of the distribution, concentrations, and potential sources of contamination within the areas sampled. Their findings and conclusions are described in a report provided in Appendix D.

1.2 Physical and Environmental Setting

The Site is located within a heavily developed industrial/commercial setting. Parcel 1 includes one brick warehouse building, Parcel 2 is primarily covered with bituminous asphalt and a concrete slab foundation from the former Department of Sanitation building, and Parcels 3 and 4 include two concrete warehouse style buildings.

The topography and surface water drainage pathways for the Site are shown in Figure 1. The Site is relatively flat with a subtle downward slope to the northwest, the southeastern portion of the Site being the topographic high point. Topographic elevations across the Site range from approximately 21 feet North American Vertical Datum (NAVD) to 4 feet NAVD. The East River is located adjacent to the western boundary of the Site.

Storm water runoff drains into the sewers in the streets surrounding the Site.

1.2.1 Regional Geology

Beneath the RI study area, the following geologic materials are present in stratigraphic order (from deepest to shallowest):

- Bedrock (Fordham Gneiss)
- Glacial deposits (glacial till, glacial outwash, glacial lacustrine [lake])
- Alluvial deposits
- Fill

A detailed discussion of the site-specific geology and hydrogeologic findings is presented in Section 3 of this report. The sections below discuss the regional geology and hydrogeology so that the reader can gain an understanding of how the Site fits into the regional geologic framework. The following discussion of regional geology is presented in stratigraphic order, that is, from the deepest geologic unit to the shallowest.

Bedrock encountered beneath the Site is the Fordham Gneiss, which is described as a metamorphosed, medium- to coarse-grained igneous rock unit of Precambrian Age (Brock and Brock, 2001). Regional down-warping of bedrock beneath the Site and the vicinity has resulted in a southeast-dipping bedrock surface of approximately 80 feet per mile (United States Environmental Protection Agency [USEPA], 1983 and Cartwright, 2002). Bedrock elevations within the vicinity of the Site are approximately -100 feet National Geodetic Vertical Datum 1929, according to Buxton et. al. (1981). Bedrock was not encountered in RI borings. However, bedrock was encountered at 99 feet [-87.27 feet NAVD] in URS boring WW-SB-102 completed at Parcel 2, installed as part of their pre-design investigation (PDI) (URS, 2013).

The Upper Pleistocene glacial deposits overlie the Fordham Gneiss near the Site. Glacial deposits in the vicinity of the Site consist of terminal moraine and ground moraine deposits, which consist of poorly sorted mixtures of clay, silt, sand, gravel, and boulders, and glacio-fluvial outwash deposits consisting of moderately to well-sorted sands and gravels and typically range in thickness between 100 and 200 feet (Cartwright, 2002).

Holocene age marsh deposits consist of sand, silt, organic material along stream channels and marshes, and have a maximum thickness of 50 feet within limited areas of Kings and Queens County (Busciolano, 2002). Organic clays and peats are found along the East River and Bushwick Inlet.

Fill is defined as soil or rock used to raise the surface of the ground (Lauber, 2014). Fill, dating from as early as the mid-1800s, has been reworked to the current grades.

1.2.2 Regional Hydrogeology

Four regional groundwater aquifers are present in the Long Island area in order of increasing depth:

- The Upper Glacial Aquifer consisting of Upper Pleistocene glacial deposits. Localized Holocene marsh and alluvial deposits (including clayey and silty deposits) and fill. These materials are typically less permeable than the underlying aquifers and may create locally confined conditions (Busciolano, 2002).
- The Jameco Aquifer consisting of the Jameco gravel.
- The Magothy Aquifer consisting of the Late Cretaceous Magothy Formation and Matawan Group deltaic deposits.
- The Lloyd Aquifer consisting of the Lloyd Sand Member.

The Lloyd Aquifer, the Magothy Aquifer, and the Jameco Aquifer do not extend northward and westward to the Site and its vicinity (Busciolano, et al., 1998 and Busciolano, 2002). As such, discussion of the regional hydrogeologic units focuses on the Upper Glacial Aquifer and the confining unit that bounds it.

The Upper Glacial Aquifer is generally unconfined; however, it can be locally confined by the presence of silt and clay layers within moraine deposits. Groundwater within the Upper Glacial Aquifer flows west to southwest towards the Upper New York Harbor. The horizontal hydraulic conductivity of glacial outwash deposits of the Upper Glacial Aquifer on Long Island was calculated at 270 feet per day [9.5×10^{-2} centimeters per second (cm/s)] (Cartwright, 2002) and are likely retarded to 135 feet per day (4.4×10^{-2} cm/s) in localized poorly-sorted moraine deposits (Cartwright, 2002).

Glaciolacustrine clay acts as a hydrologic confining unit where it is present in the Upper Glacial Aquifer deposits. This clay deposit consists of a cohesive, dense, red to brown to gray, clay with varying amounts of fine sand with varves of silt and fine sand. Similar deposits present within New York Harbor are described by Meguerian (2003).

1.2.3 Regional Water Use

Potable water is currently provided to the Site and surrounding area by the New York City Water Supply System. The water supply is transported by a series of aqueducts from interconnected watershed areas, the Catskill/Delaware Watersheds and Croton Watershed, located 50 to 125 miles north of New York City. According to Cartwright (2002), the use of groundwater for public supply in Brooklyn was discontinued 1947.

An environmental database search for available federal and state well data within the vicinity of the Site was performed by Environmental Data Resources (EDR), Inc. The EDR report identified that there is one public water supply well (PWS ID: NY0007257) within a 1-mile radius of the Site. The well is located to the south-southeast, up gradient of the Site, near the intersection of Metropolitan Ave. and N. 6th Street in Brooklyn. A search of the United States Geological Survey (USGS) National Water Inventory System listed twenty-one wells within a 1-mile radius of the Site. None of the identified wells are within ¼ mile of the Site. The full EDR report is included in Appendix E.

1.3 Environmental Records

The record search report for the former Williamsburg Works MGP included the review or evaluation of the following:

- For potential releases on Site, GEI reviewed the NYSDEC's:
    - On-line Spills Incidents Database Search,
    - Environmental Remediation Database Search, and
    - Bulk Storage Database Search

- For environmental data, potential hazardous waste storage, and potentially responsible parties (PRPs), GEI relied upon information from:
    - EDR, a commercially available environmental database, searched January 15, 2008, and
    - Available Sanborn maps dated 1887 through 1996.

EDR environmental database searches and Sanborn maps are attached in Appendices C and E.

A Freedom of Information Act (FOIA) request letter was submitted to the NYSDEC to obtain environmental records for the subject property and abutting properties. NYSDEC provided correspondence and spill report information pertaining to the adjacent Parcel 6 (Site V00587) in response to the FOIA request. No information pertaining to the former Williamsburg Works MGP and the other adjacent non-MGP parcels was provided.

Figure 4 presents a summary of the environmental records search information.

1.3.1 Former Williamsburg Works MGP Parcels

The NYSDEC Environmental Site Remediation Database lists Williamsburg Works (Site Code: 224055) within the State Superfund Program as a Class A site, which indicates that a remedial program is underway but not yet complete. Three spill indents were listed for Parcel 2 between 1978 and present. The spill incidents indicate that diesel was spilled at

Parcel 2 multiple times due to equipment failure, tank failure, and housekeeping in 1994 and 1996. Gasoline was also spilled as a result of the tank failure in 1996. In these three spill instances, Brooklyn North 01 DOS-DDC is listed as the spill name. There is a petroleum spill reported at Parcel 3, although the quantity was unknown/not reported. No other spill incident records were found by GEI for the Parcels comprising the former Williamsburg Works MGP.

The former NYCDOS District 1 Garage was a petroleum bulk storage (PBS) facility (Site number 2-456098), according to the NYSDEC Bulk Storage Database. The PBS license expired May 17, 2010. Tank information from New York City (NYC) lists three underground and nine above ground tanks, all with a closed status. One 2,000-gallon gasoline underground tank (number 003) is listed as closed in place, the 11 other tanks are listed as removed.

The EDR environmental records report documents three underground storage tanks on Parcel 2 (Figure 2). Two, 2,000-gallon diesel underground storage tanks (USTs) were closed and removed in 1997 and one, 2,000-gasoline UST was closed in place in 1995. The property was occupied by a NYCDOS garage during the time of tank closures.

1.3.2 Non-MGP Parcels

Multiple spill incidents were reviewed for streets and properties adjacent to and within one block of the former Williamsburg Works MGP.

Four spills have been reported at Parcel 6 which is located to the north of the site across North 12th Street. Three of the spills at Parcel 6 report coal tar pitch volatiles as one of the materials spilled. Gasoline, methyl tertiary butyl ether (MTBE), and creosote were also reported as materials spilled. All reports have a closed status.

The EDR radius report references oil spill stipulation (Spill No. 9804544) at Parcel 6 which is also included in the NYSDEC spills database search.

There is one open spill adjacent to the former MGP footprint, spill number 0203699, at a manhole and a transformer vault on the south side of N. 12th Street between Kent Avenue and the East River. Over 400 gallons of unknown oil was observed in the manhole on July 8, 2002. The EDR spill report states this material is possibly No. 6 fuel oil from a Consolidated Edison fuel line spill in 1992. The manhole and transformer vault were steam cleaned and double washed by Clean Harbors on July 9, 2002. Inspections following cleaning noted oil leaking from the wall and ceiling seams. Lab analysis indicates the substance is similar to a degraded mixture of light and heavy fuel oil. Notes in the report state the structures were initially impacted by a leak in Pipeline #7 at the corner of Kent Avenue and North 12th Street with a heavy fuel oil ID from the structure.

1.4 Other Environmental Investigations

Previous environmental investigations have been conducted at and adjacent to the Site. Approximate on-site sample locations from previous investigations are shown in Plates 1 and 2. The reports are included in Appendix B. The findings of these investigations for the area investigated during this RI are summarized below.

1.4.1 Parcel 1

No known prior investigations.

1.4.2 Parcels 2, 3, 4, and 5

Multiple investigations were completed at Parcel 2 during NYCDOS operations. VOCs, heavy metals, and free phase diesel fuel were observed during these investigations as summarized below. During the investigations and/or subsequent removal actions, between 2000 and 2004, 6,402 gallons of contaminated fluids (including 131 gallons of free product) were removed from wells on the property. In 2004, an area around a well with free product was excavated. No NYCDOS reports are available for this property after January 2005.

Site Investigation (SI) and Cost to Cure Reports were prepared for the New York City Department of Design and Construction (NYCDDC) in 2006 and 2007, respectively, in preparation for developing the property as a park. These reports describe impacts by alleged responsible parties including: the former petroleum distillery operations, known and unknown off-site historic petroleum releases, the former USTs, including the one closed in place, the former MGP operations, and off-site industrial operations located along the East River. The petroleum plume identified during the SI is shown in Figure 2 of this report. These reports also describe the conceptual plans for the park and provide potential remedial cost estimates.

1.4.2.1 1995-1996 - NYSDEC Correspondence and Internal Memorandum (Parcel 2, only)

A May 17, 1995 letter from the NYSDEC to the New York City Department of General Services (NYCDGS) indicates the presence of high concentrations of heavy metals discovered in a 1992 investigation.

In a letter dated June 7, 1995, the NYSDEC reports to the NYCDGS that the NYCDOS submitted a 1992 report prepared by Soil Mechanics Environmental Services. The report indicates there are areas of soil contaminated with heavy metals; including barium, lead, and mercury, on the Parcel 2. The NYSDEC requested the collection of additional samples in the areas of heavy metals to confirm the presence of potential hazardous waste and to further delineate the areas of contamination.

The 1992 Soil Mechanics report was not available for review with the exception of Figures numbered 2, 3, 7, 10, and 11. The figures depict 12 soil borings (B-1 through B-12) and eight monitoring wells (MW-1 through MW-4 and MW-6 through MW-9) with summaries of contaminant concentrations. Lead, Total Petroleum Hydrocarbon (TPH) Content (TPHC), and total BTEX were detected within Parcel 2.

Two NYSDEC inner office memoranda (memos) (dated February 1 and March 27, 1996) discuss an Investigative Summary and Remedial Plan (ISRP) from the NYCDOS for Parcel 2. Previous property uses mention a long history of non-petroleum related industrial use including landfilling, coal gasification, and sheet metal operations. The March 27 memo mentions extensive heavy metal and VOC soil and groundwater contamination across the entire property. The February 1 memo states:

> Lead concentrations range up to 1420 parts per million (ppm) in the soils and exceed class GA groundwater standards. Mercury was found in borings at concentrations up to 1.28 ppm. Boring logs also indicate the presence of elemental mercury. Trichloroethylene was found in one boring. Thousands of ppm of several chlorinated compounds were found in groundwater.

GEI believes it is unlikely that elemental mercury was present in the boring logs based on the 1.28 ppm concentration of mercury detected in the analytical sample.

Most of the metals and VOC concentrations are above the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 guidelines, but none of the samples failed for Toxicity Characteristic Leaching Procedure (TCLP) analysis. In the March 27 memo, the NYSDEC recommends the addition of Parcel 2 for “P” delineation as a potential hazardous waste site, and also recommends limited remediation for petroleum-related contaminants. The memo also states that further investigation and probably more extensive remediation will be required for the property.

A September 13, 1996 Raritan Enviro Sciences, Inc. (RES), inter-office memo RE: NYCDDC Contract PW348-04, Subject: Report of Free-Phase Petroleum Product at NYCDOS Brooklyn North 1 Site reports that on September 11, 1996 free phase petroleum product appearing to be diesel fuel was discovered for the first time in MW-2 located adjacent to the motor fuel tank system at the property. The product appeared to be a result of loss, which occurred earlier in 1996, from the active NYCDOS diesel tank system. Also noted in the memo is that during the attempt to develop MW-3, a dense NAPL (DNAPL) was observed. It was recorded as “possible free-phase coal tar residuals and/or creosote.” RES recommended the skimming off of petroleum product in MW-2 with a passive recovery system. Further discussion between all the NYCDDC, NYC Law, NYCDOS, and NYSDEC was proposed regarding the product in MW-3.

An October 18, 1996 letter from the NYSDEC to the NYC Law Department provides comments on and conditional approval of the Phase Two Remedial Investigation Work Plan at the NYCDOS Brooklyn North 1 Site.

1.4.2.2 2004-2005 – LiRo Engineers, Inc. (Parcel 2 only)

First and fourth quarter 2004 Monitoring Reports by LiRo Engineers Inc. (LiRo) were submitted to NYSDEC describing current conditions, progress of remediation, and future recommendations for the NYCDOS Brooklyn North 1 facility located at Parcel 2.

LiRo reports that in 2004 the NYCDOS facility consisted of a 44,000-square foot garage, used for vehicle storage and maintenance, bordered to the east by a 34,000-square foot parking lot. One 2,000-gallon gasoline and two 2,000-gallon fuel oil underground storage tanks (USTs), located in a common vault, are identified as closed in place. The LiRo report states that the USTs had reported leakage associated with piping failure and approximately 15 yards of visibly contaminated soil was removed from around the tank ports during closure. One petroleum spill was reported to NYSDEC for the property, the assigned spill number is 94-01167 in 1994.

The first quarter LiRo report references a letter dated February 7, 2002, where NYSDEC approved a plan to use a combination of oxygen release compound (ORC), bio-nutrient slurry, and vacuum enhanced fluid recovery (EFR) to address petroleum impacts associated with NYCDOS activities, as shown in Figure 2 and also discussed in the previous subsection.

Applications of bio-nutrient slurry began in January 2003 and continued once per week for six consecutive weeks. Each application consisted of bio-nutrient slurry being injected into each of 30 new bioremediation wells. On February 27, 2003 and August 27, 2003 ORC was applied to each of the 30 new wells.

During the work in 2003, a persistent plume of diesel fuel free product was identified around MW-2, and kerosene free product was intermittently observed in LW-1 and LW-2 located north across N 12th Street. LiRo states that the kerosene is not attributed to NYCDOS operations. From 2000 through April 2004, as part of the remediation of the NYCDOS property, LiRo removed 6,402 gallons of contaminated fluids, of which approximately 131 gallons was free product.

Both the April and January 2004 groundwater sampling results indicated that groundwater quality in the treatment area was generally stable or slightly higher than VOC concentrations previously measured and dissolved oxygen levels were continually high. NYSDEC requested that LiRo either install a product skimmer in MW-2 or excavate the area.

In December 2004, an area of approximately 10 x 10 x 7.5 feet deep was excavated around the MW-2 location where diesel fuel free product had been observed. No free product was observed within the excavation limits. Soil samples were collected from the four sidewalls and bottom of the excavated area before backfilling. Analytical results showed elevated SVOC concentrations in all five samples and elevated VOC concentrations in four of the five samples. MW-2 was replaced in January 2005. LiRo proposed adding two additional wells to the quarterly sampling plan and surveying the existing wells.

1.4.2.3 2006 – Metcalf and Eddy of New York, Inc. (Parcels 2, 3, 4, and 5)

For the proposed construction of the Williamsburg Park by NYC, Metcalf and Eddy of New York, Inc. (M&E) conducted a SI for the NYCDDC. The SI was completed at a property identified by the New York City Office of Environmental Coordination as, "west of Kent Avenue between and including North 10th and North 12th Streets, "an area which includes the former Williamsburg Works MGP and surrounding area. The purpose of the SI was to evaluate the lateral and vertical extent of potential contamination in subsurface soil, sediment, and groundwater that may relate to historic and current operations.

A subsurface investigation of the study area (Parcels 2, 3, 4, and 5) was conducted that included the following:

- Collection of 60 soil samples from 28 soil borings (BPB-1 through BPB-23, and LPB-1, LPB-6, LPB-11, LBB-12, LPB-15, and LPB-20). Soil borings were drilled to depths ranging from 27 to 68 feet below ground surface (bgs).
- Collection of 20 sediment samples from 9 sediment cores (ERS-1 through ERS-9). Sediment cores were drilled to depths ranging from 50 to 62 feet below the mud line of the East River.
- Collection of 13 groundwater samples taken from 9 newly installed wells (MW-1 through MW-9) and 2 previously installed wells (MW-7X and MW-8X).
- Soil and groundwater samples were analyzed for Target Compound List (TCL) VOCs, TCL SVOCs, polychlorinated biphenyls (PCBs), and target analyte list (TAL) metals.
    - Analytical results from soil samples were compared to the NYSDEC standards identified in TAGM No. 4046 (Recommended Soil Cleanup Objectives [RSCO] and Soil Cleanup Objectives to Protect Groundwater Quality [SCOPGQ]); Spill Technology and Remediation Series (STARS) Memo No. 1, TCLP Alternative Guidance Values; and, Characteristics of Hazardous Waste published in RCRA and NYSDEC Part 371.
    - Analytical results from groundwater samples were compared to NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Memorandum (Ambient Water Quality Standards and Guidance Values and Groundwater

Effluent Limitations); and, Characteristics of Hazardous Waste published in RCRA and NYSDEC Part 371.

Sample locations are shown in Figure 2 of the M&E Report which is included in Appendix B.

The SI report describes analytical results of M&E sampling as follows:

- TCL VOCs were detected in 30 of the 60 soil samples above either the NYSDEC TAGM RSCO, TAGM SCOPGQ criteria, and/or the STARS.
- TCL SVOCs were detected in 39 of the 60 soil samples above either the NYSDEC TAGM RSCO, TAGM SCOPGQ criteria, and/or the STARS Alternative Guidance Values.
- PCBs were detected in soil samples, but were below the NYSDEC TAGM criteria.
- TAL Metals were detected in all 60 soil samples, at levels above either the NYSDEC TAGM RSCO or the NYSDEC Eastern USA Background Criteria.
- Total Cyanide was detected in 10 of the 60 soil samples. There is no standard specified for total cyanide in either the NYSDEC RSCO or the NYSDEC Eastern USA Background Criteria.
- TCL VOCs were detected in 16 of the 18 groundwater samples above the NYSDEC TOGS Groundwater Criteria.
- TCL SVOCs were detected in 14 of the 18 groundwater samples above the NYSDEC TOGS Groundwater Criteria.
- PCB concentrations were not detected; however, the method detection limit of 1 microgram per kilogram exceeds the NYSDEC TOGS Groundwater Criteria.
- TAL Metals were detected in all 18 groundwater samples above the NYSDEC TOGS Groundwater Criteria.

The SI report describes the nature and extent of M&E's findings as follows:

- Visual petroleum impacts were described in 4 of the 13 soil borings at depths ranging from 5 to 19 feet bgs.
- Visual tar impacts were described in 11 of the 13 soil borings at depths ranging from 5 to 55 feet bgs.
- Visual petroleum impacts were described in two of the nine sediment borings at depths ranging from 14 to 30 feet bgs.
- Visual tar impacts were described in one of the nine sediment borings from 22-24 feet bgs.

The SI Report references and summarizes a number of previous investigations. Titles and summarized findings of these reports are listed below:

- A Phase I Environmental Site Assessment (ESA) was completed by Energy and Environmental Analysts, Inc. (EEA) in 1994 at 20 North 12th Street (Parcel 3). The report concluded that the historic use of the property and surrounding properties may have been a potential source of subsurface contamination at the study area.
- A Phase II Site Investigation was completed by EEA in August 1995 as a follow up to the 1994 Phase I. Six soil borings were installed. Analytical results indicated that PAHs were present at concentrations above the NYSDEC RSCOs, as well as exceeded values in one sample for Total SVOCs for the NYSDEC TAGM 4046 requirements. Metals were not detected significantly above the NYSDEC TAGM 4046 RSCOs. The report concluded that no action was needed to remediate the study area since the property was capped with a one-story warehouse building, asphalt, and concrete.
- A Phase I ESA was completed by EEA in April 1998 at 20 North 12th Street (Parcel 3). A UST was identified beneath the floor of the building. The tank was reportedly used as an oil/water separator for rainwater runoff from delivery trucks at the lumber company, which formerly occupied the property. This report also identifies 41 NYSDEC spill incidents within a half mile radius, but concludes that although soil and groundwater contamination has resulted from some of the spills, they are unlikely a significant source of contamination.
- A Preliminary Site Assessment (PSA) was completed by Montgomery Watson in November 1996 at the Kent Terminal Facility located west of Kent Avenue between North 5th and North 11th Streets (Parcel 5 is included as a portion of the larger study area). The Study area is adjacent to the southwest boundary of the former MGP. Six areas containing nine USTs (1 active) were identified as well as an underground No. 6 fuel oil pipeline located along Kent Avenue with four reported releases between North 5th and North 11th Streets between 1986 and 1996. Nine soil borings and four monitoring wells were installed immediately southwest of the SI Study area between North 9th and North 10th street. Soil samples were tested for total recoverable petroleum hydrocarbons (TRPH), TCLP, VOCs, SVOCs, RCRA metals, and PCBs. Analytical results did not identify any constituents in the soil above regulatory limits. Groundwater samples were tested for TRPH, chloride, salinity, VOCs, SVOCs, PCBs, RCRA metals, and dissolved RCRA metals. VOCs were detected above NYSDEC standards in one of the four groundwater wells. This report was also summarized by M&E below in section 1.4.4.1.
- An Additional Site Investigation Report was completed by Montgomery Watson in May 1997 at the Kent Terminal Facility. Eight additional soil borings were installed between North 10th Street and North 11th Streets. Organic vapors, staining, petroleum-like odors, and oily sheen were reported in the boring logs. Laboratory analytical results showed VOCs and SVOCs above the applicable guidelines in both soil and groundwater samples.

- A Limited Subsurface Corridor Investigation Report was completed by EMTEQUE Corporation in January 2003. During the work one sample was collected from the Parcel 2 NYCDOS facility. The sample contained VOCs and SVOCs at levels greater than NYSDEC guidance values, as well as concentrations of mercury and zinc above the NYSDEC RSCOs.

Tar and petroleum plume maps were prepared by M&E based on the boring logs and observations made during the SI. The petroleum plume identified by M&E is shown in Figure 2.

1.4.2.4 2007 - M&E (Parcel 2 Only)

On behalf of the NYCDDC, M&E prepared a Cost to Cure (CTC) report for the NYCDOS garage located at Parcel. The CTC was based on the findings of the 2006 SI report (summarized in subsection 1.5.1.6).

The findings of the 2006 SI report are summarized and state the following:

- The study area contains contaminated historic fill from depths of 9 to 42 feet bgs.
- A majority of petroleum hydrocarbons were spread over the entire study area from depths of 0 to 31 feet bgs.
- MGP contamination is mixed with petroleum contamination from depths of 5 to 31 feet bgs in the north and northeastern portions of the study area and along North 11th and North 12th Streets.
- The area had been impacted by the former refinery operations, known and unknown off-site historic petroleum releases, the former USTs closed in place at the NYCDOS yard (Parcel 2), the former MGP operations, and off-site industrial operations located along the East River.

NYC's conceptual site development proposed an 8,000-square foot paved walkway and a 72,000-square foot landscaped or vegetated, open space. Two remedial cost estimates were prepared based on whether or not the excavated soil would be disposed off-site or reused on-site. The cost estimate for off-site disposal was $1,522,000, while for reuse of the excavated contaminated soil on-site an estimated CTC was $600,000.

1.4.2.5 2013 – URS Corporation (Parcel 2 Only)

URS Corporation (URS) completed a PDI of Parcel 2 to support the planned IRM of the Parcel. The PDI investigation included the following:

- Completion of 11 soil borings (WW-SB-100 through WW-SB-110).
- Excavation of 14 tests pits (WW-TP-100 through WW-TP-113).

- Installation of two intermediate monitoring wells (WW-MW-100I and WW-MW-102I screened from 46.5 to 56.5 feet bgs and 49 to 59 feet bgs, respectively)
- Installation of one deep monitoring well (WW-MW-102D screened from 92 to 102 feet bgs).
- Gauging of existing monitoring wells
- Hydraulic conductivity testing
- Utility and subsurface infrastructure investigation
- Baseline groundwater modeling
- Noise and vibration study
- Adjacent building foundation assessment

The following were described on the URS boring/test pit logs:

- Tar impacts were observed in all 11 of the soil borings at depths ranging from 5 to 81 feet bgs.
- Petroleum impacts were observed in 3 of the 11 soil borings at depths ranging from 5.5 to 19 feet bgs.
- Contamination impacts, including tar and petroleum, were observed in eight of the 14 test pits at depths ranging from 1 to 10 feet bgs.
- Eight inches of DNAPL were recorded at WW-MW-13.

The PDI report concludes the following:

- No simply-described pattern of contamination was observed, but the contaminant extent was consistent with the existing site conceptual model that describes tar contamination migrating vertically downward from the former holders until reaching lower permeability lenses whereupon the NAPL would migrate horizontally down gradient.
- Slug testing indicated that the soil has moderate to low permeability.
- Soils are poorly sorted and are considered moderately to very dense based on blow counts. Cobble lenses were encountered. The basal clay layer was observed to be very stiff.
- The geotechnical properties of the soil are conducive to the installation of shoring to aid in excavation, with the fines content assisting to reduce permeability. The clay layer would provide a firm base for shoring installation and tie-in. However, the presence of cobbles and fill debris would make some technologies, such as sheet pile, difficult to install.
- Test pits revealed frequent obstacles such as walls, pipes, and former holder tank walls that would require removal during the implementation of the IRM.

The 2013 Supplemental PDI consisted of seven geotechnical borings (GR-1 through GR-7) along with geotechnical laboratory testing. The data collected generally confirmed previous findings but with a more precise delineation of geotechnical stratigraphy. Impacts observed in the Supplemental PDI borings were consistent with initial PDI boring logs showing tar impacts observed in all seven borings at depths ranging from 5 to 61 feet and petroleum impacts in one of the seven borings from 25.5 to 27 feet.

1.4.2.6 2014 and 2015 – URS Corporation (Parcel 2 Only)

URS designed and managed the construction of 13 NAPL recovery wells (NRW-1 through NRW-13) as part of IRM activities for Parcel 2. Recovery well locations are shown in Plates 1 and 2. Screen intervals range from 7 to 62 feet bgs, with some wells screened at multiple intervals based on soil sample inspection during installation. Measurable DNAPL was observed in NRW1 through NRW-4, NRW-7 through NRW-10, and NRW-12 at thickness ranging from 0.1 foot in NRW-1 to 17.2 feet in NRW-10. URS recovers NAPL on a weekly basis from wells where NAPL has collected in the sumps. A total of 873 gallons of NAPL have been removed to date.

URS collected NAPL samples on September 12, 2014 from NRW-2, NRS-7 through NRS-10, and a Verizon Manhole. A soil sample was also collected from the Verizon manhole and this sample was also analyzed for dielectric fluid forensics. All samples were analyzed for extended PAHs/Biomarkers and TPH. Results of the analysis were used by Exponent to perform forensics analysis. Exponent’s forensics analysis report is provided in Appendix D.

During the period December 2014 through January 2015, URS performed boring and test pit investigations at the 50 Kent Avenue parcel. The objective of this field effort was to gather additional information about potential obstructions to installation of support of excavation walls. URS installed 12 borings to a depth of 55 feet, and excavated 9 test pits. During this investigation, three NAPL samples were collected and analyzed for extended PAHs/Biomarkers and TPH.

1.4.3 Parcel 6

Parcel 6 is part of the NYCDDC planned park area. In preparation for that development, a SI Report and Cost to Cure Report were prepared for NYCDDC in 2006 and 2007. These reports describe impacts by fill mixed with ash and cinders that was brought to the property, releases from petroleum storage operations, and off-site MGP impacts migrating onto the property. These reports underplay the historic operations by Pratt Works on this parcel and do not acknowledge this on-site source when discussing the results of the investigations. The petroleum plume identified during the SI is shown in Figure 2 of this RI report. These reports also describe the conceptual plans for the park and provide potential remedial cost estimates.

1.4.3.1 2006 – M&E Site Investigation Report

M&E completed a SI at a property identified by the New York City Office of Environmental Coordination as the Bayside Fuel Oil Company located at 1-65 North 12th Street. The purpose of the SI was to evaluate the lateral and vertical extent of potential contamination in subsurface soil and groundwater that may exist from historic and current operations.

A subsurface investigation of the Parcel was conducted that included:

- Collection of 43 soil samples within 13 on-site and 6 off-site soil borings (B-7A, B-12A, B-13A, B-15A, B-16A, B-20A, B-24A, B-28/MW-28, B-29, B-30, B-31/MW-31, B-32, B-33/MW-33, B-34, BPB-4, BPB-5, BPB6/MW-2, BPB-9, and BPB-13/MW-4). Soil borings were drilled to depths ranging from 47.6 to 72 feet bgs.
- Collection of 23 groundwater samples, including 4 duplicates, from the 5 monitoring wells installed during the SI and 14 monitoring wells installed during a previous SI.

M&E submitted the *Site Investigation Report* to the NYSDEC in November 2006. The report describes the following nature and extent findings:

- Soil and groundwater samples were analyzed for TCL VOCs, TCL SVOCs, PCBs, and TAL metals.
  - Analytical soil samples were compared to the NYSDEC standards identified in TAGM No. 4046 (RSCO and SCOPGQ); Spill Technology and Remediation Series (STARS) Memo No. 1, TCLP Alternative Guidance Values; and, Characteristics of Hazardous Waste published in RCRA and NYSDEC Part 371.
  - Analytical groundwater samples were compared to NYSDEC TOGS 1.1.1 Memorandum (Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations); and, Characteristics of Hazardous Waste published in RCRA and NYSDEC Part 371.
- Visual petroleum impacts were described in the boring log for 1 of the 19 soil borings, boring B-15A from 9 to 11 feet bgs.
- Visual tar impacts were described in the boring logs for 2 of the 19 soil borings, in borings B-20A from 19 to 21 feet and BPB-13/MW-4 from 50 to 52 feet.
- TCL VOCs were detected in 17 of the 43 soil samples, above either the NYSDEC TAGM RSCO, TAGM SCOPGO criteria, and/or the STARS
- TCL SVOCs were detected in 18 of the 43 soil samples, above either the NYSDEC TAGM RSCO, TAGM SCOPGO criteria, and/or the STARS Alternative Guidance Values.
- PCBs were detected in soil samples, but detections were below the NYSDEC TAGM criteria.

- TAL Metals were detected in all 43 soil samples, at levels above either the NYSDEC TAGM RSCO or the NYSDEC Eastern USA Background Criteria.
- Total Cyanide was detected in 3 of the 43 soil samples. There is no standard specified for total cyanide in either the NYSDEC RSCO or the NYSDEC Eastern USA Background Criteria.
- TCL VOCs were detected in 18 of the 23 groundwater samples, at levels above the NYSDEC TOGS Groundwater Criteria.
- TCL SVOCs were detected in 5 of the 23 groundwater samples, at levels above the NYSDEC TOGS Groundwater Criteria.
- PCBs were not detected; however, MDLs exceed the NYSDEC TOGS Groundwater Criteria.
- TAL Metals were detected in all 23 groundwater samples above the NYSDEC TOGS Groundwater Criteria.

The SI Report references and summarizes a previous Phase II Baseline ESA investigation performed at the property by TRC Environmental Corporation (TRC) in December 2002. The TRC report concludes the following:

- There is a significant amount of off-site MGP source material and tar DNAPL near the southeast and southwest corners of Parcel 6, which represents a continuing source of contamination to the property.
- On-site groundwater and soil has been impacted by the MGP source material. Groundwater impacts from the off-site sources extend across the property from the southeast corner to within approximately 60 feet of the Bushwick Creek Inlet.
- On-site soil is significantly impacted with petroleum from product storage and handling, and visibly impacted soil exists in many locations from near ground surface to 20 or more feet deep.
- Benzene was detected in groundwater at concentrations ranging from 6.5 micrograms per liter (ug/L) to 29,500 ug/L. The highest concentration occurred where tar appeared in the boring.
- Areas outside of Parcel 6 are contaminated with MGP material, petroleum, and materials inherent to urban fill. The Phase II Baseline ESA indicated that surrounding conditions (i.e., the former MGP) are comparable to or greater than the study area, which is significantly impacted by MGP, petroleum, and urban fill materials.

As of 2002, groundwater does not appear to be adversely impacting surface water beyond what would be considered background conditions.

According to Sanborn maps a Pratt Manufacturing Company tar tank was located at the southeastern corner of the property. GEI believes the off-site MGP source material and tar DNAPL described above is based upon visual observation and potentially analytical data.

Given the complex property usage and that the Pratt Works kerosene process used coal as a starting material; we believe forensic analysis is required to substantiate the source of the petroleum and tar materials.

1.4.3.2 2007 – M&E Cost to Cure Report (CTC)

On behalf of the NYCDDC, M&E prepared a CTC report for the Parcel 6 property. The CTC was based on the findings of the 2006 SI report.

NYC's conceptual site development proposed a 27,000-square foot paved walkway and 243,000 square foot park area. Two remedial cost estimates were prepared based on whether or not the excavated soil would be disposed off-site or reused on-site. The cost estimate for off-site disposal was $6,000,000, while for reuse of the excavated contaminated soil on-site an estimated CTC was $2,900,000.

1.4.3.3 2008 – NYSDEC Spill Report, Former Chevron Facility

The NYSDEC provided a letter stating no investigation or response was required for a spill identified as case no. 9804544. The letter was addressed as the former Chevron facility. The report indicated ARCADIS BB provided a November 2007 Site Progress report regarding the spill. The no further investigation or response did not extend to any off-site migration of petroleum contaminants that were not addressed by the evaluation.

1.4.4 Other Investigations Adjacent to SI Study Area

1.4.4.1 2006 – M&E Site Investigation 9th Street Equities LLC Property

For the proposed construction of the Williamsburg Park by the NYC, M&E completed a SI for NYCDDC at a property identified by the NYC Office of Environmental Coordination as the 9th Street Equities LLC Property, also known as the Levine Property, located at 86 Kent Avenue, Block 2301, Lots 1, 50, 60, and 70. This study area is adjacent, to the south, of the former MGP footprint. The purpose of the M&E SI was to evaluate the lateral and vertical extent of potential contamination in subsurface soil and groundwater that may exist from historic and current on-site and off-site operations. This property is outside of the former Williamsburg Works MGP footprint; however, it overlaps with a portion of Parcel 5.

A subsurface investigation of the Parcel was conducted that included the following:

- Collection of 45 soil samples including one duplicate within 20 soil borings (LPB-1 through LPB-20). Soil borings were drilled to depths ranging from 25 to 51 feet bgs.
- Collection of 10 groundwater samples including one duplicate from 9 monitoring wells installed within soil borings advanced as part of the SI. Ten- to 20-foot well screens were installed to depths ranging from 15 to 24 feet.

M&E submitted the *Site Investigation Report* to the NYSDEC in August 2006. The report describes the following nature and extent findings:

- Soil and groundwater samples were analyzed for VOCs, SVOCs, PCBs, pesticides, and TAL metals.
  - Analytical soil samples were compared to the NYSDEC standards identified in TAGM No. 4046 (RSCO and SCOPGQ); STARS Memo No. 1, TCLP Alternative Guidance Values; and, Characteristics of Hazardous Waste published in RCRA and NYSDEC Part 371.
  - Analytical groundwater samples were compared to NYSDEC TOGS 1.1.1 Memorandum (Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations); and, Characteristics of Hazardous Waste published in RCRA and NYSDEC Part 371.
- Visual impacts were not observed in any of the 20 soil borings.
- A VOC (acetone) was detected above the TAGM RSCO and/or TAGM SCOPGO criteria in 5 of the 45 soil samples. Exceedances are attributed to likely laboratory contamination. Benzene was detected in two soil samples above the STARS TCLP Alternative Guidance Value. The samples were from borings LPB-6 from 7 to 9 feet bgs and LPB-12 from 5 to 7 feet bgs.
- SVOCs were detected in 30 of the 45 soil samples, at levels above either the NYSDEC TAGM RSCO, TAGM SCOPGO criteria, and/or the STARS Alternative Guidance Values.
- PCBs and pesticides were detected, but did not exceed the TAGM criteria values.
- TAL Metals were detected in all 45 soil samples above either the NYSDEC TAGM RSCO or the NYSDEC Eastern USA Background Criteria.
- VOCs were detected in 4 of the 10 groundwater samples (including the duplicate location) above the NYSDEC TOGS Groundwater Criteria from MW-1, MW-5 and MW-6
- SVOCs were detected in 3 of the 10 groundwater samples (including the duplicate location) above the NYSDEC TOGS Groundwater Criteria from MW-1 and MW-6.
- PCBs and pesticides were not detected above detection limits.
- TAL Metals were detected in all 10 groundwater samples above the NYSDEC TOGS Groundwater Criteria.

The SI Report references and summarizes a number of previous investigations performed at the site. Titles and reported findings of these reports are listed below:

- A PSA was completed by Montgomery Watson in 1996 at several properties along Kent Avenue between North 5th and North 11th Streets. This report was also summarized by M&E above in section 1.4.2.3. The PSA refers to previous environmental studies conducted in 1986 and 1994. Five soil borings and two monitoring wells were installed. One of the soil samples collected contained leachable concentrations of arsenic and selenium above the federal hazardous waste standards, though a confirmation sample collected from the same area did not confirm the initial results. The analysis and standards for these samples were specified in the report. The results of the groundwater samples detected several total metals above the applicable NYSDEC TOGS criteria. However, only dissolved concentrations of arsenic and selenium were detected slightly exceeding the applicable NYSDECTOGS criteria.

- A Site Assessment Up-Date Report was completed by Fleming Lee Shue in 2002 as an update to the work conducted by Montgomery Watson in 1996. The report identified two additional investigations conducted by Montgomery Watson in 1996 and 1997. Significant levels of VOCs and SVOCs were not identified and the subject site was removed from the NYSDEC's list of potential inactive hazardous waste sites. The investigation conducted by Fleming Lee Shue consisted of the collection of 12 soil samples from 6 soil borings and 3 groundwater samples. Laboratory analysis of the samples showed:
    - SVOCs were detected in several of the surface and subsurface samples that contained coal ash.
    - Naphthalene was detected in one subsurface soil sample above NYSDEC TAGM criteria.
    - Elevated levels of arsenic and mercury were detected in the soil samples. Mercury was detected above the NYSDEC TAGM criteria in all of the surface samples and arsenic was detected above the criteria in one subsurface sample.

  Based upon the results and a comparison to Montgomery Watson's results, the report concludes that the data is indicative of impacts due to the disposal of coal ash as fill, with minimal impacts from petroleum due to leaking motor vehicles.
- A Phase I ESA was completed by Fleming Lee Shue in 2003. The report summarized the past and current environmental conditions of the area along Kent Avenue from North 9th Street to Quay Street. The report concluded that there is minimal contamination, but significant amounts of coal ash are present in on-site fill material.

1.4.4.2 2006 – M&E Site Investigation of Bushwick Creek Inlet Property

For the proposed construction of the Williamsburg Park by NYC, on behalf of the NYCDDC, M&E completed a SI at a property identified by the NYC Office of Environmental Coordination as the Bushwick Creek Inlet property, which is currently owned by Motiva Enterprises LLC. The study area is located along Kent Avenue between the south shoreline of the Bushwick Creek and Quay Street. This study area is adjacent, to the north, of Parcel 5. The purpose of the SI was to evaluate the lateral and vertical extent of potential contamination in subsurface soil and groundwater that may exist from historic and current operations.

A subsurface investigation of the Parcel was conducted that included the following:

- Collection of 18 soil samples within 8 soil borings (BC-1 through BC-8). Borings were drilled to depths ranging from 43.7 to 72 feet bgs.
- Collection of 22 sediment samples from 11 sediment cores (BCS-1 through BCS-11). Sediment cores were drilled to depths ranging from 35.8 to 54 feet below the mud line.

M&E submitted the *Site Investigation Report* to the NYSEC in November 2006. The report describes the following nature and extent findings:

- Soil and sediment samples were analyzed for TCL VOCs, TCL SVOCs, PCBs, TAL metals, and cyanide.
    - Analytical soil and sediment samples were compared to the NYSDEC standards identified in TAGM No. 4046 (RSCOs and SCOPGQ); STARS Memo No. 1, TCLP Alternative Guidance Values; and, Characteristics of Hazardous Waste published in RCRA and NYSDEC Part 371.
- Visual petroleum impacts were observed in one of the 8 soil borings from 25 to 27 feet bgs, and three of the 11 sediment borings at depths ranging from 6 to 18 feet bgs.
- Visual tar impacts were not observed in any of the soil or sediment borings.
- VOCs were detected above the STARS criteria in three of the 18 soil samples. Naphthalene was detected in one soil sample above the TAGM RSCO and TAGM SCOPGO Guidance Values.
- SVOCs were detected in 6 of the 18 soil samples above either the NYSDEC TAGM RSCO, TAGM SCOPGO criteria, and/or the STARS Alternative Guidance Values.
- PCBs were detected, but did not exceed the TAGM criteria values.
- TAL Metals were detected in 16 of the 18 soil samples, at levels above either the NYSDEC TAGM RSCO or the NYSDEC Eastern USA Background Criteria.
- VOCs were detected above the TAGM RSCO, TAGM SCOPGO, and/or STARS TCLP Alternative Guidance Values in eight of the 22 sediment samples.
- SVOCs were detected in 11 of the 22 sediment samples above either the NYSDEC TAGM RSCO, TAGM SCOPGO criteria, and/or the STARS Alternative Guidance Values.
- PCBs were detected, but did not exceed the TAGM criteria values.
- TAL Metals were detected in all 22 of the sediment samples above either the NYSDEC TAGM RSCO or the NYSDEC Eastern USA Background Criteria.

The SI Report references and summarizes a previous Phase I ESA completed by Fleming Lee Shue in 2003. The report concludes the following:

- Tax Block 2590, Lots 25 and 100 (between Bushwick Creek and Quay Street) located to the north of Parcel 6, are currently undeveloped, however, several structures historically existed on-site including a ship yard and dry dock facility. This facility appeared to occupy portions of Lot 100 from at least 1942 to sometime prior to 1966.
- A limited subsurface investigation conducted along Franklin Street and Kent Avenue identified possible subsurface petroleum contamination. Prior use as a shipyard suggests that possible contamination from anti-fouling paints, petroleum, and solvents, which may have been used at the time.

1.5 Investigation Report

As discussed above, the purpose of the RI was to generate sufficient data to define the nature and extent of soil, groundwater, sub-slab vapor and/or sediment impacts resulting from the former Williamsburg Works MGP operations. The RI uses the findings of the investigation to evaluate the potential risks to human health, and the environment at a portion of the Site.

The remainder of this report describes the methods used to collect data (Section 2), Site-specific geology and hydrology (Section 3), and nature and extent (Section 4) as well as fate and transport (Section 5) of contamination. A Qualitative Human Health Exposure Assessment and Fish and Wildlife Resource Impact Analysis were performed and are discussed in Sections 6 and 7 respectively. Section 8 provides a Conceptual Site Model and Section 9 describes conclusions of the RI.

2. Remedial Investigation Methods

This section describes the methods and procedures used during the RI. Unless otherwise noted, the RI was implemented in accordance with the RI Work Plan (RIWP), RIWP Addendums, and Supplemental RIWP (SRIWP) that were approved by NYSDEC, and relevant NYSDEC regulations. Copies of the NYSDEC approval letters are provided in Appendix A.

GEI oversaw implementation of the RI field activities, which were conducted between June 2009 and December 2012. The RI fieldwork included the following tasks:

- Surface soil sample collection
- Subsurface utility location and mark-out
- Test pit excavation and subsurface soil sample collection
- Soil boring installation and subsurface soil sample collection
- Sediment core installation and sediment sample collection
- Monitoring well installation and development
- Temporary groundwater sampling point installation
- Groundwater sample collection
- Groundwater gauging and gauging for the presence of NAPL
- Hydraulic conductivity testing
- Sub-slab vapor point installation and sample collection
- Indoor and outdoor ambient air sample collection
- Surveys of sample locations

The RI sample locations are shown in Plates 1 and 2. Table 1 presents the sample location identification and rationale, sample collection type, and a summary of selected laboratory analyses.

Detailed field procedures, including quality assurance/quality control (QA/QC) sample practices, are provided in the NYSDEC-approved RIWPs in Appendix A.

All samples submitted for chemical testing were analyzed by TestAmerica Laboratories (TestAmerica), an accredited laboratory under the NYSDOH environmental laboratory approval program (Lab ID: 10602). Each sample was placed into laboratory-supplied containers, which were stored in coolers with ice.

2.1 Subsurface Utility and Former Structure Location

The NYC/Long Island One Call Center was notified to mark-out locations of subsurface utilities prior to GEI or their subcontractors completing ground intrusive activities. Utility companies and utility company contractors marked out utility lines within the public street right of ways (ROWs).

Hager-Richter Geoscience, Inc. of Fords, New Jersey and Utility Survey Corporation of New Windsor, New York were contracted by GEI to identify and mark subsurface utilities at private properties and public street ROWs. The private contractors conducted surveys using ground penetrating radar (GPR) and other precision utility locating procedures to identify underground utilities, potential subsurface obstructions, and subsurface anomalies that might be former MGP structure foundations.

Once subsurface utilities had been marked out, soil boring and monitoring well locations were cleared to approximately 5 feet bgs using hand tools or a vacuum clearance machine. Zebra Environmental Corporation of Lynbrook, New York, Paragon Environmental Construction, Inc. of Brewerton, New York, and Boart Longyear Environmental and Infrastructure Drilling (Boart Longyear™) of Northborough, Massachusetts performed subsurface utility clearance.

2.2 Surface Soil Sampling

Nine surface soil samples (WW-SS-01 through WW-SS-09) were collected to evaluate areas of exposed soils within the footprint and adjacent to the former Williamsburg Works MGP. The surface soil sample locations are shown in Plates 1 and 2.

Each sample was collected using stainless steel or disposable sampling equipment, in accordance with the RIWP, within the top 2-inches of mineral soil.

Surface soil was analyzed for:

- VOCs via USEPA Method 8260B
- SVOCs via USEPA Method 8270C
- PCBs via USEPA Method 8082
- Pesticides via USEPA Method 8081
- Herbicides via USEPA Methods 8151
- Target Analyte List (TAL) metals via USEPA Method 6000/7000 series
- Free cyanide [extraction by USEPA Method 9013A/and analysis by Micro-diffusion ASTM International (ASTM) Method D4282-02]

Table 1 presents a summary of laboratory analyses completed for each surface soil sample.

2.3 Subsurface Explorations and Sample Collection

2.3.1 Test Pit Excavations

Six test pits (WW-TP-01 through WW-TP-06) were excavated using a rubber-tired backhoe. The test pits excavations were completed to evaluate the presence, configuration, and contents of the subsurface portions of former gasholders. Test pit locations are shown in Plates 1 and 2.

Test pit excavations were completed by Aquifer Drilling & Testing of New Hyde Park, New York. Soil was excavated to the depth of the apparent water table, which ranged from approximately 3 feet bgs in WW-TP-01 to 6.5 feet bgs at WW-TP-05 and WW-TP-06. Excavated soil was stockpiled on plastic sheeting adjacent to the excavation. Soil was logged for visual and olfactory observations and photographed. Test pit logs are included in Appendix F.

One grab soil sample was collected from each test pit for laboratory analysis. Samples from test pits WW-TP-01, WW-TP-02, WW-TP-03 and WW-TP-05 were collected within fill that exhibited physical impacts (odor and/or sheen) near the apparent water table. Samples from WW-TP-04 and WW-TP-06 were collected within fill at the apparent water table, although physical impacts were not observed.

Samples were collected using the backhoe bucket, which was decontaminated with a steam cleaner between excavations. Soil samples were analyzed for VOCs, SVOCs, TAL metals, herbicides, PCBs, pesticides, and free cyanide as indicated in Table 1.

The test pits were backfilled in reverse sequence so that the materials removed from the bottom of the test pit excavation were returned to the bottom and materials removed from the top were placed back on top. The soil was replaced in lifts and compacted with the backhoe bucket and a plate compactor. Pavement was restored after backfilling to match the existing ground cover.

2.3.2 Soil Borings

Seventy-five soil borings were drilled during the RI to characterize subsurface geology, identify former MGP structures, assess the horizontal and vertical extent of visual impacts, evaluate the chemical impacts in soil, and enable the installation of monitoring wells. Soil boring locations are provided in Plates 1 and 2. The rationale for each soil boring location is provided in Table 1.

Soil borings were drilled to depths ranging from 10 to 97 feet bgs, and continuously sampled using Geoprobe® direct push and resonant sonic drilling methods. Zebra Environmental provided direct push drilling services. Boart Longyear™ provided resonant sonic drilling services.

Soil samples were collected using a 5-foot Macro-Core® sampler with disposable plastic sleeves, for borings installed using a Geoprobe® drill rig. For resonant sonic drilling, soil samples were collected in a 5-foot or 10-foot core barrel and extruded into new clean disposable plastic sleeves. Geoprobe® drilling rods and Macro-Core® samplers were decontaminated using an alconox-tap water mixture and tap water rinse in accordance with the RIWP. Resonant sonic rig drilling implements (i.e. casings, core barrels, and drill rods) were decontaminated between borings using a high-pressure steam cleaner.

The soil was logged and screened with an organic vapor analyzer equipped with a photoionization detector (PID). Visual and olfactory observations were recorded in field books, and in a field personal data assistant equipped with pLog™ logging software. The soil boring logs are included in Appendix G.

A total of 222 soil samples were collected and analyzed as part of the RI. In general, three subsurface soil samples were collected at each boring location. The first subsurface soil sample was collected within fill, in the top 5 feet bgs, from the sidewall of the hand-cleared portion of the boring. The second sample was collected from a deeper boring interval that exhibited the greatest observed occurrence of NAPL saturation, staining, odors, sheen, and/or PID readings. The third sample was collected from soil below observed impacts or at the completion depth of a boring. If the boring was free of observed physical impacts, a sample was collected at the water table.

All subsurface soil samples were analyzed for VOCs, SVOCs, TAL metals, and free cyanide (Table 1). Soil samples collected within the top 5 feet were also analyzed for PCBs, pesticides, and herbicides. The rationale used to determine collection and laboratory analysis of soil samples is detailed in Table 1.

Each borehole not finished as a monitoring well was abandoned by filling the borehole with a cement/bentonite grout mixture tremied from the bottom of the hole to ground surface, which was restored to the prior condition following abandonment. Investigation derived waste (IDW) generated during the RI activities is discussed further in Section 2.11.

2.3.3 Sediment Core Installation

Twenty-one sediment cores were collected during the RI to characterize subsurface geology, assess the horizontal and vertical extent of visual impacts, and evaluate the chemical impacts in sediments in the East River and Bushwick Inlet. Sediment core locations are provided in Plates 1 and 2. The rationale for each sediment core location is provided in Table 1.

Sediment cores were drilled to depths ranging from 12 to 84 feet below the mud line and continuously sampled using vibracore and resonant sonic drilling methods. Ocean Surveys, Inc. provided vibracore drilling services. Boart Longyear™ provided resonant sonic drilling services.

Sediment samples from the vibracore were collected using 3.5” inner diameter Lexan (polycarbonate) core liners. For resonant sonic drilling, soil samples were collected in a 5-foot or 10-foot core barrel and extruded into new clean disposable plastic sleeves. The vibracore sampler was decontaminated using a site tap water rinse in accordance to the RIWP. Resonant sonic rig drilling implements (i.e. casings, core barrel, and drill rods) were decontaminated using a high-pressure steam cleaner.

The sediments were logged and screened with an organic vapor analyzer equipped with a PID. Visual and olfactory observations were recorded on field sediment boring logs, in field books, and using a field personal data assistant equipped with pLog™ logging software. The sediment boring logs are included in Appendix G.

In general, three subsurface sediment samples were collected at each boring location. The first sediment sample was collected from 0 to 6 inches below the mud line for the purpose of evaluating the bioactive zone. The second sample was collected from the interval that exhibited the greatest observed occurrence of NAPL saturation, staining, odors, sheen, and/or PID readings. The third sample was collected from sediments below observed impacts or at the completion depth of a core. If the core was free of physical impacts, a sample was collected at the interface of soft and native sediment.

All sediment samples were analyzed for VOCs, SVOCs, TAL metals, and free cyanide. Sediment samples collected from 0 to 6 inches below the mud line, as well as all samples collected from locations WW-SED-01 through WW-SED-07, were also analyzed for PCBs, pesticides, and herbicides. Sediment samples collected from 0 to 6 inches below the mud line at locations WW-SED-08 through WW-SED-21 were analyzed for total organic carbon (TOC). The rationale used to determine collection and laboratory analysis of sediment samples is detailed in Table 1.

Sediment cores collected using resonant sonic drilling were abandoned by filling the borehole with a cement/bentonite grout mixture tremied from the bottom of the borehole up to the mud line. IDW generated during the RI activities is discussed further in Section 2.11.

2.4 Monitoring Well Installation

Twenty-one shallow monitoring wells and 12 temporary monitoring points were installed during the RI. Monitoring wells were installed to evaluate conditions at or near the observed water table. The wells were installed using Geoprobe® direct push, hollow stem auger, and resonant sonic drilling methods.

The temporary monitoring points were installed within borings WW-SB-03, WW-SB-05, WW-SB-07, WW-SB-19, WW-SB-21 and WW-SB-22. Each temporary monitoring well was screened spanning the water table with screen intervals ranging from 2.5 to 16 feet bgs. Locations WW-SB-19, WW-SB-21, and WW-SB-22 were also screened within soil with the greatest impacts at depths from 15 to 45 feet bgs, and just above the potentially confining clay unit at depths from 40 to 65 feet bgs. Each temporary well was constructed with 1-inch inner diameter flush-threaded polyvinyl chloride (PVC) risers and 0.010-inch slotted PVC screens. Five-foot well screens were installed at temporary monitoring well locations WW-SB-03, WW-SB-05, and WW-SB-07 and 10 foot well screens were installed at locations WW-SB-19, WW-SB-21, and WW-SB-22 for all three depths screened. Temporary monitoring points were installed during soil boring installation and abandoned following sample collection. Locations with multiple temporary wells used separate screen and casing for each interval which were installed within the same hole at depth as drilling progressed.

Permanent monitoring wells were screened at the water table. Bottom depths of the screen ranged from 10.3 to 23 feet bgs. Table 2 provides information on well depths and elevations, top of casing information, and screen depths and elevations. All monitoring wells were constructed with 2-inch inner diameter flush-threaded PVC risers and 0.010-inch slotted PVC screens. All screened intervals were 10 feet long.

The permanent monitoring wells were constructed as follows:

- The annular space around each well screen, and approximately 2 feet above the well screen, was backfilled with a washed, uniform silica sand to form the filter pack.
- A2-foot bentonite clay seal was placed above the filter pack in each monitoring well. The bentonite seal in three monitoring wells (WW-MW-05, WW-MW-17, and WW-MW-22) was 1-foot thick due to shallow groundwater conditions. A bentonite seal was not placed in three monitoring wells (WW-MW-06, WW-MW-07, and WW-MW-08) due to shallow groundwater conditions.
- The remaining annular space was filled to grade with a cement-bentonite grout slurry or concrete.
- Each monitoring well was fitted with a flush-mount locking road box set in a concrete pad.

The well construction details are shown on the soil boring logs, which are included in Appendix G.

Following installation, each monitoring well was developed to remove sediment from the well and to stabilize the filter pack. Development was completed in accordance with the

RIWP (Appendix A). IDW generated during the RI activities is discussed further in Section 2.11.

2.5 Air Monitoring

Perimeter air quality monitoring was conducted in accordance with the Community Air Monitoring Plan (CAMP) provided in Appendix C of the NYSDEC-approved RIWP. The objective of the perimeter air monitoring was to prevent the migration of potential airborne compounds of concern to the downwind community (i.e., off-site receptors, including residences and businesses and on-site workers not involved with the RI field activities) by monitoring concentrations of VOCs and dust particles and implementing controls addressing the source of the concentrations if they were detected.

Two perimeter air-quality stations (upwind and downwind) were set up for each soil boring location. A PID was used to monitor the levels of organic vapors in the ambient air, and a DustTrak particle detector was used to monitor respirable dust particles (<10 micrometers) during non-precipitation conditions. Each instrument was calibrated daily prior to use and set for data logging.

There were several instances when the VOC air monitoring criteria data were exceeded. However, based on the field monitoring data, these exceedances were related to operation of gas or diesel-powered equipment and were for short periods of time. Elevated dust particle readings were occasionally observed and were due to saw cutting of concrete, exhaust from gas or diesel-powered equipment, or moisture interference. During the saw cutting activities, the concrete was wetted to minimize dust particles. CAMP data is included in Appendix H.

2.6 Groundwater Monitoring and Sampling

Groundwater monitoring activities consisted of the collection of depth-to-water measurements, gauging the wells for the presence of NAPL, and collection of groundwater samples for laboratory analyses.

2.6.1 Depth-to-Water Measurements and NAPL Gauging

Depth to groundwater measurements were collected from accessible monitoring wells at high tide and low tide on November 2, 2009, and December 19, 2012. Monitoring well gauging points are shown in Plates 1 and 2. Table 3 provides a summary of measured depth to groundwater and corresponding elevations of groundwater in each monitoring well. A discussion of groundwater elevations and groundwater flow is provided below in subsection 3.2. During these two events, monitoring wells were also gauged to determine if NAPL was present.

Two wells, WW-MW-01 and WW-MW-04, could not be located during the December 19, 2012 gauging event.

Water level measurements were collected at low and high tide levels from the shore in the adjacent East River. A tidal benchmark (TBM) was established along the East River bulkhead, at Parcel 4, to gauge surface water and measure tidal fluctuations (Plates 1 and 2). On the day of measurements, tidal stage information was obtained from www.saltwatertides.com based on a tidal gauging station located at the Williamsburg Bridge, which is located 0.8 miles downstream of the bulkhead referenced above.

2.6.2 Groundwater Sampling

Groundwater samples were collected from the monitoring wells and temporary monitoring points in July 2009, November 2009, and December 2012 as summarized in the table below. Groundwater sampling was completed during two events due to property access and RIWP and SRIWP scopes. Monitoring well locations are shown in Plates 1 and 2.

Sample Period	Work Plan Scope(s) [Location]	Wells Sampled
July 2009	RIWP [Parcels 1 and 2]	Temporary monitoring wells: WW-SB-03, WW-SB-05, WW-SB-07, WW-SB-19, WW-SB-21, and WW-SB-22
November 2009	RIWP [Parcel 2 and Street ROWs]	WW-MW-01 through WW-MW-08 and WW-MW-10 through WW-MW-17
December 2012	SRIWP [south of Parcel 5, Parcel 6, and Street ROWs]	WW-MW-18 through WW-MW-22

2.6.2.1 Purging

Low-flow purging of the RI monitoring wells and temporary monitoring wells was performed using peristaltic pumps and dedicated tubing in accordance with the RIWP. Groundwater purged from each well was monitored for field parameters (temperature, pH, conductivity, dissolved oxygen [DO], oxidation-reduction potential [ORP], and turbidity) using a closed flow-through cell and a multi-parameter water quality meter. Wells were sampled after the values of field parameters stabilized in accordance with the RIWP. At least one well volume was purged from each well prior to sampling. IDW is further discussed in Section 2.11.

2.6.2.2 Sampling

After each monitoring well was purged, groundwater samples were collected and placed into laboratory-provided, pre-cleaned, and pre-preserved containers. Temporary well WW-SB-22 had a very slow recharge rate, so the well was pumped dry and the sample was collected the following day.

VOC samples were collected with a dedicated/disposable polyethylene bailer and rope that was lowered to the center of the screen interval to collect a sample. All other sample aliquots were collected using the peristaltic pump and dedicated tubing in accordance with the RIWP. Each sample container was placed into coolers and packed with ice. Groundwater samples from all the permanent monitoring wells and temporary monitoring wells screened across the water table were analyzed for VOCs, SVOCs, TAL metals, herbicides, pesticides, PCBs and total cyanide. Deeper temporary monitoring wells located within Parcel 1 were all analyzed for VOCs, SVOCs, TAL metals, total cyanide. All temporary monitoring wells within the Parcel 1 building were also analyzed for ammonia at the request of the property owner as indicated in Table 1.

2.7 Hydraulic Conductivity Testing

Rising head in-situ hydraulic conductivity tests (slug tests) were completed at three monitoring wells, within Parcel 2, that were representative of the Upper Glacial Aquifer. Hydraulic conductivity was estimated using the Bouwer and Rice method (Bouwer, Rice, 1976; Bouwer, 1989). The results of the slug tests are summarized in Table 4. Hydraulic conductivity calculations are provided in Appendix I.

2.8 Sub-slab Vapor and Air Sampling

Sub-slab vapor, indoor air, and ambient (outdoor) air sampling was conducted in accordance with the NYSDEC-approved RIWP.

2.8.1 Sub-Slab Vapor Sampling

Two sub-slab vapor points (WW-SV-01 and WW-SV-02) were installed inside the Parcel 1 building through the concrete slab and sub-slab vapor samples were collected from each point. The sub-slab vapor points were installed to evaluate the potential for soil vapor intrusion (SVI) into the building currently on Parcel 1.

The sub-slab vapor points were installed by coring through the concrete building slab with a concrete coring machine. Each point was constructed of a segment of 3/8-inch stainless steel tubing with the opening positioned just below the bottom of the building slab. Each sub-slab vapor point was backfilled with sand, a bentonite seal and non-shrinking concrete seal. Each point was protected with a 2-inch flush-mounted manhole.

Each sub-slab vapor sample was collected in an individually certified, 6-liter capacity SUMMA® canister. Each canister had a laboratory-supplied flow controller calibrated for an 8-hour sample period. The flow rate was less than 0.2 liters per minute. An enclosure that was enriched with helium tracer gas was used, as described in the NYSDOH SVI Guidance document (2006). The samples were delivered to TestAmerica-Connecticut for shipment to their laboratory in Knoxville, Tennessee and were analyzed for VOCs by USEPA Method TO-15 (including naphthalene) and helium by ASTM Method 1945.

2.8.2 Indoor Air Sampling

Indoor air was sampled at two locations (WW-IA-01 to WW-IA-02) within the Parcel 1 building. Indoor air samples were collected during sub-slab vapor sampling to evaluate potential SVI into the Parcel 1 on-site building.

The indoor air samples were collected using individually-certified 6-liter SUMMA® canisters. Each canister was equipped with a laboratory-supplied flow controller that was calibrated for an 8-hour sample period. The flow rate for each air sample did not exceed 0.2 liters per minute. The inlets of each canister were positioned at an approximate breathing height of 3 to 5 feet above ground. The samples were delivered to TestAmerica-Connecticut for shipment to their laboratory in Knoxville, Tennessee and were analyzed for VOCs by USEPA Method TO-15 (including naphthalene).

2.8.3 Ambient (Outdoor) Air Sampling

Ambient (outdoor) air was sampled at one location (WW-OA-01). This sample was collected during sub-slab vapor/indoor air sampling to determine outdoor air concentrations and the potential to influence indoor air quality.

The ambient outdoor air sample was collected using an individually-certified 6-liter SUMMA® canister that was equipped with a laboratory-supplied flow controller that was calibrated for an 8-hour sample period. The flow rate did not exceed 0.2 liters per minute.

This air sample was delivered to TestAmerica-Connecticut for shipment to their laboratory in Knoxville, Tennessee. The sample was analyzed for VOCs by USEPA Method TO-15 (including naphthalene).

2.9 Data Validation and Management

Analytical results for the samples submitted to TestAmerica were validated using New York State Analytical Services Protocol (NYSASP) Category B guidance. The analytical data include qualifiers based on the validation. All data were found to be valid and usable for the purposes of this RI Report with the exception of values rejected as indicated in the tables. The data usability summary reports, chain-of-custody forms and the validated laboratory Form I reports are included in Appendix J.

2.10 Survey

RI sample locations were surveyed by a New York State-licensed land surveyor (NYLS, License #: 050146). The survey was conducted to A-2 standards of accuracy, with an approximate horizontal and vertical precision of ±0.02 feet. Point coordinates were referenced to the New York State Plane Coordinate System (East Zone, North American Vertical Datum (NAVD) 83) as determined by differential global positioning system (GPS) observations.

Two high precision control points were established on-site using data from a GPS base station in Palisades Cliff, New Jersey. A number of subordinate control points were subsequently established from the GPS baseline, and were then occupied by a total station to locate individual points.

Point elevations are expressed as heights above the ellipsoid NAVD 88. This datum is not directly related to sea level; however, at the USGS tidal benchmark located approximately two miles south of the Site at the Brooklyn Navy Yard, mean sea level is approximately at NAVD 88 elevation -0.31 feet.

A reference benchmark was established along the shoreline of Parcel 4, on the East River, to facilitate monitoring of tidal fluctuations. Water level measurements were collected at low and high tide levels from the shore in the adjacent East River. Tidal stage information was obtained for a tidal gauging station located at the Williamsburg Bridge, located 0.8 miles downstream of the bulkhead referenced above.

2.11 IDW Sampling and Disposal

IDW generated during the RI activities and consisting of soil cuttings, excess soil samples, sediment cuttings, personal protective equipment and plastic, and development and purge water were placed in separate 55-gallon United States Department of Transportation (USDOT)-approved drums based on material type. The materials were tested and disposed off-site by National Grid at an appropriate facility.

2.12 Forensic Analysis of Chemical Data

Exponent conducted an analysis of the chemistry data obtained from the former Williamsburg Works MGP site (Parcels 1–4) and surrounding parcels (Parcels 5 and 6) to provide an understanding of the distribution, concentrations, and potential sources of different chemicals found in the parcel soils. Exponent reviewed GEI's RI soil samples and samples collected by URS in September 2014.

Chemicals not known to be associated with typical MGP operations, such as solvents, PCBs, pesticides, elevated metals, and distilled petroleum products, were reported in soils and NAPL recovery wells. Various industrial operations occupied Parcels 1–4 after the cessation of MGP operations and it is likely that these industrial sources contributed to the non-MGP chemicals. Exponent found that the contamination found on the different parcels is from multiple sources, consistent with the historical industrial nature of the area. The full report is provided in Appendix D.

2.13 Deviations from the RIWP, Addendums, and SRIWP

This section describes deviations from the methods and procedures used during the RI that were summarized and approved in the RIWP, RIWP Addendums, and SRIWP. Deviations to the approved plans include:

- Geotechnical analysis was proposed as part of the RI, however, due to a Geoprobe being selected as the primary drilling method, equipment and sample volume restrictions did not allow for geotechnical sample collection.
- In addition to the shallow fill samples, deep subsurface soil samples were tested for PCBs, pesticides, and herbicides from borings south of Parcel 5 as well as WW-SB-44(50-51).
- Ammonia analysis was performed from samples collected within Parcel 1 at the request of the property owner. Ammonia was not analyzed from WW-SB-20 at depths of 55 to 57 feet and 62 to 63 feet.
- In addition to the ten sediment cores proposed as part of the SRIWP, four additional sediment cores were installed as step out locations for the purpose of delineating visual impacts.
- Additional temporary groundwater sampling points were installed and sampled within Parcel 1 at the request of the property owner.

3. Site Geology and Hydrogeology

This section documents the geology and hydrogeology beneath the Site and surrounding area based upon specific boring and monitoring well data collected during the RI and other collocated or nearby investigations.

3.1 Geology

Four major stratigraphic units, in order of increasing depth, were identified during the RI drilling program: (1) fill, (2) alluvial, harbor, and marsh deposits, (3) glacial deposits [glacial till, glacial outwash, and glacial lacustrine (lake)], and (4) bedrock [Fordham Gneiss].

Cross sections A-A' to J-J'(Plates 3 through 6) were developed to illustrate the geology underlying the area investigated. Figure 5 provides a contour map depicting the elevation of the surface of the glacial lacustrine layer. Detailed geologic descriptions for each soil boring, and monitoring well construction details, are shown in the boring logs provided in Appendix G. Detailed geologic descriptions and photographs of each test pit are provided in Appendix F.

3.1.1 Fill

Fill was encountered in each of the soil borings drilled at the area investigated. Fill is present beneath the asphalt pavement, concrete slabs, and buildings. As discussed in Site history (subsection 1.2.1), the majority of the area investigated (including Parcels 2 through 6) was created historically by filling shoreline areas of the East River and Bushwick Inlet. The fill consists primarily of loose, non-cohesive sand, and silty-sand mixed with ash, gravel, and fragments of brick, concrete, coal and wood.

The former shoreline of the Bushwick Inlet and East River was located along the eastern edge of Parcel 2, as shown on an 1844 *Map of New York Bay and Harbor and The Environs* included in Appendix C. Parcels 2 through 6 were landfilled as part of the development of the waterfront in the mid-1800s. Historically, a portion of the area investigated was in a marsh (possibly intertidal) area, and submerged under 3 feet to more than 15 feet of water. The depth of the water increased to the west towards the East River. In the 1800s, the area was filled and Parcels 2 through 6 were developed.

Fill depths ranged from a few feet, in multiple locations, to generally 10 to 20 feet along the East River. A maximum fill depth of 43 feet bgs [-39.1 feet NAVD] was observed at BPB-5, within the North 12th Street ROW. The thickness of fill deposits increases from east to west, which is consistent with the land filling of shorelines of the East River and Bushwick Inlet.

Fill materials, including brick, wood, ash, and cinders, were encountered near the current shoreline of the East River to depths ranging from 5 feet bgs [1.88 feet NAVD, WW-SB-36] to 43 feet bgs [-39.1 feet NAVD, BPB-5], as shown on Plate 5.

3.1.2 Alluvial, Harbor, and Marsh Deposits

Alluvial, harbor, and marsh deposits, where present, were found beneath the fill layer. The alluvial deposits consist of sub-units of primarily sands with occasional silt and/or gravel. Harbor deposits consist of organic materials, including fine-grained soil such as organic soil. Marsh deposits consist of primarily silt, silt-clay, clay, and peat. Based on historical maps, these deposits are believed to be associated with a former marsh (possibly inter-tidal) located adjacent to the Buswick Inlet and harbor deposits in the East River. The alluvial, harbor, and marsh deposits were encountered on or adjacent to Parcels 2 through 6.

Harbor deposits were encountered in each of the sediment cores advanced in the East River and Bushwick Inlet. Harbor deposits consisted of black to gray organic silt with varying amounts of sand, organic material (sticks, wood fibers, roots, shell fragments, etc.), and urban fill material (e.g. glass fragments, plastic pieces, hair, etc.). The harbor deposits were present from the sediment water interface to a maximum depth of 33.5 feet bgs [-52.03 feet NAVD, WW-SED-17].

The thickness of the marsh deposits ranged from 0.5 feet [bottom depth -2.52 feet NAVD, WW-MW-21] at the southern edge of the area investigated, to 26 feet [bottom depth -23 feet NAVD, BC-4] adjacent to the Bushwick Inlet and north of Parcel 6. The deposits were observed as shallow as 5 feet bgs [2.13 feet NAVD, WW-MW-19] Parcel 6, and at a maximum depth of 35 feet bgs [-49.17 feet NAVD, BPB-3] adjacent to Parcel 4, as shown on Cross-section E-E' on Plate 4.

3.1.3 Glacial Deposits

Glacial deposits were encountered beneath the fill and alluvial deposits (where present), and above bedrock. Glacial deposits were the most extensive unit encountered during the RI and were present at up to a thickness of approximately 97 feet based upon deep soil borings completed at Parcel 2. The glacial deposits are categorized into three sub-units:

- glacial till,
- glaciolacustrine (glacial lake) clay, and
- glacial outwash.

Glacial outwash was the most predominant geologic unit observed. Sporadic layers of glacial till and a continuous glaciolacustrine layer are present within the glacial outwash. These units are depicted on cross sections A-A' through J-J', shown on Plates 3 through 6. The glacial deposits encountered are consistent with glacial stratigraphy described by

Merguerian (2003) and Moss and Merguerian (2005 and 2007). The sequence of deposits is likely associated with the advance of the Harbor Hill terminal moraine, damming of glacial meltwaters and forming of glacial lakes, and breaching of the Harbor Hill Terminal Moraine at The Narrows of New York Harbor and subsequent retreat of the glacier.

The glacial outwash sands are typically light brown, brown, loose, non-cohesive, well-sorted, fine to coarse sands with varied amounts of gravel, sporadic cobbles and trace silt. The glacial outwash deposits extend to the bedrock surface, which is located approximately 99 feet bgs [-87.27 feet NAVD, WW-SB-102] on Parcel 2.

Sporadic layers of glacial till were present within the glacial outwash. Glacial till layers generally consist of silt-sand mixtures. The maximum observed thickness of glacial till material was 49 feet [bottom depth -36.26 feet NAVD, WW-SB-54] south of Parcel 5; however, the glacial till thickness was generally less than 10 feet.

A consistent layer of glaciolacustrine clay (a glacial silt-clay unit) was encountered beneath the area investigated. This deposit consists of a cohesive, dense, red to brown to gray, clay with varying amounts of fine sand, with varves of silt and fine sand. The glacial silt-clay was encountered below the fill layer and inter-bedded with the glacial outwash. The glacial silt-clay was encountered as shallow as 36 feet bgs [-31.4 feet NAVD, BPB-2/MW-1] at Parcel 5, and as deep as 90 feet bgs [-78.27 feet NAVD, WW-SB-102] at Parcel 2. The deepest borings were advanced in Parcel 2; the bottom of the clay layer was not reached outside of Parcel 2 with the exception of WW-SB-21 located in Parcel 1. The glacial silt-clay unit is likely glaciolacustrine in origin as evidenced by the varves of fine sand. Similar deposits within New York Harbor, described by Meguerian (2003), were inferred to be associated with damming of Hudson River by the Harbor Hill Terminal Moraine to the southwest.

3.1.4 Bedrock

Bedrock was not encountered in RI borings. However, bedrock was encountered at 99 feet [-87.27 feet NAVD] in URS boring WW-SB-102 completed at Parcel 2, installed as part of a PDI (URS, 2013). Published bedrock information presented by Buxton, et al. (1981) indicates that bedrock in the vicinity of the Site is located at approximately -100 feet NAVD.

3.2 Site Hydrogeology

The Site hydrogeology will be discussed in terms of the closest surface water bodies (East River and Bushwick Inlet) and the groundwater aquifer (Upper Glacial Aquifer) that underlies the former Williamsburg Works MGP and vicinity. Groundwater elevation measurements are provided in Table 3.

The Upper Glacial Aquifer is generally an unconfined aquifer. This is consistent with published studies completed by Buxton, *et al*. (1981) and Cartwright (2002). The Upper Glacial Aquifer has been subdivided into shallow, intermediate, and deep groundwater zones for purposes of this RI. Groundwater contour maps of the shallow (groundwater surface) zones of the Upper Glacial Aquifer were prepared for high and low tide stages on November 2, 2009 and December 19, 2012 (Plate 7, and Figures 5 through 7). Two monitoring wells (WW-MW-01 and WW-MW-04) were unable to be located during the 2012 gauging event.

Tidal effects were observed on groundwater elevations in the Upper Glacial Aquifer. Plate 7 and Figures 6 through 8 depict the low tide and high tide groundwater contour maps for the shallow zone of the Upper Glacial Aquifer. Table 3 presents a summary of depths to groundwater and groundwater elevations at high and low tide.

Horizontal hydraulic conductivities were calculated using Bouwer-Rice methods based upon in-situ (slug) tests completed during the RI. Slug tests were performed in shallow (groundwater surface) wells within the Upper Glacial Aquifer. A summary of hydraulic conductivity values is presented in Table 4. Appendix I includes the slug test data with the associated hydraulic conductivity calculations.

3.2.1 Upper Glacial Aquifer

To evaluate the conditions within the Upper Glacial Aquifer, monitoring wells installed in three groundwater zones (shallow [groundwater surface], intermediate, and deep). Shallow wells were installed by GEI as part of the RI, and intermediate and deep wells were installed by URS as part of the Pre-Design Investigation. Table 3 presents a summary of depths to groundwater and groundwater elevations at high and low tide conditions on December 19, 2012. A discussion of the groundwater conditions for the shallow, intermediate, and deep zones of the Upper Glacial Aquifer is presented below.

3.2.1.1 Upper Glacial Aquifer – Shallow (Water Table) Zone

The shallow groundwater zone resides in fill, alluvial deposits, and glacial deposits. Well screen intervals within the shallow zone were constructed with screen intervals placed across the water table; the screen intervals ranged between approximately 0.3 to 23 feet bgs (11.88 to -7.65 feet NAVD). Groundwater elevations from the November 2, 2009 and December 19, 2012 gauging events are presented in Table 3. Plate 7 presents the groundwater contours for the shallow (water table) zone at high tide on December 19, 2012. Figure 8 depicts the contours at low tide and Figures 6 and 7 depict high and low tide contours from the November 2, 2009 event.

Water Level Summary and Groundwater Flow

Water table elevations (shallow zone) ranged from elevation -2.56 feet NAVD at WW-MW-14 [near the East River] to 9.20 feet NAVD at WW-MW-07 [Parcel 2] during the December 19, 2012 groundwater gauging event.

The northernmost gasholder tank (labeled “Relief Holder” on the 1921 BUG map) appears to be intact based on apparent higher water table elevations inside the holder compared to outside the gasholder foundations. The apparent groundwater surface elevation inside the Relief Holder tank at Parcel 2 is higher than outside the gasholder foundation. The observed apparent water table inside the gasholder tank was approximately elevations 10.35 feet NAVD (WW-TP-01) and 10.15 feet (WW-TP-02). Outside the holder it was measured at 6.69 feet NAVD (WW-MW-07), 2.48 feet NAVD (WW-MW-05), 7.3 feet NAVD (WW-SB-24), and 5.5 feet NAVD (WW-SB-42).

A noticeable difference in groundwater elevations was not observed within the Holder No. 1 and 2 foundations suggesting that these holders are not intact and do not act as hydraulic barriers.

Tidal fluctuations in the shallow zone ranged from no change in WW-MW-17 during the November 2, 2009 gauging event to 3.78 feet in WW-MW-14 during the December 19, 2012 gauging event. WW-MW-17 is located on the western portion of Parcel 2 while WW-MW-14 is located adjacent to Parcel 4 at the end of North 11th Street, approximately 50 feet to the southeast of the East River. The tidal change measured from the tidal benchmark within the East River was 5.70 feet during the November 2, 2009 gauging event and 3.38 feet during the December 19, 2012 event. Overall, the greatest tidal fluctuations were observed in monitoring wells located closest to the East River shoreline. Tidal fluctuations were less than 0.05 feet at approximately 300 feet from the East River.

The shallow groundwater near the Site generally flows northwest toward the East River at high and low tide levels based upon groundwater elevation data (Plate 7 and Figures 6 through 8). The groundwater contours show a potential area of mounded water in the groundwater surface portion of the Upper Glacial Aquifer beneath Parcel 2, which is likely attributable to lack of on-site drainage and by the presence of the Relief Holder (Plate 7 and Figures 6 through 8).

Hydraulic Gradient and Average Linear Flow

The average horizontal hydraulic gradient of the shallow groundwater is approximately 0.013 foot/foot. The steepest observed hydraulic gradients within the monitoring well network ranged up to 0.017 foot/foot and were generally located within Parcel 2 near the former holder tanks. Flatter gradients were apparent in localized areas of the Parcels 4, 5, and 6 that are closer to the shoreline, ranging from approximately 0.003 to 0.009 foot/foot.

A tidally influenced hydraulic gradient change was apparent in wells near the shoreline of the East River during both gauging events performed on November 9, 2009 and December 19, 2012. A hydraulic gradient of 0.008 foot/foot was observed at high tide within approximately 100 feet of the East River in the area of wells WW-MW-12 and WW-MW-14.

The hydraulic conductivity (K) of the groundwater surface portion of the Upper Glacial Aquifer was estimated using data generated from well permeability tests (rising head slug test) conducted on monitoring wells (WW-MW-01, WW-MW-04 and WW-MW-17). WW-MW-01 was screened within soil that consisted of intervals of silty sand, widely graded gravel with sand, widely graded sand with gravel, and widely graded sand. WW-MW-04 was screened within soil that consisted of intervals of silt with gravel, narrowly graded sand, silty sand, and widely graded sand. WW-MW-17 was screened within soil that consisted of silty sand. The calculated hydraulic conductivity ranged from 2.3 to 2.6 feet/day (Table 4). Appendix I shows hydraulic conductivity calculations.

Average linear flow velocities for the shallow upper glacial aquifer were calculated based on the measured hydraulic conductivities and the horizontal hydraulic gradients using the following equation:

$$V = K*i/n$$

where:

K = hydraulic conductivity of the formation
i = lateral hydraulic gradient
n = effective porosity of the formation

The following values were used to calculate a range of average linear flow velocities for the shallow portion of the Upper Glacial Aquifer.

Parameter	Value	Notes
Effective porosity (n):	30%	Assumed literature value (Fetter, 1988)
Lateral hydraulic gradient (i):	0.013 (foot/foot)	Determined from contour map (Plate 7 and Figures 6 through 8)
Hydraulic conductivity (K):	2.6 (feet/day) 2.5 (feet/day) 2.3 (feet/day)	Slug test value from WW-MW-01 Slug test value from WW-MW-04 Slug test value from WW-MW-17

The estimated average linear flow velocity is 38 feet per year for the area investigated.

Tidal Summary

Three monitoring wells were installed within approximately 50 feet of the East River or the Bushwick Inlet shoreline:

- WW-MW-14 – adjacent to Parcel 4 at the dead end of North 11th Street
- WW-MW-15 – adjacent to Parcel 4 at the dead end of North 12th Street
- WW-MW-19 – within Parcel 6

Tidal fluctuations of water level measurements within these wells are summarized in the table below and are compared to the change in surface water elevation.

Location	Tidal Fluctuation November 2, 2009	Tidal Fluctuation December 19, 2012
East River Tidal Benchmark	5.70 feet	3.38 feet
WW-MW-14	3.05 feet	--
WW-MW-15	1.80 feet	0.15 feet
WW-MW-19	--	1.30 feet

-- WW-MW-19 was not installed during the 2009 gauging event. A measurement error at WW-MW-14 prevented estimation of tidal fluctuation for the 2012 gauging event.

Tidal fluctuations generally decreased as wells moved away from the shoreline. A full list of well gauging data is provided in Table 3.

3.2.1.2 Upper Glacial Aquifer – Intermediate Zone

Monitoring wells were not installed in the intermediate zone of the Upper Glacial Aquifer by GEI as part of RI. Two intermediate zone monitoring wells (WW-MW-100I and WW-MW-102I) were installed by URS as part of the Pre-Design Investigation. The intermediate groundwater zone resides in glacial deposits just above the glacial silt-clay unit. Monitoring well screen intervals within this zone ranged from -35.46 to -47.36 feet NAVD.

The groundwater elevations within the intermediate groundwater zone ranged from elevation 2.20 feet NAVD at WW-MW-100I to elevation 3.96 feet NAVD at WW-MW-102I during the December 19, 2012 groundwater gauging event. Both intermediate wells had a tidal fluctuation of 0.01 feet between high and low tide.

3.2.1.3 Upper Glacial Aquifer – Deep Zone

The deep groundwater zone consists of glacial deposits. One well (WW-MW-102D) was installed by URS as part of the PDI and was screened at -80.27 to -90.27 feet NAVD immediately below the bottom of the glacial silt-clay unit and above bedrock.

Groundwater elevation within the deep groundwater well ranged from 2.78 feet at low tide to 2.80 feet at high tide during the December 19, 2012 groundwater gauging event. Tidal fluctuation within the deep zone of the Upper Glacial Aquifer well was 0.02 feet. Vertical hydraulic gradient between the intermediate and deep WW-MW-102 wells was calculated at a magnitude of 0.0268 at high tide and 0.0275 at low tide with a downward flow direction.

4. Nature and Extent of Impacts

This section of the report summarizes the physical and chemical nature and extent of impacts identified through implementation of the RIWP at the former Williamsburg Works MGP Site. The RI was conducted with no bias to National Grid operations given the overwhelming information pointing to historic releases from multiple potential sources (Section 1.0). Throughout the investigation, a review of historic occupancy and process operations highlighted that adjacent operations, specifically those conducted by SOCONY Pratt Works, produced a similar contaminant profile to that which might be found at an MGP (e.g. DNAPLS and Tars). A review of the interim data revealed heterogeneous impacts and commingling of contaminants resulting in uncertainty in source identification throughout the area of investigation. Given the difficulty in distinguishing sources and lack of investigation data on portions of adjacent parcels where historic operations occurred, the nature and extent of impacts and Conceptual Site Model (CSM) must be considered preliminary until further delineation has been completed on all SOCONY-Pratt Works parcels. The RI was conducted specifically to observe and document the presence/absence of potentially MGP-related impacts, such as tar (a DNAPL), volatile organic compounds, metals, odors, physical sheen, staining, coating, and saturation, purifier waste, metals, etc. The following discussion is based upon interpretation of data obtained and observations made during the RI.

The nature and extent of physical impacts and chemical constituents is affected by a number of factors including: the presence of former historic structures, former site use, geologic conditions, groundwater flow patterns and historical land use. Physical observations (visual and olfactory) are provided on the boring and test pit logs included in Appendices F and G. These observations are also summarized on geologic cross sections A-A′ through K-K′ in Plates 3 through 6. Figures 6 through 8 provide a summary of physical impacts observed within the unsaturated zone, saturated zone above the clay layer, and the clay layer and deeper zone. Discussion of depth is relative to feet bgs. Discussion of elevation is relative to the NAVD88.

This section presents the analytical results of the soil, sediment, groundwater, sub-slab vapor, and air samples collected during the RI.

The analytical results are discussed in terms of compounds or groups of compounds that are typically associated with former MGP operations. Generally, contaminants are grouped as organic or inorganic.

Organic compounds associated with former MGP operations include VOCs and SVOCs. The principal VOCs detected during the RI were benzene, toluene, ethylbenzene, and xylene (commonly and collectively referred to as BTEX). BTEX are common VOCs associated with MGP-related impacts and the common subset of SVOCs associated with MGP-related impacts are PAHs. For the purpose of comparison to applicable NYSDEC and NYSDOH regulations, in this report, PAHs include:

2-Methylnaphthalene	Anthracene
Benzo(b)fluoranthene	Chrysene
Fluorene	Phenanthrene
Acenaphthene	Benz(a)anthracene
Benzo(g,h,i)perylene	Dibenz(a,h)anthracene
Indeno(1,2,3-cd)pyrene	Pyrene
Acenaphthylene	Benzo(a)pyrene
Benzo(k)fluoranthene	Fluoranthene
Naphthalene	

BTEX and PAHs are found in a variety of petroleum-related products as well as MGP by-products. PAHs in particular are ubiquitous in the urban environment and are commonly associated with multiple urban sources, such as: asphalt pavement run-off; combustion fall out; heavier fuel storage facilities for heating oil, diesel ranges (No. 2 through 4), and boiler fuels (e.g. No. 6 and bunker crude); and abraded tire particulates found along roadways and washed into waterways, as well as many other industrial sources. The fingerprinting analysis performed by Exponent states that chemical results demonstrate that the contamination at the different parcels is from multiple sources, consistent with the historical industrial nature of the area (Appendix D).

During the RI, a number of artificial organic compounds that had not been synthesized and/or were not broadly used during the era of the MGP operation were identified. Such compounds include PCBs, chlorinated solvents and organochlorinated pesticides. Since these compounds did not exist and/or were not broadly used at the time of the MGP operations, the presence of these compounds is related to land use activities that post-date the operation of the former MGP. According to the chemical fingerprinting analysis of available data that was performed by Exponent (Appendix D), several non-MGP compounds, including PCBs and pesticides in surface and shallow subsurface soil as well as solvents at varying depths across the area investigated, in addition to tar.

Soil analytical results were compared to several Soil Cleanup Objectives (SCOs). In accordance with NYSDEC regulations, all soil analytical results are compared to Title 6, Chapter 100, Part 700-705, Subpart 375-6 of the New York State Code of Rules and Regulations (6NYCRR Part 375) Unrestricted Use SCOs (NYSDEC, 2006) (Unrestricted SCOs).

Soil analytical results were also compared to either the Restricted Use Restricted Residential SCOs (subparagraph 1.8(g)(2)(ii)) (Restricted Residential SCOs) or to the Restricted Use

Industrial SCOs (subparagraph 1.8(g)(2)(iv) (Industrial SCO). The Restricted Residential SCOs apply to properties where the land use includes active recreational uses, such as public uses with a reasonable potential for soil contact. Parks and areas of passive recreational use, where there is some potential for contacting soil, were classified under the Restricted Residential category under 6NYCRR Part 375 (NYSDEC, 2006). The Industrial SCOs are appropriate for evaluating the significance of site impacts in an urban setting because they reflect the current zoning of the site and surrounding area. Parcels 2 and 6 were compared to the Restricted Residential SCOs because the currently understood future land use for these properties is as park land. Parcels 1, 3, 4, and 5 were compared to the Industrial SCOs because of the current zoning.

Table 5 presents the typical background concentrations of metals in soil for the Eastern United States (Shacklette and Boerngen, 1984). Table 6 presents a summary of background polycyclic aromatic hydrocarbon (PAH) concentrations in New York City surface soil (Retec, 2007). The background study by Retec was conducted in Manhattan, New York; however, the background values are expected to be applicable to all areas of New York City, including Brooklyn. These tables are useful in evaluating the concentrations of inorganic (i.e., metals and cyanide) and organic compounds present at the area investigated.

Tables 7, 8, and 9 provide the soil sample results for individual compounds detected at least once and the sum of the detected concentrations for each of the following: BTEX, all VOCs, PAHs, all SVOCs, and PCB aroclors. For estimated concentrations of individual compounds ("J" qualified), the estimated value was used to generate the total. Detected compounds are bold in the table. Concentrations in excess of the Unrestricted SCOs and applicable Restricted Residential or Industrial SCOs have been highlighted. Table 7 provides detected surface soil analytical results for locations adjacent to Parcels 2, 3, and 4, Table 8 provides subsurface soil analytical results for Parcels 2 and 6, only, and Table 9 provides subsurface soil analytical results for Parcels 1, 3, 4, and 5, only.

In accordance with NYSDEC regulations, sediment sampling results were compared to the June 24, 2014 NYSDEC Screening and Assessment of Contaminated Sediment Saltwater Sediment Guidance Values (SSGVs). Table 10 provides the individual compound results, the sum of the detected concentrations of BTEX as well as the sum of all VOCs, the sum of the detected concentrations of PAHs as well as the sum of all SVOCs, and the sum of PCB constituents for sediments. Detected compounds are bold and exceedances of the guidance values have been highlighted in the tables.

In accordance with NYSDEC regulations, groundwater sampling results were compared to the New York State Ambient Water Quality Standards (NYSAWQS) for a GA area. It should be noted that while the results were compared against the NYSDEC's GA standards per NYSDEC guidance, NYC provides potable water to Brooklyn and; therefore, potential exposures related to consumption of groundwater are not of concern for this Site. Table 11 provides a summary of field parameters collected during sampling activities. Table 12 provides the groundwater sample results for individual compound and the sum of the detected concentrations for each of the following: BTEX, all VOCs, PAHs, all SVOCs, and PCB aroclors. Detected compounds are bolded and exceedances of the criteria have been highlighted.

In commercial settings, NYSDOH suggests that indoor and outdoor ambient air results be compared to criteria in USEPA *Building Assessment and Survey Evaluation* (BASE), conducted by USEPA in 2001 (NYSDOH, 2006). The USEPA BASE study assessed background VOC concentrations within indoor air in public and commercial office buildings. A comparison to this database is appropriate since office areas are part of the current building operations at Parcel 1. At this time, there is no background comparison data or standard for soil vapor. Sub-slab vapor, indoor, and outdoor ambient air results are provided in Table 13. Concentrations of compounds detected in indoor and outdoor air above the 90th percentile of the applicable USEPA BASE Study levels are shaded in gray on the tables.

In addition to the EPA BASE, the NYSDOH SVI Guidance includes indoor air guidelines for evaluation of three VOCs: trichloroethene (TCE), PCE, and methylene chloride. The guidelines are established to provide context for the concentrations and reduce exposures to the chemicals. NYSDOH developed matrices that indicate what, if any, action is recommended based on the concentrations of PCE, TCE, 1,1,1-trichloroethane (1,1,1-TCA), and carbon tetrachloride detected in indoor air and sub-slab vapor. NYSDOH matrices are provided in Appendix K.

The following terminology and descriptions were used to describe the visual and olfactory observations of tar and/or petroleum impacts in the soil and sediment, as recorded on the soil boring, sediment core, and test pit logs. These terms, as defined, will be used in the discussion presented below.

- **Saturated:** the entirety of the pore space of the soil matrix for a given soil sample appeared to be filled with a NAPL. The characteristics of the observed NAPL were used in the description (i.e., tar-saturated or petroleum-saturated).

- **Coated:** soil grains were coated with tar/free-phase liquid, but there was not sufficient free-phase material present to saturate the pore spaces. The term “coated” was used in conjunction with modifiers such as light, moderate or heavy to indicate the degree of coating.

- **Blebs:** discrete blebs or pockets of NAPL were observed within a soil sample. The majority of the soil matrix did not exhibit the presence of NAPL beyond these discrete blebs. The characteristics of the observed NAPL were used in the description (i.e., tar blebs or petroleum blebs).

- **Sheen:** iridescence was observed within a soil sample.
- **Stained:** the soil sample exhibited a discoloration not apparently associated with natural processes. The color of the observed stain was noted and if the characteristics of the staining material were discernible, they were also noted (i.e., tar-stained or petroleum-stained).
- **Odor:** if an odor was observed, it was described based on its relative intensity and characteristics. Modifier terms such as strong, moderate, and slight were used to describe relative odor intensity. Descriptive terms such as tar-like or petroleum-like odors were also used.

The descriptions of soil samples, using the above terms, assists in this RI in characterizing the potential range of NAPL conditions and mobility in the subsurface, ranging from residual/non-mobile/weathered to NAPL-saturated, which may indicate potential mobility.

4.1 Impacts to Soil

As previously mentioned in section 3.1.1, the Site and surrounding area have been subject to historical filling as part of the development of the area. Soil that contains fill can often contain elevated concentrations of compounds such as PAHs and metals, unrelated to historic operations at the Site.

4.1.1 Surface Soil

There is not any exposed surface soil within the footprint of the former MGP therefore surface soil samples were collected adjacent to the former MGP footprint from planter boxes in the current sidewalks. Nine surface soil samples (WW-SS-01 through WW-SS-09) were collected from unpaved areas lining the sidewalks within the North 11th and North 12th Street ROWs (Plates 1 and 2). No NAPL was observed within surface soil.

All surface soil samples were compared to Unrestricted SCOs. In addition, samples collected adjacent to Parcel 2 were compared to Restricted Residential SCOs and samples collected adjacent to Parcels 3 and 4 were compared to the Industrial SCOs because of current zoning.

Laboratory testing results indicated that VOCs, SVOCs, pesticides, PCBs, metals and free cyanide were detected in surface soils (Table 7). The presence of these compounds is not associated with the former operation of the MGP and likely represent impacts associated with fill and land uses post-dating the MGP operation. In Exponents fingerprint analysis, they state that gas chromatograms showed the presence of unresolved complex mixture (UCM) in all surface soil samples, consistent with residual-type oil found in road runoff.

4.1.1.1 Parcel 2(Block 2287 Lot 1)

Three surface soil samples (WW-SS-01 through WW-SS-03) were collected adjacent to Parcel 2 to assess surface soil conditions.

BTEX compounds were not detected in the surface soil samples, with the exception of toluene in WW-SS-01 at a concentration of 0.00016 milligrams per kilogram (mg/kg) which is below the Unrestricted SCO. This elevated concentration suggests the presence of recent and/or ongoing impacts due to the volatility of toluene. Other VOCs were not detected in the three surface soil samples.

Total PAH concentrations ranged from 8.516 mg/kg to 15.66 mg/kg. One sample (WW-SS-02) contained a benzo(a)pyrene concentration of 1.6 mg/kg, a level that exceeds the Restricted Residential SCO of 1 mg/kg. However, this value is within the range of the typical background concentration of benzo(a)pyrene (0.07 to 2 mg/kg) in surface soil (Table 6). The three surface soil samples had varying concentrations of other detected SVOCs, none of which exceeded the Restricted Residential SCOs.

Total PCB concentrations ranged from 0.086 mg/kg to 1.8 mg/kg. One sample (WW-SS-03) exceeded the Restricted Residential SCO of 1 mg/kg. The three surface soil samples had varying concentrations of pesticides, none of which exceeded the Restricted Residential SCOs. The presence of PCBs and pesticides are related to land uses that post-date the operation of the MGP.

Generally, metals were detected in the samples at concentrations below the Restricted Residential SCOs, with one exception: arsenic was detected in WW-SS-01 at 19.9 mg/kg (above the Restricted Residential SCO of 16 mg/kg). This value is within the range of the typical background concentration (Table 5) of arsenic in soil (<0.1 to 73 mg/kg).

Herbicides and free cyanide were not detected in the samples.

4.1.1.2 Parcels 3 and 4 (Block 2287 Lot 16 and Block 2287 Lot 30)

Six surface soil samples (WW-SS-04 through WW-SS-09) were collected adjacent to the Parcels 3 and 4 to assess surface soil conditions.

VOCs including BTEX compounds were not detected in any of the surface soil samples.

Total PAH concentrations ranged from 3.951 mg/kg to 29.48 mg/kg. Two of the six samples contained benzo(a)pyrene concentrations at levels that exceeded the Industrial SCOs; WW-SS-04 (0 to 0.2 feet) at 2.9 mg/kg and WW-SS-08 (0 to 0.2 feet) at 1.5 mg/kg. However, one of those samples is within the range of typical background concentration of benzo(a)pyrene

(0.07 to 2 mg/kg) in surface soil (Table 6). The surface soil samples had varying concentrations of other detected SVOCs, none of which exceeded the Industrial SCOs. Gas chromatograms showed the presence of UCM in all surface soil samples, consistent with residual-type oil found in road run-off (Exponent, Appendix D).

Total PCB concentrations ranged from 0.195 mg/kg to 0.47 mg/kg. None of the six samples exceeded the Industrial SCO of 25 mg/kg. The surface soil samples had varying concentrations pesticides, none of which exceeded the Industrial SCOs. The presence of PCBs and pesticides are related to land uses that post-date the operation of the MGP.

Metal concentrations were detected in the samples at concentrations below the Industrial SCOs.

Herbicides were not detected in the samples. Free cyanide was detected below the Unrestricted Use SCO (27 mg/kg) in one sample (WW-SS-07) at 0.063 mg/kg.

4.1.2 Subsurface Soil

Subsurface soil is discussed by Parcel and by the following groupings:

- Shallow Subsurface Soil – The top 5 feet of soil that would likely be excavated during utility or construction activities. Soil samples for laboratory analysis were collected to document the chemical findings in this depth range.
- Deep Subsurface Soil – Subsurface soils deeper than 5 feet, where physical impacts were generally observed. Soil samples for laboratory analysis were collected beneath observed impacted zones and serve to document the chemical findings beneath the observed physical impacts.

4.1.2.1 Parcel 1 (Block 2288 Lot 1)

Parcel 1 is located southeast of the Parcel 2 portion of the former MGP. Former MGP structures included a gas holder, a coal bin, and a gas oil storage tank. Five tanks within two tank pits located in the eastern and western corners are shown in a 1921 BUG drawing and are related to toluol plant activities.

Nine soil borings (WW-SB-01, WW-SB-02, WW-SB-19 through WW-SB-22, and WW-MW-01 through WW-MW-03) were advanced on and adjacent to Parcel 1 to assess the subsurface conditions. The following discussion of the nature and extent of impacts will provide a summary of the physical and chemical impacts encountered at Parcel 1. As mentioned above, Parcel 1 was compared to the Industrial SCOs because of current zoning.

Shallow Subsurface Soil

All samples within the top 5 feet at soil borings at or adjacent to Parcel 1 were collected within fill materials. Concrete and brick fragments, associated with current and historic sidewalks and streets, were observed in borings WW-MW-01 through WW-MW-03, WW-SB-01, and WW-SB-02. Concrete and brick fragments, likely associated with the former gas holders, were observed in borings WW-SB-19 through WW-SB-22.

Generally, petroleum/tar impacts (including odors, sheens, and staining) were not observed at Parcel 1, except at WW-SB-22. This boring is located adjacent to the footprint of the former Holder No. 3 and a naphthalene-like odor was observed in the top 5 feet of the boring.

Total BTEX concentrations ranged from non-detect in a number of samples to 0.1011 mg/kg in WW-SB-19 (2 to 3 feet). There were only three detections of two other VOCs, acetone and carbon disulfide. VOC concentrations did not exceed the Industrial SCOs.

Total PAH concentrations ranged from non-detect in WW-SB-01 (1 to 5 feet) to 71.31 mg/kg in WW-SB-22 (3 to 4 feet). Concentrations of benzo(a)pyrene and dibenz(a,h)anthracene exceeded the Industrial SCOs in five and three samples, respectively. Concentrations of other SVOCs did not exceed the Industrial SCOs. Gas chromatograms indicate impacts from diesel-like product (Exponent, Appendix D).

Concentrations of PCBs, pesticides, herbicides, and metals did not exceed the Industrial SCOs. PCBs, pesticides, herbicides, copper and zinc are not MGP-related and are likely related to fill.

Free cyanide was detected below the Unrestricted Use SCO (27 mg/kg) in one sample, WW-SB-21 (1 to 2 feet) at 0.0456 mg/kg.

Deep Subsurface Soil

Fill material and potential former foundations were encountered at Parcel 1 to a maximum depth of 20 feet bgs (-7.76 feet NAVD) in WW-SB-21. Soil borings confirmed the presence of the still present tank foundations. The bottom of Holder No. 3 ranged from 10 to 11.5 feet bgs and the bottom of the gas oil storage tank was approximately 10 feet bgs. Impacts were observed across the property in the deep subsurface soil as shallow as 9 feet bgs, the most concentrated of which were generally near Holder No. 3 (Figure 10). Exceedances of Industrial SCOs were limited to native material. Physical impacts for Parcel 1 are discussed further below.

Total BTEX concentrations ranged from non-detect in three samples to 887 mg/kg in WW-MW-03 (28 to 30 feet), which was a tar coated stratum. Only one of the individual BTEX concentrations exceeded the Industrial SCOs of 89 mg/kg. This exceedance was benzene, at

90 mg/kg in WW-SB-22 (37 to 38 feet). A few other non-MGP related VOCs, including: acetone, carbon disulfide, chloroform, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,2,2-tetrachloroethane, and TCE; and styrene were detected, but their concentrations did not exceed the Industrial SCOs.

Total PAH concentrations ranged from non-detect in a number of samples to 1,910.7 mg/kg in WW-SB-20 (55 to 57 feet), which was a tar-stained stratum. Nine samples contained individual PAH concentrations that exceeded the Industrial SCOs; of them, three samples from physically impacted strata (WW-SB-20 [55 to 57 feet], WW-SB-22 [37 to 38 feet], and WW-MW-03 [28 to 30 feet]) showed total and individual PAH concentrations that exceeded the Industrial SCOs. Individual PAHs detected at concentrations exceeding the Industrial SCOs include benz[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, dibenz[a,h]anthracene, and naphthalene. Concentrations of other SVOCs did not exceed the Industrial SCOs. Gas chromatograms of samples shallower than 20 feet bgs indicate impacts from diesel-like product.

Per the RIWP, deep subsurface soil was not tested for PCBs, pesticides, and herbicides, due the likelihood that these compounds generally come from a surficial, non-MGP-related source of contamination. Concentrations of metals did not exceed the Industrial SCOs. Free cyanide was not detected at Parcel 1.

Six samples, shown in the table below, were collected beneath visually observed impacts to document vertical extent of contamination. Concentrations in these samples were present at levels below the Industrial SCOs. These results document that the vertical extent of MGP-related impacts has been bounded for Parcel 1. These results show the horizontal extent of MGP-impacts has been bounded to the east.

Boring ID	Depth Intervals (feet bgs)	Analytical concentrations present at concentrations exceeding Industrial SCOs?
WW-MW-02	50-53	No
WW-MW-03	60-63	No
WW-SB-19	47-50	No
WW-SB-20	62-63	No
WW-SB-21	68-69	No
WW-SB-22	65-65.5	No

Physical Impacts

Soil with visual petroleum impacts including sheens or staining were observed at five of the nine soil borings completed within Parcel 1. Petroleum-impacted soil was generally encountered near the water table, as shallow as 9 feet bgs (7.19 feet NAVD); however, in one case (WW-MW-03), impacts were observed as deep as 43.1 feet bgs (-29.11 feet NAVD). No measurable Light NAPL (LNAPL) was observed in the monitoring wells adjacent to Parcel 1. Gas chromatograms indicate the impacts are from diesel-like products (Exponent,

Appendix D). Petroleum impacts are likely related to the garage and gasoline storage tank located on Parcel 1 after the MGP ceased operations.

Tar impacts ranging from sheens to coating were observed in four of the nine soil borings (WW-MW-03 and WW-SB-20 through WW-SB-22) located at or adjacent to Parcel 1, at depths between 14.4 and 58 feet bgs (-2.16 to -42.06 feet NAVD). Holder No. 3 and a gas oil storage tank were present on Parcel 1 during MGP operations. MGP related impacts were not observed in the boring (WW-SB-19) installed within the gas oil storage tank, located on the southern portion on the property. Impacts ranging from tar sheens to blebs and partial coating were observed in soil borings (WW-SB-20 and WW-SB-21) installed within Holder No. 3. Sheen and lenses of coating were observed in the two soil borings (WW-MW-03 and WW-SB-22) located adjacent to the larger holder footprint. Concrete was encountered at a depth of 10 to 13 feet bgs (6.1 to 3.1 feet NAVD) within the gas oil storage tank. Brick and concrete were encountered between 10 and 15 feet bgs (4.44 to -2.16 feet NAVD) within the Holder No. 3 footprint. These materials suggest the presence of bottom foundations.

The table below presents a summary of physical impacts more significant than odor and staining at Parcel 1.

Boring ID	Depth Intervals (feet bgs)	Physical Impact Observations
WW-MW-03	27.5-29.5	Tar coating
WW-SB-20	55-58	Tar coating
WW-SB-21	33.2-35.4	Tar blebs

These observations and analytical results described above demonstrate that the deep subsurface at Parcel 1 is impacted by tar. In addition, GEI observed instances of petroleum-like odor and sheen in the subsurface, indicating residual petroleum contamination. Fingerprint analysis performed by Exponent also identified several samples as having diesel-like product characteristics (Appendix D). Visual MGP-related impacts were not observed in WW-SB-02 and WW-MW-16 located to the north, WW-MW-01 to the east, and WW-SB-01 and WW-MW-02 to the south of Parcel 1, therefore horizontal delineation is considered to be complete in these directions. Visual impacts were not observed immediately above the confining clay layer within Parcel 1 or within the bottom 10 feet of borings installed adjacent to Parcel 1 confirming the vertical delineation of contamination as discussed above in relation to analytical data.

4.1.2.2 Parcel 2 (Block 2287 Lot 1)

Structures at Parcel 2 related to the former MGP included: an exhaust house, gas holders, salt water condensers, a lime house, purifying houses, condenser house, governor house, and meter/lime houses. A still house and tank shown in a 1920 Chemical Equipment Corporation drawing and 1921 BUG drawing and are likely related to toluol plant activities.

Twenty-three soil borings (WW-SB-03 through WW-SB-11, WW-SB-23, WW-SB-24, WW-SB-37 through WW-SB-42, WW-MW-04 through WW-MW-08, and WW-MW-17) were advanced and six test pits (WW-TP-01 through WW-TP-06) were excavated on and adjacent to Parcel 2 to assess the subsurface conditions. The following discussion of the nature and extent of impacts will provide a summary of the physical and chemical impacts encountered at Parcel 2. As mentioned above, Parcel 2 was compared to the Restricted Residential SCOs because of its future intended use as a park with grass areas.

Shallow Subsurface Soil

Fill materials were encountered within the top 5 feet at soil borings and test pit excavations. Brick and concrete associated with the three gas holders were observed in test pits WW-TP-01 through WW-TP-06 and boring WW-SB-05. The former NYCDOS concrete building slab is visible at the surface and was observed in borings on the western half of the Parcel. Approximately 5 feet of concrete was observed at WW-MW-04, within the footprint of the former still house.

Generally, environmental impacts (including odors, sheens, and stains) were observed in the area of the three gas holders and near the former purifier at the west corner of the property. GEI observed NAPL impacts as shallow as 3.5 feet bgs in soil boring WW-SB-41, which was located slightly down gradient of the holder foundations. URS observed “brown NAPL free product” at approximately 1 foot bgs in test pit WW-TP-101, which was located slightly down gradient of the holder foundations.

Total BTEX concentrations ranged from non-detect in a number of samples to 148.8 mg/kg in WW-MW-05 (0.75 to 5 feet). None of the BTEX or other VOC concentrations exceeded the Restricted Residential SCOs.

Total PAH concentrations ranged from 0.95 mg/kg in WW-TP-02 (2 to 2.5 feet) to 1,570 mg/kg in WW-MW-05 (0.75 to 5 feet). Most samples have individual PAH concentrations that exceeded the Restricted Residential SCOs, with the exception of WW-TP-02 (2 to 2.5 feet). Concentrations of other SVOCs did not exceed the Restricted Residential SCOs. Fingerprint analysis indicates that shallow PAH profiles were dominated by heavy molecular weight (HMW) PAH compounds. Impacts to the shallow soils (above and at the groundwater table) appear to be from a mixture of petroleum products consistent with petroleum storage operations that occurred in Parcels 1 and 2 after the MGP operations ceased (Exponent, Appendix D).

Concentrations of PCBs, pesticides, and herbicides did not exceed the Restricted Residential SCOs. Detections of these compounds suggest the presence of recent impacts from non-MGP sources.

Metals concentrations did not exceed Restricted Residential SCOs with the exception of arsenic, barium, lead, and mercury. Concentrations of arsenic (25.4 mg/kg in WW-SB-03 [3 to 5 feet], 20.4 mg/kg in WW-SB-09 [2 to 4 feet], and 20.5 mg/kg in WW-SB-11 [1 to 2 feet]) exceeded the Restricted Residential SCO of 16 mg/kg. Concentrations of barium (683 mg/kg in WW-SB-03 [3 to 5 feet]) exceeded the Restricted Residential SCO of 400 mg/kg. Concentrations of lead (1,550 mg/kg in WW-SB-03 [3 to 5 feet], 903 mg/kg in WW-SB-10 [2 to 3 feet], 2,140 mg/kg in WW-SB-11 [1 to 2 feet], 503 mg/kg in WW-SB-24 [4 to 5 feet],401 mg/kg in WW-TP-01 [2 to 2.5 feet], and 904 mg/kg in WW-TP-04 [4 to 4.5 feet]) exceeded the Restricted Residential SCO of 400 mg/kg. Concentrations of mercury (0.91 mg/kg in WW-MW-17 [1 to 2 feet], 1.3 mg/kg in WW-SB-11 [1 to 2 feet], and 1.2 mg/kg in WW-TP-01 [2 to 2.5 feet]) exceeded the restricted Residential SCO of 0.81 mg/kg. Arsenic, barium, and mercury concentrations were within the range of typical background concentrations (Table 5) of metals in soil (0.1 to 73 mg/kg, 10 to 1,500 mg/kg, and 0.01 to 3.4 mg/kg, respectively). Exponent states that the abrupt drop in metal concentrations with depth indicates that these metals are associated with historical fill. Other sources that potentially contributed to the metals include the former railroads that existed in Parcels 2, 3, 5, and 6; metal works on Parcel 2; and the former tin can factory on Parcel 6 (Appendix D).

Free cyanide was detected below the Unrestricted Use SCO (27 mg/kg) in two samples, WW-SB-10 (2 to 3 feet) and WW-SB-23 (1 to 4 feet), at 0.359 mg/kg and 0.153 mg/kg, respectively.

Deep Subsurface Soil

Fill material was encountered at Parcel 2 to a maximum depth of 25.5 feet bgs (-16.1 feet NAVD) in WW-SB-06 which is within Holder No. 1. Soil borings and test pit excavation confirmed the presence of the still present holder foundations. The bottom of the Parcel 2 holders ranged from 20 to 25.5 feet bgs. Physical impacts were observed across the property in the deep subsurface soil, the heaviest of which were generally near and within the three gas holders (Cross Section A-A’, Plate 3). Physical impacts for Parcel 2 are discussed further below.

Total BTEX concentrations ranged from non-detect in a number of samples to 14,400 mg/kg in WW-SB-05 (20 to 24 feet), which was collected from a tar saturated stratum within the bottom of the Holder No. 1 foundation. Many of the individual BTEX concentrations exceeded the Restricted Residential SCOs, generally correlating to a stratum that had some degree of physical impacts including odors, staining, blebs, coating, and/or saturation that was inside the holder foundations or within native soil deposits, below observed fill. Other VOCs were detected; however, their concentrations did not exceed the Restricted Residential SCOs.

Total PAH concentrations ranged from non-detect in a number of samples to 83,800 mg/kg in WW-SB-05 (20 to 24 feet), which was a tar saturated stratum within the bottom of the

Holder No. 1 foundation. Many samples from both fill and native physically impacted strata showed total and individual PAH concentrations that exceeded the Restricted Residential SCOs. Except for dibenzofuran in WW-SB-04 (18 to 20 feet [120 mg/kg]), WW-SB-05 (20 to 24 feet [370 mg/kg]), and WW-SB-23 (31 to 33 feet [400 mg/kg]), concentrations of other SVOCs did not exceed the Restricted Residential SCOs in deep subsurface soil. Fingerprint analysis indicates that PAH profiles in shallow and deep soils differed; with the PAHs in deep samples dominated by low molecular weight (LMW) PAH compounds compared to the shallower PAH profiles which were dominated by HMW PAHs (Exponent, Appendix D).

Per the RIWP, deep subsurface soil was generally not tested for PCBs, pesticides, and herbicides, due to the likelihood that these compounds generally come from a surficial, non-MGP-related source of contamination. Samples were collected from 6 to 6.5 feet from WW-TP-05 and WW-TP-06, and concentrations of PCBs, pesticides, and herbicides from these samples did not exceed the Restricted Residential SCOs.

Concentrations of metals including arsenic, barium, cadmium, lead, manganese, and mercury were detected in some samples at levels exceeding the Restricted Residential SCOs primarily within fill. Concentrations of arsenic (21.7 mg/kg in WW-SB-04 [18 to 20 feet] and 30.0 mg/kg in WW-SB-05 [20 to 24 feet]) exceed the Restricted Residential SCO of 16 mg/kg. Concentrations of barium (1,760 mg/kg in WW-SB-07 [19 to 22 feet] and 531 mg/kg in WW-SB-40 [95 to 95.5 feet]) exceeded the Restricted Residential SCO of 400 mg/kg. The concentrations of cadmium at (9.2 mg/kg in WW-SB-04 [18 to 20 feet]) exceeded the Restricted Residential SCO of 4.3 mg/kg. Concentrations of lead (548 mg/kg in WW-MW-17 [7 to 8 feet], 900 mg/kg in WW-SB-04 [18 to 20 feet], 901 mg/kg in WW-SB-05 [20 to 24 feet], and 2,980 mg/kg in WW-TP-06 [6 to 6.5 feet]) exceeded the Restricted Residential SCO of 400 mg/kg. The concentration of manganese at (4,820 mg/kg in WW-SB-42 [62 to 62.5 feet]) exceeded the Restricted Residential SCO of 2,000 mg/kg. Concentrations of mercury (1.2 mg/kg at WW-MW-17 [7 to 8 feet], 0.88 mg/kg at WW-SB-04 [18 to 20 feet], 1.2 mg/kg at WW-SB-07 [19 to 22 feet], and 0.93 mg/kg at WW-TP-05 [6 to 6.5 feet]) exceeded the Restricted Residential SCO of 0.81 mg/kg. All arsenic concentrations, one of the barium concentrations, all manganese concentrations, and all mercury concentrations were within the range of typical background concentrations (Table 5) of metals in soil (0.1 to 73 mg/kg, 10 to 1,500 mg/kg, 2 to 7,000 mg/kg, and 0.01 to 3.4 mg/kg, respectively). Exponent states that the abrupt drop in metal concentrations with depth indicates that these metals are associated with historical fill. Other sources that potentially contributed to the metals include the former railroads that existed in Parcels 2, 3, 5, and 6; metal works on Parcel 2; and the former tin can factory on Parcel 6 (Appendix D).

Free cyanide was detected below the Unrestricted Use SCO (27 mg/kg) in three samples, WW-SB-03 (20 to 22 feet), WW-SB-04 (18 to 20 feet), and WW-SB-05 (20 to 24 feet) at 1.56 mg/kg, 0.334 mg/kg, and 0.277 mg/kg, respectively. These samples were all within holder foundations.

Seventeen samples, shown in the table below, were collected beneath visually observed impacts to document vertical extent of contamination. All concentrations, with the exceptions noted below, were present at levels below the Restricted Residential SCOs in these samples. These results document that the vertical extent of MGP-related impacts has been bounded for these boring locations.

Boring ID	Depth Intervals (feet bgs)	Analytical concentrations present at concentrations exceeding Restricted Residential SCOs?
WW-MW-04	58-59	No
WW-MW-05	63-64	No
WW-MW-06	58-60	No
WW-MW-07	59-60	No
WW-MW-08	40-45	No
WW-MW-17	54-55	No
WW-SB-09	53-54	Yes
WW-SB-10	51-52	No
WW-SB-11	63-64	No
WW-SB-23	62-63	Yes
WW-SB-24	53-55	No
WW-SB-37	96-97	No
WW-SB-38	96.5-97	No
WW-SB-39	96-97	No
WW-SB-40	95-95.5	Yes
WW-SB-41	96-97	No
WW-SB-42	96.5-97	No

- Sample WW-SB-09 (53-54), taken at the bottom of the boring just above a silt layer but within the end of an area of soil with tar blebs just above a layer of silt, had exceedances of benzene and indeno[1,2,3-cd] pyrene.
- Sample WW-SB-23 (62 to 63 feet), taken from visually un-impacted clay but below soil with visual impacts that ranged from tar saturated lenses to tar staining just above the sample interval, had exceedances of benzene, benz(a)anthracene, benzo(a)pyrene, benzo(b)floranthene, chrysene, dibenz(a,h)anthracene, indeno[1,2,3-cd]pyrene, and naphthalene.
- Sample WW-SB-42 (62 to 62.5 feet), taken below soil with visual impacts that ranged from coating to tar staining, had exceedances of benz(a)anthracene, benzo(a)pyrene, benzo(b)floranthene, indeno[1,2,3-cd] pyrene, and manganese. However, the sample taken below this one in the same boring, WW-SB-42 (96.5 to 97 feet), had no exceedances.
- Sample WW-SB-40 (95 to 95.5 feet), taken approximately 80 feet below soil impacted with blebs, had an exceedance of barium. It can be assumed that this exceedance is not MGP related due to its depth and that barium is not an MGP-related compound.

Accordingly, the vertical extent of impacts was found to be above the confining clay layer at all boring locations on this Parcel except for WW-SB-09 and WW-SB-23. Soil boring WW-SB-41 was completed adjacent to WW-SB-23, and a sample collected from 96 to 97 feet did not have any exceedances of the Restricted Residential SCOs. With the exception of the non-MGP related concentration of barium in WW-SB-40 discussed above, all analytical sample concentrations collected from below the confining clay layer did not exceed the Restricted Residential SCOs.

Physical Impacts

Soil with visual petroleum impacts including sheens or staining were observed at 12 of the 51 soil borings completed within Parcel 2. Petroleum-impacted soil was encountered near the water table, as shallow as 3.9 feet bgs and as deep as 19 feet bgs (6.03 to -9.09 feet NAVD). No measurable LNAPL was observed in the monitoring wells at Parcel 2. Fingerprint analysis of the fill/shallow soil indicates the presence of various petroleum products, which would not be typical of former MGP operations but is consistent with petroleum storage operations that occurred after the MGP ceased operation (Exponent, Appendix D). Petroleum impacts are likely related to the long-term oil operations adjacent to the Site and to other industrial sources typically found in urban areas, as well as the New York City Department of Sanitation former operations within Parcel 2. As discussed in Section 1.3.1, two diesel and one gasoline spill was reported for Parcel 2 between 1978 and present.

Tar impacts ranging from sheen to saturation were observed between 3.5 and 60.4 feet bgs (8.9 to -48.3 feet NAVD) in all but three soil borings (BPB-11, BPB-12, and WW-SB-11) completed at or adjacent to Parcel 2. GEI observed visual tar impacts just above the clay layer at three locations (WW-SB-23, WW-SB-39, and WW-SB-41) which are located down gradient, to the west of two gas holder foundations. Visual tar impacts were not encountered within or beneath the clay layer in any of the six deep borings installed by GEI as part of the RI. URS observed visual tar impacts ranging from sheen to saturation within and/or below the clay layer in seven of the 11 borings installed, however these impacts are assumed to be an artifact of hollow stem auger drilling methods. Tar saturation was observed within five of the six borings (WW-SB-03 and WW-SB-05 through WW-SB-08) located within the gas holder footprints as well as 12 borings (WW-MW-08, WW-SB-23, WW-SB-24, WW-SB-41, WW-SB-100, WW-SB-101, WW-SB-104 through WW-SB-107, WW-SB-109, and WW-SB-110) installed near or slightly down gradient to the west of the foundations. Refusal was encountered within the holder foundations between depths of 20 and 25.5 feet bgs (-7.88 to -16.10 feet NAVD), which suggests the presence of a bottom foundation.

The table below presents a summary of physical impacts more significant than odor and staining at Parcel 2.

Boring ID	Depth Intervals (feet bgs)	Physical Impact Observations
WW-MW-04	30-33.5	Tar coating
WW-MW-05	10-11.7 11.7-15, 50.9-51.5	Tar blebs Tar coating
WW-MW-06	11-14.4, 15.6-17.1 11-13	Tar coating Tar blebs
WW-MW-06	22.9-24.2, 25.8-28.1, 50-54	Tar coating
WW-MW-08	7.6-8.6	Tar saturation
WW-MW-17	15.2-15.3	Tar coating
WW-SB-03*	15-20 21.8-22	Tar blebs Tar saturation
WW-SB-05*	10-24	Tar saturation
WW-SB-06*	13.5-23.5 23.5-25.5	Tar coating Tar saturation
WW-SB-07*	10-20 15-20 20-22	Tar blebs Tar coating Tar saturation
WW-SB-08*	5-13, 20-24 15-20	Tar coating Tar saturation
WW-SB-09	47.3-51.4 51.4-54	Tar coating Tar blebs
WW-SB-10	7.7-11.8 47.7-49	Tar blebs Tar coating
WW-SB-23	13.1-23.6, 25-27.9 27.9-33.6 30.3-33.6, 35-54.8	Tar blebs Tar coating Tar saturation
WW-SB-24	12.1-20.2, 36.5-37.7 37.7-39.5	Tar blebs Tar saturation
WW-SB-37	28.4-31.1, 32-32.9	Tar coating
WW-SB-39	12-14, 17-18.3 16.5-17, 46.6-47, 48.7-48.9	Tar blebs Tar coating
WW-SB-40	14.1-14.9	Tar blebs
WW-SB-41	29.9-37, 38.7-40.9 37-37.9	Tar coating Tar saturation
WW-SB-42	7-17, 37-39.7 22.5-24.3, 26.5-27, 37-39.7	Tar blebs Tar coating

*- Borings located within holder footprints

These physical observations and analytical results described above demonstrate that the subsurface at Parcel 2 is impacted by tar inside and around the footprint of the former gas holders and various distilled petroleum products. Distilled petroleum impacts on Parcel 2 are not likely related to MGP operations. URS installed 13 recovery wells in and around Parcel 2. NAPL samples collected from recovery well NRW-7 showed a dominant pyrogenic PAH signature with a small contribution from a petrogenic source. PAHs in the NAPL from the remainder of the recovery well samples were predominantly pyrogenic, based on the PAH profiles and the lack of UCM in the gas chromatograms. For the Verizon manhole NAPL and solid sample, the alkylated PAH compounds far exceeded the abundance of the parent PAH compounds, indicating that the PAHs are from petrogenic sources. This was consistent with the gas chromatograms, which showed the presence of a mix of diesel- and heavy-fuel-like refined products, which would be unrelated to the former MGP operations (Exponent, Appendix D).

Visual impacts were not observed immediately above the confining silt or clay layer within or adjacent to Parcel 2 with the exception of WW-SB-09 and WW-SB-23. Visual impacts were not observed within or below the confining clay layer in any of the RI borings confirming the vertical delineation of contamination as discussed above in relation to analytical data.

4.1.2.3 Parcels 3 and 4 (Block 2287 Lot 16 and 30)

Parcels 3 and 4 are located to northwest of the Parcel 2 portion of the former MGP. The former MGP operations also took place on Parcels 3 and 4. Historic MGP-related structures at Parcels 3 and 4 included: fuel oil tank, iron tar tank, wooden tar tank, oil tanks, tar slop tank, pump house, coal shed, oil separators, generator houses, condenser house, exhauster houses, scrubbers, iron gas tank, engines dynamo, retort house, storage, and offices. None of these structures is present today.

Nine soil borings (WW-SB-13 through WW-SB-16, WW-MW-10, WW-MW-11, and WW-MW-13 through WW-MW-15) were advanced adjacent to Parcels 3 and 4 to assess the subsurface conditions. The following discussion of the nature and extent of impacts will provide a summary of the impacts encountered adjacent to Parcels 3 and 4. Access inside Parcels 3 and 4 was not granted during the time of the RI. Once property use changes, additional investigation will be needed to determine the nature and extent of MGP-related impacts at these Parcels.

Shallow Subsurface Soil

Fill materials were encountered within the top 5 feet at soil borings, likely associated with current and former parking lots, sidewalks, etc. as well as historical filling along the East River. Generally, environmental impacts (including odors, sheens, and stains) were petroleum-related along North 12th Street, likely from the adjacent properties long-term use as a fuel oil distribution facility. Physical impacts observed adjacent to Parcels 3 and 4 5 are discussed further below.

Total BTEX concentrations ranged from non-detect in a number of samples to 0.32 mg/kg in WW-MW-10 (4 to 5 feet). None of the BTEX concentrations exceeded the Industrial SCOs. Concentrations of other VOCs did not exceed the Industrial SCOs.

Total PAH concentrations ranged from 50.73 mg/kg in WW-MW-14 (3 to 5 feet) to 1,108.3 mg/kg in WW-SB-14 (1 to 5 feet). Total PAH values exceeded the Industrial SCOs in WW-SB-13 (4 to 5 feet) and WW-SB-14 (1 to 5 feet). Individual PAH concentrations exceed the

Industrial SCOs in all the samples. Concentrations of other SVOCs did not exceed the Industrial SCOs.

Concentrations of PCBs, pesticides, and herbicides did not exceed the Industrial SCOs.

Arsenic was the only metal with detected concentrations in excess of Industrial SCOs. Concentrations of arsenic exceeded the Industrial SCO of 16 mg/kg at two shallow subsurface sample locations: WW-MW-14 (3 to 5 feet) at 19.7 mg/kg and WW-MW-15 (1 to 4 feet) at 39.2 mg/kg. Both values are within the range of typical background concentrations (Table 5) of arsenic in soil (0.1 to 73 mg/kg).

Free cyanide was not detected in any of the samples adjacent to Parcels 3 and 4.

Deep Subsurface Soil

Fill materials, including concrete, coal, brick fragments, and wood, were encountered adjacent to Parcels 3 and 4 to a maximum depth of 21 feet bgs (-14.65 feet NAVD) in WW-MW-15. As discussed above, impacts (including odors, sheens, and stains) were observed in the shallow subsurface soil. Impacts were also observed in the deep subsurface soil, the most concentrated of which were generally adjacent to the former MGP (Plate 4). Physical impacts adjacent to Parcels 3 and 45 are discussed further below.

Total BTEX concentrations ranged from non-detect in three samples to 484 mg/kg in WW-SB-13(12 to 15 feet), which was a tar-coated stratum. Individual BTEX as well as other VOC concentrations did not exceed the Industrial SCOs.

Total PAH concentrations ranged from 3.665 mg/kg in WW-MW-11(39 to 40 feet) to 4,724 mg/kg in WW-SB-13 (12 to 15 feet). Many samples from physically impacted strata also showed individual PAH concentrations that exceeded the Industrial SCOs. Concentrations of other SVOCs did not exceed the Industrial SCOs.

Metals concentrations including arsenic in six samples and mercury in two samples exceeded the Industrial SCOs of 16 mg/kg and 5.7 mg/kg, respectively. One arsenic concentration, 207 mg/kg at WW-MW-14 (5 to 10 feet), and one mercury concentration, 8.6 mg/kg at WW-SB-15 (7 to 9 feet) were outside the range of typical background concentrations (Table 5) of arsenic and mercury in soil (0.1 to 73 mg/kg and 0.01 to 3.4 mg/kg, respectively). Exponent states that the abrupt drop in metal concentrations with depth indicates that these metals are associated with historical fill. Other sources that potentially contributed to the metals include the former railroads that existed in Parcels 2, 3, 5, and 6; metal works on Parcel 2; and the former tin can factory on Parcel 6 (Appendix D).

Free cyanide was not detected in any of the samples.

Three samples, shown in the table below, were collected beneath visually observed impacts to document vertical extent of contamination. All concentrations were present at levels below the Industrial SCOs in these samples. Generally, these results document that the vertical extent of impacts has been bounded for these boring locations.

Boring ID	Depth Intervals (feet bgs)	Analytical concentrations present at concentrations exceeding Industrial SCOs?
WW-MW-11	39-40	No
WW-MW-14	55-57	No
WW-SB-13	37-38	No

Physical Impacts

Most of Parcels 3 and 4 are occupied by warehouse buildings. Access inside the buildings was not granted during the RI; therefore, investigation borings were limited to the streets and parking areas adjacent to the buildings. Parcels 3 and 4 were part of the historic MGP footprint.

Soil with visual petroleum impacts ranging from sheens to staining were observed at four of the 14 soil borings adjacent to Parcels 3 and 4. Petroleum-impacted soil was encountered near the water table, as shallow as just under the paved surface and as deep as 25 feet bgs (6.15 to -18.46 feet NAVD). No measurable LNAPL was observed in monitoring wells adjacent to Parcels 3 and 4. Petroleum impacts are likely related to the long-term oil operations (Paragon Oil Co. Inc., Texaco Inc. and UST) conducted at and adjacent to the property, as well as other industrial sources typically found in urban areas.

Tar impacts ranging from sheen to coating were observed in nine of the 14 soil borings (WW-MW-10, WW-MW-11, WW-MW-13 through WW-MW-15, and WW-SB-13 through WW-SB-16) adjacent to Parcels 3 and, at depths between 4 and 43.9 feet bgs (6.51 to -37.15 feet NAVD).

The table below presents a summary of physical impacts more significant than odor and staining at Parcels 3 and 4.

Boring ID	Depth Intervals (feet bgs)	Physical Impact Observations
WW-MW-10	4-5, 7-8.9, 10-12.2	Tar blebs
WW-MW-13	5-10, 16.8-17.5 10-12.9	Tar coating Tar blebs
WW-MW-14	20-22.2, 28.6-28.8, 35-36.6, 40-42.1 42.1-43.9	Tar coating Tar blebs
WW-SB-13	10-19.3	Tar coating
WW-SB-14	10-11.1	Tar coating
WW-SB-16	11.9-13	Tar blebs

These physical observations and analytical results described above demonstrate that the subsurface adjacent to Parcels 3 and 4 is impacted by a mixture of tar and petroleum. In addition, GEI observed instances of petroleum-like odor, sheen, and staining in the subsurface, indicating petroleum contamination. Gas chromatograms for samples collected in the top 10 feet of soil/fill on N. 12th Street showed the presence of petroleum products in the kerosene-like, diesel-like, and heavy oil ranges. This variability in petroleum products indicates impacts from petroleum handling and storage that occurred on Parcel 6 and on the MGP parcels after the MGP operations ceased (Appendix D). Visual impacts were not observed immediately above the confining clay layer or within the bottom 10 feet of borings installed adjacent to Parcels 3 and 4 (with the exception of WW-MW-15 where target depth was not reached due to refusal) confirming the vertical delineation of contamination within the sampled areas as discussed above in relation to analytical data.

4.1.2.4 Parcel 5 (Block 2294 Lot 1 and 5)

Parcel 5 is located to southwest of the Parcel 2 portion of the former MGP. MGP operations did not take place on Parcels 5.

Twelve soil borings (WW-SB-17, WW-SB-28 through WW-SB-32, WW-SB-54, WW-SB-55, WW-MW-12, and WW-MW-20 through WW-MW-22) were advanced adjacent to Parcel 5 to assess the subsurface conditions. The following discussion of the nature and extent of impacts will provide a summary of the impacts encountered adjacent to Parcel 5. Access inside the Parcel was not granted during the time of the RI. Once property use changes, additional investigation will be needed to determine the nature and extent of MGP-related impacts at these Parcels.

Shallow Subsurface Soil

Fill materials were encountered within the top 5 feet at soil borings, likely associated with current and former parking lots, sidewalks, etc. as well as historical filling along the East River. Generally, environmental impacts (including odors, sheens, and stains) were petroleum-related along North 12th Street, likely from the adjacent properties long-term use as a fuel oil distribution facility. Physical impacts observed adjacent to Parcel 5 are discussed further below.

Total BTEX concentrations ranged from non-detect in a number of samples to 0.22 mg/kg in WW-SB-30 (2 to 5 feet). None of the BTEX concentrations exceeded the Industrial SCOs. Concentrations of other VOCs did not exceed the Industrial SCOs.

Total PAH concentrations ranged from non-detect in WW-MW-20 (1.5 to 3 feet) and WW-SB-54 (3 to 5 feet) to 123.83 mg/kg in WW-SB-31 (1 to 5 feet). Total PAH values did not exceed the Industrial SCOs. Individual PAH concentrations exceed the Industrial SCOs, except in eight samples: WW-MW-20 (1.5 to 3 feet), WW-MW-21 (3 to 5 feet), WW-SB-17 (2 to 4 feet), WW-SB-28 (3 to 5 feet), WW-SB-29 (2 to 5 feet), WW-SB-30 (2 to 5 feet), WW-SB-32 (4 to 5 feet), and WW-SB-54 (3 to 5 feet). Concentrations of other SVOCs did not exceed the Industrial SCOs.

Concentrations of PCBs, pesticides, herbicides, and metals did not exceed the Industrial SCOs.

Free cyanide was detected below the Unrestricted Use SCO (27 mg/kg) in two of the samples adjacent to Parcel 5: 0.27 mg/kg at WW-MW-22 (3 to 5 feet) and 0.0478 mg/kg at WW-SB-31 (1 to 5 feet).

Deep Subsurface Soil

Fill materials, including coal, brick fragments, and wood, were encountered adjacent to Parcel 5 to a maximum depth of 25 feet bgs (-10.23 feet NAVD) in WW-SB-17. As discussed above, impacts (including odors, sheens, and stains) were observed in the shallow subsurface soil. Impacts were also observed in the deep subsurface soil along North 12th Street. Physical impacts adjacent to Parcel 5 are discussed further below.

Total BTEX concentrations ranged from non-detect in a number of samples to 2,990 mg/kg in WW-SB-28 (22 to 23 feet), which was a tar-coated stratum. Individual BTEX concentrations only exceeded the Industrial SCOs at WW-SB-17 (32 to 33 feet) and WW-SB-28 (22 to 32 feet). None of the other VOCs were detected at concentrations exceeding the Industrial SCOs.

Total PAH concentrations ranged from non-detect in seven samples to 8,311 mg/kg in WW-SB-28 (22 to 23 feet). Many samples from physically impacted strata also showed individual PAH concentrations that exceeded the Industrial SCOs. Concentrations of other SVOCs did not exceed the Industrial SCOs.

Eight deep subsurface soil samples were tested for PCBs, pesticides, and herbicides, none of which were detected at concentrations above the laboratory detection limits.

Arsenic concentrations in two samples exceeded the Industrial SCOs of 16 mg/kg. One arsenic concentration, 207 mg/kg at WW-MW-14 (5 to 10 feet) was outside the range of typical arsenic background concentrations (Table 5) in soil (0.1 to 73 mg/kg).

Free cyanide was detected below the Unrestricted Use SCO (27 mg/kg) in WW-MW-22 (24 to 25 feet) at 0.14 mg/kg, WW-MW-22 (52 to 55 feet) at 0.3 mg/kg, and WW-SB-32 (10 to 11 feet) at 0.14 mg/kg.

Six samples, shown in the table below, were collected beneath visually observed impacts to document vertical extent of contamination. All concentrations were present at levels below the Industrial SCOs in these samples. Generally, these results document that the vertical extent of impacts has been bounded for these boring locations.

Boring ID	Depth Intervals (feet bgs)	Analytical concentrations present at concentrations exceeding Industrial SCOs?
WW-MW-22	52-55	No
WW-SB-17	45-46	No
WW-SB-30	45-50	No
WW-SB-31	52-54	No
WW-SB-32	43-44	No
WW-SB-55	55-57	No

Physical Impacts

Most of Parcel 5 is occupied by warehouse buildings. Access inside the buildings was not granted during the RI; therefore, investigation borings were limited to the streets and parking areas adjacent to the buildings. Parcel 5 was not part of the historic MGP footprint.

Soil with visual petroleum staining was observed at three of the 20 soil borings adjacent to Parcel 5. Petroleum-impacted soil was encountered near the water table, as shallow 3 feet and as deep as 25 feet bgs (5.7 to -17.62 feet NAVD). No measurable LNAPL was observed in monitoring wells adjacent to Parcels 3, 4, and 5. Petroleum impacts are likely related to the Pratt Works/SOCONY distilled petroleum storage at and adjacent to the property, as well as other industrial sources typically found in urban areas.

Tar impacts ranging from sheen to coating were observed in six of the 20 soil borings (WW-MW-12, WW-SB-17, WW-SB-28, WW-SB-29, WW-SB-31, and WW-SB-32) adjacent to Parcel 5, at depths between 7.8 and 33 feet bgs (0.9 to -18.23 feet NAVD). MGP related impacts were not observed in the four borings (WW-MW-21, WW-MW-22, WW-SB-54, and WW-SB-55) south of Parcel 5. MGP related impacts appear to be bound somewhere under the building on Parcel 5.

The table below presents a summary of physical impacts more significant than odor and staining at Parcel 5.

Boring ID	Depth Intervals (feet bgs)	Physical Impact Observations
WW-SB-17	30-33	Tar coating
WW-SB-28	17.5-18.2, 22.1-23.7 23.7-25	Tar coating Tar blebs
WW-SB-29	14.7-15, 16.6-21.9 16.6-21.9	Tar blebs Tar coating
WW-SB-32	7.8-11.3	Tar coating

These physical observations and analytical results described above demonstrate that the deep subsurface adjacent to Parcel 5 is impacted by tar and distilled petroleum products. In addition, GEI observed instances of petroleum-like odor, staining, and coating in the subsurface, indicating petroleum contamination. Gas chromatograms for samples collected from within the fill from the western part of N. 11th Street, adjacent to Parcel 5, showed petroleum products in the kerosene and diesel ranges. Gas chromatograms were not available for samples collected south of Parcel 5 which constitutes a data gap that limits the interpretation of PAH sources. However, the presence of the distilled petroleum products would not be associated with the former MGP operations. The former MGP would not have used distilled petroleum products in the kerosene and diesel ranges. For the carbureted water gas process, MGPs either used crude oil, or gas oil, which was crude oil with the light end [gasoline and kerosene] distilled out. Visual MGP-related impacts were not observed in WW-MW-21, WW-MW-22, WW-SB-54, or WW-SB-55 collected south of Parcel 5, therefore southern horizontal delineation is considered to be complete.

Visual impacts were not observed immediately above the confining clay layer or within the bottom 10 feet of borings installed adjacent to Parcel 5 (with the exception of WW-SB-28 and WW-SB-29 where target depth was not reached due to refusal) confirming the vertical delineation of contamination within the sampled areas as discussed above in relation to analytical data.

4.1.2.5 Parcel 6 (Block 2277 Lot 1)

Parcel 6 is located northeast of the Parcel 2 portion of the former MGP. Former MGP operations did not take place on Parcel 6. Historic industrial uses of this Parcel did include coal distillation, tar storage, and tar refining operations.

Twenty-one soil borings (WW-SB-18, WW-SB-25 through WW-SB-27, WW-SB-34 through WW-SB-36, WW-SB-43 through WW-SB-53, WW-MW-16, WW-MW-18, and WW-MW-19) were advanced on and adjacent to Parcel 6 to assess the subsurface conditions. The following discussion of the nature and extent of impacts will provide a summary of the impacts encountered at Parcel 6. As mentioned above, Parcel 6 was compared to the Restricted Residential SCOs because of its proposed future use as a park.

Shallow Subsurface Soil

Fill materials were encountered within the top 5 feet, likely associated with current and former parking lots, sidewalks, as well as historic filling of the East River and Bushwick Inlet. Generally, environmental impacts to the shallow subsurface soil (including odors, sheens, and stains) were petroleum-related, likely from long-term use as a fuel oil distribution facility. Physical impacts for Parcel 6 are discussed further below.

Total BTEX concentrations ranged from not detected, in a number of samples, to 5.68 mg/kg in WW-SB-49 (1 to 2 feet). None of the BTEX concentrations exceeded the Restricted Residential SCOs. Concentrations of other VOCs did not exceed the Restricted Residential SCOs.

Total PAH concentrations ranged from non-detect in three samples to 1,048.9 mg/kg in WW-SB-36 (3 to 5 feet). PAH concentrations in nine samples exceeded the Restricted Residential SCOs, five of which are located along North 12th Street [WWSB-25 (1 to 3 feet), WWSB-26 (1 to 4 feet), WW-SB-27 (4 to 5 feet), WWSB-34 (2 to 5 feet), and WWSB-36 (3 to 5 feet)]. Concentrations of other SVOCs did not exceed the Restricted Residential SCOs. Gas chromatograms for samples collected in the top 10 feet of soil/fill on the western part of Parcel 6 and N. 12th Street showed the presence of petroleum products in the kerosene-like, diesel-like, and heavy oil ranges. This variability in petroleum products indicates impacts from petroleum handling and storage that occurred on Parcel 6 and on the MGP parcels after the MGP operations ceased (Exponent, Appendix D).

Concentrations of PCBs, pesticides, and herbicides did not exceed the Restricted Residential SCOs.

Metals concentrations exceeded the Restricted Residential SCOs in 12 of the borings. Concentrations of arsenic exceeded the Restricted Residential SCO of 16 mg/kg in 11 of the samples. Concentrations ranged from 16.9 mg/kg at WWSB-50 (1 to 2 feet) to 273 mg/kg at WWSB-25 (1 to 3 feet); however, arsenic concentrations at ten of the locations were within the range of typical background concentrations (Table 5) of arsenic in soil (0.1 to 73 mg/kg). Concentrations of lead exceeded the Restricted Residential SCO of 400 mg/kg in seven of the samples, ranging from 436 mg/kg in WW-SB-50 (1 to 2 feet) to 1,270 mg/kg in WW-SB-45 (1 to 2 feet). Concentrations of mercury exceeded the Restricted Residential SCO of 0.81 mg/kg at five locations, ranging from 0.85 mg/kg in WW-SB-50 (1 to 2 feet) to 5.1 mg/kg in WW-SB-46 (1.5 to 2.5 feet). Exponent states that the abrupt drop in metal concentrations with depth indicates that these metals are associated with historical fill. Other sources that potentially contributed to the metals include the former railroads that existed in Parcels 2, 3, 5, and 6; metal works on Parcel 2; and the former tin can factory on Parcel 6 (Appendix D). Free cyanide was not detected at Parcel 6.

Deep Subsurface Soil

Fill materials, including concrete, brick fragments, and wood, were encountered at Parcel 6 to a maximum depth of 35 feet bgs (-24.63 feet NAVD) in WW-SB-26. As discussed above, impacts (including odors, sheens, and stains), were observed in the shallow subsurface soil. Impacts were observed across the property in the deep subsurface soil, the heaviest of which were generally along North 12th Street (Plate 4). Physical impacts for Parcel 6 are discussed further below.

Total BTEX concentrations ranged from non-detect in a number of samples to 4,180 mg/kg in WW-SB-25 (34 to 35 feet), which was collected from a tar-coated stratum. Individual BTEX concentrations exceeded the Restricted Residential SCOs at WW-SB-25 (34 to 35 feet), WW-SB-45 (53 to 54 feet), and WW-SB-46 (33 to 34 feet). Of the other VOCs, TCE was detected at 22 mg/kg in WW-SB-25 (34 to 35 feet), exceeding the Restricted Residential SCOs of 21 mg/kg. TCE is not related to former MGP operations.

Total PAH concentrations ranged from non-detect in a number of samples to 3,018 mg/kg in WW-SB-25 (34 to 35 feet). Nine samples showed individual PAH concentrations that exceeded the Restricted Residential SCOs; all of which were taken from strata where physical contamination was observed. Concentrations of other SVOCs did not exceed the Restricted Residential SCOs.

Per the RIWP, with the exception of one sample, deep subsurface soil was generally not tested for PCBs, pesticides, and herbicides, due to the likelihood of surficial sources of these types of contamination. Sample WW-SB-44 (50 to 51 feet) PCB, pesticide, and herbicide concentrations were not detected above the laboratory detection limits.

Generally, metal concentrations did not exceed Restricted Residential SCOs. Concentrations of arsenic exceeded the Restricted Residential SCO of 16 mg/kg in six samples, ranging from 20 mg/kg at WW-SB-34 (10 to 13 feet) to 300 mg/kg at WW-SB-36 (9 to 10 feet);however, four of those concentrations were within the range of typical background concentrations (Table 5) of arsenic in soil (0.1 to 73 mg/kg).Concentrations of mercury exceeded the Restricted Residential SCO of 0.81 mg/kg in four samples ranging from 1.2 mg/kg at WW-SB-35 (8 to 10 feet) and WW-SB-49 (9 to 10 feet) to 14.4 mg/kg at WW-SB-36 (9 to 10 feet). However, three of those concentrations were within the range of typical background concentrations (Table 5) of mercury in soil (0.01 to 3.4 mg/kg). One sample, WW-SB-36 (9 to 10 feet) had exceedances of the Restricted Residential SCOs of arsenic, cadmium, copper, lead, and mercury. Sample WW-SB-49 (9 to 10 feet) had exceedances of the Restricted Residential SCOs for arsenic, copper, lead, and mercury. However, arsenic and lead values were within the range of their typical background concentrations (Table 5) in soil (0.1 to 73 mg/kg and 10 to 1,500 mg/kg, respectively). Exponent states that the abrupt drop in metal concentrations with depth indicates that these metals are associated with historical fill. Other sources that potentially contributed to the metals include the former railroads that existed in Parcels 2, 3, 5, and 6; metal works on Parcel 2; and the former tin can factory on Parcel 6 (Appendix D).

Free cyanide was detected below the Unrestricted Use SCO (27 mg/kg) in one sample, WW-SB-36 (9 to 10 feet) at 0.301 mg/kg.

Fourteen samples, shown in the table below, were collected beneath visually observed impacts to document vertical extent of contamination. All concentrations were below the Restricted Residential SCOs in these samples. These results document that the vertical extent of impacts has been bounded for these boring locations.

Boring ID	Depth Intervals (feet bgs)	Analytical concentrations present at concentrations exceeding Restricted Residential SCOs?
WW-MW-16	(38-40)	No
WW-MW-18	(72-73)	No
WW-SB-18	(51-53)	No
WW-SB-25	(52-53)	No
WW-SB-43	(44-44.5)	No
WW-SB-44	(50-51)	No
WW-SB-45	(64-64.5)	No
WW-SB-46	(60.5-61)	No
WW-SB-47	(66-67)	No
WW-SB-48	(65-66)	No
WW-SB-49	(84-85)	No
WW-SB-51	(52.5-53)	No
WW-SB-52	(67.5-68.5)	No
WW-SB-53	(24.5-25)	No

Physical Impacts

Soil with visual petroleum impacts including sheens or staining were observed at 17 of the 39 soil borings within Parcel 6. Petroleum-impacted soil was encountered near the water table, as shallow as 0.5 feet and as deep as 27 feet bgs (8.25 to -17.35 feet NAVD). No measurable LNAPL was observed in monitoring wells at the Parcel 6. Gas chromatograms for samples collected in the top 10 feet of soil/fill on the western part of Parcel 6 and N. 12th Street showed the presence of petroleum products in the kerosene-like, diesel-like, and heavy oil ranges (Exponent, Appendix D). Parcel 6 has a long historic property use of fuel oil storage distribution and refining. MGP operations were not conducted on this parcel.

Tar impacts ranging from sheens to saturation were observed in 10 of the 39 soil borings (B-20A, WW-SB-18, WW-SB-25, WW-SB-26, WW-SB-34, WW-SB-36, WW-SB-43, WW-SB-45, WW-SB-46, WW-SB-53) located adjacent to Parcel 6, at depths between five and 57.6 feet bgs (3.74 to -47.22 feet NAVD). Tar related impacts are generally limited to borings within North 12th Street and the southern portion of Parcel 6 with the exception of WW-SB-52 and WW-SB-53. Coal carbonization tar was observed as shallow as 3 feet at WW-SB-36, located on N. 12th Street at the border of Parcel 6. The source of the tar at this shallow depth does not suggest subsurface migration from the former MGP, or disposal from the gas works on and near an active refinery property at that time. Because tar tanks were present on Parcel 6 at some point in time, with several documented accidents, one has to consider Parcel 6 as a tar source (Exponent, Appendix D). Tar impacts observed in WW-SB-52 and WW-SB-53 are related to nearby historic tar tanks used at Pratt Works, and therefore not related to the MGP operation. MGP related impacts are bound at the southern portion of the Parcel 6 (Cross section C-C’ [Plate 4]). Former Pratt Works’ tar and naphtha tanks were also located at the southeastern part of Parcel 6 (at the intersection of N. 12th Street and Kent Ave). At that corner, coal carbonization (CC) and carbureted water gas (CWG) tar impacts at shallow depths (4 to 5 feet bgs) were found suggesting that the source is the Pratt Works tanks/operations as opposed to subsurface migration from the former MGP site.

The table below presents a summary of observations of physical impacts more significant than odor and staining at Parcel 6.

Boring ID	Depth Intervals (feet bgs)	Physical Impact Observations
WW-SB-25	25.9-26.6 33.9-35	Tar blebs Tar coating
WW-SB-26	19.5-20, 24.1-24.4, 25-27.6, 40-42	Tar coating
WW-SB-34	10-15	Tar coating
WW-SB-36	20.9-21.6	Tar coating
WW-SB-45	51.5-56.5 56.5-57.6	Tar saturation Tar coating
WW-SB-46	33.3-34	Tar saturation
WW-SB-53	5-8.2	Tar blebs*

* Tar blebs found in WW-SB-53 are likely related to a historic tar tank on the property that is not associated with the Williamsburg Works MGP facility

The physical observations and analytical results described above demonstrate that the subsurface at Parcel 6 is impacted by tar in some areas along the southern portion of the property and North 12th Street (Cross Section C-C' [Plate 4]). Intervals of tar-like impacts including saturation were seen within the property at WW-SB-45 and WW-SB-46. WW-SB-43 located closer to Kent Avenue, had an interval of staining. Tar-like impacts including staining and blebs observed in WW-SB-52 and WW-SB-53 are likely associated with former Pratt tar tanks rather than MGP operations. In addition, GEI observed instances of petroleum-like odor, sheen, and staining in the subsurface, indicating petroleum contamination. Petroleum contamination at the property is likely related to the long term historic petroleum refining operations, rather than the former MGP operation. Visual MGP-related impacts were not observed in WW-MW-16, WW-MW-18, WW-MW-19, WW-SB-44, or WW-SB-48 through WW-SB-51 within the northern portion of Parcel 6, therefore northern horizontal delineation is considered to be complete. Visual impacts were not observed immediately above the confining clay layer or within the bottom 10 feet of borings installed within and adjacent to Parcel 6 (with the exception of WW-SB-26 where target depth was not reached due to refusal) confirming the vertical delineation of contamination within Parcel 6 as discussed above in relation to analytical data.

4.2 Sediment

Sediment samples were collected from twenty-one locations at varying depths from sections of the East River and the Bushwick Inlet that were adjacent to the former Williamsburg Works MGP and the Pratt Works properties (Parcels 5 and 6). Physical impacts from tar and/or petroleum were observed in most of the sediment cores, except for WW-SED-07, WW-SED-12, WW-SED-16, WW-SED-17, and WW-SED-18, which helped delineate the horizontal extent of contamination. Impacts were not bound to the west of the Site within the East River due to equipment limitations however, the depth of impacts observed are deeper than sediment dredging or remediation would address, therefore further delineation is not required. Visual petroleum-like sheen was observed in WW-SED-05 and WW-SED-15. Physical impacts for sediment are discussed further below.

Sediments are discussed in the following groupings:

- Accumulated soft organic sediment – fine organic material accumulated above native deposits were observed within East River sediment adjacent to the site as deep as 33.5 feet (WW-SED-17).
- Native sediment – native deposits underlying the accumulated soft material.

Accumulated Soft Organic Sediment

Total BTEX concentrations ranged from non-detect in a number of samples to 2,820 mg/kg in WW-SED-05 (4.5 to 5 feet). Based on individual BTEX concentrations, 19 samples qualify as Class A sediment, four samples quality as Class B, and 19 qualify as Class C. Concentrations of total VOCs ranged from non-detect WW-SED-12 (0 to 0.5 feet) to 2,820 mg/kg in WW-SED-05 (4.5 to 5 feet).

Total PAH concentrations ranged from 0.59 mg/kg in WW-SED-18 (0 to 0.5 feet) to 19,905 mg/kg in WW-SED-04 (3 to 4 feet). Based on total PAH concentrations 13 samples qualify as Class A sediment, 8 samples qualify as Class B, and 21 qualify as Class C. Total SVOC concentrations ranged from 1.16 mg/kg in WW-SED-18 (0 to 0.5 feet) to 20,083 mg/kg in WW-SED-04 (3 to 4 feet). Exponent suggests that elevated PAH concentrations are indicative of the presence, at least in part, of carbureted water gas tar. This was confirmed by the lack of UCM in the available gas chromatograms (Appendix D).

Of the 35 samples analyzed for PCBs, total PCB concentrations ranged from non-detect in a number of samples to 5.22 mg/kg in WW-SED-07 (0 to 0.5 feet). Based on total PCB concentrations 17 samples qualify as Class A sediment, 10 samples qualify as Class B and eight qualify as Class C. Elevated concentrations of PCBs indicate the presence of commingled contamination sources in the River (Appendix D).

Of the 35 samples analyzed for pesticides, concentrations of pesticides including alpha-chlordane, gamma-chlordane, 4,4-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endosulfan I, endosulfan II, endrin, heptachlor, heptachlor epoxide, and methoxychlor were detected at concentrations that qualify as Class B or C sediments. Eleven qualify as Class A sediment, 15 qualify as Class B and nine qualify as Class C. However, as discussed above, pesticides are not likely related MGP activities. Elevated concentrations of pesticides indicate the presence of commingled contamination sources in the River (Appendix D).

Herbicides were not detected in any sample.

Generally, metals were detected at concentrations qualifying as Class B and C sediments. Elevated metal concentrations are likely related to historic fill, with additional input from activities along the East River as well as activities from Parcels 1 through 6 (Appendix D). Free cyanide concentrations ranged from 0.113 mg/kg in WW-SED-02 (11-12 feet) to 1.1 mg/kg in WW-SED-20 (0-0.5 feet), but there is no guidance value for free cyanide.

TOC was analyzed in fifteen of the surface sediment samples collected from 0 to 0.5 feet. TOC concentrations ranged from 34,800 mg/kg in WW-SED-16 (0 to 0.5 feet) to 69,300 mg/kg in WW-SED-09 (0 to 0.5 feet).

All 42 of the samples collected within the accumulated soft sediment qualify as Class C sediments based on at least one of the analyses performed.

Native Sediment

Total BTEX concentrations ranged from non-detect in a number of samples to 278 mg/kg in WW-SED-19 (41.2 to 41.5 feet). Based on individual BTEX concentrations, 15 samples qualify as Class A sediment, one qualifies as Class B, and five qualify as Class C. Concentrations of total VOCs ranged from non-detect in a number of samples to 318.5 mg/kg in WW-SED-19 (41.2 to 41.5 feet).

Total PAH concentrations ranged from non-detect in a number of samples to 575.2 mg/kg in WW-SED-19 (41.2 to 41.5 feet). Based on total PAH concentrations 15 samples qualify as Class A sediment, two samples qualify as Class B and four qualify as Class C. Total SVOC concentrations ranged from non-detect in a number of samples to 575 mg/kg in WW-SED-19 (41.2 to 41.5 feet). Exponent suggests that elevated PAH concentrations appear to be from a mixture of CC and CWG tar (Appendix D).

Compared to accumulated soft sediment, metals were detected at lower concentrations within native material. Based on individual metal concentrations, 16 samples qualify as Class A sediment, three qualify as Class B, and two qualify as C sediments. Free cyanide was not detected in any samples. Elevated metal concentrations are likely related to historic fill, with additional input from activities along the East River as well as activities from Parcels 1 through 6 (Appendix D).

Based on all analyses performed, of the 21 samples collected from native material, 12 qualify as Class A, four qualify as Class B, and five qualify as Class C sediments. Samples and their associated class are provided in the table below.

Class A		Class B		Class C	
Boring ID	Sample Depth (feet bgs)	Boring ID	Sample Depth (feet bgs)	Boring ID	Sample Depth (feet bgs)
WW-SED-08	62-63	WW-SED-12	22-23	WW-SED-15	15.5-16
WW-SED-09	39.5-40	WW-SED-15	41.5-42	WW-SED-16	27-28
WW-SED-10	63-64	WW-SED-17	33.5-34.5, 53-54	WW-SED-19	41.2-41.5
WW-SED-11	58-59			WW-SED-20	42-42.5
WW-SED-12	79.5-80			WW-SED-21	37.5-38
WW-SED-13	54.5-55				
WW-SED-14	52.5-53				
WW-SED-16	64-64.5				
WW-SED-18	83.5-84				
WW-SED-19	74.5-75				
WW-SED-20	58.5-59				
WW-SED-21	46.5-47				

Physical Impacts

Sediments with visual petroleum impacts (sheens)were observed at four of the 30 sediment cores within the East River between the surface and 17.3 feet below the mudline (-7.3 to -24.6 feet NAVD). Petroleum impacts are likely associated with the long-term oil operations within adjacent properties and other industrial sources common in urban areas, including storm water run-off.

Tar impacts ranging from sheens to saturation were observed in 15 of the 30 sediment cores (ERS-5, WW-SED-01 through WW-SED-06, WW-SED-08 through WW-SED-11, WW-SED-13, WW-SED-14, WW-SED-19 and WW-SED-20) at depths between the mudline and 48.3 feet bgs (-6.3 to -67.10 feet NAVD). Impacts including staining and saturation were observed within the top 6 inches of sediment at two locations (WW-SED-03 and WW-SED-06). Tar impacts appear to be present at shallow depths closer to the shoreline and are deeper and weathered as cores locations move toward the center of the river. Tar impacts appear to be a mixture of CC and CWG tars (Appendix D). Visible tar impacts were not observed in cores within the northern and southern portions of the sediment study area, including cores collected previously by others within the Bushwick Inlet, indicating tar is bound in these directions.

The table below presents a summary of physical impacts more significant than odor and staining in the sediment cores.

Boring ID	Depth Intervals (feet below mud line)	Physical Impact Observations	Depositional Zone
WW-SED-03	8.3-10	Tar coating	Soft Sediment
WW-SED-04	0.9-4.3	Tar coating	Soft Sediment
WW-SED-05	4.3-5	Tar coating	Soft Sediment
WW-SED-06	0-1.3, 9.2-10 1.3-3.3	Tar saturation Tar coating	Soft Sediment
WW-SED-10	48-48.3	Tar coating	Native Sediment
WW-SED-11	28-29	Tar coating	Native Sediment
WW-SED-14	25-26	Tar blebs	Native Sediment
WW-SED-19	30-30.2 36-38, 40.5-42	Tar blebs Tar coating	Native Sediment

These observations and analytical results described above demonstrate that the sediment in the East River abutting the Site is impacted by a mixture of tar and petroleum. In addition, we observed instances of petroleum-like odor and sheen in the sediment, indicating petroleum contamination. Petroleum impacts and other environmental impacts to sediment are likely from a variety of sources, historic and modern, including Pratt Works. Visual MGP-related impacts were not observed in WW-SED-07, WW-SED-15 through WW-SED-17, and WW-SED-21 to the north, or WW-SED-12 and WW-SED-18 to the south within the East River sediment cores, therefore horizontal delineation is considered to be complete in these directions. Horizontal impact delineation was not reached to the west due to equipment restriction. Visual impacts were not observed immediately above the confining clay layer or within the bottom 10 feet of deep cores installed within the East River confirming the vertical delineation of contamination within the River.

4.3 Groundwater

Twenty-one monitoring wells and six temporary groundwater points were installed at various locations across the area investigated. Permanent monitoring well screens were installed spanning the groundwater surface. Temporary well screens were installed spanning the groundwater surface as well as some within deeper intervals of the Upper Glacial Aquifer. Many well screens were installed within intervals containing both petroleum and tar related impacts. Analytical sample concentrations were consistent between the different sample intervals.

As discussed in Section 3.2, groundwater in the water table aquifer generally flows towards the north and northwest towards the East River. Drinking water is supplied to the Site and surrounding area by the City of New York municipal water system.

Analysis of dissolved phase groundwater samples collected as part of the RI identified concentrations of compounds that were above NYSAWQSs that are likely related to MGP and petroleum impacts. Groundwater at the Site also contained elevated concentrations of naturally occurring metals (iron, magnesium, manganese, and/or sodium) indicative of the natural groundwater conditions in the area.

Concentrations of BTEX in the monitoring wells and temporary groundwater points ranged from non-detect in a number of samples to 31,100 ug/L in WW-MW-05. WW-MW-05 is screened in soil where petroleum and naphthalene odors, sheen, tar stains, blebs, and coating were observed. This well is located on Parcel 2. Many BTEX compound concentrations in groundwater samples exceeded the NYSAWQSs. Generally, the wells with the highest levels of BTEX were located in Parcels 1 and 2, or on either side of the Parcel 3 building. Other VOCs, including chloroform, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, styrene, trichloroethene, and vinyl chloride, exceeded the NYSAWQS standards in at least one sample. These chlorinated VOCs are not related to former MGP operations. MTBE, a gasoline additive, was detected on Parcel 2 (MW-5 at 2 ug/L; Metcalf and Eddy 2007), the source is likely operations that occurred at the parcels 1 and 2 after the MGP operations had ceased.

Concentrations of total PAHs ranged from non-detect in a number of wells to 9,830 ug/L in WW-SB-07, which is located at Parcel 2 and was screened in soil with tar staining, blebs, and partial coating. Concentrations of individual PAHs were present at levels above the NYSAWQS. Other SVOCs were also detected in four wells (2-methylphenol and 4-methylphenol in WW-MW-05 and WW-SB-05, and phenol in WW-MW-13 and WW-SB-21) at concentrations that exceeded the NYSAWQS.

PCBs and herbicides were not detected. Concentrations of pesticides exceeded the NYSAWQS in six samples. Pesticides are not associated with former MGP operations.

Concentrations of metals (including arsenic, barium, chromium, iron, lead, magnesium, manganese, nickel, potassium, selenium, and sodium) were detected above the NYSAWQS in all of the monitoring wells.

Ammonia was analyzed from temporary groundwater samples collected within the Parcel 1. Ammonia was detected in all of these samples, but only at concentrations exceeding the NYSAWQS standard in WW-SB-21 and WW-SB-22, within deeper screened intervals (35 feet and deeper).

Concentrations of total cyanide ranged from non-detect in a number of samples to 3,900 ug/L in WW-SB-21. Concentrations of total cyanide exceeded the NYSAWQS standard in nine samples.

4.4 Sub-Slab Vapor, Indoor Air, and Ambient Air (Outdoor)

An SVI investigation, including the collection of sub-slab vapor, indoor air, and ambient (outdoor air) samples, was completed within the occupied building at Parcel 1.

4.4.1 Sub-slab Soil Vapor

Sub-slab vapor samples were collected from two sub-slab soil vapor points (WW-SV-01 and WW-SV-02) on November 18, 2009 during the winter heating season.

The soil vapor tracer gas, helium, was not detected within sub-slab vapor samples verifying the integrity of the sub-slab vapor probe seal at the time of sampling. This seal prevents ambient air infiltration into the sub-slab vapor samples.

A number of VOCs and naphthalene were present in the samples. BTEX and naphthalene are common to petroleum products and MGP operations. Concentrations of PCE and TCE, chlorinated solvents which are not associated with MGP operations, were also detected in each of the sample locations.

4.4.2 Indoor Air

Indoor air samples WW-IA-01 and WW-IA-02, were collected concurrently with sub-slab vapor samples on November 18, 2009. Toluene, PCE, and TCE were detected above the levels shown in the BASE study. Although toluene, PCE, and TCE were detected above the NYSDOH Background Indoor Air concentrations, the concentrations detected in sub-slab vapor were an order of magnitude lower and therefore were not contributing to the elevated indoor air concentrations. Potential sources of toluene, PCE, and TCE observed in the indoor air of the building include paint, paint thinners, and paint removers.

Based upon the NYSDOH guidance, TCE, carbon tetrachloride, and PCE were present within indoor air at concentrations that may require reasonable and practical actions to identify source(s) and reduce exposures by others.

4.4.3 Ambient (Outdoor) Air

Outdoor ambient air sample WW-OA-01 was collected concurrently with indoor air samples and sub-slab vapor samples on November 18, 2009. All VOC concentrations were below the 90^{th} percentile of USEPA BASE study concentrations.

5. Fate and Transport of Impacts

This section provides interpretation and discussion of the data presented in previous sections and provides analysis of the interaction between the physical and chemical processes at the area investigated with the impacts observed. Through an understanding of sources, migration pathways, and potential receptors, the potential need for remedial actions to protect human health and/or the environment can be evaluated. Data collected by GEI as part of the RI as well as data obtained from other investigations is included in the fate and transport evaluation.

The following analysis of the area investigated takes into account the physical characteristics and surroundings, groundwater hydrology, history of development, the nature of the chemical compounds encountered, and any apparent trends in the distribution of these materials on or adjacent to the Site. This section provides a discussion of the physical, chemical, and biological characteristics of contaminants of potential concern (COPCs), and a discussion of the sources, migration pathways, and receptors for those COPCs. COPCs are defined as constituents that are present within each media at concentrations exceeding the Unrestricted SCOs and generally include VOCs, SVOCs, pesticides, PCBs, and metals.

The environmental media that may serve as pathways for COPC migration are soil, sediment, groundwater, and sub-slab soil vapor.

5.1 Soil

5.1.1 Surface Soil

PAHs, pesticides, PCBs, and metals were identified as COPCs in surface soil. VOCs (including BTEX compounds), SVOCs (excluding PAHs), herbicides, and cyanide were not detected above the Unrestricted SCOs and; therefore, are not considered COPCs for surface soil.

The former MGP Site is primarily covered by bituminous asphalt, concrete sidewalks, and buildings. However, there are some unpaved planter box areas along the sidewalks of North 11^{th} and North 12^{th} Streets.

PAHs, pesticides, PCBs, and metals could potentially migrate via fugitive dust emissions and dissolution into surface water run-off. Each of these pathways and its potential to occur at the Site are described below:

5.1.1.1 Fugitive Dust

COPCs sorbed to soil particulates could be transported by fugitive dust if exposed to wind erosion. PAHs and metals generally exhibit an affinity to sorb to soil and organic particulates. The unvegetated areas may be prone to wind erosion and the transport of COPCs sorbed to the dust generated by wind action.

5.1.1.2 Dissolved Phase Transport

Solubility is the measure of a chemical's ability to dissolve in water. COPCs sorbed to surface soil may dissolve in storm water, which then infiltrates into the ground or can run-off along the ground surface until it infiltrates. PAHs have a varying degree of solubility. The lighter-weight PAHs are more soluble while the higher-weight PAHs are less soluble and typically do not dissolve into water. PCBs are also generally insoluble and will also not dissolve into water. The dissolution of metals typically occurs under reducing conditions, which are unlikely to occur in surface soil. Given the nature of the compounds in the surface soil, dissolution of compounds into groundwater is likely not a major migration pathway.

Migration of COPCs from the surface soil is possible, but would likely occur primarily through the transport of particulates by wind. The nature of the COPCs is such that they are relatively persistent in soils and would likely remain attached to soil particulates. In fingerprinting analysis performed by Exponent, gas chromatograms results suggest that residual type runoff is the source of surface soil contamination. Potential exposure pathways to impacted surface soil is evaluated below in the QHHEA in Section 6.

5.1.2 Subsurface Soil

VOCs (BTEX, 2-Butanone [MEK], trichloroethene, and acetone), SVOC (PAHs, dibenzofuran, 2-methylphenol, 4-methylphenol, and pentachlorophenol), pesticides, PCBs, and metals were identified as COPCs in subsurface soil. In general, the distribution of BTEX and PAHs in subsurface soil coincides with the presence of tar and petroleum. Historic industrial operations at the area investigated have also contributed to the contamination in subsurface soil. Section 4 discusses the extent of COPCs (BTEX and PAHs) associated with the presence of tar and petroleum. Section 4 also discusses the nature and extent of non-MGP related COPCs including VOCs, pesticides, PCBs, and metals.

At the area investigated, tar was observed in 50 of the 74 soil borings, predominantly on Parcel 2 were the former holders were located, and 14 of the 21 sediment cores. Cross-sections A-A′ through J-J′ (Plate 3 through 6) depict physical observations of NAPL at each boring as shown. These cross-sections can be used to interpret the vertical and lateral extent of NAPL, petroleum, and tar impacts. Figures 9 through 11 depict the extent of impacts within the unsaturated zone, saturated zone above the clay layer, and clay (and underlying deeper) zone.

The majority of the DNAPL impacts are present within and adjacent to the gas holders within Parcel 2. Thirteen recovery wells were installed by URS in and around Parcel 2. Petroleum impacts, primarily in the form of sheen, are present intermittently beneath all Parcels at the area investigated. Fingerprint analysis of a NAPL and solid sample collected from a manhole located at the intersection of Kent Avenue and North 12th Street as well as NAPL recovery wells installed in and around Parcel 2 highlighted that the contamination at the different parcels is from multiple sources, consistent with the historical industrial nature of the area (Exponent, Appendix D).

The COPCs could potentially migrate through subsurface soil by volatilization, sorption, and dissolved-phase transport. Each migration pathway, as it relates to the COPCs identified in subsurface soil at the area investigated, is discussed below.

5.1.2.1 Volatilization

VOCs are by definition volatile and, therefore, may be transported from subsurface soil, tar, petroleum-impacted soil and groundwater to soil gas in the vadose zone and then into ambient air. PAHs, pesticides, PCBs, and metals do not readily volatilize; therefore, they are not COPCs for soil vapor.

5.1.2.2 Sorption

Sorption is usually defined as the reversible binding of a chemical to a solid matrix. However, there is evidence in the literature that this process is partially irreversible based on the time that the compound has been sorbed to a soil matrix (Brusseau and Rao, 1989; Brusseau, et al., 1991; Loehr and Webster, 1996). Sorption of BTEX, PAHs, and metals limits the fraction of the COPCs available for other transport processes such as volatilization and/or solubility. In general, BTEX compounds have low sorption potential, coupled with high water solubility and high volatility, which make sorption a relatively minor environmental fate for BTEX compared to other transport mechanisms. PAHs exhibit varying degrees of binding affinity to organic matter and soil particles; this affinity is dependent upon their individual molecular structures. In general, the higher molecular weight PAHs (e.g., benzo(a)pyrene) are more likely to sorb, whereas the lighter-weight PAHs (e.g., naphthalene) are less likely to sorb, due to higher solubilities and volatilities (USEPA, 1979; USEPA, 1986). Therefore, in unsaturated conditions, the higher molecular weight PAHs are expected to remain sorbed to soil, while the lighter-weight PAHs may transported by other mechanisms. Metals may remain sorbed to the subsurface soil depending on subsurface oxidation-reduction conditions and the availability of anions with which the metals could bind. Pesticides adhere and remain sorbed to organic matter within soil. Metals and pesticides that do not sorb to subsurface soil could be available for transport through the groundwater in solution.

5.1.2.3 Dissolved Phase Transport

BTEX and light-weight PAHs are soluble in water. Since NAPL was encountered below the water table, and BTEX and light-weight PAHs are COPCs in subsurface soil, dissolution of these COPCs from soil to groundwater represents a migration pathway at the area investigated.

Metals in the subsurface soil could dissolve and continue to leach to the groundwater system. However, the solubility of metals is highly dependent upon the oxidation-reduction conditions of the aquifer, the valance state of the specific metal, and the availability of anions that the metals could bind with to become immobile. The fate and transport of COPCs in subsurface soil is determined by multiple reactions that can be occurring including oxidation-reduction, adsorption-desorption, pH controls, and ion competition.

5.1.2.4 NAPL

NAPL fate and transport is dependent on various characteristics of the NAPL and of the media in which it is present. According to Guswa and Kueper, for a NAPL to be potentially mobile in a porous media, it must be present in a fully saturated state. In addition, the flow paths along which these fully saturated conditions exist can result in a complex pattern and/or distribution of NAPL and its residual impacts. Fully saturated conditions consist of accumulations where the entirety of the pore space of the soil or sediment is filled with NAPL, creating continuous liquid phase in the pore spaces (Guswa and Kueper, 2003). The saturated conditions result in a NAPL pressure head within the soil or sediment and serve as the driving force on the NAPL.

The relative mobility of NAPL in the saturated zone is dependent on the density and the viscosity of the NAPL, as well as the grain size of the soil. LNAPLs, which have a density less than that of water, tend to float on the surface of the water table while DNAPLs, which have a density greater than that of water, will sink below the water table.

As a finite volume of a DNAPL migrates through a porous media, the volume of DNAPL becomes spread until the DNAPL is no longer in a saturated state. Material in a residual state no longer has sufficient volume to create the pressure head needed to overcome the entry pressure of the porous media (Guswa and Kueper, 2003) and the migration front thus stagnates unless acted upon by an outside force.

In summary, the presence of tar and petroleum at the area investigated would likely result in the persistent presence of BTEX and PAHs in groundwater downgradient of the source material. Non-NAPL associated BTEX constituents in soil are typically mobile and are not particularly persistent in the surrounding environment due to their high volatility, low adsorption to soil, and high water solubility. This is primarily due to their generally low water solubility and high sorption coefficient with soil. Metals in soil are also anticipated to be relatively persistent, due to relatively low dissolved phase observations at the area investigated. Potential exposure pathways to impacted subsurface soil are evaluated below in the QHHEA in Section 6.

5.2 Sediment

Parcel 3, 4 and 5 along the East River have not yet been investigated as part of the RI. A data gap exists in these areas limiting the information available to evaluate the pathway for the fate and transport of impacts at these parcels to East River sediments. Fate and transport of source material to the sediments can be further evaluated when investigations are conducted at Parcels 3, 4, 5, and the portion of Parcel 6 that has not yet been sampled.

BTEX, PAHs, PCBs, pesticides, and metals were identified as COPCs in sediment. Several metals were detected in sediments at levels which qualify as Class B or C sediment. However, many of these inorganic substances are naturally occurring and representative of background conditions.

The fate and transport of COPCs in sediment is determined in part by carbon, sulfur and redox reactions, sorption and solubility mechanisms, as described above for subsurface soil. Sediment impacts from PAHs are present within surface and deeper sediments. Certain PAHs will continue to desorb and dissolve as groundwater flows through sediments to surface water. Over time, NAPL in sediment has been shown to harden or weather as light-weight PAHs are removed from the tar and high-weight PAHs remain.

Potential exposure pathways of ecological receptors to impacted sediment are evaluated below in the FWRIA in Section 7.

5.3 Groundwater

VOCs (BTEX, acetone, styrene, and chlorinated VOCs), SVOCs (including PAHs, 2-methylphenol, 4-methylohenol, and phenol), pesticides, metals, cyanide, and ammonia have been identified as COPCs in groundwater. Several of these compounds are non-MGP related; however, they remain COPCs in groundwater (chlorinated VOCs, pesticides, some metals, and ammonia).

Arsenic, barium, chromium, iron, magnesium, manganese, nickel, and selenium were also detected in groundwater at levels exceeding the NYSAWQSs. Iron, magnesium, manganese, and sodium are naturally occurring and representative of background conditions.

The fate and transport migration pathways for COPCs in groundwater are determined by volatilization, sorption, and solubility as described above in subsurface soil. Dissolved phase shallow groundwater impacts (BTEX and PAHs) are present within and downgradient of areas where NAPL was observed in subsurface soil. Dissolved phase BTEX and PAHs are also present within the areas where there is petroleum-impacted soil (Plate 7 and Figures 6 through 8). Total cyanide was present in groundwater samples collected within the former gas holder footprints, as well as in samples collected from three downgradient wells. Chlorinated VOCs, which are non-MGP related compounds, were present in monitoring wells located in Parcel 1.

BTEX and PAHs will continue to desorb as groundwater flows through soil with tar, petroleum and chlorinated VOC impacts. Refer to Plate 7 and Figures 6 through 8 for BTEX, PAH, and cyanide concentrations and groundwater contours. Shallow groundwater generally flows to the northeast toward the East River at both high and low tides. Dissolved phase contaminants that may enter the East River will likely be mitigated rapidly by biodegradation, volatilization, and dilution.

5.4 Sub-Slab Soil Vapor

VOCs (including BTEX, naphthalene, chlorinated compounds, and others) were detected within sub-slab soil vapor, unsaturated subsurface soil and in groundwater. Chlorinated VOCs (unassociated with the former MGP) pose a potential to migrate to indoor air as they are not subject to aerobic degradation in the vadose zone. VOCs can volatilize from subsurface soil and shallow groundwater to the soil vapor in the vadose zone. COPCs in soil vapor, where exposed, can enter the ambient air, where concentrations could be mitigated by dilution. The Site and surrounding area are primarily covered by pavement and buildings which limits volatilization into ambient air. Detections of COPCs in ambient (outdoor) air were below levels found in the BASE study. Aerobic degradation of aromatic hydrocarbons (e.g. BTEX) in the vadose zone has been widely demonstrated and essentially eliminates the potential for these VOCs to cause adverse indoor air impacts unless the sources of the VOCs are in direct communication with the indoor building space.

SVI analysis of soil vapor and indoor air within the Parcel 1 building demonstrates that concentrations of BTEX and naphthalene in sub-slab vapor are present below ambient air BASE concentrations. MGP compounds are not adversely affecting indoor air quality.

6. Qualitative Human Health Exposure Assessment

This section presents the QHHEA prepared for the area investigated, by addressing the qualitative exposures potentially posed to human receptors by COPCs that are present at the area investigated in surface soil, subsurface soil, groundwater, sediment, sub-slab vapor, and indoor air. Soil samples are discussed in comparison with the Unrestricted SCOs. This conservative comparison to Unrestricted SCOs is presented at the request of NYSDEC and NYSDOH. The results are also evaluated with respect to the Restricted Residential or Industrial SCOs. The latter approach is more appropriate given the anticipated future use and current zoned use of the Site and surrounding area. Groundwater is compared to NYSAWQS and indoor air samples are compared to EPA BASE Air Concentrations of the 90th Percentile as well as NYSDOH air guidance values. Human health exposure guidelines for sediment have not been established, for the purpose of this QHHEA sediment concentrations have been compared to Unrestricted and Restricted Residential SCOs similar to soil. All COPCs exceeding these thresholds are evaluated regardless of whether a particular COPC is related to the former MGP operation or not.

Tables 7, 8, 9, 10, 12, and 13 provide a summary of the detected concentrations and highlight compounds that are above guidance values in surface soil, subsurface soil, sediment, groundwater, sub-slab vapor and indoor air.

6.1 Exposure Pathways

An exposure pathway describes the means by which a potential receptor can come into contact with contaminants originating from a Site. Assessment of potential exposure pathways includes the following five elements (NYSDEC, 2010):

(1) Contaminant source
(2) Contaminant release and transport mechanisms
(3) Point of exposure
(4) Route of exposure
(5) Receptor population

The NYSDEC and NYSDOH consider an exposure pathway complete when all five of these elements are documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future (NYSDEC, 2010).

Sections 4 and 5 of this report document the source of the COPCs (Element 1), the nature of the contaminants, and the transport mechanisms that account for the distribution of COPCs

(Element 2). This information is then used to present a summary of complete exposure pathways. The qualitative exposure assessment summarizes the COPCs at the study area (Elements 1 and 2), the media in which COPCs are present (potential exposure points; Element 3), the potential exposure routes of the COPCs (i.e., ingestion, inhalation, dermal absorption; Element 4), and the assumed potential receptors (Element 5).

It is important to note that this QHHEA assumes that contaminant conditions have not or will not be mitigated. In this sense, a "baseline" of potential exposures is presented. This evaluation was conducted in accordance with Appendix 3B of the *DER-10 Technical Guidance for Site Investigation and Remediation* (NYSDEC, 2010), which summarizes the approach for preparing a QHHEA.

For the purposes of this assessment, it is assumed that the future land use of Parcel 2 and Parcel 6 will be a park and Parcels 1, 3, 4, and 5 will remain zoned for manufacturing uses.

6.2 Surface Soil

The following compounds were detected above the Unrestricted SCOs in surface soil:

SVOCs	Benz[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[k]fluoranthene Chrysene Dibenz[a,h]anthracene Indeno[1,2,3-cd]pyrene
Pesticides	4,4-DDD 4,4-DDE 4,4-DDT Endrin
PCBs	Total PCBs
Metals	Arsenic Copper Lead Mercury Zinc

Potentially complete exposure pathways exist for these compounds in surface soil via ingestion, dermal contact, and inhalation. The potential receptors include the adult and child visitor, trespasser, adult commercial worker, and adult utility worker under current and future expected property use. Pavement and buildings cover most of the area investigated, with the exception of areas along the sidewalks of North 11th and North 12th Streets where soil and gravel is exposed. Except for the unpaved areas, potentially complete exposure pathways must be triggered by intrusive subsurface activity, such as excavation.

6.3 Subsurface Soil

The following compounds were detected above the Unrestricted SCOs in subsurface soil:

VOCs	Benzene Toluene Ethylbenzene Xylene Acetone TCE 2-Butanone
SVOCs	Acenaphthene Acenaphthylene Anthracene Benz[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[g,h,i]perylene Benzo[k]fluoranthene Chrysene Dibenz[a,h]anthracene Fluoranthene Fluorene Indeno[1,2,3-cd]pyrene Naphthalene Phenanthrene Pyrene Dibenzofuran 2-Methylphenol 4-Metholphenol Pentachlorophenol
Pesticides	Aldrin Beta-BHC 4,4-DDD 4,4-DDE 4,4-DDT Endrin Dieldrin
PCBs	Total PCBs
Metals	Arsenic Barium Cadmium Copper Lead Manganese Mercury Nickel Selenium Silver Zinc

Potentially complete exposure pathways exist for these compounds in subsurface soil via ingestion, dermal contact, and inhalation. The potential receptors include adult commercial and adult utility worker under current and future expected property use. Potentially complete exposure pathways must be triggered by intrusive subsurface activity, such as excavation.

6.4 Groundwater

The following compounds were detected above the NYSAWQS in groundwater:

VOCs	Benzene Toluene Ethylbenzene Xylene Acetone Chloroform 1,1-Dichloroethene cis-1,2-Dichloroethene trans-1,2-Dichloroethene Styrene TCE Vinyl Chloride
SVOCs	Acenaphthene Benz[a]anthracene Chrysene Fluorene Indeno[1,2,3-cd]pyrene Naphthalene Phenanthrene 2-Methylphenol (o-Cresol) 4-Methylphenol (p-Cresol) Phenol
Pesticides	Aldrin Alpha-BHC Beta-BHC Delta-BHC Heptachlor epoxide
Metals	Arsenic Barium Chromium Iron Lead Magnesium Manganese Nickel Selenium Sodium
Other	Ammonia Cyanide

Potentially complete exposure pathways exist for groundwater via ingestion, dermal contact, and inhalation for the adult commercial worker and the adult utility worker. However, these potentially complete exposure pathways must be triggered by intrusive subsurface activity, such as excavation. Groundwater was encountered from 2.3 feet bgs (WW-MW-07) to 12.21 feet bgs (WW-MW-02) which limits the potential for contact. In addition, iron, magnesium, manganese, and sodium detected in the groundwater at the area investigated are frequently naturally occurring compounds. In addition, potable water in this area is supplied by the City of New York.

6.5 Sediment

The following compounds were detected above Unrestricted SCO in sediment:

VOCs	Benzene Toluene Ethylbenzene Xylene Acetone
SVOCs	Acenaphthene Acenaphthylene Anthracene Benz[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[k]fluoranthene Chrysene Dibenz[a,h]anthracene Fluoranthene Fluorene Indeno[1,2,3-cd]pyrene Naphthalene Phenanthrene Pyrene Dibenzofuran 4-Methylphenol (p-Cresol)
Pesticides	Alpha-BHC Beta-BHC Delta-BHC Alpha-chlordane 4,4-DDD 4,4-DDE 4,4-DDT Dieldrin Endrin Heptachlor
Metals	Arsenic Barium

	Cadmium Copper Lead Manganese Mercury Nickel Selenium Silver Zinc

Potentially complete exposure pathways exist for these compounds in sediment via ingestion, dermal contact, and inhalation. The potential receptors include adult commercial worker and utility worker. Sediments are not exposed during low tide and surface water restricts access to sediments, particularly in areas of deeper water.

6.6 Sub-Slab Soil Vapor

A potentially complete exposure pathway to organic compounds in sub-slab vapor exists for adult utility and construction workers if intrusive activity such as soil excavation is conducted. Building foundations provide physical barriers that limit vapor intrusion into the building at Parcel 1.

6.7 Indoor Air

Former MGP operations do not appear to be the source of VOCs impacting the indoor air quality at Parcel 1.

Analysis of indoor air in the building at Parcel 1 detected toluene, PCE, and TCE, at concentrations above background levels. These VOCs were detected at much lower concentrations in sub-slab vapor. Chlorinated compounds (TCE, carbon tetrachloride, and PCE) are present in indoor air at concentrations that exceed the NYSDOH air guidance values and EPA BASE Indoor Air Concentrations 90th Percentile. As previously discussed, these compounds are not related to MGP operations and are found in commonly used paint, paint thinners, and paint removers. They are likely related to the products stored and used in the building. A potentially complete exposure pathway to these compounds exists for adult and child visitors, trespassers, adult commercial workers, and adult utility workers.

6.8 QHHEA Discussion

The QHHEA has revealed that there are potentially complete exposure pathways to surface and subsurface soil above the Unrestricted SCOs, groundwater above the NYSAWQSs, sediment above the Unrestricted SCOs, and sub-slab vapor and indoor air above background established by the EPA BASE 90th percentiles and NYSDOH air guidance values.

6.8.1 Summary of Potential Exposure Pathways

A summary of the media of concern, exposure routes, and potential receptors is presented, by parcel, in the following table. Potential receptors at and near the Site are based on current site and adjacent area uses, and the potential for future uses and activities (i.e., construction/utility activities). Potentially complete exposure pathways are identified if a receptor has a current or future potential exposure to impacted media.

Parcel ID	Media of Concern	Exposure Routes	Construction/ Utility Worker	Adult/Child Visitor	Trespasser
Parcel 1 and adjacent ROW	Subsurface Soil	Direct Contact Ingestion Inhalation (particulates)	√	--	--
	Groundwater	Ingestion Direct Contact	√	--	--
	Sub-Slab Soil Vapor	Inhalation	√	--	--
	Indoor Air	Inhalation	√	√	√
	Surface Soil (ROW only)	Inhalation (particulates) Direct contact Ingestion	√	√	√
Parcel 2 and adjacent ROW	Subsurface Soil	Direct Contact Ingestion Inhalation (particulates)	√	--	--
	Groundwater	Ingestion Direct Contact	√	--	--
	Surface Soil (ROW only)	Inhalation (particulates) Direct contact Ingestion	√	√	√
Parcels 3 and 4 and adjacent ROW	Subsurface Soil	Direct Contact Ingestion Inhalation (particulates)	√	--	--
	Groundwater	Ingestion Direct Contact	√	--	--
	Subsurface Soil	Direct Contact Ingestion Inhalation (particulates)	√	--	--
Parcel 5 adjacent ROW	Groundwater	Ingestion Direct Contact	√	--	--
	Subsurface Soil	Direct Contact Ingestion Inhalation (particulates)	√	--	--
Parcel 6	Groundwater	Ingestion Direct Contact	√	--	--
	Sediment	Inhalation (particulates)	√	--	√

Parcel ID	Media of Concern	Exposure Routes	Construction/ Utility Worker	Adult/Child Visitor	Trespasser
		Direct contact Ingestion			
East River					

6.8.2 Surface Soil

Although surface soil impacts are not MGP-related, potentially complete exposure pathways to a number of SVOCs, all pesticides, and most metals are eliminated when compared to the applicable Restricted Residential or Industrial SCOs. Exposure routes include ingestion, dermal contact, and inhalation at the area investigated for the adult or child visitor, trespasser, adult commercial worker, and adult utility worker for the following compounds, which are present at concentrations above the applicable Restricted SCOs:

Adjacent to Parcel 2 Restricted Residential Land Use	
PAHs	Benz[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Dibenz[a,h]anthracene Indeno[1,2,3-cd]pyrene
PCBs	Total PCBs
Metals	Arsenic

Adjacent to Parcels 3 and 4 Industrial Land Use	
PAHs	Benzo[a]pyrene

Surface soil samples were collected within unpaved soil and gravel areas (planter boxes) along the sidewalks of North 11th and North 12th Streets. The exposed surface soil represents recent fill material which was placed after MGP operations ceased. Because of the limited areas of exposed surface soil and infrequent contact, surface soil PAHs do not pose a substantive exposure concern.

6.8.3 Subsurface Soil

There were 46 COPCs in subsurface soil with concentrations higher than the Unrestricted SCOs. The number of compounds is reduced to 29 COPCs when compared to the Restricted Residential and Industrial SCOs, eliminating potentially complete exposure pathways to a number of SVOCs, metals, and all pesticides. A potentially complete exposure pathway exists via ingestion, dermal contact, and inhalation at the area investigated for the adult commercial worker and adult utility worker for the following compounds, which are present at concentrations above the applicable Restricted SCOs:

Industrial Land Use SCO (Parcels 1 and adjacent to Parcels 3, 4, and 5)	
VOCs	Benzene Xylene
SVOCs	Benz[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Dibenz[a,h]anthracene Indeno[1,2,3-cd]pyrene Total PAHs
Metals	Arsenic Mercury

Restricted Residential Land Use SCO (Parcels 2 and 6)	
VOCs	Benzene Toluene Ethylbenzene Xylene Trichloroethene (TCE)
SVOCs	Acenaphthene Acenaphthylene Anthracene Benz[a]anthracene Benzo[a]pyrene Benzo[b]fluoranthene Benzo[g,h,i]perylene Benzo[k]fluoranthene Chrysene Dibenz[a,h]anthracene Fluoranthene Fluorene Indeno[1,2,3-cd]pyrene Naphthalene Phenanthrene Pyrene Dibenzofuran
Metals	Arsenic Barium Cadmium Copper Lead Manganese Mercury

As previously discussed, the majority of the area investigated is covered either by pavement or buildings. Small portions along the sidewalks of North 11th and North 12th Streets contain unpaved areas. In most areas, potentially complete exposure pathways must be triggered by intrusive subsurface activity, such as excavation.

6.8.4 Groundwater

Potentially complete exposure pathways to VOCs, SVOCs, pesticides, metals, cyanide, and ammonia compounds exist for groundwater via ingestion, and dermal contact at the area investigated for the adult commercial worker and adult utility worker. However, these potentially complete exposure pathways must be triggered by intrusive subsurface activity, such as excavation. Groundwater at the area investigated is approximately 2.5 to 12 feet bgs, limiting the potential for contact. The Site is developed with buildings and the majority of the area is paved further reducing the potential for intrusive activities.

In addition, iron, magnesium, manganese, and sodium detected in the groundwater at the site are frequently naturally occurring compounds. Potable water in the area of the Site is provided by the City of New York.

6.8.5 Sediment

There were 44COPCs in sediment with concentrations higher than the Unrestricted SCOs. The number of compounds is reduced to 32 COPCs when compared to the Restricted Residential SCOs, eliminating potentially complete exposure pathways to a number of VOCs, SVOCs, metals, and pesticides. A potentially complete exposure pathway to BTEX, SVOCs, pesticides (beta-BHC and dieldrin), and metals exist for sediments via ingestion, dermal contact, and inhalation at the area investigated for the adult commercial worker and adult utility worker. However, these potentially complete exposure pathways must be triggered by intrusive subsurface activity, such as dredging. Sediments are below the surface water of the East River reducing the potential for exposure.

6.8.6 Sub-Slab Soil Vapor

In the event that surface covers and/or soil are disturbed through invasive activity, a potentially complete exposure pathway to organic compounds via inhalation in soil vapor may exist for the utility and construction worker. As discussed above, the majority of the Site and surrounding area is paved. Dilution and dispersion of soil vapor migrating from soil to air greatly reduces the concentrations of vapors, minimizing human health exposures. Although chloroform and PCE concentrations in sub-slab soil vapor are slightly higher than the background indoor air concentrations, buildings, where present, are physical barriers that greatly reduce the potential for vapor intrusion. As such, the soil vapor pathway exposure is low risk at the Site.

6.8.7 Indoor Air

Concentrations of VOCs (toluene, PCE, and TCE) were detected above background indoor air concentrations and PCE, carbon tetrachloride, and TCE (chlorinated VOCs), were detected above the NYSDOH air guidance values. As such, there is a complete exposure pathway for adult and child visitors, adult commercial worker, and adult utility workers at Parcel 1. As discussed above in subsection 6.7, these VOCs were detected at much lower concentrations in sub-slab vapor and therefore the concentrations of these compounds detected in indoor air at Parcel 1 are not associated with former MGP operations. PCE, carbon tetrachloride, and TCE are also not related to former MGP operations.

6.9 QHHEA Summary

As a result of the potential complete exposure pathways to soil, groundwater, sediment, sub-slab vapor, and ambient air, any future intrusive activity should evaluate and address, as necessary, the identified pathways to COPCs for Site workers. Any future excavation can be managed by the current owners to address potential exposure pathways for the construction and utility worker to COPCs in surface and subsurface soil, groundwater, sediment, and sub-slab vapor.

A complete exposure pathway to chlorinated and other non-MGP VOCs within indoor air was identified during the RI. These compounds are not related to MGP gas operations, but are related to activities conducted at Parcel 1 during the time of the RI. The concentrations are well below established Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs). However, the TCE, carbon tetrachloride, and PCE concentrations in the indoor air will require that reasonable and practical actions be taken to identify source(s) and reduce exposures according to NYSDOH SVI guidance. TCE, carbon tetrachloride, and PCE are not related to MGP operations.

Potential risk for adults and children exists for direct contact, inhalation, and ingestion of dust and surface soil. However, surface soil impacts appear to be related to urban conditions and adjacent area uses, not the former MGP. As such, the potential risk is similar to that of any urban area.

Greater risk is associated with uncovering and having direct contact with, or ingestion of, heavily impacted subsurface soil, groundwater, and sediment. Adults and children are not likely to be involved in the excavation activities required to make contact with these media. Construction and utility workers are most likely to face these hazards, and appropriate soil management methods are necessary.

7. Fish and Wildlife Resource Impact Analysis Part 1

Per NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC 2010), the purpose of the Fish and Wildlife Resource Impact Analysis (FWRIA) Part 1 is to identify actual or potential for adverse effects to fish and wildlife resources due to COPCs.

This analysis includes:

- The identification of fish and wildlife resources in the vicinity of the Site in the form of a natural resources map;
- Descriptions of the fish and wildlife resources within one-quarter mile of the Site based on available data and information including a general characterization of the floral and faunal resources present;
- Identification of COPCs by comparison of data to applicable standards;
- Evaluations of potential contaminant migration and exposure pathways to fish and wildlife resources from COPCs; and,
- Conclusions regarding the potential of exposure and potential for adverse effects to fish and wildlife on or in the vicinity of the Site.

7.1 Fish and Wildlife Resources

The U.S. Fish and Wildlife Service and the NYSDEC Natural Heritage Program were contacted regarding species of concern, significant habitats, and fishery resources within one half mile of the Site (Figure 12). In addition, resources near the Site and surrounding quarter mile radius were reviewed. The objectives of the review were to:

- Map and describe plant communities and aquatic resources on and adjacent to the Site;
- Identify significant ecological resources; and
- Record evidence of stress to plants and animals, if any, from Site-related chemicals.

7.1.1 Terrestrial Resources

The Site is currently composed of industrial establishments covered by buildings and asphalt. Little vegetation exists to support wildlife populations. As a result, much of the area is classified as paved road or urban structure exterior. The paved road category includes much of the Site, parking lots, streets, and sidewalks.

A portion of the Bushwick Inlet Park and East River State Park are located directly southwest of the Site, and McCarren Park is located less than one-quarter mile southeast of the Site. East River State Park is a seven-acre park which is partially paved including a playground area with some open, maintained grassy areas and direct access to the East River via a sand/riprap beach area. Bushwick Inlet Park includes a large multi-purpose athletic field covered with artificial turf, a community building, and direct access to the East River waterfront via a dog run and riprap park area. More than half of McCarren Park is grass covered athletic fields and also includes paved/artificially covered areas for various sports, and has a track and a swimming pool. Currently, parks and commercial and industrial uses dominate the land within 0.5 mile of the Site. Residential areas within one half mile of the Site consist of buildings surrounded by maintained lawns and ornamental plantings.

7.1.2 Freshwater and Tidal Wetlands and Aquatic Resources

The northeast boundary of the Site abuts the East River (Figure 12). The East River is the only wetland identified within 0.5 miles of the Site according to the U.S. Fish and Wildlife National Wetland Inventory (NWI) Maps (The Narrows and Jersey City, NY-NJ quadrangles) and NYSDEC Tidal Wetland Maps. The East River is mapped as an estuarine and marine deep-water wetland (E1UBL). There were no freshwater wetlands identified within one-quarter mile of the Site.

NYSDEC classifies the East River adjacent to the Site as “I”, a saline water body water with the best uses for secondary contact recreation and fishing, and water quality suitable for fish propagation and survival. Bushwick Inlet is located north of the Site. The protected cove of Bushwick Inlet is considered a shallow littoral habitat (estimated water depth 1.5 meters or less in depth as defined by NYSDEC; New York City Department of City Planning, 2005). Shallow groundwater at the area investigated flows toward the East River.

Fish and marine resources have been documented in the East River adjacent to and within one half mile of the Site. The East River provides habitat for a variety of aquatic organisms including planktonic organisms, marine algae, and benthic invertebrates, and fish. The majority of the shoreline along the area investigated consists primarily of urban bulkhead and/or riprap. Edinger (2002) defines this condition as a constructed marine shore, which represents “a community in which the substrate is composed of broken rocks, stones, wooden bulkheads, or concrete placed so as to reduce erosion. Characteristic organisms are attached algae, mussels, and barnacles; percent cover and species diversity are low compared to a marine rocky intertidal community. This community is demonstrably secure throughout its range.” Tidal flats are present within Bushwick Inlet. No submerged aquatic vegetation has been observed is the shallow areas of the East River or Bushwick Inlet (New York City Department of City Planning, 2005).

7.1.3 Rare, Threatened and Endangered Species

The NYSDEC Environmental Resource identified that although there are no documented NYSDEC significant habitats near the Site, an endangered beetle, American burying beetle (*Nicrophorusamericanus*), has been identified within one-half mile of the Site (Figure 12). However, the report of this endangered beetle took place in 1905, and habitat for these organisms does not currently exist at the Site. Correspondence with NYSDEC Natural Heritage Group identified that nesting peregrine falcons (*Falco peregrinus*) are the only federally listed endangered, threatened, or species of concern that is currently known to occur within one half mile of the Site (Appendix L).

7.1.4 Observation of Stress

The urbanized environment near the Site provides very limited habitat for terrestrial wildlife. Signs of stress to vegetation and wildlife in terrestrial habitats resulting from COPCs were not observed.

NAPL coating and saturation were observed in surface sediment samples collected in the East River adjacent to the Site (WW-SED-04, WW-SED-06). These conditions have the potential to cause stress to aquatic ecological receptors.

7.1.5 Value of Habitat to Associated Fauna

The surrounding quarter mile radius of the Site consists of residential homes, three parks with primarily paved or maintained grass surfaces, and industrial/commercial properties. These areas are not expected to support an abundance of wildlife, due to the lack of vegetation that could provide food and cover and due to constant human activity. The wildlife expected to occur near the Site includes only urbanized bird and mammalian species such as mockingbird (*Mimuspolyglottos*), gray squirrel (*Sciuruscarolinensis*), and Norway rat (*Rattusnorvegicus*).

As described above, the East River adjacent and within one-quarter mile of the Site provides habitat for a variety of aquatic organisms, including planktonic organisms, aquatic algae, and benthic invertebrates, and has been classified as essential fish habitat by the United States Fish and Wildlife Service (USFWS 1997). The tidal flats adjacent to Bushwick inlet have been observed to serve as habitat for coastal and migratory bird forage areas (City of New York 2005).

7.1.6 Value of Resources to Humans

The parks within a quarter mile of the Site have value to humans for recreational use, primarily consisting of paved or maintained grass and artificial turf sports fields, which provide limited value to wildlife. The areas adjacent to the East River provide the potential for fishing activities, observation of birds and aquatic organisms, and boating activities.

7.2 Contaminant Migration and Exposure Pathway Analysis

Section 5 provides a detailed review of the fate and transport mechanisms for COPCs from the area investigated including a description of sources, migration pathways, and potential receptors.

COPCs were detected in surface and subsurface soil and groundwater on the area investigated and sediment in the East River adjacent to the Site. COPCs leaching or dissolving from subsurface soil to groundwater may migrate to sediments and potentially associated overlying surface water. Sorption processes may limit migration of organic COPCs through sediment to surface water. There is limited potential for direct release of COPCs in surface soil to the East River as the area investigated is primarily paved.

Fish and wildlife receptors have the potential to be exposed to surface water, sediment, and soil, which may be impacted by COPCs. Exposure pathways include direct exposure or ingestion of COPCs in surface sediments (approximately 0 to 0.5 feet below mud line), surface water, and exposed surficial soil (approximately 0 to 2 feet dependent on root depth).

The area investigated is primarily covered by paved surfaces, and no terrestrial habitat was observed, therefore, exposure of wildlife resources to surface soil is not considered a significant complete exposure pathway and will not be evaluated further within this FWRIA.

The East River is the most significant ecological resource adjacent to the Site. Surface water was not collected during this investigation; however, biodegradation, volatilization, dilution, and, strong currents in the river adjacent to the Site may limit the magnitude of COPCs in surface water, limiting the exposure to fish and wildlife receptors to COPCs. Surface water was not evaluated further within this FWRIA. Fish and wildlife receptors have complete exposure pathways to COPCs in surface sediments (0 to 0.5 feet in depth); therefore, surface sediments were evaluated in the FWRIA.

7.3 Identification of Contaminants of Potential Concern

As described above, East River surface sediments collected adjacent to the Site were screened to determine if COPCs were detected at concentrations that may cause the potential for adverse effects on fish and wildlife resources.

In accordance with NYSDEC Screening and Assessment of Contaminated Sediment effective June 24, 2014, surface sediment sampling results were compared to the NYSDEC SSGVs establishing Class A through C sediment. The results are summarized in Table 10. COPCs detected in surface sediments at concentrations above Class A are considered COPCs.

BTEX compounds were detected in 12 of the 21 surface sediment samples. Total xylene in WW-SED-09 was detected at a concentration qualifying as Class B sediment. Six samples (WW-SED-01 through WW-SED-06) qualify as Class C sediment based on multiple compound concentrations.

PAHs were detected in all surface sediment samples. Based on total PAH concentrations, two of the 21 samples (WW-SED-07 and WW-SED-15) qualify as Class B sediment and six of the 21 samples (WW-SED-01 through WW-SED-06) qualified as Class C sediments. These sample locations were closest to the shoreline.

Individual PCBs are not MGP-related and were detected in 11 of the 21 surface sediment samples. Based on total PCB concentrations, four samples (WW-SED-01, WW-SED-05, WW-SED-06, and WW-SED-11) qualify as Class B sediments, and an additional four (WW-SED-04, WW-SED-07, WW-SED-09, and WW-SED-15) qualify as Class C sediment.

Pesticides are not MGP-related and were detected in 11 of the 21 surface sediment samples. Ten samples (WW-SED-01 through WW-SED-07, WW-SED-09, WW-SED-11, and WW-SED-15) contained concentrations of pesticides that qualify as Class B, of those, four (WW-SED-02 through WW-SED-04, and WW-SED-15) had concentration qualifying as Class C sediment. Pesticides detected at Class B concentrations include alpha-chlordane, gamma-chlordane, 4,4-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endrin, heptachlor, heptachlor epoxide, and methoxychlor. Pesticides detected at Class C concentrations include endosulfan I, endosulfan II, endosulfan sulfate, and heptachlor epoxide.

Several metals, including arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver and zinc, were detected in all surface sediment samples. Concentrations of these metals were qualified as Class B or C sediment in the majority of samples. Metals were generally detected at higher concentrations within cores collected closer to the shoreline.

7.4 Conclusions

The former Williamsburg Works MGP Site is primarily paved and covered with buildings, providing limited to no habitat for terrestrial wildlife receptors. The East River, located northwest of the Site, is the most significant ecological resource near the Site providing habitat for a variety of aquatic flora and fauna and semi-aquatic wildlife.

A complete exposure pathway of fish and wildlife receptors to COPCs in surface sediments (0 to 0.5 feet in depth) was identified; therefore, surface sediments were the focus of the FWRIA Part 1. The exposure of wildlife resources to surface soil was not considered a significant complete exposure pathway due to the paved and commercial use and no terrestrial habitat was observed on the area investigated, therefore, was not evaluated in the FWRIA Part 1. Surface water was not collected as a component of the investigation and, due to its tidal, high flow nature was therefore was not evaluated within the FWRIA Part 1.

BTEX, PAHs, PCBs, metals, and pesticides were identified as COPCs in surface sediments based on comparison of concentrations in surface sediment to NYSDEC SSGVs; the source of these COPCs requires further assessment. Based upon the aquatic and wildlife resources expected to utilize the East River near the Site, the potential migration pathways of COPCs to surface sediment resulting in exposure to aquatic ecological receptors, and potential toxicity of the COPCs, this FWRIA Part 1 indicates potential for adverse effects to fish and wildlife resources in the vicinity of the Site.

8. Conceptual Site Model

The CSM typically provides a holistic framework for the physical and chemical contaminant distribution at a site and it serves as a basis for future decisions regarding investigation or remediation. This CSM will discuss the nature of the impact sources, pathways for source migration, and potential human and ecological receptors in the areas investigated thus far as part of the RI.

A large portion of the former MGP footprint (Parcels 3 and 4) and adjacent property (Parcel 5) is currently occupied by warehouse buildings. A large portion of Parcel 6 is occupied by building and oil storage tanks. Subsurface characterization has not been performed below the buildings and oil storage tanks due to access limitation and this area presents a large data gap within the CSM for impacts associated with the former MGP and impacts, from other sources surrounding the former MGP and impacts on the MGP site footprint, but post-dating the operation of the MGP, that exist separately from and that are commingled with potentially MGP-related impacts. Unknown source areas may exist below the Parcel 3 and 4 building, which overlies areas in which several tanks and other structures associated with the MGP were located. In addition, based on information about the Pratt Works/SOCONY processes currently available to National Grid, tar should not automatically be considered a marker of MGP-related contamination. Therefore, more rigorous forensic differentiation of source materials is also a data gap within the CSM.

Petroleum and tar impacts are present beneath Parcels 1, 2, and 6; adjacent to Parcels 3 4, and 5; and in the East River. The observed vertical and lateral extent of physical impacts is shown on cross-sections A-A′ through K-K′, in Plates 3 through 6, and the extent maps, Figures 9 through 11.

8.1 Contaminant Sources

The data collected during the RI, PDI, and previous investigations by others in the area investigated indicate that there are impacts associated with the former MGP and there are impacts from other releases on-Site and off-site that have commingled with the MGP impacts. Other sources include the Pratt Works oil refinery and subsequent iterations of the Pratt Works as a SOCONY refinery and later as a Major Oil Storage Facility (MOSF), and releases related to other operations post-dating the MGP, such as fuel tanks that were operated by NYC Department of Sanitation, which had documented releases. Section 1.1 describes the history of the area investigated and documents known sources of contamination.

Based on the areas investigated to date, the primary source of MGP-related tar is associated with the gas holders and governor station located within Parcel 2, specifically Holder No. 1 and the relief holder. Tar-saturated soil was generally observed in sandy layers within the glacial outwash above the glacial lake clay. Visual impacts were not observed in or below the clay in borings installed by GEI as part of the RI, including the six deep borings installed on Parcel 2. Tar saturation was most abundant and seen the furthest below ground surface in the soil borings adjacent to and slightly down gradient of the Parcel 2 gas holders. The deepest tar-saturated soil encountered by GEI was in boring WW-SB-45 at a depth of 56.5 feet bgs (-46.12 feet NAVD). An additional lesser source of MGP-related tar is also the gas holder on Parcel 1. The holder at Parcel 1 was further downstream in the gas generation and purification process than the holders at Parcel 2, and therefore, the gas it received was cooler and contained a smaller quantity of condensable vapors.

The former gas works was sandwiched between the Pratt works/Standard Oil refinery operations, located on Parcel 5 and 6. Sanborn maps showed that Parcel 6 contained tar tanks and coal piles/bins, in addition to petroleum tanks and a tin can factory, among other activities. Historical fires and accidents that occurred on Parcel 6, across the street from the former MGP, resulted in burning of the tar and oil tanks. In one instance, the entire refinery operation was destroyed. Parcel 5, apparently connected to Parcel 6 by pipelines that ran across the former MGP, contained refined-oil storage tanks, railroads, and a chemical storage area. The overlapping of these industrial activities suggests commingling of contamination (Exponent, Appendix D).

Shallow impacts observed during the RI were not related to the MGP operations, except in the area of the gas holders on Parcel 2, and may be associated with historical fill or various industrial operations that occupied the Site after the cessation of MGP operations. Solvents, PCBs, pesticides, and metals not associated with MGP operations were found in shallow soil/fill across all sampled areas. The presence of these additional non-MGP related chemicals in soils on the Site and adjacent to the Site further confirm the presence and commingling of multiple sources of impacts that require further evaluation.

Tar impacts were commingled with petroleum-impacted soil and fill at depths from ground surface to greater than 40 feet. Petroleum impacts are likely associated with multiple sources including historic on-site fuel storage, off-site fuel storage and distribution operations at the adjacent former Pratt Works (Parcels 5 and 6 and 25 Kent Avenue), oil use and storage during NYCDOS operations, and placement of urban fill over the history of the Site. The extent of the petroleum impacts remains a data gap because access could not be obtained for Parcels 3, 4, (on-site) and 5 (off-site Pratt Works). Gas chromatograms showed the presence of various petroleum products (e.g., finished, distilled petroleum products in the mid to heavy boiling point ranges). In addition, MTBE was detected in Parcel 2 groundwater, MTBE was recently a common additive to gasoline. These findings are consistent with storage of petroleum products that occurred in Parcels 1 through 4, after the MGP had ceased operations, and at Parcels 5 and 6 (Appendix D).

8.2 Pathways for Migration

Fate and transport mechanisms for impacts were developed, as described in Section 5, and include: movement as NAPL, transportation as fugitive dust from surface soil, sorption to subsurface soil, and dissolution into groundwater.

8.2.1 Soil

The NAPL impacts in soil have extended from the source area on Parcel 2 to the northwest. It appears that releases of tar from the MGP source area generally migrated downward through the permeable fill and glacial till deposits until they encountered silty, less permeable layers. The tar then migrated laterally to the northwest along the less permeable layers. Visual impacts were frequently seen near and below the water table within Parcel 2 and adjacent street ROWs.

The remainder of the NAPL impacts migrated downward through coarse-grained glacial outwash until they encountered the glacial lake clay or the volume of tar was insufficient to flow further into the soil matrix due to properties of the tar and soil. Visual tar impacts deeper than 20 feet bgs were most frequently seen within Parcel 2 itself and not at the surrounding Parcels. In addition, visual impacts were seen in East River sediment cores between an elevation of -30 feet NAVD and clay (elevation ranging from -50 to -80 feet NAVD getting deeper further from the shoreline). These impacts are from multiple sources and require further evaluation.

Measurable NAPL was not observed by GEI in any of the monitoring wells, however, tar streaking was observed on the water level tape at WW-MW-13 during gauging activities. URS observed approximately 8 inches of NAPL in WW-MW-13 during PDI activities. Measurable tar accumulating in this well implies that NAPL is potentially mobile in this area. This well is down gradient of the former holders and tar handling areas and adjacent to the Parcel 3 building that has not yet had a subsurface investigation. NAPL was measured in recovery wells installed by URS within and adjacent to Parcel 2 further supporting the NAPL mobility. NAPL was measured in nine of the 13 recovery wells. A total of 543 gallons of NAPL was removed over approximately 5 months. This suggests that the measurable NAPL has been migrating horizontally down gradient from the Parcel 2 gas storage area and/or from an unknown source area within the uncharacterized area below Parcel 3 and 4 buildings.

The glacial lacustrine clay was observed in most of the soil borings that were installed deep enough to reach the expected clay layer. The clay layer was not encountered in most borings along the Bushwick Inlet coastline or the western-most portion of the East River sediments.

At these locations clay is either not present or present deeper than the depth of the boring. The downward mobility of the tar ceased atop the glacial lake clay.

Visually tar-impacted soil was not observed in the following borings

Location	Boring ID
Parcel 1 and street ROWs on the eastern portion of the area investigated	WW-MW-01, WW-MW-02, WW-MW-16, WW-MW-20, WW-SB-01, WW-SB-02, WW-SB-19, and BPB-23
Former street ROWs south of Parcel 5, Block 2301 (south of Parcel 5), and East River on the southern portion of the area investigated	WW-MW-21, WW-MW-22, WW-SB-30, WW-SB-54, WW-SB-55, BPB-1, BPB-2, BPB-3, and LPB-1 through LPB-20, WW-SED-12, WW-SED-18, and ERS-1 through ERS-4
Parcel 6, East River, and Bushwick Inlet on the northern portion of the area investigated	WW-MW-18, WW-MW-19, WW-SB-27, WW-SB-35, WW-SB-44, WW-SB-47 through WW-SB-52, B-7A, B-12A, B-13A, B-15A, B-16A, B-24A, B-28 through B-32, B-33, B-34, and BC-1 through BC-8, WW-SED-07, WW-SED-15, WW-SED-16, WW-SED-17. WW-SED-21, ERS-9, and BCS-1 through BCS-11

These borings appear to bound the extent of tar-impacted soil to the north, east, and south. The lateral extent of impacts in sediments west of the Site was investigated and delineated to the satisfaction of NYSDEC, but were not bound to the west of the Site within the East River due to equipment limitations. The mud line elevation drops and water current speed increases toward the center of the river. NAPL impacts were observed in borings installed as far west as the drilling equipment was capable of operating.

Visual NAPL impacts were also not observed in soil borings WW-SB-11, BPB-4 through BPB-9, BPB-11, and BPB-12 as well as sediment cores WW-SED-02 and WW-SED-03, however, these locations are surrounded by borings with visual NAPL and are included in what is considered the impacted area.

8.2.2 Groundwater

Groundwater flows northwest across the area investigated through the source areas toward the East River. The highest groundwater concentrations were generally detected in source areas. Total BTEX and total PAH concentrations were highest in wells WW-MW-05 and WW-SB-07. Dissolved BTEX and PAH concentrations decrease with distance downgradient of the source area indicating that contamination is migrating to the northwest. A portion of the dissolved phase BTEX and PAH constituents and total cyanide in the shallow groundwater zone are likely discharging to the East River. Volatilization, biodegradation, and dilution likely rapidly mitigate any dissolved phase discharges to the East River.

8.3 Ecological Receptors

As discussed in Section 7, the area investigated is primarily paved and covered with buildings, providing limited to no habitat for terrestrial wildlife receptors; therefore, exposure of wildlife resources to surface soil was not considered a complete exposure pathway. The East River located northwest of the Site, is the most significant ecological resource in the area investigated providing habitat for a variety of aquatic flora and fauna and semi-aquatic wildlife. A complete exposure pathway for fish and wildlife receptors to COPCs in surface sediments (0 to 0.5 feet in depth) was identified; therefore, surface sediments were the focus of the FWRIA.

The FWRIA found that aquatic and wildlife resources expected to utilize the East River near the Site combined with the potential migration pathways of COPCs to surface sediment result in the potential exposure to aquatic ecological receptors, and potential toxicity resulting from these COPCs. These COPCs are related to a commingling of multiple sources of impacts that require further evaluation.

8.4 Human Receptors

As discussed in Section 6, there are potentially complete pathways for human receptors to come into contact with both MGP-related and non-MGP-related chemical compounds in subsurface soil, groundwater, sub-slab vapor and indoor air at the area investigated. Under current conditions, however, these impacts pose no risk of harm to human health. Potential future utility and construction workers may contact contaminants in subsurface soil at each of the parcels and beneath the streets during excavation activities. There is a potential risk to these workers performing utility repairs or future construction activities of exposure to contaminated subsurface soil, groundwater, and sub-slab vapor.

9. Summary and Conclusions

The RI was performed under the terms of the AOC Index No. A2-0552-0606 and in accordance with the NYSDEC-approved RIWP, addenda, and SRIWP to evaluate potential impacts to soil, sediment, groundwater, sub-slab vapor and indoor air from impacts associated with the former operations of the Williamsburg Works MGP. The MGP produced gas for use by local businesses and the nearby community between circa 1850 until at least 1930. Following decommissioning, the property was subdivided into four properties (Parcels 1 through 4) and sold between the mid-1940s and 1950s. National Grid and its subsidiaries have not controlled the properties since their sale.

A review of available historical information reveals that the area of the former Williamsburg Works MGP was subject to considerable filling prior to the operation of the MGP. Following the decommissioning of the MGP, the United States Navy used the property before it was sold. After it was sold, the properties were used for parking, lumber storage, sheet metal manufacturing, and city sanitation operations, including bulk petroleum storage. Currently, the former Williamsburg Works Site is used for document storage by CitiStorage, a parking and concert venue by New York Parks and Recreation Department, and a photography studio by Amazon. The former MGP was surrounded to the north (Parcel 6), northeast (25 Kent Avenue), and the south (Parcel 5) by the former Pratt Works Williamsburg site (aka Astral Oil Works). The Pratt Works refinery was originally constructed circa 1867, and eventually merged with SOCONY, which became Exxon Mobil. The former Pratt Works was one of the earliest and largest refineries in New York and contained dozens of bulk petroleum and tar storage tanks. Parcel 6 fronting on North 12th Street has been operated as a MOSF until very recently. This property has been operated by Pratt Works, SOCONY, Exxon Mobil, Paragon Oil Co (a Division of Texaco, Inc.), Bayside Fuel Oil, TransGas Energy Systems, and Motiva. National Grid and NYSDEC are aware of substantial petroleum impacts located on the North 12th Street MOSF site (Parcel 6).

RI activities and prior and contemporary investigations have been completed on two of the four Site parcels and the adjacent rights of way. The parcels that have not yet been investigated represent data gaps for nature and extent of impacts and CSM associated with the former MGP and impacts that are commingled with other sources surrounding the former MGP and contemporaneous with or post-dating the operation of the MGP. Parcels 3, 4, and 5 have not been investigated because investigation was not possible at this time due to building use.

The field investigation revealed that the shallowest subsurface materials consist of fill underlain, in some cases, by alluvial deposits. Beneath these materials, glacial till, glacial outwash sands, glacial lake clay, and bedrock were encountered, although not all of these materials were observed in each boring.

Tar appears to have originated from gas production and tar handling areas of the MGP footprint, particularly around the gas holders. Tar, released from the MGP source area generally migrated downward through the permeable fill until it encountered less permeable till or silty lenses. Tar tanks on Parcel 6 are an additional potential source of tar. A portion of the tar then migrated laterally to the northwest along the top of the less permeable layers. The remainder of the tar migrated downward through coarse-grained deposits within the glacial till into coarse-grained glacial outwash until it encountered the glacial lake clay. The clay layer acts as a barrier to the downward migration of tar at the Site.

Based on the areas investigated to date, the bulk of tar–saturated soil was limited to Parcel 2 near the former gas holders. Tar impacted soil was encountered as shallow as 5 feet bgs (5.69 feet NAVD) in WW-SB-100 installed by URS and as deep as 56.5 feet bgs (-46.127 feet NAVD) in WW-SB-45. Tar-saturated soil was generally encountered on Parcel 2 above the glacial lake clay, which acts as a barrier to the downward migration of tar.

The overall vertical extent of tar migration has been defined by this RI. Visual tar impacts were not observed below the clay layer within surrounding deep borings installed by GEI. The lateral extent of tar migration has been defined to the north, east, and south. The extent of tar impacts on-site remains a data gap because Parcels 3 and 4 have not been investigated.

The former gas works was sandwiched between the Pratt works/Standard Oil refinery operations, located on Parcel 5 and 6. Sanborn maps showed that Parcel 6 contained tar tanks and coal piles/bins, in addition to petroleum tanks and a tin can factory, among other activities. Historical fires and accidents that occurred on Parcel 6, across the street from the former MGP, resulted in burning of the tar and oil tanks. In one instance, the entire refinery operation was destroyed. Parcel 5, apparently connected to Parcel 6 by pipelines that ran across the former MGP, contained refined-oil storage tanks, railroads, and a chemical storage area. The overlapping of these industrial activities suggests commingling of contamination. (Exponent, Appendix D).

Tar impacts were commingled with petroleum-impacted soil and fill at depths from ground surface to greater than 40 feet. Products associated with the former gas works (Parcels 1–4) included coal tar and petroleum (e.g., gas oil) used as a feedstock in the carbureted water gas process. After the MGP operations ceased, several other operations occupied the site parcels, including sheet metal manufacturing, scrap metal shops, and tanks and oil/water separators, among other operations (Exponent, Appendix D). Petroleum impacts are likely associated with multiple sources including historic on-site fuel storage, oil use and storage during NYCDOS operations, long-term off-site fuel storage and operations at the adjacent former Pratt Works (Parcels 5 and 6), and historic urban filling. The presence of additional non-

MGP related chemicals including metals, solvents, pesticides, and PCBs in soils on the Site and adjacent to the Site further confirm the presence and comingling of multiple sources of impacts that require further evaluation.

The western lateral extent of impacts in sediments was investigated and delineated to the satisfaction of NYSDEC. The source of the sediment impacts is not clear however and may relate to multiple releases associated with the MGP, the former Pratt Works operation (including a well-documented catastrophic fire that caused releases of petroleum to the East River), and releases associated with outfalls to the East River. Further forensic evaluation will be necessary to assess the contribution of sediment impacts associated with these potential sources.

Within samples collected from the top 5 feet of subsurface soil, BTEX values did not exceed the appropriate restricted SCO criteria, however, individual and total PAH values were detected in some areas above the appropriate restricted SCO criteria. Elevated metal concentrations (arsenic, barium, lead, and mercury) were also detected. However, due to the shallow depths, these COPCs are likely associated with historic fill material used in the development and post-MGP operation of the Site.

Samples collected from visually impacted subsurface soil deeper than 5 feet were associated with BTEX and total and individual PAH exceedances of the appropriate restricted SCOs, within all of the parcels but most frequently Parcel 2. Elevated concentrations of dibenzofuran and metals (arsenic, barium, cadmium, copper, lead, and mercury) were also present. However, dibenzofuran and the noted metals are not associated with MGP operation and are associated with historic fill material used in the development and post-MGP operation of the Site. The presence of non-MGP related chemicals confirm the presence and commingling of multiple impact sources.

With the exception of one soil boring (WW-SB-23), analytical concentrations within samples collected below observed impacts at the completion of the borings were all below the appropriate restricted SCO criteria, indicating the vertical extent of impacts has been determined.

Groundwater at the area investigated moves through soil that contains both impacts associated with the former MGP operations and non-MGP sources. Groundwater moving through the areas of tar-saturated soil, residual tar, and petroleum impacted soil will dissolve the BTEX components and low molecular weight PAHs (e.g., naphthalene). The resultant groundwater plume is migrating in the direction of groundwater flow. Shallow groundwater flows to the northwest toward the East River during both high and low tides.

Based on the distribution of impacted soil and the groundwater flow directions, dissolved phase BTEX and PAHs associated with both petroleum and tar impacted soil is being transported by groundwater flow toward the East River. Potential dissolved phase contaminants that enter the river will likely be mitigated by processes of biodegradation, volatilization, and dilution.

A QHHEA for COPCs in all media at the area investigated determined that current users have a limited potential to come into contact with COPCs in excess of the screening values. Potential risk associated with surface soil impacts are similar to any urban area and are not related to former MGP operations. Greater risk may exist if future construction and utility workers uncover soil and come into contact with impacted soil or groundwater. In these cases, appropriate soil management methods are necessary. A complete exposure pathway to chlorinated and other non-MGP VOCs within indoor air was identified during the RI. These compounds are not related to MGP gas operations, but are related to recent uses at Parcel 1.

A FWRIA Part 1 identified and evaluated COPCs within subsurface soil and sediment, and determined the potential risks to on-site and off-site terrestrial and aquatic receptors. The Site and surrounding area are primarily paved and covered with buildings, providing limited to no habitat for terrestrial wildlife receptors. The East River located northeast of the Site, is the most significant ecological resource near the Site and provides habitat for a variety of aquatic flora and fauna and semi-aquatic wildlife. PAHs, metals, and the pesticide DDE were identified as COPCs in surface sediments; the source of these COPCs requires further assessment. Based upon the aquatic and wildlife resources expected to use the East River in the vicinity of the Site, the potential migration pathways of COPCs to surface sediment resulting in exposure to aquatic ecological receptors, and potential toxicity of the COPCs, this FWRIA Part 1 indicates potential for adverse effects to fish and wildlife resources in the area investigated.

References

American Conference of Governmental Industrial Hygienists (ACGIH), 2002. *Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices*.

Bouwer, H., Rice, R.C., 1976. *A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells*. Water Resources Research Vol. 12, No. 3, p. 423-428

Bouwer, H., 1989. *The Bouwer and Rice Slug Test – An Update*. Ground Water, Vol 27, No 3, p. 15-20.

Brock, P. C. and P. W. G. Brock, undated. "Bedrock Geology of New York City: More than 600 m.y. of geologic history" *Field Guide for Long Island Geologists Field Trip October 27, 2001."* Pp. 17. http://pbisotopes.ess.sunysb.edu/reports/NYCity/. Accessed September 16, 2003.

Brooklyn Union Gas (BUG) Drawings, 1908 through 1946. Drawing 1D36, dated November 9, 1908, Drawing OA8, dated February 5, 1909, Drawing 1G122, dated June 23, 1909, and retraced October 5, 1939 and July 16, 1946, Drawing 1G102, dated June 23, 1909, and Drawing 2G130, dated July 27, 1921.

Brusseau, M. L. and P.S.C. Rao, 1989. "The Influence of Sorbate-Organic Matter Interactions on Sorption Nonequilibrium."*Chemosphere*. Vol. 18, pp 1691-1706.

Brusseau, M. L., R.E. Jessup, and P.S.C. Rao, 1991. "Nonequilibrium Sorption of Organic Chemicals: Elucidation of Rate-Limiting Processes." *Environmental Science and Technology*. Vol. 25, pp 134-142.

Busciolano, R., 2002. *Water-Table and Potentiometric-Surface Altitudes of the Upper Glacial, Magothy, and Lloyd Aquifers on Long Island, New York, in March-April 2000, with a Summary of Hydrogeologic Conditions*. United States Geological Survey. Water-Resources Investigations Report 01-4165.

Busciolano, R., J. Monti, Jr., and A. Chu, 1998. *Water-Table and Potentiometric-Surface Altitudes of the Upper Glacial, Magothy, and Lloyd Aquifers on Long Island, New York, in March-April 1997, with a Summary of Hydrogeologic Conditions*. United States Geological Survey. Water-Resources Investigations Report 98-4019.

Buxton, H. T., J. Soren, A. Posner, and P. K. Shernoff, 1981. *Reconnaissance of the Ground-Water Resources of Kings and Queens Counties, New York*. United States Geological Survey Open-File Report 81-1186.

Cartwright, R. A., 2002. *History and Hydrologic Effects of Ground-Water Use in Kings, Queens, and Western Nassau Counties, Long Island, New York, 1800s through 1997*. United States Geological Survey Water-Resources Investigations Report 01-4096.

Chaskey, C., 2005. Personal Communication. New York Natural Heritage Program, Albany, NY. June 10.

Chemical Equipment Corporation Map, 1920. Lots 75-76-77, Block 2287, Section 8. September 10, 1920.

City of New York Department of Finance, Automated City Register Information System. http://a836-acris.nyc.gov/Scripts/Coverpage.dll/index.

City of New York, 1921. *Board of Estimate and Apportionment*. Approved Resolution No. 139 p. 511. July 21, 1921.

Dripps, M., 1855. Map of the Cities of New York, Brooklyn & Jersey City.

Edinger, G. J., D. J. Evans, S. Gebauer, T. G. Howard, D. M. Hunt, and A. M. Olivero (editors). 2014. *Ecological Communities of New York State. Second Edition. A revised and expanded edition of Carol Reschke's Ecological Communities of New York State.* New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY. March 2014.

Efroymson R. A., M. E. Will, G. W. Suter III, 1997. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision.*ES/ER/TM-126/R2. Oak Ridge National Laboratory, Oak Ridge, TN.

Environmental Data Resources, Inc. (EDR), 2005. The EDR Radius Map with GeoCheck®. Former Williamsburg Works, Kent Avenue, Brooklyn, NY. Inquiry No. 2119865.2s. January 15, 2008.

Explosion in Pratt's Astral Oil Works, 1880. *The Brooklyn Daily Eagle*, Vol. 41 – No. 13. January 14, 1880.

Fetter, C.W. 1988. *Applied Hydrogeology, 2nd Edition*; Merrill Publishing Company, Columbus, OH, 592 p.

Forbes, R.J. 1959. More Studies in Early Petroleum History 1860-1870.

Freeze, R.A., and J. A. Cherry, 1979. *Groundwater;* Prentice-Hall, Inc. Englewood Cliffs, NJ, p. 604.

GEI Consultants, Inc. (GEI), 2008. *Remedial Investigation Work Plan, Williamsburg Works Former Manufactured Gas Plant Site, Brooklyn, NY*. May 2008.

GEI, 2008a. *Work Plan Addendum, Remedial Investigation – Additional Borings, 35 Kent Avenue, Williamsburg Works Former Manufactured Gas Plant Site, Brooklyn NY.* November 19, 2008.

Gelfer, V., R. Gobin, J. Schedtman, 2003. *Design of Confined Disposal Facility on Compressible Organic Soil*.

Gesner, G.W. 1865. A Practical Treatise on Coal, Petroleum, and Other Distilled Oils. Second Edition.

Guswa, Dr. J. H. and Dr. B. H. Kueper, 2003. *Site Characterization and Remediation Techniques for DNAPLs and Associated Dissolved Phase Contamination,* Rensselaer at Hartford, Hartford, Connecticut. February 2003.

HDR Engineering, Inc. 1998. *Supplementary Site Assessment for a 13-Acre Parcel of The Brooklyn Navy Yard Final Report* Vols. I & II. June 1998.

Howard, P.H., 1990, *Handbook of Environmental Fate and Exposure Data for Organic Chemicals*. Lewis Publishers, Chelsea, MI.

http://factfinder.census.gov/servlet/ReferenceMapFramesetServlet?_bm=y&-_lang=en.
http://www.dec.state.ny.us/website/dfwmr/heritage/EcolComm.htm.

Kabata-Pendias A, A. Pendias, 1992. *Trace Elements in Soils and Plants.* P.T. Kostecki, E.J. Calabrese, eds. Lewis Publishers, Inc. Chelsea, MI.

Lauber, J. M., T. D. Mock. *Glossary of Technical Terms*. New York State Geological Survey – New York State Museum. Web. Accessed July 31, 2014.http://www.nysm.nysed.gov/nysgs/resources/index.html

LiRo Engineers, Inc., 2004. *Quarterly Monitoring Report, Brooklyn North 1, January 2004 – April 2004.* May 26, 2004.

LiRo Engineers, Inc., 2005. *Quarterly Monitoring Report, Brooklyn North 1, November 2004 – January 2005.* February 28, 2005.

Loehr, R. C. and M. T. Webster, 1996. "Behavior of Fresh vs. Aged Chemicals in Soil. *"Journal of Soil Contamination*. Vol. 5, pp 361-383.

Long E. R., D. D. MacDonald, S. L. Smith, F. D. Calder, 1995. *Incidence of Adverse Biological Effects within Ranges of Chemical Concentrations in Marine and Estuarine Sediments.* Environ Manag 19(1): 81-97.

Marterer, G., 1925. Map Showing the Original High and Low Grounds, Salt Marsh, and Shore Lines in the City of Brooklyn from original Government Surveys made in 1776-1777.

Merguerian, C., 2003. *The Narrows Flood-Post-Woodfordian Meltwater Breach of the Narrows Channel, NYC.* Hofstra University. Accessed September 16, 2003.http://pbisotopes.ess.sunysb.edu/lig/Conferences/abstracts-03/merguerian/merguerian.htm.

Metcalf & Eddy of New York, Inc. (M&E 2006. *Site Investigation Report, 9th Street Equities, LLC, 86 Kent Avenue between and including North 9th and North 10th Streets, Block 2301, Lots 1, 50, 60 & 70, Brooklyn, New York.* August 2006.

M&E, 2006a. *Site Investigation Report, Property West of Kent Avenue between and including North 10th and North 12th Streets, Block 2287, Lot 1,16, & 30, Block 2294, Lot 1 & 5, Brooklyn, New York.* November 2006.

M&E, 2006b. *Site Investigation Report, Bayside Fuel Oil Company, 1-65 North 12th Street, Block 2277, Lot 1, Brooklyn, New York.* November 2006.

M&E, 2006c. *Site Investigation Report, Motiva Enterprises LLC/Bushwick Creek Inlet, Kent Avenue between South Shoreline of Bushwick Creek and Quay Street, Block 2590, Lot 25 & 100, Brooklyn, New York.* November 2006.

M&E, 2007. *Cost to Cure Report Park Land, Department of Sanitation Garage, 50 Kent Avenue, Block 2287, Lot 1, Brooklyn, New York.* June 2007.

M&E, 2007a. *Cost to Cure Report Park Land, Bayside Fuel Oil Company, 1-65 North 12th Street, Block 2277, Lot 1, Brooklyn, New York.* June 2007.

Mueser Rutledge Consulting Engineers, 1999. *Inspection of Barge Basin, Brooklyn Navy Yard, Brooklyn, New York*, April 16, 1999.

Moss, C. J., and C, Merguerian, 2005. Loading patterns in varved Pleistocene sediment in the NYC area: *in* Hanson, G. N., *chm*., Twelfth Annual Conference on Geology of Long Island

and Metropolitan New York, 16 April 2005, State University of New York at Stony Brook, NY, Long Island Geologists Program with Abstracts, 12 p.

Moss, C. J., and C. Merguerian, 2007. Different and distinct - Implications of unusual glacial strata in Brooklyn: *in* Hanson, G. N., *chm*., Fourteenth Annual Conference on Geology of Long Island and Metropolitan New York, 14 April 2007, State University of New York at Stony Brook, NY, Long Island Geologists Program with Abstracts, 19 p.

Murphy, R. F. 1995. *Brooklyn Union-A Centennial History*. Brooklyn Union Gas Company. pp. 158.

National Grid, 2009. *Remedial Investigation Work Plan Addendum, 50 Kent Avenue, Williamsburg Works Former Manufactured Gas Plant (MGP) Site, Brooklyn NY*. Letter to Ms. Lisa Gorton. February 12, 2009.

National Grid, 2009a. *Remedial Investigation Work Plan Addendum, Williamsburg Works Former MGP Site, Brooklyn NY*. Letter to Mr. Henry Willems. December 7, 2009.

National Grid, 2010. *Supplemental Remedial Investigation Work Plan, Williamsburg Works Former MGP Site, Brooklyn NY*. Letter to Mr. Henry Willems. September 3, 2010.

National Oceanic Atmospheric Administration Center for Operational Oceanographic Products and Services Homepage, undated.2003 Water Level Tidal Predictions.http://www.co-ops.nos.noaa.gov/tides05/tab2ec2a.html#22.Accessed April 1, 2005.

National Oceanic Atmospheric Administration, 2004. Local Climatological Data, New York LaGuardia Airport. National Climatic Data Center, Ashville, North Carolina. October to December 2004.

New York City Department of City Planning, 2005. Greenpoint-Williamsburg Rezoning: Final Environmental Impact Statement. Prepared by Philip Habib & Associates, AKRF, Inc., LMS Engineers LLP, Celia Bergoffen, Ph.D., and HydroQual, Inc. CEQR No. 04DCP003K.

New York City Department of Sanitation, 1995. *Letter to NYSDEC, NYCDOS Brooklyn North 1 Garage, 50 Kent Avenue, Brooklyn.* July 3, 1995.

New York State Archives, 2009.1915 and 1920 Brooklyn Union Gas Company Information.

New York State Department of Environmental Conservation (NYSDEC), May 2010.*DER-10 Technical Guidance for Site Investigation and Remediation*.

NYSDEC. 1989. *Guidelines for Remedial Investigations and Feasibility Studies*, Technical and Administrative Guidance Memorandum (TAGM), HWR-89-4025.

NYSDEC, 1993. Division of Fish, Wildlife, and Marine Resources, November 22, 1993, *Technical Guidance for Screening Contaminated Sediments*.

NYSDEC. 1994a. *Determination of Soil Cleanup Objectives and Cleanup Levels*, Technical and Administrative Guidance Memorandum #4046, HWR-89-4025.

NYSDEC. 1994b. *Fish and Wildlife Impact Analysis for Hazardous Waste Sites.* Division of Fish and Wildlife, Albany, New York.

NYSDEC, 1995. *Letter to NYC Department of General Services (DGS), NYCDOS Brooklyn North 1, 50 Kent Street, PBS#2-456098.* May 17, 1995.

NYSDEC, 1995a. *Letter to NYCDGS, NYCDOS Brooklyn North 1, 50 Kent Street, PBS#2-456098.* June 7, 1995.

NYSDEC, 1996. *Interoffice Memorandum, Brooklyn North 1.* February 1, 1996.

NYSDEC, 1996a. *Interoffice Memorandum, Brooklyn North 1.* March 27, 1996.

NYSDEC, 1996b. *Letter to NYCDGS, Brooklyn North 1, 50 Kent Avenue, Brooklyn, PBS#2-456098, Spill #9600011.* April 8, 1996.

NYSDEC, 1996c. *Letter to NYC Law Department, 50 Kent Avenue, Brooklyn.* October 18, 1996.

NYSDEC, 1998. *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*. Division of Water Technical and Operational Guidance Series (1.1.1), June 1998.

NYSDEC, 2002, *Draft DER-10 Technical Guidance for Site Investigation and Remediation*.

NYSDEC, 2006 *New York State Code of Rules and Regulations*, 6NYCRR Title 6, Chapter 100, Part 700-705.

NYSDEC,2007. *Site Characterization Report, Fulton Former Manufactured Gas Plant, Brooklyn, Kings County, New York, Site No. 2-24-051*, September 2007

NYSDEC, 2007a, *Modification to Order on Consent and Administrative Settlement Twelve Sites (Index no. A2-0552-0606)*. August 7, 2007.

NYSDEC, 2013, *Letter to GEI Consultants, Review of New York Natural Heritage Program Database, Kent Avenue, Brooklyn*. March 12, 2013.

NYSDEC Spill Incidents Database Search, 2014. *Database Search for Spill No. 9804544.* August 4, 2014.

New York State Department of Health, 2006. *Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York*. October 2006.

Olin, J. A., 2005. Personal Communication. United States Fish and Wildlife Service, Long Island Field Office, Islip, NY. April 25, 2005.

Online Highways, undated. *New York LaGuardia Airport, Weather Station of the U.S. Weather Service*. http://www.ohwy.com/ny/w/wx305811.htm. Accessed June 11, 2003.

Open Accessible Space Information System for New York City, http://www.oasisnyc.net/mapsearch.asp.

Ordnance Department, *History of Light Oil Recovery Plants, Part I*, pp. 40-41.

Parsons Brinkerhoff Quade & Douglas, Inc., 2002. *Summary of Water Quality, Aquatic Ecology and Sediment Sampling Results-Brooklyn Navy Nearshore Confined Disposal Facility*, January 2002.

Raritan Enviro Sciences, Inc., 1996. *Interoffice Memo, NYCDDC Contract PW348-04, Report of Free-Phase Petroleum Product at NYCDOS Brooklyn North 1 Site.* September 13, 1996.

The RETEC Group, Inc., 2007. Characterization of Soil Background PAH and Metal Concentrations, Manhattan, New York. March 24, 2007.

Sanborn Fire Insurance Maps. Site Parcels 1-6, 1887, 1905, 1916, 1941, 1951, 1965, 1978, 1979, 1980, 1981, 1982, 1983, 1986, 1987, 1988, 1989, 1991, 1993, 1995, and 1996.

Scientific America, 1874. *James Young, Founder of the Paraffin Oil Industry*. Scientific America. Volume XXX, No. 7 [New Series]. New York, February 14, 1874.

Shacklette, H.T. and J. G. Boerngen, 1984. *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States*. U.S. Geological Survey Professional Paper 1270. 105p.

Soil Mechanics Environmental Services, 1992. *Figures 2, 3, 7, 10, and 11*. July 28, 1992.

Soren, J. and D. Simmons, 1985. *Thickness and Hydrogeology of Aquifers And Confining Units Below The Upper Glacial Aquifer On Long Island, New York*. Sheets 1 through 3. September 1985.

Tarbell, I. M., 1904. *The History of the Standard Oil Company, Vol. II.* 252p.
United States Census Bureau, 2000, *Population, Housing, Units Area, and Density Geologic Comparison Table: Census 2000 Summary File 1*, Geographic Area: New York – County.

The New York Times, 1910. *Oil Plant Explode; Twenty Men Burned*. May 10, 19010.

United States Coastal Survey under direction of F.R. Hassler, 1844. *Map of New-York Bay and Harbor and the Environs*.

United States Environmental Protection Agency (USEPA), 1979. *Status Assessment of Toxic Chemicals*. EPA-600/2-89-210L.

USEPA, 1983.*Brooklyn-Queens Aquifer System*. P. 18.http://www.epa.gov/region2/water/aquifer/brooklyn/brooklyn.htm#I2

USEPA, 1986. "Guidelines for Carcinogen Risk Assessment," *Federal Register* 51:33992-34012.

USEPA, 1989. *Risk Assessment Guidance for Superfund, Human Health Evaluation Manual (Part A), Interim Final*, Office of Emergency and Remedial Response, EPA/540/1-89/002.

USEPA, 1991. *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual, Supplemental Guidance*, 'Standard Default Exposure Factors', PB91-921314.

USEPA, 1992. *Dense Non-Aqueous Phase Liquids – A Workshop Summary, Dallas, Texas, April 16-18, 1991*. Office of Research and Development, Washington D.C., EPA/600/r-92/030, February 1992.

USEPA, 1994. *Supplemental Guidance to RAGs: Region IV Bulletins, Development of Health Based Preliminary Remediation Goals, Remedial Goal Options, and Remediation Levels*, Office of Health Assessment, Waste Management Division, Atlanta, GA.

USEPA, 1997a. *Exposure Factors Handbook,* Office of Research and Development, Washington, D.C., EPA/600/P-95//002Fa.

USEPA, 1997b. *Health Assessment Effects* Summary Tables. EPA No. 540-R-97-036, FY 1997 Update. Washington, D.C.

USEPA, 2000 and 2002, Integrated Risk Information System on-line database, http://www.epa.gov/ngispgm3/iris/index.html.

USEPA, undated. *Brooklyn-Queens Aquifer System*. Pp. 18.http://www.epa.gov/region02/water/aquifer/brooklyn/brooklyn.htm, accessed on March 30, 2003.

United States Fish and Wildlife Service (USFWS). 1997. *Significant Habitats and Habitat Complexes of the New York Bight*. Charlestown, RI.

URS, 2013. *Interim Remedial Measure Design Investigation for the 50 Kent Avenue Parcel, Williamsburg Works Former MGP Site*. February 2013.

URS, 2013. *Interim Remedial Measure Supplemental Pre-Design Investigation for the 50 Kent Avenue Parcel, Former Williamsburg Works MGP Site*. July 2013.

Williamson, F. and A. Daum, 1959. *The American Petroleum Industry: The Age of Illumination, 1859-1899*. Pages 279-281.

Wilson, J. G. and J. Fiske, 1918. *The Cyclpaedia of American Biography*. 192p.

www.saltwatertides.com. Accessed November 4, 2009 and December 20, 2012.

Tables

Table 1. Sample Location, Collection Rationale, and Analysis
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample I.D.	Sample Location	Laboratory Sample Description (Sample Depth Feet)	Sample Rationale	Number of Samples			VOCs (EPA 8260B)	SVOCs (EPA 8270C)	TAL Metals (6000/7000)	Cyanide[1]	Herbicides (EPA 8151A)	PCBs (EPA 8082)	Pesticides (EPA 8081A)	Ammonia (EPA 350.1)	TOC (EPA 9060)	VOCs (EPA TO-15)	Helium (D1946)
				Soil	Groundwater	Soil Vapor/ Indoor Air/ Outdoor Air											
Soil Vapor Sample Locations																	
WW-SV-01	Parcel 1, within the gas holder footprint	**WW-SV-01**	Evaluate the potential for soil vapor intrusion into the Parcel 1 building and the soil vapor conditions within the former gasometer footprint			X										X	X
WW-SV-02	Parcel 1, within the gas holder footprint	**WW-SV-02**	Evaluate the potential for soil vapor intrusion into the Parcel 1 building and the soil vapor conditions within the former gasometer footprint			X										X	X
Indoor Air Sample Locations																	
WW-IA-01	Parcel 1, inside warehouse building	**WW-IA-01**	Evaluate indoor air quality and potential soil vapor intrusion into on-site buildings			X										X	
WW-IA-02	Parcel 1, inside warehouse building	**WW-IA-02**	Evaluate indoor air quality and potential soil vapor intrusion into on-site buildings			X										X	
Outdoor Air Sample Locations																	
WW-OA-01	Corner of Kent Avenue and North 12th Street	**WW-OA-01**	Evaluate outdoor air concentrations and the potential to influence indoor air quality			X										X	
Surface Soil Sample Locations																	
WW-SS-01	North 12th Street, adjacent to the site	**WW-SS-01 (0-0.2)**	Soil sample to evaluate surface soil conditions adjacent to the site	X			X	X	X	X	X	X	X				
WW-SS-02	North 11th Street, adjacent to the site	**WW-SS-02 (0-0.2)**	Soil sample to evaluate surface soil conditions adjacent to the site	X			X	X	X	X	X	X	X				
WW-SS-03	North 12th Street, adjacent to the site	**WW-SS-03 (0-0.2)**	Soil sample to evaluate surface soil conditions at the site	X			X	X	X	X	X	X	X				
WW-SS-04	North 11th Street, adjacent to the site	**WW-SS-04 (0-0.2)**	Soil sample to evaluate surface soil conditions at the site	X			X	X	X	X	X	X	X				
WW-SS-05	North 12th Street, adjacent to the site	**WW-SS-05 (0-0.2)**	Soil sample to evaluate surface soil conditions adjacent to the site	X			X	X	X	X	X	X	X				
WW-SS-06	North 11th Street, adjacent to the site	**WW-SS-06 (0-0.2)**	Soil sample to evaluate surface soil conditions adjacent to the site	X			X	X	X	X	X	X	X				
WW-SS-07	North 12th Street, adjacent to the site	**WW-SS-07 (0-0.2)**	Soil sample to evaluate surface soil conditions adjacent to the site	X			X	X	X	X	X	X	X				
WW-SS-08	North 11th Street, adjacent to the site	**WW-SS-08 (0-0.2)**	Soil sample to evaluate surface soil conditions adjacent to the site	X			X	X	X	X	X	X	X				
WW-SS-09	North 12th Street, adjacent to the site	**WW-SS-09 (0-0.2)**	Soil sample to evaluate surface soil conditions adjacent to the site	X			X	X	X	X	X	X	X				
Test Pit Sample Locations																	
WW-TP-01	Parcel 2, within the gas holder footprint	**WW-TP-01 (2-2.5)**	Evaluate soil quality at the depth with the highest VOC reading within the gas holder wall	X			X	X	X	X	X	X	X				
WW-TP-02	Parcel 2, within the gas holder footprint	**WW-TP-02 (2-2.5)**	Evaluate soil quality at the depth with the highest VOC reading within the suspected gas holder wall	X			X	X	X	X	X	X	X				
WW-TP-03	Parcel 2, within the gas holder footprint	**WW-TP-03 (3.5-4)**	Evaluate soil quality at the depth with the highest VOC reading and sheen, within the gas holder wall	X			X	X	X	X	X	X	X				
WW-TP-04	Parcel 2, within the gas holder footprint	**WW-TP-04 (4.5-5)**	Evaluate soil quality at the water table within the gas holder wall	X			X	X	X	X	X	X	X				

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Sample I.D.	Sample Location	Laboratory Sample Description (Sample Depth Feet)	Sample Rationale	Number of Samples			VOCs (EPA 8260B)	SVOCs (EPA 8270C)	TAL Metals (6000/7000)	Cyanide[1]	Herbicides (EPA 8151A)	PCBs (EPA 8082)	Pesticides (EPA 8081A)	Ammonia (EPA 350.1)	TOC (EPA 9060)	VOCs (EPA TO-15)	Helium (D1946)
				Soil	Groundwater	Soil Vapor/ Indoor Air/ Outdoor Air											
WW-TP-05	Parcel 2, within the gas holder footprint	**WW-TP-05 (6-6.5)**	Evaluate soil quality at the depth with the highest VOC reading within the gas holder wall	X			X	X	X	X	X	X	X				
WW-TP-06	Parcel 2, within the gas holder footprint	**WW-TP-06 (6-6.5)**	Evaluate soil quality at the water table within the gas holder wall	X			X	X	X	X	X	X	X				
Subsurface Soil Borings, Monitoring Wells and Temporary Groundwater Sample Locations																	
WW-SB-01	North 11th Street, adjacent to Parcel 1	**WW-SB-01 (1-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-01 (14-15)	Evaluate soil quality at the depth with the highest VOC reading and sheen	X			X	X	X	X							
WW-SB-02	North 12th Street, adjacent to Parcel 1	**WW-SB-02 (2-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-02 (10.5-11.5)	Evaluate soil quality at the depth with the highest VOC reading	X			X	X	X	X							
WW-SB-03	Parcel 2, within the gas holder footprint	**WW-SB-03 (3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-03 (20-22)	Evaluate soil quality at the depth with the highest VOC reading and tar saturation	X			X	X	X	X							
		WW-SB-03 (6-10)	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-SB-04	Parcel 2, within the gas holder footprint	**WW-SB-04 (2-4)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-04 (18-20)	Evaluate soil quality at the depth with the highest VOC reading and tar-like staining	X			X	X	X	X							
WW-SB-05	Parcel 2, within the gas holder footprint	**WW-SB-05 (3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-05 (20-24)	Evaluate soil quality at the depth with the highest VOC reading and tar saturation	X			X	X	X	X							
		WW-SB-05 (3-8)	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-SB-06	Parcel 2, within the gas holder footprint	**(none)**	No laboratory samples were collected due to the addition of WW-SB-23 located immediately outside the holder.														
WW-SB-07	Parcel 2, within the gas holder footprint	**WW-SB-07 (3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-07 (19-22)	Evaluate soil quality at the depth with the highest VOC reading, tar-like coating, and partial tar saturation	X			X	X	X	X							
		WW-SB-07 (2.5-7.5)	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-SB-08	Parcel 2, within the gas holder footprint	**(none)**	No laboratory samples were collected due to the addition of WW-SB-24 located immediately outside the holder.														
WW-SB-09	Parcel 2, downgradient of the gas holder footprint	**WW-SB-09 (2-4)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-09 (11-12)	Evaluate soil quality at the depth with high VOC readings, sheen, and tar-like staining	X			X	X	X	X							
		WW-SB-09 (53-54)	Evaluate soil quality at the depth with the highest VOC reading, tar-like staining, and partial tar-like coating	X			X	X	X	X							
WW-SB-10	Parcel 2, downgradient of the gas holder footprint	**WW-SB-10 (2-3)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-10 (49-50)	Evaluate soil quality at the depth with the highest VOC reading	X			X	X	X	X							
		WW-SB-10 (51-52)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							

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				Soil	Groundwater	Soil Vapor/ Indoor Air/ Outdoor Air											
WW-SB-11	Parcel 2, downgradient of the gas holder footprint	**WW-SB-11 (1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-11 (50-51)	Evaluate soil quality at the depth with the highest VOC reading	X			X	X	X	X							
		WW-SB-11 (63-64)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-13	North 11th Street, adjacent to Parcel 3	**WW-SB-13 (4-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-13 (12-15)	Evaluate soil quality at the depth with the highest VOC reading, sheen, and tar-like coating	X			X	X	X	X							
		WW-SB-13 (37-38)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-14	North 12th Street, adjacent to Parcel 3	**WW-SB-14 (1-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-14 (10-11)	Evaluate soil quality at the depth with the highest VOC reading, sheen, tar-like staining, and partial tar-like coating	X			X	X	X	X							
WW-SB-15	North 12th Street, adjacent to Parcel 4	**WW-SB-15 (3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-15 (7-9)	Evaluate soil quality at the depth with the highest VOC reading	X			X	X	X	X							
WW-SB-16	North 12th Street, adjacent to Parcel 4	**WW-SB-16 (0.5-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-16 (12-13)	Evaluate soil quality at the depth with tar-like blebs	X			X	X	X	X							
WW-SB-17	North 11th Street, adjacent to Parcel 5	**WW-SB-17 (2-4)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-17 (32-33)	Evaluate soil quality at the depth with the highest VOC reading, sheen, tar-like staining, and partial tar-like coating	X			X	X	X	X							
		WW-SB-17 (45-46)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-18	Kent Avenue, adjacent to Parcel 6	**WW-SB-18 (3.5-4.5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-18 (9-10)	Evaluate soil quality at the depth with the highest VOC reading	X			X	X	X	X							
		WW-SB-18 (51-53)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-19	Parcel 1, within the gas holder footprint	**WW-SB-19 (2-3)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X	X			
		WW-SB-19 (4-5)	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X	X			
		WW-SB-19 (14-15)	Evaluate soil quality at the depth with a high VOC reading	X			X	X	X	X				X			
		WW-SB-19 (25-35)	Evaluate soil quality at the depth with a high VOC reading and petroleum-like staining	X			X	X	X	X				X			
		WW-SB-19 (47-50)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X				X			
		WW-SB-19 (5-15)	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X	X			
		WW-SB-19 (25-35)	Evaluate groundwater quality at the depth with a high VOC reading and petroleum-like staining		X		X	X	X	X				X			
		WW-SB-19 (40-50)	Evaluate groundwater quality above the suspected confining clay layer		X		X	X	X	X				X			

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				Soil	Groundwater	Soil Vapor/ Indoor Air/ Outdoor Air											
WW-SB-20	Parcel 1, within the gas holder footprint	**WW-SB-20 (3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X	X			
		WW-SB-20 (55-57)	Evaluate soil quality at the depth with the highest VOC reading, tar-like staining, and partial tar-like coating	X			X	X	X	X							
		WW-SB-20 (62-63)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-21	Parcel 1, within the gas holder footprint	**WW-SB-21 (1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X	X			
		WW-SB-21 (33-34)	Evaluate soil quality at the depth with a high VOC reading, tar-like staining, and blebs	X			X	X	X	X				X			
		WW-SB-21 (68-69)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X				X			
		WW-SB-21 (4-14)	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X	X			
		WW-SB-21 (15-25)	Evaluate ground water quality at the depth with the highest VOC reading		X		X	X	X	X				X			
		WW-SB-21 (40-50)	Evaluate groundwater quality below the depth of impacts		X		X	X	X	X				X			
WW-SB-22	Parcel 1, downgradient of the gas holder footprint	**WW-SB-22 (3-4)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X	X			
		WW-SB-22 (13-15)	Evaluate the soil quality at the depth of high VOC reading and black staining	X			X	X	X	X				X			
		WW-SB-22 (37-38)	Evaluate soil quality at the depth with the highest VOC reading	X			X	X	X	X				X			
		WW-SB-22 (65-65.5)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X				X			
		WW-SB-22 (6-16)	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X	X			
		WW-SB-22 (35-45)	Evaluate groundwater quality at the depth with the highest VOC reading and tar-like staining		X		X	X	X	X				X			
		WW-SB-22 (55-65)	Evaluate groundwater quality above the suspected confining clay layer		X		X	X	X	X				X			
WW-SB-23	Parcel 2, downgradient of the gas holder footprint	**WW-SB-23 (1-4)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-23 (31-33)	Evaluate soil quality at the depth with a high VOC reading, tar-like coating, and partial saturation	X			X	X	X	X							
		WW-SB-23 (62-63)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-24	Parcel 2, downgradient of the gas holder footprint	**WW-SB-24 (4-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-24 (38-40)	Evaluate soil quality at the depth with the highest VOC reading and tar saturation	X			X	X	X	X							
		WW-SB-24 (53-55)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-25	Stepout of WW-SB-11, North 12th Street, adjacent to Parcel 6	**WW-SB-25 (1-3)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-25 (34-35)	Evaluate soil quality at the depth with the highest VOC reading and tar-like coating	X			X	X	X	X							
		WW-SB-25 (52-53)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-26	Stepout of WW-SB-09, North 12th Street, adjacent to Parcel 6	**WW-SB-26 (1-4)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-26 (12-13)	Evaluate soil quality at the depth with the highest VOC reading and sheen	X			X	X	X	X							

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				Soil	Groundwater	Soil Vapor/ Indoor Air/ Outdoor Air											
WW-SB-27	Stepout of WW-MW-07, North 12th Street, adjacent to Parcel 6	**WW-SB-27 (4-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-27 (14-15)	Evaluate soil quality from the depth with the highest VOC reading	X			X	X	X	X							
WW-SB-28	Stepout of WW-MW-06, North 11th Street, adjacent to Parcel 5	**WW-SB-28 (3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-28 (22-23)	Evaluate soil quality at the depth with the highest VOC reading, tar-like staining, and tar-like coating	X			X	X	X	X							
WW-SB-29	Stepout of WW-SB-10, North 11th Street, adjacent to Parcel 5	**WW-SB-29 (2-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-29 (20-22)	Evaluate soil quality at the depth with a high VOC reading, tar-like staining, blebs, and partial tar-like coating	X			X	X	X	X							
WW-SB-30	Stepout of WW-MW-08, North 11th Street, adjacent to Parcel 5	**WW-SB-30 (2-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-30 (7-9)	Evaluate soil quality at the depth with the highest VOC reading	X			X	X	X	X							
		WW-SB-30 (45-50)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-31	Stepout of WW-SB-13, North 11th Street, adjacent to Parcel 5	**WW-SB-31 (1-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-31 (15-17)	Evaluate soil quality at the depth with the highest VOC reading, tar and petroleum-like staining	X			X	X	X	X							
		WW-SB-31 (52-54)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-32	Stepout of WW-MW-11, North 11th Street, adjacent to Parcel 5	**WW-SB-32 (4-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-32 (10-11)	Evaluate soil quality at the depth with the highest VOC reading, tar-like staining, and tar-like coating	X			X	X	X	X							
		WW-SB-32 (43-44)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-33	Stepout of WW-SB-14, North 12th Street, adjacent to Parcel 6	**(none)**	No laboratory samples were collected due to repeated refusal at 4'														
WW-SB-34	Stepout of WW-MW-13, North 12th Street, adjacent to Parcel 6	**WW-SB-34 (2-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-34 (10-13)	Evaluate soil quality at the depth with a high VOC reading, sheen, blebs, and partial tar-like staining and coating	X			X	X	X	X							
WW-SB-35	Stepout of WW-SB-15, North 12th Street, adjacent to Parcel 6	**WW-SB-35 (1-4.5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X							
		WW-SB-35 (8-10)	Evaluate soil quality at the depth with the highest VOC reading and petroleum-like staining	X			X	X	X	X							
WW-SB-36	Stepout of WW-MW-15, North 12th Street, adjacent to Parcel 6 and downgradient of the former MGP footprint	**WW-SB-36 (3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-36 (9-10)	Evaluate soil quality at the depth with the highest VOC reading and petroleum-like staining	X			X	X	X	X							
WW-SB-37	Parcel 2, downgradient of the gas holder footprint	**WW-SB-37 (96-97)**	Evaluate the soil quality beneath the clay layer, at the termination depth of the boring	X			X	X	X	X							
WW-SB-38	Parcel 2, adjacent to the gas holder footprint	**WW-SB-38 (96.5-97)**	Evaluate the soil quality beneath the clay layer, at the termination depth of the boring	X			X	X	X	X							
WW-SB-39	Parcel 2, downgradient of the gas holder footprint	**WW-SB-39 (96-97)**	Evaluate the soil quality beneath the clay layer, at the termination depth of the boring	X			X	X	X	X							

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				Soil	Groundwater	Soil Vapor/ Indoor Air/ Outdoor Air											
WW-SB-40	Parcel 2, downgradient of the gas holder footprint	**WW-SB-40 (95-95.5)**	Evaluate the soil quality beneath the clay layer, at the termination depth of the boring	X			X	X	X	X							
WW-SB-41	Parcel 2, downgradient of the gas holder footprint	**WW-SB-41 (96-97)**	Evaluate the soil quality beneath the clay layer, at the termination depth of the boring	X			X	X	X	X							
WW-SB-42	Parcel 2, downgradient of the gas holder footprint	**WW-SB-42 (62-62.5)**	Evaluate the soil quality at the depth of high VOC reading and slight odor	X			X	X	X	X							
		WW-SB-42 (96.5-97)	Evaluate the soil quality below the observed impacts, at the termination depth of the boring	X			X	X	X	X							
WW-SB-43	Parcel 6, north of the former MGP footprint	**WW-SB-43(1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-43(8-8.5)	Evaluate soil quality at the depth with the highest PID reading, moderate naphthalene-like odor, and heavy tar-like staining	X			X	X	X	X							
		WW-SB-43(44-44.5)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-44	Parcel 6, north of the former MGP footprint	**WW-SB-44(1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-44(7-8)	Evaluate soil quality at the depth with a high PID reading, strong petroleum-like odor, heavy sheen, and staining	X			X	X	X	X							
		WW-SB-44(50-51)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-45	Parcel 6, north of the former MGP footprint	**WW-SB-45(1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-45(53-54)	Evaluate soil quality at the depth with the highest PID reading, strong naphthalene-like odor, and heavy tar-like coating with saturation	X			X	X	X	X							
		WW-SB-45(64-64.5)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-46	Parcel 6, north of the former MGP footprint	**WW-SB-46(1.5-2.5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-46(33-34)	Evaluate soil quality at the depth with the highest PID reading, strong naphthalene-like odor, and heavy tar-like coating with saturation	X			X	X	X	X							
		WW-SB-46(60.5-61)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-47	Parcel 6, north of the former MGP footprint	**WW-SB-47(1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-47(5-6)	Evaluate soil quality at the depth with a high PID reading, slight petroleum-like odor, and sheen on water	X			X	X	X	X							
		WW-SB-47(66-67)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-48	Parcel 6, north of the former MGP footprint	**WW-SB-48(1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-48(7-8)	Evaluate soil quality at the depth with the highest PID reading, moderate petroleum-like odor, and slight to moderate staining	X			X	X	X	X							
		WW-SB-48(65-66)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							

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				Soil	Groundwater	Soil Vapor/ Indoor Air/ Outdoor Air											
WW-SB-49	Parcel 6, north of the former MGP footprint	**WW-SB-49(1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-49(9-10)	Evaluate soil quality at the depth with the highest PID reading, strong petroleum-like odor, and heavy staining	X			X	X	X	X							
		WW-SB-49(84-85)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-50	Parcel 6, north of the former MGP footprint	**WW-SB-50(1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-50(5.5-6.5)	Evaluate soil quality at the water table	X			X	X	X	X							
WW-SB-51	Parcel 6, north of the former MGP footprint	**WW-SB-51(1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-51(6-9)	Evaluate soil quality at the water table	X			X	X	X	X							
		WW-SB-51(52.5-53)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-52	Parcel 6, north of the former MGP footprint	**WW-SB-52(2-3)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-52(9.5-10)	Evaluate soil quality at the depth with the highest PID reading, strong naphthalene-like odor, and moderate petroleum-like and tar-like staining	X			X	X	X	X							
		WW-SB-52(67.5-68.5)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
WW-SB-53	Parcel 6, north of the former MGP footprint	**WW-SB-53(1-2)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-53(7.5-8)	Evaluate soil quality at the depth with the highest PID reading, moderate petroleum-like and naphthalene-like odor, sheen, and pockets of tar-like blebs	X			X	X	X	X							
		WW-SB-53(24.5-25)	Evaluate soil quality below the greatest impacts at the completion of the boring	X			X	X	X	X							
WW-SB-54	Parcel 5, south of the former MGP footprint	**WW-SB-54(3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-54(7-9)	Evaluate soil quality at the observed water table	X			X	X	X	X	X	X	X				
		WW-SB-54(57-59)	Evaluate soil quality at the completion of the boring	X			X	X	X	X	X	X	X				
WW-SB-55	Parcel 5, south of the former MGP footprint	**WW-SB-55(3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SB-55(12-14)	Evaluate solid quality at the depth with naphthalene-like odor, black staining, and elevated PID readings	X			X	X	X	X	X	X	X				
		WW-SB-55(55-57)	Evaluate soil quality below the greatest impacts at the completion of the boring	X			X	X	X	X	X	X	X				
WW-MW-01	Wythe Avenue, east and upgradient of the former MGP footprint	**WW-MW-01 (0.5-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-01 (16-17)	Evaluate soil quality at the depth of the water table	X			X	X	X	X							
		WW-MW-01 (63-64)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-01	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-02	North 11th Street, adjacent to Parcel 1	**WW-MW-02 (2-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-02 (15-17)	Evaluate soil quality at the depth with the highest VOC reading and gray staining	X			X	X	X	X							
		WW-MW-02 (50-53)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-02	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				

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				Soil	Groundwater	Soil Vapor/ Indoor Air/ Outdoor Air											
WW-MW-03	North 12th Street, adjacent to Parcel 1	**WW-MW-03 (2-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-03 (28-30)	Evaluate soil quality at the depth with the highest VOC reading, sheen, tar-like staining, and partial tar-like coating	X			X	X	X	X							
		WW-MW-03 (60-63)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-03	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-04	Parcel 2, downgradient of the gas holder footprint	**WW-MW-04 (5-10)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X							
		WW-MW-04 (31-33)	Evaluate soil quality at the depth with the highest VOC reading and tar-like coating	X			X	X	X	X							
		WW-MW-04 (58-59)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-04	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-05	Parcel 2, adjacent to the gas holder footprints	**WW-MW-05 (0.75-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-05 (12-13)	Evaluate soil quality at the depth with the highest VOC reading, sheen, and partial tar-like staining and coating	X			X	X	X	X							
		WW-MW-05 (63-64)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-05	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-06	North 11th Street, adjacent to Parcel 2	**WW-MW-06 (0.5-1.5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-06 (50-52)	Evaluate soil quality at the depth with the highest VOC reading, sheen, and tar-like coating	X			X	X	X	X							
		WW-MW-06 (58-60)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-06	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-07	Parcel 2, adjacent to the gas holder footprint	**WW-MW-07 (4-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-07 (48.5-49.5)	Evaluate soil quality at the depth with the highest VOC reading and tar-like staining	X			X	X	X	X							
		WW-MW-07 (59-60)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-07	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-08	North 11th Street, adjacent to Parcel 2	**WW-MW-08 (2-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-08 (7.5-8.5)	Evaluate soil quality at the depth with the highest VOC reading, sheen, and tar saturation	X			X	X	X	X							
		WW-MW-08 (40-45)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-08	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-10	North 12th Street, adjacent to Parcel 3	**WW-MW-10 (4-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-10 (10-11.5)	Evaluate soil quality at the depth with a high VOC reading, sheen, and tar-like blebs	X			X	X	X	X							
		WW-MW-10	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				

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WW-MW-11	North 11th Street, adjacent to Parcel 3	WW-MW-11 (3-5)	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-11 (11-14)	Evaluate soil quality at the depth with the highest VOC reading, sheen, and tar-like staining	X			X	X	X	X							
		WW-MW-11 (39-40)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-11	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-12	North 11th Street, adjacent to Parcel 5	WW-MW-12 (0.5-3)	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-12 (9-10)	Evaluate soil quality at the depth with the highest VOC reading and sheen	X			X	X	X	X							
		WW-MW-12	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-13	North 12th Street, adjacent to Parcel 3	WW-MW-13 (2-5)	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-13 (5-10)	Evaluate soil quality at the depth with the highest VOC reading, tar-like staining, and pockets of coating	X			X	X	X	X							
		WW-MW-13	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-14	End of North 11th Street, adjacent to Parcel 4, downgradient and adjacent to the former MGP footprint	WW-MW-14 (3-5)	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-14 (36-37)	Evaluate soil quality at the depth with a high VOC reading and tar-like coating	X			X	X	X	X							
		WW-MW-14 (55-57)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-14	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-15	North 12th Street, adjacent to Parcel 4, downgradient and adjacent to the former MGP footprint	WW-MW-15 (1-4)	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-15 (12-13)	Evaluate soil quality at the depth with the highest VOC reading	X			X	X	X	X							
		WW-MW-15	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-16	Kent Avenue, adjacent to Parcel 6, northeast of the former MGP footprint	WW-MW-16 (2-3.5)	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-16 (20-21)	Evaluate soil quality at the depth with the highest VOC reading	X			X	X	X	X							
		WW-MW-16 (38-40)	Evaluate soil quality below the greatest impacts	X			X	X	X	X							
		WW-MW-16	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-17	Parcel 2, downgradient of the gas holder footprint	WW-MW-17 (1-2)	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-17 (7-8)	Evaluate soil quality at the depth with a high VOC reading and tar-like staining	X			X	X	X	X							
		WW-MW-17 (54-55)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-17	Evaluate groundwater quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-18	Parcel 6, north of the former MGP footprint	WW-MW-18(1-2)	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-18(6-7)	Evaluate soil quality at the depth with slight petroleum-like odor	X			X	X	X	X							
		WW-MW-18(72-73)	Evaluate soil quality above the suspected confining clay layer	X			X	X	X	X							
		WW-MW-18	Evaluate water quality at the water table		X		X	X	X	X	X	X	X				

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WW-MW-19	Parcel 6, north of the former MGP footprint	**WW-MW-19(1-2)**	Evaluate soil quality of the shallow subsurface with slight petroleum-like odor	X			X	X	X	X	X	X	X				
		WW-MW-19(5-6)	Evaluate soil quality at the water table	X			X	X	X	X							
		WW-MW-19	Evaluate water quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-20	Kent Avenue, adjacent to Parcel 5, south of the former MGP footprint	**WW-MW-20(1.5-3)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-20(9-10)	Evaluate soil quality at the water table	X			X	X	X	X							
		WW-MW-20	Evaluate water quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-21	Parcel 5, south of the former MGP footprint	**WW-MW-21(3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-21(10-11)	Evaluate soil quality at the water table	X			X	X	X	X	X	X	X				
		WW-MW-21(50-52)	Evaluate soil quality at the completion of the boring	X			X	X	X	X	X	X	X				
		WW-MW-21	Evaluate water quality at the water table		X		X	X	X	X	X	X	X				
WW-MW-22	Parcel 5, south of the former MGP footprint	**WW-MW-22(3-5)**	Evaluate soil quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-MW-22(24-25)	Evaluate soil quality at the depth with naphthalene-like odor, staining, and elevated PID readings	X			X	X	X	X	X	X	X				
		WW-MW-22(52-55)	Evaluate soil quality below the greatest impacts at the completion of the boring	X			X	X	X	X	X	X	X				
		WW-MW-22	Evaluate water quality at the water table		X		X	X	X	X	X	X	X				
Sediment Sample Locations																	
WW-SED-01	East River, west of the Site	**WW-SED-01 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SED-01 (1-2)	Evaluate sediment quality at the depth with the highest VOC reading and tar-like staining	X			X	X	X	X	X	X	X				
		WW-SED-01 (19.5-20)	Evaluate sediment quality below the greatest impacts and at the termination of boring	X			X	X	X	X	X	X	X				
WW-SED-02	East River, west of the Site	**WW-SED-02 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SED-02 (4-5)	Evaluate sediment quality at the depth with the highest VOC reading and tar-like staining	X			X	X	X	X	X	X	X				
		WW-SED-02 (11-12)	Evaluate sediment quality below the greatest impacts and at the termination of boring	X			X	X	X	X	X	X	X				
WW-SED-03	East River, west of the Site	**WW-SED-03 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SED-03 (9-10)	Evaluate sediment quality at the depth with the highest VOC reading and tar-like coating	X			X	X	X	X	X	X	X				
		WW-SED-03 (16.5-17)	Evaluate sediment quality below the greatest impacts and at the termination of boring	X			X	X	X	X	X	X	X				
WW-SED-04	East River, west of the Site	**WW-SED-04 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SED-04 (3-4)	Evaluate sediment quality at the depth with the highest VOC reading and tar-like coating	X			X	X	X	X	X	X	X				
		WW-SED-04 (16.75-17.3)	Evaluate sediment quality below the greatest impacts and at the termination of boring	X			X	X	X	X	X	X	X				

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WW-SED-05	East River, west of the Site	**WW-SED-05 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SED-05 (4.5-5)	Evaluate sediment quality at the depth with the highest VOC reading, sheen, and tar-like coating	X			X	X	X	X	X	X	X				
		WW-SED-05 (19.5-20)	Evaluate sediment quality below the greatest impacts and at the termination of boring	X			X	X	X	X	X	X	X				
WW-SED-06	East River, west of the Site	**WW-SED-06 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SED-06 (9-10)	Evaluate sediment quality at the depth with the highest VOC reading and tar saturation	X			X	X	X	X	X	X	X				
		WW-SED-06 (15-18.5)	Evaluate sediment quality below the greatest impacts and at the termination of boring	X			X	X	X	X	X	X	X				
WW-SED-07	East River, west of the Site	**WW-SED-07 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X				
		WW-SED-07 (4-4.5)	Evaluate sediment quality at the depth with the highest VOC reading	X			X	X	X	X	X	X	X				
		WW-SED-07 (15-15.7)	Evaluate sediment quality below the greatest impacts and at the termination of boring	X			X	X	X	X	X	X	X				
WW-SED-08	East River, west of the Site	**WW-SED-08 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-08 (26.5-27.5)	Evaluate sediment quality at the depth with naphthalene-like odor, sheen, and tar staining	X			X	X	X	X							
		WW-SED-08 (62-63)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							
WW-SED-09	East River, west of the Site	**WW-SED-09 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-09 (23.5-24)	Evaluate sediment quality at the depth with naphthalene-like odor and tar staining	X			X	X	X	X							
		WW-SED-09 (39.5-40)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							
WW-SED-10	East River, west of the Site	**WW-SED-10 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-10 (20-21)	Evaluate sediment quality at the depth with naphthalene-like odor and tar-like staining	X			X	X	X	X							
		WW-SED-10 (63-64)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							
WW-SED-11	East River, west of the Site	**WW-SED-11 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-11 (22-23)	Evaluate sediment quality at the depth with naphthalene-like odor and tar-like staining	X			X	X	X	X							
		WW-SED-11 (58-59)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							

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WW-SED-12	East River, west of the Site	**WW-SED-12 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-12 (22-23)	Evaluate sediment quality at the interface of the sediment deposits and the native material	X			X	X	X	X							
		WW-SED-12 (79.5-80)	Evaluate sediment quality at the completion of the boring	X			X	X	X	X							
WW-SED-13	East River, west of the Site	**WW-SED-13 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-13 (24-24.5)	Evaluate sediment quality at the depth with naphthalene-like odor and tar-like sheen and staining	X			X	X	X	X							
		WW-SED-13 (54.5-55)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							
WW-SED-14	East River, west of the Site	**WW-SED-14 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-14 (16-17)	Evaluate sediment quality at the depth with naphthalene-like odor and sheen	X			X	X	X	X							
		WW-SED-14 (52.5-53)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							
WW-SED-15	East River, north of the Site	**WW-SED-15 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-15 (15.5-16)	Evaluate sediment quality at the depth with petroleum-like odor and sheen	X			X	X	X	X							
		WW-SED-15 (41.5-42)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							
WW-SED-16	East River, north of the Site	**WW-SED-16 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-16 (27-28)	Evaluate sediment quality at the interface of the sediment deposits and the native material with highest PID reading	X			X	X	X	X							
		WW-SED-16 (64-64.5)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							
WW-SED-17	East River, west of the Site	**WW-SED-17 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-17 (33.5-34.5)	Evaluate sediment quality at the interface of the sediment deposits and the native material with chemical/fruit-like odor	X			X	X	X	X							
		WW-SED-17 (53-54)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							
WW-SED-18	East River, west of the Site	**WW-SED-18 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-18 (18.5-19)	Evaluate sediment quality at the depth with petroleum-like odor	X			X	X	X	X							
		WW-SED-18 (83.5-84)	Evaluate sediment quality at the completion of the boring	X			X	X	X	X							

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				Soil	Groundwater	Soil Vapor/ Indoor Air/ Outdoor Air											
WW-SED-19	East River, west of the Site	**WW-SED-19 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-19 (41.2-41.5)	Evaluate sediment quality at the depth with naphthalene-like odor, tar-like staining, and coating	X			X	X	X	X							
		WW-SED-19 (74.5-75)	Evaluate sediment quality at the completion of the boring	X			X	X	X	X							
WW-SED-20	East River, west of the Site	**WW-SED-20 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-20 (42-42.5)	Evaluate sediment quality at the depth with naphthalene-like odor, sheen, and tar staining	X			X	X	X	X							
		WW-SED-20 (58.5-59)	Evaluate sediment quality at the completion of the boring	X			X	X	X	X							
WW-SED-21	East River, west of the Site	**WW-SED-21 (0-0.5)**	Evaluate sediment quality of the shallow subsurface	X			X	X	X	X	X	X	X		X		
		WW-SED-21 (37.5-38)	Evaluate sediment quality at the depth with the highest PID reading	X			X	X	X	X							
		WW-SED-21 (46.5-47)	Evaluate sediment quality above the suspected confining clay layer	X			X	X	X	X							

Notes:
Chemical analysis test methods specified are from U.S. EPA SW-846 test methods
EPA TO-15 analysis includes VOCs and naphthalene
EPA - Environmental Protection Agency
VOC - volatile organic compounds
SVOC - semivolatile organic compounds
TAL - target analyte list
PCBs - polychlorinated biphenyls
bgs - below ground surface
[1]-Soils were analyzed by Free Cyanide [extraction by EPA Method 9013A and analysis by Microdiffusion American Society for Testing and Materials (ASTM)], water was analyzed by Total Cyanide EPA Method 9012B

Table 2. Monitoring Well Construction Data
Former Williamsburg Works MGP Site
Brooklyn, New York

Well ID	Lithology of Screened Interval	Screen Interval Depth (feet bgs)		Screen Interval Elevation (feet)		Top of Casing Elevation (feet)	Center of Well Screen Elevation (feet)	Borehole Diameter (inches)	Sand Filter Pack Interval (feet bgs)	Bentonite Seal Interval (feet bgs)	Sump Interval (feet bgs)	Installation Method
		Top	Bottom	Top	Bottom							
WW-MW-01	Intervals of Silty Sand (SM), Widely Graded Gravel With Sand (GW), Widely Graded Sand With Gravel (SW), and Widely Graded Sand (SW)	13	23	8.37	-1.63	21.05	3.37	6	11 - 25	1 - 11	23 - 25	Hollow Stem Auger
WW-MW-02	Intervals of Widely Graded Sand (SW), Narrowly Graded Sand (SP), Widely Graded Sand with Silt (SW-SM), and Sandy Silt (ML)	7.4	17.4	11.63	1.63	18.59	6.63	6	5 - 17.7	3 - 5	-	Hollow Stem Auger
WW-MW-03	Intervals of Widely Graded Sand (SW) and Widely Graded Sand with Silt (SW-SM)	4	14	10.00	0	13.69	5	6	2.5 - 16	0.5 - 2.5	14 - 16	Hollow Stem Auger
WW-MW-04	Intervals of Silt With Gravel (ML), Narrowly Graded Sand (SP), Silty Sand (SM), and Widely Graded Sand (SW)	10	20	3.36	-6.64	12.71	-1.64	6	8 - 22	6 - 8	20 - 22	Hollow Stem Auger
WW-MW-05	Intervals of Widely Graded Sand (SW) and Widely Graded Sand with Silt (SW-SM)	4	14	8.70	-1.3	12.05	3.7	6	2 - 14	1 - 2	14 - 16	Hollow Stem Auger
WW-MW-06	Intervals of Widely Graded Sand (SW), Silty Sand (SM), and Widely Graded Sand with Silt (SW-SM)	0.3	10.3	11.88	1.88	11.81	6.88	6	0.4 - 12.3	-	10.3 - 12.3	Hollow Stem Auger
WW-MW-07	Widely Graded Sand (SW)	1	11	11.35	1.35	11.84	6.35	6	1.1 - 13	-	11 - 13	Hollow Stem Auger
WW-MW-08	Intervals of Widely Graded Sand with Gravel (SW), Widely Graded Sand with Silt (SW-SM), and Widely Graded Sand (SW)	0.3	10.3	9.87	-0.13	9.89	4.87	6	0.4 - 12.3	-	10.3 - 12.3	Hollow Stem Auger
WW-MW-10[1]	Intervals of Widely Graded Sand (SW) and Widely Graded Sand with Silt (SW-SM)	4	14	4.11	-5.89	7.67	-0.89	6	3 - 16	1 - 3	14 - 16	Geoprobe
WW-MW-11[1]	Intervals of Widely Graded Gravel with Sand (GW) and Widely Graded Sand with Gravel (SW)	4	14	5.20	-4.8	8.72	0.2	3.25	3 - 16	1 - 3	14 - 16	Geoprobe
WW-MW-12[1]	Intervals of Widely Graded Sand with Gravel (SW) and Widely Graded Gravel with Sand (GW)	5	15	2.89	-7.11	7.42	-2.11	3.25	4 - 17	2 - 4	15 - 17	Geoprobe
WW-MW-13[1]	Intervals of Widely Graded Gravel with Sand (GW) and Silt with Sand (ML)	4	14	3.26	-6.74	6.89	-1.74	3.25	3 - 16	1 - 3	14 - 16	Geoprobe
WW-MW-14[1]	Widely Graded Sand with Gravel (GW)	4	14	2.75	-7.25	6.38	-2.25	3.25	3 - 16	1 - 3	14 - 16	Geoprobe
WW-MW-15[1]	Intervals of Widely Graded Sand with Gravel (SW), Widely Graded Sand (SW), and Silty Sand (SM)	4	14	2.35	-7.65	5.94	-2.65	3.25	3 - 16	1 - 3	14 - 16	Geoprobe
WW-MW-16	Intervals of Silty Sand (SM), Widely Graded Sand with Gravel (SW), Widely Graded Sand (SW), and Silty Sand	4	14	6.06	-3.94	9.73	1.06	6	3 - 17	1 - 3	14 - 16	Hollow Stem Auger
WW-MW-17	Silty Sand (SM)	4	14	7.79	-2.21	11.25	2.79	6	2 - 15	1 - 2	14 - 16	Hollow Stem Auger
WW-MW-18	Intervals of Narrowly Graded Sand with Silt (SP-SM), Widely Graded Sand with Silt (SM), and Widely Graded Sand (SW)	4	14	4.87	-5.13	8.5	-0.13	6	3 - 14	1 - 3	-	Sonic
WW-MW-19	Intervals of Narrowly Graded Sand with Silt (SP-SM), Organic Soil with Sand (OL), and Wood	4	14	3.39	-6.61	6.83	-1.61	6	3 - 14	1 - 3	-	Sonic
WW-MW-20	Intervals of Silty Sand (SM) and Widely Graded Sand with Silt (SW-SM)	6	16	10.17	0.17	15.49	5.17	6	5 - 16	3 - 5	-	Sonic
WW-MW-21	Intervals of Silt with Sand (ML), Silty Sand (SM), Silt (ML), and Narrowly Graded Sand with Silt (SP-SM)	8	18	2.98	-7.02	10.72	-2.02	6	6 - 20	4 - 6	18 - 20	Sonic
WW-MW-22	Intervals of Widely Graded Sand with Gravel (SW), Widely Graded Sand with Silt (SW-SM), and Clayey Sand (SC)	4	14	3.38	-6.62	7.1	-1.62	6	3 - 16	2 - 3	14 - 16	Sonic

Notes:

Monitoring wells were completed as 2-inch inner diameter with flush-threaded polyvinyl chloride (PVC) 0.010-inch slotted screen, solid PVC riser, and a flush-mounted protective cover. #0 sand was used for filter pack.

[1] - Lithology is assumed based on nearby borings; observations of soil encountered in this interval were not described.

Elevations in North American Vertical Datum (NAVD)

bgs - below ground surface

Table 3. Groundwater Depths and Elevations
Former Williamsburg Works MGP Site
Brooklyn, New York

											Round 1: November 2, 2009					Round 2: December 19, 2012				
Monitoring Well	GS Elevation (feet)	TOC Elevation (feet)	Stickup (feet)	Depth to Bottom (feet)		Screen Depth (feet)		Screen Elevation (feet)		Well Diameter (inches)	Groundwater Depth from TOC (feet)		Groundwater Elevation (feet)		Elevation Difference of Tides (feet)	Groundwater Depth from TOC (feet)		Groundwater Elevation (feet)		Elevation Difference of Tides (feet)
				From GS	From TOC	Top	Bottom	Top	Bottom		High Tide	Low Tide	High Tide	Low Tide		High Tide	Low Tide	High Tide	Low Tide	
East River TBM	7.36			NA	NA	NA	NA	NA	NA	NA	3.09	8.79	4.27	-1.43	5.70	5.30	8.68	2.06	-1.32	3.38
WW-MW-01	21.37	21.05	-0.32	25	24.68	13	23	8.37	-1.63	2	14.68	14.65	6.37	6.40	-0.03	--	--	--	--	--
WW-MW-02	19.03	18.59	-0.44	17.7	17.26	7.4	17.4	11.63	1.63	2	11.68	11.66	6.91	6.93	-0.02	12.21	12.20	6.38	6.39	-0.01
WW-MW-03	14	13.69	-0.31	16	15.69	4	14	10.00	0.00	2	7.56	7.51	6.13	6.18	-0.05	7.85	7.82	5.84	5.87	-0.03
WW-MW-04	13.36	12.71	-0.65	22	21.35	10	20	3.36	-6.64	2	5.37	5.35	7.34	7.36	-0.02	--	--	--	--	--
WW-MW-05	12.7	12.05	-0.65	16	15.35	4	14	8.70	-1.30	2	4.61	4.52	7.44	7.53	-0.09	5.31	5.18	6.74	6.87	-0.13
WW-MW-06	12.18	11.81	-0.37	12.3	11.93	0.3	10.3	11.88	1.88	2	4.07	4.00	7.74	7.81	-0.07	3.68	3.65	8.13	8.16	-0.03
WW-MW-07	12.35	11.84	-0.51	13	12.49	1	11	11.35	1.35	2	2.26	2.30	9.58	9.54	0.04	2.68	2.64	9.16	9.20	-0.04
WW-MW-08	10.17	9.89	-0.28	12.3	12.02	0.3	10.3	9.87	-0.13	2	4.08	3.99	5.81	5.90	-0.09	4.11	4.08	5.78	5.81	-0.03
WW-MW-10	8.11	7.67	-0.44	16	15.56	4	14	4.11	-5.89	2	3.82	3.96	3.85	3.71	0.14	4.36	4.31	3.31	3.36	-0.05
WW-MW-11	9.2	8.72	-0.48	16	15.52	4	14	5.20	-4.80	2	5.88	5.84	2.84	2.88	-0.04	6.04	6.03	2.68	2.69	-0.01
WW-MW-12	7.89	7.42	-0.47	17	16.53	5	15	2.89	-7.11	2	4.75	4.62	2.67	2.80	-0.13	4.98	4.90	2.44	2.52	-0.08
WW-MW-13	7.26	6.89	-0.37	16	15.63	4	14	3.26	-6.74	2	4.19	5.74	2.70	1.15	1.55	5.15	5.97	1.74	0.92	0.82
WW-MW-14	6.75	6.38	-0.37	16	15.63	4	14	2.75	-7.25	2	2.46	5.51	3.92	0.87	3.05	5.16	8.94	1.22	-2.56	3.78
WW-MW-15	6.35	5.94	-0.41	16	15.59	4	14	2.35	-7.65	2	3.00	4.80	2.94	1.14	1.80	4.61	4.76	1.33	1.18	0.15
WW-MW-16	10.06	9.73	-0.33	16	15.67	4	14	6.06	-3.94	2	3.02	3.00	6.71	6.73	-0.02	4.29	4.31	5.44	5.42	0.02
WW-MW-17	11.79	11.25	-0.54	16	15.46	4	14	7.79	-2.21	2	4.50	4.50	6.75	6.75	0.00	4.45	4.42	6.80	6.83	-0.03
WW-MW-18	8.72	8.50	-0.22	14	13.78	4	14	4.72	-5.28	2	--	--	--	--	--	2.51	2.61	5.99	5.89	0.10
WW-MW-19	7.13	6.83	-0.3	14	13.7	4	14	3.13	-6.87	2	--	--	--	--	--	2.68	3.98	4.15	2.85	1.30
WW-MW-20	16.13	15.49	-0.64	16	15.36	6	16	10.13	0.13	2	--	--	--	--	--	9.42	9.44	6.07	6.05	0.02
WW-MW-21	10.98	10.72	-0.26	20	19.74	8	18	2.98	-7.02	2	--	--	--	--	--	4.40	4.70	6.32	6.02	0.30
WW-MW-22	7.38	7.10	-0.28	16	15.72	4	14	3.38	-6.62	2	--	--	--	--	--	5.59	6.37	1.51	0.73	0.78
WW-MW-100I	11.04	10.51	-0.53	58.5	57.97	46.5	56.5	-35.46	-45.46	2	--	--	--	--	--	8.31	8.30	2.20	2.21	-0.01
WW-MW-102I	11.64	11.07	-0.57	61	60.43	49	59	-37.36	-47.36	2	--	--	--	--	--	7.12	7.11	3.95	3.96	-0.01
WW-MW-102D	11.73	10.98	-0.75	102	101.25	92	102	-80.27	-90.27	2	--	--	--	--	--	8.18	8.20	2.80	2.78	0.02

Notes:

-- Measurement not collected. 2009 round, all wells had not been installed. 2012 round, wells could not be located.
NA - Not Applicable
GS - Ground Surface
TOC - Top of Casing
Elevations in North American Vertical Datum (NAVD)

Table 4. Hydraulic Conductivity Values (K)
Former Williamsburg Works MGP Site
Brooklyn, New York

Well ID	Screen Depth (ft bgs)	Screen Elevation (NAVD 88)	Lithology of Screened Interval	Range of Individual Calculated Hydraulic Conductivity Results		Average Hydraulic Conductivity	
				(ft/day)	(cm/sec)	(ft/day)	(cm/sec)
Rising Head Hydraulic Conductivity Test Results							
WW-MW-01	13 to 23	8.37 to -1.63	Intervals of Silty Sand (SM), Widely Graded Gravel With Sand (GW), Widely Graded Sand With Gravel (SW), and Widely Graded Sand (SW)	2.5 to 2.7	8.75E-04 to 9.45E-04	2.6	9.10E-04
WW-MW-04	10 to 20	3.36 to -6.64	Intervals of Silt With Gravel (ML), Narrowly Graded Sand (SP), Silty Sand (SM), and Widely Graded Sand (SW)	2.3 to 2.6	8.05E-04 to 9.1E-04	2.5	8.58E-04
WW-MW-17	4 to 14	7.79 to -2.21	Silty Sand	2.2 to 2.3	7.7E-04 to 8.05E-04	2.3	7.88E-04

Notes:

Hydraulic conductivity was calculated using the Bouwer and Rice Method via Super Slug Aquifer Testing and Analysis Software Version 3.2

ft bgs - feet below ground surface

NAVD - North American Vertical Datum

ft/day - feet per day

cm/sec - centimeters per second

Table 5. Typical Background Concentrations of Metals in Soil in the Eastern United States
Former Williamsburg Works MGP Site
Brooklyn, New York

Metals	Background Levels - Eastern USA (mg/kg)
Aluminum	7,000 - > 100,000
Antimony	< 1 - 8.8
Arsenic	< 0.1 - 73
Barium	10 - 1,500
Beryllium	< 1 - 7
Cadmium	NE
Calcium	100 - 280,000
Chromium	1 - 1,000
Cobalt	< 0.3 - 70
Copper	< 1 - 700
Iron	100 - >100,000
Lead	> 10 - 300
Magnesium	50 - 50,000
Manganese	< 2 - 7,000
Mercury	0.01 - 3.4
Nickel	< 5 - 700
Potassium	50 - 37,000
Selenium	< 0.1 - 3.9
Silver	NE
Sodium	<500 - 50,000
Thallium	NE
Vanadium	<7 - 300
Zinc	< 5 - 2,900

Notes:
NE - Not established
mg/kg - milligrams/kilogram
Source: Shacklette, H.T., and Boerngen, J.G., 1984. Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States. U.S. Geological Survey Professional Paper 1270. 105p.

Table 6. Background Concentrations of PAHs in Surface Soil in New York City
Former Williamsburg Works MGP Site
Brooklyn, New York

	Minimum	Mean(1)	75th Percentile(2)	95th Percentile(2)	Maximum	Unrestricted SCO	Commercial SCO
PAH Compound (mg/kg)							
Acenaphthene	0.0039	0.0512	0.11	0.37	0.63	20	500
Acenaphthylene	0.0013	0.0135	0.03	0.12	0.14	100	500
Anthracene	0.009	0.125	0.28	0.98	1.1	100	500
Benzo(a)anthracene	0.066	0.491	1.1	1.8	2.1	1	5.6
Benzo(a)pyrene	0.07	0.523	1	1.7	2.0	1	1
Benzo(b)fluoranthene	0.071	0.556	1	1.6	1.8	1	5.6
Benzo(g,h,i)perylene	0.14	0.403	0.67	1	1.5	100	0.5
Benzo(k)fluoranthene	0.056	0.48	0.89	2	2.0	0.8	56
Chrysene	0.082	0.543	1.1	2.4	2.4	1	56
Dibenz(a,h)anthracene	0.032	0.0959	0.13	0.33	0.48	0.33	0.56
Fluoranthene	0.12	1.05	1.9	4.5	5.2	100	500
Fluorene	0.0029	0.0479	0.11	0.36	0.6	30	500
Indeno(1,2,3-cd)pyrene	0.046	0.375	0.75	1.2	1.5	0.5	5.6
Naphthalene	0.0024	0.0274	0.074	0.15	0.21	12	500
Phenanthrene	0.057	0.58	1.1	3.7	4.4	100	500
Pyrene	0.11	0.887	1.7	3.4	4.7	100	500
Total PAH_{16}(3)	1.89	6.63	11.1	21	24.8	NE	NE

Notes:

(1) - Mean values were calculated on natural-logarithm transformed data and back transformed into original concentration units.

(2) - Percentiles were calculated using the empirical distribution function with averaging.

(3) - Total PAH16 includes the 16 USEPA priority pollutant PAH compounds (sum of acenaphthene through pyrene). It does not include 2-Methylnaphthalene.

Unrestricted Use SCO - regulatory comparison against NYCRR, Chapter IV, Part 375-6 Unrestricted Use Soil Cleanup Objectives (SCOs)

Commercial Use SCO - regulatory comparison against NYCRR, Chapter IV, Part 375-6 Restricted Use Commercial SCOs

Source: Characterization of Soil Background PAH and Metal Concentrations. Manhattan, New York. Prepared by: The RETEC Group, Inc. Prepared for: Consolidated Edison Company of New York, Inc. March 24, 2007

Table 7. Detected Surface Soil Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

			Adjacent to Parcel 2				Adjacent to Parcels 3 and 4						
Location:	Unrestricted SCO	Restricted Residential SCO	N .12th St. ROW	N. 11th St. ROW	N .12th St. ROW	Industrial SCO	N. 11th St. ROW		N .12th St. ROW	N. 11th St. ROW	N .12th St. ROW	N. 11th St. ROW	N .12th St. ROW
Sample Name: Sample Depth (feet bgs): Sample Date:			WWSS-01 (0-0.2) 10/6/2009	WWSS-02 (0-0.2) 10/6/2009	WWSS-03 (0-0.2) 10/6/2009		WWSS-04 (0-0.2) 10/6/2009	Duplicate of: WWSS-04 (0-0.2) 10/6/2009	WWSS-05 (0-0.2) 10/6/2009	WWSS-06 (0-0.2) 10/6/2009	WWSS-07 (0-0.2) 10/6/2009	WWSS-08 (0-0.2) 10/6/2009	WWSS-09 (0-0.2) 10/6/2009
BTEX (mg/kg)													
Toluene	0.7	100	**0.00016 J**	0.0052 U	0.0052 U	1,000	0.0058 U	0.0058 UJ	0.0055 U	0.0056 U	0.0053 U	0.0054 U	0.0062 U
Total BTEX	NE	NE	**0.00016**	ND	ND	NE	ND	ND	ND	ND	ND	ND	ND
Other VOCs (mg/kg)													
Total VOCs	NE	NE	**0.00016**	ND	ND	NE	ND	ND	ND	ND	ND	ND	ND
PAHs (mg/kg)													
Acenaphthene	20	100	1.2 U	1.1 U	1.1 U	1,000	**0.18 J**	1.3 UJ	1.2 U	**0.23 J**	**0.1 J**	**0.12 J**	1.3 U
Acenaphthylene	100	100	**0.23 J**	**0.51 J**	**0.21 J**	1,000	**0.79 J**	**0.13 J**	1.2 U	1.2 U	1.1 U	**0.11 J**	**0.11 J**
Anthracene	100	100	**0.14 J**	**0.21 J**	**0.14 J**	1,000	**0.58 J**	**0.071 J**	**0.12 J**	**0.35 J**	**0.19 J**	**0.32 J**	**0.15 J**
Benz[a]anthracene	1	1	**0.66 J**	**1.2 J**	**0.59 J**	11	**2.1 J**	**0.28 J**	**0.5 J**	**0.96 J**	**0.54 J**	**1.2**	**0.53 J**
Benzo[a]pyrene	1	1	**1 J**	**1.6 J**	**0.71 J**	1.1	**2.9 J**	**0.37 J**	**0.6 J**	**1.1 J**	**0.64 J**	**1.5**	**0.7 J**
Benzo[b]fluoranthene	1	1	**1 J**	**1.8 J**	**0.87 J**	11	**2.9 J**	**0.47 J**	**0.81 J**	**1.4**	**0.8 J**	**1.6**	**0.77 J**
Benzo[g,h,i]perylene	100	100	**1.1 J**	**1.8 J**	**0.75 J**	1,000	**2.6 J**	**0.61 J**	**0.49 J**	**1.4**	**0.78 J**	**1.7**	**0.97 J**
Benzo[k]fluoranthene	0.8	3.9	**0.5 J**	**0.73 J**	**0.25 J**	110	**1.2 J**	**0.14 J**	**0.36 J**	**0.59 J**	**0.26 J**	**0.68 J**	**0.32 J**
Chrysene	1	3.9	**0.73 J**	**1.3 J**	**1 J**	110	**2.6 J**	**0.33 J**	**0.63 J**	**1.1 J**	**0.64 J**	**1.3**	**0.63 J**
Dibenz[a,h]anthracene	0.33	0.33	1.2 U	**0.48 J**	1.1 UJ	1.1	**0.73 J**	1.3 UJ	1.2 U	1.2 U	1.1 UJ	1.2 U	1.3 UJ
Fluoranthene	100	100	**0.95 J**	**1.1 J**	**0.75 J**	1,000	**2.3 J**	**0.28 J**	**1.1 J**	**2.1**	**1.1 J**	**2.2**	**0.92 J**
Fluorene	30	100	**0.087 J**	1.1 U	**0.076 J**	1,000	**0.2 J**	1.3 UJ	1.2 U	**0.19 J**	1.1 U	1.2 U	1.3 U
Indeno[1,2,3-cd]pyrene	0.5	0.5	**1.1 J**	**1.9 J**	**0.73 J**	11	**2.9 J**	**0.52 J**	**0.43 J**	**1.2 J**	**0.66 J**	**1.7**	**1 J**
Phenanthrene	100	100	**0.73 J**	**0.43 J**	**0.74 J**	1,000	**2.7 J**	**0.2 J**	**0.7 J**	**1.9**	**0.91 J**	**1.4**	**0.75 J**
Pyrene	100	100	**1.5**	**2.6 J**	**1.7 J**	1,000	**4.8 J**	**0.55 J**	**1.1 J**	**2.6**	**1.5**	**3.2**	**1.5**
Total PAHs	NE	NE	**9.727**	**15.66**	**8.516**	500	**29.48**	**3.951**	**6.84**	**15.12**	**8.12**	**17.03**	**8.35**
Other SVOCs (mg/kg)													
Bis(2-ethylhexyl)phthalate	NE	NE	1.2 U	1.1 UJ	1.6 UJ	NE	**3 J**	5.7 UJ	1.2 UJ	5.7 U	5.3 U	2.3 U	4.6 U
Butyl benzyl phthalate	NE	NE	**0.078 J**	**0.18 J**	**0.25 J**	NE	**0.34 J**	**0.48 J**	**0.24 J**	**0.31 J**	**0.68 J**	**1.1 J**	**0.3 J**
Carbazole	NE	NE	1.2 U	1.1 U	**0.063 J**	NE	**0.16 J**	1.3 UJ	**0.08 J**	**0.2 J**	**0.095 J**	**0.13 J**	1.3 U
Dibenzofuran	7	59	1.2 U	1.1 U	1.1 U	1,000	**0.12 J**	1.3 UJ	1.2 U	**0.17 J**	1.1 U	1.2 U	1.3 U
Di-n-butyl phthalate	NE	NE	1.2 U	1.1 U	**0.25 J**	NE	**0.11 J**	1.3 UJ	1.2 U	1.2 U	**0.2 J**	1.2 U	**0.23 J**
Phenol	0.33	100	1.2 U	1.1 U	1.1 U	1,000	0.31 U	1.3 UJ	1.2 U	**0.15 J**	1.1 U	1.2 U	1.3 U
Total Other SVOCs	NE	NE	**0.078**	**0.18**	**0.563**	NE	**3.73**	**0.48**	**0.32**	**0.83**	**0.975**	**1.23**	**0.53**
PCBs (mg/kg)													
Aroclor 1248	NE	NE	0.019 UJ	**0.0071 J**	0.17 U	NE	0.019 U	0.02 UJ	0.019 UJ	**0.018 J**	0.018 UJ	0.018 U	0.021 UJ
Aroclor 1254	NE	NE	**0.024 JN**	**0.02 J**	0.17 U	NE	**0.15 J**	**0.043 J**	**0.024 J**	**0.06 J**	**0.021 J**	**0.12 J**	**0.022 J**
Aroclor 1260	NE	NE	**0.045 J**	**0.045 JN**	0.17 U	NE	**0.2 J**	**0.073 J**	**0.041 J**	0.042 U	**0.017 J**	**0.1**	0.021 UJ
Aroclor 1268	NE	NE	**0.017 J**	**0.085 J**	**1.8 J**	NE	**0.12 J**	**0.079 J**	**0.022 J**	**0.011 J**	**0.0078 J**	**0.071 J**	**0.0075 J**
Total PCBs	0.1	1	**0.086**	**0.1571**	**1.8**	NE	**0.47**	**0.195**	**0.087**	**0.089**	**0.0458**	**0.291**	**0.0295**
Pesticides (mg/kg)													
Aldrin	0.005	0.097	0.0019 UJ	0.0017 UJ	0.017 UJ	1.4	**0.0022 J**	0.002 UJ	0.0018 UJ	0.0019 UJ	0.0018 UJ	0.0018 UJ	0.0021 UJ
Alpha-chlordane	0.094	4.2	**0.0026 JN**	**0.0056 J**	0.017 UJ	47	0.0019 UJ	0.002 UJ	0.0018 UJ	**0.0038 J**	0.0018 UJ	0.0018 UJ	0.0021 UJ
Beta-BHC	0.036	0.36	0.0019 UJ	**0.0014 J**	0.017 UJ	14	**0.0037 JN**	**0.0025 JN**	0.0018 UJ	0.0019 UJ	0.0018 UJ	0.0018 UJ	0.0021 UJ
Chlordane, gamma	NE	NE	**0.005 JN**	**0.0076 JN**	0.017 UJ	NE	**0.0051 JN**	**0.0041 JN**	0.0018 UJ	**0.0042 JN**	**0.003 JN**	**0.0031 JN**	0.0021 UJ
DDD,4,4-	0.0033	13	0.0037 U	0.0033 U	0.034 UJ	180	**0.011 JN**	**0.0084 JN**	0.0036 UJ	**0.0068 J**	**0.0041 JN**	**0.011 J**	0.004 UJ
DDE,4,4-	0.0033	8.9	0.0037 UJ	**0.0086 J**	0.034 UJ	120	**0.015 J**	**0.012 J**	**0.0024 J**	**0.0047 J**	**0.0035 J**	**0.0046 J**	0.004 UJ
DDT,4,4-	0.0033	7.9	**0.011 J**	**0.018 J**	**0.15 J**	94	**0.042 J**	**0.033 J**	**0.01 J**	**0.011 J**	0.0066 UJ	**0.013 J**	**0.011 J**
Delta-BHC	0.04	100	**0.00066 J**	0.0017 U	0.017 UJ	1,000	**0.003 J**	**0.0019 J**	0.0018 UJ	0.0019 UJ	0.0018 UJ	0.0018 UJ	0.0021 UJ
Dieldrin	0.005	0.2	0.0037 UJ	0.0033 UJ	0.034 UJ	2.8	**0.0046 J**	**0.0042 J**	**0.0013 J**	0.0036 UJ	0.0034 UJ	0.0036 UJ	0.004 UJ
Endosulfan I	2.4	24	0.0019 UJ	0.0017 UJ	0.017 UJ	920	**0.0075 J**	**0.0068 J**	0.0018 UJ	0.0019 UJ	0.0018 UJ	0.0018 UJ	0.0021 UJ
Endrin	0.014	11	0.0037 U	0.0033 UJ	**0.049 JN**	410	**0.0039 JN**	0.0039 UJ	R	0.0036 UJ	0.0034 UJ	0.0036 UJ	R
Endrin aldehyde	NE	NE	**0.0058 J**	**0.01 J**	**0.58 JN**	NE	**0.0071 JN**	**0.029 JN**	**0.0074 JN**	**0.0056 JN**	**0.0056 JN**	**0.0098 JN**	**0.011 JN**
Gamma-BHC	0.1	1.3	0.0019 U	0.0017 U	0.017 UJ	23	**0.0034 JN**	0.002 UJ	0.0018 UJ	0.0019 UJ	0.0018 UJ	0.0018 UJ	0.0021 UJ
Heptachlor epoxide	NE	NE	**0.0041 J**	0.0017 UJ	0.017 UJ	NE	**0.0036 JN**	**0.0072 J**	0.0018 UJ	0.0019 UJ	0.0018 UJ	0.0018 UJ	0.0021 UJ
Methoxychlor	NE	NE	0.019 UJ	0.017 UJ	**0.21 JN**	NE	0.019 UJ	**0.027 JN**	0.018 UJ	0.019 UJ	0.018 UJ	**0.02 JN**	0.021 UJ

Table 7. Detected Surface Soil Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted Residential SCO	Adjacent to Parcel 2			Industrial SCO	Adjacent to Parcels 3 and 4						
			N .12th St. ROW	N. 11th St. ROW	N .12th St. ROW		N. 11th St. ROW		N .12th St. ROW	N. 11th St. ROW	N .12th St. ROW	N. 11th St. ROW	N .12th St. ROW
Sample Name: Sample Depth (feet bgs): Sample Date:			WWSS-01 (0-0.2) 10/6/2009	WWSS-02 (0-0.2) 10/6/2009	WWSS-03 (0-0.2) 10/6/2009		WWSS-04 (0-0.2) 10/6/2009	Duplicate of: WWSS-04 (0-0.2) 10/6/2009	WWSS-05 (0-0.2) 10/6/2009	WWSS-06 (0-0.2) 10/6/2009	WWSS-07 (0-0.2) 10/6/2009	WWSS-08 (0-0.2) 10/6/2009	WWSS-09 (0-0.2) 10/6/2009
Herbicides (mg/kg)													
Total Herbicides	NE	NE	ND	ND	ND	NE	ND	ND	ND	ND	ND	ND	ND
Metals (mg/kg)													
Aluminum	NE	NE	**5580**	**4010**	**2560**	NE	**4390**	**4600**	**4270**	**4160**	**2440**	**5260**	**13700**
Arsenic	13	16	**19.9 J**	**4.4 J**	5.3 U	16	5.9 U	5.9 U	5.8 U	5.8 U	5.4 U	5.6 U	**6.1 J**
Barium	350	400	**77.2 J**	**51.3 J**	**40.3 J**	10,000	**102 J**	**102 J**	**68.8 J**	**327 J**	**76.8 J**	**199 J**	**203 J**
Beryllium	7.2	72	**0.4 J**	**0.27 J**	**0.17 J**	2,700	**0.28 J**	**0.31 J**	**0.26 J**	**0.28 J**	**0.15 J**	**0.32 J**	**1.6**
Cadmium	2.5	4.3	**0.6 J**	**0.43 J**	**0.34 J**	60	**2.1**	**2.5**	**1 J**	**0.94 J**	**0.6 J**	**0.66 J**	1.5 U
Calcium	NE	NE	**17000**	**59500**	**124000**	NE	**13900**	**12800**	**9680**	**15200**	**21700**	**17600**	**64900**
Chromium	NE	NE	**16.2**	**12.5**	**11.6**	NE	**22.4**	**31.5**	**20.9**	**21.1**	**22.5**	**23.8**	**32.3**
Cobalt	NE	NE	**5.8**	**5**	**3.9 J**	NE	**5.5**	**7.6**	**4**	**4.3**	**4 J**	**4.8**	**4.1**
Copper	50	270	**71.5**	**66.5**	**59.3**	10,000	**89.9**	**88.1**	**51.9**	**347**	**57.2**	**75.6**	**130**
Iron	NE	NE	**11600**	**11500**	**11800**	NE	**12800**	**15100**	**10200**	**15700**	**20500**	**12200**	**14900**
Lead	63	400	**233**	**166**	**133**	3,900	**241**	**248**	**99.6**	**251**	**99.1**	**125**	**106**
Magnesium	NE	NE	**5600**	**13700**	**60300**	NE	**6380**	**6820**	**5840**	**7230**	**9290**	**7630**	**18400**
Manganese	1600	2000	**208**	**159**	**205**	10,000	**188**	**227**	**272**	**205**	**195**	**248**	**963**
Mercury	0.18	0.81	**0.37**	**0.16**	**0.099**	5.7	**0.2**	**0.2**	**0.11**	**0.094**	**0.094**	**0.12**	**0.091**
Nickel	30	310	**21.1**	**15.9**	**14**	10,000	**19.7**	**24.2**	**14.6**	**16.7**	**19.4**	**19.3**	**20.9**
Potassium	NE	NE	**751 J**	**550 J**	**526 J**	NE	**491 J**	**540 J**	**423 J**	**430 J**	**277 J**	**531 J**	**1710 J**
Silver	2	180	1.4 U	**0.16 J**	1.3 UJ	6,800	1.4 U	**0.57 J**	1.4 U	**0.39 J**	1.3 UJ	1.3 U	**0.1 J**
Sodium	NE	NE	**182 J**	**383 J**	**176 J**	NE	**141 J**	**152 J**	**103 J**	**238 J**	**134 J**	**231 J**	**954 J**
Vanadium	NE	NE	**23.1**	**31.4**	**31.9**	NE	**18.6**	**21.1**	**15.4**	**19.4**	**13.3**	**19**	**24.8**
Zinc	109	10000	**239**	**171**	**372**	10,000	**832**	**922**	**456**	**462**	**626**	**465**	**336**
Other (mg/kg)													
Free Cyanide	NE	NE	0.226 UJ	0.205 UJ	0.206 UJ	NE	0.231 UJ	0.233 UJ	0.218 UJ	0.223 UJ	**0.063 J**	0.216 UJ	0.242 UJ

Notes:

mg/kg - milligrams/kilogram or parts per million (ppm)
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
SVOCs - semivolatile organic compounds
PCBs - polychlorinated biphenyls
Total BTEX, Total VOCs, Total PAHs, Total SVOCs, and Total PCBs are calculated using detects only.

6 NYCRR - New York State Register and Official Compilation of Codes, Rules and Regulations of the State of New York
UNRESTRICTED USE SCO - regulatory comparison against 6 NYCRR, Chapter IV, Part 375-6 Unrestricted Use Soil Cleanup Objectives
COMMERCIAL USE SCO - regulatory comparison against 6 NYCRR, Chapter IV, Part 375-6 Restricted Use Commercial Soil Cleanup Objectives
INDUSTRIAL USE SCO - regulatory comparison against 6 NYCRR, Chapter IV, Part 375-6 Restricted Use Industrial Soil Cleanup Objectives

NE - not established
NA - not analyzed
ND - not detected; total concentration is listed as ND because no compounds were detected in the group

Bolding indicates a detected concentration
Gray shading and bolding indicates that the detected result value exceeds established UNRESTRICTED USE SCO
Yellow shading and bolding indicates that the detected result value exceeds established UNRESTRICTED USE SCO and COMMERCIAL USE SCO
Orange shading and bolding indicates that the detected result value exceeds established UNRESTRICTED USE SCO and INDUSTRIAL USE SCO

Validation Qualifiers:
J - estimated value
JN - analyte is presumptively present at an approximated quantity
U - indicates not detected to the reporting limit for organic analysis and the method detection limit for inorganic analysis
UJ - not detected at or above the reporting limit shown and the reporting limit is estimated
R - rejected

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 2 [Block 2287 at 1]																					
Sample Name:			WW-MW-04	WW-MW-04	WW-MW-04	WW-MW-05	Duplicate of WW-MW-05	WW-MW-05	WW-MW-05	WW-MW-17	WW-MW-17	WW-MW-17	WW-SB-03	Duplicate of WW-SB-03	WW-SB-03	WW-SB-04	WW-SB-04	Duplicate of WW-SB-04	WW-SB-05	WW-SB-05	WW-SB-07	WW-SB-07	WW-SB-09	WW-SB-09
Sample Depth(ft bgs):			(5-10)	(31-33)	(58-59)	(0.75-5)	(0.75-5)	(12-13)	(63-64)	(1-2)	(7-8)	(54-55)	(3-5)	(3-5)	(20-22)	(2-4)	(18-20)	(18-20)	(3-5)	(20-24)	(3-5)	(19-22)	(2-4)	(11-12)
Sample Date:			6/15/2009	6/15/2009	6/15/2009	6/10/2009	6/10/2009	6/10/2009	6/11/2009	6/8/2009	6/8/2009	6/9/2009	7/14/2009	7/14/2009	7/14/2009	10/5/2009	10/5/2009	10/5/2009	7/14/2009	7/14/2009	7/15/2009	7/15/2009	6/26/2009	7/13/2009
BTEX (mg/kg)																								
Benzene	0.06	4.8	0.021 J	62 J	0.0042 J	3.8 J	2.1 J	84	0.0057 U	0.0059 U	0.37 J	0.13	0.011	0.0076	270	0.0025 J	100 J	200 J	0.0061 J	3000	0.021	120	0.0059 U	0.73 J
Toluene	0.7	100	0.0014 J	220 J	0.003 J	26	19	220	0.00068 J	0.0059 U	0.74 J	0.0027 J	0.00034 J	0.0005 J	230	0.0015 J	56 J	110	0.0061 U	4300	0.00031 J	260	0.0059 U	7.6
Ethylbenzene	1	41	0.0056 UJ	220 J	0.018	38	32	320	0.002 J	0.0059 U	15 J	0.12	0.0057 U	0.0055 U	3000	0.0053 UJ	1100 J	1900 J	0.0012 J	2800	0.0028 J	38	0.0059 U	38
Total Xylene	0.26	100	0.0011 J	320 J	0.02	81	65	340	0.002 J	0.0059 U	22 J	0.12	0.0057 U	0.0055 U	2800	0.0018 J	920	1500	0.002 J	4300	0.0015 J	320	0.0059 U	87
Total BTEX	NE	NE	0.0235	822	0.0452	148.8	118.1	964	0.00468	ND	38.11	0.3727	0.01134	0.0081	6300	0.0058	2176	3710	0.0093	14400	0.02561	738	ND	133.33
Other VOCs (mg/kg)																								
Acetone	0.05	100	0.048 J	14 UJ	0.039 J	28 U	5.6 U	31 U	0.023 U	0.024 U	1.5 U	0.023 U	0.023 UJ	0.022 UJ	350 U	0.021 UJ	160 U	150 U	0.024 UJ	350 U	0.022 UJ	34 U	0.024 U	7.2 U
Carbon disulfide	NE	NE	0.0012 J	1.5 J	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0012 J	65 U	61 U	0.0061 U	140 U	0.0054 U	14 U	0.0059 U	2.9 U
Chloroform	0.37	49	0.0056 UJ	5.8 UJ	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 U	65 U	61 U	0.0061 U	140 U	0.0054 U	14 U	0.0059 U	2.9 U
Chloromethane	NE	NE	0.0056 UJ	5.8 UJ	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 U	65 U	61 U	0.0061 U	140 U	0.0054 U	14 U	0.0059 U	2.9 U
1,1-Dichloroethane	0.27	26	0.0056 UJ	5.8 UJ	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 U	65 U	61 U	0.0061 U	140 U	0.0054 U	14 U	0.0059 U	2.9 U
1,1-Dichloroethene	0.33	100	0.0056 UJ	5.8 UJ	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 UJ	65 U	61 U	0.0061 U	140 U	0.0054 U	14 U	0.0059 U	2.9 U
cis-1,2-Dichloroethene	0.25	100	0.0015 J	5.8 UJ	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 UJ	65 U	61 U	0.0019 J	140 U	0.0054 U	14 U	0.0059 U	2.9 U
trans-1,2-Dichloroethene	0.19	100	0.0056 UJ	5.8 UJ	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 U	65 U	61 U	0.0061 U	140 U	0.0054 U	14 U	0.0059 U	2.9 U
2-Butanone (Methyl ethyl ketone)	0.12	100	0.011 UJ	5.8 UJ	0.012 U	11 U	2.3 U	13 U	0.011 U	0.012 U	0.59 U	0.011 U	0.011 U	0.011 U	140 U	0.011 U	65 U	61 U	0.012 U	140 U	0.011 U	14 U	0.012 U	2.9 U
Methylene chloride	0.05	100	0.022 UJ	5.8 UJ	0.023 U	11 U	2.3 U	13 U	0.023 U	0.024 U	0.59 U	0.023 U	0.023 U	0.022 U	140 U	0.021 U	65 U	61 U	0.024 U	140 U	0.022 UJ	14 U	0.024 U	2.9 U
Styrene	NE	NE	0.0056 UJ	60 J	0.0058 U	14	11	13 U	0.00026 J	0.011	0.61 J	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 UJ	65 U	61 U	0.0061 U	1100	0.0054 U	270	0.0059 U	2.9 U
Tetrachloroethene (PCE)	1.3	19	0.0056 UJ	5.8 UJ	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 UJ	65 U	61 U	0.0061 U	140 U	0.0054 U	14 U	0.00098 J	2.9 U
Trichloroethene (TCE)	0.47	21	0.0053 J	5.8 UJ	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 U	65 U	61 U	0.047	140 U	0.0054 U	14 U	0.0042 J	2.9 U
Vinyl chloride	0.02	0.9	0.0056 UJ	5.8 UJ	0.0058 U	11 U	2.3 U	13 U	0.0057 U	0.0059 U	0.59 U	0.0057 U	0.0057 U	0.0055 U	140 U	0.0053 U	65 U	61 U	0.0061 U	140 U	0.0054 U	14 U	0.0059 U	2.9 U
Total VOCs	NE	NE	0.0795	883.5	0.0842	162.8	129.1	964	0.00494	0.011	38.72	0.3727	0.01134	0.0081	6300	0.007	2176	3710	0.0582	15500	0.02561	1008	0.00518	133.33
PAHs (mg/kg)																								
Acenaphthene	20	100	0.3 U	31 J	0.31 UJ	6.8 J	10 J	73	0.3 U	0.23 J	95	0.36 J	0.064 J	0.13 J	240	0.29 J	2500 J	690 J	4.1	590 J	0.19 J	18 J	0.063 J	24 J
Acenaphthylene	100	100	0.069 J	280	0.31 UJ	68	110	14 J	0.077 J	0.88 J	16 J	0.033 J	0.55	0.54 J	180 J	0.95	280 J	82 J	1.7 J	6400	1.8	180	1	16 J
Anthracene	100	100	0.054 J	110 J	0.31 UJ	23 J	36 J	26 J	0.058 J	0.6 J	26 J	0.61 U	0.66	0.71 J	170 J	0.81	980 J	290 J	8	2200 J	1.2	51 J	0.43	26 J
Benz[a]anthracene	1	1	0.088 J	56 J	0.31 UJ	12 J	19 J	14 J	0.045 J	5.1	17 J	0.61 U	1.1	1.4	82 J	2.9	470 J	140 J	20	1100 J	1.7	27 J	1.2	16 J
Benzo[a]pyrene	1	1	0.088 J	42 J	0.31 UJ	8.5 J	15 J	11 J	0.3 U	11	19 J	0.61 U	0.87	1.2	60 J	5.4 J	340 J	100 J	21	810 J	1.7	20 J	1.8	11 J
Benzo[b]fluoranthene	1	1	0.14 J	26 J	0.31 UJ	6.3 J	10 J	7.9 J	0.3 U	9.7	13 J	0.61 U	1.1	1.3	37 J	5.1 J	260 J	82 J	22	540 J	2.3	14 J	1.6	7.3 J
Benzo[g,h,i]perylene	100	100	0.3 J	86 J	0.31 UJ	61 U	61 U	33 U	0.3 U	5.2 J	28 J	0.61 U	1.1	1.6	26 J	4.9 J	1400 U	330 U	16	280 J	0.96	8 J	1.1	47 J
Benzo[k]fluoranthene	0.8	3.9	0.046 J	150 U	0.31 UJ	61 U	61 U	33 U	0.3 U	3.9	5.2 J	0.61 U	0.35	0.47 J	17 J	1.7 J	1400 U	330 U	8.4	3000 U	0.91	73 U	0.6	62 U
Chrysene	1	3.9	0.1 J	56 J	0.31 UJ	11 J	18 J	12 J	0.038 J	5.2	16 J	0.61 U	1.7	1.9	85 J	3.1	430 J	130 J	19	1000 J	2.1	26 J	1.3	15 J
Dibenz[a,h]anthracene	0.33	0.33	0.19 J	150 U	0.31 UJ	61 U	61 U	33 U	0.3 U	2.4	29 J	0.61 U	0.39	0.76 J	190 U	1.3 J	1400 U	330 U	4.2	3000 U	0.34	73 U	0.49	62 U
Fluoranthene	100	100	0.13 J	88 J	0.31 UJ	22 J	37 J	25 J	0.065 J	3.7	26 J	0.032 J	1.3	2	140 J	2	820 J	250 J	43	2000 J	3.1	48 J	0.96	25 J
Fluorene	30	100	0.042 J	150	0.31 UJ	38 J	63	40	0.075 J	1.3 U	35	0.61 U	0.11 J	1.2 U	220	0.26 J	1300 J	370	3.4	3400	0.37	80	0.11 J	28 J
Indeno[1,2,3-cd]pyrene	0.5	0.5	0.38	150 U	0.31 UJ	61 U	61 U	7.7 J	0.3 U	5.7	38	0.61 U	1	1.5	25 J	5.1 J	1400 U	38 J	16	280 J	1.1	7.8 J	1.2	46 J
2-Methylnaphthalene	NE	NE	0.1 J	790	0.072 J	200 J	300 J	200	0.18 J	1.3 U	320	1.4	0.17 J	0.21 J	1100	0.51 J	5900 J	1500 J	1.2 J	16000	0.4	430	0.28 J	250
Naphthalene	12	100	0.054 J	2100	0.13 J	540 J	760 J	500	0.27 J	1.3 U	540	7.3	0.16 J	1.2 U	3200	0.57 U	15000 J	3700 J	3 J	38000	0.67	1200	0.41	610
Phenanthrene	100	100	0.22 J	390	0.033 J	90	140	93	0.23 J	1.5	88	0.046 J	0.98	1.6	580	2.3	3200 J	950 J	30	8300	2.3	180	0.89	84
Pyrene	100	100	0.23 J	150 J	0.31 UJ	33 J	52 J	36	0.11 J	4.5	29 J	0.03 J	1.8	2.2	230	5.4 J	1600 J	480 J	38	2900 J	1.9	73 J	0.97	37 J
Total PAH 17	NE	NE	2.231	4355	0.235	1058.6	1570	1059.6	1.148	59.61	1340.2	9.201	13.404	17.52	6392	42.02	33080	8802	259	83800	23.04	2362.8	14.403	1242.3
Other SVOCs (mg/kg)																								
Bis(2-ethylhexyl)phthalate	NE	NE	0.15 J	150 U	0.31 UJ	61 U	61 U	33 U	0.031 J	0.44 J	32 U	0.73	0.31 U	1.2 U	190 U	0.57 UJ	1400 U	330 U	3.3 U	3000 U	1.4	73 U	0.23 J	62 U
Butyl benzyl phthalate	NE	NE	0.3 U	150 U	0.31 UJ	61 U	61 U	33 U	0.3 U	1.3 U	32 U	0.61 U	0.31 U	1.2 U	190 U	0.57 U	1400 U	330 U	3.3 U	3000 U	0.29 U	73 U	0.32 U	62 U
Carbazole	NE	NE	0.3 U	150 U	0.31 UJ	61 U	61 U	33 U	0.3 U	0.26 J	32 U	0.61 U	0.31 U	1.2 U	190 U	0.14 J	1400 U	330 U	2.7 J	3000 U	0.15 J	73 U	0.097 J	62 U
Dibenzofuran	7	59	0.3 U	16 J	0.31 UJ	4.4 J	6.6 J	4.2 J	0.3 U	1.3 U	32 U	0.61 U	0.31 U	1.2 U	24 J	0.14 J	120 J	41 J	1.8 J	370 J	0.14 J	9.6 J	0.068 J	4.8 J
2,4-Dimethylphenol	NE	NE	0.3 U	150 U	0.31 UJ	61 U	61 U	33 U	0.3 U	1.3 U	32 U	0.61 U	0.31 U	1.2 U	190 U	0.57 U	1400 U	330 U	3.3 U	3000 U	0.29 U	73 U	0.32 U	62 U
2-Methylphenol (o-Cresol)	0.33	100	0.3 U	150 U	0.31 UJ	61 U	61 U	33 U	0.3 U	1.3 U	32 U	0.61 U	0.31 U	1.2 U	190 U	0.57 U	1400 U	330 U	3.3 U	3000 U	0.29 U	73 U	0.32 U	62 U
4-Methylphenol (p-Cresol)	0.33	100	0.3 U	150 U	0.31 UJ	61 U	61 U	33 U	0.3 U	1.3 U	32 U	0.61 U	0.31 U	1.2 U	190 U	0.57 U	1400 U	330 U	3.3 U	3000 U	0.29 U	73 U	0.32 U	62 U
Pentachlorophenol	0.8	6.7	1.9 U	950 U	2 UJ	380 U	380 U	210 U	1.9 U	8 U	200 U	3.9 U	1.9 U	7.5 U	1200 U	1.4 U	3500 U	810 U	21 U	19000 U	1.8 U	460 U	2 U	390 U
Phenol	0.33	100	0.3 U	150 U	0.31 UJ	61 U	61 U	33 U	0.3 U	1.3 U	32 U	0.61 U	0.31 U	1.2 U	190 U	0.57 U	1400 U	330 U	3.3 U	3000 U	0.29 U	73 U	0.32 U	62 U
Total SVOCs	NE	NE	2.381	4371	0.235	1063	1576.6	1063.8	1.179	60.31	1340.2	9.931	13.404	17.52	6416	42.3	33200	8843	263.5	84170	24.73	2372.4	14.798	1247.1
PCBs (mg/kg)																								
Aroclor 1242	NE	NE	0.019 U	NA	NA	0.019 U	0.019 U	NA	NA	0.02 U	NA	NA	0.019 U	NA	NA	0.018 U	NA	NA	0.021 U	NA	0.018 UJ	NA	0.04 U	NA
Aroclor 1254	NE	NE	0.019 U	NA	NA	0.019 U	0.019 U	NA	NA	0.02 U	NA	NA	0.019 U	NA	NA	0.018 U	NA	NA	0.021 U	NA	0.018 UJ	NA	0.04 U	NA
Aroclor 1260	NE	NE	0.012 J	NA	NA	0.019 U	0.019 U	NA	NA	0.02 U	NA	NA	0.016 J	NA	NA	0.018 UJ	NA	NA	0.021 U	NA	0.018 UJ	NA	0.04 U	NA
Aroclor 1268	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.54	NA
Total PCB Aroclors	NE	NE	0.012	NA	NA	ND	ND	NA	NA	ND	NA	NA	0.016	NA	NA	ND	NA	NA	ND	NA	ND	NA	0.54	NA
Pesticides (mg/kg)																								
Aldrin	0.005	0.097	0.0019 U	NA	NA	0.0089 J	0.019 U	NA	NA	0.002 U	NA	NA	0.0019 U	NA	NA	0.0018 UJ	NA	NA	0.0021 U	NA	0.0018 UJ	NA	0.002 U	NA
alpha-BHC	0.02	0.48	0.0019 U	NA	NA	0.0096 UJ	0.019 U	NA	NA	0.002 U	NA	NA	0.0019 U	NA	NA	0.0018 UJ	NA	NA	0.0022 JN	NA	0.0018 U	NA	0.002 U	NA
beta-BHC	0.036	0.36	0.0019 U	NA	NA	0.026 J	0.018 J	NA	NA	0.002 U	NA	NA	0.0019 U	NA	NA	0.0032 JN	NA	NA	0.0021 U	NA	0.0018 UJ	NA	0.002 U	NA
gamma-BHC	0.1	1.3	0.0019 UJ	NA	NA	0.0096 UJ	0.019 UJ	NA	NA	0.002 U	NA	NA	0.0019 U	NA	NA	0.004 JN	NA	NA	0.0021 U	NA	0.0018 UJ	NA	0.002 U	NA
delta-BHC	0.04	100	0.00082 J	NA	NA	0.0043 J	0.019 UJ	NA	NA	0.002 U	NA	NA	0.0019 U	NA	NA	0.0018 UJ	NA	NA	0.0021 U	NA	0.0018 UJ	NA	0.002 U	NA
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 2 [Block 2287 at 1]																					
Sample Name:			WW-MW-04	WW-MW-04	WW-MW-04	WW-MW-05	Duplicate of WW-MW-05	WW-MW-05	WW-MW-05	WW-MW-17	WW-MW-17	WW-MW-17	WW-SB-03	Duplicate of WW-SB-03	WW-SB-03	WW-SB-04	WW-SB-04	Duplicate of WW-SB-04	WW-SB-05	WW-SB-05	WW-SB-07	WW-SB-07	WW-SB-09	WW-SB-09
Sample Depth(ft bgs):			(5-10)	(31-33)	(58-59)	(0.75-5)	(0.75-5)	(12-13)	(63-64)	(1-2)	(7-8)	(54-55)	(3-5)	(3-5)	(20-22)	(2-4)	(18-20)	(18-20)	(3-5)	(20-24)	(3-5)	(19-22)	(2-4)	(11-12)
Sample Date:			6/15/2009	6/15/2009	6/15/2009	6/10/2009	6/10/2009	6/10/2009	6/11/2009	6/8/2009	6/8/2009	6/9/2009	7/14/2009	7/14/2009	7/14/2009	10/5/2009	10/5/2009	10/5/2009	7/14/2009	7/14/2009	7/15/2009	7/15/2009	6/26/2009	7/13/2009
alpha-chlordane	0.094	4.2	0.0019 U	NA	NA	**0.011 JN**	0.019 U	NA	NA	0.002 U	NA	NA	0.0019 U	NA	NA	0.0018 UJ	NA	NA	0.0021 U	NA	0.0018 UJ	NA	0.002 U	NA
gamma-Chlordane	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NE	NE	0.0019 U	NA	NA	**0.012 JN**	0.019 U	NA	NA	0.002 U	NA	NA	0.0019 U	NA	NA	0.0018 UJ	NA	NA	**0.0035 J**	NA	0.0018 UJ	NA	0.002 U	NA
4,4-DDD	0.0033	13	0.0037 U	NA	NA	0.019 U	0.037 U	NA	NA	0.0038 UJ	NA	NA	0.0038 U	NA	NA	0.0035 UJ	NA	NA	0.004 U	NA	0.0036 UJ	NA	0.0039 U	NA
4,4'-DDE	0.0033	8.9	0.0037 U	NA	NA	0.019 U	0.037 U	NA	NA	0.0038 U	NA	NA	0.0038 U	NA	NA	**0.0032 J**	NA	NA	0.004 UJ	NA	0.0036 U	NA	0.0039 U	NA
4,4'-DDT	0.0033	7.9	**0.0071 J**	NA	NA	**0.35 J**	**0.42 J**	NA	NA	0.0038 UJ	NA	NA	0.0038 UJ	NA	NA	**0.014 J**	NA	NA	0.004 U	NA	0.0036 UJ	NA	**0.01 J**	NA
Dieldrin	0.005	0.2	**0.0021 J**	NA	NA	0.019 UJ	**0.043 J**	NA	NA	**0.00078 J**	NA	NA	0.0038 U	NA	NA	**0.0097 J**	NA	NA	0.004 U	NA	0.0036 U	NA	**0.0022 J**	NA
Endosulfan I	2.4	24	0.0019 U	NA	NA	0.0096 U	0.019 U	NA	NA	0.002 U	NA	NA	0.0019 U	NA	NA	0.0018 UJ	NA	NA	0.0021 U	NA	0.0018 UJ	NA	**0.0027 JN**	NA
Endosulfan II	2.4	24	0.0037 U	NA	NA	0.019 U	0.037 U	NA	NA	0.0038 U	NA	NA	0.0038 U	NA	NA	**0.004 J**	NA	NA	0.004 U	NA	0.0036 UJ	NA	0.0039 U	NA
Endosulfan sulfate	2.4	24	0.0037 U	NA	NA	**0.18 J**	**0.21**	NA	NA	0.0038 U	NA	NA	0.0038 U	NA	NA	0.0035 UJ	NA	NA	**0.0046 JN**	NA	0.0036 UJ	NA	0.0039 U	NA
Endrin	0.014	11	0.0037 U	NA	NA	0.019 UJ	0.037 U	NA	NA	0.0038 U	NA	NA	0.0038 U	NA	NA	**0.01 J**	NA	NA	**0.013 J**	NA	0.0036 UJ	NA	**0.0099**	NA
Endrin aldehyde	NE	NE	0.0037 U	NA	NA	**0.065 JN**	**0.041 JN**	NA	NA	0.0038 UJ	NA	NA	0.0038 U	NA	NA	**0.011 JN**	NA	NA	**0.022 J**	NA	**0.0024 J**	NA	**0.024 J**	NA
Endrin ketone	NE	NE	0.0037 U	NA	NA	0.019 U	0.037 U	NA	NA	0.0038 U	NA	NA	**0.0059 J**	NA	NA	0.0035 U	NA	NA	0.004 U	NA	0.0036 UJ	NA	**0.074**	NA
Heptachlor	0.042	2.1	0.0019 UJ	NA	NA	0.0096 UJ	0.019 UJ	NA	NA	**0.00085 J**	NA	NA	0.0019 U	NA	NA	**0.0054 J**	NA	NA	0.0021 U	NA	0.0018 UJ	NA	0.002 U	NA
Heptachlor epoxide	NE	NE	0.0019 U	NA	NA	0.0096 UJ	0.019 U	NA	NA	**0.0032 J**	NA	NA	0.0019 U	NA	NA	0.0018 UJ	NA	NA	0.0021 U	NA	0.0018 UJ	NA	**0.007 J**	NA
Methoxychlor	NE	NE	0.019 U	NA	NA	**0.28 J**	0.19 U	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.021 U	NA	0.018 UJ	NA	0.02 U	NA
Herbicides (mg/kg)																								
Silvex	3.8	100	0.024 U	NA	NA	0.023 U	0.023 U	NA	NA	0.024 U	NA	NA	0.025 U	NA	NA	0.021 UJ	NA	NA	0.022 U	NA	0.023 U	NA	0.027 U	NA
Metals (mg/kg)																								
Aluminum	NE	NE	**5960 J**	**2580 J**	**2250 J**	**6230**	**7010**	**7180**	**2650**	**7960**	**7070**	**2430**	**5530**	**4970**	**8910**	**7420**	**3090**	**3230**	**6160**	**1850**	**6220**	**5170**	**5260**	**7190**
Antimony	NE	NE	4.5 UJ	4.5 UJ	4.6 UJ	4.6 UJ	4.6 UJ	4.9 UJ	4.6 UJ	4.8 UJ	4.9 UJ	4.7 UJ	4.6 UJ	4.6 UJ	5.6 UJ	4.2 UJ	5.3 UJ	5 UJ	4.9 UJ	**3.2 J**	4.3 UJ	5.6 UJ	4.8 UJ	4.6 UJ
Arsenic	13	16	**2.4 J**	5.8 UJ	5.8 UJ	**3.6 J**	**3.3 J**	**2.7 J**	5.8 UJ	**4.1 J**	**3.2 J**	6 UJ	**16.2 J**	**25.4 J**	**13.7 J**	**10.1**	**21.7**	**14.9**	**9.7 J**	**30 J**	**7 J**	**6.9 J**	**20.4 J**	5.9 UJ
Barium	350	400	**180 J**	**19.1 J**	**15.7 J**	**56.1**	**64.6**	**39.7**	**18.3**	**55.3**	**54.7**	**15.1**	**547**	**683**	**63.7**	**83 J**	**132 J**	**151 J**	**95.3**	**328**	**111**	**1760**	**81.9 J**	**36.3**
Beryllium	7.2	72	**0.58 J**	**0.23 J**	**0.41 J**	**0.56 J**	**0.57 J**	**0.47 J**	**0.68 J**	**0.57 J**	**0.53 J**	**0.51 J**	**0.26 J**	**0.23 J**	**0.42 J**	**0.4 J**	**0.23 J**	**0.25 J**	**0.39 J**	**0.55 J**	**0.31 J**	**0.31 J**	**0.47 J**	**0.51 J**
Cadmium	2.5	4.3	1.4 UJ	1.4 U	1.4 UJ	1.4 U	1.4 U	1.5 U	1.4 UJ	1.5 U	1.5 U	1.4 UJ	1.4 U	1.4 UJ	1.7 U	1.3 UJ	**9.2 J**	**1.3 J**	1.5 UJ	1.7 U	1.3 UJ	1.7 UJ	1.5 U	1.4 U
Calcium	NE	NE	**63700 J**	**349 J**	**545 J**	**1670**	**1510**	**1040**	**413**	**8600**	**14800**	**507**	**35900**	**40500**	**59300**	**73800**	**46000 J**	**22300 J**	**23500**	**22000**	**77800**	**63400**	**22500 J**	70.2 U
Chromium	NE	NE	**19.1 J**	**6.6 J**	**9.1 J**	**15.6**	**18.6**	**19.9**	**11.5**	**21.7**	**12.8**	**12.3**	**45.7**	**37.1**	**14.7**	**13.5 J**	**12.2 J**	**14.2 J**	**11**	**7.6**	**11.6**	**11.1**	**10.7 J**	**16.7**
Cobalt	NE	NE	**7.1 J**	**4.4 J**	**4.3 J**	**8.1 J**	**8.3 J**	**5.7 J**	**6.5 J**	**7.3 J**	**5.5 J**	**4.4 J**	**6.9**	**7.6 J**	**4.3**	**6.6**	**3.5**	**4.9 J**	**5.5 J**	**7.7**	**6.6 J**	**2.6 J**	**4.2**	**15.1**
Copper	50	270	**88**	**10.4**	**17.4 J**	**28.8**	**39.9**	**17.2**	**20.4**	**26**	**21**	**15.4**	**129**	**156**	**33.7**	**44**	**57.3**	**43.5**	**37.3**	**163**	**79.5**	**15**	**36.2 J**	**15.9**
Iron	NE	NE	**9400 J**	**10900 J**	**21700 J**	**16300**	**17800**	**15300**	**43800**	**18400**	**15000**	**30500**	**10500 J**	**32800 J**	**12800 J**	**17900**	**19500**	**30300**	**23000 J**	**18000 J**	**18000 J**	**7910 J**	**13000**	**17100 J**
Lead	63	400	**99.9**	**2.3 J**	**5.9**	**109 J**	**116 J**	**108 J**	**9.8 J**	**299 J**	**548 J**	**6.7 J**	**1180**	**1550**	**305**	**161**	**858**	**900**	**180**	**901**	**286**	**313**	**129 J**	4.2 U
Magnesium	NE	NE	**6070 J**	**911 J**	**640 J**	**2220**	**2510**	**2020**	**571**	**2930**	**3810**	**513**	**7190**	**5400**	**5790**	**6820**	**10800 J**	**2610 J**	**2870**	**3200**	**21500**	**9140**	**2070**	**2300**
Manganese	1600	2000	**157 J**	**147 J**	**575 J**	**324**	**355**	**314**	**409**	**345**	**287**	**389**	**163**	**229**	**290**	**253**	**183 J**	**454 J**	**406**	**92.2**	**286**	**366**	**190**	**155**
Mercury	0.18	0.81	**0.11**	0.056 U	0.057 U	**0.12**	**0.11**	**0.016 J**	0.055 U	**0.91**	**1.2**	0.053 U	**0.32**	**0.49**	**0.61**	**0.19**	**0.13 J**	**0.88 J**	**0.2**	**0.46**	**0.7**	**1.2**	**0.74 J**	**0.012 J**
Nickel	30	310	**10 J**	**5.6 J**	**4.3 J**	**14.9**	**16.3**	**11.6**	**6.8**	**13.8**	**11.4**	**5.2**	**47.4**	**41.7**	**13.9**	**19.5**	**18.3**	**17.3**	**19.6**	**16**	**20.6**	**11.6**	**11.4 J**	**13**
Potassium	NE	NE	**543 J**	**424 J**	**332 J**	**1070**	**1290**	**710**	**347**	**1010**	**927**	**282**	**743 J**	**659 J**	**961 J**	**1350 J**	**367 J**	**621 J**	**973 J**	**576 J**	**1220 J**	**1040 J**	**844 J**	**1120 J**
Selenium	3.9	180	R	R	R	10.4 UJ	10.6 UJ	11.2 UJ	10.4 UJ	11 UJ	11.1 UJ	10.7 UJ	10.4 U	10.4 UJ	12.6 U	R	R	R	11.2 UJ	**10.3 J**	9.8 UJ	12.8 UJ	11 UJ	10.5 U
Silver	2	180	1.4 UJ	1.4 U	1.4 UJ	1.4 U	**0.087 J**	1.5 U	1.4 UJ	1.5 U	1.5 U	1.4 UJ	**0.31 J**	**0.22 J**	**0.21 J**	**0.92 J**	**0.43 J**	1.5 UJ	**0.24 J**	**0.85 J**	**0.37 J**	1.7 UJ	**0.21 J**	1.4 U
Sodium	NE	NE	**604**	68.7 U	69.5 U	**1320**	**1300**	**1210**	**57.6 J**	**358**	**362**	**48.9 J**	69.1 U	69.4 U	84.1 U	**1770**	**1370**	**1420**	75 U	84.8 U	65.1 U	85 U	**401 J**	70.2 U
Thallium	NE	NE	4.1 U	4.1 U	4.2 U	4.2 U	4.2 U	4.5 U	4.2 U	**1.7 J**	**1.7 J**	4.3 U	4.1 U	4.2 U	5 U	3.8 UJ	4.8 UJ	4.5 UJ	4.5 U	5.1 U	3.9 U	5.1 U	4.4 U	4.2 U
Vanadium	NE	NE	**10.2 J**	**9.6 J**	**18.8 J**	**23.8**	**27**	**18.1**	**21**	**22.3**	**20.4**	**23.7**	**14.7**	**15.8**	**19.5**	**19.4 J**	**11.3 J**	**12.8 J**	**17.5**	**10.5**	**30**	**13.3**	**16.2 J**	**24.2**
Zinc	109	10000	**1020 J**	**13.5 J**	**21.6 J**	**64.3**	**78.9**	**29.6**	**35.3**	**81.2**	**55.4**	**27.8**	**928**	**954**	**112**	**94.8**	**1900 J**	**381 J**	**95.9**	**651**	**291**	**720**	**59.4 J**	**33.1**
Cyanides (mg/kg)																								
Free Cyanide	NE	NE	0.221 U	0.229 U	0.232 U	0.226 U	0.222 U	0.25 U	0.23 U	0.235 U	0.234 U	0.228 U	0.228 U	0.219 U	**1.56**	0.209 UJ	**0.334 J**	**0.12 J**	0.245 U	**0.277**	0.217 U	0.27 U	0.233 U	0.229 U

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 2 [Block 2287 at 1]																					
Sample Name:			WW-SB-09	WW-SB-10	WW-SB-10	WW-SB-10	WW-SB-11	WW-SB-11	WW-SB-11	WW-SB-23	WW-SB-23	WW-SB-23	WW-SB-24	WW-SB-24	WW-SB-24	WW-SB-37	WW-SB-38	WW-SB-39	WW-SB-40	Duplicate of WW-SB-40	WW-SB-41	WW-SB-42	WW-SB-42	WW-TP-01
Sample Depth(ft bgs):			(53-54)	(2-3)	(49-50)	(51-52)	(1-2)	(50-51)	(63-64)	(1-4)	(31-33)	(62-63)	(4-5)	(38-40)	(53-55)	(96-97)	(96.5-97)	(96-97)	(95-95.5)	(95-95.5)	(96-97)	(62-62.5)	(96.5-97)	(2-2.5)
Sample Date:			7/14/2009	6/26/2009	7/15/2009	7/15/2009	6/25/2009	7/14/2009	7/14/2009	7/16/2009	7/17/2009	7/17/2009	7/16/2009	7/16/2009	7/16/2009	12/28/2009	12/29/2009	12/30/2009	12/23/2009	12/23/2009	12/22/2009	12/22/2009	12/22/2009	10/29/2009
BTEX (mg/kg)																								
Benzene	0.06	4.8	14	0.0041 J	87	2.8	0.00096 J	0.25	0.0029 J	0.0031 J	1100	13	0.00073 J	840	0.063	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 U	0.33 J	0.0062 U	0.041
Toluene	0.7	100	15	0.0057 U	180	1.2	0.0058 U	0.032 U	0.0061 U	0.0064 U	1800	32	0.0059 U	1300	0.0033 J	0.0058 U	0.00019 J	0.0059 U	0.0059 U	0.006 U	0.0058 U	5	0.0062 U	0.0062 U
Ethylbenzene	1	41	16	0.0057 UJ	43	1.5	0.0058 U	0.028 J	0.0061 U	0.018	200	35	0.0059 U	120	0.014	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 U	2.5	0.0062 U	0.016
Total Xylene	0.26	100	19	0.0057 UJ	220	1.6	0.0058 U	0.027 J	0.0061 U	0.0028 J	1700	69	0.0059 U	1200	0.014	0.0058 U	0.0058 U	0.0059 U	0.0019 J	0.00069 J	0.0058 U	18	0.0062 U	0.016
Total BTEX	NE	NE	64	0.0041	530	7.1	0.00096	0.305	0.0029	0.0239	4800	149	0.00073	3460	0.0943	ND	0.00019	ND	0.0019	0.00069	ND	25.83	ND	0.073
Other VOCs (mg/kg)																								
Acetone	0.05	100	1.7 U	0.023 U	15 U	1.5 U	0.023 U	0.13 UJ	0.024 UJ	0.026 UJ	270 U	3 U	0.024 UJ	81 U	0.024 UJ	0.023 UJ	0.023 UJ	0.024 UJ	0.0062 J	0.005 J	0.023 U	2.8 UJ	0.025 U	0.025 UJ
Carbon disulfide	NE	NE	0.68 U	0.00058 J	6 U	0.62 U	0.0058 U	0.032 U	0.0061 U	0.0038 J	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 UJ	1.1 U	0.0062 UJ	0.0062 UJ
Chloroform	0.37	49	0.68 U	0.0057 U	6 U	0.62 U	0.0058 U	0.032 U	0.0061 U	0.0064 U	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0016 J	0.0017 J	0.0058 U	1.1 U	0.0062 U	0.0062 U
Chloromethane	NE	NE	0.68 U	0.004 J	6 U	0.62 U	0.0058 U	0.032 U	0.0061 UJ	0.0064 U	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 U	1.1 U	0.0062 U	0.0062 U
1,1-Dichloroethane	0.27	26	0.68 U	0.0057 UJ	6 U	0.62 U	0.0058 U	0.032 U	0.0061 U	0.0064 U	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 U	1.1 U	0.0062 U	0.0062 U
1,1-Dichloroethene	0.33	100	0.68 U	0.0057 UJ	6 U	0.62 U	0.0058 U	0.032 U	0.0061 U	0.0064 U	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 UJ	1.1 U	0.0062 U	0.0062 U
cis-1,2-Dichloroethene	0.25	100	0.68 U	0.0057 UJ	6 U	0.62 U	0.0058 U	0.032 U	0.0061 U	0.0064 U	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 U	1.1 U	0.0062 U	0.0062 U
trans-1,2-Dichloroethene	0.19	100	0.68 U	0.0057 U	6 U	0.62 U	0.0058 U	0.032 U	0.0061 U	0.0064 U	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 U	1.1 U	0.0062 U	0.0062 U
2-Butanone (Methyl ethyl ketone)	0.12	100	0.68 U	0.011 U	6 U	0.62 U	0.012 U	0.063 U	0.012 U	0.013 U	110 U	1.2 U	0.012 U	33 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	1.1 UJ	0.012 U	0.012 UJ
Methylene chloride	0.05	100	0.68 U	0.023 U	6 U	0.62 U	0.023 U	0.13 U	0.024 U	0.026 U	110 U	1.2 U	0.024 U	33 U	0.024 U	0.023 U	0.023 U	0.024 U	0.024 U	0.024 U	0.0022 J	1.1 U	0.0031 J	0.025 U
Styrene	NE	NE	0.24 J	0.0057 UJ	150	0.62 U	0.0058 U	0.032 U	0.0061 U	0.0064 U	1100	21	0.0059 U	1000	0.00019 J	0.0058 U	0.0058 U	0.0059 U	0.0009 J	0.006 U	0.0058 U	7.3	0.0062 U	0.00047 J
Tetrachloroethene (PCE)	1.3	19	0.68 U	0.0057 UJ	6 U	0.62 U	0.001 J	0.032 U	0.0061 U	0.0064 U	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 U	1.1 U	0.0062 U	0.0062 U
Trichloroethene (TCE)	0.47	21	0.68 U	0.0057 U	6 U	0.62 U	0.0058 U	0.032 U	0.0061 U	0.0064 U	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 U	1.1 U	0.0062 U	0.0062 U
Vinyl chloride	0.02	0.9	0.68 U	0.0057 U	6 U	0.62 U	0.0058 U	0.032 U	0.0061 U	0.0064 U	110 U	1.2 U	0.0059 U	33 U	0.0061 U	0.0058 U	0.0058 U	0.0059 U	0.0059 U	0.006 U	0.0058 U	1.1 U	0.0062 U	0.0062 U
Total VOCs	NE	NE	64.24	0.00868	680	7.1	0.00196	0.305	0.0029	0.0277	5900	170	0.00073	4460	0.09449	ND	0.00019	ND	0.0106	0.00739	0.0022	33.13	0.0031	0.07347
PAHs (mg/kg)																								
Acenaphthene	20	100	0.55 J	0.16 J	20 J	0.21 J	0.068 J	0.055 J	0.32 U	2.1	400 J	5.1 J	0.16 J	44 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	1.5 J	0.33 U	0.83
Acenaphthylene	100	100	3.7	1.6	220	1.7 U	1.6	0.34 U	0.32 U	8.6	3200	32	2.1	470	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	14	0.33 U	0.85
Anthracene	100	100	1.6	0.73	77	1.7 U	0.9	0.34 U	0.32 U	4.4	1300	14	0.74	140 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	6.1	0.33 U	1.3
Benz[a]anthracene	1	1	0.92 J	2.7 J	39 J	1.7 U	3.2	0.34 U	0.32 U	11	710 J	7.5	2.4	82 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	3.6 J	0.33 U	1.8
Benzo[a]pyrene	1	1	0.68 J	5.1 J	29 J	1.7 U	4.2	0.34 U	0.32 U	9.6	530 J	5.5 J	4	64 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	2.5 J	0.33 U	2.6
Benzo[b]fluoranthene	1	1	0.42 J	4.1 J	19 J	1.7 U	3.9	0.34 U	0.32 U	10	430 J	3.5 J	3.7	40 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	1.9 J	0.33 U	2.1
Benzo[g,h,i]perylene	100	100	0.85 J	3.8 J	11 J	1.7 U	4.2	0.34 U	0.32 U	10	620 J	4.3 J	3.1	23 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	0.45 J	0.33 U	2
Benzo[k]fluoranthene	0.8	3.9	0.15 J	1.5	6.4 J	1.7 U	1.4	0.34 U	0.32 U	4.3	140 J	1.1 J	1.3	21 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	0.81 J	0.33 U	0.7
Chrysene	1	3.9	0.88 J	2.8 J	36 J	1.7 U	3.5	0.34 U	0.32 U	11	700 J	6.9	2.4	78 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	3.6 J	0.33 U	2
Dibenz[a,h]anthracene	0.33	0.33	1.5 U	1.2	64 U	1.7 U	1.1	0.34 U	0.32 U	3.7	1200 U	2.9 J	0.93	180 U	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	5.9 U	0.33 U	0.44 J
Fluoranthene	100	100	1.5	3.1 J	69	1.7 U	4.5	0.34 U	0.32 U	13	1600	14	2.7	140 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	6.4	0.33 U	3.2 J
Fluorene	30	100	2	0.23 J	110	1.7 U	0.17 J	0.34 U	0.32 U	4.2	2000	19	0.3 J	220	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	9.5	0.33 U	0.89
Indeno[1,2,3-cd]pyrene	0.5	0.5	0.83 J	4.3 J	10 J	1.7 U	4.2	0.34 U	0.32 U	10	1200 U	4.2 J	3.4	24 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	0.54 J	0.33 U	2 J
2-Methylnaphthalene	NE	NE	7.5	0.18 J	550	2.3	0.14 J	0.14 J	0.32 U	3.7	7800	64	0.36	1200	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	45	0.33 U	0.75
Naphthalene	12	100	15	0.33	1200	21	0.25 J	0.74	0.32 U	6.3	17000	120	0.31 U	3100	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	90	0.33 U	2.7 J
Phenanthrene	100	100	5.6	1.7 J	290	1.7 U	1.8	0.34 U	0.32 U	10	4800	50	1.9	540	0.33 U	0.3 U	0.3 U	0.32 U	0.019 J	0.035 J	0.31 U	22	0.33 U	4.3 J
Pyrene	100	100	2.3	2.9 J	110	1.7 U	6	0.34 U	0.32 U	22	1700	19	3.1	220	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	8.9	0.33 U	5.7
Total PAH 17	NE	NE	44.48	36.43	2796.4	23.51	41.128	0.935	ND	143.9	42930	373	32.59	6406	ND	ND	ND	ND	0.019	0.035	ND	216.8	ND	34.16
Other SVOCs (mg/kg)																								
Bis(2-ethylhexyl)phthalate	NE	NE	1.5 U	1.3	64 U	0.36 J	0.073 J	0.34 U	0.042 J	1.7	1200 U	6.5 U	0.076 J	180 U	0.038 J	0.044 J	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	5.9 U	0.33 U	0.67 U
Butyl benzyl phthalate	NE	NE	1.5 U	0.31 U	64 U	1.7 U	0.62 U	0.34 U	0.32 U	1.7 U	1200 U	6.5 U	0.31 U	180 U	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	5.9 U	0.33 U	0.67 U
Carbazole	NE	NE	1.5 U	0.19 J	64 U	1.7 U	0.14 J	0.34 U	0.32 U	0.51 J	1200 U	0.77 J	0.23 J	180 U	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	5.9 U	0.33 U	0.27 J
Dibenzofuran	7	59	1.5 U	0.092 J	15 J	1.7 U	0.075 J	0.34 U	0.32 U	0.97 J	400 J	2.8 J	0.18 J	31 J	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	1.1 J	0.33 U	0.32 J
2,4-Dimethylphenol	NE	NE	1.5 U	0.31 U	64 U	0.75 J	0.62 U	0.34 U	0.32 U	1.7 U	1200 U	6.5 U	0.31 U	180 U	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	5.9 U	0.33 U	0.67 U
2-Methylphenol (o-Cresol)	0.33	100	1.5 U	0.31 U	64 U	0.55 J	0.62 U	0.34 U	0.32 U	1.7 U	1200 U	6.5 U	0.31 U	180 U	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	5.9 U	0.33 U	0.67 U
4-Methylphenol (p-Cresol)	0.33	100	1.5 U	0.038 J	64 U	0.52 J	0.62 U	0.34 U	0.32 U	1.7 U	1200 U	6.5 U	0.31 U	180 U	0.33 U	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	5.9 U	0.33 U	0.67 U
Pentachlorophenol	0.8	6.7	9.2 U	2.3	400 U	10 U	3.9 U	2.2 U	2 U	11 U	7300 U	41 U	2 U	1100 U	2.1 U	0.74 U	0.74 U	0.79 U	0.79 U	0.8 U	0.76 U	15 U	0.83 U	1.7 UJ
Phenol	0.33	100	1.5 U	0.31 U	64 U	1.7 U	0.62 U	0.1 J	0.32 U	1.7 U	1200 U	6.5 U	0.31 U	180 U	0.23 J	0.3 U	0.3 U	0.32 U	0.32 U	0.32 U	0.31 U	5.9 U	0.33 U	0.67 U
Total SVOCs	NE	NE	44.48	40.35	2811.4	25.69	41.416	1.035	0.042	147.08	43330	376.57	33.076	6437	0.268	0.044	ND	ND	0.019	0.035	ND	217.9	ND	34.75
PCBs (mg/kg)																								
Aroclor 1242	NE	NE	NA	0.019 U	NA	NA	0.019 U	NA	NA	0.11 U	NA	NA	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.021 U
Aroclor 1254	NE	NE	NA	0.019 U	NA	NA	0.019 U	NA	NA	0.11 U	NA	NA	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.021 U
Aroclor 1260	NE	NE	NA	0.019 U	NA	NA	0.019 U	NA	NA	0.11 U	NA	NA	0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.021 UJ
Aroclor 1268	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCB Aroclors	NE	NE	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Pesticides (mg/kg)																								
Aldrin	0.005	0.097	NA	0.0019 UJ	NA	NA	0.0019 U	NA	NA	0.012 J	NA	NA	0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
alpha-BHC	0.02	0.48	NA	0.0019 UJ	NA	NA	0.0019 U	NA	NA	0.022 UJ	NA	NA	0.002 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
beta-BHC	0.036	0.36	NA	0.0023 JN	NA	NA	0.0019 U	NA	NA	0.042 J	NA	NA	0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
gamma-BHC	0.1	1.3	NA	0.0087 J	NA	NA	0.0019 U	NA	NA	0.022 UJ	NA	NA	0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
delta-BHC	0.04	100	NA	0.0073 J	NA	NA	0.0019 UJ	NA	NA	0.012 J	NA	NA	0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 2 [Block 2287 at 1]																					
Sample Name:			WW-SB-09	WW-SB-10	WW-SB-10	WW-SB-10	WW-SB-11	WW-SB-11	WW-SB-11	WW-SB-23	WW-SB-23	WW-SB-23	WW-SB-24	WW-SB-24	WW-SB-24	WW-SB-37	WW-SB-38	WW-SB-39	WW-SB-40	Duplicate of WW-SB-40	WW-SB-41	WW-SB-42	WW-SB-42	WW-TP-01
Sample Depth(ft bgs):			(53-54)	(2-3)	(49-50)	(51-52)	(1-2)	(50-51)	(63-64)	(1-4)	(31-33)	(62-63)	(4-5)	(38-40)	(53-55)	(96-97)	(96.5-97)	(96-97)	(95-95.5)	(95-95.5)	(96-97)	(62-62.5)	(96.5-97)	(2-2.5)
Sample Date:			7/14/2009	6/26/2009	7/15/2009	7/15/2009	6/25/2009	7/14/2009	7/14/2009	7/16/2009	7/17/2009	7/17/2009	7/16/2009	7/16/2009	7/16/2009	12/28/2009	12/29/2009	12/30/2009	12/23/2009	12/23/2009	12/22/2009	12/22/2009	12/22/2009	10/29/2009
alpha-chlordane	0.094	4.2	NA	0.0019 UJ	NA	NA	0.0019 U	NA	NA	0.022 UJ	NA	NA	0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
gamma-Chlordane	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NE	NE	NA	**0.0039 JN**	NA	NA	0.0019 U	NA	NA	0.022 UJ	NA	NA	0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
4,4-DDD	0.0033	13	NA	0.0038 UJ	NA	NA	0.0038 UJ	NA	NA	**0.29 JN**	NA	NA	0.0038 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U
4,4'-DDE	0.0033	8.9	NA	0.0038 UJ	NA	NA	0.0038 U	NA	NA	**0.32 JN**	NA	NA	0.0038 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U
4,4'-DDT	0.0033	7.9	NA	0.0038 UJ	NA	NA	**0.015 JN**	NA	NA	**0.24 J**	NA	NA	0.0038 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U
Dieldrin	0.005	0.2	NA	**0.0039 J**	NA	NA	0.0038 UJ	NA	NA	**0.15 JN**	NA	NA	0.0038 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U
Endosulfan I	2.4	24	NA	0.0019 UJ	NA	NA	0.0019 U	NA	NA	**0.15 JN**	NA	NA	0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
Endosulfan II	2.4	24	NA	0.0038 UJ	NA	NA	0.0038 UJ	NA	NA	**0.15 JN**	NA	NA	0.0038 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U
Endosulfan sulfate	2.4	24	NA	0.0038 UJ	NA	NA	**0.0051 JN**	NA	NA	0.042 UJ	NA	NA	0.0038 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.018 J**
Endrin	0.014	11	NA	0.0038 UJ	NA	NA	**0.0046 J**	NA	NA	**0.16 J**	NA	NA	0.0038 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U
Endrin aldehyde	NE	NE	NA	**0.012 JN**	NA	NA	0.0038 U	NA	NA	0.021 U	NA	NA	**0.029 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 UJ
Endrin ketone	NE	NE	NA	0.0038 UJ	NA	NA	**0.011 JN**	NA	NA	0.042 UJ	NA	NA	0.0038 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U
Heptachlor	0.042	2.1	NA	**0.0019 J**	NA	NA	0.0019 U	NA	NA	0.022 UJ	NA	NA	0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
Heptachlor epoxide	NE	NE	NA	0.0019 UJ	NA	NA	0.0019 U	NA	NA	0.022 UJ	NA	NA	0.002 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01 U
Methoxychlor	NE	NE	NA	**0.021 J**	NA	NA	0.019 U	NA	NA	**0.29 JN**	NA	NA	0.02 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1 U
Herbicides (mg/kg)																								
Silvex	3.8	100	NA	0.022 U	NA	NA	0.022 U	NA	NA	0.13 U	NA	NA	0.025 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.018**
Metals (mg/kg)																								
Aluminum	NE	NE	**6740**	**6040**	**4050**	**6850**	**7050**	**3340**	**4090**	**6510**	**2310**	**2770**	**7930**	**3910**	**3710**	**915**	**845**	**13500**	**29700**	**26300**	**22000**	**3830**	**3400**	**8680**
Antimony	NE	NE	5.6 UJ	4.7 UJ	4.9 UJ	5 UJ	**2.3 J**	5.1 UJ	4.9 UJ	5 UJ	4.3 UJ	4.8 UJ	4.8 UJ	5.4 UJ	4.9 UJ	22.7 UJ	4.7 UJ	4.9 UJ	4.7 UJ	4.9 UJ	4.8 UJ	22.7 UJ	4.9 UJ	4.9 UJ
Arsenic	13	16	7.1 UJ	**7.6 J**	6.3 UJ	**3.7 J**	**20.5 J**	**6.4 J**	6.2 UJ	**6.9 J**	**2.4 J**	6.1 UJ	**7.9 J**	6.8 UJ	6.2 UJ	28.9 U	**2.1 J**	6.2 UJ	6 U	6.2 U	6.1 UJ	28.8 U	**3.4**	**5.6 J**
Barium	350	400	**55.5**	**57.3 J**	**25.1**	**42.8**	**168 J**	**24.8**	**20.2**	**83.1**	**15.6**	**19.7**	**122**	**22.3**	**37.6**	**14.9**	**11.3**	**22.5**	**531**	**474**	**320**	**35.3 J**	**34.4**	**125**
Beryllium	7.2	72	**0.57 J**	**0.31 J**	**0.72 J**	**0.66 J**	**0.42 J**	**0.27 J**	**0.65 J**	**0.34 J**	**0.17 J**	**0.51 J**	**0.49 J**	**0.43 J**	**0.66 J**	**0.97 J**	**0.56 J**	**0.8 J**	**1.5**	**1.2 J**	**1.5**	**0.73 J**	**0.56 J**	**0.54 J**
Cadmium	2.5	4.3	1.7 U	1.4 U	1.5 UJ	1.5 U	**0.8 J**	1.5 U	1.5 UJ	1.5 U	1.3 U	1.4 UJ	1.5 U	1.6 U	1.5 UJ	6.9 U	1.4 U	1.5 UJ	1.4 UJ	1.5 UJ	1.4 UJ	6.9 UJ	**0.49 J**	1.5 U
Calcium	NE	NE	84.3 U	**30900 J**	74.7 U	76.4 U	**6690 J**	76.7 U	73.8 U	**15900**	65.1 U	72.5 U	**19700**	81.3 U	73.8 U	**332 J**	**268 J**	**540 J**	**5010 J**	**5800 J**	**579 J**	**3060 J**	**469 J**	**14100 J**
Chromium	NE	NE	**16.9**	**13.9 J**	**15.2**	**21.3**	**18.3 J**	**8.8**	**16.1**	**15.3**	**5.3**	**14.7**	**16.4**	**15.9**	**16.7**	**6.7 J**	**4.8**	**17.6**	**27.7**	**20.2**	**74**	**10.3 J**	**4.9**	**15.4**
Cobalt	NE	NE	**8.9**	**5.5**	**8**	**178**	**7.4**	**4.2**	**7.5 J**	**4.6**	**2.9**	**6 J**	**7.4**	**7.5**	**4.4 J**	**1.2 J**	**9.6 J**	**16.3 J**	**17.4 J**	**15.5 J**	**26.7 J**	**1.2 J**	**185 J**	**8.1**
Copper	50	270	**13.7**	**36.2 J**	**19.8**	**17.2**	**102 J**	**7.2**	**15.9 J**	**43.8**	**6.8**	**13.7**	**50.9**	**14.8**	**17.4 J**	**7.1**	**5.8**	**28.4**	**50.3**	**58.9**	**68.9**	**5.8 J**	**264**	**46.5**
Iron	NE	NE	**13700 J**	**17600**	**28200 J**	**21200 J**	**20100**	**8490 J**	**51400 J**	**21500 J**	**6430 J**	**31400 J**	**17800 J**	**19900 J**	**49200 J**	**439**	**3260**	**27800**	**41900**	**33400**	**42900**	**247000**	**19100**	**15500**
Lead	63	400	5.1 U	**903 J**	4.5 UJ	**12.8**	**2140 J**	4.6 U	4.4 UJ	**198**	3.9 U	4.3 UJ	**503**	4.9 U	4.4 UJ	20.6 U	**3.8 J**	**7 J**	**4.9**	**1.5 J**	**7.3**	**7.1 J**	**11.4**	**401**
Magnesium	NE	NE	**3770**	**5010**	**1210**	**2310**	**3340**	**1660**	73.8 U	**2860**	**1520**	72.5 U	**3850**	**1480**	73.8 U	**62.9 J**	**83.5**	**5600**	**10600**	**9350**	**10300**	**3850**	**265**	**8310 J**
Manganese	1600	2000	**195**	**409**	**228**	**581**	**413**	**130**	**359**	**203**	**108**	**352**	**351**	**217**	**421**	**4.1 J**	**6.2**	**288**	**593**	**441**	**338**	**4820**	**11.3**	**245**
Mercury	0.18	0.81	**0.0068 J**	**0.57 J**	**0.01 J**	**0.022**	**1.3 J**	0.063 U	**0.0078 J**	**0.26**	0.051 U	0.061 U	**0.43**	**0.0074 J**	**0.022**	0.056 U	0.055 U	0.058 U	0.055 U	0.059 U	0.055 U	0.053 U	0.058 U	**1.2 J**
Nickel	30	310	**15.4**	**17.3 J**	**15.2**	**170**	**18.7 J**	**7.2**	**8.4**	**14**	**6.2**	**8.2**	**20.7**	**12.1**	**7.6**	6.9 U	**6.3 J**	**18.8 J**	**17.7 J**	**13.7 J**	**57.3 J**	**4.3 J**	**231 J**	**26.4**
Potassium	NE	NE	**1770 J**	**720 J**	**643 J**	**1030 J**	**1540 J**	**825 J**	73.8 UJ	**1070 J**	**409 J**	72.5 UJ	**1420 J**	**627 J**	**607 J**	688 UJ	**32.4 J**	**2980**	**13400**	**10500**	**9740**	**492**	**43.7 J**	**1350 J**
Selenium	3.9	180	12.6 U	10.7 UJ	11.2 UJ	11.5 U	10.5 U	11.5 U	11.1 UJ	11.5 U	9.8 U	10.9 UJ	11 U	12.2 U	11.1 UJ	51.6 U	10.7 U	11 UJ	10.7 UJ	11.1 UJ	10.8 UJ	51.5 UJ	11.2 U	11.1 UJ
Silver	2	180	1.7 U	**0.38 J**	1.5 UJ	**0.14 J**	**0.61 J**	1.5 U	**0.15 J**	**0.12 J**	1.3 U	**0.3 J**	**0.21 J**	**0.12 J**	**0.22 J**	6.9 U	1.4 U	1.5 UJ	1.4 UJ	1.5 UJ	1.4 UJ	6.9 UJ	1.5 U	**0.11 J**
Sodium	NE	NE	84.3 U	**1020 J**	74.7 U	76.4 U	**363 J**	76.7 U	73.8 U	76.3 U	65.1 U	72.5 U	73.1 U	81.3 U	73.8 U	688 U	142 U	**1110**	**549 J**	**1030 J**	**232 J**	687 U	**46.3 J**	**828 J**
Thallium	NE	NE	5.1 U	4.3 U	4.5 UJ	4.6 U	4.2 UJ	4.6 U	4.4 U	4.6 U	3.9 U	4.3 U	4.4 U	4.9 U	4.4 U	20.6 U	4.3 U	4.4 UJ	4.3 UJ	4.4 UJ	4.3 UJ	20.6 UJ	**1.8 J**	4.4 UJ
Vanadium	NE	NE	**22.5**	**17.1 J**	**42.7**	**29.3**	**24.2 J**	**12.2**	**31.6**	**23**	**8.9**	**25.8**	**21.5**	**25.5**	**20.6**	**3.5 J**	**4.6**	**65.7**	**94.8**	**84.1**	**90**	**19.4 J**	**25.2**	**22.8**
Zinc	109	10000	**33.4**	**90.6 J**	**36.1**	**127**	**458 J**	**21.1**	**40.8**	**135**	**13.4**	**34.6**	**158**	**31**	**35.1**	34.4 U	**6.8**	**96.4**	**89.5**	**58.5**	**102**	**22.8 J**	**161**	**175 J**
Cyanides (mg/kg)																								
Free Cyanide	NE	NE	0.271 U	**0.359**	0.238 U	0.246 U	0.228 U	0.253 U	0.243 U	**0.153 J**	0.213 U	0.243 U	0.231 U	0.257 U	0.243 U	0.231 U	0.229 U	0.234 U	0.236 U	0.239 U	0.231 U	0.222 U	0.247 U	0.245 U

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 2 [Block 2287 at 1]						Adjacent to Parcel 2										Parcel 6 [Block 2277 Lot 1]				
									N. 11th St. ROW			N. 12th St. ROW			N. 11th St. ROW								
Sample Name:			Duplicate of WW-TP-01	WW-TP-02	WW-TP-03	WW-TP-04	WWTP-05	WWTP-06	WW-MW-06	WW-MW-06	WW-MW-06	WW-MW-07	WW-MW-07	WW-MW-07	WW-MW-08	WW-MW-08	WW-MW-08	Duplicate of WW-MW-08	WW-MW-18	WW-MW-18	WW-MW-18	WW-MW-19	WW-MW-19
Sample Depth(ft bgs):			(2-2.5)	(2-2.5)	(3.5-4)	(4.5-5)	(6-6.5)	(6-6.5)	(0.5-1.5)	(50-52)	(58-60)	(4-5)	(48.5-49.5)	(59-60)	(2-5)	(7.5-8.5)	(40-45)	(40-45)	(1-2)	(6-7)	(72-73)	(1-2)	(5-6)
Sample Date:			10/29/2009	10/29/2009	10/29/2009	10/27/2009	10/28/2009	10/26/2009	6/17/2009	6/18/2009	6/18/2009	6/22/2009	6/23/2009	6/23/2009	6/19/2009	6/19/2009	6/19/2009	6/19/2009	10/26/2010	10/27/2010	10/28/2010	10/27/2010	11/2/2010
BTEX (mg/kg)																							
Benzene	0.06	4.8	0.013 J	0.0059 UJ	0.48 J	0.033	0.098	0.0074 U	0.0051 U	160	0.15	0.0061 U	230	2.8	2.8	7.1 J	0.013	0.0081	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
Toluene	0.7	100	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	460	0.05	0.0061 U	400	0.6 U	4.1	4.6 J	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
Ethylbenzene	1	41	0.002 J	0.0059 U	0.09 J	0.023	1.1	0.0074 U	0.0051 U	440	0.058	0.0061 U	64	0.89	7.2	470	0.0061 UJ	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
Total Xylene	0.26	100	0.0033 J	0.0013 J	0.51 J	0.0076	0.45	0.0074 U	0.0051 U	570	0.073	0.0061 U	550	0.6 U	8.9	550	0.0061 UJ	0.0064 U	0.0031 UJ	0.0033 UJ	0.0031 UJ	0.0028 U	0.0048 U
Total BTEX	NE	NE	0.0183	0.0013	1.08	0.0636	1.648	ND	ND	1630	0.331	ND	1244	3.69	23	1031.7	0.013	0.0081	ND	ND	ND	ND	ND
Other VOCs (mg/kg)																							
Acetone	0.05	100	0.024 UJ	0.024 U	0.13 UJ	0.025 UJ	0.13 U	0.03 U	0.039 J	52 U	0.049 J	0.025 U	66 U	1.5 U	1.6 U	37 U	0.024 UJ	0.049 J	0.01 U	0.011 U	0.01 U	0.0093 UJ	0.13
Carbon disulfide	NE	NE	0.006 U	0.0059 UJ	0.031 U	0.0063 U	0.032 UJ	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.28 J	15 U	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0015 J
Chloroform	0.37	49	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.63 U	15 U	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
Chloromethane	NE	NE	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.63 U	15 U	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 UJ	0.0016 U
1,1-Dichloroethane	0.27	26	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.63 U	15 U	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
1,1-Dichloroethene	0.33	100	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.63 U	15 U	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
cis-1,2-Dichloroethene	0.25	100	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.63 U	15 U	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
trans-1,2-Dichloroethene	0.19	100	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.63 U	15 U	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
2-Butanone (Methyl ethyl ketone)	0.12	100	0.012 UJ	0.012 UJ	0.063 UJ	0.013 U	0.065 UJ	0.015 U	0.01 U	21 U	0.011 U	0.012 U	26 U	0.6 U	0.63 U	15 U	0.012 UJ	0.013 U	0.01 U	0.011 U	0.01 U	0.0093 U	0.017
Methylene chloride	0.05	100	0.024 UJ	0.024 U	0.13 U	0.025 U	0.13 U	0.03 U	0.02 U	21 U	0.021 U	0.025 U	26 U	0.6 U	0.63 UJ	15 U	0.024 U	0.026 U	0.001 U	0.0034	0.0018	0.00093 U	0.0018 U
Styrene	NE	NE	0.006 U	0.0059 U	0.031 U	0.0063 U	0.0062 J	0.0074 U	0.0051 U	20 J	0.0045 J	0.0061 U	420	0.6 U	0.52 J	15 U	0.0061 UJ	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
Tetrachloroethene (PCE)	1.3	19	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.63 U	15 U	0.0061 UJ	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
Trichloroethene (TCE)	0.47	21	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.63 U	15 U	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
Vinyl chloride	0.02	0.9	0.006 U	0.0059 U	0.031 U	0.0063 U	0.032 U	0.0074 U	0.0051 U	21 U	0.0054 U	0.0061 U	26 U	0.6 U	0.63 U	15 U	0.0061 U	0.0064 U	0.001 U	0.0011 U	0.001 U	0.00093 U	0.0016 U
Total VOCs	NE	NE	0.0183	0.0013	1.08	0.0636	1.6542	ND	0.039	1650	0.3845	ND	1664	3.69	23.8	1031.7	0.013	0.0571	ND	0.0034	0.0018	ND	0.1485
PAHs (mg/kg)																							
Acenaphthene	20	100	4.8 J	1.6 UJ	7.4	5.9	25	0.4 U	0.15 J	44 J	0.03 J	0.27 J	46 J	0.028 J	21	290	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.12 J
Acenaphthylene	100	100	2 J	1.6 U	0.37 J	2.2	5.4 J	0.4 U	2.9	460	0.13 J	2.9	460	0.13 J	6.8	37 J	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.54 U
Anthracene	100	100	14 J	1.6 UJ	9.3	2.6	6.5 J	0.4 U	1	170	0.071 J	0.99	130 J	0.051 J	9.7	91 J	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.61
Benz[a]anthracene	1	1	20 J	0.11 J	16	3.4	5.9 J	0.043 J	2.1	89 J	0.056 J	6.9	83 J	0.04 J	11	44 J	0.32 U	0.34 U	0.036 U	0.038 U	0.037 U	0.035 U	0.98
Benzo[a]pyrene	1	1	22 J	1.6 UJ	17	6	11	0.055 J	3.6 J	64 J	0.033 J	12	58 J	0.03 J	18	35 J	0.044 J	0.049 J	0.069	0.038 U	0.037 U	0.035 U	0.76
Benzo[b]fluoranthene	1	1	23 J	1.6 UJ	17	4.4	8.9	0.4 U	3.1 J	39 J	0.016 J	8.1	34 J	0.32 U	14	24 J	0.07 J	0.34 U	0.061	0.038 U	0.037 U	0.035 U	0.66
Benzo[g,h,i]perylene	100	100	12 J	1.6 UJ	12	3.8	10	0.045 J	1.7 J	88 J	0.29 U	6.1	350 U	0.32 U	9.2 J	12 J	0.42	0.44	0.066 J	0.38 U	0.37 U	0.35 U	0.36 J
Benzo[k]fluoranthene	0.8	3.9	9.1 J	1.6 UJ	6.2	1.7	2.9 J	0.4 U	1.1 J	15 J	0.29 U	3.3	350 U	0.32 U	5.6 J	160 U	0.32 U	0.34 U	0.036 U	0.038 U	0.037 U	0.035 U	0.35
Chrysene	1	3.9	19 J	0.26 J	15	4.3	8.4	0.064 J	2.4	86 J	0.043 J	6	75 J	0.028 J	12	43 J	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.98
Dibenz[a,h]anthracene	0.33	0.33	3 J	1.6 U	3 J	1.1	2.3 J	0.4 U	0.57 J	140 U	0.29 U	2.3	350 U	0.32 U	6 J	160 U	0.32 U	0.34 U	0.036 U	0.038 U	0.037 U	0.035 U	0.16
Fluoranthene	100	100	48 J	0.17 J	30	4	8.3	0.056 J	2	140 J	0.079 J	5.4	130 J	0.057 J	15	76 J	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	1.3
Fluorene	30	100	6.9 J	1.6 UJ	5.2	2.6	11	0.4 U	0.28	230	0.084 J	0.37 J	220 J	0.066 J	12	120 J	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.12 J
Indeno[1,2,3-cd]pyrene	0.5	0.5	12 J	1.6 UJ	13	4	9.7	0.035 J	2 J	72 J	0.29 U	7.6	350 U	0.32 U	13	110 J	0.28 J	0.34 U	0.036 U	0.038 U	0.037 U	0.035 U	0.37
2-Methylnaphthalene	NE	NE	1.4 J	0.11 J	1.6 J	0.31 J	35	0.017 J	0.37	1200	0.32	0.26 J	1200	0.37	9.3	840	0.023 J	0.014 J	0.36 U	0.38 U	0.37 U	0.35 U	0.54 U
Naphthalene	12	100	3.1 J	1.6 U	5.6	1.7	100	0.4 U	0.64	2600	0.84	0.58 J	3300	1	32	1700	0.062 J	0.038 J	0.36 U	0.38 U	0.37 U	0.35 U	0.11 J
Phenanthrene	100	100	50 J	1.6 UJ	29	6.9	23	0.4 U	0.96	610	0.27 J	1.9	490	0.2 J	33	310	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.46 J
Pyrene	100	100	39 J	0.3 J	37	9.1	16	0.084 J	2.3	240	0.12 J	5.6	190 J	0.086 J	23	120 J	0.32 U	0.34 U	0.12 J	0.38 U	0.37 U	0.35 U	1.4
Total PAH 17	NE	NE	289.3	0.95	224.67	64.01	289.3	0.399	27.17	6147	2.092	70.57	6416	2.086	250.6	3852	0.899	0.541	0.316	ND	ND	ND	8.74
Other SVOCs (mg/kg)																							
Bis(2-ethylhexyl)phthalate	NE	NE	3.2 U	1.6 U	3.4 U	0.68 U	7 U	0.4 U	0.21 J	140 U	0.089 J	0.21 J	350 U	0.32 U	6.6 U	160 U	0.32 U	0.34 U	0.2 J	0.38 U	0.37 U	0.35 U	0.54 U
Butyl benzyl phthalate	NE	NE	3.2 U	1.6 U	3.4 U	0.68 U	7 U	0.4 U	0.016 J	140 U	0.29 U	0.65 U	350 U	0.32 U	6.6 U	160 U	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.54 U
Carbazole	NE	NE	2.6 J	1.6 U	4.3	0.21 J	0.82 J	0.4 U	0.13 J	140 U	0.29 U	0.45 J	350 U	0.32 U	0.39 J	160 U	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.54 U
Dibenzofuran	7	59	2.8 J	1.6 U	2.9 J	0.4 J	1.3 J	0.4 U	0.069 J	26 J	0.29 U	0.18 J	27 J	0.32 U	1.2 J	14 J	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.083 J
2,4-Dimethylphenol	NE	NE	3.2 U	1.6 U	3.4 U	0.68 U	7 U	0.4 U	0.27 U	140 U	0.29 U	0.65 U	350 U	0.32 U	6.6 U	160 U	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.54 U
2-Methylphenol (o-Cresol)	0.33	100	3.2 U	1.6 U	3.4 U	0.68 U	7 U	0.4 U	0.27 U	140 U	0.29 U	0.65 U	350 U	0.32 U	6.6 U	160 U	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.54 U
4-Methylphenol (p-Cresol)	0.33	100	3.2 U	1.6 U	3.4 U	0.68 U	7 U	0.4 U	0.021 J	140 U	0.29 U	0.65 U	350 U	0.32 U	6.6 U	160 U	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.54 U
Pentachlorophenol	0.8	6.7	8 U	4 U	8.4 U	1.7 U	17 U	0.99 U	1.7 UJ	890 UJ	1.8 UJ	4.1 U	2200 U	2 U	41 U	980 U	2 U	2.1 U	1.1 U	1.2 U	1.1 U	1 U	1.6 U
Phenol	0.33	100	3.2 U	1.6 U	3.4 U	0.68 U	7 U	0.4 U	0.27 U	140 U	0.29 U	0.65 U	350 U	0.32 U	6.6 U	160 U	0.32 U	0.34 U	0.36 U	0.38 U	0.37 U	0.35 U	0.54 U
Total SVOCs	NE	NE	294.7	0.95	231.87	64.62	291.42	0.399	27.616	6173	2.181	71.41	6443	2.086	252.19	3866	0.899	0.541	0.516	ND	ND	ND	8.823
PCBs (mg/kg)																							
Aroclor 1242	NE	NE	0.02 U	0.02 UJ	0.024 J	0.021 U	0.022 U	0.025 U	0.017 UJ	NA	NA	0.021 U	NA	NA	0.021 UJ	NA	NA	NA	0.073 U	NA	NA	0.07 U	NA
Aroclor 1254	NE	NE	0.02 U	0.02 UJ	0.02 J	0.021 U	0.022 U	0.025 U	0.098 J	NA	NA	0.021 U	NA	NA	0.021 UJ	NA	NA	NA	0.073 U	NA	NA	0.07 U	NA
Aroclor 1260	NE	NE	0.03 J	0.0037 J	0.015 J	0.021 U	0.022 U	0.025 U	0.056 J	NA	NA	0.021 U	NA	NA	0.021 UJ	NA	NA	NA	0.073 UJ	NA	NA	0.07 U	NA
Aroclor 1268	NE	NE	0.034	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCB Aroclors	NE	NE	0.064	0.0037	0.059	ND	ND	ND	0.154	NA	NA	ND	NA	NA	ND	NA	NA	NA	ND	NA	NA	ND	NA
Pesticides (mg/kg)																							
Aldrin	0.005	0.097	0.002 U	0.0099 U	0.01 U	0.011 U	0.011 U	0.0025 U	0.0017 U	NA	NA	0.0021 U	NA	NA	0.0021 U	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
alpha-BHC	0.02	0.48	0.002 U	0.0099 U	0.01 U	0.011 U	0.011 U	0.0025 U	0.0017 U	NA	NA	0.0021 U	NA	NA	0.0084 JN	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
beta-BHC	0.036	0.36	0.002 U	0.0099 U	0.012 JN	0.011 U	0.011	0.0025 U	0.0014 J	NA	NA	0.0027 J	NA	NA	0.012 J	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
gamma-BHC	0.1	1.3	0.002 U	0.0099 U	0.01 U	0.011 U	0.011 U	0.0025 U	0.0017 UJ	NA	NA	0.0021 U	NA	NA	0.0022 JN	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
delta-BHC	0.04	100	0.002 U	0.0099 U	0.0056 J	0.011 U	0.011 U	0.0025 U	0.0014 J	NA	NA	0.0021 U	NA	NA	0.0021 UJ	NA	NA	NA	0.0073 UJ	NA	NA	0.007 U	NA
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 2 [Block 2287 at 1]						Adjacent to Parcel 2										Parcel 6 [Block 2277 Lot 1]				
									N. 11th St. ROW			N. 12th St. ROW			N. 11th St. ROW								
Sample Name:			Duplicate of WW-TP-01	WW-TP-02	WW-TP-03	WW-TP-04	WWTP-05	WWTP-06	WW-MW-06	WW-MW-06	WW-MW-06	WW-MW-07	WW-MW-07	WW-MW-07	WW-MW-08	WW-MW-08	WW-MW-08	Duplicate of WW-MW-08	WW-MW-18	WW-MW-18	WW-MW-18	WW-MW-19	WW-MW-19
Sample Depth(ft bgs):			(2-2.5)	(2-2.5)	(3.5-4)	(4.5-5)	(6-6.5)	(6-6.5)	(0.5-1.5)	(50-52)	(58-60)	(4-5)	(48.5-49.5)	(59-60)	(2-5)	(7.5-8.5)	(40-45)	(40-45)	(1-2)	(6-7)	(72-73)	(1-2)	(5-6)
Sample Date:			10/29/2009	10/29/2009	10/29/2009	10/27/2009	10/28/2009	10/26/2009	6/17/2009	6/18/2009	6/18/2009	6/22/2009	6/23/2009	6/23/2009	6/19/2009	6/19/2009	6/19/2009	6/19/2009	10/26/2010	10/27/2010	10/28/2010	10/27/2010	11/2/2010
alpha-chlordane	0.094	4.2	**0.0044 J**	0.0099 U	0.01 U	0.011 U	0.011 U	0.0025 U	**0.0019 J**	NA	NA	0.0021 U	NA	NA	0.0021 UJ	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
gamma-Chlordane	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
gamma-Chlordane	NE	NE	**0.0037 J**	0.0099 U	0.01 U	0.011 U	0.011 U	0.0025 U	**0.0027 JN**	NA	NA	**0.0045 J**	NA	NA	**0.0029 J**	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD	0.0033	13	**0.0018 J**	0.019 U	0.02 U	0.021 U	0.021 U	0.0049 UJ	**0.015 JN**	NA	NA	0.004 UJ	NA	NA	0.0041 UJ	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
4,4'-DDE	0.0033	8.9	**0.005 J**	0.019 U	0.02 U	0.021 U	0.021 U	0.0049 U	**0.0036 JN**	NA	NA	0.004 U	NA	NA	0.0041 UJ	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
4,4'-DDT	0.0033	7.9	**0.0033 J**	0.019 U	0.02 U	0.021 U	**0.02 J**	0.0049 U	0.0034 UJ	NA	NA	**0.014 JN**	NA	NA	**0.051 J**	NA	NA	NA	0.0073 U	NA	NA	0.007 UJ	NA
Dieldrin	0.005	0.2	**0.0012 J**	0.019 U	0.02 U	0.021 U	0.021 U	0.0049 U	0.0034 U	NA	NA	0.004 UJ	NA	NA	0.0041 UJ	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
Endosulfan I	2.4	24	0.002 U	0.0099 U	0.01 U	0.011 U	0.011 U	0.0025 U	0.0017 U	NA	NA	0.0021 U	NA	NA	0.0021 UJ	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
Endosulfan II	2.4	24	0.0039 U	0.019 U	0.02 U	0.021 U	0.021 U	0.0049 U	**0.011 JN**	NA	NA	**0.0087 JN**	NA	NA	0.0041 U	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
Endosulfan sulfate	2.4	24	0.0039 UJ	0.019 U	0.02 U	0.021 U	**0.022 J**	0.0049 UJ	0.0034 U	NA	NA	**0.017 J**	NA	NA	0.0041 UJ	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
Endrin	0.014	11	0.0039 U	0.019 U	0.02 U	0.021 U	**0.021**	0.0049 U	0.0034 U	NA	NA	**0.0074 JN**	NA	NA	**0.013 J**	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
Endrin aldehyde	NE	NE	0.019 UJ	0.019 UJ	0.02 UJ	0.021 U	0.021 UJ	0.0049 UJ	**0.023 J**	NA	NA	**0.023 J**	NA	NA	0.0041 U	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
Endrin ketone	NE	NE	0.0039 U	0.019 U	0.02 U	0.021 U	0.021 U	0.0049 U	0.0034 U	NA	NA	**0.019 J**	NA	NA	0.0041 U	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
Heptachlor	0.042	2.1	0.002 U	0.0099 U	0.01 U	0.011 U	0.011 U	0.0025 U	0.0017 UJ	NA	NA	**0.0043 J**	NA	NA	0.0021 U	NA	NA	NA	0.0073 UJ	NA	NA	0.007 U	NA
Heptachlor epoxide	NE	NE	0.002 U	0.0099 U	0.01 U	0.011 U	0.011 U	0.0025 U	**0.0091**	NA	NA	0.0021 U	NA	NA	0.0021 UJ	NA	NA	NA	0.0073 U	NA	NA	0.007 U	NA
Methoxychlor	NE	NE	0.02 U	0.099 U	0.1 U	0.11 U	0.11 U	0.025 U	0.017 U	NA	NA	**0.033 JN**	NA	NA	0.021 U	NA	NA	NA	0.0073 U	NA	NA	0.007 UJ	NA
Herbicides (mg/kg)																							
Silvex	3.8	100	0.023 U	0.022 U	0.12 U	0.025 U	**0.0065**	0.028 U	0.023 U	NA	NA	0.024 U	NA	NA	**0.014**	NA	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA
Metals (mg/kg)																							
Aluminum	NE	NE	**9630 J**	**5440 J**	**8050**	**6570**	**4110**	**2100**	**4850 J**	**2370 J**	**2690 J**	**7330**	**1860**	**2790**	**6800 J**	**4480 J**	**2710 J**	**7800 J**	**9950**	**5380**	**2430**	**1080**	**7710**
Antimony	NE	NE	4.7 UJ	4.7 UJ	5.2 UJ	5.1 UJ	5.3 UJ	6 UJ	4 UJ	4.2 UJ	4.3 UJ	4.8 UJ	5.3 UJ	4.9 UJ	5 UJ	4.9 UJ	4.9 UJ	5.2 UJ	2.1 U	2.2 UJ	2.1 UJ	2 UJ	3.3 UJ
Arsenic	13	16	**9.7 J**	**3.3 J**	**5.4 J**	**9.3 J**	**8.4 J**	7.6 UJ	**5.1 J**	**1.7 J**	5.4 UJ	**2.3 J**	6.7 U	6.3 U	**6.6 J**	**2.3 J**	**3.1 J**	**14.3 J**	**2.4 J**	**1.6**	**2.7 J**	**4.9**	**7.1**
Barium	350	400	**157 J**	**34 J**	**361**	**194**	**63.8**	**394**	**65.3 J**	**15.2 J**	**21.9 J**	**48.5 J**	**18.4 J**	**19.9 J**	**71.4 J**	**26.5 J**	**39.7 J**	**87.2 J**	**58.6**	**37.4 J**	**21.1 J**	**10.3 J**	**85.1**
Beryllium	7.2	72	**0.49 J**	**0.23 J**	**0.48 J**	**0.32 J**	**0.25 J**	**0.1 J**	**0.42 J**	**0.26 J**	**0.47 J**	**0.67 J**	**0.42 J**	**0.53 J**	**0.7 J**	**0.44 J**	**0.8 J**	**1.8**	**0.3 J**	**0.28 J**	**0.45**	0.4 U	**0.42 J**
Cadmium	2.5	4.3	1.4 U	1.4 UJ	1.6 UJ	1.6 UJ	1.6 U	1.8 UJ	**0.25 J**	1.3 U	1.3 UJ	**0.33 J**	1.6 U	1.5 UJ	1.5 U	1.5 U	1.5 U	1.6 U	1 UJ	1.1 U	1.1 UJ	1 U	1.6 U
Calcium	NE	NE	**15800 J**	**89200 J**	**59100 J**	**57700 J**	**9760 J**	**103000 J**	**60600 J**	**580 J**	**786 J**	**1150 J**	**436 J**	**666 J**	**1200 J**	**737 J**	**1360 J**	**2210 J**	**11000**	**833 J**	**386 J**	**386 J**	**2500**
Chromium	NE	NE	**17.5 J**	**9.1 J**	**11**	**9.3**	**21.7**	**5.7**	**11.3 J**	**6.9 J**	**11.2 J**	**15.7 J**	**8 J**	**11.5 J**	**13.2 J**	**11.2 J**	**10.3 J**	**18.2 J**	2.1 U	**12.6**	**13**	**3.6**	**19.8**
Cobalt	NE	NE	**8 J**	**4.1 J**	**4**	**3.6**	**5.7**	**14.9**	**6.2 J**	**3.8 J**	**4.2 J**	**6.4**	**6.5**	**5.3 J**	**6.7 J**	**5.3 J**	**15.8 J**	**53.9 J**	**19.3**	**5.9 J**	**5.9 J**	**1.8 J**	**7.2 J**
Copper	50	270	**67**	**61**	**87.9**	**256**	**47**	**84.3**	**88.1**	**9.3**	**19.8 J**	**24.8 J**	**17.1 J**	**16.8 J**	**38.2**	**12.9**	**35.1**	**53.9**	**112**	**12.7**	**15**	**3.3 J**	**57.3**
Iron	NE	NE	**19200**	**13700**	**10900**	**11000**	**15900**	**24400**	**11300 J**	**8800 J**	**21600 J**	**15800**	**10300**	**25100**	**20900 J**	**13000 J**	**4110 J**	**9520 J**	**35000**	**15600**	**58700**	**3960**	**20900**
Lead	63	400	**450 J**	**79.9 J**	**280**	**904**	**203**	**2980**	**176**	**3.2**	**7.4**	**45 J**	**4.7 J**	**5.9 J**	**314**	**4.6**	**14.5 J**	**25.9 J**	**12.1**	**5.3**	**4.4 J**	**2.5**	**219**
Magnesium	NE	NE	**5530 J**	**41500 J**	**4990 J**	**6390 J**	**6040 J**	**1990 J**	**22800 J**	**953 J**	**888 J**	**2010**	**782**	**794**	**1740 J**	**2530 J**	**568 J**	**1600 J**	**8570**	**1910**	**374 J**	**410 J**	**3090**
Manganese	1600	2000	**335 J**	**179 J**	**258**	**470**	**158**	**84.8**	**165 J**	**291 J**	**423 J**	**269**	**92.1**	**555**	**141 J**	**79.6 J**	**27.4 J**	**78.3 J**	**433**	**209 J**	**423 J**	**68.4 J**	**213 J**
Mercury	0.18	0.81	**0.49 J**	**0.099 J**	**0.47 J**	**0.32 J**	**0.93 J**	**0.23 J**	**0.64**	0.051 U	0.05 U	**0.037 J**	0.065 UJ	**0.0078 J**	**0.35**	0.059 U	**0.035**	**0.018 J**	**0.36**	0.035 U	0.035 U	0.032 U	**3.1**
Nickel	30	310	**28.7 J**	**8.9 J**	**12.1**	**11.7**	**51.3**	**12.3**	**16.1 J**	**6.1 J**	**6.5 J**	**13.6 J**	**7.6 J**	**5.6 J**	**14.5 J**	**13.4 J**	**16.7 J**	**70 J**	**14.1**	**10.6**	**5.2 J**	**4.4 J**	**15.7**
Potassium	NE	NE	**1380 J**	**882 J**	**1390 J**	**1210 J**	**518 J**	**593 J**	**599 J**	**454 J**	**417 J**	**806 J**	**380 J**	**448 J**	**562 J**	**729 J**	**559 J**	**799 J**	**2170**	**1000 J**	**156 J**	**280 J**	**1190 J**
Selenium	3.9	180	10.7 UJ	10.7 UJ	11.7 UJ	11.6 UJ	11.9 UJ	13.5 UJ	R	R	R	11 UJ	11.9 U	11.2 U	R	R	R	R	**3.3 J**	2.2 U	**2.7 J**	2 U	3.3 U
Silver	2	180	**0.094 J**	1.4 UJ	1.6 UJ	1.6 UJ	1.6 U	**0.16 J**	**0.11 J**	1.3 U	1.3 UJ	1.5 U	1.6 U	1.5 UJ	1.5 U	1.5 U	1.5 U	1.6 U	2.1 U	2.2 U	2.1 U	2 U	3.3 U
Sodium	NE	NE	**1110 J**	**606 J**	**2440 J**	**1940 J**	**1350 J**	**4760 J**	**218**	**58.9 J**	**56.9 J**	**65.1 J**	**138 J**	74.5 UJ	**320**	**347**	**119 J**	**248 J**	1040 U	**103 J**	**347 J**	996 U	**118 J**
Thallium	NE	NE	4.3 UJ	4.3 UJ	4.7 UJ	4.7 UJ	4.8 UJ	5.4 UJ	**1.1 J**	3.8 U	**1.1 J**	4.4 U	4.8 U	4.5 U	4.6 U	4.4 U	4.4 U	4.7 U	2.1 U	2.2 U	2.1 U	2 U	3.3 U
Vanadium	NE	NE	**24.6**	**28.4**	**21.2**	**16.6**	**17**	**6.4 J**	**25.2 J**	**9.7 J**	**21 J**	**25.9 J**	**17.9 J**	**21.5 J**	**18.2 J**	**14.2 J**	**18.4 J**	**26.9 J**	**98.9**	**19.4**	**32.4**	**4.7 J**	**22.4**
Zinc	109	10000	**205 J**	**83.5 J**	**307 J**	**171 J**	**97.4 J**	**570 J**	**478 J**	**13.1 J**	**25.2 J**	**91.3 J**	**17.4 J**	**23.8 J**	**120 J**	**20.8 J**	**81.1 J**	**287 J**	**69.2**	**25.1**	**33.5**	**6.7**	**164**
Cyanides (mg/kg)																							
Free Cyanide	NE	NE	0.235 U	0.231 U	0.245 U	0.247 U	0.257 U	0.297 U	0.204 U	0.209 U	0.213 U	0.241 U	0.264 U	0.233 U	0.247 U	0.233 U	0.241 U	0.255 U	0.22 U	0.23 U	0.23 U	0.21 U	0.33 U

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 6 [Block 2277 Lot 1]																					
Sample Name:			WW-SB-43	WW-SB-43	WW-SB-43	WW-SB-44	WW-SB-44	WW-SB-44	WW-SB-45	WW-SB-45	WW-SB-45	Duplicate of WW-SB-45	WW-SB-46	WW-SB-46	WW-SB-46	WW-SB-47	WW-SB-47	WW-SB-47	Duplicate of WW-SB-47	WW-SB-48	WW-SB-48	WW-SB-48	WW-SB-49	Duplicate of WW-SB-49
Sample Depth(ft bgs):			(1-2)	(8-8.5)	(44-44.5)	(1-2)	(7-8)	(50-51)	(1-2)	(53-54)	(64-64.5)	(64-64.5)	(1.5-2.5)	(33-34)	(60.5-61)	(1-2)	(5-6)	(66-67)	(66-67)	(1-2)	(7-8)	(65-66)	(1-2)	(1-2)
Sample Date:			10/20/2010	10/21/2010	10/21/2010	10/18/2010	10/19/2010	10/19/2010	10/18/2010	10/20/2010	10/20/2010	10/20/2010	10/21/2010	10/25/2010	10/25/2010	10/22/2010	10/26/2010	10/26/2010	10/26/2010	10/26/2010	10/26/2010	10/27/2010	11/3/2010	11/3/2010
BTEX (mg/kg)																								
Benzene	0.06	4.8	**0.019**	**0.02 J**	**0.0082**	0.21 UJ	**0.031 J**	**0.0036**	**0.029 J**	**430**	**0.032**	**0.035**	**0.073**	**17**	0.0012 U	**0.2**	**0.0031**	0.0011 U	0.001 U	**0.055 J**	**0.016 J**	**0.18**	**0.37 J**	**0.47 J**
Toluene	0.7	100	**0.019**	**0.054 J**	**0.011**	0.21 UJ	**0.081 J**	**0.00056 J**	**0.062 J**	**1000**	**0.016**	**0.014**	**0.015**	**23**	**0.00059 J**	**0.12**	**0.00048 J**	0.0011 U	0.001 U	**0.037 J**	0.11 U	**0.12**	**0.41**	**0.45 J**
Ethylbenzene	1	41	**0.002**	0.13 U	**0.001 J**	0.21 UJ	**0.099 J**	**0.0083**	**0.043 J**	**300**	**0.0025**	**0.003**	**0.00052 J**	**68**	**0.00072 J**	**0.089 J**	**0.00023 J**	0.0011 U	0.001 U	**0.049 J**	0.11 U	**0.098 J**	**0.42**	**0.86 J**
Total Xylene	0.26	100	**0.007 J**	**0.074 J**	**0.0032 J**	0.63 UJ	**0.44**	**0.0031 J**	**0.14 J**	**1400**	**0.0089 J**	**0.011**	0.0035 UJ	**83**	**0.0013 J**	**0.37**	0.0033 UJ	0.0034 UJ	0.0031 UJ	**0.11 J**	**0.13 J**	**0.33**	**2.2**	**3.9**
Total BTEX	NE	NE	**0.047**	**0.148**	**0.0234**	ND	**0.651**	**0.01556**	**0.274**	**3130**	**0.0594**	**0.063**	**0.08852**	**191**	**0.00261**	**0.779**	**0.00381**	ND	ND	**0.251**	**0.146**	**0.728**	**3.4**	**5.68**
Other VOCs (mg/kg)																								
Acetone	0.05	100	0.011 UJ	1.3 UJ	**0.044 J**	2.1 UJ	1.1 UJ	0.011 U	1.1 UJ	43 UJ	0.011 UJ	**0.022**	0.012 UJ	12 UJ	0.012 U	1.1 UJ	0.011 U	0.011 U	0.01 U	1.1 UJ	R	R	4.1 U	11 UJ
Carbon disulfide	NE	NE	0.0011 U	0.13 U	0.0011 U	**0.062 J**	0.11 U	0.0011 U	**0.07 J**	4.3 U	0.0011 U	0.0011 U	0.0012 U	1.2 UJ	0.0012 UJ	**0.047 J**	**0.00065 J**	0.0011 U	0.001 U	**0.043 J**	0.11 U	0.1 U	0.41 U	1.1 U
Chloroform	0.37	49	0.0011 U	0.13 U	0.0011 U	0.21 UJ	0.11 U	0.0011 U	0.11 U	4.3 U	0.0011 U	**0.00041 J**	0.0012 U	1.2 U	**0.00037 J**	0.11 U	0.0011 U	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
Chloromethane	NE	NE	0.0011 UJ	0.13 U	0.0011 UJ	0.21 UJ	0.11 U	0.0011 U	0.11 U	4.3 U	0.0011 UJ	0.0011 U	0.0012 UJ	1.2 U	0.0012 U	0.11 U	0.0011 U	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
1,1-Dichloroethane	0.27	26	0.0011 U	0.13 U	0.0011 U	0.21 UJ	0.11 U	0.0011 U	0.11 U	4.3 U	0.0011 U	0.0011 U	0.0012 U	1.2 U	0.0012 U	0.11 U	0.0011 U	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
1,1-Dichloroethene	0.33	100	0.0011 U	0.13 U	0.0011 U	0.21 UJ	0.11 U	0.0011 U	0.11 U	4.3 U	0.0011 U	**0.00075 J**	0.0012 U	1.2 U	0.0012 U	0.11 U	0.0011 U	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
cis-1,2-Dichloroethene	0.25	100	0.0011 U	0.13 U	0.0011 U	0.21 UJ	0.11 U	0.0011 U	**0.081 J**	4.3 U	0.0011 U	0.0011 U	0.0012 U	1.2 U	0.0012 U	0.11 U	**0.0029**	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
trans-1,2-Dichloroethene	0.19	100	0.0011 U	0.13 U	0.0011 U	0.21 UJ	0.11 U	0.0011 U	0.11 U	4.3 U	0.0011 U	0.0011 U	0.0012 U	1.2 U	0.0012 U	0.11 U	0.0011 U	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
2-Butanone (Methyl ethyl ketone)	0.12	100	0.011 U	1.3 U	0.011 U	2.1 UJ	1.1 U	0.011 U	1.1 U	43 U	0.011 U	0.011 U	0.012 U	12 UJ	0.012 U	1.1 U	0.011 U	0.011 U	0.01 U	1.1 U	R	R	4.1 U	11 UJ
Methylene chloride	0.05	100	0.0022 U	0.13 UJ	0.0028 U	0.21 UJ	0.11 UJ	0.0011 U	0.11 UJ	4.3 UJ	0.0011 U	**0.00081 J**	0.01 U	1.2 UJ	**0.0019**	0.11 UJ	**0.0031**	0.0011 U	0.001 U	0.11 UJ	0.11 U	0.1 U	0.41 U	1.1 U
Styrene	NE	NE	**0.0023**	0.13 U	0.0011 U	0.21 UJ	0.11 U	0.0011 U	0.11 U	**830**	**0.0021**	**0.0032**	0.0012 U	**0.49 J**	0.0012 U	0.11 U	0.0011 U	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
Tetrachloroethene (PCE)	1.3	19	0.0011 U	0.13 U	0.0011 U	0.21 UJ	0.11 U	0.0011 U	0.11 U	4.3 U	0.0011 U	0.0011 U	**0.00079 J**	1.2 U	0.0012 U	0.11 U	0.0011 U	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
Trichloroethene (TCE)	0.47	21	0.0011 U	0.13 U	0.0011 U	0.21 UJ	0.11 U	0.0011 U	0.11 U	4.3 U	0.0011 U	0.0011 U	0.0012 U	1.2 U	0.0012 U	0.11 U	0.0011 U	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
Vinyl chloride	0.02	0.9	0.0011 U	0.13 U	0.0011 U	0.21 UJ	0.11 U	0.0011 U	0.11 U	4.3 U	0.0011 U	0.0011 U	0.0012 U	1.2 U	0.0012 U	0.11 U	**0.0016**	0.0011 U	0.001 U	0.11 U	0.11 U	0.1 U	0.41 U	1.1 U
Total VOCs	NE	NE	**0.0493**	**0.148**	**0.0674**	**0.062**	**0.651**	**0.01556**	**0.425**	**3960**	**0.0615**	**0.09017**	**0.08931**	**191.49**	**0.00488**	**0.826**	**0.01206**	ND	ND	**0.294**	**2.346**	**2.728**	**3.4**	**5.68**
PAHs (mg/kg)																								
Acenaphthene	20	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	9.5 U	0.4 U	0.39 U	0.4 U	**2.6**	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	**0.19 J**	0.85 U	0.39 U	**0.33 J**	0.73 U
Acenaphthylene	100	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	**14**	0.4 U	0.39 U	0.4 U	**7.4**	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	0.4 U	0.85 U	0.39 U	1.8 U	0.73 U
Anthracene	100	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	**0.34 J**	**4.4 J**	0.4 U	0.39 U	**0.095 J**	**3.9**	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	**0.24 J**	**0.16 J**	0.39 U	**0.49 J**	**0.51 J**
Benz[a]anthracene	1	1	0.041 U	0.094 U	0.039 U	**0.11 J**	**0.075**	0.038 U	**0.86**	**3.1**	0.04 U	0.039 U	**0.25**	**2**	0.04 U	**0.061**	0.042 U	0.039 U	0.038 U	**1.3**	0.085 U	0.039 U	**0.71**	**0.63**
Benzo[a]pyrene	1	1	0.041 U	0.094 U	0.039 U	0.075 UJ	**0.085**	0.038 U	**0.67**	0.95 U	0.04 U	0.039 U	**0.22**	**1.5**	0.04 U	**0.066**	0.042 U	0.039 U	0.038 U	**1.8**	0.085 U	0.039 U	**0.74**	**0.58**
Benzo[b]fluoranthene	1	1	0.041 U	0.094 U	0.039 U	0.075 UJ	**0.077**	0.038 U	**0.89**	0.95 U	0.04 U	0.039 U	**0.3**	**1.1**	0.04 U	**0.067**	0.042 U	0.039 U	0.038 U	**1.9**	0.085 U	0.039 U	**0.68**	**0.64**
Benzo[g,h,i]perylene	100	100	0.41 U	**0.12 J**	0.39 U	0.75 UJ	0.39 U	0.38 U	**0.88 J**	9.5 U	0.4 U	0.39 U	**0.12 J**	**0.41 J**	0.4 U	**0.11 J**	0.42 U	0.39 U	0.38 U	**1.4**	0.85 U	0.39 U	**0.68 J**	**0.56 J**
Benzo[k]fluoranthene	0.8	3.9	0.041 U	0.094 U	0.039 U	0.075 UJ	0.039 U	0.038 U	**0.25**	0.95 U	0.04 U	0.039 U	**0.15**	**0.53**	0.04 U	0.037 U	0.042 U	0.039 U	0.038 U	**0.81**	0.085 U	0.039 U	**0.32**	**0.22**
Chrysene	1	3.9	0.41 U	0.94 U	0.39 U	**0.12 J**	**0.093 J**	0.38 U	**1.1 J**	**2.6 J**	0.4 U	0.39 U	**0.26 J**	**2.2**	0.4 U	**0.11 J**	0.42 U	0.39 U	0.38 U	**1.7**	0.85 U	0.39 U	**1.1 J**	**0.99**
Dibenz[a,h]anthracene	0.33	0.33	0.041 U	0.094 U	0.039 U	0.075 UJ	0.039 U	0.038 U	**0.26**	0.95 U	0.04 U	0.039 U	0.04 U	0.21 U	0.04 U	**0.028 J**	0.042 U	0.039 U	0.038 U	**0.35**	0.085 U	0.039 U	**0.18**	**0.15**
Fluoranthene	100	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	**1.2 J**	**3.6 J**	0.4 U	0.39 U	**0.49**	**2.8**	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	**1.3**	**0.2 J**	0.39 U	**0.65 J**	**0.66 J**
Fluorene	30	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	**5.8 J**	0.4 U	0.39 U	0.4 U	**5.2**	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	**0.12 J**	0.85 U	0.39 U	**0.34 J**	**0.31 J**
Indeno[1,2,3-cd]pyrene	0.5	0.5	0.041 U	0.094 U	0.039 U	0.075 UJ	0.039 U	0.038 U	**0.81**	0.95 U	0.04 U	0.039 U	**0.12**	**0.34**	0.04 U	**0.075**	0.042 U	0.039 U	0.038 U	**1.2**	0.085 U	0.039 U	**0.57**	**0.48**
2-Methylnaphthalene	NE	NE	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	**38**	0.4 U	0.39 U	0.4 U	**19**	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	**0.077 J**	0.85 U	0.39 U	**2.1**	**1.7**
Naphthalene	12	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	**110**	0.4 U	0.39 U	0.4 U	**30**	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	**0.12 J**	0.85 U	0.39 U	**0.42 J**	0.73 U
Phenanthrene	100	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	**15**	0.4 U	0.39 U	**0.44**	**13**	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	**0.71**	**0.56 J**	0.39 U	**2.6**	**2.1**
Pyrene	100	100	0.41 U	**0.32 J**	0.39 U	0.75 UJ	**0.1 J**	0.38 U	**1.7 J**	**5.6 J**	0.4 U	0.39 U	**0.51**	**5.4**	0.4 U	**0.14 J**	0.42 U	0.39 U	0.38 U	**1.6**	**0.25 J**	0.39 U	**1.9**	**1.4**
Total PAH 17	NE	NE	ND	**0.44**	ND	**0.23**	**0.43**	ND	**8.96**	**202.1**	ND	ND	**2.955**	**97.38**	ND	**0.657**	ND	ND	ND	**14.817**	**1.17**	ND	**13.81**	**10.93**
Other SVOCs (mg/kg)																								
Bis(2-ethylhexyl)phthalate	NE	NE	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	9.5 U	0.4 U	0.39 U	0.4 U	2.1 U	0.4 U	**0.091 J**	0.42 U	0.39 U	0.38 U	0.4 U	0.85 U	0.39 U	1.8 U	0.73 U
Butyl benzyl phthalate	NE	NE	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	9.5 U	0.4 U	0.39 U	0.4 U	2.1 U	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	0.4 U	0.85 U	0.39 U	1.8 U	0.73 U
Carbazole	NE	NE	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	9.5 U	0.4 U	0.39 U	0.4 U	2.1 U	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	0.4 U	0.85 U	0.39 U	1.8 U	0.73 U
Dibenzofuran	7	59	0.41 UJ	0.94 UJ	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	9.5 U	0.4 U	0.39 UJ	0.4 UJ	**0.98 J**	0.4 U	0.37 UJ	0.42 U	0.39 U	0.38 U	0.4 U	0.85 U	0.39 U	1.8 U	0.73 U
2,4-Dimethylphenol	NE	NE	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	9.5 U	0.4 U	0.39 U	0.4 U	2.1 U	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	0.4 U	0.85 U	0.39 U	1.8 U	0.73 U
2-Methylphenol (o-Cresol)	0.33	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	9.5 U	0.4 U	0.39 U	0.4 U	2.1 U	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	0.4 U	0.85 U	0.39 U	1.8 U	0.73 U
4-Methylphenol (p-Cresol)	0.33	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	9.5 U	0.4 U	0.39 U	0.4 U	2.1 UJ	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	0.4 U	0.85 U	0.39 U	1.8 U	0.73 U
Pentachlorophenol	0.8	6.7	1.2 U	2.9 U	1.2 U	2.3 UJ	1.2 U	1.2 U	5.9 U	29 U	1.2 U	1.2 U	1.2 U	6.5 U	1.2 U	1.1 U	1.3 U	1.2 U	1.1 U	1.2 U	2.6 U	1.2 U	5.4 U	2.2 U
Phenol	0.33	100	0.41 U	0.94 U	0.39 U	0.75 UJ	0.39 U	0.38 U	1.9 U	9.5 U	0.4 U	0.39 U	0.4 U	2.1 U	0.4 U	0.37 U	0.42 U	0.39 U	0.38 U	0.4 U	0.85 U	0.39 U	1.8 U	0.73 U
Total SVOCs	NE	NE	ND	**0.44**	ND	**0.23**	**0.43**	ND	**8.96**	**202.1**	ND	ND	**2.955**	**98.36**	ND	**0.748**	ND	ND	ND	**16.017**	**1.17**	ND	**13.81**	**10.93**
PCBs (mg/kg)																								
Aroclor 1242	NE	NE	0.084 U	NA	NA	0.15 UJ	NA	0.078 U	0.079 U	NA	NA	NA	0.081 U	NA	NA	0.075 U	NA	NA	NA	0.081 U	NA	NA	0.073 U	0.074 U
Aroclor 1254	NE	NE	0.084 U	NA	NA	0.15 UJ	NA	0.078 U	0.079 U	NA	NA	NA	0.081 U	NA	NA	0.075 U	NA	NA	NA	0.081 U	NA	NA	0.073 U	0.074 U
Aroclor 1260	NE	NE	0.084 UJ	NA	NA	0.15 UJ	NA	0.078 U	0.079 U	NA	NA	NA	0.081 UJ	NA	NA	0.075 UJ	NA	NA	NA	0.081 UJ	NA	NA	0.073 U	0.074 U
Aroclor 1268	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCB Aroclors	NE	NE	ND	NA	NA	ND	NA	ND	ND	NA	NA	NA	ND	NA	NA	ND	NA	NA	NA	ND	NA	NA	ND	ND
Pesticides (mg/kg)																								
Aldrin	0.005	0.097	0.0084 UJ	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 UJ	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
alpha-BHC	0.02	0.48	0.0084 UJ	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 UJ	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
beta-BHC	0.036	0.36	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
gamma-BHC	0.1	1.3	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
delta-BHC	0.04	100	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 6 [Block 2277 Lot 1]																					
Sample Name:			WW-SB-43	WW-SB-43	WW-SB-43	WW-SB-44	WW-SB-44	WW-SB-44	WW-SB-45	WW-SB-45	WW-SB-45	Duplicate of WW-SB-45	WW-SB-46	WW-SB-46	WW-SB-46	WW-SB-47	WW-SB-47	WW-SB-47	Duplicate of WW-SB-47	WW-SB-48	WW-SB-48	WW-SB-48	WW-SB-49	Duplicate of WW-SB-49
Sample Depth(ft bgs):			(1-2)	(8-8.5)	(44-44.5)	(1-2)	(7-8)	(50-51)	(1-2)	(53-54)	(64-64.5)	(64-64.5)	(1.5-2.5)	(33-34)	(60.5-61)	(1-2)	(5-6)	(66-67)	(66-67)	(1-2)	(7-8)	(65-66)	(1-2)	(1-2)
Sample Date:			10/20/2010	10/21/2010	10/21/2010	10/18/2010	10/19/2010	10/19/2010	10/18/2010	10/20/2010	10/20/2010	10/20/2010	10/21/2010	10/25/2010	10/25/2010	10/22/2010	10/26/2010	10/26/2010	10/26/2010	10/26/2010	10/26/2010	10/27/2010	11/3/2010	11/3/2010
alpha-chlordane	0.094	4.2	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
gamma-Chlordane	NE	NE	**0.012**	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	NA	NA	NA	NA	0.0081 U	NA	NA	NA	NA
gamma-Chlordane	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0076 U	NA	NA	NA	NA	NA	NA	0.0073 U	0.0074 U
4,4-DDD	0.0033	13	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
4,4'-DDE	0.0033	8.9	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
4,4'-DDT	0.0033	7.9	**0.098 J**	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Dieldrin	0.005	0.2	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Endosulfan I	2.4	24	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Endosulfan II	2.4	24	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Endosulfan sulfate	2.4	24	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Endrin	0.014	11	**0.051 J**	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Endrin aldehyde	NE	NE	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	**0.015**	NA	NA	NA	**0.013**	NA	NA	0.0073 U	0.0074 U
Endrin ketone	NE	NE	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Heptachlor	0.042	2.1	0.0084 UJ	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 UJ	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Heptachlor epoxide	NE	NE	0.0084 U	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Methoxychlor	NE	NE	**0.18 J**	NA	NA	0.015 UJ	NA	0.0078 U	0.0079 U	NA	NA	NA	0.0081 U	NA	NA	0.0076 U	NA	NA	NA	0.0081 U	NA	NA	0.0073 U	0.0074 U
Herbicides (mg/kg)																								
Silvex	3.8	100	0.021 U	NA	NA	0.039 UJ	NA	0.02 U	0.02 U	NA	NA	NA	0.021 U	NA	NA	0.019 U	NA	NA	NA	0.021 UJ	NA	NA	0.018 UJ	0.019 UJ
Metals (mg/kg)																								
Aluminum	NE	NE	**4600**	**5720**	**1990**	**6940 J**	**7400**	**2630**	**5530**	**1580**	**2090**	**1780**	**3830**	**3840**	**3240**	**4160**	**7730**	**4500**	**3440**	**4840**	**5590**	**3030**	**775**	**681**
Antimony	NE	NE	2.5 U	2.6 U	2.3 UJ	4.5 UJ	2.2 U	2.3 U	**4.9**	2.2 U	2.2 UJ	2.2 UJ	**1.5 J**	2.4 U	2.2 UJ	2.1 U	2.5 U	2.3 U	11.3 U	2.4 U	2.4 UJ	2.3 UJ	**3.9 J**	**2.2 J**
Arsenic	13	16	**11.9**	**73.7**	**3 J**	**11.6 J**	**14.2**	**5.1**	**132**	**2.3**	**1.9 J**	**2.1 J**	**37.2**	**1.1 J**	1.1 UJ	**20.8**	**1.7**	**2.3**	5.6 U	**23.5**	**2.3**	**1.7**	**38.4 J**	**21 J**
Barium	350	400	**94.6**	**68.5**	**8.7 J**	**59.1 J**	**107**	**16.5 J**	**351**	**9.9 J**	**5.9 J**	**7.3**	**152**	**26.3 J**	**15.1 J**	**97.5**	**49.9**	**23.6 J**	45.1 U	**76.1**	**47.9 J**	**31.9 J**	**69.6**	**51.4**
Beryllium	7.2	72	**0.34 J**	**0.53**	**0.54**	**0.39 J**	**0.31 J**	**0.52**	**0.37 J**	**0.25 J**	**0.47**	**0.47**	**0.36 J**	**0.35 J**	**0.54**	**0.39 J**	**0.37 J**	0.45 U	**0.87**	**0.25 J**	**0.31 J**	**0.25 J**	0.43 U	0.41 U
Cadmium	2.5	4.3	1.2 U	1.3 U	1.1 UJ	2.2 UJ	**1.1**	**0.53 J**	**2 J**	1.1 U	1.1 UJ	1.1 UJ	**2.4 J**	1.2 UJ	1.1 UJ	**0.27 J**	1.2 U	1.1 U	5.6 U	**0.43 J**	1.2 U	1.2 U	1.1 U	1 U
Calcium	NE	NE	**12700**	**2940**	**443 J**	**74700 J**	**7550**	**499 J**	**24300**	**413 J**	**299 J**	**261**	**8240**	**1290**	**554 J**	**3470**	**1450**	**770 J**	**450 J**	**41200**	**4500 J**	**6140 J**	**669 J**	**465 J**
Chromium	NE	NE	**9.3**	**8.6**	**9.9**	**13.8 J**	**48**	**12.7**	**22.4**	**6.1**	**10.1**	**10.3**	**11.2**	**11.1**	**18.9**	**11.4**	**13.4**	**10.9 J**	**18.3 J**	**10.5**	**15.6**	**8.4**	**8.8**	**7.5**
Cobalt	NE	NE	**6.4 J**	**6.4 J**	**6.8 J**	**7.9 J**	**8.8 J**	**9.6 J**	**10.4 J**	**4.4 J**	**8.5 J**	**7.2**	**7.7 J**	**6.9 J**	**11.6**	**6.2 J**	**6.4 J**	**7.3 J**	**12**	**5.4 J**	**6.8 J**	**3.7 J**	**1.8 J**	**1.6 J**
Copper	50	270	**87.6**	**28**	**15.9**	**26.2 J**	**53.2**	**16.4**	**264**	**9.7**	**15.9**	**11.9**	**232**	**14.5 J**	**20.8 J**	**127**	**24.3**	**8.4 J**	5.6 U	**45.8**	**17.3**	**10.4**	**16.6**	**14.8**
Iron	NE	NE	**10600**	**28900**	**64000**	**21200 J**	**20600**	**91900**	**44700**	**21700**	**66800**	**55000**	**31600**	**34000**	**69200**	**16700**	**15600**	**8210**	**118000 J**	**15900**	**20400**	**11500**	**7740 J**	**4030 J**
Lead	63	400	**189**	**38.5**	**6.5 J**	**65.4 J**	**148**	**7.3 J**	**1270**	**3.8**	**5.8 J**	**5.6 J**	**1230**	**4.5 J**	**6.1 J**	**452**	**22.9**	**3.8 J**	**11.5 J**	**229**	**43.6**	**4.3**	**130 J**	**75.3 J**
Magnesium	NE	NE	**5030**	**5570**	**385 J**	**3890 J**	**2940**	**554 J**	**3160**	**609 J**	**355 J**	**316**	**1570**	**1820**	**535 J**	**1560**	**2220**	**1380**	**521 J**	**2680**	**1910**	**3070**	**132 J**	**101 J**
Manganese	1600	2000	**322**	**602**	**594**	**558 J**	**322**	**942**	**319**	**432**	**486**	**459**	**222**	**128**	**915**	**129**	**452**	**222 J**	**685 J**	**267**	**521 J**	**161 J**	**48.8 J**	**15.7 J**
Mercury	0.18	0.81	**0.21**	**0.084**	0.034 U	**0.13 J**	**0.31**	0.036 U	**1.4**	0.035 U	0.039 U	0.037 U	**5.1**	0.042 U	0.035 U	**0.41**	0.041 U	0.039 U	0.033 U	**0.53**	**0.086**	0.039 U	**0.71 J**	**0.15 J**
Nickel	30	310	**16.6**	**13.9**	**6.6 J**	**15.9 J**	**21.2**	**8.1 J**	**38.4**	**6.3 J**	**8.2 J**	**7**	**19.3**	**10.4**	**9.6**	**12.4**	**12.2**	**7.9 J**	**12.3**	**11.9**	**12.9**	**10.2**	**5.5 J**	**5 J**
Potassium	NE	NE	**937 J**	**423 J**	**179 J**	**1340 J**	**2090**	**265 J**	**688 J**	**279 J**	**177 J**	**143**	**438 J**	**1040 J**	**286 J**	**614 J**	**1080 J**	**447 J**	**223 J**	**900 J**	**857 J**	**787 J**	**141 J**	**158 J**
Selenium	3.9	180	2.5 U	2.6 U	**1.3 J**	4.5 UJ	**1.1 J**	**3.4 J**	**3.7 J**	2.2 U	**1.5 J**	**1.9**	**1.5 J**	**4.9 J**	**6.3 J**	**1.5 J**	2.5 U	2.3 UJ	**7.2 J**	**1.2 J**	**1.4 J**	2.3 U	**2 J**	**1.9 J**
Silver	2	180	2.5 U	2.6 U	2.3 U	4.5 UJ	2.2 U	2.3 U	**0.42 J**	2.2 U	2.2 U	2.2 U	2.4 U	2.4 U	2.2 U	**0.18 J**	2.5 U	2.3 U	2.3 U	2.4 U	2.4 U	2.3 U	2.2 U	2 U
Sodium	NE	NE	1240 U	1320 U	1130 U	2230 UJ	1120 UJ	1140 U	1140 UJ	1120 U	1110 U	1090 U	1210 U	1220 U	1110 U	1070 U	1230 U	1130 U	**573 J**	1210 U	**116 J**	**1460**	**75.6 J**	**76.6 J**
Thallium	NE	NE	2.5 U	2.6 U	2.3 U	4.5 UJ	2.2 U	2.3 U	2.3 U	2.2 U	2.2 U	2.2 U	2.4 U	2.4 U	2.2 U	2.1 U	2.5 U	2.3 U	2.3 U	2.4 U	2.4 U	2.3 U	2.2 U	2 U
Vanadium	NE	NE	**19.5**	**26.2**	**27.9**	**30.8 J**	**30.3**	**31.4**	**75.2**	**15.1**	**25.1**	**27.2**	**22**	**23.1**	**39**	**20.4**	**21.8**	**11.1 J**	**52.1 J**	**22.1**	**25.7**	**13.1**	**5.9 J**	**4.7 J**
Zinc	109	10000	**126**	**38.9**	**34.3**	**68.5 J**	**168**	**45.2**	**859**	**18.8**	**43**	**33.5**	**1080**	**31.5**	**43.3**	**317**	**34.4**	**36.9 J**	**61.8 J**	**474**	**41.3**	**13.5**	**85.1 J**	**50.2 J**
Cyanides (mg/kg)																								
Free Cyanide	NE	NE	0.25 U	0.28 U	0.23 U	0.45 UJ	0.24 U	0.23 U	0.23 U	0.23 U	0.24 U	0.24 U	0.24 U	0.26 U	0.24 U	0.23 U	0.26 U	0.24 U	0.23 U	0.24 U	0.26 U	0.24 U	0.22 U	0.22 U

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 6 [Block 2277 Lot 1]													Adjacent to Parcel 6								
																Kent Ave. ROW								N. 12th St. ROW
Sample Name:			WW-SB-49	WW-SB-49	WW-SB-50	WW-SB-50	WW-SB-51	WW-SB-51	WW-SB-51	WW-SB-52	WW-SB-52	WW-SB-52	WW-SB-53	WW-SB-53	WW-SB-53	WW-MW-16	WW-MW-16	Duplicate of WW-MW-16	WW-MW-16	WW-SB-18	WW-SB-18	Duplicate of WW-SB-18	WW-SB-18	WW-SB-25
Sample Depth(ft bgs):			(9-10)	(84-85)	(1-2)	(5.5-6.5)	(1-2)	(6-9)	(52.5-53)	(2-3)	(9.5-10)	(67.5-68.5)	(1-2)	(7.5-8)	(24.5-25)	(2-3.5)	(20-21)	(20-21)	(38-40)	(3.5-4.5)	(9-10)	(9-10)	(51-53)	(1-3)
Sample Date:			11/3/2010	11/3/2010	10/27/2010	11/1/2010	10/19/2010	10/21/2010	10/21/2010	10/27/2010	10/29/2010	10/29/2010	10/27/2010	12/8/2010	12/8/2010	7/27/2009	8/10/2009	8/10/2009	8/10/2009	7/27/2009	8/7/2009	8/7/2009	8/7/2009	7/28/2009
BTEX (mg/kg)																								
Benzene	0.06	4.8	**4.7**	0.0011 U	0.0011 U	0.0012 U	0.0011 U	**0.02**	0.0011 U	0.00098 U	**0.48 J**	0.0054 U	**0.15**	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
Toluene	0.7	100	**0.37 J**	0.0011 U	0.0011 U	0.0012 U	0.0011 U	**0.0073**	0.0011 U	0.00098 U	**0.3 J**	0.0054 U	**0.097 J**	0.0062 UJ	0.0056 U	**0.029**	0.58 U	0.59 U	**0.0012 J**	0.0058 U	0.61 U	0.03 U	0.0058 U	**0.15**
Ethylbenzene	1	41	**4.6**	0.0011 U	0.0011 U	0.0012 U	0.0011 U	**0.00037 J**	0.0011 U	**0.00022 J**	**0.83 J**	0.0054 U	**0.097 J**	0.0062 U	0.0056 U	**0.0045 J**	0.58 U	0.59 U	0.0061 U	**0.0034 J**	0.61 U	0.03 U	0.0058 U	**0.026**
Total Xylene	0.26	100	**7.4 J**	0.0034 U	0.0033 UJ	0.0036 U	0.0034 U	0.0032 UJ	0.0033 UJ	0.0029 UJ	**4.4 J**	0.0054 U	**0.26 J**	0.0062 U	0.0056 U	**0.019**	0.58 U	0.59 U	0.0061 U	**0.019**	0.61 U	0.03 U	0.0058 U	**0.14**
Total BTEX	NE	NE	**17.07**	ND	ND	ND	ND	**0.02767**	ND	**0.00022**	**6.01**	ND	**0.604**	ND	ND	**0.0525**	ND	ND	**0.0012**	**0.0224**	ND	ND	ND	**0.316**
Other VOCs (mg/kg)																								
Acetone	0.05	100	30 U	0.011 U	0.011 U	**0.05**	**0.035**	0.011 UJ	**0.04 J**	0.0098 U	0.78 U	0.022 U	R	**0.049**	0.022 U	0.023 U	1.4 U	1.5 U	0.024 UJ	0.023 U	1.5 U	0.12 U	0.023 U	**0.0041 J**
Carbon disulfide	NE	NE	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 UJ	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
Chloroform	0.37	49	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
Chloromethane	NE	NE	3 U	0.0011 UJ	0.0011 U	0.0012 U	0.0011 U	0.0011 UJ	0.0011 UJ	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
1,1-Dichloroethane	0.27	26	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
1,1-Dichloroethene	0.33	100	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
cis-1,2-Dichloroethene	0.25	100	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
trans-1,2-Dichloroethene	0.19	100	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
2-Butanone (Methyl ethyl ketone)	0.12	100	30 U	0.011 U	0.011 U	0.012 U	0.011 U	0.011 U	0.011 U	0.0098 U	0.31 U	0.011 U	R	0.012 U	0.011 U	0.011 U	0.58 U	0.59 U	0.012 U	0.012 U	0.61 U	0.061 U	0.012 U	0.012 U
Methylene chloride	0.05	100	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0026 U	0.0021 U	**0.0014**	0.31 U	0.022 U	0.1 U	0.025 UJ	0.022 UJ	0.023 U	0.58 U	0.59 U	0.024 U	0.023 U	0.61 U	0.12 U	0.023 U	0.023 U
Styrene	NE	NE	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
Tetrachloroethene (PCE)	1.3	19	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
Trichloroethene (TCE)	0.47	21	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
Vinyl chloride	0.02	0.9	3 U	0.0011 U	0.0011 U	0.0012 U	0.0011 U	0.0011 U	0.0011 U	0.00098 U	0.31 U	0.0054 U	0.1 U	0.0062 U	0.0056 U	0.0057 U	0.58 U	0.59 U	0.0061 U	0.0058 U	0.61 U	0.03 U	0.0058 U	0.0058 U
Total VOCs	NE	NE	**17.07**	ND	ND	**0.05**	**0.035**	**0.02767**	**0.04**	**0.00162**	**6.01**	ND	**2.604**	**0.049**	ND	**0.0525**	ND	ND	**0.0012**	**0.0224**	ND	ND	ND	**0.3201**
PAHs (mg/kg)																								
Acenaphthene	20	100	**0.079 J**	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	**5.3**	0.36 U	**0.59**	**0.18 J**	0.3 U	**0.054 J**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	**0.022 J**	**0.075 J**	**0.24 J**
Acenaphthylene	100	100	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	2.1 U	0.36 U	**0.091 J**	0.33 U	0.3 U	**0.068 J**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	**0.066 J**
Anthracene	100	100	**0.19 J**	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	**10**	0.36 U	**0.72**	**0.38**	0.3 U	**0.17 J**	0.31 U	**0.038 J**	0.32 U	0.31 U	**0.052 J**	**0.061 J**	0.3 U	**0.53**
Benz[a]anthracene	1	1	**0.2**	0.041 U	**0.12**	0.04 U	**0.16 J**	0.039 U	0.039 U	**0.23**	**8.1**	0.036 U	**0.86**	**1.1**	0.3 U	**0.74**	0.31 U	0.31 U	0.32 U	0.31 U	**0.091 J**	**0.1 J**	0.3 U	**2.1**
Benzo[a]pyrene	1	1	**0.23**	0.041 U	**0.19**	0.04 U	**0.086 J**	0.039 U	0.039 U	**0.3**	**8.8**	0.036 U	**0.78**	**0.79**	0.3 U	**0.96**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	**2.9**
Benzo[b]fluoranthene	1	1	**0.27**	0.041 U	**0.17**	0.04 U	**0.21 J**	0.039 U	0.039 U	**0.28**	**4.5**	0.036 U	**0.7**	**0.26 J**	0.3 U	**0.92**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	**2.7**
Benzo[g,h,i]perylene	100	100	**0.21 J**	0.41 U	**0.21 J**	0.4 U	**2.1 J**	0.39 U	0.39 U	**0.28 J**	**9.4**	0.36 U	**1.1**	**0.47**	0.3 U	**0.76**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	**0.032 J**	0.3 U	**1.6**
Benzo[k]fluoranthene	0.8	3.9	**0.14**	0.041 U	0.041 U	0.04 U	0.22 U	0.039 U	0.039 U	**0.11**	**1.1**	0.036 U	**0.21**	**0.056 J**	0.3 U	**0.38**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	**1**
Chrysene	1	3.9	**0.38 J**	0.41 U	**0.16 J**	0.4 U	**0.68 J**	0.39 U	0.39 U	**0.27 J**	**11**	0.36 U	**0.94**	**1.1**	0.3 U	**0.75**	0.31 U	0.31 U	0.32 U	0.31 U	**0.083 J**	**0.11 J**	0.3 U	**2.2**
Dibenz[a,h]anthracene	0.33	0.33	**0.1**	0.041 U	0.041 U	0.04 U	**0.23**	0.039 U	0.039 U	**0.051**	**1.4**	0.036 U	**0.19**	**0.34 J**	0.3 UJ	**0.44**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	**0.49**
Fluoranthene	100	100	**0.16 J**	0.41 U	**0.18 J**	0.4 U	2.2 U	0.39 U	0.39 U	**0.33 J**	**13**	0.36 U	**1.6**	**0.3 J**	0.3 U	**1.1**	0.31 U	0.31 U	0.32 U	0.31 U	**0.055 J**	**0.055 J**	0.3 U	**3.2**
Fluorene	30	100	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	**6.1**	0.36 U	**0.83**	**0.26 J**	0.3 U	**0.044 J**	**0.019 J**	**0.051 J**	0.32 U	0.31 U	**0.033 J**	**0.044 J**	0.3 U	**0.16 J**
Indeno[1,2,3-cd]pyrene	0.5	0.5	**0.3**	0.041 U	**0.16**	0.04 U	**0.4**	0.039 U	0.039 U	**0.23**	**4.7**	0.036 U	**0.57**	**0.17 J**	0.3 U	**0.85**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	**1.7**
2-Methylnaphthalene	NE	NE	**1.2**	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	**0.63 J**	0.36 U	**0.16 J**	0.33 U	0.3 U	**0.04 J**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	**0.024 J**	**0.16 J**	**0.067 J**
Naphthalene	12	100	**0.23 J**	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	**0.12 J**	0.38 U	**0.62 J**	0.36 U	**0.1 J**	0.33 U	0.3 U	0.31 U	0.31 U	0.31 U	0.32 U	0.31 U	**0.017 J**	**0.027 J**	**0.79**	0.31 U
Phenanthrene	100	100	**0.7**	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	**0.079 J**	**35**	0.36 U	**2.2**	**1**	0.3 U	**0.67**	0.31 U	**0.16 J**	0.32 U	0.31 U	**0.15 J**	**0.15 J**	0.3 U	**2.6**
Pyrene	100	100	**0.42 J**	0.41 U	**0.24 J**	0.4 U	**0.67 J**	0.39 U	0.39 U	**0.25 J**	**24**	0.36 U	**1.3**	**1.5**	0.3 U	**1**	0.31 U	0.31 U	0.32 U	0.31 U	**0.21 J**	**0.23 J**	0.3 U	**3.1**
Total PAH 17	NE	NE	**4.809**	ND	**1.43**	ND	**4.536**	ND	**0.12**	**2.41**	**143.65**	ND	**12.941**	**7.906**	ND	**8.946**	**0.019**	**0.249**	ND	ND	**0.691**	**0.855**	**1.025**	**24.653**
Other SVOCs (mg/kg)																								
Bis(2-ethylhexyl)phthalate	NE	NE	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	2.1 U	0.36 U	**0.23 J**	**0.45**	0.3 U	0.31 U	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	**1.8**
Butyl benzyl phthalate	NE	NE	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	2.1 U	0.36 U	0.38 U	0.33 U	0.3 U	0.31 U	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	0.31 U
Carbazole	NE	NE	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	2.1 U	0.36 U	0.38 U	0.33 U	0.3 U	**0.082 J**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	**0.25 J**
Dibenzofuran	7	59	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 UJ	0.39 U	0.38 U	2.1 U	0.36 U	**0.5**	**0.077 J**	0.3 U	**0.04 J**	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	**0.11 J**
2,4-Dimethylphenol	NE	NE	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	2.1 U	0.36 U	0.38 U	0.33 U	0.3 U	0.31 U	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	0.31 U
2-Methylphenol (o-Cresol)	0.33	100	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	2.1 U	0.36 U	0.38 U	0.33 U	0.3 U	0.31 U	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	0.31 U
4-Methylphenol (p-Cresol)	0.33	100	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	2.1 U	0.36 U	0.38 U	0.33 U	0.3 U	0.31 U	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	0.3 U	0.31 U
Pentachlorophenol	0.8	6.7	1.7 U	1.2 U	1.2 U	1.2 U	6.6 U	1.2 U	1.2 U	1.2 U	6.3 U	1.1 U	1.2 U	0.83 U	0.75 U	1.9 U	2 U	2 U	2 U	1.9 U	2.1 U	2 U	1.9 U	1.9 U
Phenol	0.33	100	0.55 U	0.41 U	0.41 U	0.4 U	2.2 U	0.39 U	0.39 U	0.38 U	2.1 U	0.36 U	0.38 U	0.33 U	0.3 U	0.31 U	0.31 U	0.31 U	0.32 U	0.31 U	0.33 U	0.32 U	**0.046 J**	0.31 U
Total SVOCs	NE	NE	**4.809**	ND	**1.43**	ND	**4.536**	ND	**0.12**	**2.41**	**143.65**	ND	**13.671**	**8.433**	ND	**9.068**	**0.019**	**0.249**	ND	ND	**0.691**	**0.855**	**1.071**	**26.813**
PCBs (mg/kg)																								
Aroclor 1242	NE	NE	NA	NA	0.083 U	NA	0.088 U	NA	NA	0.077 U	NA	NA	0.077 U	NA	NA	0.019 U	NA	NA	NA	0.02 U	NA	NA	NA	0.02 U
Aroclor 1254	NE	NE	NA	NA	0.083 U	NA	0.088 U	NA	NA	0.077 U	NA	NA	0.077 U	NA	NA	0.019 U	NA	NA	NA	0.02 U	NA	NA	NA	0.02 U
Aroclor 1260	NE	NE	NA	NA	0.083 U	NA	0.088 U	NA	NA	**0.021 J**	NA	NA	**0.019 J**	NA	NA	0.019 U	NA	NA	NA	0.02 U	NA	NA	NA	**0.029 J**
Aroclor 1268	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCB Aroclors	NE	NE	NA	NA	ND	NA	ND	NA	NA	**0.021**	NA	NA	**0.019**	NA	NA	ND	NA	NA	NA	ND	NA	NA	NA	**0.029**
Pesticides (mg/kg)																								
Aldrin	0.005	0.097	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	0.002 U
alpha-BHC	0.02	0.48	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	0.002 U
beta-BHC	0.036	0.36	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	**0.0023 JN**
gamma-BHC	0.1	1.3	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	0.002 U
delta-BHC	0.04	100	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	0.002 U
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Parcel 6 [Block 2277 Lot 1]													Adjacent to Parcel 6								
																Kent Ave. ROW								N. 12th St. ROW
Sample Name:			WW-SB-49	WW-SB-49	WW-SB-50	WW-SB-50	WW-SB-51	WW-SB-51	WW-SB-51	WW-SB-52	WW-SB-52	WW-SB-52	WW-SB-53	WW-SB-53	WW-SB-53	WW-MW-16	WW-MW-16	Duplicate of WW-MW-16	WW-MW-16	WW-SB-18	WW-SB-18	Duplicate of WW-SB-18	WW-SB-18	WW-SB-25
Sample Depth(ft bgs):			(9-10)	(84-85)	(1-2)	(5.5-6.5)	(1-2)	(6-9)	(52.5-53)	(2-3)	(9.5-10)	(67.5-68.5)	(1-2)	(7.5-8)	(24.5-25)	(2-3.5)	(20-21)	(20-21)	(38-40)	(3.5-4.5)	(9-10)	(9-10)	(51-53)	(1-3)
Sample Date:			11/3/2010	11/3/2010	10/27/2010	11/1/2010	10/19/2010	10/21/2010	10/21/2010	10/27/2010	10/29/2010	10/29/2010	10/27/2010	12/8/2010	12/8/2010	7/27/2009	8/10/2009	8/10/2009	8/10/2009	7/27/2009	8/7/2009	8/7/2009	8/7/2009	7/28/2009
alpha-chlordane	0.094	4.2	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	**0.0046 J**	NA	NA	0.0077 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	0.002 U
gamma-Chlordane	NE	NE	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	**0.0048 J**	NA	NA	0.0077 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	0.002 U
4,4-DDD	0.0033	13	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0038 U	NA	NA	NA	0.0038 U	NA	NA	NA	**0.0041 JN**
4,4'-DDE	0.0033	8.9	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0038 U	NA	NA	NA	0.0038 U	NA	NA	NA	0.0038 U
4,4'-DDT	0.0033	7.9	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0038 UJ	NA	NA	NA	0.0038 UJ	NA	NA	NA	**0.0077 J**
Dieldrin	0.005	0.2	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0038 U	NA	NA	NA	0.0038 U	NA	NA	NA	0.0038 U
Endosulfan I	2.4	24	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	0.002 U
Endosulfan II	2.4	24	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0038 U	NA	NA	NA	0.0038 U	NA	NA	NA	0.0038 U
Endosulfan sulfate	2.4	24	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0038 U	NA	NA	NA	0.0038 U	NA	NA	NA	0.0038 U
Endrin	0.014	11	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0038 U	NA	NA	NA	0.0038 U	NA	NA	NA	0.0038 U
Endrin aldehyde	NE	NE	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0038 U	NA	NA	NA	0.0038 U	NA	NA	NA	0.0038 U
Endrin ketone	NE	NE	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0038 U	NA	NA	NA	0.0038 U	NA	NA	NA	**0.017 J**
Heptachlor	0.042	2.1	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	0.002 U
Heptachlor epoxide	NE	NE	NA	NA	0.0083 U	NA	0.0088 U	NA	NA	0.0077 U	NA	NA	0.0077 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	NA	NA	0.002 U
Methoxychlor	NE	NE	NA	NA	0.0083 UJ	NA	0.0088 U	NA	NA	0.0077 UJ	NA	NA	0.0077 UJ	NA	NA	0.019 UJ	NA	NA	NA	0.02 UJ	NA	NA	NA	0.02 UJ
Herbicides (mg/kg)																								
Silvex	3.8	100	NA	NA	0.021 UJ	NA	0.022 U	NA	NA	0.02 UJ	NA	NA	0.02 UJ	NA	NA	0.024 U	NA	NA	NA	0.024 U	NA	NA	NA	0.025 U
Metals (mg/kg)																								
Aluminum	NE	NE	**6240**	**755**	**7690**	**4450**	**5880**	**6430**	**2160**	**7000**	**2570**	**5200**	**4510**	**9460**	**4310**	**5950**	**6680**	**9320**	**3380**	**10400**	**9540**	**10900**	**2530**	**6640**
Antimony	NE	NE	3.3 UJ	2.4 UJ	2.3 UJ	2.4 UJ	2.5 U	2.3 U	2.3 UJ	2.3 UJ	2.5 UJ	2.1 UJ	2.3 UJ	4.9 U	4.4 U	4.5 UJ	4.7 UJ	4.7 UJ	4.8 UJ	4.7 UJ	5 UJ	5 UJ	4.7 UJ	4.6 UJ
Arsenic	13	16	**36.3**	1.2 U	**16.9**	**1.8**	**9.9**	**2.4**	**1.7 J**	**2.6**	**24.4**	**1.7**	**64.9**	**4.3 J**	5.6 U	5.7 UJ	5.9 U	6 U	6.1 U	6 U	6.4 U	6.3 U	5.9 U	**273**
Barium	350	400	**269**	**14.2 J**	**127**	**39 J**	**55.5**	**53.2**	**9.8 J**	**67.9**	**42.6 J**	**41.1 J**	**103**	**48.5**	**16.1**	**67.7**	**33.4**	**42.3**	**19.7**	**35.6**	**34.5**	**38.6**	**19.7**	**67.9**
Beryllium	7.2	72	**0.53 J**	**0.31 J**	**0.32 J**	**0.26 J**	**0.54**	**0.43 J**	**0.46**	**0.2 J**	0.49 U	**0.32 J**	**0.25 J**	**0.46 J**	**0.22 J**	**0.5 J**	**0.45 J**	**0.56 J**	**0.34 J**	**0.49 J**	**0.46 J**	**0.52 J**	1.4 U	**0.5 J**
Cadmium	2.5	4.3	1.6 U	1.2 U	**0.89 J**	**0.63 J**	**0.29 J**	1.2 U	1.1 UJ	**0.52 J**	1.2 U	1 U	**0.94 J**	1.5 U	1.3 U	**0.32 J**	1.4 U	1.4 U	1.4 UJ	1.4 UJ	1.5 UJ	1.5 UJ	1.4 U	1.4 UJ
Calcium	NE	NE	**6430**	**273 J**	**6500 J**	**1210**	**16400**	**748 J**	**255 J**	**47900 J**	**13100 J**	**6300 J**	**6320 J**	**1150**	**805**	**4320 J**	**796 J**	**1050 J**	**928 J**	**1340 J**	**1220**	**1410**	**1340**	**8940 J**
Chromium	NE	NE	**14.9**	**1.7 J**	**19.4**	**12.7**	**8.8**	**14.9**	**12.4 J**	**14.6**	**5.5**	**13.4**	**12.2**	**17.1**	**10.9**	**13.9 J**	**12 J**	**20.3 J**	**9.8 J**	**13.4 J**	**13.6 J**	**16.3 J**	**7.6 J**	**14.1 J**
Cobalt	NE	NE	**7 J**	12 U	**9.6 J**	**7.4 J**	**14.9**	**7.3 J**	**6.8 J**	**4.2 J**	**5.3 J**	**5.9 J**	**6.3 J**	**6.6**	**4.2**	**5.9**	**4.8**	**5.8**	**4.8**	**5.5**	**7.8**	**8.5**	**3.7**	**6.6**
Copper	50	270	**783**	**28**	**75.3**	**19.4**	**49**	**14.4**	**13.6**	**23.1**	**15.1**	**11.2**	**95.3**	**13**	**5.7**	**29.6**	**10.3 J**	**14.2 J**	**8.1 J**	**11**	**14 J**	**14.7 J**	**6.7 J**	**57.6**
Iron	NE	NE	**33800**	**329**	**24100**	**18600**	**12400**	**17200**	**48600**	**10400**	**10900**	**13500**	**20900**	**17300**	**9450**	**20000**	**15700**	**18200**	**11300**	**16900**	**20200**	**22600**	**10100**	**16300**
Lead	63	400	**812**	**4.6**	**436**	**11.1**	**18**	**8.7**	**7.3 J**	**42.4**	**14.9**	**4.8**	**504**	**11.6**	**2.5 J**	**179**	4.2 U	**12**	4.3 U	**17.2**	**8.1**	**10.7**	4.2 U	**373**
Magnesium	NE	NE	**2460**	**85.7 J**	**3030**	**1580**	**6050**	**2350**	**442 J**	**7670**	**863 J**	**5140**	**1870**	**2500**	**1930**	**1880 J**	**2100 J**	**2930 J**	**1960 J**	**2330 J**	**2680**	**2880**	**1530**	**2500 J**
Manganese	1600	2000	**213 J**	**7 J**	**281 J**	**443 J**	**158**	**264**	**342**	**190 J**	**63 J**	**277 J**	**153 J**	**316**	**69.2**	**401**	**199**	**236**	**175**	**272**	**1370 J**	**1540 J**	**140 J**	**409**
Mercury	0.18	0.81	**1.2**	0.04 U	**0.85**	0.036 U	**0.042**	0.034 U	0.034 U	**0.073**	**0.039**	0.033 U	**1.9**	0.062 U	0.049 U	**0.63**	**0.0099 J**	**0.02**	0.058 U	**0.036**	**0.03**	**0.035**	**0.0047 J**	**0.26**
Nickel	30	310	**18.3**	**2 J**	**20.8**	**10.3**	**23.2**	**13.4**	**6.6 J**	**11.2**	**12.2**	**12**	**21.4**	**13.6**	**11.2**	**12.4**	**11.1**	**13**	**9.3**	**11.5**	**13.1**	**14.3**	**5.5**	**14.9**
Potassium	NE	NE	**612 J**	1200 U	**2040**	**839 J**	**2350**	**981 J**	**205 J**	**1150**	**548 J**	**1730**	**408 J**	**1030**	**952**	**690 J**	**723 J**	**850 J**	**830 J**	**597 J**	**616**	**641**	**517**	**855 J**
Selenium	3.9	180	**4**	2.4 U	**2.5**	2.4 U	2.5 U	2.3 U	2.3 U	2.3 U	**1.7 J**	2.1 U	**2.3**	11.2 U	10.1 U	**4.4 J**	10.6 U	10.7 U	10.9 U	**4.1 J**	11.4 UJ	11.3 UJ	10.6 UJ	10.4 UJ
Silver	2	180	**2.5 J**	2.4 U	2.3 U	2.4 U	2.5 U	2.3 U	2.3 U	2.3 U	2.5 U	2.1 U	2.3 U	1.5 U	1.3 U	**0.12 J**	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U	1.4 U	**0.084 J**
Sodium	NE	NE	**452 J**	**336 J**	**108 J**	**98.5 J**	1250 UJ	1160 U	1130 U	**273 J**	**167 J**	**480 J**	**136 J**	**50.8 J**	**169**	68.2 UJ	70.5 U	71.4 U	72.5 UJ	71.3 UJ	**204**	**223**	70.7 U	**172 J**
Thallium	NE	NE	3.3 U	2.4 U	2.3 U	2.4 U	2.5 U	2.3 U	2.3 U	2.3 U	2.5 U	2.1 U	2.3 U	4.5 U	4 U	4.1 UJ	4.2 UJ	4.3 UJ	**1.7 J**	4.3 UJ	4.5 U	4.5 U	4.2 U	4.2 UJ
Vanadium	NE	NE	**36.9**	**17.4**	**38.3**	**21.2**	**33.4**	**24.5**	**32.3**	**20.2**	**13.7**	**17.9**	**156**	**23.5**	**12.3**	**19.3**	**17.5 J**	**29.2 J**	**14.5**	**19.1**	**20.4**	**22.8**	**12.6**	**23**
Zinc	109	10000	**592**	**36.4**	**456**	**114**	**132**	**34.3**	**34.8**	**52.3**	**572**	**27.9**	**474**	**42.9**	**20.7**	**113**	**33.1 J**	**35.8 J**	**23.4 J**	**36.2**	**33.4**	**39.9**	**15.8**	**433**
Cyanides (mg/kg)																								
Free Cyanide	NE	NE	0.33 U	0.25 U	0.25 U	0.25 U	0.26 U	0.23 U	0.24 U	0.23 U	0.25 U	0.22 U	0.23 U	0.25 U	0.22 U	0.227 U	0.229 U	0.235 U	0.239 U	0.231 U	0.239 U	0.243 U	0.231 U	0.233 U

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Adjacent to Parcel 6 N. 12th St. ROW												
Sample Name:			WW-SB-25	WW-SB-25	WW-SB-26	Duplicate of WW-SB-26	WW-SB-26	WW-SB-27	WW-SB-27	WW-SB-34	WW-SB-34	WW-SB-35	WW-SB-35	WW-SB-36	WW-SB-36
Sample Depth(ft bgs):			(34-35)	(52-53)	(1-4)	(1-4)	(12-13)	(4-5)	(14-15)	(2-5)	(10-13)	(1-4.5)	(8-10)	(3-5)	(9-10)
Sample Date:			7/28/2009	7/29/2009	7/29/2009	7/29/2009	7/29/2009	8/3/2009	8/4/2009	9/16/2009	9/16/2009	9/24/2009	9/30/2009	9/30/2009	9/30/2009
BTEX (mg/kg)															
Benzene	0.06	4.8	**450**	**0.03**	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	**0.0026 J**	**0.28 J**	0.0065 U	**0.0013 J**	0.0058 UJ	7.6 UJ
Toluene	0.7	100	**630**	**0.12**	**0.31 J**	0.0067 UJ	0.032 UJ	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	0.0062 U	0.0058 UJ	7.6 UJ
Ethylbenzene	1	41	**1400**	**0.052**	**0.066 J**	**0.016 J**	**0.025 J**	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	**0.0011 J**	0.0058 UJ	**1.2 J**
Total Xylene	0.26	100	**1700**	**0.11**	**0.26 J**	**0.094 J**	**0.1 J**	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	**0.0063 J**	0.0058 UJ	7.6 UJ
Total BTEX	NE	NE	**4180**	**0.312**	**0.636**	**0.11**	**0.125**	ND	ND	**0.0026**	**0.28**	ND	**0.0087**	ND	**1.2**
Other VOCs (mg/kg)															
Acetone	0.05	100	150 U	**0.016 J**	**0.16 J**	**0.025 J**	**0.4 J**	0.024 U	3.1 U	0.024 UJ	3.2 U	0.026 UJ	**0.058 J**	**0.0038 J**	19 UJ
Carbon disulfide	NE	NE	58 U	0.0063 U	0.029 U	0.0067 U	**0.0081 J**	0.006 U	1.2 U	0.0059 UJ	1.3 U	**0.0025 J**	**0.0018 J**	0.0058 UJ	7.6 UJ
Chloroform	0.37	49	58 U	0.0063 U	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	0.0062 U	0.0058 U	7.6 UJ
Chloromethane	NE	NE	58 U	0.0063 U	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	0.0062 U	0.0058 U	7.6 UJ
1,1-Dichloroethane	0.27	26	58 U	0.0063 U	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	0.0062 U	0.0058 UJ	7.6 UJ
1,1-Dichloroethene	0.33	100	58 U	0.0063 U	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	0.0062 U	0.0058 UJ	7.6 UJ
cis-1,2-Dichloroethene	0.25	100	58 U	0.0063 U	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	0.0062 U	0.0058 UJ	7.6 UJ
trans-1,2-Dichloroethene	0.19	100	58 U	0.0063 U	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 U	1.3 U	0.0065 U	0.0062 U	0.0058 U	7.6 UJ
2-Butanone (Methyl ethyl ketone)	0.12	100	58 U	0.013 U	0.059 U	0.013 U	0.065 U	0.012 U	1.2 U	0.012 U	1.3 U	0.013 U	0.012 U	0.012 UJ	7.6 UJ
Methylene chloride	0.05	100	58 U	0.025 U	0.12 U	0.027 U	0.13 U	0.024 U	1.2 U	0.024 UJ	1.3 U	0.026 U	0.025 U	0.023 UJ	7.6 UJ
Styrene	NE	NE	**77**	**0.00045 J**	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	0.0062 U	0.0058 UJ	7.6 UJ
Tetrachloroethene (PCE)	1.3	19	58 U	0.0063 U	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	0.0062 U	0.0058 UJ	7.6 UJ
Trichloroethene (TCE)	0.47	21	**22 J**	0.0063 U	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 UJ	1.3 U	0.0065 U	0.0062 U	0.0058 UJ	7.6 UJ
Vinyl chloride	0.02	0.9	58 U	0.0063 U	0.029 U	0.0067 U	0.032 U	0.006 U	1.2 U	0.0059 U	1.3 U	0.0065 U	0.0062 U	0.0058 UJ	7.6 UJ
Total VOCs	NE	NE	**4279**	**0.32845**	**0.796**	**0.135**	**0.5331**	ND	ND	**0.0026**	**0.28**	**0.0025**	**0.0685**	**0.0038**	**1.2**
PAHs (mg/kg)															
Acenaphthene	20	100	**26 J**	**0.042 J**	**0.12 J**	**0.16 J**	**0.16 J**	0.32 U	**0.056 J**	**1 J**	**0.24 J**	**0.47 J**	**3.7**	**8 J**	**72 J**
Acenaphthylene	100	100	**190**	**0.027 J**	0.32 U	0.36 U	0.35 U	**0.065 J**	0.33 U	**0.62 J**	**0.66 J**	6.8 U	**0.47 J**	**5.2 J**	**31 J**
Anthracene	100	100	**69 J**	**0.029 J**	**0.32**	**0.44**	**0.22 J**	**0.036 J**	0.33 U	**0.67 J**	**1.1 J**	**0.5 J**	**2.2**	**26**	**60 J**
Benz[a]anthracene	1	1	**39 J**	**0.025 J**	**2**	**2.6**	**0.57**	**0.24 J**	**0.035 J**	**0.96 J**	**3.2 J**	**0.81 J**	**2.3**	**89**	**120 J**
Benzo[a]pyrene	1	1	160 U	0.34 U	**3.6**	**3.9**	**0.95**	**0.48**	0.33 U	**1.4 J**	**3.9 J**	6.8 U	**2.7 J**	**95**	**140 J**
Benzo[b]fluoranthene	1	1	160 U	0.34 U	**3**	**3.4**	**0.78**	**0.48**	0.33 U	**1.6 J**	**3.5 J**	**0.84 J**	**2.2 J**	**100**	**120 J**
Benzo[g,h,i]perylene	100	100	160 U	0.34 U	**2**	**2.4**	**0.49**	**0.65**	0.33 U	**2.1 J**	**2.7 J**	6.8 U	**3.4 J**	**67**	**97 J**
Benzo[k]fluoranthene	0.8	3.9	160 U	0.34 U	**1.2**	**1.4**	**0.32 J**	**0.2 J**	0.33 U	**0.56 J**	**1.3 J**	6.8 U	**0.88 J**	**49**	**46 J**
Chrysene	1	3.9	**33 J**	0.34 U	**1.9**	**2.4**	**0.55**	**0.22 J**	0.33 U	**1.1 J**	**2.6 J**	**0.78 J**	**2.2**	**95**	**110 J**
Dibenz[a,h]anthracene	0.33	0.33	160 U	0.34 U	**0.73**	**1.1**	**0.17 J**	**0.3 J**	0.33 U	1.3 UJ	1.7 UJ	6.8 U	**0.91 J**	**17**	**27 J**
Fluoranthene	100	100	**69 J**	**0.03 J**	**1.3**	**1.7**	**0.48**	**0.13 J**	**0.034 J**	**1.3 J**	**3.8 J**	**0.87 J**	**2.6**	**150**	**140 J**
Fluorene	30	100	**97 J**	**0.034 J**	**0.1 J**	**0.15 J**	**0.22 J**	0.32 U	**0.061 J**	1.3 U	1.7 U	6.8 U	**0.8**	**9.2 J**	20 U
Indeno[1,2,3-cd]pyrene	0.5	0.5	160 U	0.34 U	**2.1**	**2.9**	**0.51**	**0.6**	0.33 U	**1.5 J**	**2.4 J**	6.8 U	**3.5 J**	**74**	**110 J**
2-Methylnaphthalene	NE	NE	**640**	**0.17 J**	**0.15 J**	**0.23 J**	**2.6**	**0.021 J**	**2.1**	1.3 U	1.7 U	6.8 U	**1.1**	**9.5 J**	**3.4 J**
Naphthalene	12	100	**1500**	**0.33 J**	0.32 U	0.36 U	0.35 U	0.32 U	**1.2**	1.3 U	1.7 U	6.8 U	**1.7**	**15 J**	20 U
Phenanthrene	100	100	**260**	**0.12 J**	**0.75**	**1**	**0.52**	**0.056 J**	**0.093 J**	**0.74 J**	**0.25 J**	6.8 U	**1.2**	**100**	**34 J**
Pyrene	100	100	**95 J**	**0.048 J**	**1.3**	**1.6**	**0.55**	**0.15 J**	**0.069 J**	**3.3 J**	**11**	**1.7 J**	**7.1**	**140**	**200 J**
Total PAH 17	NE	NE	**3018**	**0.855**	**20.57**	**25.38**	**9.09**	**3.628**	**3.648**	**16.85**	**36.65**	**5.97**	**38.96**	**1048.9**	**1310.4**
Other SVOCs (mg/kg)															
Bis(2-ethylhexyl)phthalate	NE	NE	160 U	**0.058 J**	**0.12 J**	**0.52**	**0.6**	**0.21 J**	**0.26 J**	**0.87 J**	1.7 U	6.8 U	0.67 U	16 U	20 U
Butyl benzyl phthalate	NE	NE	160 U	0.34 U	0.32 U	0.36 U	0.35 U	0.32 U	0.33 U	1.3 U	1.7 U	6.8 U	0.67 U	16 U	20 U
Carbazole	NE	NE	160 U	0.34 U	**0.18 J**	**0.25 J**	**0.045 J**	0.32 U	0.33 U	1.3 U	1.7 U	6.8 U	**0.1 J**	**14 J**	**2.3 J**
Dibenzofuran	7	59	160 U	0.34 U	**0.063 J**	**0.086 J**	**0.12 J**	0.32 U	0.33 U	**0.18 J**	1.7 U	6.8 U	**0.39 J**	**5.2 J**	20 U
2,4-Dimethylphenol	NE	NE	160 U	0.34 U	0.32 U	0.36 U	0.35 U	0.32 U	0.33 U	1.3 UJ	1.7 UJ	6.8 U	0.67 U	16 U	20 U
2-Methylphenol (o-Cresol)	0.33	100	160 U	0.34 U	0.32 U	0.36 U	0.35 U	0.32 U	0.33 U	1.3 U	1.7 U	6.8 U	R	16 U	20 U
4-Methylphenol (p-Cresol)	0.33	100	160 U	0.34 U	0.32 U	0.36 U	0.35 U	0.32 U	0.33 U	1.3 U	1.7 U	6.8 U	R	16 U	20 U
Pentachlorophenol	0.8	6.7	990 U	2.1 U	2 U	2.3 U	2.2 U	2 U	2.1 U	8 UJ	11 U	43 U	4.2 U	99 U	130 U
Phenol	0.33	100	160 U	0.34 U	0.32 U	0.36 U	0.35 U	0.32 U	0.33 U	1.3 U	1.7 U	6.8 U	R	16 U	20 U
Total SVOCs	NE	NE	**3018**	**0.913**	**20.933**	**26.236**	**9.855**	**3.838**	**3.908**	**17.9**	**36.65**	**5.97**	**39.45**	**1068.1**	**1312.7**
PCBs (mg/kg)															
Aroclor 1242	NE	NE	NA	NA	0.02 UJ	0.023 UJ	NA	0.02 U	NA	0.38 U	NA	0.044 U	NA	0.02 U	NA
Aroclor 1254	NE	NE	NA	NA	0.02 UJ	0.023 UJ	NA	0.02 U	NA	0.38 U	NA	0.044 U	NA	0.02 U	NA
Aroclor 1260	NE	NE	NA	NA	0.02 UJ	0.023 UJ	NA	0.02 U	NA	0.38 U	NA	0.044 U	NA	0.02 UJ	NA
Aroclor 1268	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total PCB Aroclors	NE	NE	NA	NA	ND	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Pesticides (mg/kg)															
Aldrin	0.005	0.097	NA	NA	0.002 U	0.0023 U	NA	0.002 UJ	NA	0.099 U	NA	0.023 UJ	NA	0.002 UJ	NA
alpha-BHC	0.02	0.48	NA	NA	0.002 U	0.0023 U	NA	0.002 UJ	NA	0.099 UJ	NA	0.023 UJ	NA	0.002 U	NA
beta-BHC	0.036	0.36	NA	NA	0.002 U	0.0023 U	NA	0.002 UJ	NA	0.099 U	NA	0.023 UJ	NA	0.002 UJ	NA
gamma-BHC	0.1	1.3	NA	NA	0.002 U	0.0023 U	NA	0.002 UJ	NA	0.099 UJ	NA	0.023 UJ	NA	0.002 U	NA
delta-BHC	0.04	100	NA	NA	0.002 U	0.0023 U	NA	0.002 UJ	NA	0.099 UJ	NA	0.023 UJ	NA	0.002 U	NA
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 8. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 2 and 6
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Restricted-Residential SCO	Adjacent to Parcel 6												
			N. 12th St. ROW												
Sample Name:			WW-SB-25	WW-SB-25	WW-SB-26	Duplicate of WW-SB-26	WW-SB-26	WW-SB-27	WW-SB-27	WW-SB-34	WW-SB-34	WW-SB-35	WW-SB-35	WW-SB-36	WW-SB-36
Sample Depth(ft bgs):			(34-35)	(52-53)	(1-4)	(1-4)	(12-13)	(4-5)	(14-15)	(2-5)	(10-13)	(1-4.5)	(8-10)	(3-5)	(9-10)
Sample Date:			7/28/2009	7/29/2009	7/29/2009	7/29/2009	7/29/2009	8/3/2009	8/4/2009	9/16/2009	9/16/2009	9/24/2009	9/30/2009	9/30/2009	9/30/2009
alpha-chlordane	0.094	4.2	NA	NA	0.002 U	0.0023 U	NA	0.002 UJ	NA	0.099 U	NA	0.023 UJ	NA	0.002 UJ	NA
gamma-Chlordane	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NE	NE	NA	NA	0.002 U	0.0023 U	NA	0.002 UJ	NA	0.099 U	NA	0.023 UJ	NA	**0.0043 J**	NA
4,4-DDD	0.0033	13	NA	NA	0.0038 U	0.0044 U	NA	0.004 UJ	NA	0.099 UJ	NA	0.023 UJ	NA	0.0038 U	NA
4,4'-DDE	0.0033	8.9	NA	NA	0.0038 U	0.0044 U	NA	0.004 UJ	NA	0.099 U	NA	0.023 U	NA	0.0038 UJ	NA
4,4'-DDT	0.0033	7.9	NA	NA	0.0038 UJ	0.0044 UJ	NA	0.004 UJ	NA	0.099 U	NA	0.023 UJ	NA	**0.0092 JN**	NA
Dieldrin	0.005	0.2	NA	NA	0.0038 U	0.0044 U	NA	0.004 UJ	NA	0.099 U	NA	0.023 UJ	NA	0.0038 U	NA
Endosulfan I	2.4	24	NA	NA	0.002 U	0.0023 U	NA	0.002 UJ	NA	0.099 UJ	NA	0.023 UJ	NA	0.002 UJ	NA
Endosulfan II	2.4	24	NA	NA	0.0038 U	0.0044 U	NA	0.004 UJ	NA	0.099 U	NA	0.023 U	NA	0.0038 U	NA
Endosulfan sulfate	2.4	24	NA	NA	0.0038 U	0.0044 U	NA	0.004 UJ	NA	0.099 U	NA	0.023 U	NA	0.0038 U	NA
Endrin	0.014	11	NA	NA	0.0038 U	0.0044 U	NA	0.004 UJ	NA	0.099 U	NA	0.023 UJ	NA	**0.022 J**	NA
Endrin aldehyde	NE	NE	NA	NA	0.0038 U	0.0044 U	NA	0.004 U	NA	0.099 U	NA	0.023 U	NA	0.019 UJ	NA
Endrin ketone	NE	NE	NA	NA	0.0038 U	0.0044 U	NA	0.004 U	NA	0.099 U	NA	0.023 U	NA	0.0038 UJ	NA
Heptachlor	0.042	2.1	NA	NA	0.002 U	0.0023 U	NA	0.002 U	NA	0.099 U	NA	0.023 UJ	NA	0.002 U	NA
Heptachlor epoxide	NE	NE	NA	NA	0.002 U	0.0023 U	NA	**0.00087 J**	NA	0.099 UJ	NA	0.023 UJ	NA	0.002 UJ	NA
Methoxychlor	NE	NE	NA	NA	0.02 UJ	0.023 UJ	NA	0.02 UJ	NA	0.19 U	NA	0.044 UJ	NA	**0.023 JN**	NA
Herbicides (mg/kg)															
Silvex	3.8	100	NA	NA	0.025 U	0.026 U	NA	0.026 UJ	NA	**0.0068**	NA	0.027 U	NA	0.022 U	NA
Metals (mg/kg)															
Aluminum	NE	NE	**2660**	**2700**	**8570**	**8540**	**10700**	**8830**	**9520**	**5520**	**5840**	**5700**	**4020**	**5490**	**15300 J**
Antimony	NE	NE	4.7 UJ	5.2 UJ	4.7 UJ	5.5 UJ	5.3 UJ	5.1 UJ	5.1 UJ	4.8 UJ	5.3 UJ	**6.7 J**	5 UJ	4.6 UJ	**5.3 J**
Arsenic	13	16	**2 J**	6.6 U	**3.7**	**3.3 J**	**3.6**	**10.9**	**2.8 J**	**23.1**	**20**	**32.8 J**	**20.5**	**24.8**	**300 J**
Barium	350	400	**15.8**	**17.8**	**71.5**	**85.8**	**46.2**	**109**	**54**	**124 J**	**60.4 J**	**80.1**	**46.5 J**	**74.9 J**	**88.8 J**
Beryllium	7.2	72	**0.34 J**	**0.35 J**	**0.63 J**	**0.61 J**	**0.6 J**	**0.65 J**	**0.73 J**	1.5 UJ	1.6 U	**0.31 J**	**0.37 J**	**0.42 J**	**1.2 J**
Cadmium	2.5	4.3	1.4 UJ	1.6 UJ	1.4 UJ	1.7 UJ	1.6 UJ	1.5 UJ	1.5 U	**0.57 J**	1.6 U	1.6 U	**1.4 J**	**0.44 J**	**9.8 J**
Calcium	NE	NE	**772 J**	**788 J**	**2070 J**	**2840 J**	**1880 J**	**2950**	**1600**	**43700**	**1580**	**3660 J**	**6310**	**3180**	**3310 J**
Chromium	NE	NE	**9.5 J**	**9.7 J**	**20.7 J**	**20.1 J**	**19.4 J**	**21.9 J**	**17 J**	**12.5**	**24.9**	**15.4 J**	**10 J**	**15.5 J**	**435 J**
Cobalt	NE	NE	**4.9**	**5.1**	**8.2**	**8**	**8.5**	**5.6**	**6.5**	**6.1 J**	**5.4 J**	**8.3**	**8.1**	**6.1**	**15.5 J**
Copper	50	270	**10.1**	**11.2**	**29.2**	**31.4**	**18.1**	**51 J**	**16.8 J**	**53.1**	**19.9**	**236**	**79.3**	**143**	**1180 J**
Iron	NE	NE	**17300**	**17500**	**25300**	**20300**	**22900**	**21600**	**19500**	**10600 J**	**11800 J**	**20300**	**21900**	**16600**	**98000 J**
Lead	63	400	4.2 U	4.7 U	**89**	**101**	**22**	**211**	**23.1**	**273**	**23.2**	**872 J**	**271 J**	**524**	**3980 J**
Magnesium	NE	NE	**1210 J**	**1330 J**	**2680 J**	**2570**	**2990 J**	**2110**	**2580**	**2450**	**2890**	**2720**	**1810**	**2490**	**6720 J**
Manganese	1600	2000	**84.8**	**102**	**370**	**327 J**	**356**	**142 J**	**311 J**	**117**	**216**	**196**	**139**	**122**	**878 J**
Mercury	0.18	0.81	0.055 U	**0.0056 J**	**0.47 J**	**0.19 J**	**0.24**	**0.36**	**0.035**	**0.45 J**	**0.75 J**	**0.69 J**	**1.2**	**1.7**	**14.4 J**
Nickel	30	310	**6.9**	**7.2**	**16.4**	**15.8**	**15.8**	**14.7**	**12.7**	**16.4 J**	**11.3 J**	**15**	**18.8 J**	**15.4**	**91.6 J**
Potassium	NE	NE	**486 J**	**541 J**	**1160 J**	**1120 J**	**878 J**	**1100**	**929**	**950 J**	**4610 J**	**1020 J**	**641 J**	**864 J**	**2940 J**
Selenium	3.9	180	10.6 UJ	11.8 UJ	10.6 UJ	12.6 UJ	12 UJ	11.6 UJ	11.5 UJ	10.9 UJ	**4.9 J**	11.7 U	11.3 UJ	10.5 UJ	**12.3 J**
Silver	2	180	1.4 U	1.6 U	1.4 UJ	1.7 U	1.6 UJ	**0.17 J**	1.5 U	1.5 U	1.6 U	**0.19 J**	1.5 UJ	1.4 U	**10.1 J**
Sodium	NE	NE	**181 J**	**190 J**	**156 J**	**195 J**	**142 J**	**199**	76.9 U	**511 J**	**976 J**	**310**	**353**	**810**	**13000 J**
Thallium	NE	NE	**1.1 J**	**1.2 J**	4.2 UJ	5 UJ	4.8 UJ	4.6 U	4.6 U	4.4 U	4.8 U	**1.6 J**	4.5 UJ	4.2 UJ	13.7 UJ
Vanadium	NE	NE	**16**	**15.7**	**33.1**	**29.5**	**28.2**	**32.1**	**23.4**	**15.4**	**17.6**	**22.3 J**	**15.3 J**	**20.9**	**66.3 J**
Zinc	109	10000	**23**	**23.4**	**62**	**68.2**	**44.6**	**122**	**36.2**	**230**	**66.3**	**897**	**517 J**	**303 J**	**2470 J**
Cyanides (mg/kg)															
Free Cyanide	NE	NE	0.228 U	0.251 U	0.235 U	0.266 U	0.259 U	0.238 U	0.249 U	0.23 UJ	0.256 UJ	0.257 UJ	0.24 UJ	0.231 U	**0.301 J**

Notes:
Analytes in blue are not detected in any sample
mg/kg - milligrams/kilogram or parts per million (ppm)
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
SVOCs - semivolatile organic compounds
PCBs - polychlorinated biphenyls
Total BTEX, Total VOCs, Total PAHs, Total SVOCs, and Total PCBs are calculated using detects only.
Total PAH16 is calculated using the EPA16 list of analytes: Acenaphthene, Acenaphthylene, Anthracene, Benz[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno[1,2,3-cd]pyrene, Naphthalene, Phenanthrene, and Pyrene
Total PAH17 is calculated using the EPA16 list of analytes plus 2-Methylnaphthalene
6 NYCRR - New York State Register and Official Compilation of Codes, Rules and Regulations of the State of New York
Comparison of detected results are performed against one or more of the following NYCRR, Chapter IV, Part 375-6 Soil Cleanup Objectives (SCO)s: Unrestricted Use, Residential, Restricted-Residential, Commercial, Industrial, Protection of Ecological Resources, or Protection of Groundwater
NE - not established
NA - not analyzed
ND - not detected; total concentrations are listed as ND because no analytes are detected in the group
Bolding indicates a detected concentration
Gray shading and bolding indicates that the detected result value exceeds the Unrestricted SCO
Yellow shading and bolding indicates that the detected result value exceeds the Restricted Residential SCO
Validation Qualifiers:
J - estimated value
JN - analyte is presumptively present at an approximated quantity
U - indicates not detected to the reporting limit
UJ - not detected at or above the reporting limit shown and the reporting limit is estimated
R - rejected

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Industrial SCO	Parcel 1 [Block 2288 Lot 1]															
Sample Name: Sample Depth(ft bgs): Sample Date:			WW-SB-19 (2-3) 7/27/2009	WW-SB-19 (4-5) 7/6/2009	WW-SB-19 (14-15) 7/28/2009	WW-SB-19 (25-35) 7/29/2009	WW-SB-19 (47-50) 7/29/2009	WW-SB-20 (3-5) 6/29/2009	WW-SB-20 (55-57) 7/21/2009	Duplicate of WW-SB-20 (55-57) 7/21/2009	WW-SB-20 (62-63) 7/21/2009	WW-SB-21 (1-2) 7/1/2009	WW-SB-21 (33-34) 7/22/2009	WW-SB-21 (68-69) 7/22/2009	WW-SB-22 (3-4) 6/29/2009	WW-SB-22 (13-15) 7/1/2009	WW-SB-22 (37-38) 7/24/2009	WW-SB-22 (65-65.5) 7/27/2009
BTEX (mg/kg)																		
Benzene	0.06	89	0.006 U	0.006 U	0.03 U	0.032 U	0.0061 U	0.0057 U	13	9	0.02	0.0057 U	23	0.0061 UJ	0.0055 U	0.0059 U	90	0.027
Toluene	0.7	1000	0.037	0.006 U	0.03 U	0.032 U	0.0061 U	0.00016 J	16	20	0.0064 U	0.0057 U	17	0.0061 U	0.00058 J	0.0059 U	200	0.062
Ethylbenzene	1	780	0.0091	0.006 U	0.0095 J	0.058	0.0071	0.0057 U	35	58	0.026	0.0057 U	160	0.0061 UJ	0.0055 U	0.0059 U	150	0.022
Total Xylene	0.26	1000	0.055	0.006 U	0.058	0.049	0.042	0.0057 U	42 J	71 J	0.03	0.0057 U	170	0.0061 UJ	0.00086 J	0.0059 U	260	0.054
Total BTEX	NE	NE	0.1011	ND	0.0675	0.107	0.0491	0.00016	106	158	0.076	ND	370	ND	0.00144	ND	700	0.165
Other VOCs (mg/kg)																		
Acetone	0.05	1000	0.024 U	0.024 UJ	0.12 U	0.042 J	0.0064 J	0.023 UJ	3.3 UJ	6.2 UJ	0.026 UJ	0.023 UJ	16 U	0.024 UJ	0.022 UJ	0.023 UJ	30 U	0.026 U
Carbon disulfide	NE	NE	0.006 U	0.006 U	0.03 U	0.032 U	0.0061 U	0.0057 U	1.3 U	2.5 U	0.0064 U	0.0057 UJ	6.3 U	0.0061 UJ	0.0055 U	0.0011 J	12 U	0.0014 J
Chloroform	0.37	700	0.006 U	0.006 U	0.03 U	0.032 U	0.00047 J	0.0057 U	1.3 U	2.5 U	0.0064 U	0.0057 U	6.3 U	0.0061 U	0.0055 U	0.0059 U	12 U	0.0065 U
cis-1,2-Dichloroethene	0.25	1000	0.006 U	0.006 U	0.03 U	0.0045 J	0.0061 U	0.0057 U	1.3 U	2.5 U	0.0015 J	0.0057 U	6.3 U	0.0061 UJ	0.0055 U	0.0059 U	12 U	0.0065 U
trans-1,2-Dichloroethene	0.19	1000	0.006 U	0.006 U	0.03 U	0.01 J	0.0061 U	0.0057 U	1.3 U	2.5 U	0.0064 U	0.0057 U	6.3 U	0.0061 U	0.00071 J	0.0059 U	12 U	0.0065 U
2-Butanone (Methyl ethyl ketone)	0.12	1000	0.012 U	0.012 U	0.059 U	0.065 U	0.012 UJ	0.011 U	1.3 UJ	2.5 UJ	0.013 U	0.011 U	6.3 U	0.012 UJ	0.011 U	0.012 U	12 U	0.013 U
4-Methyl-2-pentanone (MIBK)	NE	NE	0.006 U	0.006 U	0.03 U	0.032 U	0.0061 UJ	0.0057 U	1.3 UJ	2.5 UJ	0.0064 U	0.0057 U	6.3 U	0.0061 U	0.0055 U	0.0059 U	12 U	0.0065 U
Styrene	NE	NE	0.006 U	0.006 U	0.03 U	0.032 U	0.0061 U	0.0057 U	1.3 U	2.5 U	0.0064 U	0.0057 U	6.3 U	0.0061 UJ	0.0055 U	0.0059 U	26	0.0065 U
1,1,2,2-Tetrachloroethane	NE	NE	0.006 U	0.006 U	0.03 U	0.032 U	0.0061 UJ	0.0057 U	1.3 U	2.5 U	0.0064 U	0.0057 U	6.3 U	0.0061 U	0.0055 U	0.0059 U	12 U	0.0065 U
Tetrachloroethene (PCE)	1.3	300	0.006 U	0.006 U	0.03 U	0.032 U	0.0061 U	0.0057 U	1.3 U	2.5 U	0.0064 U	0.0057 U	6.3 U	0.0061 UJ	0.0055 U	0.0059 U	12 U	0.0065 U
1,1,2-Trichloroethane	NE	NE	0.006 U	0.006 U	0.03 U	0.032 U	0.0061 U	0.0057 U	1.3 U	2.5 U	0.0064 U	0.0057 U	6.3 U	0.0061 U	0.0055 U	0.0059 U	12 U	0.0065 U
Trichloroethene (TCE)	0.47	400	0.006 U	0.006 U	0.03 U	0.0053 J	0.0061 U	0.0057 U	1.3 U	2.5 U	0.0064 U	0.0057 U	6.3 U	0.0061 UJ	0.0055 U	0.0059 U	12 U	0.0065 U
Total VOC	NE	NE	0.1011	ND	0.0675	0.1688	0.05597	0.00016	106	158	0.0775	ND	370	ND	0.00215	0.0011	726	0.1664
PAHs (mg/kg)																		
Acenaphthene	20	1000	0.27 J	0.96	0.32 U	0.57	0.33 U	0.61 U	27 J	130 J	0.054 J	0.062 J	33	0.32 U	0.3 J	0.31 U	9.5 J	0.35 U
Acenaphthylene	100	1000	3.6	1.7	0.32 U	0.35 U	0.33 U	0.61 U	5.9 J	29 J	0.028 J	0.7	4.8 J	0.32 U	0.78	0.31 U	100	0.35 U
Anthracene	100	1000	2.4	3.1	0.55	0.42	0.33 U	0.61 U	14 J	63 J	0.039 J	0.33	15	0.32 U	1.9	0.31 U	40 J	0.35 U
Benz[a]anthracene	1	11	2.4	4.7	0.21 J	0.13 J	0.33 U	0.61 U	6.8 J	32 J	0.028 J	0.67	7.7	0.32 U	5.7	0.31 U	20 J	0.35 U
Benzo[a]pyrene	1	1.1	4.5	5.4	0.11 J	0.061 J	0.33 U	0.61 U	4.9 J	22 J	0.02 J	0.93	5.2 J	0.32 U	7.3	0.31 U	15 J	0.35 U
Benzo[b]fluoranthene	1	11	3.2	4.6	0.061 J	0.033 J	0.33 U	0.61 U	2.8 J	14 J	0.34 U	0.92	3.1 J	0.32 U	6	0.31 U	13 J	0.35 U
Benzo[k]fluoranthene	0.8	110	1.2	1.4	0.32 U	0.35 U	0.33 U	0.61 U	1.2 J	67 U	0.34 U	0.3 J	1.6 J	0.32 U	2.3	0.31 U	65 U	0.35 U
Benzo[g,h,i]perylene	100	1000	1.1	3.6	0.048 J	0.35 U	0.33 U	0.61 U	1.9 J	8.1 J	0.42	0.93	1.4 J	0.32 U	5.2	0.31 U	65 U	0.35 U
Chrysene	1	110	3.3	5.1	0.26 J	0.18 J	0.33 U	0.61 U	6.6 J	29 J	0.34 U	0.81	7.5	0.32 U	5.9	0.31 U	19 J	0.35 U
Dibenz[a,h]anthracene	0.33	1.1	0.63	1.2	0.32 U	0.35 U	0.33 U	0.61 U	7 U	67 U	0.34 U	0.31	6.8 U	0.32 U	1.7	0.31 U	65 U	0.35 U
Fluoranthene	100	1000	2.8	9.1	0.21 J	0.12 J	0.33 U	0.049 J	11 J	50 J	0.035 J	0.86	13	0.32 U	9.4	0.31 U	38 J	0.35 U
Fluorene	30	1000	0.8	1.5	0.64	0.27 J	0.33 U	0.61 U	15 J	73 J	0.035 J	0.073 J	17	0.32 U	0.57 J	0.31 U	52 J	0.35 U
Indeno[1,2,3-cd]pyrene	0.5	11	1.3	3.8	0.037 J	0.35 U	0.33 U	0.61 U	1.5 J	6.6 J	0.39	0.95	1.2 J	0.32 U	6	0.31 U	65 U	0.35 U
2-Methylnaphthalene	NE	NE	0.15 J	0.58 J	0.32 U	0.85	0.33 U	0.61 U	74 J	390 J	0.12 J	0.043 J	76	0.32 U	0.46 J	0.31 U	280	0.35 U
Naphthalene	12	1000	0.32 U	0.89	0.32 U	2.4	0.33 U	0.61 U	120 J	760 J	0.34 U	0.068 J	120	0.32 U	1.1	0.31 U	840	0.35 U
Phenanthrene	100	1000	2.5	9	2.1	0.89	0.33 U	0.61 U	47 J	220 J	0.12 J	0.51	50	0.32 U	7.5	0.31 U	130	0.35 U
Pyrene	100	1000	5	8.9	0.64	0.36	0.33 U	0.054 J	18 J	84 J	0.051 J	1.2	20	0.32 U	9.2	0.31 U	36 J	0.35 U
Total PAHs	NE	500	35.15	65.53	4.866	6.284	ND	0.103	357.6	1910.7	1.34	9.666	376.5	ND	71.31	ND	1592.5	ND
Other SVOCs (mg/kg)																		
Bis(2-ethylhexyl)phthalate	NE	NE	0.32 U	0.12 J	0.32 U	0.35 U	0.33 U	8.9	7 U	67 U	0.34 U	3.7 J	6.8 U	0.048 J	4.7	0.11 J	65 U	0.35 U
Butyl benzyl phthalate	NE	NE	0.32 U	0.63 U	0.32 U	0.35 U	0.33 U	0.051 J	7 U	67 U	0.34 U	0.31 U	6.8 U	0.32 U	0.6 U	0.31 U	65 U	0.35 U
Carbazole	NE	NE	0.31 J	0.95	0.32 U	0.35 U	0.33 U	0.61 U	0.56 J	67 U	0.34 U	0.079 J	0.45 J	0.32 U	0.77	0.31 U	65 U	0.35 U
Dibenzofuran	7	1000	0.2 J	0.93	0.32 U	0.073 J	0.33 U	0.61 U	1.7 J	9.4 J	0.34 U	0.031 J	2 J	0.32 U	0.56 J	0.31 U	8.3 J	0.35 U
2,4-Dimethylphenol	NE	NE	0.32 U	0.63 U	0.32 U	0.35 U	0.33 U	0.61 U	7 U	67 U	0.34 U	0.31 U	6.8 U	0.32 U	0.6 U	0.31 U	65 U	0.35 U
Di-n-octyl phthalate	NE	NE	0.32 U	0.63 U	0.32 U	0.35 U	0.33 U	0.61 U	7 U	67 U	0.34 U	0.31 U	6.8 U	0.32 U	0.6 U	0.31 U	65 U	0.35 U
2-Methylphenol (o-Cresol)	0.33	1000	0.32 U	0.63 U	0.32 U	0.35 U	0.33 U	0.61 U	7 U	67 U	0.34 U	0.31 U	6.8 U	0.32 U	0.6 U	0.31 U	65 U	0.35 U
4-Methylphenol (p-Cresol)	0.33	1000	0.32 U	0.63 U	0.32 U	0.35 U	0.33 U	0.61 U	7 U	67 U	0.34 U	0.31 U	6.8 U	0.32 U	0.6 U	0.31 U	65 U	0.35 U
4-Nitroaniline	NE	NE	0.38	0.63 U	0.32 U	0.35 U	0.33 U	0.61 U	7 U	67 U	0.34 U	0.31 U	6.8 U	0.32 U	0.6 U	0.31 U	65 U	0.35 U
Phenol	0.33	1000	0.32 U	0.63 U	0.32 U	0.35 U	0.33 U	0.61 U	7 U	67 U	0.34 U	0.31 U	6.8 U	0.32 U	0.043 J	0.31 U	65 U	0.35 U
Total SVOC	NE	NE	36.04	67.53	4.866	6.357	ND	9.054	359.86	1920.1	1.34	13.476	378.95	0.048	77.383	0.11	1600.8	ND
PCBs (mg/kg)																		
Aroclor 1254	NE	NE	0.02 UJ	0.02 U	NA	NA	NA	0.019 U	NA	NA	NA	0.019 U	NA	NA	0.019 U	NA	NA	NA
Aroclor 1260	NE	NE	0.02 UJ	0.017 J	NA	NA	NA	0.019 U	NA	NA	NA	0.012 J	NA	NA	0.019 U	NA	NA	NA
Total PCBs	NE	NE	ND	0.017	NA	NA	NA	ND	NA	NA	NA	0.012	NA	NA	ND	NA	NA	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Industrial SCO	Parcel 1 [Block 2288 Lot 1]															
Sample Name: Sample Depth(ft bgs): Sample Date:			WW-SB-19 (2-3) 7/27/2009	WW-SB-19 (4-5) 7/6/2009	WW-SB-19 (14-15) 7/28/2009	WW-SB-19 (25-35) 7/29/2009	WW-SB-19 (47-50) 7/29/2009	WW-SB-20 (3-5) 6/29/2009	WW-SB-20 (55-57) 7/21/2009	Duplicate of WW-SB-20 (55-57) 7/21/2009	WW-SB-20 (62-63) 7/21/2009	WW-SB-21 (1-2) 7/1/2009	WW-SB-21 (33-34) 7/22/2009	WW-SB-21 (68-69) 7/22/2009	WW-SB-22 (3-4) 6/29/2009	WW-SB-22 (13-15) 7/1/2009	WW-SB-22 (37-38) 7/24/2009	WW-SB-22 (65-65.5) 7/27/2009
Pesticides (mg/kg)																		
gamma-BHC	0.1	23	0.002 U	0.002 UJ	NA	NA	NA	0.0019 UJ	NA	NA	NA	0.0019 UJ	NA	NA	0.0019 UJ	NA	NA	NA
delta-BHC	0.04	1000	0.002 UJ	0.002 UJ	NA	NA	NA	0.0019 U	NA	NA	NA	0.0019 UJ	NA	NA	0.0019 U	NA	NA	NA
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NE	NE	0.002 U	**0.00084 J**	NA	NA	NA	0.0019 U	NA	NA	NA	**0.0021 J**	NA	NA	0.0019 U	NA	NA	NA
4,4-DDD	0.0033	180	0.004 UJ	0.004 U	NA	NA	NA	0.0038 U	NA	NA	NA	0.0037 U	NA	NA	0.0036 U	NA	NA	NA
4,4'-DDE	0.0033	120	0.004 UJ	0.004 UJ	NA	NA	NA	0.0038 U	NA	NA	NA	0.0037 UJ	NA	NA	0.0036 U	NA	NA	NA
4,4'-DDT	0.0033	94	**0.064 J**	0.004 UJ	NA	NA	NA	0.0038 UJ	NA	NA	NA	0.0037 UJ	NA	NA	**0.0047 J**	NA	NA	NA
Dieldrin	0.005	2.8	**0.0054 J**	0.004 U	NA	NA	NA	0.0038 U	NA	NA	NA	**0.002 J**	NA	NA	0.0036 U	NA	NA	NA
Endosulfan I	2.4	920	0.002 U	0.002 U	NA	NA	NA	0.0019 UJ	NA	NA	NA	0.0019 UJ	NA	NA	0.0019 UJ	NA	NA	NA
Endosulfan II	2.4	920	**0.011 JN**	0.004 UJ	NA	NA	NA	0.0038 UJ	NA	NA	NA	**0.0064 JN**	NA	NA	**0.0035 J**	NA	NA	NA
Endosulfan sulfate	2.4	920	0.004 UJ	0.004 UJ	NA	NA	NA	0.0038 U	NA	NA	NA	0.0037 UJ	NA	NA	0.0036 U	NA	NA	NA
Endrin	0.014	410	**0.011 JN**	0.004 UJ	NA	NA	NA	0.0038 U	NA	NA	NA	0.0037 UJ	NA	NA	0.0036 U	NA	NA	NA
Endrin aldehyde	NE	NE	**0.017 JN**	**0.0023 J**	NA	NA	NA	0.0038 UJ	NA	NA	NA	**0.0082 J**	NA	NA	**0.0093 J**	NA	NA	NA
Endrin ketone	NE	NE	**0.015 JN**	0.004 UJ	NA	NA	NA	0.0038 U	NA	NA	NA	0.0037 UJ	NA	NA	0.0036 U	NA	NA	NA
Heptachlor	0.042	29	0.002 UJ	**0.00045 J**	NA	NA	NA	0.0019 U	NA	NA	NA	**0.0015 J**	NA	NA	0.0019 U	NA	NA	NA
Heptachlor epoxide	NE	NE	0.002 U	0.002 UJ	NA	NA	NA	0.0019 U	NA	NA	NA	0.0019 UJ	NA	NA	0.0019 U	NA	NA	NA
Methoxychlor	NE	NE	**0.045 JN**	0.02 UJ	NA	NA	NA	0.019 U	NA	NA	NA	0.019 UJ	NA	NA	0.019 U	NA	NA	NA
Metals (mg/kg)																		
Aluminum	NE	NE	**10100**	**8780**	**9390**	**3680**	**2980**	**9750**	**2350**	**1970**	**3570**	**6980**	**2820**	**1330**	**7350**	**10900**	**3570**	**3530**
Antimony	NE	NE	4.8 UJ	4.9 UJ	4.7 UJ	5.3 UJ	4.8 UJ	4.5 UJ	5.3 UJ	4.9 UJ	5.3 UJ	4.5 UJ	5.2 UJ	4.8 UJ	4.4 UJ	4.7 UJ	5 UJ	5.4 UJ
Arsenic	13	16	6.1 UJ	**7.1 J**	**2.2 J**	6.7 U	6.1 U	**6.2 J**	6.8 U	6.2 U	6.7 U	**12.4 J**	6.6 U	6.1 U	**8.5 J**	6 U	6.4 U	6.8 U
Barium	350	10000	**102**	**139**	**54.1**	**24.1**	**28.6**	**366 J**	**12.2**	**9**	**29.7**	**160 J**	**19.2**	**14.1**	**158 J**	**94.2 J**	**30.7**	**26.9**
Beryllium	7.2	2700	**0.75 J**	**0.76 J**	**0.52 J**	**0.34 J**	**0.5 J**	**0.39 J**	**0.22 J**	**0.18 J**	**0.45 J**	**0.41 J**	**0.38 J**	**0.41 J**	**0.49 J**	**0.9 J**	**0.43 J**	**0.64 J**
Cadmium	2.5	60	**0.49 J**	1.5 UJ	1.4 UJ	1.6 UJ	1.4 UJ	1.4 U	**1.1 J**	**0.94 J**	**0.6 J**	**0.64 J**	**0.55 J**	1.5 UJ	**0.56 J**	1.4 UJ	**0.53 J**	1.6 UJ
Calcium	NE	NE	**3010 J**	**4550 J**	**4300 J**	**1000 J**	**951 J**	**40600**	80.9 U	74.1 U	79.7 U	**46200**	78.2 U	73.1 U	**4130**	**2220**	75.7 U	**843 J**
Chromium	NE	NE	**16.1 J**	**17.1 J**	**29.3 J**	**10.4 J**	**11.8 J**	**13.7 J**	**6.6 J**	**7.4 J**	**11.7 J**	**16 J**	**11.7 J**	**8.6 J**	**16.2 J**	**30.6 J**	**15.8 J**	**20.5 J**
Cobalt	NE	NE	**7.1**	**9.5**	**10.6**	**5.3**	**4.5 J**	**3 J**	**3.8**	**2.9**	**5.5**	**24.6 J**	**3.7**	**4.5 J**	**18.7 J**	**10.6 J**	**7.2**	**4.4 J**
Copper	50	10000	**49.6**	**51.1 J**	**42.2**	**9.9**	**11.9**	**7.7**	**8.6**	**6**	**11.5**	**27.5 J**	**8.4**	**9.9**	**54.7 J**	**24.4 J**	**14.9**	**14.6**
Iron	NE	NE	**20900**	**22700**	**25400**	**12800**	**38800**	**7780**	**12300**	**8930**	**19500**	**18600**	**12000**	**36200**	**20600**	**29500**	**13700**	**44700**
Lead	63	3900	**191**	**311**	**9.1**	**5**	**6.7**	**762 J**	**6.6 J**	**5.4 J**	**8.4 J**	**839 J**	**6.8 J**	**6.9 J**	**190 J**	**6.2 J**	**6.6 J**	**8.2 J**
Magnesium	NE	NE	**2760 J**	**2290**	**2790 J**	**1200 J**	**630 J**	**14800**	**962 J**	**787 J**	**1150 J**	**5780**	**921 J**	73.1 UJ	**3030**	**5830**	**1220 J**	**564 J**
Manganese	1600	10000	**231**	**600**	**765**	**193**	**445**	**387**	**245 J**	**120 J**	**481**	**375**	**82.6**	**935**	**458**	**715**	**331**	**483**
Mercury	0.18	5.7	**0.34**	**1.4**	0.056 U	0.062 U	0.057 U	**0.098 J**	0.063 U	0.058 U	0.061 U	**0.53 J**	0.062 U	0.06 U	**0.24 J**	0.057 UJ	0.056 U	**0.011 J**
Nickel	30	10000	**15.5**	**17.5**	**17.7**	**6.7**	**6.3**	**11.4**	**5.7**	**5**	**7.5**	**15.7**	**6.7**	**3.9 J**	**19.3**	**18.9**	**8.9**	**7.1 J**
Potassium	NE	NE	**822 J**	**852 J**	**1520 J**	**561 J**	**411 J**	**1040**	80.9 U	74.1 U	**620**	**1220**	**476**	73.1 U	**1340**	**2910**	**603**	**523 J**
Selenium	3.9	6800	11 UJ	11.1 UJ	10.7 UJ	12 UJ	10.9 UJ	R	12.1 UJ	11.1 UJ	12 UJ	R	11.7 UJ	**10.5 J**	R	R	11.4 UJ	**8.1 J**
Silver	2	6800	1.5 UJ	1.5 UJ	**0.54 J**	1.6 U	1.4 UJ	**0.075 J**	1.6 U	1.5 U	1.6 U	1.4 UJ	**0.12 J**	**0.15 J**	**0.28 J**	1.4 UJ	**0.29 J**	**0.25 J**
Sodium	NE	NE	73.2 UJ	**73.7 J**	**1050 J**	**85.3 J**	**45.6 J**	**1110 J**	80.9 UJ	74.1 UJ	79.7 UJ	**833 J**	78.2 UJ	73.1 UJ	**213 J**	**92.3 J**	75.7 UJ	81.2 UJ
Thallium	NE	NE	4.4 UJ	4.4 U	4.3 UJ	4.8 UJ	**3.7 J**	4.1 UJ	4.9 U	4.4 U	4.8 U	**2.8 J**	4.7 U	4.4 UJ	4 UJ	4.3 UJ	4.5 U	4.9 UJ
Vanadium	NE	NE	**37.2**	**24.4**	**54.1**	**20.3**	**21.7**	**18.8**	**11 J**	**10 J**	**19.2 J**	**22.1**	**28.1 J**	**20.2 J**	**23.2**	**52.3**	**26.2 J**	**23.6 J**
Zinc	109	10000	**182**	**232**	**38.2**	**24**	**25 J**	**142 J**	**14.5 J**	**11 J**	**28.8 J**	**262 J**	**18.7 J**	**24.2 J**	**270 J**	**63.4 J**	**21.1 J**	**30.8**
Cyanides (mg/kg)																		
Free Cyanide	NE	NE	0.241 U	0.238 U	0.231 U	0.257 U	0.241 U	0.227 U	0.26 U	0.246 U	0.254 U	**0.0456 J**	0.25 U	0.241 U	0.22 U	0.234 U	0.241 U	0.258 U
Other (mg/kg)																		
Ammonia	NE	NE	**4.6 J**	2.4 U	**20.2**	**5.4 J**	2.4 U	**1.5 J**	NA	NA	NA	**1.4 J**	**14.9**	2.4 U	**1.7 J**	**7.5**	**16.3**	**3.5 J**
Percent Solids (%)	NE	NE	**81.6**	**84.5**	NA	NA	NA	**90.1**	NA	NA	NA	**80.8**	NA	NA	**87.6**	NA	NA	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Industrial SCO	Adjacent to Parcel 1														
			Wythe Ave. ROW			N. 11th St. ROW				N. 12th St. ROW				N. 11th St. ROW		N. 12th St. ROW	
Sample Name: / Sample Depth(ft bgs):			WW-MW-01 (0.5-5)	WW-MW-01 (16-17)	WW-MW-01 (63-64)	WW-MW-02 (2-5)	Duplicate of WW-MW-02 (2-5)	WW-MW-02 (15-17)	WW-MW-02 (50-53)	WW-MW-03 (2-5)	WW-MW-03 (28-30)	WW-MW-03 (60-63)	Duplicate of WW-MW-03 (60-63)	WW-SB-01 (1-5)	WW-SB-01 (14-15)	WW-SB-02 (2-5)	WW-SB-02 (10.5-11.5)
Sample Date:			6/16/2009	6/16/2009	6/16/2009	7/10/2009	7/10/2009	7/10/2009	7/13/2009	6/23/2009	6/24/2009	6/26/2009	6/26/2009	7/10/2009	7/10/2009	7/8/2009	7/8/2009
BTEX (mg/kg)																	
Benzene	0.06	89	**0.0012 J**	**0.00098 J**	**0.00072 J**	0.0058 U	0.0059 U	0.0059 U	0.0061 U	**0.0069**	**17**	**0.0097**	**0.0092**	0.0058 U	0.0055 U	**0.0014 J**	**0.012 J**
Toluene	0.7	1000	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	**0.00033 J**	0.0061 U	0.0057 U	**160**	**0.026 J**	0.0053 U	0.0058 U	0.0055 U	**0.0012 J**	0.03 U
Ethylbenzene	1	780	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	**290**	**0.033 J**	**0.011 J**	0.0058 U	0.0055 U	0.006 U	**0.11 J**
Total Xylene	0.26	1000	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	**420**	**0.046 J**	0.0053 U	0.0058 U	**0.001 J**	0.006 U	**0.02 J**
Total BTEX	NE	NE	**0.0012**	**0.00098**	**0.00072**	ND	ND	**0.00033**	ND	**0.0069**	**887**	**0.1147**	**0.0202**	ND	**0.001**	**0.0026**	**0.142**
Other VOCs (mg/kg)																	
Acetone	0.05	1000	**0.043 J**	**0.065 J**	**0.059 J**	**0.005 J**	0.024 UJ	0.024 UJ	0.024 UJ	0.023 U	31 U	0.025 U	0.021 U	0.023 UJ	**0.064 J**	0.024 UJ	0.12 UJ
Carbon disulfide	NE	NE	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	**0.0014 J**	0.0061 UJ	0.0057 U	13 U	**0.0018 J**	0.0053 U	0.0058 U	**0.0016 J**	0.006 U	0.03 U
Chloroform	0.37	700	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	13 U	0.0062 U	0.0053 U	0.0058 U	0.0055 U	0.006 U	0.03 U
cis-1,2-Dichloroethene	0.25	1000	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	13 U	0.0062 U	0.0053 U	0.0058 U	0.0055 U	0.006 U	0.03 U
trans-1,2-Dichloroethene	0.19	1000	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	13 U	0.0062 U	0.0053 U	0.0058 U	0.0055 U	0.006 U	0.03 U
2-Butanone (Methyl ethyl ketone)	0.12	1000	0.01 U	0.01 U	0.011 U	0.012 U	0.012 U	0.012 U	0.012 UJ	0.011 U	13 U	0.012 U	0.011 U	0.012 U	0.011 U	0.012 U	0.059 U
4-Methyl-2-pentanone (MIBK)	NE	NE	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	13 U	0.0062 U	0.0053 U	0.0058 U	0.0055 U	0.006 U	0.03 U
Styrene	NE	NE	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	13 U	0.0062 U	0.0053 U	0.0058 U	0.0055 U	0.006 U	0.03 U
1,1,2,2-Tetrachloroethane	NE	NE	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	13 U	0.0062 U	0.0053 U	0.0058 U	**0.03 J**	0.006 U	**0.2 J**
Tetrachloroethene (PCE)	1.3	300	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	13 U	0.0062 U	0.0053 U	0.0058 U	0.0055 U	0.006 U	0.03 U
1,1,2-Trichloroethane	NE	NE	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	13 U	0.0062 U	0.0053 U	0.0058 U	0.0055 U	0.006 U	0.03 U
Trichloroethene (TCE)	0.47	400	0.0051 U	0.0051 U	0.0055 U	0.0058 U	0.0059 U	0.0059 U	0.0061 U	0.0057 U	13 U	0.0062 U	0.0053 U	0.0058 U	0.0055 U	0.006 U	0.03 U
Total VOC	NE	NE	**0.0442**	**0.06598**	**0.05972**	**0.005**	ND	**0.00173**	ND	**0.0069**	**887**	**0.1165**	**0.0202**	ND	**0.0966**	**0.0026**	**0.342**
PAHs (mg/kg)																	
Acenaphthene	20	1000	0.27 U	0.27 U	0.3 U	**0.25 J**	**0.29 J**	**0.89 J**	0.33 U	**0.18 J**	**72**	0.33 U	**0.046 J**	0.31 U	**0.69 J**	0.32 U	**1.1 J**
Acenaphthylene	100	1000	0.27 U	0.27 U	0.3 U	**5.9**	**7.2**	**0.18 J**	0.33 U	**0.42**	**17 J**	0.33 U	**0.018 J**	0.31 U	0.3 UJ	**0.027 J**	0.32 UJ
Anthracene	100	1000	0.27 U	0.27 U	0.3 U	**2.7**	**2.9**	**0.27 J**	0.33 U	**0.59**	**38 J**	0.33 U	**0.027 J**	0.31 U	**1.1 J**	**0.051 J**	**0.87 J**
Benz[a]anthracene	1	11	**0.02 J**	**0.011 J**	**0.017 J**	**4.4**	**3.7**	**2 J**	0.33 U	**1.7**	**19 J**	0.33 U	**0.015 J**	0.31 U	**0.34 J**	**0.26 J**	**0.51 J**
Benzo[a]pyrene	1	1.1	0.27 U	0.27 U	0.3 U	**6.5**	**8.8**	**0.76 J**	0.33 U	**1.9**	**14 J**	0.33 U	**0.0081 J**	0.31 U	**0.14 J**	**0.43**	**0.37 J**
Benzo[b]fluoranthene	1	11	0.27 U	0.27 U	0.3 U	**6.2**	**7.3**	**0.84 J**	0.33 U	**1.7**	**8.7 J**	0.33 U	0.28 U	0.31 U	**0.069 J**	**0.34**	**0.27 J**
Benzo[k]fluoranthene	0.8	110	0.27 U	0.27 U	0.3 U	**2.3**	**2.6**	**0.29 J**	0.33 U	**0.64**	66 U	0.33 U	0.28 U	0.31 U	0.3 UJ	**0.13 J**	**0.09 J**
Benzo[g,h,i]perylene	100	1000	0.27 U	0.27 U	0.3 U	**3.2**	**3.2**	**0.18 J**	0.33 U	**1**	**4.5 J**	0.33 U	0.28 U	0.31 U	**0.31 J**	**0.61**	**0.18 J**
Chrysene	1	110	0.27 U	0.27 U	0.3 U	**5.7**	**4.7**	**1.7 J**	0.33 U	**1.6**	**18 J**	0.33 U	0.28 U	0.31 U	**0.45 J**	**0.27 J**	**0.5 J**
Dibenz[a,h]anthracene	0.33	1.1	0.27 U	0.27 U	0.3 U	**1.4**	**1.4**	**0.21 J**	0.33 U	**0.52**	66 U	0.33 U	0.28 U	0.31 U	**0.21 J**	**0.46**	**0.12 J**
Fluoranthene	100	1000	**0.022 J**	0.27 U	0.3 U	**5.8 J**	**4 J**	**9.9 J**	0.33 U	**2.5**	**32 J**	0.33 U	**0.021 J**	0.31 U	**0.29 J**	**0.28 J**	**0.86 J**
Fluorene	30	1000	0.27 U	0.27 U	0.3 U	**0.82**	**0.88**	**0.74 J**	0.33 U	**0.22 J**	**43 J**	0.33 U	**0.035 J**	0.31 U	**0.8 J**	0.32 U	**0.93 J**
Indeno[1,2,3-cd]pyrene	0.5	11	0.27 U	0.27 U	0.3 U	**3.2**	**3.4**	**0.22 J**	0.33 U	**1.2**	**46 J**	0.33 U	0.28 U	0.31 U	**0.25 J**	**0.63**	**0.2 J**
2-Methylnaphthalene	NE	NE	0.27 U	**0.0094 J**	**0.017 J**	**0.36 J**	**0.27 J**	0.64 UJ	0.33 U	**0.14 J**	**270**	**0.044 J**	**0.24 J**	0.31 U	0.3 UJ	**0.049 J**	**2.1 J**
Naphthalene	12	1000	0.27 U	**0.024 J**	**0.029 J**	**0.51 J**	**0.4 J**	0.64 UJ	0.33 U	**0.38**	**1000**	**0.19 J**	**1.2 J**	0.31 U	0.3 UJ	**0.082 J**	**1.1 J**
Phenanthrene	100	1000	**0.025 J**	**0.023 J**	**0.022 J**	**4.4 J**	**2.1 J**	**0.05 J**	0.33 U	**2.6**	**130**	**0.023 J**	**0.11 J**	0.31 U	**2.8 J**	**0.18 J**	**2.4 J**
Pyrene	100	1000	**0.033 J**	**0.013 J**	**0.015 J**	**7.8**	**5.9**	**6.6 J**	0.33 U	**3.8**	**55 J**	0.33 U	**0.034 J**	0.31 U	**1 J**	**0.34**	**1.5 J**
Total PAHs	NE	500	**0.1**	**0.0804**	**0.1**	**61.44**	**59.04**	**24.83**	ND	**21.09**	**1767.2**	**0.257**	**1.7541**	ND	**8.449**	**4.139**	**13.1**
Other SVOCs (mg/kg)																	
Bis(2-ethylhexyl)phthalate	NE	NE	**0.37**	**0.53**	**0.04 J**	0.61 U	0.63 U	**0.11 J**	**0.11 J**	**0.95**	66 U	0.33 U	0.28 U	**0.48 J**	**0.63 J**	**0.5**	**0.18 J**
Butyl benzyl phthalate	NE	NE	0.27 U	0.27 U	0.3 U	0.61 U	0.63 U	0.64 UJ	0.33 U	0.31 U	66 U	0.33 U	0.28 U	**0.12 J**	0.3 UJ	**0.13 J**	0.32 UJ
Carbazole	NE	NE	0.27 U	0.27 U	0.3 U	**0.37 J**	**0.43 J**	0.64 UJ	0.33 U	**0.2 J**	66 U	0.33 U	0.28 U	0.31 U	0.3 UJ	0.32 U	0.32 UJ
Dibenzofuran	7	1000	0.27 U	0.27 U	0.3 U	**0.17 J**	**0.12 J**	0.64 UJ	0.33 U	**0.11 J**	**6 J**	0.33 U	0.28 U	0.31 U	0.3 UJ	0.32 U	**0.47 J**
2,4-Dimethylphenol	NE	NE	0.27 U	0.27 U	0.3 U	0.61 U	0.63 U	0.64 UJ	0.33 U	0.31 U	66 U	0.33 U	0.28 U	0.31 U	0.3 UJ	0.32 U	0.32 UJ
Di-n-octyl phthalate	NE	NE	0.27 U	0.27 U	0.3 U	0.61 U	0.63 U	0.64 UJ	0.33 U	0.31 U	66 U	0.33 U	0.28 U	0.31 U	0.3 UJ	0.32 U	0.32 UJ
2-Methylphenol (o-Cresol)	0.33	1000	0.27 U	0.27 U	0.3 U	0.61 U	0.63 U	0.64 UJ	0.33 U	0.31 U	66 U	0.33 U	0.28 U	0.31 U	0.3 UJ	0.32 U	0.32 UJ
4-Methylphenol (p-Cresol)	0.33	1000	0.27 U	0.27 U	0.3 U	0.61 U	0.63 U	0.64 UJ	0.33 U	0.31 U	66 U	0.33 U	0.28 U	0.31 U	0.3 UJ	0.32 U	0.32 UJ
4-Nitroaniline	NE	NE	0.27 U	0.27 U	0.3 U	0.61 U	0.63 U	0.64 UJ	0.33 U	0.31 U	66 U	0.33 U	0.28 U	0.31 U	0.3 UJ	0.32 U	0.32 UJ
Phenol	0.33	1000	0.27 U	0.27 U	0.3 U	0.61 U	0.63 U	0.64 UJ	0.33 U	0.31 U	66 U	0.33 U	0.28 U	0.31 U	0.3 UJ	0.32 U	0.32 UJ
Total SVOC	NE	NE	**0.47**	**0.6104**	**0.14**	**61.98**	**59.59**	**24.94**	**0.11**	**22.35**	**1773.2**	**0.257**	**1.7541**	**0.6**	**9.079**	**4.769**	**13.75**
PCBs (mg/kg)																	
Aroclor 1254	NE	NE	0.017 U	NA	NA	0.02 U	0.02 U	NA	NA	0.019 U	NA	NA	NA	0.02 U	NA	0.02 U	NA
Aroclor 1260	NE	NE	0.017 U	NA	NA	0.02 U	0.02 U	NA	NA	**0.023 JN**	NA	NA	NA	0.02 U	NA	**0.0067 J**	NA
Total PCBs	NE	NE	ND	NA	NA	ND	ND	NA	NA	**0.023**	NA	NA	NA	ND	NA	**0.0067**	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Industrial SCO	Adjacent to Parcel 1														
			Wythe Ave. ROW			N. 11th St. ROW				N. 12th St. ROW				N. 11th St. ROW		N. 12th St. ROW	
Sample Name:			WW-MW-01	WW-MW-01	WW-MW-01	WW-MW-02	Duplicate of WW-MW-02	WW-MW-02	WW-MW-02	WW-MW-03	WW-MW-03	WW-MW-03	Duplicate of WW-MW-03	WW-SB-01	WW-SB-01	WW-SB-02	WW-SB-02
Sample Depth(ft bgs):			(0.5-5)	(16-17)	(63-64)	(2-5)	(2-5)	(15-17)	(50-53)	(2-5)	(28-30)	(60-63)	(60-63)	(1-5)	(14-15)	(2-5)	(10.5-11.5)
Sample Date:			6/16/2009	6/16/2009	6/16/2009	7/10/2009	7/10/2009	7/10/2009	7/13/2009	6/23/2009	6/24/2009	6/26/2009	6/26/2009	7/10/2009	7/10/2009	7/8/2009	7/8/2009
Pesticides (mg/kg)																	
gamma-BHC	0.1	23	0.0017 UJ	NA	NA	0.002 U	0.002 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	0.002 UJ	NA
delta-BHC	0.04	1000	0.0017 UJ	NA	NA	0.002 U	0.002 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	0.002 UJ	NA
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NE	NE	0.0017 U	NA	NA	0.002 U	0.002 U	NA	NA	**0.0031 J**	NA	NA	NA	0.002 U	NA	**0.00088 J**	NA
4,4-DDD	0.0033	180	0.0033 U	NA	NA	**0.037 J**	**0.034 J**	NA	NA	0.0038 UJ	NA	NA	NA	0.0038 U	NA	0.0039 U	NA
4,4'-DDE	0.0033	120	0.0033 U	NA	NA	0.0038 U	0.0039 U	NA	NA	0.0038 U	NA	NA	NA	0.0038 U	NA	0.0039 UJ	NA
4,4'-DDT	0.0033	94	0.0033 UJ	NA	NA	**0.015 J**	**0.034 J**	NA	NA	**0.0099 JN**	NA	NA	NA	0.0038 U	NA	**0.002 J**	NA
Dieldrin	0.005	2.8	0.0033 U	NA	NA	0.0038 U	0.0039 U	NA	NA	**0.0057 J**	NA	NA	NA	0.0038 U	NA	0.0039 U	NA
Endosulfan I	2.4	920	0.0017 U	NA	NA	0.002 U	0.002 U	NA	NA	**0.0084 J**	NA	NA	NA	0.002 U	NA	0.002 UJ	NA
Endosulfan II	2.4	920	0.0033 U	NA	NA	**0.01 J**	0.0039 U	NA	NA	**0.01 J**	NA	NA	NA	0.0038 U	NA	0.0039 U	NA
Endosulfan sulfate	2.4	920	0.0033 U	NA	NA	**0.012 JN**	**0.011 J**	NA	NA	**0.0093 JN**	NA	NA	NA	0.0038 U	NA	0.0039 UJ	NA
Endrin	0.014	410	0.0033 U	NA	NA	0.0038 U	0.0039 U	NA	NA	**0.0046 JN**	NA	NA	NA	0.0038 U	NA	0.0039 UJ	NA
Endrin aldehyde	NE	NE	0.0033 U	NA	NA	**0.01 JN**	**0.013 J**	NA	NA	**0.011 J**	NA	NA	NA	0.0038 U	NA	0.0039 U	NA
Endrin ketone	NE	NE	0.0033 U	NA	NA	**0.024 J**	**0.036 J**	NA	NA	**0.015 J**	NA	NA	NA	0.0038 U	NA	0.0039 UJ	NA
Heptachlor	0.042	29	0.0017 UJ	NA	NA	0.002 U	0.002 U	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	0.002 UJ	NA
Heptachlor epoxide	NE	NE	0.0017 U	NA	NA	**0.0036 JN**	**0.0033 J**	NA	NA	0.0019 U	NA	NA	NA	0.002 U	NA	**0.00076 J**	NA
Methoxychlor	NE	NE	0.017 U	NA	NA	0.02 U	0.02 U	NA	NA	**0.017 J**	NA	NA	NA	0.02 U	NA	0.02 UJ	NA
Metals (mg/kg)																	
Aluminum	NE	NE	**10700 J**	**6330 J**	**3190 J**	**8230**	**9380**	**2990**	**5080**	**7820**	**3090**	**2600**	**2910**	**10000**	**7320**	**7350**	**3950**
Antimony	NE	NE	4.1 UJ	4.1 UJ	4.4 UJ	4.6 UJ	4.8 UJ	4.6 UJ	5 UJ	4.6 UJ	4.9 UJ	5.1 UJ	4.3 UJ	4.6 UJ	4.4 UJ	4.8 UJ	4.9 UJ
Arsenic	13	16	**2.3 J**	**2 J**	5.5 UJ	**8.9 J**	**7.2 J**	5.9 UJ	**4.3 J**	**7.8 J**	**2 J**	**3.4 J**	**2.7 J**	**2.7 J**	5.6 UJ	**5.9 J**	6.2 UJ
Barium	350	10000	**51.2 J**	**46.8 J**	**27.9 J**	**193**	**189**	**15.4**	**40.4**	**159 J**	**20.8 J**	**17.1 J**	**16.2 J**	**32.6**	**152**	**83.7**	**32**
Beryllium	7.2	2700	**0.82 J**	**0.86 J**	**0.56 J**	**0.68 J**	**0.7 J**	**0.46 J**	**0.43 J**	**0.4 J**	**0.25 J**	**0.58 J**	**0.58 J**	**0.6 J**	**0.85 J**	**0.6 J**	**0.34 J**
Cadmium	2.5	60	1.2 U	1.3 UJ	1.3 UJ	1.4 UJ	1.5 UJ	1.4 UJ	1.5 UJ	**0.6 J**	1.5 U	1.6 UJ	1.3 UJ	1.4 UJ	1.3 UJ	1.5 UJ	1.5 U
Calcium	NE	NE	**1880 J**	**1020 J**	**960 J**	**16900 J**	**2860 J**	**647 J**	75.9 U	**15100 J**	**1320 J**	**554 J**	**499 J**	**694 J**	**2420 J**	**22200 J**	**10900 J**
Chromium	NE	NE	**21.7 J**	**17.8 J**	**11.1 J**	**18.9 J**	**33 J**	**14.2 J**	**16.1**	**14.8 J**	**9.4 J**	**14.1 J**	**16.5 J**	**16.5 J**	**14.9 J**	**19.9 J**	**11.6 J**
Cobalt	NE	NE	**5.8 J**	**7.7 J**	**3.1 J**	**7.4**	**9.1**	**6.4**	**3.4 J**	**5.2**	**4.7**	**4.8 J**	**4.6 J**	**8.8**	**7.8**	**8.4**	**3.2**
Copper	50	10000	**18.6**	**26.6 J**	**23.4 J**	**59.7 J**	**62.7 J**	**11 J**	**11.3 J**	**50 J**	**7.6 J**	**10 J**	**9.6 J**	**12.9 J**	**6.8 J**	**31.7 J**	**12.3 J**
Iron	NE	NE	**16500 J**	**20800 J**	**31100 J**	**20100**	**21000**	**28600**	**38300 J**	**14000**	**8850**	**40300**	**38800**	**21200**	**24900**	**27500**	**13000**
Lead	63	3900	**7.7**	**7.2**	**6.8**	**320**	**232**	**7.8 J**	**16 J**	**459 J**	**6.5 J**	**6.5 J**	**6.2 J**	**8.2**	4 UJ	**75.9**	**19.1**
Magnesium	NE	NE	**2910 J**	**2100 J**	**902 J**	**6580 J**	**2410 J**	**977**	**1510**	**3820**	**1140**	**540**	**475**	**2690**	**4720**	**5680**	**1640**
Manganese	1600	10000	**125 J**	**455 J**	**518 J**	**233**	**295**	**378**	**162**	**261**	**196**	**550**	**409**	**512**	**528**	**604**	**268**
Mercury	0.18	5.7	**0.018**	**0.0067 J**	**0.014 J**	**0.55**	**0.62**	**0.0059 J**	**0.012 J**	**0.65 J**	**0.0055 J**	**0.008 J**	0.053 UJ	**0.024**	0.053 U	**0.1**	**0.033**
Nickel	30	10000	**16.3 J**	**12.8 J**	**5.3 J**	**18.6**	**16.3**	**13**	**5.6**	**13.2 J**	**8.6 J**	**5.8 J**	**5.5 J**	**14.9**	**9.6**	**15.4**	**7.2**
Potassium	NE	NE	**1250 J**	**1330 J**	**475 J**	**919 J**	**852 J**	**454 J**	**1190 J**	**1150 J**	**576 J**	**271 J**	**227 J**	**898 J**	**3710 J**	**1170 J**	**518 J**
Selenium	3.9	6800	R	R	R	10.4 UJ	10.9 UJ	**7.7 J**	11.4 UJ	10.4 U	11.2 U	11.6 UJ	**4.6 J**	10.5 UJ	**6.4 J**	11 UJ	11 UJ
Silver	2	6800	1.2 U	1.3 UJ	1.3 UJ	1.4 UJ	1.5 UJ	**0.14 J**	1.5 UJ	**0.27 J**	1.5 U	**0.53 J**	**0.38 J**	1.4 UJ	**0.11 J**	1.5 UJ	1.5 UJ
Sodium	NE	NE	**99.4**	**71.7**	**19.4 J**	**210**	**152**	70.4 UJ	75.9 U	**595 J**	**71 J**	77.6 U	65.8 U	**89.1**	66.7 UJ	**324**	73.6 U
Thallium	NE	NE	3.7 U	3.8 U	**1.9 J**	4.2 U	4.4 U	4.2 U	4.6 U	4.2 U	4.5 U	4.7 UJ	3.9 UJ	4.2 U	4 U	4.4 U	4.4 U
Vanadium	NE	NE	**23.7 J**	**28.2 J**	**21.1 J**	**22.6**	**21.1**	**19.9**	**24.3**	**21 J**	**16.5 J**	**27.4**	**25.5 J**	**23.7**	**41.5**	**32.5**	**15.1**
Zinc	109	10000	**49.6 J**	**39.1 J**	**28.5 J**	**190**	**166**	**24.8**	**27.6**	**258 J**	**19.5 J**	**33**	**31.1 J**	**37.8**	**44.9**	**119**	**30.4**
Cyanides (mg/kg)																	
Free Cyanide	NE	NE	0.202 U	0.201 U	0.219 U	0.229 U	0.234 U	0.236 UJ	0.241 U	0.229 U	0.25 U	0.248 U	0.21 U	0.232 U	0.222 UJ	0.237 U	0.235 UJ
Other (mg/kg)																	
Ammonia	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Solids (%)	NE	NE	**85.4**	NA	NA	**82.1**	**82.7**	NA	NA	**81.5**	NA	NA	NA	**85.9**	NA	**76.5**	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Industrial SCO	Adjacent to Parcels 3 and 4														
			N. 12th St. ROW		N. 11th St. ROW			N. 12th St. ROW			N. 11th St. ROW				N. 12th St. ROW		
Sample Name: / Sample Depth(ft bgs):			WW-MW-10 (4-5)	WW-MW-10 (10-11.5)	WW-MW-11 (3-5)	WW-MW-11 (11-14)	WW-MW-11 (39-40)	WW-MW-13 (2-5)	WW-MW-13 (5-10)	Duplicate of WW-MW-13 (5-10)	WW-MW-14 (3-5)	Duplicate of WW-MW-14 (3-5)	WW-MW-14 (36-37)	WW-MW-14 (55-57)	WW-MW-15 (1-4)	Duplicate of WW-MW-15 (1-4)	WW-MW-15 (12-13)
Sample Date:			9/8/2009	9/8/2009	8/21/2009	8/25/2009	8/25/2009	9/15/2009	9/15/2009	9/15/2009	9/1/2009	9/1/2009	9/2/2009	9/2/2009	9/24/2009	9/24/2009	9/28/2009
BTEX (mg/kg)																	
Benzene	0.06	89	0.029 UJ	2.4 U	0.0059 U	0.34 J	0.0056 U	0.0016 J	1.1 J	2.8 J	0.00074 J	0.006 U	0.87 J	0.0059 U	0.0059 U	0.006 U	0.014 J
Toluene	0.7	1000	0.029 U	2.4 U	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.0018 J	5.7 U	0.0059 U	0.0059 U	0.006 U	0.031 U
Ethylbenzene	1	780	0.32 J	2.4 U	0.0059 U	25	0.0056 U	0.0062 U	70 J	120 J	0.0057 U	0.006 U	34	0.0059 U	0.0059 U	0.006 U	0.0087 J
Total Xylene	0.26	1000	0.029 U	2.4 U	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 UJ	72 J	0.0057 U	0.006 U	5.7 U	0.0059 U	0.0059 U	0.006 U	0.0085 J
Total BTEX	NE	NE	0.32	ND	ND	25.34	ND	0.0016	71.1	194.8	0.00074	0.0018	34.87	ND	ND	ND	0.0312
Other VOCs (mg/kg)																	
Acetone	0.05	1000	0.12 UJ	6 U	0.024 UJ	R	0.022 U	0.025 U	18 U	20 U	0.023 UJ	0.024 UJ	14 U	0.024 UJ	0.024 UJ	0.024 UJ	0.12 U
Carbon disulfide	NE	NE	0.029 UJ	2.4 U	0.0059 UJ	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	5.7 U	0.0059 U	0.0059 U	0.006 U	0.031 U
Chloroform	0.37	700	0.029 U	2.4 U	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	5.7 U	0.0059 U	0.0059 U	0.006 U	0.031 U
cis-1,2-Dichloroethene	0.25	1000	0.029 U	2.4 U	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	5.7 U	0.0059 U	0.0059 U	0.006 U	0.031 U
trans-1,2-Dichloroethene	0.19	1000	0.029 U	2.4 U	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	5.7 U	0.0059 U	0.0059 U	0.006 U	0.031 U
2-Butanone (Methyl ethyl ketone)	0.12	1000	0.058 UJ	2.4 U	0.012 U	2.3 U	0.011 U	0.012 U	7.1 UJ	230 J	0.011 U	0.012 U	5.7 U	0.012 U	0.012 U	0.012 U	0.061 U
4-Methyl-2-pentanone (MIBK)	NE	NE	0.029 UJ	2.4 UJ	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	7 J	0.0059 U	0.0059 U	0.006 U	0.031 U
Styrene	NE	NE	0.029 U	2.4 U	0.001 J	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	5.7 U	0.0059 U	0.0059 U	0.006 U	0.031 U
1,1,2,2-Tetrachloroethane	NE	NE	0.029 UJ	2.4 U	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	5.7 U	0.0059 U	0.0059 U	0.006 U	0.031 U
Tetrachloroethene (PCE)	1.3	300	0.029 UJ	2.4 U	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	0.95 J	0.0059 U	0.0059 U	0.006 U	0.031 U
1,1,2-Trichloroethane	NE	NE	0.029 U	2.4 U	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	5.7 U	0.0059 U	0.0059 U	0.006 U	0.031 U
Trichloroethene (TCE)	0.47	400	0.029 U	2.4 U	0.0059 U	2.3 U	0.0056 U	0.0062 U	7.1 U	8.1 U	0.0057 U	0.006 U	5.7 U	0.0059 U	0.0059 U	0.006 U	0.031 U
Total VOC	NE	NE	0.32	ND	0.001	25.34	ND	0.0016	71.1	424.8	0.00074	0.0018	42.82	ND	ND	ND	0.0312
PAHs (mg/kg)																	
Acenaphthene	20	1000	21	56 J	1.4 J	110	0.35	19	510	520	0.3 J	0.45 J	180	1.6 J	6.1 U	6.4 U	3
Acenaphthylene	100	1000	2.5 J	9.9 J	0.87 J	12 J	0.042 J	7.4	29 J	38 J	1.5 J	1.3 J	36	0.23 J	1.6 J	1.6 J	1 J
Anthracene	100	1000	8.6	16 J	2.6 J	47 J	0.2 J	12	160	190	0.97 J	1.4 J	110	0.97 J	1.6 J	1.1 J	2.9
Benz[a]anthracene	1	11	5.9	15 J	19	35 J	0.14 J	24	83	110	4.3	4.5	76	0.61	6.1	3.9 J	4.6
Benzo[a]pyrene	1	1.1	4.4	13 J	41 J	36 J	0.12 J	30	70	99	5	5.9	59	0.42	8.3	6.6	6
Benzo[b]fluoranthene	1	11	3.3	9.5 J	47 J	30 J	0.13 J	23	76	74	6.8	5.8	43	0.4	8.4	6.4	5.8
Benzo[k]fluoranthene	0.8	110	1.6 J	3.4 J	20 J	12 J	0.043 J	9.9	25 J	34 J	3 J	2.3	18 J	0.19 J	3.3 J	2.3 J	2.2
Benzo[g,h,i]perylene	100	1000	1 J	3 J	28 J	15 J	0.13 J	29	38 U	29 J	2.5 J	6.3 J	16 J	0.098 J	9.3	8.2	7
Chrysene	1	110	5.9	15 J	20	36 J	0.13 J	24	82	100	4.8	4.7	70	0.65 J	6.5	4 J	4.4
Dibenz[a,h]anthracene	0.33	1.1	3.1 U	16 UJ	8.2 J	60 U	0.29 U	6.9	3.7 J	44 U	0.48 J	1.2 J	2.5 J	0.32 U	6.1 U	6.4 U	1.3 J
Fluoranthene	100	1000	9.5	27 J	17	71	0.23 J	26	150	180	6.6	7.1	140	1.1 J	8.7	4.3 J	8.8
Fluorene	30	1000	13	39 J	1.2 J	59 J	0.2 J	9.7	210	230	0.38 J	0.55 J	130	1.1 J	0.46 J	0.39 J	1.7
Indeno[1,2,3-cd]pyrene	0.5	11	1.2 J	3.4 J	33 J	14 J	0.11 J	31	38 U	29 J	2.8 J	6.3 J	17 J	0.1 J	7.8	6.3 J	6.9
2-Methylnaphthalene	NE	NE	11	29 J	6.2 U	340	0.7	5.4	210	210	3.1 U	1.6 U	360	1.9 J	6.1 U	6.4 U	0.49 J
Naphthalene	12	1000	29 J	56 J	6.2 U	740	0.29 U	10	610	550	3.1 U	1.6 U	490	1.6 J	6.1 U	6.4 U	1.8
Phenanthrene	100	1000	32	90 J	10	160	0.67	25	520	540	3.5	4.7	380	2.7 J	3.2 J	1.9 J	7.7
Pyrene	100	1000	14	40 J	22	80	0.47	57	220	290	7.8	8.7	180	1.5 J	11	6.3 J	11
Total PAHs	NE	500	163.9	425.2	271.27	1797	3.665	349.3	2958.7	3223	50.73	61.2	2307.5	15.168	76.26	53.29	76.59
Other SVOCs (mg/kg)																	
Bis(2-ethylhexyl)phthalate	NE	NE	3.1 U	16 UJ	6.2 U	60 U	0.29 U	0.84 J	38 U	44 U	3.1 U	1.6 U	30 U	0.32 U	6.1 U	6.4 U	1.3 U
Butyl benzyl phthalate	NE	NE	3.1 U	16 UJ	6.2 U	60 U	0.29 U	3.3 U	38 U	44 U	0.25 J	0.23 J	30 U	0.32 U	1 J	6.4 U	1.3 U
Carbazole	NE	NE	0.26 J	16 UJ	1.1 J	5.2 J	0.29 U	0.48 J	2.2 J	44 U	0.28 J	0.51 J	6.2 J	0.052 J	6.1 U	6.4 U	0.85 J
Dibenzofuran	7	1000	1.8 J	4.5 J	1 J	11 J	0.032 J	1.1 J	27 J	34 J	3.1 U	0.26 J	34	0.18 J	6.1 U	6.4 U	1.3 J
2,4-Dimethylphenol	NE	NE	3.1 U	16 UJ	6.2 U	60 U	0.29 U	3.3 U	38 UJ	44 UJ	3.1 U	1.6 U	30 U	0.32 U	6.1 U	6.4 U	1.3 U
Di-n-octyl phthalate	NE	NE	3.1 U	16 UJ	6.2 UJ	60 U	0.29 U	3.3 U	38 U	44 U	3.1 U	1.6 U	30 U	0.32 U	6.1 U	6.4 U	1.3 U
2-Methylphenol (o-Cresol)	0.33	1000	3.1 U	16 UJ	6.2 U	60 U	0.29 U	3.3 U	38 U	44 U	3.1 U	1.6 U	30 U	0.32 U	6.1 U	6.4 U	1.3 U
4-Methylphenol (p-Cresol)	0.33	1000	3.1 U	16 UJ	6.2 U	60 U	0.29 U	3.3 U	38 U	44 U	3.1 U	1.6 U	30 U	0.32 U	6.1 U	6.4 U	1.3 U
4-Nitroaniline	NE	NE	3.1 U	16 UJ	6.2 U	60 U	0.29 U	3.3 U	38 U	44 U	3.1 U	1.6 U	30 U	0.32 U	6.1 U	6.4 U	1.3 U
Phenol	0.33	1000	3.1 U	16 UJ	6.2 U	60 U	0.29 U	3.3 U	38 U	44 U	3.1 U	1.6 U	30 U	0.32 U	6.1 U	6.4 U	1.3 U
Total SVOC	NE	NE	165.96	429.7	273.37	1813.2	3.697	351.72	2987.9	3257	51.26	62.2	2347.7	15.4	77.26	53.29	78.74
PCBs (mg/kg)																	
Aroclor 1254	NE	NE	0.39 U	NA	0.02 U	NA	NA	2 U	NA	NA	0.21 J	0.094 J	NA	NA	0.041 U	NA	NA
Aroclor 1260	NE	NE	0.39 U	NA	0.02 U	NA	NA	2 U	NA	NA	0.081 J	0.039 J	NA	NA	0.041 U	NA	NA
Total PCBs	NE	NE	ND	NA	ND	NA	NA	ND	NA	NA	0.291	0.133	NA	NA	ND	NA	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Industrial SCO	Adjacent to Parcels 3 and 4														
			N. 12th St. ROW		N. 11th St. ROW			N. 12th St. ROW			N. 11th St. ROW				N. 12th St. ROW		
Sample Name:			WW-MW-10	WW-MW-10	WW-MW-11	WW-MW-11	WW-MW-11	WW-MW-13	WW-MW-13	Duplicate of WW-MW-13	WW-MW-14	Duplicate of WW-MW-14	WW-MW-14	WW-MW-14	WW-MW-15	Duplicate of WW-MW-15	WW-MW-15
Sample Depth(ft bgs):			(4-5)	(10-11.5)	(3-5)	(11-14)	(39-40)	(2-5)	(5-10)	(5-10)	(3-5)	(3-5)	(36-37)	(55-57)	(1-4)	(1-4)	(12-13)
Sample Date:			9/8/2009	9/8/2009	8/21/2009	8/25/2009	8/25/2009	9/15/2009	9/15/2009	9/15/2009	9/1/2009	9/1/2009	9/2/2009	9/2/2009	9/24/2009	9/24/2009	9/28/2009
Pesticides (mg/kg)																	
gamma-BHC	0.1	23	0.04 U	NA	**0.00077 J**	NA	NA	0.11 UJ	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
delta-BHC	0.04	1000	0.04 U	NA	**0.00089 J**	NA	NA	0.11 UJ	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NE	NE	0.04 U	NA	**0.0058**	NA	NA	0.11 U	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
4,4-DDD	0.0033	180	0.04 U	NA	0.0039 UJ	NA	NA	**0.081 J**	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
4,4'-DDE	0.0033	120	0.04 U	NA	0.0039 U	NA	NA	0.11 U	NA	NA	0.041 UJ	**0.017 J**	NA	NA	0.021 U	NA	NA
4,4'-DDT	0.0033	94	0.04 U	NA	0.0039 U	NA	NA	0.11 U	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
Dieldrin	0.005	2.8	0.04 U	NA	**0.004 J**	NA	NA	0.11 U	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
Endosulfan I	2.4	920	0.04 U	NA	0.002 UJ	NA	NA	0.11 UJ	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
Endosulfan II	2.4	920	0.04 U	NA	**0.0089 J**	NA	NA	0.11 U	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
Endosulfan sulfate	2.4	920	0.04 U	NA	0.0039 U	NA	NA	0.11 U	NA	NA	0.041 U	0.13 U	NA	NA	0.021 U	NA	NA
Endrin	0.014	410	0.04 U	NA	0.0039 U	NA	NA	0.11 U	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
Endrin aldehyde	NE	NE	0.04 U	NA	**0.023 J**	NA	NA	0.11 U	NA	NA	0.041 U	0.13 U	NA	NA	0.021 U	NA	NA
Endrin ketone	NE	NE	0.04 U	NA	**0.0041 J**	NA	NA	**0.099 J**	NA	NA	**0.026 J**	0.13 UJ	NA	NA	**0.011 J**	NA	NA
Heptachlor	0.042	29	0.04 U	NA	0.002 UJ	NA	NA	0.11 U	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
Heptachlor epoxide	NE	NE	0.04 U	NA	0.002 UJ	NA	NA	0.11 UJ	NA	NA	0.041 UJ	0.13 UJ	NA	NA	0.021 U	NA	NA
Methoxychlor	NE	NE	0.077 U	NA	0.02 UJ	NA	NA	0.2 U	NA	NA	0.079 UJ	0.26 UJ	NA	NA	0.041 U	NA	NA
Metals (mg/kg)																	
Aluminum	NE	NE	**7690**	**4450**	**2170**	**1760**	**4450**	**1250**	**1670 J**	**3400 J**	**7000**	**7190**	**3210**	**5340**	**4950**	**4710**	**3510**
Antimony	NE	NE	4.7 UJ	4.7 UJ	4.7 UJ	4.6 UJ	4.6 UJ	5 UJ	5.6 UJ	6.5 UJ	4.6 UJ	4.8 UJ	4.7 UJ	4.8 UJ	4.6 U	4.9 U	5 UJ
Arsenic	13	16	6 U	6 U	**2.7 J**	**3.8**	5.9 U	**4.3**	**88.2 J**	**207 J**	**19.7 J**	**17.2**	**7 J**	**2.8 J**	**39.2**	**45.1**	**65.9**
Barium	350	10000	**33.6**	**19.3**	**30.4**	**12.8 J**	**28.5 J**	**51 J**	**13.4 J**	**32 J**	**171 J**	**170 J**	**36.8 J**	**43.7 J**	**54**	**56.1**	**38 J**
Beryllium	7.2	2700	1.4 U	1.4 U	1.4 U	**0.15 J**	**0.46 J**	1.5 U	1.7 U	2 UJ	**0.2 J**	**0.26 J**	**0.49 J**	**0.28 J**	**0.31**	**0.27**	1.5 U
Cadmium	2.5	60	**0.57 J**	**0.33 J**	1.4 UJ	1.4 UJ	1.4 U	**0.41 J**	**0.63 J**	**1.9 J**	**1.2 J**	**1.1 J**	**0.31 J**	1.4 U	1.4 U	1.5 U	1.5 U
Calcium	NE	NE	71.5 UJ	**874 J**	71.2 UJ	**113000 J**	**1490 J**	**4660**	**686 J**	**2260 J**	**33100 J**	**31100 J**	**5040 J**	**10800 J**	**2260**	**5380**	**1960**
Chromium	NE	NE	**12.8 J**	**9.2 J**	**13.3 J**	**3 J**	**13.2 J**	**5.4**	**11.3 J**	**30.2 J**	**22.3 J**	**24.1 J**	**10.6 J**	**13 J**	**15.7**	**21.6**	**43.7 J**
Cobalt	NE	NE	**5.1**	**5.5**	**1.6**	**2.2 J**	**6.4 J**	1.5 U	**6.4 J**	**15.2 J**	**5.8**	**5.2**	**5.9**	**6.2**	**6.9**	**4.8**	**12.2**
Copper	50	10000	**11.7**	**7.5**	**10.2**	**12 J**	**16.4 J**	**29.6**	**86.9 J**	**233 J**	**93.9**	**136**	**11.3**	**13.7**	**104**	**142**	**202**
Iron	NE	NE	**14500**	**9600**	**5570 J**	**6210 J**	**13600 J**	**19100 J**	**11700 J**	**36300 J**	**28100 J**	**20400 J**	**24400 J**	**17700 J**	**17900**	**12700**	**14800**
Lead	63	3900	**11.1 J**	**5.8 J**	**36.9 J**	**11.8 J**	**4.5 J**	**108**	**233 J**	**576 J**	**331 J**	**316 J**	**5.7 J**	4.3 U	**345**	**502**	**450 J**
Magnesium	NE	NE	**2020**	**1720**	**493 J**	**67000 J**	**2490 J**	**1450**	**197 J**	**894 J**	**7530**	**6570**	**3730**	**5720**	**2740**	**2880**	**2550**
Manganese	1600	10000	**131**	**112**	**50.9 J**	**132 J**	**382 J**	**19.6**	**150 J**	**453 J**	**294**	**353**	**875**	**421**	**132**	**90**	**196**
Mercury	0.18	5.7	**0.015 J**	0.059 U	**0.069**	**0.041 J**	0.054 UJ	**0.22 J**	**0.42 J**	**0.86 J**	**0.85**	**0.83**	**0.0075 J**	**0.017 J**	**0.34**	**1.6**	**0.11**
Nickel	30	10000	**11.8**	**11.4**	**5.2**	**5.4**	**10.8**	**4.1 J**	**23.2 J**	**40.9 J**	**20.6**	**20.6**	**10.3**	**10.1**	**19.8**	**14.6**	**17.1 J**
Potassium	NE	NE	**699 J**	**540 J**	71.2 UJ	**496 J**	**1250 J**	**128 J**	**81.7 J**	**219 J**	**1240 J**	**1130 J**	**774 J**	**1170 J**	**903**	**1000**	**652 J**
Selenium	3.9	6800	R	R	10.7 UJ	10.4 U	10.4 U	11.4 UJ	12.7 UJ	14.9 UJ	R	R	R	R	10.5 U	11.2 U	**6 J**
Silver	2	6800	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.7 U	2 UJ	**0.18 J**	**0.17 J**	1.4 UJ	1.4 U	**0.083**	**0.21**	**0.27 J**
Sodium	NE	NE	**249**	**139**	71.2 U	**187 J**	**229 J**	76.1 UJ	**419 J**	**698**	**1640**	**2000**	**800**	**1480**	**1850**	**1590**	**1560**
Thallium	NE	NE	4.3 UJ	4.3 UJ	4.3 UJ	4.2 U	4.2 U	4.6 U	5.1 U	6 UJ	4.2 UJ	4.3 UJ	4.3 UJ	4.3 UJ	**2.2**	**1.6**	**1.1 J**
Vanadium	NE	NE	**18.3**	**12.9**	**6.5 J**	**9.6 J**	**17.7 J**	**5**	**5.9 J**	**15.9 J**	**24.5 J**	**24.3 J**	**19.6 J**	**22.2 J**	**19.8**	**19.7**	**13.9 J**
Zinc	109	10000	**32.1**	**21.2**	**178**	**23.3**	**31.4**	**15.9**	**311 J**	**539 J**	**471 J**	**479 J**	**32 J**	**32.6 J**	**248**	**177**	**94.2 J**
Cyanides (mg/kg)																	
Free Cyanide	NE	NE	0.229 UJ	0.234 UJ	0.231 U	0.228 UJ	0.218 UJ	0.241 UJ	0.283 UJ	0.321 UJ	0.227 U	0.237 U	0.228 U	0.234 U	0.233 U	0.238 U	0.242 UJ
Other (mg/kg)																	
Ammonia	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Solids (%)	NE	NE	**85.6**	NA	**81.3**	NA	NA	**80.8**	NA	NA	**83.1**	**75.6**	NA	NA	**80.4**	NA	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

			Adjacent to Parcels 3 and 4										Adjacent to Parcel 5		
Location:	Unrestricted SCO	Industrial SCO	N. 11th St. ROW			N. 12th St. ROW			N. 12th St. ROW		N. 12th St. ROW		N. 11th St. ROW		Kent Ave. ROW
Sample Name: / Sample Depth(ft bgs): / Sample Date:			WW-SB-13 (4-5) 8/21/2009	WW-SB-13 (12-15) 8/24/2009	WW-SB-13 (37-38) 8/24/2009	WW-SB-14 (1-5) 9/11/2009	Duplicate of WW-SB-14 (1-5) 9/11/2009	WW-SB-14 (10-11) 9/11/2009	WW-SB-15 (3-5) 9/17/2009	WW-SB-15 (7-9) 9/17/2009	WW-SB-16 (0.5-5) 9/22/2009	WW-SB-16 (12-13) 9/23/2009	WW-MW-12 (0.5-3) 8/28/2009	WW-MW-12 (9-10) 8/28/2009	WW-MW-20 (1.5-3) 11/3/2010
BTEX (mg/kg)															
Benzene	0.06	89	0.006 U	**54**	**0.00086 J**	0.03 U	0.03 U	12 U	**0.017 J**	**0.061 J**	**0.046 J**	**0.22 J**	0.0055 U	15 U	0.00097 U
Toluene	0.7	1000	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	0.0055 UJ	0.031 U	0.0055 U	15 U	0.00097 U
Ethylbenzene	1	780	0.006 U	**430**	0.006 U	**0.1 J**	**0.3 J**	**270**	0.0061 U	0.037 U	**0.018 J**	**0.11 J**	0.0055 U	15 U	0.00097 U
Total Xylene	0.26	1000	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 UJ	0.037 UJ	0.0055 UJ	0.031 UJ	0.0055 U	15 U	0.0029 U
Total BTEX	NE	NE	ND	**484**	**0.00086**	**0.1**	**0.3**	**270**	**0.017**	**0.061**	**0.064**	**0.33**	ND	ND	ND
Other VOCs (mg/kg)															
Acetone	0.05	1000	0.024 UJ	30 U	0.024 UJ	0.12 U	0.12 U	31 U	0.024 U	0.15 U	**0.065 J**	0.13 UJ	0.022 U	38 U	0.0097 U
Carbon disulfide	NE	NE	0.006 UJ	12 U	0.006 UJ	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	**0.012 J**	**0.025 J**	0.0055 U	15 U	0.00097 U
Chloroform	0.37	700	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	R	0.031 U	0.0055 U	15 U	0.00097 U
cis-1,2-Dichloroethene	0.25	1000	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	R	0.031 U	0.0055 U	15 U	0.00097 U
trans-1,2-Dichloroethene	0.19	1000	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	R	0.031 U	0.0055 U	15 U	0.00097 U
2-Butanone (Methyl ethyl ketone)	0.12	1000	0.012 U	12 U	0.012 U	0.061 U	0.061 U	12 U	0.012 U	0.074 U	**0.011 J**	0.063 U	0.011 U	**260**	0.0097 U
4-Methyl-2-pentanone (MIBK)	NE	NE	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	0.0055 U	0.031 U	0.0055 U	15 U	0.0097 U
Styrene	NE	NE	**0.00051 J**	12 U	0.006 U	0.03 U	**0.003 J**	12 U	0.0061 U	0.037 U	R	0.031 U	0.0055 U	15 U	0.00097 U
1,1,2,2-Tetrachloroethane	NE	NE	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	R	0.031 U	0.0055 U	15 U	0.00097 U
Tetrachloroethene (PCE)	1.3	300	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	R	0.031 U	0.0055 U	15 U	0.00097 U
1,1,2-Trichloroethane	NE	NE	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	**0.074 J**	0.031 U	0.0055 U	15 U	0.00097 U
Trichloroethene (TCE)	0.47	400	0.006 U	12 U	0.006 U	0.03 U	0.03 U	12 U	0.0061 U	0.037 U	R	0.031 U	0.0055 U	15 U	0.00097 U
Total VOC	NE	NE	**0.00051**	**484**	**0.00086**	**0.1**	**0.303**	**270**	**0.017**	**0.061**	**0.226**	**0.355**	ND	**260**	ND
PAHs (mg/kg)															
Acenaphthene	20	1000	**5.6 J**	**350**	**0.12 J**	**89**	**92**	**200**	**16**	**120**	**6.9**	**23**	2.9 U	**3.9 J**	0.34 U
Acenaphthylene	100	1000	**4.4 J**	150 U	0.32 U	**15 J**	**23**	**19 J**	**2.4 J**	**7 J**	**1.2 J**	**3.2 J**	2.9 U	4 U	0.34 U
Anthracene	100	1000	**14 J**	**120 J**	**0.06 J**	**55**	**83**	**54 J**	**11**	**57**	**5.5 J**	**24**	**1.1 J**	**6.1**	0.34 U
Benz[a]anthracene	1	11	**76**	**57 J**	**0.05 J**	**37**	**68**	**32 J**	**26**	**52**	**5.1 J**	**19**	**2.5 J**	**25**	0.034 U
Benzo[a]pyrene	1	1.1	**130 J**	**43 J**	**0.038 J**	**32**	**60**	**28 J**	**39**	**72 J**	**6.3**	**17**	**2.4 J**	**48 J**	0.034 U
Benzo[b]fluoranthene	1	11	**150 J**	**34 J**	0.32 U	**27**	**50**	**21 J**	**34**	**60 J**	**5.6**	**16**	**3.5 J**	**53 J**	0.034 U
Benzo[k]fluoranthene	0.8	110	**78 J**	150 U	0.32 U	**10 J**	**21**	**9.5 J**	**15**	**30 J**	**2.3 J**	**5.6 J**	**1.3 J**	**25 J**	0.034 U
Benzo[g,h,i]perylene	100	1000	**57 J**	**15 J**	0.32 U	**8 J**	**14 J**	66 U	**47**	**47 J**	**4.5 J**	**11**	**1.5 J**	**28 J**	0.34 U
Chrysene	1	110	**73**	**55 J**	**0.049 J**	**37**	**67**	**31 J**	**25**	**47**	**5.1 J**	**16**	**2.4 J**	**23**	0.34 U
Dibenz[a,h]anthracene	0.33	1.1	**22 J**	150 U	0.32 U	**2.5 J**	**4.3 J**	66 U	**7.9**	**9.1 J**	5.6 U	**2.1 J**	**0.37 J**	**8.3 J**	0.034 U
Fluoranthene	100	1000	**60**	**130 J**	**0.088 J**	**55**	**89**	**61 J**	**32**	**62**	**9.3**	**51**	**5.7**	**18**	0.34 U
Fluorene	30	1000	**8.6 J**	**160**	**0.064 J**	**67**	**100**	**96**	**8.8**	**56**	**4.3 J**	**7.4**	**0.28 J**	**4**	0.34 U
Indeno[1,2,3-cd]pyrene	0.5	11	**90 J**	150 U	0.32 U	**9.4 J**	**17**	**6.5 J**	**47**	**49 J**	**3.8 J**	**11**	**1.6 J**	**33 J**	0.034 U
2-Methylnaphthalene	NE	NE	16 U	**930**	0.32 U	16 U	16 U	**410**	**22**	**31**	5.6 U	6.7 U	2.9 U	**11**	0.34 U
Naphthalene	12	1000	16 U	**2300**	0.32 U	16 U	16 U	**930**	**39**	**72**	5.6 U	**22**	2.9 U	4 U	0.34 U
Phenanthrene	100	1000	**46**	**390**	**0.23 J**	**190**	**280**	**200**	**32**	**150**	**15**	**33**	**3.4**	**18**	0.34 U
Pyrene	100	1000	**90**	**140 J**	**0.17 J**	**87**	**140**	**87**	**52**	**130**	**12**	**61**	**6.7**	**29**	0.34 U
Total PAHs	NE	500	**904.6**	**4724**	**0.869**	**720.9**	**1108.3**	**2185**	**456.1**	**1051.1**	**86.9**	**322.3**	**32.75**	**333.3**	ND
Other SVOCs (mg/kg)															
Bis(2-ethylhexyl)phthalate	NE	NE	16 U	150 U	0.32 U	16 U	16 U	66 U	**0.75 J**	20 U	5.6 U	6.7 U	2.9 U	4 U	0.34 U
Butyl benzyl phthalate	NE	NE	16 U	150 U	0.32 U	16 U	16 U	66 U	3.3 U	20 U	5.6 U	6.7 U	2.9 U	4 U	0.34 U
Carbazole	NE	NE	**2.3 J**	**13 J**	0.32 U	**1.5 J**	**2.5 J**	66 U	**1.8 J**	**3.1 J**	**0.4 J**	**1.9 J**	2.9 U	**2.1 J**	0.34 U
Dibenzofuran	7	1000	**2.2 J**	**43 J**	0.32 U	**7.4 J**	**9.6 J**	**9.9 J**	**2.8 J**	**7.9 J**	**1.4 J**	**6.9**	2.9 U	**1.6 J**	0.34 U
2,4-Dimethylphenol	NE	NE	16 U	150 U	0.32 U	16 U	16 U	66 UJ	3.3 UJ	20 UJ	5.6 U	6.7 U	2.9 U	4 U	0.34 U
Di-n-octyl phthalate	NE	NE	16 UJ	150 U	0.32 U	16 U	16 U	66 U	3.3 U	20 UJ	5.6 U	6.7 U	2.9 UJ	4 UJ	0.34 U
2-Methylphenol (o-Cresol)	0.33	1000	16 U	150 U	0.32 U	16 U	16 U	66 U	3.3 U	20 U	5.6 U	**0.42 J**	2.9 U	4 U	0.34 U
4-Methylphenol (p-Cresol)	0.33	1000	16 U	150 U	0.32 U	16 U	16 U	66 U	3.3 U	20 U	5.6 U	**1.2 J**	2.9 U	4 U	0.34 U
4-Nitroaniline	NE	NE	16 U	150 U	0.32 U	16 U	16 U	66 U	3.3 U	20 U	5.6 U	6.7 U	2.9 U	4 U	0.7 U
Phenol	0.33	1000	16 U	150 U	0.32 U	16 U	16 U	66 U	3.3 U	20 U	5.6 U	6.7 U	2.9 U	4 U	0.34 U
Total SVOC	NE	NE	**909.1**	**4780**	**0.869**	**729.8**	**1120.4**	**2194.9**	**461.45**	**1062.1**	**88.7**	**332.72**	**32.75**	**337**	ND
PCBs (mg/kg)															
Aroclor 1254	NE	NE	0.02 U	NA	NA	0.04 U	0.04 U	NA	0.44 U	NA	0.037 U	NA	**0.052 J**	NA	0.07 U
Aroclor 1260	NE	NE	0.02 U	NA	NA	0.04 U	0.04 U	NA	0.44 U	NA	0.037 U	NA	**0.026 J**	NA	0.07 U
Total PCBs	NE	NE	ND	NA	NA	ND	ND	NA	ND	NA	ND	NA	**0.078**	NA	ND

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Industrial SCO	Adjacent to Parcels 3 and 4										Adjacent to Parcel 5		
			N. 11th St. ROW			N. 12th St. ROW			N. 12th St. ROW		N. 12th St. ROW		N. 11th St. ROW		Kent Ave. ROW
Sample Name:			WW-SB-13	WW-SB-13	WW-SB-13	WW-SB-14	Duplicate of WW-SB-14	WW-SB-14	WW-SB-15	WW-SB-15	WW-SB-16	WW-SB-16	WW-MW-12	WW-MW-12	WW-MW-20
Sample Depth(ft bgs):			(4-5)	(12-15)	(37-38)	(1-5)	(1-5)	(10-11)	(3-5)	(7-9)	(0.5-5)	(12-13)	(0.5-3)	(9-10)	(1.5-3)
Sample Date:			8/21/2009	8/24/2009	8/24/2009	9/11/2009	9/11/2009	9/11/2009	9/17/2009	9/17/2009	9/22/2009	9/23/2009	8/28/2009	8/28/2009	11/3/2010
Pesticides (mg/kg)															
gamma-BHC	0.1	23	**0.0021 J**	NA	NA	0.21 UJ	0.42 U	NA	0.045 UJ	NA	0.038 UJ	NA	0.019 UJ	NA	0.007 U
delta-BHC	0.04	1000	**0.00089 J**	NA	NA	0.21 UJ	0.42 U	NA	0.045 UJ	NA	0.038 UJ	NA	0.019 UJ	NA	0.007 U
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NE	NE	0.002 U	NA	NA	0.21 U	0.42 U	NA	0.045 U	NA	0.038 UJ	NA	0.019 UJ	NA	0.007 U
4,4-DDD	0.0033	180	0.0039 UJ	NA	NA	0.21 U	0.42 UJ	NA	0.045 UJ	NA	0.038 UJ	NA	0.019 UJ	NA	0.007 U
4,4'-DDE	0.0033	120	0.0039 U	NA	NA	0.21 U	0.42 U	NA	0.045 U	NA	0.038 U	NA	0.019 UJ	NA	0.007 U
4,4'-DDT	0.0033	94	0.0039 U	NA	NA	0.21 U	0.42 UJ	NA	0.045 UJ	NA	0.038 U	NA	0.019 U	NA	0.007 U
Dieldrin	0.005	2.8	0.0039 UJ	NA	NA	0.21 U	0.42 U	NA	0.045 U	NA	0.038 UJ	NA	0.019 UJ	NA	0.007 U
Endosulfan I	2.4	920	0.002 UJ	NA	NA	0.21 U	0.42 U	NA	0.045 UJ	NA	0.038 UJ	NA	0.019 UJ	NA	0.007 U
Endosulfan II	2.4	920	**0.014 J**	NA	NA	0.21 U	0.42 U	NA	0.045 U	NA	0.038 U	NA	0.019 UJ	NA	0.007 U
Endosulfan sulfate	2.4	920	0.0039 U	NA	NA	0.21 U	0.42 U	NA	0.045 U	NA	0.038 U	NA	0.019 U	NA	0.007 U
Endrin	0.014	410	0.0039 UJ	NA	NA	0.21 U	0.42 U	NA	0.045 U	NA	0.038 UJ	NA	0.019 UJ	NA	0.007 U
Endrin aldehyde	NE	NE	**0.03 J**	NA	NA	0.21 U	0.42 U	NA	0.045 U	NA	0.038 U	NA	0.019 U	NA	0.007 U
Endrin ketone	NE	NE	**0.0016 J**	NA	NA	0.21 U	0.42 U	NA	**0.043 J**	NA	0.038 U	NA	0.019 U	NA	0.007 U
Heptachlor	0.042	29	0.002 UJ	NA	NA	0.21 U	0.42 U	NA	0.045 U	NA	0.038 UJ	NA	0.019 UJ	NA	0.007 U
Heptachlor epoxide	NE	NE	0.002 UJ	NA	NA	0.21 U	0.42 U	NA	0.045 UJ	NA	0.038 UJ	NA	0.019 UJ	NA	0.007 U
Methoxychlor	NE	NE	0.02 UJ	NA	NA	0.4 U	0.81 UJ	NA	0.088 U	NA	0.073 UJ	NA	0.037 UJ	NA	0.007 U
Metals (mg/kg)															
Aluminum	NE	NE	**2790**	**4000**	**2700**	**6820**	**6650**	**8110**	**1370**	**3960**	**5160**	**2620**	**3900**	**4970**	**3540**
Antimony	NE	NE	4.7 UJ	4.9 UJ	4.7 UJ	5 UJ	4.8 UJ	5.1 UJ	5 UJ	5.9 UJ	4.3 UJ	5 UJ	4.4 UJ	6.2 UJ	2 UJ
Arsenic	13	16	**3.9 J**	**31.9**	6 U	6.3 UJ	6.2 U	6.5 U	**6.6**	**16.9**	**14.4 J**	**17.7 J**	**2.8 J**	**40.9**	**1.5**
Barium	350	10000	**21.4**	**56.5 J**	**15.1 J**	**46.6**	**52.3**	**30.7**	**36.6 J**	**64.8 J**	**44.5**	**30.6**	**51.5 J**	**21.8 J**	**24.2 J**
Beryllium	7.2	2700	1.4 U	**0.36 J**	**0.64 J**	1.5 UJ	1.5 U	1.5 U	1.5 U	**0.31 J**	**0.27 J**	**0.14 J**	**0.21 J**	**0.59 J**	**0.23 J**
Cadmium	2.5	60	1.4 UJ	1.5 U	1.4 UJ	**1.6 J**	**0.87 J**	**0.79 J**	1.5 U	1.8 UJ	1.3 U	1.5 U	1.3 U	1.9 U	1 U
Calcium	NE	NE	71.3 UJ	**12100 J**	**384 J**	**3230 J**	**2910 J**	**743 J**	**1380**	**4040**	**18700 J**	**21700 J**	**18400 J**	**1520 J**	**717 J**
Chromium	NE	NE	**4.2 J**	**12.9 J**	**17.9 J**	**13 J**	**11.1 J**	**15.5 J**	**6.2**	**11**	**15 J**	**20.2 J**	**10.8 J**	**7.1 J**	**12.6**
Cobalt	NE	NE	**1.3 J**	**3.8 J**	**5.2 J**	**5.8**	**5.7**	**6.9**	**2.2 J**	**8.4 J**	**5.7**	**3.2**	**3.4 J**	**4.4 J**	**3.1 J**
Copper	50	10000	**7.9**	**64.2 J**	**17.1 J**	**36.4**	**36.6**	**13**	**54.1**	**123**	**50.6**	**57.8**	**50.8 J**	**20.6 J**	**9**
Iron	NE	NE	**5830 J**	**14500 J**	**44200 J**	**32300 J**	**15800 J**	**20200**	**6470 J**	**25600 J**	**11400**	**9200**	**8580 J**	**11700 J**	**10900**
Lead	63	3900	**25.3 J**	**99 J**	**6 J**	**219 J**	**243 J**	**10.3 J**	**353**	**320**	**90.7 J**	**369 J**	**87.8 J**	**78.5 J**	**5.3**
Magnesium	NE	NE	**517 J**	**1700 J**	**535 J**	**1830**	**1830**	**2160**	**550**	**1310**	**3260**	**2120**	**3790 J**	**838 J**	**1150**
Manganese	1600	10000	**24.8 J**	**178 J**	**348 J**	**268**	**180**	**230**	**25.3**	**174**	**111**	**103**	**126 J**	**112 J**	**91 J**
Mercury	0.18	5.7	**0.12**	**0.81 J**	**0.0065 J**	**0.18**	**0.19**	**0.014 J**	**0.84 J**	**8.6 J**	**0.41 J**	**6.9 J**	**0.12 J**	**0.22 J**	0.034 U
Nickel	30	10000	**4.1**	**9.9**	**6.7**	**14.5**	**13.3**	**12.7**	**6.6 J**	**18.8 J**	**22.9**	**14.3**	**12.2**	**16.4**	**6.3 J**
Potassium	NE	NE	71.3 UJ	**655 J**	**255 J**	**793 J**	**796 J**	**868 J**	**359 J**	**635 J**	**914 J**	**640 J**	**715 J**	**401 J**	**593 J**
Selenium	3.9	6800	10.7 U	11.1 U	10.7 U	R	R	R	11.3 UJ	13.5 UJ	9.8 U	11.4 U	9.9 U	14.1 U	**1.1 J**
Silver	2	6800	1.4 U	**0.11 J**	1.4 U	1.5 UJ	1.5 U	1.5 U	1.5 U	**0.43 J**	**0.87 J**	**0.29 J**	**0.29 J**	1.9 U	2 U
Sodium	NE	NE	71.3 U	**510 J**	**67.8 J**	**177 J**	**178**	**296**	75.5 UJ	**1270 J**	**391**	**2410**	**327 J**	**1480 J**	**226 J**
Thallium	NE	NE	4.3 UJ	4.5 U	4.3 U	4.5 UJ	4.4 UJ	4.6 UJ	4.5 U	5.4 UJ	**1 J**	4.6 U	4 U	5.6 U	2 U
Vanadium	NE	NE	**7.9 J**	**15.7 J**	**28.9 J**	**21.5**	**19**	**24.5**	**5.2**	**16.4**	**36.7 J**	**10.3 J**	**14.1 J**	**17.9 J**	**16.6**
Zinc	109	10000	**26.9**	**89.8**	**35.5**	**317**	**345**	**31.1**	**6.6 J**	**216**	**93.2**	**84.9**	**126**	**321**	**17.6**
Cyanides (mg/kg)															
Free Cyanide	NE	NE	0.237 U	0.234 UJ	0.238 U	0.242 UJ	0.24 UJ	0.238 UJ	0.24 UJ	0.296 UJ	0.218 UJ	0.249 UJ	0.215 UJ	0.299 UJ	0.21 U
Other (mg/kg)															
Ammonia	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Solids (%)	NE	NE	**78**	NA	NA	**82.4**	**81.6**	NA	**75.3**	NA	**90.3**	NA	**89.4**	NA	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Industrial SCO	Adjacent to Parcel 5													
			Former N. 10th St. ROW			Former N. 10th St. ROW			N. 11th St. ROW			N. 11th St. ROW		N. 11th St. ROW		
Sample Name:			WW-MW-21	WW-MW-21	WW-MW-21	WW-MW-22	WW-MW-22	WW-MW-22	WW-SB-17	WW-SB-17	WW-SB-17	WW-SB-28	WW-SB-28	WW-SB-29	Duplicate of WW-SB-29	WW-SB-29
Sample Depth(ft bgs):			(3-5)	(10-11)	(50-52)	(3-5)	(24-25)	(52-55)	(2-4)	(32-33)	(45-46)	(3-5)	(22-23)	(2-5)	(2-5)	(20-22)
Sample Date:			11/14/2012	11/14/2012	11/14/2012	11/12/2012	11/12/2012	11/12/2012	8/12/2009	8/12/2009	8/13/2009	8/14/2009	8/14/2009	8/18/2009	8/18/2009	8/18/2009
BTEX (mg/kg)																
Benzene	0.06	89	**0.00039 J**	**0.0011**	0.00071 U	**0.00028 J**	**0.82**	0.00045 U	0.0063 U	**140**	6.9 U	0.006 U	**950**	**0.046**	0.031 U	**42**
Toluene	0.7	1000	**0.00013 J**	**6.4E-05 J**	0.00071 U	**0.00014 J**	**3.9**	0.00045 U	0.0063 U	12 U	6.9 U	0.006 U	67 U	0.03 U	0.031 U	6.2 U
Ethylbenzene	1	780	0.00051 UJ	0.00034 U	0.00071 U	0.00076 U	**9.3**	0.00045 U	0.0063 U	**220**	**20**	0.006 U	**440**	0.03 U	0.031 U	**130**
Total Xylene	0.26	1000	0.0015 UJ	0.001 U	0.0021 U	0.0023 U	**16**	0.0013 U	0.0063 U	**340**	6.9 U	0.006 U	**1600**	0.03 U	0.031 U	6.2 U
Total BTEX	NE	NE	**0.00052**	**0.001164**	ND	**0.00042**	**30.02**	ND	ND	**700**	**20**	ND	**2990**	**0.046**	ND	**172**
Other VOCs (mg/kg)																
Acetone	0.05	1000	**0.022**	**0.0074**	0.0071 U	**0.031 J**	R	0.0045 UJ	0.025 UJ	31 U	R	0.024 U	170 U	0.12 U	0.12 U	15 U
Carbon disulfide	NE	NE	**0.0011 J**	**0.00031 J**	0.00071 U	**0.0038**	0.56 U	**0.00033 J**	0.0063 U	12 U	6.9 U	0.006 U	67 U	0.03 UJ	0.031 UJ	6.2 U
Chloroform	0.37	700	0.00051 U	0.00034 U	0.00071 U	0.00076 U	0.56 U	0.00045 U	0.0063 U	12 U	6.9 U	0.006 U	67 U	0.03 U	0.031 U	6.2 U
cis-1,2-Dichloroethene	0.25	1000	**0.05**	**0.00032 J**	**0.0011**	0.00076 U	0.56 U	0.00045 U	0.0063 U	12 U	6.9 U	0.006 U	67 U	0.03 U	0.031 U	6.2 U
trans-1,2-Dichloroethene	0.19	1000	**0.0063 J**	**5.2E-05 J**	0.00071 U	0.00076 U	0.56 U	0.00045 U	0.0063 U	12 U	6.9 U	0.006 U	67 U	0.03 U	0.031 U	6.2 U
2-Butanone (Methyl ethyl ketone)	0.12	1000	**0.004 J**	**0.0015 J**	R	R	2.8 U	R	0.013 UJ	12 U	6.9 U	0.012 U	67 U	0.061 U	0.062 U	6.2 U
4-Methyl-2-pentanone (MIBK)	NE	NE	0.0051 U	0.0034 U	0.0071 U	0.0076 U	2.8 U	0.0045 U	0.0063 UJ	12 U	6.9 U	0.006 U	67 U	0.03 U	0.031 U	6.2 U
Styrene	NE	NE	0.00051 UJ	0.00034 U	0.00071 U	0.00076 U	**0.2 J**	0.00045 U	0.0063 U	**59**	**3.3 J**	0.006 U	**860**	0.03 U	0.031 U	6.2 U
1,1,2,2-Tetrachloroethane	NE	NE	0.00051 U	0.00034 U	0.00071 U	0.00076 U	0.56 U	0.00045 U	0.0063 U	12 U	6.9 U	0.006 U	67 U	0.03 U	0.031 U	6.2 U
Tetrachloroethene (PCE)	1.3	300	**0.039 J**	**9.5E-05 J**	**0.00016 J**	0.00076 U	0.56 U	0.00045 U	0.0063 U	12 U	6.9 U	0.006 U	67 U	0.03 U	0.031 U	6.2 U
1,1,2-Trichloroethane	NE	NE	0.00051 U	0.00034 U	0.00071 U	0.00076 U	0.56 U	0.00045 U	0.0063 U	12 U	6.9 U	0.006 U	67 U	0.03 U	0.031 U	6.2 U
Trichloroethene (TCE)	0.47	400	**0.039 J**	0.00034 U	0.00071 U	0.00076 U	0.56 U	0.00045 U	0.0063 U	12 U	6.9 U	0.006 U	67 U	0.03 U	0.031 U	6.2 U
Total VOC	NE	NE	**0.17632**	**0.011121**	**0.00138**	**0.03522**	**30.22**	**0.00033**	ND	**759**	**23.3**	ND	**3850**	**0.046**	ND	**172**
PAHs (mg/kg)																
Acenaphthene	20	1000	0.36 U	0.38 U	0.37 U	**0.24 J**	**21**	0.37 U	0.34 U	**3.5 J**	**0.64 J**	0.32 U	**49 J**	1.3 U	**0.095 J**	**140**
Acenaphthylene	100	1000	0.36 U	0.38 U	0.37 U	**0.13 J**	**2.6 J**	0.37 U	0.34 U	**34**	**0.61 J**	0.32 U	**670**	1.3 U	**0.25 J**	**29 J**
Anthracene	100	1000	0.36 U	0.38 U	0.37 U	**0.92**	**14**	0.37 U	0.34 U	**13 J**	**0.58 J**	0.32 U	**230 J**	**0.057 J**	**0.14 J**	**58 J**
Benz[a]anthracene	1	11	**0.12**	0.038 U	0.037 U	**2.8**	**8.5**	0.037 U	**0.023 J**	16 U	0.74 U	0.32 U	**110 J**	**0.084 J**	**0.18 J**	**27 J**
Benzo[a]pyrene	1	1.1	**0.27**	0.038 U	0.037 U	**3**	**5.5**	0.037 U	0.34 U	16 U	0.74 U	0.32 U	**71 J**	1.3 U	1.3 U	**19 J**
Benzo[b]fluoranthene	1	11	**0.28**	0.038 U	0.037 U	**3.2**	**4.1**	0.037 U	**0.027 J**	16 U	0.74 U	0.32 U	**71 J**	1.3 U	1.3 U	**14 J**
Benzo[k]fluoranthene	0.8	110	**0.19 J**	0.38 U	0.37 U	**1.4**	**1.7 J**	0.37 U	0.34 U	16 U	0.74 U	0.32 U	360 U	1.3 U	1.3 U	**7.1 J**
Benzo[g,h,i]perylene	100	1000	**0.14**	0.038 UJ	0.037 UJ	**1.6**	0.42 U	0.037 U	0.34 U	16 U	0.74 UJ	0.32 U	360 U	1.3 U	1.3 U	65 U
Chrysene	1	110	**0.14 J**	0.38 U	0.37 U	**2.8**	**8.1**	0.37 U	0.34 U	16 U	0.74 U	0.32 U	**100 J**	1.3 U	**0.15 J**	**26 J**
Dibenz[a,h]anthracene	0.33	1.1	0.036 U	0.038 U	0.037 U	0.04 U	0.42 U	0.037 U	0.34 U	16 U	0.74 U	0.32 U	360 U	1.3 U	1.3 U	65 U
Fluoranthene	100	1000	**0.084 J**	0.38 U	0.37 U	**5.8**	**13**	0.37 U	**0.046 J**	**13 J**	**0.61 J**	**0.028 J**	**230 J**	**0.16 J**	**0.17 J**	**48 J**
Fluorene	30	1000	0.36 U	0.38 U	0.37 U	**0.24 J**	**12**	0.37 U	0.34 U	**18**	**0.73 J**	0.32 U	**360 J**	1.3 U	**0.19 J**	**81**
Indeno[1,2,3-cd]pyrene	0.5	11	**0.17**	0.038 U	0.037 U	**1.5**	**1.4**	0.037 U	0.34 U	**3.5 J**	0.74 U	0.32 U	360 U	1.3 U	1.3 U	65 U
2-Methylnaphthalene	NE	NE	0.36 U	0.38 U	0.37 U	**0.091 J**	**17**	0.37 U	0.34 U	**83**	**3.5**	0.32 U	**1600**	1.3 U	1.3 U	**410**
Naphthalene	12	1000	0.36 U	0.38 U	0.37 U	**0.13 J**	**7.6**	0.37 U	0.34 U	**190**	**7.5**	0.32 U	**3600**	1.3 U	1.3 U	**780**
Phenanthrene	100	1000	0.36 U	0.38 U	0.37 U	**3.1**	**54**	0.37 U	**0.027 J**	**51**	**2.2**	**0.028 J**	**850**	**0.24 J**	**0.5 J**	**200**
Pyrene	100	1000	**0.16 J**	0.38 U	0.37 U	**5.4**	**22**	0.37 U	**0.034 J**	**19**	**0.86**	**0.03 J**	**370**	**0.16 J**	**0.32 J**	**110**
Total PAHs	NE	500	**1.554**	ND	ND	**32.351**	**192.5**	ND	**0.157**	**428**	**17.23**	**0.086**	**8311**	**0.701**	**1.995**	**1949.1**
Other SVOCs (mg/kg)																
Bis(2-ethylhexyl)phthalate	NE	NE	0.36 U	0.38 U	0.37 U	**0.22 J**	4.2 U	0.37 U	0.34 U	16 U	0.74 U	0.32 U	360 U	**0.15 J**	**0.18 J**	65 U
Butyl benzyl phthalate	NE	NE	0.36 U	0.38 U	0.37 U	0.4 U	4.2 U	0.37 U	0.34 U	16 U	0.74 U	0.32 U	360 U	1.3 U	1.3 U	65 U
Carbazole	NE	NE	0.36 U	0.38 U	0.37 U	**0.3 J**	4.2 U	0.37 U	0.34 U	16 U	0.74 U	0.32 U	360 U	1.3 U	1.3 U	65 U
Dibenzofuran	7	1000	0.36 U	0.38 U	0.37 U	**0.15 J**	**1.3 J**	0.37 U	0.34 U	**2.3 J**	**0.092 J**	0.32 U	**41 J**	1.3 U	1.3 U	**9.1 J**
2,4-Dimethylphenol	NE	NE	0.36 U	0.38 U	0.37 U	0.4 U	4.2 U	0.37 U	0.34 U	16 U	**0.051 J**	0.32 U	360 U	1.3 U	1.3 U	65 U
Di-n-octyl phthalate	NE	NE	0.36 U	0.38 U	0.37 U	0.4 U	4.2 U	0.37 U	**0.27 J**	16 U	0.74 U	0.32 U	360 U	1.3 U	1.3 U	65 U
2-Methylphenol (o-Cresol)	0.33	1000	0.36 U	0.38 U	0.37 U	0.4 U	4.2 U	0.37 U	0.34 U	16 U	**0.046 J**	0.32 U	360 U	1.3 U	1.3 U	65 U
4-Methylphenol (p-Cresol)	0.33	1000	0.36 U	0.38 U	0.37 U	0.4 U	4.2 U	0.37 U	0.34 U	16 U	**0.055 J**	0.32 U	360 U	1.3 U	1.3 U	65 U
4-Nitroaniline	NE	NE	0.73 U	0.78 U	0.74 U	0.8 UJ	8.4 UJ	0.76 U	0.34 U	16 U	0.74 U	0.32 U	360 U	1.3 U	1.3 U	65 U
Phenol	0.33	1000	0.36 U	0.38 U	0.37 U	0.4 U	4.2 U	0.37 U	0.34 U	16 U	0.74 U	0.32 U	360 U	1.3 U	1.3 U	65 U
Total SVOC	NE	NE	**1.554**	ND	ND	**33.021**	**193.8**	ND	**0.427**	**430.3**	**17.474**	**0.086**	**8352**	**0.851**	**2.175**	**1958.2**
PCBs (mg/kg)																
Aroclor 1254	NE	NE	0.073 U	0.078 U	0.074 U	0.08 U	0.084 U	0.076 U	0.021 U	NA	NA	0.02 U	NA	0.02 U	0.021 U	NA
Aroclor 1260	NE	NE	0.073 U	0.078 U	0.074 U	**0.082**	0.084 U	0.076 U	0.021 U	NA	NA	0.02 U	NA	0.02 U	0.021 U	NA
Total PCBs	NE	NE	ND	ND	ND	**0.082**	ND	ND	ND	NA	NA	ND	NA	ND	ND	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	Unrestricted SCO	Industrial SCO	Adjacent to Parcel 5													
			Former N. 10th St. ROW			Former N. 10th St. ROW			N. 11th St. ROW			N. 11th St. ROW		N. 11th St. ROW		
Sample Name:			WW-MW-21	WW-MW-21	WW-MW-21	WW-MW-22	WW-MW-22	WW-MW-22	WW-SB-17	WW-SB-17	WW-SB-17	WW-SB-28	WW-SB-28	WW-SB-29	Duplicate of WW-SB-29	WW-SB-29
Sample Depth(ft bgs):			(3-5)	(10-11)	(50-52)	(3-5)	(24-25)	(52-55)	(2-4)	(32-33)	(45-46)	(3-5)	(22-23)	(2-5)	(2-5)	(20-22)
Sample Date:			11/14/2012	11/14/2012	11/14/2012	11/12/2012	11/12/2012	11/12/2012	8/12/2009	8/12/2009	8/13/2009	8/14/2009	8/14/2009	8/18/2009	8/18/2009	8/18/2009
Pesticides (mg/kg)																
gamma-BHC	0.1	23	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0021 U	NA	NA	0.002 U	NA	0.002 UJ	0.0021 UJ	NA
delta-BHC	0.04	1000	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0021 U	NA	NA	0.002 U	NA	0.002 UJ	0.0021 UJ	NA
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
gamma-Chlordane	NE	NE	NA	NA	NA	NA	NA	NA	0.0021 U	NA	NA	0.002 U	NA	0.002 U	0.0021 U	NA
4,4-DDD	0.0033	180	0.0073 U	0.0078 U	0.0074 U	**0.036**	0.0084 U	0.0076 U	0.0042 U	NA	NA	0.004 U	NA	0.004 UJ	0.0041 UJ	NA
4,4'-DDE	0.0033	120	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0042 U	NA	NA	0.004 U	NA	0.004 U	0.0041 U	NA
4,4'-DDT	0.0033	94	0.0073 U	0.0078 U	0.0074 U	**0.024**	0.0084 U	0.0076 U	0.0042 U	NA	NA	0.004 U	NA	0.004 U	0.0041 U	NA
Dieldrin	0.005	2.8	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0042 U	NA	NA	0.004 U	NA	0.004 UJ	0.0041 UJ	NA
Endosulfan I	2.4	920	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0021 U	NA	NA	0.002 U	NA	0.002 UJ	0.0021 UJ	NA
Endosulfan II	2.4	920	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0042 U	NA	NA	0.004 U	NA	0.004 UJ	0.0041 U	NA
Endosulfan sulfate	2.4	920	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0042 U	NA	NA	0.004 U	NA	0.004 UJ	0.0041 U	NA
Endrin	0.014	410	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0042 U	NA	NA	0.004 U	NA	0.004 UJ	0.0041 U	NA
Endrin aldehyde	NE	NE	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0042 U	NA	NA	0.004 UJ	NA	0.004 UJ	0.0041 U	NA
Endrin ketone	NE	NE	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0042 U	NA	NA	0.004 U	NA	0.004 UJ	0.0041 U	NA
Heptachlor	0.042	29	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0021 U	NA	NA	0.002 U	NA	0.002 UJ	0.0021 UJ	NA
Heptachlor epoxide	NE	NE	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.0021 U	NA	NA	0.002 U	NA	0.002 UJ	0.0021 UJ	NA
Methoxychlor	NE	NE	0.0073 U	0.0078 U	0.0074 U	0.008 U	0.0084 U	0.0076 U	0.021 U	NA	NA	0.02 U	NA	0.02 UJ	0.021 U	NA
Metals (mg/kg)																
Aluminum	NE	NE	**7630**	**7880**	**2120**	**4790**	**6740**	**4100**	**10100**	**2120**	**9880**	**9160**	**2940**	**12500**	**8560**	**4550**
Antimony	NE	NE	2 UJ	2.2 UJ	2 UJ	**1.9 J**	**11.1 J**	2.1 UJ	5.1 UJ	4.8 UJ	5.7 UJ	4.9 UJ	5.3 UJ	4.9 UJ	5 UJ	4.9 UJ
Arsenic	13	16	**2.4**	**1.4**	**3.3**	**10.5**	**29.2**	R	6.5 U	**2.1 J**	7.3 U	**3.1 J**	6.8 U	**6.8 J**	**4.5 J**	6.3 UJ
Barium	350	10000	**58.2**	**49.8**	**20.1 J**	**314**	**170**	**44.2**	**27.4**	**17.3**	**79.3**	**37.6**	**26**	**113**	**75.1**	**36.4**
Beryllium	7.2	2700	**0.38 J**	**0.41 J**	0.41 U	**0.89**	**0.28 J**	**0.24 J**	**0.53 J**	**0.26 J**	**0.99 J**	**0.53 J**	**0.41 J**	**1.1 J**	**0.46 J**	**0.29 J**
Cadmium	2.5	60	**0.41 J**	**0.28 J**	**0.3 J**	**1.3**	**0.61 J**	1 U	1.6 U	1.5 UJ	1.7 UJ	1.5 UJ	1.6 UJ	1.5 UJ	1.5 UJ	1.5 UJ
Calcium	NE	NE	**4030 J**	**773 J**	**470 J**	**14600**	**47800**	**5920**	**2530 J**	**525 J**	**1810 J**	**1360 J**	**594 J**	**4960 J**	**10800 J**	74.4 UJ
Chromium	NE	NE	**42.3**	**17.3**	**7**	**27.7**	**18.8**	**11.7**	**13.1 J**	**7.4 J**	**29.4 J**	**12.9 J**	**10.5 J**	**55.3 J**	**17.2 J**	**14.4 J**
Cobalt	NE	NE	**6.7 J**	**7.9 J**	**3.6 J**	**11**	**66.5**	**4.8 J**	**9.8**	**3.4**	**9.9**	**5.7**	**3.8**	**7.5**	**6.4**	**5.5**
Copper	50	10000	**24.1**	**17.4**	**6.6**	**206**	**425**	**13.6**	**22.1 J**	**8.9 J**	**22.6 J**	**26.8 J**	**9.3 J**	**36.2**	**39.8**	**8.9**
Iron	NE	NE	**20000**	**20700**	**19100**	**26400**	**32300**	**12300**	**19000**	**11200**	**25000**	**18400**	**15600**	**45000 J**	**20900 J**	**9620 J**
Lead	63	3900	**51.2**	**4.5**	1 U	**479**	**450**	**4.3**	**16.4**	4.4 U	**13.3 J**	**38.5**	4.8 U	**131 J**	**153 J**	4.5 U
Magnesium	NE	NE	**1860**	**2620**	**732 J**	**3600**	**4600**	**4020**	**3210 J**	**723 J**	**3120 J**	**1940 J**	**1170 J**	**1880 J**	**5400 J**	**1970 J**
Manganese	1600	10000	**366**	**375**	**209**	**221**	**196**	**238**	**218**	**154**	**583**	**300**	**136**	**423 J**	**495**	**112 J**
Mercury	0.18	5.7	**0.13**	0.037 U	0.036 U	**0.6**	**3.1**	0.037 U	**0.032**	0.06 U	**0.014 J**	**0.21**	0.061 U	**0.17**	**0.23**	**0.0062 J**
Nickel	30	10000	**16.7**	**15.1**	**5.6 J**	**55.1**	**25.3**	**11.1**	**17.6**	**5.7**	**18.4**	**11.6**	**9.2**	**17.3**	**14.2**	**12.3**
Potassium	NE	NE	**970 J**	**1570**	**352 J**	**631 J**	**903 J**	**1560**	**810 J**	**397 J**	**1520 J**	**762 J**	**746 J**	**1100 J**	**744 J**	**1210 J**
Selenium	3.9	6800	2 U	2.2 U	2 U	2.1 U	2.5 U	2.1 U	11.7 U	11 U	13 UJ	11 U	12.1 UJ	11.2 UJ	11.3 UJ	11.2 UJ
Silver	2	6800	2 U	2.2 U	2 U	**0.81 J**	**0.49 J**	2.1 U	1.6 U	1.5 U	1.7 UJ	1.5 U	1.6 U	1.5 UJ	1.5 UJ	1.5 U
Sodium	NE	NE	**176 J**	1120 U	1020 U	**593 J**	**1960**	**367 J**	77.9 U	73.1 U	86.6 UJ	73.5 U	80.4 U	74.9 U	75.4 U	74.4 U
Thallium	NE	NE	2 U	2.2 U	2 U	2.1 U	2.5 U	2.1 U	4.7 UJ	4.4 UJ	5.2 UJ	4.4 UJ	4.8 UJ	**1.5 J**	4.5 UJ	4.5 UJ
Vanadium	NE	NE	**27**	**25.7**	**11.9**	**26.3**	**17.4**	**16.1**	**17.2**	**14.6**	**33.7**	**20.5**	**14.8**	**59.1 J**	**30.2 J**	**16.1 J**
Zinc	109	10000	**79.8**	**39.4**	**14.5**	**1250**	**1020**	**23.9**	**52.9 J**	**15.5 J**	**52.7 J**	**36.6 J**	**21.9 J**	**189 J**	**80.1 J**	**28.3**
Cyanides (mg/kg)																
Free Cyanide	NE	NE	2.4 U	2.5 U	2.3 U	**0.27 J**	**0.14 J**	**0.3 J**	0.252 U	0.244 U	0.276 U	0.239 U	0.263 U	0.239 U	0.248 U	0.247 U
Other (mg/kg)																
Ammonia	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Solids (%)	NE	NE	NA	NA	NA	NA	NA	NA	**76**	NA	NA	**79.5**	NA	**79**	**83.4**	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

			Adjacent to Parcel 5																
Location:	Unrestricted SCO	Industrial SCO	N. 11th St. ROW			N. 11th St. ROW				N. 11th St. ROW			Former N. 10th St. ROW				Former N. 10th St. ROW		
Sample Name:			WW-SB-30	WW-SB-30	WW-SB-30	WW-SB-31	WW-SB-31	WW-SB-31	Duplicate of WW-SB-31	WW-SB-32	WW-SB-32	WW-SB-32	WW-SB-54	Duplicate of WW-SB-54	WW-SB-54	WW-SB-54	WW-SB-55	WW-SB-55	WW-SB-55
Sample Depth(ft bgs):			(2-5)	(7-9)	(45-50)	(1-5)	(15-17)	(52-54)	(52-54)	(4-5)	(10-11)	(43-44)	(3-5)	(3-5)	(7-9)	(57-59)	(3-5)	(12-14)	(55-57)
Sample Date:			8/18/2009	8/18/2009	8/20/2009	8/26/2009	8/26/2009	8/27/2009	8/27/2009	8/27/2009	8/27/2009	8/28/2009	11/15/2012	11/15/2012	11/15/2012	11/15/2012	11/13/2012	11/13/2012	11/13/2012
BTEX (mg/kg)																			
Benzene	0.06	89	**0.22 J**	0.03 UJ	0.0062 U	**0.03 J**	**0.00069**	**0.0065**	0.0066 U	0.04 U	**0.5 J**	**0.0011 J**	0.00053 U	0.00052 U	0.00032 U	**0.00032 J**	0.00072 U	**0.0019 J**	0.00038 U
Toluene	0.7	1000	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.00053 U	0.00052 U	0.00032 U	**0.00029 J**	**0.0002 J**	**0.011 J**	0.00038 U
Ethylbenzene	1	780	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	**6.8**	0.0058 U	0.00053 U	0.00052 U	0.00032 U	0.00092 U	0.00072 U	**0.0023 J**	0.00038 U
Total Xylene	0.26	1000	0.029 UJ	0.03 UJ	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.0016 U	0.0016 U	0.00095 U	0.0027 U	0.0022 U	**0.01 J**	0.0011 U
Total BTEX	NE	NE	**0.22**	ND	ND	**0.03**	**0.00069**	**0.0065**	ND	ND	**7.3**	**0.0011**	ND	ND	ND	**0.00061**	**0.0002**	**0.0252**	ND
Other VOCs (mg/kg)																			
Acetone	0.05	1000	0.12 U	0.12 U	0.025 UJ	0.12 U	R	0.024 U	0.026 U	0.16 U	R	0.023 U	0.0053 U	0.0052 U	0.0032 U	**0.039 J**	**0.022**	R	0.0041 U
Carbon disulfide	NE	NE	0.029 UJ	0.03 UJ	0.0062 UJ	0.03 UJ	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.00053 U	0.00052 U	0.00032 U	**0.00021 J**	**0.00022 J**	0.02 U	**0.00015 J**
Chloroform	0.37	700	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.00053 U	0.00052 U	**0.00017 J**	0.00092 U	0.00072 U	0.02 U	0.00038 U
cis-1,2-Dichloroethene	0.25	1000	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.00053 U	0.00052 U	0.00032 U	0.00092 U	0.00072 U	0.02 U	0.00038 U
trans-1,2-Dichloroethene	0.19	1000	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.00053 U	0.00052 U	0.00032 U	0.00092 U	0.00072 U	0.02 U	0.00038 U
2-Butanone (Methyl ethyl ketone)	0.12	1000	0.059 UJ	0.059 U	0.012 U	0.061 U	0.00061 U	0.012 U	0.013 U	0.08 U	**12 J**	0.012 U	R	R	R	**0.0017 J**	**0.0051 J**	R	**0.00055 J**
4-Methyl-2-pentanone (MIBK)	NE	NE	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.0053 U	0.0052 U	0.0032 U	0.0092 U	0.0072 U	0.099 U	0.0038 U
Styrene	NE	NE	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.00053 U	0.00052 U	0.00032 U	0.00092 U	0.00072 U	0.02 U	0.00038 U
1,1,2,2-Tetrachloroethane	NE	NE	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.00053 U	0.00052 U	0.00032 U	0.00092 U	0.00072 U	0.02 U	0.00038 U
Tetrachloroethene (PCE)	1.3	300	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	**0.0037**	**0.0051**	**0.0015**	0.00092 U	0.00072 U	0.02 U	0.00038 U
1,1,2-Trichloroethane	NE	NE	0.029 UJ	0.03 U	0.0062 U	**0.028 J**	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	0.00053 U	0.00052 U	0.00032 U	0.00092 U	0.00072 U	0.02 U	0.00038 U
Trichloroethene (TCE)	0.47	400	0.029 UJ	0.03 U	0.0062 U	0.03 U	0.00061 U	0.0061 U	0.0066 U	0.04 U	0.7 U	0.0058 U	**0.0017**	**0.002**	**0.00047**	0.00092 U	0.00072 U	0.02 U	0.00038 U
Total VOC	NE	NE	**0.22**	ND	ND	**0.058**	**0.00069**	**0.0065**	ND	ND	**19.3**	**0.0011**	**0.012**	**0.0071**	**0.00214**	**0.09152**	**0.02752**	**0.0252**	**0.0007**
PAHs (mg/kg)																			
Acenaphthene	20	1000	0.31 U	**0.61**	0.33 U	**0.5 J**	**33**	**0.09 J**	**0.052 J**	4.2 U	**20**	**0.059 J**	0.38 U	0.38 U	0.4 U	0.39 U	**0.17 J**	**0.44 J**	0.39 U
Acenaphthylene	100	1000	0.31 U	0.32 U	0.33 UJ	**0.26 J**	6.5 U	0.33 U	0.35 U	4.2 U	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	**0.11 J**	0.79 U	0.39 U
Anthracene	100	1000	**0.19 J**	**0.31 J**	0.33 U	**1.4 J**	**12**	**0.037 J**	**0.029 J**	4.2 U	**7.2**	**0.018 J**	0.38 U	**0.12 J**	0.4 U	0.39 U	**0.47**	**0.25 J**	0.39 U
Benz[a]anthracene	1	11	**0.35**	**0.19 J**	0.33 U	**10**	**6.5**	**0.031 J**	**0.021 J**	4.2 UJ	**5.2**	**0.02 J**	0.038 UJ	**0.39 J**	0.04 U	0.039 U	**2.1**	**0.31**	0.039 U
Benzo[a]pyrene	1	1.1	**0.32**	**0.15 J**	0.33 U	**18 J**	**5 J**	**0.02 J**	0.35 U	**0.44 J**	**4.4 J**	0.31 U	0.038 UJ	**0.52 J**	0.04 U	0.039 U	**2**	**0.18**	0.039 U
Benzo[b]fluoranthene	1	11	**0.44**	**0.15 J**	0.33 U	**23 J**	**5.5 J**	0.33 U	0.35 U	**0.49 J**	**5.3 J**	0.31 U	0.038 UJ	**0.49 J**	0.04 U	0.039 U	**2.3**	**0.24**	0.039 U
Benzo[k]fluoranthene	0.8	110	**0.19 J**	**0.058 J**	0.33 U	**9.7 J**	**2.1 J**	0.33 U	0.35 U	4.2 UJ	**1.7 J**	0.31 U	0.38 U	**0.43**	0.4 U	0.39 U	**0.87**	0.79 UJ	0.39 U
Benzo[g,h,i]perylene	100	1000	**0.35**	**0.064 J**	0.33 U	**10 J**	**2 J**	0.33 U	0.35 U	**0.46 J**	**1.7 J**	0.31 U	0.038 UJ	**0.23 J**	0.04 U	0.039 U	**0.91**	0.079 U	0.039 UJ
Chrysene	1	110	**0.36**	**0.19 J**	0.33 U	**10**	**6.2 J**	0.33 U	0.35 U	4.2 UJ	**5.4**	0.31 U	0.38 U	**0.38**	0.4 U	0.39 U	**2**	**0.27 J**	0.39 U
Dibenz[a,h]anthracene	0.33	1.1	**0.044 J**	0.32 U	0.33 U	**3 J**	6.5 UJ	0.33 U	0.35 U	4.2 UJ	**0.44 J**	0.31 U	0.038 U	0.038 U	0.04 U	0.039 U	**0.24**	0.079 U	0.039 U
Fluoranthene	100	1000	**0.62**	**0.41**	0.33 U	**10**	**12**	**0.061 J**	**0.045 J**	**0.38 J**	**9.8**	**0.034 J**	0.38 U	**0.79**	0.4 U	0.39 U	**3.4**	**0.71 J**	0.39 U
Fluorene	30	1000	**0.27 J**	**0.39**	0.33 U	**0.47 J**	**14**	**0.05 J**	0.35 U	**0.35 J**	**8.4**	**0.024 J**	0.38 U	0.38 U	0.4 U	0.39 U	**0.15 J**	**0.34 J**	0.39 U
Indeno[1,2,3-cd]pyrene	0.5	11	**0.34**	0.32 U	0.33 U	**11 J**	**2 J**	0.33 U	0.35 U	**0.41 J**	**1.7 J**	0.31 U	0.038 UJ	**0.3 J**	0.04 U	0.039 U	**0.9**	0.079 U	0.039 U
2-Methylnaphthalene	NE	NE	**2.6**	**4.7**	0.33 UJ	3.2 U	**78**	0.33 U	0.35 U	4.2 U	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	0.39 U	0.79 U	0.39 U
Naphthalene	12	1000	0.31 U	0.32 U	0.33 UJ	3.2 U	**86**	0.33 U	0.35 U	4.2 U	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	**0.055 J**	**0.17 J**	0.39 U
Phenanthrene	100	1000	**0.86**	**1.1**	0.33 U	**4.5**	**40**	**0.17 J**	**0.11 J**	4.2 U	**26**	**0.074 J**	0.38 U	**0.59**	0.4 U	0.39 U	**2.1**	**1.2**	0.39 U
Pyrene	100	1000	**0.91**	**0.53**	0.33 U	**12**	**22**	**0.064 J**	**0.044 J**	**0.77 J**	**18**	**0.036 J**	0.38 U	**0.91**	0.4 U	0.39 U	**3.6**	**0.86**	0.39 U
Total PAHs	NE	500	**7.844**	**8.852**	ND	**123.83**	**326.3**	**0.523**	**0.301**	**3.3**	**115.24**	**0.265**	ND	**5.15**	ND	ND	**21.375**	**4.97**	ND
Other SVOCs (mg/kg)																			
Bis(2-ethylhexyl)phthalate	NE	NE	**0.17 J**	**0.04 J**	**0.066 J**	3.2 U	6.5 U	0.33 U	0.35 U	4.2 UJ	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	**0.17 J**	0.79 U	0.39 U
Butyl benzyl phthalate	NE	NE	0.31 U	0.32 U	0.33 U	3.2 U	6.5 U	0.33 U	0.35 U	4.2 UJ	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	0.39 U	0.79 U	0.39 U
Carbazole	NE	NE	**0.064 J**	**0.019 J**	0.33 U	**0.46 J**	**0.64 J**	0.33 U	0.35 U	4.2 U	**0.44 J**	0.31 U	0.38 U	**0.083 J**	0.4 U	0.39 U	**0.17 J**	0.79 U	0.39 U
Dibenzofuran	7	1000	**0.15 J**	**0.12 J**	0.33 UJ	**0.37 J**	**2.3 J**	0.33 U	0.35 U	**0.46 J**	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	**0.083 J**	0.79 U	0.39 U
2,4-Dimethylphenol	NE	NE	0.31 U	0.32 U	0.33 U	3.2 U	6.5 U	0.33 U	0.35 U	4.2 U	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	0.39 U	0.79 U	0.39 U
Di-n-octyl phthalate	NE	NE	0.31 U	0.32 U	0.33 U	3.2 UJ	6.5 UJ	0.33 U	0.35 U	4.2 UJ	3.7 UJ	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	0.39 U	0.79 U	0.39 U
2-Methylphenol (o-Cresol)	0.33	1000	0.31 U	0.32 U	0.33 U	3.2 U	6.5 U	0.33 U	0.35 U	4.2 U	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	0.39 U	0.79 U	0.39 U
4-Methylphenol (p-Cresol)	0.33	1000	0.31 U	0.32 U	0.33 U	3.2 U	6.5 U	0.33 U	0.35 U	4.2 U	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	0.39 U	0.79 U	0.39 U
4-Nitroaniline	NE	NE	0.31 U	0.32 U	0.33 U	3.2 U	6.5 U	0.33 U	0.35 U	4.2 U	3.7 U	0.31 U	0.78 U	0.77 U	0.82 U	0.79 U	0.8 U	1.6 U	0.8 U
Phenol	0.33	1000	0.31 U	0.32 U	0.33 U	3.2 U	6.5 U	0.33 U	0.35 U	4.2 U	3.7 U	0.31 U	0.38 U	0.38 U	0.4 U	0.39 U	0.39 U	0.79 U	0.39 U
Total SVOC	NE	NE	**8.228**	**9.031**	**0.066**	**124.66**	**329.24**	**0.523**	**0.301**	**3.76**	**115.68**	**0.265**	ND	**5.233**	ND	ND	**21.798**	**4.97**	ND
PCBs (mg/kg)																			
Aroclor 1254	NE	NE	0.02 U	NA	NA	0.02 U	NA	NA	NA	0.027 UJ	NA	NA	0.078 U	0.077 U	0.082 U	0.079 U	0.08 U	0.08 U	0.08 U
Aroclor 1260	NE	NE	0.02 U	NA	NA	0.02 UJ	NA	NA	NA	0.027 UJ	NA	NA	0.078 U	0.077 U	0.082 U	0.079 U	0.08 U	0.08 U	0.08 U
Total PCBs	NE	NE	ND	NA	NA	ND	NA	NA	NA	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

			Adjacent to Parcel 5																
Location:			N. 11th St. ROW			N. 11th St. ROW				N. 11th St. ROW			Former N. 10th St. ROW				Former N. 10th St. ROW		
Sample Name: / Sample Depth(ft bgs): / Sample Date:	Unrestricted SCO	Industrial SCO	WW-SB-30 (2-5) 8/18/2009	WW-SB-30 (7-9) 8/18/2009	WW-SB-30 (45-50) 8/20/2009	WW-SB-31 (1-5) 8/26/2009	WW-SB-31 (15-17) 8/26/2009	WW-SB-31 (52-54) 8/27/2009	Duplicate of WW-SB-31 (52-54) 8/27/2009	WW-SB-32 (4-5) 8/27/2009	WW-SB-32 (10-11) 8/27/2009	WW-SB-32 (43-44) 8/28/2009	WW-SB-54 (3-5) 11/15/2012	Duplicate of WW-SB-54 (3-5) 11/15/2012	WW-SB-54 (7-9) 11/15/2012	WW-SB-54 (57-59) 11/15/2012	WW-SB-55 (3-5) 11/13/2012	WW-SB-55 (12-14) 11/13/2012	WW-SB-55 (55-57) 11/13/2012
Pesticides (mg/kg)																			
gamma-BHC	0.1	23	0.002 UJ	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
delta-BHC	0.04	1000	0.002 U	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Chlordane (Alpha & Gamma)	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.078 U	0.077 U	0.082 U	0.079 U	0.094 J	0.08 U	0.08 U
gamma-Chlordane	NE	NE	0.002 U	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD	0.0033	180	0.0039 UJ	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.04	0.008 U	0.008 U
4,4'-DDE	0.0033	120	0.0039 U	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.014	0.008 U	0.008 U
4,4'-DDT	0.0033	94	0.0039 U	NA	NA	0.021 U	NA	NA	NA	0.03 U	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.03	0.008 U	0.008 U
Dieldrin	0.005	2.8	0.0039 UJ	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.0086 J	0.008 U	0.008 U
Endosulfan I	2.4	920	0.002 UJ	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Endosulfan II	2.4	920	0.0039 UJ	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Endosulfan sulfate	2.4	920	0.0039 U	NA	NA	0.021 U	NA	NA	NA	0.03 U	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Endrin	0.014	410	0.0039 UJ	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Endrin aldehyde	NE	NE	0.0039 U	NA	NA	0.021 U	NA	NA	NA	0.03 U	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Endrin ketone	NE	NE	0.0039 U	NA	NA	0.021 U	NA	NA	NA	0.03 U	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Heptachlor	0.042	29	0.002 UJ	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Heptachlor epoxide	NE	NE	0.002 UJ	NA	NA	0.021 UJ	NA	NA	NA	0.03 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Methoxychlor	NE	NE	0.02 UJ	NA	NA	0.041 UJ	NA	NA	NA	0.058 UJ	NA	NA	0.0078 U	0.0077 U	0.0082 U	0.0079 U	0.008 U	0.008 U	0.008 U
Metals (mg/kg)																			
Aluminum	NE	NE	9490	10900	1000	4500	1290	2610	1960	4230	1650	5880	6750	5930	7940	1740	5350	8000	3360
Antimony	NE	NE	4.7 UJ	4.8 UJ	5 UJ	5 UJ	3.5 J	4.8 UJ	5.4 UJ	12.5 UJ	5.6 UJ	4.6 UJ	4.2	3.8	2.3 U	2.2 U	2.3 UJ	2.3 UJ	5.2 UJ
Arsenic	13	16	4.7 J	10.9 J	6.3 UJ	9.2	9.9	6.1 U	6.9 U	15.9 U	9.3	2.6 J	4 J	7.1 J	3.7	1.1 U	6	4.3	3.7
Barium	350	10000	86.3	60.2	21.6	51	20.9 J	14 J	12.6 J	27.1 J	28.1 J	31.4 J	47.9	56.2	34.9 J	10.5 J	249	85.1	24.9 J
Beryllium	7.2	2700	0.49 J	0.53 J	0.26 J	0.41 J	0.17 J	0.46 J	0.43 J	0.36 J	0.24 J	0.76 J	0.3 J	0.28 J	0.33 J	0.44 U	0.29 J	0.63	0.4 J
Cadmium	2.5	60	1.4 UJ	1.4 UJ	1.5 UJ	1.5 U	1.5 U	1.5 UJ	1.6 UJ	3.8 UJ	1.7 U	1.4 U	1.1 U	0.46 J	1.2 U	1.1 U	0.81 J	0.27 J	0.89 J
Calcium	NE	NE	7250 J	72 UJ	75 UJ	4540 J	1960 J	397 J	344 J	321000 J	3350 J	4630 J	937 J	8300 J	837 J	3980	19500 J	1870 J	807 J
Chromium	NE	NE	17.8 J	29.5 J	9.5 J	9.6 J	8 J	12.2 J	10.9 J	4.7 J	9.5 J	16.9 J	24.8 J	27.2 J	10.7 J	6.8 J	14.7	16.7	16
Cobalt	NE	NE	7.2	4.5	0.54 J	4.9	8.2 J	4.2 J	4.2 J	0.8 J	2.4 J	12 J	5.7 J	4.9 J	5.2 J	4.3 J	4.5 J	7.1 J	5.4 J
Copper	50	10000	26.2	21.5	7.7	28.2 J	194 J	14.2 J	13.6 J	9.1 J	35.1 J	22.3	13.4	20.1	10.5	5.2 J	136	29.3	16.5
Iron	NE	NE	21000 J	31000 J	36300 J	13200	18700 J	29100 J	29800 J	1980 J	6180 J	17300 J	15500	13100	18500	7560	14000	17400	60500
Lead	63	3900	86.7 J	13.3 J	4.5 UJ	98.8 J	51.9 J	4.6 J	4.5 J	47 J	36.2 J	13	183 J	148 J	5.7 J	1.8 J	356	30.6	3.4 J
Magnesium	NE	NE	2390 J	3370 J	662 J	1190 J	365 J	420 J	429 J	2150 J	161 J	3210	2100	2260	2640	2490	2500	2240	888 J
Manganese	1600	10000	493 J	172 J	280 J	90.6	274 J	296 J	330 J	237 J	29.6 J	309 J	311	265	162	153	208	147	871
Mercury	0.18	5.7	0.18	0.015 J	0.015 J	0.39 J	0.065 J	0.0061 J	0.0061 J	0.22 J	0.26 J	0.015 J	0.12	0.15	0.038 U	0.037 U	1.3	0.059	0.038 U
Nickel	30	10000	13.4	13.9	1.4 J	12.3	17	5	4.7	2.7 J	7.5	18.6	11.2	12.2	11.5	5.8 J	13.7	13	7.2 J
Potassium	NE	NE	1050 J	1570 J	371 J	473 J	173 J	232 J	220 J	358 J	244 J	1150 J	470 J	613 J	344 J	339 J	706 J	1150	518 J
Selenium	3.9	6800	10.8 UJ	10.8 UJ	11.3 UJ	11.3 U	11 U	10.9 U	12.3 U	28.3 U	12.7 U	10.5 U	2.3 U	2.1 U	2.3 U	2.2 U	2.3 U	2.3 U	5.2 U
Silver	2	6800	1.4 UJ	1.4 UJ	1.5 U	0.1 J	0.15 J	1.5 U	1.6 U	3.8 U	1.7 U	1.4 U	2.3 U	2.1 U	2.3 U	2.2 U	2.3 U	2.3 U	5.2 U
Sodium	NE	NE	71.9 U	72 U	75 U	298 J	332 J	84.2 J	85.5 J	2140 J	248 J	812 J	1140 U	1050 U	1150 U	193 J	431 J	368 J	2600 U
Thallium	NE	NE	1.1 J	1.1 J	4.5 UJ	4.5 U	4.4 U	4.4 U	4.9 U	11.3 U	5.1 U	4.2 U	2.3 U	2.1 U	2.3 U	2.2 U	2.3 U	2.3 U	5.2 U
Vanadium	NE	NE	27.6 J	40.2 J	9.4 J	16.1 J	17.2 J	26.9 J	24.2 J	7.6 J	16.1 J	25.9	14.6	13.2	14.5	13	22.8	26.2	32.4
Zinc	109	10000	60.5	39.5	7.5 UJ	496	105	26.2	25.5	21.5 J	39.2	54.7	74.9 J	235 J	40.8	16.4	302	46.2	35.4
Cyanides (mg/kg)																			
Free Cyanide	NE	NE	0.233 U	0.237 U	0.247 U	0.0478 J	0.24 UJ	0.244 UJ	0.259 UJ	0.318 UJ	0.14 J	0.23 UJ	2.5 U	2.5 U	2.6 U	2.5 U	2.5 U	2.6 U	2.5 U
Other (mg/kg)																			
Ammonia	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percent Solids (%)	NE	NE	78.2	NA	NA	80.2	NA	NA	NA	56.7	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 9. Detected Subsurface Soil Analytical Results - Within and Adjacent to Parcels 1, 3, 4, and 5
Former Williamsburg Works MGP Site
Brooklyn, New York

Notes:
Analytes in blue are not detected in any sample
mg/kg - milligrams/kilogram or parts per million (ppm)
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
SVOCs - semivolatile organic compounds
PCBs - polychlorinated biphenyls
Total BTEX, Total VOCs, Total PAHs, Total SVOCs, and Total PCBs are calculated using detects only.
Total PAH16 is calculated using the EPA16 list of analytes: Acenaphthene, Acenaphthylene, Anthracene, Benz[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno[1,2,3-cd]pyrene, Naphthalene, Phenanthrene, and Pyrene
Total PAH17 is calculated using the EPA16 list of analytes plus 2-Methylnaphthalene

6 NYCRR - New York State Register and Official Compilation of Codes, Rules and Regulations of the State of New York
Comparison of detected results are performed against one or more of the following NYCRR, Chapter IV, Part 375-6 Soil Cleanup Objectives (SCO)s: Unrestricted Use, Residential, Restricted-Residential, Commercial, Industrial, Protection of Ecological Resources, or Protection of Groundwater
* 500 ppm total PAH SCO for non-residential sites (Commercial or Industrial), per NYSDEC CP-51 / Soil Cleanup Guidance, Section V(H).

NE - not established
NA - not analyzed
ND - not detected; total concentrations are listed as ND because no analytes are detected in the group

Bolding indicates a detected concentration
Gray shading and bolding indicates that the detected result value exceeds the Unrestricted SCO
Yellow shading and bolding indicates that the detected result value exceeds the Industrial SCO

Validation Qualifiers:
J - estimated value
JN - analyte is presumptively present at an approximated quantity
R - rejected
U - indicates not detected to the reporting limit
UJ - not detected at or above the reporting limit shown and the reporting limit is estimated

Table 10. Detected Sediment Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample Name: / Sample Depth (ft bss): / Sample Date:	SSGV Class B	SSGV Class C	WW-SED-01 (0-0.5) 9/30/2009	WW-SED-01 (1-2) 9/30/2009	WW-SED-01 (19.5-20) 9/30/2009	WW-SED-02 (0-0.5) 9/30/2009	WW-SED-02 (4-5) 9/30/2009	WW-SED-02 (11-12) 9/30/2009	WW-SED-03 (0-0.5) 9/30/2009	WW-SED-03 (9-10) 9/30/2009	WW-SED-03 (16.5-17) 9/30/2009	WW-SED-04 (0-0.5) 9/30/2009	WW-SED-04 (3-4) 9/30/2009	WW-SED-04 (16.75-17.3) 9/30/2009	WW-SED-05 (0-0.5) 9/29/2009	WW-SED-05 (4.5-5.0) 9/29/2009	WW-SED-05 (19.5-20) 9/29/2009	Duplicate of WW-SED-05 (19.5-20) 9/29/2009	WW-SED-06 (0-0.5) 9/29/2009	WW-SED-06 (9-10) 9/29/2009	WW-SED-06 (15-18.5) 9/29/2009	WW-SED-07 (0-0.5) 9/29/2009
BTEX (mg/kg)																						
Benzene	0.46	1.4	52 J	84 J	0.0061 J	10	250 J	7.6	110	130 J	0.0028 J	7.6 J	100	0.0049 J	8 J	210 J	0.0028 J	0.0028 J	22	28	0.017 J	0.0026 J
Toluene	0.8	3.3	240 J	410 J	0.0015 J	5.7	710 J	2.1 J	380	370 J	0.0028 J	0.58 J	470	0.0065 J	1.3 J	740 J	0.013 UJ	0.00038 J	32	33	0.025 J	0.014 UJ
Ethylbenzene	0.11	0.75	390 J	670 J	0.016 J	67	830 J	55	610	700 J	0.0039 J	29 J	700	0.0096 J	46 J	900 J	0.0023 J	0.0031 J	170	190	0.082 J	0.014 UJ
Total Xylene	0.091	0.64	420 J	690 J	0.035 J	70	900 J	50	600	690 J	0.011 J	32 J	730	0.016 J	57 J	970 J	0.014 J	0.018 J	180	200	0.094 J	0.0053 J
Total BTEX	NE	NE	1102	1854	0.0586	152.7	2690	114.7	1700	1890	0.0205	69.18	2000	0.037	112.3	2820	0.0191	0.02428	404	451	0.218	0.0079
NE - not established																						
NA - not analyzed	NE	NE	28 UJ	54 UJ	0.077 J	8.8 U	100 UJ	9.6 U	50 U	53 UJ	0.11 J	3.3 UJ	50 U	0.079 J	11 UJ	110 UJ	0.052 UJ	0.13 J	16 U	21 U	0.054 UJ	0.056 UJ
2-Butanone (Methyl ethyl ketone)	NE	NE	11 UJ	22 UJ	0.024 UJ	3.5 U	42 UJ	3.8 U	20 U	21 UJ	0.027 J	1.3 UJ	20 U	0.026 UJ	4.3 UJ	45 UJ	0.032 J	0.033 J	6.3 U	8.3 U	0.027 UJ	0.028 UJ
Carbon disulfide	NE	NE	11 UJ	22 UJ	0.012 UJ	3.5 U	42 UJ	3.8 U	20 U	21 UJ	0.013 UJ	1.3 UJ	20 U	0.013 UJ	4.3 UJ	45 UJ	0.013 UJ	0.0041 J	6.3 U	8.3 U	0.003 J	0.014 UJ
Chlorobenzene	0.66	4.6	11 UJ	22 UJ	0.0015 J	3.5 U	42 UJ	3.8 U	20 U	21 UJ	0.013 UJ	1.3 UJ	20 U	0.013 UJ	4.3 UJ	45 UJ	0.013 UJ	0.011 UJ	6.3 U	8.3 U	0.013 UJ	0.014 UJ
cis-1,2-Dichloroethene	NE	NE	11 UJ	22 UJ	0.012 UJ	3.5 U	42 UJ	3.8 U	20 U	21 UJ	0.013 UJ	1.3 UJ	20 U	0.013 UJ	4.3 UJ	45 UJ	0.013 UJ	0.011 UJ	6.3 U	8.3 U	0.013 UJ	0.014 UJ
Styrene	NE	NE	11 UJ	22 UJ	0.012 UJ	3.5 U	42 UJ	3.8 U	20 U	21 UJ	0.013 UJ	1.3 UJ	20 U	0.013 UJ	4.3 UJ	45 UJ	0.013 UJ	0.011 UJ	6.3 U	8.3 U	0.013 UJ	0.014 UJ
Tetrachloroethene	2.6	8.8	11 UJ	22 UJ	0.012 UJ	3.5 U	42 UJ	3.8 U	20 U	21 UJ	0.013 UJ	1.3 UJ	20 U	0.013 UJ	4.3 UJ	45 UJ	0.013 UJ	0.011 UJ	6.3 U	8.3 U	0.013 UJ	0.014 UJ
Vinyl chloride	NE	NE	11 UJ	22 UJ	0.012 UJ	3.5 U	42 UJ	3.8 U	20 U	21 UJ	0.013 UJ	1.3 UJ	20 U	0.013 UJ	4.3 UJ	45 UJ	0.013 UJ	0.011 UJ	6.3 U	8.3 U	0.013 UJ	0.014 UJ
Total VOCs	NE	NE	1102	1854	0.1371	152.7	2690	114.7	1700	1890	0.1575	69.18	2000	0.116	112.3	2820	0.0511	0.19138	404	451	0.221	0.0079
PAHs (mg/kg)																						
Acenaphthene	NE	NE	1300 J	1800 J	11 J	180	110 J	190	1300	1200 J	0.54 J	170 J	2100	0.34 J	85 J	880 J	1.1 J	1.3 J	350	280	1.3 J	0.47 J
Acenaphthylene	NE	NE	57 J	230 J	2.1 J	10 J	1000 J	12 J	150 J	92 J	0.28 J	13 J	190 J	0.25 J	4.3 J	900 J	0.51 J	1 J	28 J	24 J	0.41 J	0.24 J
Anthracene	NE	NE	520 J	740 J	8.2 J	98	400 J	100	490 J	440 J	0.46 J	100 J	890	0.41 J	43 J	640 J	1 J	1.5 J	140 J	110	0.96 J	0.76 J
Benz[a]anthracene	NE	NE	210 J	300 J	6.7 J	44 J	150 J	55	200 J	180 J	0.94 J	65 J	380 J	0.86 J	17 J	250 J	2 J	4.4 J	53 J	49 J	1.5 J	1.6 J
Benzo[a]pyrene	NE	NE	150 J	220 J	6.3 J	36 J	120 J	50 J	150 J	140 J	1.1 J	54 J	290 J	0.97 J	14 J	200 J	2.2 J	4.6 J	43 J	40 J	1.6 J	1.8 J
Benzo[b]fluoranthene	NE	NE	110 J	150 J	6.2 J	31 J	75 J	44 J	99 J	94 J	1.1 J	47 J	200 J	1.2 J	12 J	130 J	1.9 J	3.5 J	29 J	27 J	1.5 J	2.4 J
Benzo[g,h,i]perylene	NE	NE	38 J	580 UJ	5.3 J	47 U	560 UJ	14 J	540 U	570 UJ	0.99 J	140 UJ	540 U	1.1 J	3.4 J	600 UJ	2.1 J	4.1 J	170 U	89 U	1.6 J	2.3 J
Benzo[k]fluoranthene	NE	NE	38 J	66 J	1.6 J	11 J	560 UJ	16 J	53 J	52 J	0.26 J	20 J	75 J	0.23 J	3.7 J	55 J	0.54 J	0.93 J	170 U	13 J	0.49 J	0.62 J
Chrysene	NE	NE	190 J	290 J	6.9 J	46 J	160 J	59	200 J	170 J	1.1 J	70 J	360 J	1 J	17 J	260 J	2.2 J	4.6 J	53 J	52 J	1.6 J	1.8 J
Dibenz[a,h]anthracene	NE	NE	290 UJ	580 UJ	1.3 J	47 U	560 UJ	51 U	540 U	570 UJ	0.23 J	140 UJ	540 U	0.34 J	12 UJ	600 UJ	0.5 J	1.1 J	170 U	89 U	0.42 J	0.55 J
Fluoranthene	NE	NE	420 J	590 J	11 J	88	320 J	110	400 J	370 J	1.4 J	140 J	720	1.5 J	33 J	490 J	3.3 J	5.1 J	110 J	97	2 J	2.8 J
Fluorene	NE	NE	610 J	890 J	6.2 J	100	580 J	100	610	530 J	0.38 J	94 J	1000	0.3 J	39 J	890 J	0.79 J	0.96 J	160 J	140	0.93 J	0.43 J
Indeno[1,2,3-cd]pyrene	NE	NE	290 UJ	580 UJ	4.7 J	9.8 J	560 UJ	15 J	540 U	570 UJ	1.1 J	17 J	540 U	1.2 J	3.8 J	49 J	2.3 J	4.2 J	170 U	9.4 J	1.7 J	2.4 J
2-Methylnaphthalene	NE	NE	2600 J	4000 J	13 J	360	2700 J	360	2500	2300 J	0.87 J	320 J	3900	0.71 J	140 J	4100 J	1.7 J	1.6 J	710	560	2.3 J	1.1 J
Naphthalene	NE	NE	3800 J	6200 J	8.7 J	450	4800 J	510	4600	4100 J	0.84 J	1200 J	6100	0.87 J	220 J	6600 J	1.6 J	1.4 J	1200	890	3.2 J	1.3 J
Phenanthrene	NE	NE	1500 J	2200 J	25 J	270	1300 J	300	1500	1400 J	1.6 J	320 J	2600	1.3 J	91 J	2100 J	3.5 J	6 J	420	360	2.6 J	2.4 J
Pyrene	NE	NE	590 J	860 J	24 J	120	510 J	150	630	550 J	4.4 J	160 J	1100	3.9 J	43 J	800 J	8.4 J	16 J	160 J	150	5.3 J	4.8 J
Total PAH 17	4	45	12133	18536	148.2	1853.8	12225	2085	12882	11618	17.59	2790	19905	16.48	769.2	18344	35.64	62.29	3456	2801.4	29.41	27.77
Other SVOCs (mg/kg)																						
Bis(2-ethylhexyl)phthalate	NE	NE	290 UJ	580 UJ	3.3 UJ	47 U	560 UJ	51 U	540 U	570 UJ	0.71 UJ	140 UJ	540 U	9.2 J	12 UJ	600 UJ	9.8 J	1.2 UJ	170 U	89 U	13 J	1.5 UJ
Butyl benzyl phthalate	NE	NE	290 UJ	580 UJ	3.3 UJ	2.7 J	560 UJ	51 U	540 U	570 UJ	0.71 UJ	140 UJ	540 U	0.7 UJ	12 UJ	600 UJ	0.7 UJ	1.2 UJ	170 U	89 U	0.4 J	0.25 J
Carbazole	NE	NE	290 UJ	580 UJ	0.23 J	4.7 J	560 UJ	6.5 J	540 U	570 UJ	0.71 UJ	140 UJ	48 J	0.11 J	1.8 J	600 UJ	0.19 J	0.18 J	170 U	89 U	0.095 J	0.26 J
4-Chloroaniline	NE	NE	290 UJ	580 UJ	3.3 UJ	47 U	560 UJ	51 U	540 U	570 UJ	0.71 UJ	140 UJ	540 U	0.7 UJ	12 UJ	600 UJ	0.15 J	0.34 J	170 U	89 U	0.36 J	0.79 J
Dibenzofuran	NE	NE	62 J	83 J	0.72 J	11 J	55 J	13 J	59 J	53 J	0.13 J	31 J	130 J	0.12 J	4.5 J	92 J	0.23 J	0.24 J	19 J	16 J	0.25 J	0.18 J
1,2-Dichlorobenzene	0.85	6.1	290 UJ	580 UJ	3.3 UJ	47 U	560 UJ	51 U	540 U	570 UJ	0.067 J	140 UJ	540 U	0.075 J	12 UJ	600 UJ	0.11 J	0.086 J	170 U	89 U	0.048 J	1.5 UJ
1,3-Dichlorobenzene	2.1	7.1	290 UJ	580 UJ	3.3 UJ	47 U	560 UJ	51 U	540 U	570 UJ	0.71 UJ	140 UJ	540 U	0.7 UJ	12 UJ	600 UJ	0.7 UJ	1.2 UJ	170 U	89 U	0.045 J	1.5 UJ
1,4-Dichlorobenzene	1.2	5.1	290 UJ	580 UJ	3.3 UJ	47 U	560 UJ	51 U	540 U	570 UJ	0.12 J	140 UJ	540 U	0.14 J	12 UJ	600 UJ	0.2 J	0.17 J	170 U	89 U	0.18 J	0.38 J
Di-n-butyl phthalate	NE	NE	290 UJ	580 UJ	3.3 UJ	47 U	560 UJ	51 U	540 U	570 UJ	0.13 J	140 UJ	540 U	0.45 J	12 UJ	600 UJ	0.59 J	0.21 J	170 U	89 U	0.15 J	1.5 UJ
4-Methylphenol (p-Cresol)	NE	NE	290 UJ	580 UJ	0.26 J	47 U	40 J	51 U	540 U	570 UJ	0.45 J	140 UJ	540 U	1.2 J	12 UJ	47 J	1.4 J	0.89 J	170 U	89 U	0.27 J	0.4 J
3-Nitroaniline	NE	NE	1800 UJ	3600 UJ	21 UJ	300 U	3500 UJ	320 U	3400 U	3600 UJ	4.4 UJ	890 UJ	3400 U	0.13 J	73 UJ	3800 UJ	4.4 UJ	7.4 UJ	1100 U	560 U	4.6 UJ	0.094 J
1,2,4-Trichlorobenzene	2	7.4	290 UJ	580 UJ	3.3 UJ	47 U	560 UJ	51 U	540 U	570 UJ	0.71 UJ	140 UJ	540 U	0.7 UJ	12 UJ	600 UJ	0.7 UJ	1.2 UJ	170 U	89 U	0.065 J	1.5 UJ
Total SVOCs	NE	NE	12195	18619	149.41	1872.2	12320	2104.5	12941	11671	18.487	2821	20083	27.905	775.5	18483	48.31	64.406	3475	2817.4	44.273	30.124

Table 10. Detected Sediment Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample Name: / Sample Depth (ft bss): / Sample Date:	SSGV Class B	SSGV Class C	WW-SED-01 (0-0.5) 9/30/2009	WW-SED-01 (1-2) 9/30/2009	WW-SED-01 (19.5-20) 9/30/2009	WW-SED-02 (0-0.5) 9/30/2009	WW-SED-02 (4-5) 9/30/2009	WW-SED-02 (11-12) 9/30/2009	WW-SED-03 (0-0.5) 9/30/2009	WW-SED-03 (9-10) 9/30/2009	WW-SED-03 (16.5-17) 9/30/2009	WW-SED-04 (0-0.5) 9/30/2009	WW-SED-04 (3-4) 9/30/2009	WW-SED-04 (16.75-17.3) 9/30/2009	WW-SED-05 (0-0.5) 9/29/2009	WW-SED-05 (4.5-5.0) 9/29/2009	WW-SED-05 (19.5-20) 9/29/2009	Duplicate of WW-SED-05 (19.5-20) 9/29/2009	WW-SED-06 (0-0.5) 9/29/2009	WW-SED-06 (9-10) 9/29/2009	WW-SED-06 (15-18.5) 9/29/2009	WW-SED-07 (0-0.5) 9/29/2009
PCBs (mg/kg)																						
Aroclor 1242	NE	NE	0.58 JN	0.072 UJ	0.082 UJ	0.03 U	0.18 UJ	0.032 UJ	0.034 U	0.18 UJ	0.22 J	0.088 UJ	0.033 UJ	R	0.036 UJ	0.075 UJ	0.044 UJ	R	0.021 U	0.027 U	1.6 J	3.3 J
Aroclor 1248	NE	NE	0.19 UJ	0.072 UJ	0.54 J	0.03 U	0.45 J	0.032 UJ	0.034 U	1.1 J	0.089 UJ	0.37 JN	0.033 UJ	0.41 J	0.057 J	0.075 UJ	0.35 J	0.078 J	0.035 J	0.068 J	0.23 UJ	0.23 UJ
Aroclor 1254	NE	NE	0.19 UJ	0.072 UJ	0.63 JN	0.03 U	0.18 UJ	0.042 JN	0.034 U	0.18 UJ	0.28 J	0.43 JN	0.033 UJ	0.33 J	0.036 UJ	0.075 UJ	0.38 J	0.099 J	0.032 J	0.063 JN	1 J	1.1 J
Aroclor 1260	NE	NE	0.19 UJ	0.072 UJ	0.48 J	0.03 UJ	0.18 UJ	0.014 J	0.034 UJ	0.18 UJ	0.074 J	0.24 J	0.033 UJ	0.1 J	0.12 J	0.075 UJ	0.18 J	0.049 J	0.04 J	0.084 J	0.61 J	0.82 J
Total PCBs	0.1	1	0.58	ND	1.65	ND	0.45	0.056	ND	1.1	0.574	1.04	ND	0.84	0.177	ND	0.91	0.226	0.107	0.215	3.21	5.22
Pesticides (mg/kg)																						
Aldrin	NE	NE	0.037 UJ	0.036 UJ	0.0082 UJ	0.062 JN	0.14 UJ	0.031 JN	0.068 U	0.073 UJ	0.022 UJ	0.044 UJ	0.066 UJ	0.022 UJ	0.036 UJ	0.075 UJ	0.044 UJ	0.037 UJ	0.021 U	0.055 U	0.023 UJ	0.046 UJ
alpha-BHC	NE	NE	0.042 JN	0.037 JN	0.017 J	0.06 U	0.18 JN	0.013 U	0.43 JN	0.073 UJ	0.022 UJ	0.066 J	0.078 JN	0.014 J	0.036 UJ	0.088 JN	0.044 UJ	0.037 UJ	0.021 U	0.16	0.023 UJ	0.046 UJ
beta-BHC	NE	NE	0.21 J	0.036 UJ	0.0091 JN	0.099 J	1.4 J	0.032 JN	0.068 U	0.073 UJ	0.022 UJ	0.044 UJ	0.066 U	0.022 UJ	0.014 J	0.31 J	0.044 UJ	0.037 UJ	0.06 J	0.13 J	0.023 UJ	0.046 UJ
gamma-BHC	NE	NE	0.037 UJ	0.036 UJ	0.0082 UJ	0.06 U	0.14 UJ	0.013 U	0.068 U	0.073 UJ	0.022 UJ	0.044 UJ	0.066 U	0.022 UJ	0.036 UJ	0.075 UJ	0.044 UJ	0.037 UJ	0.021 U	0.055 U	0.023 UJ	0.046 UJ
delta-BHC	NE	NE	0.037 UJ	0.036 UJ	0.0082 UJ	0.06 U	0.44 J	0.071 JN	0.22 J	0.21 J	0.022 UJ	0.044 UJ	0.066 UJ	0.022 UJ	0.036 UJ	0.25 JN	0.044 UJ	0.037 UJ	0.067 J	0.07 JN	0.03 JN	0.087 JN
alpha-chlordane	0.063	1.4	0.037 UJ	0.036 UJ	0.01 J	0.06 U	0.14 UJ	0.027 JN	0.13 JN	0.16 JN	0.022 UJ	0.044 UJ	0.066 U	0.031 J	0.036 UJ	0.075 UJ	0.044 UJ	0.016 J	0.021 U	0.055 U	0.019 J	0.046 UJ
gamma-chlordane	0.063	1.4	0.37 J	0.041 JN	0.023 JN	0.06 U	0.24 JN	0.013 UJ	0.09 JN	0.46 JN	0.024 JN	0.052 JN	0.13 JN	0.035 JN	0.036 UJ	0.11 JN	0.044 UJ	0.037 UJ	0.021 U	0.079 JN	0.032 J	0.054 JN
4,4-DDD	0.044	5.7	0.073 UJ	0.07 UJ	0.18 J	0.44 JN	0.27 UJ	0.025 U	0.13 U	0.19 JN	0.14 J	0.23 J	0.13 UJ	0.33 J	0.07 UJ	0.15 UJ	0.17 J	0.16 J	0.055 JN	0.14 J	0.044 UJ	0.51 J
4,4'-DDE	0.044	5.7	0.073 UJ	0.07 UJ	0.27 JN	0.12 U	0.27 UJ	0.025 UJ	0.31 JN	0.36 JN	0.33 J	0.13 JN	0.13 UJ	0.32 J	0.07 UJ	0.15 UJ	0.18 J	0.17 J	0.07 J	0.11 UJ	0.044 UJ	0.13 J
4,4'-DDT	0.044	5.7	0.88 J	0.24 J	0.024 JN	0.78 J	3.8 J	0.28 J	0.58 JN	0.59 JN	0.12 J	0.092 JN	1.3 J	0.28 J	0.09 J	1.3 J	0.15 JN	0.14 JN	0.36 J	1.1 J	0.044 UJ	1.3 J
Dieldrin	0.006	2.3	0.073 UJ	0.07 UJ	0.018 JN	0.12 U	0.27 UJ	0.045 J	0.13 U	0.14 UJ	0.046 J	0.085 UJ	0.13 U	0.26 J	0.07 UJ	0.15 UJ	0.085 UJ	0.11 J	0.031 J	0.11 U	0.016 J	0.09 UJ
Endosulfan I	0.0001	0.003	0.037 UJ	0.036 UJ	0.0082 UJ	0.13 J	0.14 UJ	0.013 UJ	0.068 U	0.073 UJ	0.022 UJ	0.044 UJ	0.066 UJ	0.022 UJ	0.036 UJ	0.075 UJ	0.044 UJ	0.037 UJ	0.021 UJ	0.055 U	0.023 UJ	0.046 UJ
Endosulfan II	0.0001	0.003	0.073 UJ	0.07 UJ	0.016 UJ	0.12 U	0.27 UJ	0.025 U	0.24 J	0.21 J	0.043 UJ	0.043 J	0.13 U	0.043 UJ	0.07 UJ	0.15 UJ	0.085 UJ	0.072 UJ	0.04 U	0.11 UJ	0.052 JN	0.09 UJ
Endosulfan sulfate	NE	NE	0.3 JN	0.12 JN	0.05 J	0.12 U	1.3 JN	0.28 J	0.13 U	0.14 UJ	0.043 UJ	0.085 UJ	0.68 JN	0.043 UJ	0.07 UJ	0.45 JN	0.085 UJ	0.072 UJ	0.17 JN	1.1 J	0.062 JN	0.09 UJ
Endrin	0.006	0.096	0.073 UJ	0.07 UJ	0.016 UJ	0.12 U	0.27 UJ	0.025 U	0.13 U	0.14 UJ	0.014 J	0.085 UJ	0.13 UJ	0.023 J	0.07 UJ	0.15 UJ	0.085 UJ	0.072 UJ	0.04 UJ	0.16 JN	0.044 UJ	0.051 J
Endrin aldehyde	NE	NE	0.36 UJ	0.14 UJ	0.16 UJ	0.72 J	0.48 J	0.31 U	0.33 U	0.44 JN	0.17 UJ	0.17 UJ	0.55 JN	0.11 J	0.35 UJ	0.24 JN	0.43 UJ	0.14 UJ	0.16 U	0.11 U	0.13 J	0.079 JN
Endrin ketone	NE	NE	0.088 JN	0.07 UJ	0.016 UJ	0.31 J	0.27 UJ	0.1 J	0.79	0.74 J	0.043 UJ	0.089 J	0.13 UJ	0.043 UJ	0.07 UJ	0.15 UJ	0.085 UJ	0.072 UJ	0.04 UJ	0.11 UJ	0.044 UJ	0.09 UJ
Heptachlor	0.071	1.1	0.038 J	0.029 J	0.018 J	0.095 J	0.25 J	0.062 J	0.068 U	0.073 UJ	0.021 J	0.076 J	0.066 U	0.017 J	0.013 J	0.075 UJ	0.028 J	0.037 UJ	0.021 U	0.055 U	0.023 UJ	0.046 UJ
Heptachlor epoxide	0.015	0.22	0.16 J	0.036 UJ	0.038 J	0.27 J	0.32 J	0.15 J	0.082 JN	0.074 J	0.036 J	0.038 J	0.24 J	0.034 J	0.036 UJ	0.075 UJ	0.044 UJ	0.037 UJ	0.032 J	0.055 U	0.015 J	0.046 UJ
Methoxychlor	0.059	NE	0.74 J	0.36 UJ	0.082 UJ	1.5 J	2.8 J	0.64 J	0.68 U	0.73 UJ	0.22 UJ	0.31 J	1.3 J	0.22 UJ	0.36 UJ	0.92 J	0.44 UJ	0.37 UJ	0.54	0.55 UJ	0.23 UJ	0.46 UJ
Herbicides (mg/kg)																						
Total Herbicides	NE	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Metals (mg/kg)																						
Aluminum	NE	NE	12700 J	11600 J	17000 J	5880	13200 J	9820	9260	9390 J	17600 J	10600 J	5420	17800 J	15400 J	8400 J	14700 J	12200 J	1380	3760	17500 J	20900 J
Antimony	NE	NE	9 UJ	8.6 UJ	9.7 UJ	12.1 J	8.3 UJ	9.5 J	4.2 J	8.8 J	10.3 UJ	4.3 J	5.9 J	10.6 UJ	8.9 UJ	9.6 J	10.2 UJ	9 UJ	5 UJ	6.7 UJ	10.9 UJ	11 UJ
Arsenic	8.2	70	162 J	175 J	32.6 J	326	173 J	198	278	276 J	28.9 J	117 J	382	28.4 J	72.2 J	305 J	34.1 J	31.1 J	15.1	20.8	20.8 J	22.7 J
Barium	NE	NE	580 J	479 J	308 J	621 J	439 J	750 J	667 J	675 J	257 J	613 J	575 J	282 J	402 J	685 J	291 J	306 J	78 J	116 J	186 J	209 J
Beryllium	NE	NE	0.87 J	0.79 J	1.3 J	0.48 J	0.88 J	0.72 J	0.67 J	0.7 J	1.3 J	0.88 J	0.44 J	1.2 J	0.98 J	0.5 J	1.1 J	0.94 J	1.5 U	2 U	1.1 J	1.4 J
Cadmium	1.2	9.6	3.4 J	2.7 J	18 J	4 J	2.7 J	4.3 J	3.3 J	6.9 J	13.6 J	13.6 J	2.7 J	15.3 J	4.7 J	2.4 J	22.8 J	18.7 J	1.9 J	4.5 J	10.3 J	8 J
Calcium	NE	NE	8170 J	7170 J	5670 J	6500	8290 J	7450	6670	7480 J	5450 J	9710 J	4480	7160 J	6870 J	6390 J	7070 J	6310 J	1730	2530	6860 J	7500 J
Chromium	81	370	161 J	146 J	475 J	206 J	129 J	162 J	263 J	268 J	398 J	836 J	145 J	450 J	200 J	201 J	676	486 J	52.3 J	134 J	388 J	366 J
Cobalt	NE	NE	9.1 J	8.8 J	12.4 J	6	10.1 J	7.6	7.1	8.8 J	12.8 J	11.5 J	4.3	13.5 J	12.5 J	7.4 J	14.4 J	13.6 J	1.7	4.4	12.7 J	13.4 J
Copper	34	270	603 J	549 J	518 J	1260	597 J	791	805	839 J	477 J	691 J	1170	524 J	449 J	1110 J	634 J	544 J	42.3	138	497 J	502 J
Iron	NE	NE	29500 J	27000 J	36300 J	23900	28200 J	28500	23600	29900 J	37300 J	30500 J	20000	38800 J	39100 J	28100 J	40400 J	38900 J	4380	10500	36000 J	43900 J
Lead	47	220	1040 J	1340 J	743 J	2140 J	953 J	1640 J	2040 J	1900 J	622 J	1600 J	2140 J	889 J	832 J	2180 J	1550 J	1110 J	197 J	268 J	771 J	632 J
Magnesium	NE	NE	7840 J	6980 J	8410 J	4140	7420 J	6280	5580	6120 J	8590 J	6900 J	3230	9480 J	8920 J	5590 J	8590 J	7240 J	890	2280	9710 J	11000 J
Manganese	NE	NE	360 J	360 J	382 J	179	386 J	259	260	256 J	364 J	287 J	147	437 J	516 J	264 J	380 J	336 J	41.4	98.5	436 J	545 J
Mercury	0.15	0.71	9.2 J	7 J	4 J	8.5	10.3 J	12.6	16	13.1 J	5 J	5.3 J	9	5 J	10.8 J	15.9 J	3.5 J	4.1 J	3.9	2	3.9 J	3.2 J
Nickel	21	52	51.3 J	44.4 J	76.2 J	43.7 J	46.9 J	40.5 J	46.8 J	53.2 J	65.9 J	68.9 J	37.7 J	118 J	50.3 J	38.6 J	116 J	99.5 J	9.3 J	27.2 J	66.6 J	67 J
Potassium	NE	NE	3130 J	2800 J	3830 J	1530 J	3090 J	2530 J	2270 J	2430 J	3830 J	2620 J	1330 J	4070 J	3850 J	2250 J	3910 J	3130 J	197 J	1010 J	4210 J	5570 J
Selenium	NE	NE	20.4 UJ	19.6 UJ	22.1 UJ	16.1 UJ	18.9 UJ	17.6 UJ	18 UJ	19.3 UJ	23.5 UJ	24.3 UJ	18.4 UJ	24.1 UJ	20.2 UJ	20.7 UJ	23.2 UJ	20.4 UJ	11.4 UJ	15.2 UJ	24.7 UJ	25 UJ
Silver	1	3.7	10.4 J	8.2 J	16.2 J	6.7	7.2 J	5.2	5.7	10 J	15.3 J	11.7 J	3.8	16.3 J	11.2 J	11.9 J	21.1 J	18.3 J	0.59 J	2.4	15.6 J	18.1 J
Sodium	NE	NE	9090 J	8390 J	11400 J	6040	7710 J	7910	7350	8500 J	12700 J	12100 J	6580	12600 J	10100 J	8610 J	13800 J	10800 J	1080	3380	13400 J	14600 J
Thallium	NE	NE	8.2 UJ	7.8 UJ	8.8 UJ	1.7 J	7.6 UJ	7 UJ	7.2 UJ	7.7 UJ	9.4 UJ	9.7 UJ	7.4 UJ	9.6 UJ	4.2 J	3.1 J	3.7 J	3.7 J	4.6 UJ	6.1 UJ	9.9 UJ	10 UJ
Vanadium	NE	NE	42.8 J	36.8 J	76.1 J	22.7 J	43.1 J	32.9 J	31.2 J	37.8 J	80.9 J	41.1 J	21.7 J	96.5 J	47.4 J	34.9 J	109 J	90.3 J	4.9 J	12.5 J	64.2 J	89.1 J
Zinc	150	410	869 J	877 J	764 J	1400 J	835 J	1200 J	863 J	1120 J	614 J	1750 J	1070 J	762 J	713 J	1160 J	1060 J	958 J	129 J	328 J	540 J	542 J
Cyanides (mg/kg)																						
Free Cyanide	NE	NE	0.132 J	0.258 J	0.479 UJ	0.139 J	0.625 J	0.113 J	0.157 J	0.126 J	0.517 UJ	0.156 J	0.118 J	0.512 U	0.128 J	0.175 J	0.509 UJ	0.431 UJ	0.249 UJ	0.324 UJ	0.528 UJ	0.545 UJ
Other (mg/kg)																						
Total Organic Carbon	NE	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 10. Detected Sediment Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample Name: / Sample Depth (ft bss): / Sample Date:	SSGV Class B	SSGV Class C	WW-SED-07 (4-4.5) 9/29/2009	WW-SED-07 (15-15.7) 9/29/2009	WW-SED-08 (0-0.5) 11/12/2010	WW-SED-08 (26.5-27.5) 11/12/2010	WW-SED-08 (62-63) 11/12/2010	WW-SED-09 (0-0.5) 11/11/2010	WW-SED-09 (23.5-24) 11/11/2010	WW-SED-09 (39.5-40) 11/11/2010	WW-SED-10 (0-0.5) 11/16/2010	WW-SED-10 (20-21) 11/16/2010	WW-SED-10 (63-64) 11/16/2010	WW-SED-11 (0-0.5) 11/10/2010	WW-SED-11 (22-23) 11/10/2010	WW-SED-11 (58-59) 11/10/2010	WW-SED-12 (0-0.5) 11/15/2010	WW-SED-12 (22-23) 11/15/2010	WW-SED-12 (79.5-80) 11/15/2010	WW-SED-13 (0-0.5) 11/16/2010	WW-SED-13 (24-24.5) 11/16/2010	WW-SED-13 (54.5-55) 11/16/2010
BTEX (mg/kg)																						
Benzene	0.46	1.4	**0.36 J**	**0.0023 J**	0.0026 UJ	**17**	0.0012 U	0.24 UJ	**35 J**	**0.0075**	0.015 UJ	**18**	**0.00073 J**	0.0025 UJ	**51 J**	0.0011 U	0.013 UJ	**0.013**	0.0066 U	0.014 UJ	**52**	**0.0014 J**
Toluene	0.8	3.3	**0.0068 J**	0.014 UJ	0.0026 U	**94**	**0.00059 J**	0.24 UJ	**150 J**	**0.0018**	0.015 UJ	**74**	0.0059 U	**0.0018 J**	**200 J**	**0.0016**	0.013 UJ	**0.0095**	0.0066 U	0.014 UJ	**120**	0.0057 U
Ethylbenzene	0.11	0.75	**0.23 J**	0.014 UJ	**0.0014 J**	**250**	**0.00064 J**	0.24 UJ	**340 J**	**0.012**	0.015 UJ	**120**	0.0059 U	**0.0012 J**	**350 J**	**0.0012**	0.013 UJ	**0.098**	0.0066 U	0.014 UJ	**160**	0.0057 U
Total Xylene	0.091	0.64	**0.27 J**	**0.0018 J**	0.0077 UJ	**290**	0.0035 U	**0.12 J**	**410 J**	**0.0054**	0.015 UJ	**130**	0.0059 U	0.0076 UJ	**360 J**	0.0033 U	0.013 UJ	**0.12**	0.0066 U	0.014 UJ	**180**	0.0057 U
Total BTEX	NE	NE	**0.8668**	**0.0041**	**0.0014**	**651**	**0.00123**	**0.12**	**935**	**0.0267**	ND	**342**	**0.00073**	**0.003**	**961**	**0.0028**	ND	**0.2405**	ND	ND	**512**	**0.0014**
NE - not established																						
NA - not analyzed	NE	NE	0.045 UJ	0.056 UJ	0.026 U	R	**0.0079 J**	R	R	**0.0094 J**	**0.081 J**	25 U	0.024 U	**0.14 J**	R	**0.0051 J**	0.053 UJ	**0.015 J**	0.026 U	**0.047 J**	25 U	0.023 U
2-Butanone (Methyl ethyl ketone)	NE	NE	**0.036 J**	0.028 UJ	**0.0079 J**	R	R	R	R	**0.00089 J**	0.029 UJ	9.8 U	0.012 UJ	**0.021 J**	R	R	0.027 UJ	0.012 UJ	0.013 UJ	0.029 UJ	9.8 U	0.011 U
Carbon disulfide	NE	NE	**0.0046 J**	**0.0047 J**	**0.017 J**	7.2 UJ	**0.0007 J**	0.24 UJ	20 UJ	**0.00063 J**	0.015 UJ	9.8 U	0.0059 U	**0.035 J**	21 UJ	0.0011 U	0.013 UJ	0.0059 UJ	0.0066 U	0.014 UJ	9.8 U	0.0057 U
Chlorobenzene	0.66	4.6	**0.0036 J**	0.014 UJ	0.0026 UJ	7.2 U	0.0012 U	0.24 UJ	20 UJ	0.0011 U	0.015 UJ	9.8 U	0.0059 U	0.0025 UJ	21 UJ	0.0011 U	0.013 UJ	0.0059 U	0.0066 U	0.014 UJ	9.8 U	0.0057 U
cis-1,2-Dichloroethene	NE	NE	0.011 UJ	0.014 UJ	0.0026 UJ	7.2 U	0.0012 U	0.24 UJ	20 UJ	0.0011 U	0.015 UJ	9.8 U	0.0059 U	0.0025 UJ	21 UJ	0.0011 U	0.013 UJ	0.0059 U	0.0066 U	0.014 UJ	9.8 U	0.0057 U
Styrene	NE	NE	0.011 UJ	0.014 UJ	0.0026 UJ	7.2 U	0.0012 U	0.24 UJ	20 UJ	0.0011 U	0.015 UJ	9.8 U	0.0059 U	0.0025 UJ	21 UJ	0.0011 U	0.013 UJ	0.0059 U	0.0066 U	0.014 UJ	9.8 U	0.0057 U
Tetrachloroethene	2.6	8.8	0.011 UJ	0.014 UJ	0.0026 UJ	7.2 U	0.0012 U	0.24 UJ	20 UJ	0.0011 U	0.015 UJ	9.8 U	**0.0014 J**	0.0025 UJ	21 UJ	0.0011 U	0.013 UJ	0.0059 U	**0.0021 J**	0.014 UJ	9.8 U	0.0057 U
Vinyl chloride	NE	NE	0.011 UJ	0.014 UJ	0.0026 UJ	7.2 U	0.0012 U	0.24 UJ	20 UJ	R	0.015 UJ	9.8 U	0.0059 U	R	21 UJ	R	0.013 UJ	0.0059 U	0.0066 U	0.014 UJ	9.8 U	0.0057 U
Total VOCs	NE	NE	**0.911**	**0.0088**	**0.0263**	**651**	**0.00983**	**0.12**	**935**	**0.03762**	**0.081**	**342**	**0.00213**	**0.199**	**961**	**0.0079**	ND	**0.2555**	**0.0021**	**0.047**	**512**	**0.0014**
PAHs (mg/kg)																						
Acenaphthene	NE	NE	**0.69 J**	**0.23 J**	0.93 UJ	**160**	0.39 U	0.81 UJ	**260 J**	0.39 U	0.97 UJ	**100**	0.39 U	0.92 UJ	**340 J**	0.39 U	0.88 UJ	**0.099 J**	0.44 U	0.95 UJ	**94**	0.38 U
Acenaphthylene	NE	NE	**0.4 J**	**0.29 J**	0.93 UJ	**5.2 J**	0.39 U	0.81 UJ	35 UJ	0.39 U	0.97 UJ	**6.8 J**	0.39 U	0.92 UJ	35 UJ	0.39 U	**0.13 J**	0.39 U	0.44 U	0.95 UJ	**4.5 J**	0.38 U
Anthracene	NE	NE	**0.75 J**	**0.54 J**	0.93 UJ	**71**	0.39 U	**0.18 J**	**110 J**	0.39 U	0.97 UJ	**45**	0.39 U	0.92 UJ	**140 J**	0.39 U	0.88 UJ	**0.078 J**	0.44 U	0.95 UJ	**45**	0.38 U
Benz[a]anthracene	NE	NE	**1.3 J**	**1.1 J**	**0.14 J**	**34**	0.039 U	**0.28 J**	**46 J**	0.039 U	**0.19 J**	**21**	0.039 U	**0.3 J**	**52 J**	0.039 U	**0.34 J**	**0.07**	0.044 U	**0.18 J**	**17**	0.038 U
Benzo[a]pyrene	NE	NE	**1.2 J**	**1.3 J**	**0.14 J**	**26**	0.039 U	**0.29 J**	**35 J**	0.039 U	**0.24 J**	**16**	0.039 U	**0.37 J**	**46 J**	0.039 U	**0.49 J**	**0.056**	0.044 U	**0.21 J**	**13**	0.038 U
Benzo[b]fluoranthene	NE	NE	**1.6 J**	**1.8 J**	**0.14 J**	**18**	0.039 U	**0.24 J**	**21 J**	0.039 U	**0.24 J**	**10**	0.039 U	**0.32 J**	**29 J**	0.039 U	**0.48 J**	**0.041**	0.044 U	**0.2 J**	**8.8**	0.038 U
Benzo[g,h,i]perylene	NE	NE	**1.4 J**	**1.6 J**	0.93 UJ	**11 J**	0.39 U	**0.18 J**	**11 J**	0.39 UJ	0.97 UJ	**5.8 J**	0.39 U	**0.22 J**	**17 J**	0.39 U	**0.32 J**	0.39 U	0.44 U	**0.15 J**	**4.3 J**	0.38 U
Benzo[k]fluoranthene	NE	NE	**0.37 J**	**0.34 J**	0.093 UJ	**7.4**	0.039 U	**0.16 J**	**11 J**	0.039 U	**0.1 J**	**6**	0.039 U	**0.13 J**	**16 J**	0.039 U	**0.22 J**	0.039 U	0.044 U	**0.095 J**	**4.6**	0.038 U
Chrysene	NE	NE	**1.4 J**	**1.2 J**	**0.16 J**	**38**	0.39 U	**0.35 J**	**46 J**	0.39 U	**0.23 J**	**14 J**	0.39 U	**0.39 J**	**59 J**	0.39 U	**0.37 J**	**0.077 J**	0.44 U	**0.19 J**	**16**	0.38 U
Dibenz[a,h]anthracene	NE	NE	**0.4 J**	1.5 UJ	0.093 UJ	**3.1 J**	0.039 U	0.081 UJ	3.5 UJ	0.039 U	0.097 UJ	**1.9**	0.039 U	0.092 UJ	3.5 UJ	0.039 U	**0.094 J**	0.039 U	0.044 U	0.095 UJ	**1.5 J**	0.038 U
Fluoranthene	NE	NE	**2.1 J**	**1.5 J**	0.93 UJ	**58**	0.39 U	**0.27 J**	**47 J**	0.39 U	0.97 UJ	**32**	0.39 U	**0.18 J**	**61 J**	0.39 U	**0.36 J**	**0.073 J**	0.44 U	0.95 UJ	**29**	0.38 U
Fluorene	NE	NE	**0.55 J**	**0.21 J**	0.93 UJ	**77**	0.39 U	0.81 UJ	**92 J**	0.39 U	0.97 UJ	**36**	0.39 U	0.92 UJ	**130 J**	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	**34**	0.38 U
Indeno[1,2,3-cd]pyrene	NE	NE	**1.4 J**	**1.6 J**	0.093 UJ	**9.5**	0.039 U	**0.16 J**	**11**	0.039 U	**0.13 J**	**5.3**	0.039 UJ	**0.18 J**	**15 J**	0.039 U	**0.25 J**	0.039 UJ	0.044 UJ	**0.12 J**	**4**	0.038 UJ
2-Methylnaphthalene	NE	NE	**1.6 J**	**0.26 J**	0.93 UJ	**260**	**0.12 J**	**0.12 J**	**370 J**	0.39 U	0.97 UJ	**160**	0.39 U	0.92 UJ	**440 J**	0.39 U	0.88 UJ	**0.16 J**	0.44 U	**0.14 J**	**140**	0.38 U
Naphthalene	NE	NE	**18 J**	**0.3 J**	0.93 UJ	**400**	**0.2 J**	**0.14 J**	**520 J**	0.39 U	0.97 UJ	**230**	0.39 U	0.92 UJ	**640 J**	0.39 U	0.88 UJ	**0.4**	0.44 U	**0.27 J**	**220**	0.38 U
Phenanthrene	NE	NE	**2.3 J**	**0.96 J**	0.93 UJ	**210**	0.39 U	**0.3 J**	**310**	0.39 U	**0.17 J**	**130**	0.39 U	**0.21 J**	**380 J**	0.39 U	**0.2 J**	**0.23 J**	0.44 U	0.95 UJ	**120**	0.38 U
Pyrene	NE	NE	**5.7 J**	**3.6 J**	**0.31 J**	**95**	0.39 U	**0.51 J**	**130 J**	0.39 U	**0.46 J**	**53**	0.39 U	**0.56 J**	**160 J**	0.39 U	**0.65 J**	**0.15 J**	0.44 U	**0.39 J**	**47**	0.38 U
Total PAH 17	4	45	**41.16**	**16.83**	**0.89**	**1483.2**	**0.32**	**3.18**	**2020**	ND	**1.76**	**872.8**	ND	**2.86**	**2525**	ND	**3.904**	**1.434**	ND	**1.945**	**802.7**	ND
Other SVOCs (mg/kg)																						
Bis(2-ethylhexyl)phthalate	NE	NE	**10 J**	**20 J**	**1.3 J**	32 U	0.39 U	**2.3 J**	35 UJ	0.39 U	**0.66 J**	16 U	0.39 U	**1.4 J**	35 UJ	0.39 U	**0.83 J**	0.39 U	0.44 U	**0.71 J**	16 U	0.38 U
Butyl benzyl phthalate	NE	NE	1.2 UJ	**0.38 J**	0.93 UJ	32 U	0.39 U	0.81 UJ	35 UJ	0.39 U	0.97 UJ	16 U	0.39 U	0.92 UJ	35 UJ	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	16 U	0.38 U
Carbazole	NE	NE	**0.22 J**	1.5 UJ	0.93 UJ	32 U	0.39 U	0.81 UJ	35 UJ	0.39 U	0.97 UJ	16 U	0.39 U	0.92 UJ	35 UJ	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	16 U	0.38 U
4-Chloroaniline	NE	NE	**0.42 J**	**1.1 J**	0.93 UJ	32 U	0.39 U	0.81 UJ	35 UJ	0.39 U	0.97 UJ	16 U	0.39 U	0.92 UJ	35 UJ	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	16 U	0.38 U
Dibenzofuran	NE	NE	**0.25 J**	1.5 UJ	0.93 UJ	**9.1 J**	0.39 U	0.81 UJ	**12 J**	0.39 U	0.97 UJ	**5.5 J**	0.39 U	0.92 UJ	**15 J**	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	**5.4 J**	0.38 U
1,2-Dichlorobenzene	0.85	6.1	1.2 UJ	1.5 UJ	0.93 UJ	32 U	0.39 U	0.81 UJ	35 UJ	0.39 U	0.97 UJ	16 U	0.39 U	0.92 UJ	35 UJ	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	16 U	0.38 U
1,3-Dichlorobenzene	2.1	7.1	1.2 UJ	1.5 UJ	0.93 UJ	32 U	0.39 U	0.81 UJ	35 UJ	0.39 U	0.97 UJ	16 U	0.39 U	0.92 UJ	35 UJ	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	16 U	0.38 U
1,4-Dichlorobenzene	1.2	5.1	**0.34 J**	1.5 UJ	0.93 UJ	32 U	0.39 U	0.81 UJ	35 UJ	0.39 U	0.97 UJ	16 U	0.39 U	0.92 UJ	35 UJ	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	16 U	0.38 U
Di-n-butyl phthalate	NE	NE	**0.22 J**	1.5 UJ	0.93 UJ	32 U	0.39 U	0.81 UJ	35 UJ	0.39 U	0.97 UJ	16 U	0.39 U	0.92 UJ	35 UJ	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	16 U	0.38 U
4-Methylphenol (p-Cresol)	NE	NE	**1.2 J**	**0.19 J**	0.93 UJ	32 U	0.39 U	0.81 UJ	35 UJ	0.39 U	0.97 UJ	16 U	0.39 U	0.92 UJ	35 UJ	0.39 U	0.88 UJ	0.39 U	0.44 U	0.95 UJ	16 U	0.38 U
3-Nitroaniline	NE	NE	7.6 UJ	9.4 UJ	1.9 UJ	64 U	0.8 U	1.6 UJ	71 UJ	0.8 U	2 UJ	33 U	0.79 U	1.9 UJ	71 UJ	0.79 U	1.8 UJ	0.79 U	0.88 U	1.9 UJ	33 U	0.77 U
1,2,4-Trichlorobenzene	2	7.4	1.2 UJ	1.5 UJ	0.093 UJ	3.2 U	0.039 U	**0.046 J**	3.5 UJ	0.039 U	0.097 UJ	1.6 U	0.039 U	0.092 UJ	3.5 UJ	0.039 U	0.088 UJ	0.039 U	0.044 U	0.095 UJ	1.6 U	0.038 U
Total SVOCs	NE	NE	**53.81**	**38.5**	**2.19**	**1492.3**	**0.32**	**5.526**	**2032**	ND	**2.42**	**878.3**	ND	**4.26**	**2540**	ND	**4.734**	**1.434**	ND	**2.655**	**808.1**	ND

Table 10. Detected Sediment Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample Name: Sample Depth (ft bss): Sample Date:	SSGV Class B	SSGV Class C	WW-SED-07 (4-4.5) 9/29/2009	WW-SED-07 (15-15.7) 9/29/2009	WW-SED-08 (0-0.5) 11/12/2010	WW-SED-08 (26.5-27.5) 11/12/2010	WW-SED-08 (62-63) 11/12/2010	WW-SED-09 (0-0.5) 11/11/2010	WW-SED-09 (23.5-24) 11/11/2010	WW-SED-09 (39.5-40) 11/11/2010	WW-SED-10 (0-0.5) 11/16/2010	WW-SED-10 (20-21) 11/16/2010	WW-SED-10 (63-64) 11/16/2010	WW-SED-11 (0-0.5) 11/10/2010	WW-SED-11 (22-23) 11/10/2010	WW-SED-11 (58-59) 11/10/2010	WW-SED-12 (0-0.5) 11/15/2010	WW-SED-12 (22-23) 11/15/2010	WW-SED-12 (79.5-80) 11/15/2010	WW-SED-13 (0-0.5) 11/16/2010	WW-SED-13 (24-24.5) 11/16/2010	WW-SED-13 (54.5-55) 11/16/2010
PCBs (mg/kg)																						
Aroclor 1242	NE	NE	0.19 UJ	**0.24 J**	0.19 UJ	NA	NA	0.16 UJ	NA	NA	0.2 UJ	NA	NA	0.19 UJ	NA	NA	0.18 UJ	NA	NA	0.19 UJ	NA	NA
Aroclor 1248	NE	NE	**0.75 JN**	0.047 UJ	0.19 UJ	NA	NA	0.16 UJ	NA	NA	0.2 UJ	NA	NA	0.19 UJ	NA	NA	0.18 UJ	NA	NA	0.19 UJ	NA	NA
Aroclor 1254	NE	NE	**1.2 J**	**0.15 JN**	0.19 UJ	NA	NA	0.16 UJ	NA	NA	0.2 UJ	NA	NA	0.19 UJ	NA	NA	0.18 UJ	NA	NA	0.19 UJ	NA	NA
Aroclor 1260	NE	NE	**1.2 J**	**0.13 J**	**0.037 J**	NA	NA	**1.3 J**	NA	NA	0.2 UJ	NA	NA	**0.38 J**	NA	NA	0.18 UJ	NA	NA	0.19 UJ	NA	NA
Total PCBs	0.1	1	**3.15**	**0.52**	**0.037**	ND	ND	**1.3**	ND	ND	ND	ND	ND	**0.38**	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides (mg/kg)																						
Aldrin	NE	NE	0.019 UJ	0.023 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
alpha-BHC	NE	NE	0.019 UJ	0.023 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
beta-BHC	NE	NE	0.019 UJ	0.023 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
gamma-BHC	NE	NE	0.019 UJ	0.023 UJ	0.019 UJ	NA	NA	**0.028 JN**	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
delta-BHC	NE	NE	0.019 UJ	0.023 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
alpha-chlordane	0.063	1.4	**0.044 J**	0.023 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
gamma-chlordane	0.063	1.4	**0.05 JN**	**0.039 J**	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
4,4-DDD	0.044	5.7	0.036 UJ	0.045 UJ	0.019 UJ	NA	NA	**0.12 J**	NA	NA	0.02 UJ	NA	NA	**0.048 J**	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
4,4'-DDE	0.044	5.7	0.036 UJ	**0.096 J**	0.019 UJ	NA	NA	**0.031 JN**	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
4,4'-DDT	0.044	5.7	**0.12 JN**	0.045 UJ	0.019 UJ	NA	NA	**0.13 J**	NA	NA	0.02 UJ	NA	NA	**0.033 J**	NA	NA	**0.018 J**	NA	NA	0.019 UJ	NA	NA
Dieldrin	0.006	2.3	**0.044 JN**	0.045 UJ	0.019 UJ	NA	NA	**0.025 JN**	NA	NA	0.02 UJ	NA	NA	**0.025 J**	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Endosulfan I	0.0001	0.003	0.019 UJ	0.023 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Endosulfan II	0.0001	0.003	0.036 UJ	0.045 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Endosulfan sulfate	NE	NE	0.036 UJ	0.045 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Endrin	0.006	0.096	0.036 UJ	0.045 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Endrin aldehyde	NE	NE	**0.12 JN**	0.18 UJ	0.019 UJ	NA	NA	**0.027 J**	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Endrin ketone	NE	NE	0.036 UJ	0.045 UJ	0.019 UJ	NA	NA	**0.022 JN**	NA	NA	0.02 UJ	NA	NA	**0.033 J**	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Heptachlor	0.071	1.1	**0.019 J**	0.023 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Heptachlor epoxide	0.015	0.22	**0.041 J**	0.023 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Methoxychlor	0.059	NE	0.19 UJ	0.23 UJ	0.019 UJ	NA	NA	0.016 UJ	NA	NA	0.02 UJ	NA	NA	0.019 UJ	NA	NA	0.018 UJ	NA	NA	0.019 UJ	NA	NA
Herbicides (mg/kg)																						
Total Herbicides	NE	NE	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Metals (mg/kg)																						
Aluminum	NE	NE	**15900 J**	**18200 J**	**16900 J**	**11100 J**	**2830 J**	**12600 J**	**11500 J**	**2050 J**	**13600 J**	**10300**	**2370**	**17300 J**	**9950 J**	**550 J**	**13600 J**	**8240**	**349**	**13500 J**	**7480**	**2250**
Antimony	NE	NE	8.9 UJ	11 UJ	5.5 UJ	**2.3 J**	2.3 UJ	**3.9 J**	3.9 UJ	2.4 UJ	5.8 UJ	3.8 UJ	2.3 UJ	**4.2 J**	**4 J**	2.2 U	5 UJ	2.3 UJ	2.5 UJ	5.4 UJ	**4.1 J**	2.1 UJ
Arsenic	8.2	70	**25.9 J**	**23 J**	**16.9 J**	**167**	**1.4**	**27.8 J**	**113 J**	**0.97 J**	**10.3 J**	**61.9**	**1.3**	**20.1 J**	**216 J**	1.1 U	**10.9 J**	**3.9**	**1.3**	**11.1 J**	**152**	**0.99 J**
Barium	NE	NE	**276 J**	**160 J**	**130 J**	**572**	**8.7 J**	**253 J**	**324 J**	**15.7 J**	**76.5 J**	**223**	**47.1**	**150 J**	**565 J**	**7 J**	**62.2 J**	**120**	**56.7**	**80.2 J**	**664**	**13.6 J**
Beryllium	NE	NE	**1.2 J**	**1.1 J**	**0.88 J**	**0.6 J**	0.46 U	**0.88 J**	**0.7 J**	0.48 U	**0.68 J**	**0.62 J**	**0.3 J**	**0.92 J**	**0.58 J**	0.43 U	**0.77 J**	**0.3 J**	0.51 U	**0.72 J**	**0.47 J**	0.42 U
Cadmium	1.2	9.6	**24.2 J**	**6.2 J**	**2.9 J**	**1 J**	1.1 U	**21.6 J**	**1.7 J**	1.2 U	**0.78 J**	**1.4 J**	1.2 U	**3.5 J**	**3.8 J**	1.1 U	**0.43 J**	1.1 U	1.3 U	**0.83 J**	**3.4**	1.1 U
Calcium	NE	NE	**6350 J**	**6340 J**	**8480 J**	**5680 J**	1140 U	**4120 J**	**6720 J**	**2390 J**	**7480 J**	**5360**	1150 U	**12000 J**	**6750 J**	1080 U	**7320 J**	**5850**	1270 U	**7550 J**	**7100**	**1350**
Chromium	81	370	**554 J**	**383 J**	**197 J**	**113**	**4.6**	**802 J**	**132 J**	**6.6**	**79 J**	**90.7 J**	**6.3 J**	**234 J**	**133 J**	**4.3**	**63.6 J**	**26.6 J**	**2.1 J**	**87.6 J**	**99.7 J**	**6.5 J**
Cobalt	NE	NE	**13.5 J**	**12.7 J**	**13.8 J**	**9.6 J**	**4 J**	**11.9 J**	**10.9 J**	**4.5 J**	**11.2 J**	**9.5 J**	**5.2 J**	**15 J**	**9.5 J**	10.8 U	**11.2 J**	**10 J**	12.7 U	**11.2 J**	**11 J**	**3.4 J**
Copper	34	270	**681 J**	**409 J**	**277 J**	**464**	**6.2**	**548 J**	**375 J**	**6**	**120 J**	**251**	**13.2**	**298 J**	**623 J**	**3.5 J**	**85.4 J**	**23.1**	**11.5**	**123 J**	**562**	**5.6**
Iron	NE	NE	**35700 J**	**37000 J**	**40000 J**	**31200**	**5800**	**31300 J**	**32000 J**	**14600**	**31100 J**	**29400**	**7560**	**42600 J**	**31800 J**	**629**	**30900 J**	**26800**	**7490**	**30400 J**	**60300**	**8490**
Lead	47	220	**980 J**	**919 J**	**330 J**	**1380**	**6**	**1730 J**	**1030 J**	1.2 U	**155 J**	**531 J**	**4.7 J**	**477 J**	**2370 J**	**3.8**	**109 J**	**20.2 J**	**6.8 J**	**180 J**	**2320 J**	**2.2 J**
Magnesium	NE	NE	**8460 J**	**9420 J**	**9800 J**	**6010**	**1030 J**	**7110 J**	**6580 J**	**1980**	**8170 J**	**5900**	**1120 J**	**10600 J**	**6030 J**	1080 UJ	**7990 J**	**6550**	1270 U	**8040 J**	**4580**	**1570**
Manganese	NE	NE	**372 J**	**532 J**	**649 J**	**447**	**61.5**	**331 J**	**412 J**	**952**	**575 J**	**391 J**	**104 J**	**607 J**	**308 J**	**17.4**	**556 J**	**449 J**	**291 J**	**555 J**	**610 J**	**136 J**
Mercury	0.15	0.71	**4.7 J**	**3.6 J**	**2.6 J**	**10.2**	0.036 U	**4.5 J**	**7.5 J**	0.037 U	**1.1 J**	**7.5**	0.039 U	**2.3 J**	**8.7 J**	0.038 U	**0.94 J**	**0.075**	0.041 U	**1.2 J**	**14.4**	0.032 U
Nickel	21	52	**122 J**	**69.7 J**	**50.8 J**	**37.5**	**6.4 J**	**113 J**	**39.4 J**	**5.4 J**	**32.6 J**	**32**	**7.3 J**	**58.2 J**	**43.4 J**	**1.5 J**	**31.6 J**	**21.2**	10.2 U	**31.2 J**	**51.4**	**5.5 J**
Potassium	NE	NE	**3630 J**	**4060 J**	**4160 J**	**2640**	**183 J**	**3120 J**	**2840 J**	**331 J**	**3700 J**	**2610**	**530 J**	**4330 J**	**2480 J**	**345 J**	**3410 J**	**3930**	1270 U	**3550 J**	**1970**	**515 J**
Selenium	NE	NE	20.1 UJ	25.1 UJ	5.5 UJ	3.8 U	2.3 U	**2.7 J**	**3.4 J**	2.4 U	5.8 UJ	**1.8 J**	2.3 U	5.3 UJ	**4.2 J**	2.2 U	5 UJ	2.3 U	2.5 U	5.4 UJ	3.9 U	2.1 U
Silver	1	3.7	**19.7 J**	**13.9 J**	**11.2 J**	**3 J**	2.3 UJ	**18.4 J**	**4.3 J**	2.4 UJ	**3.3 J**	**4.4**	2.3 U	**10.8 J**	**6.3 J**	2.2 U	**3.2 J**	2.3 U	2.5 U	**4.1 J**	**4.3**	2.1 U
Sodium	NE	NE	**9310 J**	**11100 J**	**15300 J**	**7710**	**608 J**	**12400 J**	**8040 J**	**1390**	**15400 J**	**6800**	**926 J**	**15100 J**	**8630 J**	**1050 J**	**13000 J**	**1350**	**477 J**	**14600 J**	**4700**	**1210**
Thallium	NE	NE	8.1 UJ	10 UJ	5.5 UJ	3.8 U	2.3 U	4.7 UJ	3.9 UJ	2.4 U	5.8 UJ	3.8 U	2.3 U	5.3 UJ	4.1 UJ	2.2 U	5 UJ	2.3 U	2.5 U	5.4 UJ	3.9 U	2.1 U
Vanadium	NE	NE	**84.1 J**	**59 J**	**55 J**	**36.4**	**4.4 J**	**98.3 J**	**38.5 J**	**12.4**	**38.7 J**	**33.1**	**8.6 J**	**58.1 J**	**52.2 J**	**12.1**	**36.1 J**	**34.9**	**16.1**	**37.7 J**	**130**	**10.4 J**
Zinc	150	410	**1010 J**	**475 J**	**399 J**	**512**	**27.4**	**808 J**	**519 J**	**12.8**	**220 J**	**364 J**	**26.3 J**	**465 J**	**925 J**	**9.5**	**192 J**	**56.5 J**	**4.1 J**	**234 J**	**1040 J**	**12.4 J**
Cyanides (mg/kg)																						
Free Cyanide	NE	NE	**0.131 J**	0.552 U	0.56 UJ	0.38 U	0.24 U	0.49 UJ	0.43 UJ	0.24 U	0.59 UJ	0.39 U	0.24 U	0.56 UJ	**0.21 J**	0.24 U	0.53 UJ	0.23 U	0.26 U	0.57 UJ	**0.24 J**	0.23 U
Other (mg/kg)																						
Total Organic Carbon	NE	NE	NA	NA	**45500**	NA	NA	**69300**	NA	NA	**38300**	NA	NA	**61400**	NA	NA	**40900**	NA	NA	**44000**	NA	NA

Table 10. Detected Sediment Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample Name: / Sample Depth (ft bss): / Sample Date:	SSGV Class B	SSGV Class C	Duplicate of WW-SED-13 (54.5-55) 11/16/2010	WW-SED-14 (0-0.5) 11/11/2010	Duplicate of WW-SED-14 (0-0.5) 11/11/2010	WW-SED-14 (16-17) 11/11/2010	WW-SED-14 (52.5-53) 11/11/2010	WW-SED-15 (0-0.5) 11/9/2010	WW-SED-15 (15.5-16) 11/9/2010	WW-SED-15 (41.5-42) 11/9/2010	WW-SED-16 (0-0.5) 11/9/2010	WW-SED-16 (27-28) 11/9/2010	WW-SED-16 (64-64.5) 11/9/2010	WW-SED-17 (0-0.5) 11/10/2010	WW-SED-17 (33.5-34.5) 11/10/2010	WW-SED-17 (53-54) 11/10/2010	WW-SED-18 (0-0.5) 11/17/2010	WW-SED-18 (18.5-19) 11/17/2010	WW-SED-18 (83.5-84) 11/17/2010	WW-SED-19 (0-0.5) 11/18/2010	WW-SED-19 (41.2-41.5) 11/18/2010	WW-SED-19 (74.5-75) 11/18/2010
BTEX (mg/kg)																						
Benzene	0.46	1.4	**0.0021 J**	0.0025 UJ	**0.0075 J**	**5.4**	0.00099 U	0.0026 UJ	0.13 U	0.0011 U	0.0026 UJ	**0.14 J**	0.001 U	0.0023 UJ	0.00099 U	0.0011 U	0.014 UJ	**0.015 J**	0.0061 U	0.014 UJ	**23**	0.0058 U
Toluene	0.8	3.3	**0.00052 J**	0.0025 UJ	**0.059 J**	**11**	**0.0004 J**	0.0026 UJ	**0.057 J**	0.0011 U	0.0026 UJ	**0.53 J**	0.001 U	0.0023 UJ	**0.00041 J**	**0.00055 J**	0.014 UJ	**0.0053 J**	0.0061 U	0.014 UJ	**9.5**	0.0058 U
Ethylbenzene	0.11	0.75	0.0058 U	**0.0036 J**	**0.041 J**	**64**	**0.0003 J**	**0.0018 J**	**1.1**	0.0011 U	0.0026 UJ	**10 J**	0.001 UJ	0.0023 UJ	**0.0056**	**0.00033 J**	0.014 UJ	**0.16 J**	0.0061 U	0.014 UJ	**96**	0.0058 U
Total Xylene	0.091	0.64	0.0058 U	**0.0041 J**	**0.042 J**	**120**	0.003 U	0.0077 UJ	**0.99**	0.0033 U	0.0079 UJ	**9.7 J**	0.003 UJ	0.0069 UJ	**0.01**	0.0033 U	0.014 UJ	**0.2 J**	0.0061 U	0.014 UJ	**150**	0.0058 U
Total BTEX	NE	NE	**0.00262**	**0.0077**	**0.1495**	**200.4**	**0.0007**	**0.0018**	**2.147**	ND	ND	**20.37**	ND	ND	**0.01601**	**0.00088**	ND	**0.3803**	ND	ND	**278.5**	ND
NE - not established																						
NA - not analyzed	NE	NE	0.023 U	0.025 U	**0.095 J**	R	**0.0054 J**	**0.15 J**	R	**0.012 J**	**0.14 J**	R	**0.025 J**	**0.078 J**	**0.012 J**	**0.0084 J**	**0.053 J**	**0.059 J**	0.024 U	**0.055 J**	14 U	0.023 U
2-Butanone (Methyl ethyl ketone)	NE	NE	0.012 U	**0.0099 J**	**0.017 J**	R	R	**0.027 J**	R	R	**0.023 J**	R	**0.0019 J**	**0.015 J**	R	R	0.029 UJ	0.024 UJ	0.012 UJ	0.028 UJ	5.8 U	0.012 UJ
Carbon disulfide	NE	NE	0.0058 U	**0.0074 J**	**0.015 J**	5.2 U	0.00099 U	**0.025 J**	0.13 UJ	0.0011 U	**0.031 J**	0.2 UJ	0.001 U	**0.023 J**	**0.00067 J**	**0.00063 J**	0.014 UJ	0.012 UJ	0.0061 UJ	0.014 UJ	5.8 U	0.0058 U
Chlorobenzene	0.66	4.6	0.0058 U	0.0025 UJ	0.0024 UJ	5.2 U	0.00099 U	0.0026 UJ	**0.12 J**	0.0011 U	0.0026 UJ	0.2 UJ	0.001 UJ	0.0023 UJ	0.00099 UJ	0.0011 U	0.014 UJ	0.012 UJ	0.0061 UJ	0.014 UJ	5.8 U	0.0058 U
cis-1,2-Dichloroethene	NE	NE	0.0058 U	0.0025 UJ	0.0024 UJ	5.2 U	0.00099 U	0.0026 UJ	**0.24**	0.0011 U	0.0026 UJ	0.2 UJ	0.001 U	0.0023 UJ	0.00099 U	0.0011 U	0.014 UJ	0.012 UJ	0.0061 U	0.014 UJ	5.8 U	0.0058 U
Styrene	NE	NE	0.0058 U	0.0025 UJ	0.0024 UJ	**30**	0.00099 U	0.0026 UJ	0.13 U	0.0011 U	0.0026 UJ	0.2 UJ	0.001 UJ	0.0023 UJ	0.00099 U	0.0011 U	0.014 UJ	0.012 UJ	0.0061 U	0.014 UJ	**40**	0.0058 U
Tetrachloroethene	2.6	8.8	0.0058 U	0.0025 UJ	0.0024 UJ	5.2 U	0.00099 U	0.0026 UJ	0.13 U	0.0011 U	0.0026 UJ	0.2 UJ	0.001 U	0.0023 UJ	0.00099 U	0.0011 U	0.014 UJ	0.012 UJ	0.0061 U	0.014 UJ	5.8 U	0.0058 U
Vinyl chloride	NE	NE	0.0058 U	0.0025 UJ	R	5.2 U	R	**0.002 J**	0.13 U	0.0011 U	0.0026 UJ	0.2 UJ	0.001 U	0.0023 UJ	0.00099 U	0.0011 U	0.014 UJ	0.012 UJ	0.0061 U	0.014 UJ	5.8 U	0.0058 U
Total VOCs	NE	NE	**0.00262**	**0.025**	**0.2765**	**230.4**	**0.0061**	**0.2058**	**2.507**	**0.012**	**0.194**	**20.37**	**0.0269**	**0.116**	**0.02868**	**0.00991**	**0.053**	**0.4393**	ND	**0.055**	**318.5**	ND
PAHs (mg/kg)																						
Acenaphthene	NE	NE	0.38 U	**0.17 J**	0.82 UJ	**12**	0.38 U	**0.24 J**	**0.84**	0.39 U	0.98 UJ	**51 J**	0.38 U	0.85 UJ	**0.21 J**	0.4 U	0.95 UJ	**0.2 J**	0.4 U	0.93 UJ	**27**	0.38 U
Acenaphthylene	NE	NE	0.38 U	0.88 UJ	0.82 UJ	**17**	0.38 U	0.91 UJ	**0.072 J**	0.39 U	0.98 UJ	**1.8 J**	0.38 U	0.85 UJ	0.38 U	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	**44**	0.38 U
Anthracene	NE	NE	0.38 U	0.88 UJ	0.82 UJ	**25**	0.38 U	**0.39 J**	**1.9**	0.39 U	0.98 UJ	**27 J**	0.38 U	0.85 UJ	**0.29 J**	0.4 U	0.95 UJ	**0.3 J**	0.4 U	0.93 UJ	**30**	0.38 U
Benz[a]anthracene	NE	NE	0.038 U	**0.24 J**	**0.13 J**	**14**	0.038 U	**0.4 J**	**3.2**	0.039 U	**0.15 J**	**15 J**	0.038 U	**0.21 J**	**0.22**	0.04 U	**0.1 J**	**0.4 J**	0.04 U	**0.27 J**	**13**	0.038 U
Benzo[a]pyrene	NE	NE	0.038 U	**0.23 J**	**0.15 J**	**12 J**	0.038 U	**0.46 J**	**2.9 J**	0.039 U	**0.17 J**	**11 J**	0.038 U	**0.25 J**	**0.22 J**	0.04 U	**0.11 J**	**0.41 J**	0.04 U	**0.26 J**	**8.7**	0.038 U
Benzo[b]fluoranthene	NE	NE	0.038 U	**0.25 J**	**0.15 J**	**12**	0.038 U	**0.5 J**	**3.4**	0.039 U	**0.23 J**	**6.2 J**	0.038 U	**0.31 J**	**0.24**	0.04 U	**0.15 J**	**0.35 J**	0.04 U	**0.27 J**	**6.3**	0.038 U
Benzo[g,h,i]perylene	NE	NE	0.38 U	0.88 UJ	0.82 UJ	**6.7 J**	0.38 U	**0.31 J**	**1.9 J**	0.39 UJ	0.98 UJ	**5 J**	0.38 U	0.85 UJ	**0.12 J**	0.4 UJ	0.95 UJ	**0.25 J**	0.4 U	**0.22 J**	**3.1 J**	0.38 U
Benzo[k]fluoranthene	NE	NE	0.038 U	**0.14 J**	0.082 UJ	**5.4**	0.038 U	**0.24 J**	**1.3**	0.039 U	**0.076 J**	**3 J**	0.038 U	**0.14 J**	**0.1**	0.04 U	0.095 UJ	**0.22 J**	0.04 U	**0.14 J**	**3.7**	0.038 U
Chrysene	NE	NE	0.38 U	**0.23 J**	**0.16 J**	**13**	0.38 U	**0.56 J**	**4.2**	0.39 U	**0.21 J**	**18 J**	0.38 U	**0.28 J**	**0.26 J**	0.4 U	0.95 UJ	**0.48 J**	0.4 U	**0.29 J**	**10**	0.38 U
Dibenz[a,h]anthracene	NE	NE	0.038 U	0.088 UJ	0.082 UJ	**1.5**	0.038 U	0.091 UJ	**0.59**	0.039 U	0.098 UJ	**1.3 J**	0.038 U	0.085 UJ	0.038 U	0.04 U	0.095 UJ	0.078 UJ	0.04 U	0.093 UJ	**1.3**	0.038 U
Fluoranthene	NE	NE	0.38 U	**0.15 J**	0.82 UJ	**20**	0.38 U	**0.57 J**	**7.6**	0.39 U	0.98 UJ	**15 J**	0.38 U	**0.23 J**	**0.31 J**	0.4 U	0.95 UJ	**0.33 J**	0.4 U	**0.16 J**	**22**	0.38 U
Fluorene	NE	NE	0.38 U	0.88 UJ	0.82 UJ	**20**	0.38 U	0.91 UJ	**0.72**	0.39 U	0.98 UJ	**18 J**	0.38 U	0.85 UJ	**0.17 J**	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	**31**	0.38 U
Indeno[1,2,3-cd]pyrene	NE	NE	0.038 UJ	0.088 UJ	0.082 UJ	**6.4**	0.038 U	**0.27 J**	**2.1**	0.039 U	0.098 UJ	**4.3 J**	0.038 U	0.085 UJ	**0.1**	0.04 U	0.095 UJ	**0.25 J**	0.04 UJ	**0.19 J**	**3.1**	0.038 UJ
2-Methylnaphthalene	NE	NE	0.38 U	**0.46 J**	0.82 UJ	**36**	0.38 U	**0.14 J**	**1.3**	0.39 U	0.98 UJ	**45 J**	0.38 U	0.85 UJ	**0.27 J**	0.4 U	0.95 UJ	**0.27 J**	0.4 U	0.93 UJ	**100**	0.38 U
Naphthalene	NE	NE	0.38 U	**0.8 J**	0.82 UJ	**89**	0.38 U	**0.17 J**	**1.9**	0.39 U	0.98 UJ	**55 J**	0.38 U	0.85 UJ	**0.49**	0.4 U	0.95 UJ	**0.55 J**	0.4 U	0.93 UJ	**150**	0.38 U
Phenanthrene	NE	NE	0.38 U	**0.24 J**	0.82 UJ	**63**	0.38 U	**1**	**11**	0.39 U	0.98 UJ	**75 J**	0.38 U	**0.32 J**	**0.83**	0.4 U	0.95 UJ	**0.77 J**	0.4 U	**0.16 J**	**89**	0.38 U
Pyrene	NE	NE	0.38 U	**0.45 J**	**0.32 J**	**31**	0.38 U	**0.77 J**	**4.9**	0.39 U	**0.33 J**	**25 J**	0.38 U	**0.57 J**	**0.55**	0.4 U	**0.23 J**	**0.56 J**	0.4 U	**0.41 J**	**33**	0.38 U
Total PAH 17	4	45	ND	**3.36**	**0.91**	**384**	ND	**6.02**	**49.822**	ND	**1.166**	**376.6**	ND	**2.31**	**4.38**	ND	**0.59**	**5.34**	ND	**2.37**	**575.2**	ND
Other SVOCs (mg/kg)																						
Bis(2-ethylhexyl)phthalate	NE	NE	0.38 U	**0.8 J**	**0.56 J**	4.7 U	0.38 U	**1.6 J**	**3.8**	0.39 U	**0.63 J**	3.5 UJ	0.38 U	**1.3 J**	0.38 U	0.4 U	**0.57 J**	**2 J**	0.4 U	**0.86 J**	9.5 U	0.38 U
Butyl benzyl phthalate	NE	NE	0.38 U	0.88 UJ	0.82 UJ	4.7 U	0.38 U	0.91 UJ	0.49 U	0.39 U	0.98 UJ	3.5 UJ	0.38 U	0.85 UJ	0.38 U	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	9.5 U	0.38 U
Carbazole	NE	NE	0.38 U	0.88 UJ	0.82 UJ	**4.7**	0.38 U	0.91 UJ	**1.2**	0.39 U	0.98 UJ	3.5 UJ	0.38 U	0.85 UJ	**0.069 J**	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	9.5 U	0.38 U
4-Chloroaniline	NE	NE	0.38 U	0.88 UJ	0.82 UJ	4.7 U	0.38 U	0.91 UJ	0.49 U	0.39 U	0.98 UJ	3.5 UJ	0.38 U	0.85 UJ	0.38 U	0.4 U	0.95 UJ	**0.11 J**	0.4 U	0.93 UJ	9.5 U	0.38 U
Dibenzofuran	NE	NE	0.38 U	0.88 UJ	0.82 UJ	**11**	0.38 U	0.91 UJ	**0.88**	0.39 U	0.98 UJ	**2.1 J**	0.38 U	0.85 UJ	**0.11 J**	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	**4.2 J**	0.38 U
1,2-Dichlorobenzene	0.85	6.1	0.38 U	0.88 UJ	0.82 UJ	4.7 U	0.38 U	0.91 UJ	0.49 U	0.39 U	0.98 UJ	3.5 UJ	0.38 U	0.85 UJ	0.38 U	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	9.5 U	0.38 U
1,3-Dichlorobenzene	2.1	7.1	0.38 U	0.88 UJ	0.82 UJ	4.7 U	0.38 U	0.91 UJ	0.49 U	0.39 U	0.98 UJ	3.5 UJ	0.38 U	0.85 UJ	0.38 U	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	9.5 U	0.38 U
1,4-Dichlorobenzene	1.2	5.1	0.38 U	0.88 UJ	0.82 UJ	4.7 U	0.38 U	0.91 UJ	**0.61**	0.39 U	0.98 UJ	3.5 UJ	0.38 U	0.85 UJ	0.38 U	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	9.5 U	0.38 U
Di-n-butyl phthalate	NE	NE	0.38 U	0.88 UJ	0.82 UJ	4.7 U	0.38 U	0.91 UJ	0.49 U	0.39 U	0.98 UJ	3.5 UJ	0.38 U	0.85 UJ	0.38 U	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	9.5 U	0.38 U
4-Methylphenol (p-Cresol)	NE	NE	0.38 U	0.88 UJ	0.82 UJ	4.7 U	0.38 U	0.91 UJ	0.49 U	0.39 U	0.98 UJ	3.5 UJ	0.38 U	0.85 UJ	0.38 U	0.4 U	0.95 UJ	0.78 UJ	0.4 U	0.93 UJ	9.5 U	0.38 U
3-Nitroaniline	NE	NE	0.77 U	1.8 UJ	1.7 UJ	9.6 U	0.78 U	1.9 UJ	1 U	0.79 U	2 UJ	7.2 UJ	0.77 U	1.7 UJ	0.77 U	0.81 U	1.9 UJ	1.6 UJ	0.82 U	1.9 UJ	19 U	0.77 U
1,2,4-Trichlorobenzene	2	7.4	0.038 U	0.088 UJ	0.082 UJ	0.47 U	0.038 U	0.091 UJ	0.049 U	0.039 U	0.098 UJ	0.35 UJ	0.038 U	0.085 UJ	0.038 U	0.04 U	0.095 UJ	0.078 UJ	0.04 U	0.093 UJ	0.95 U	0.038 U
Total SVOCs	NE	NE	ND	**4.16**	**1.47**	**399.7**	ND	**7.62**	**56.312**	ND	**1.796**	**378.7**	ND	**3.61**	**4.559**	ND	**1.16**	**7.45**	ND	**3.23**	**579.4**	ND

Table 10. Detected Sediment Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample Name: / Sample Depth (ft bss): / Sample Date:	SSGV Class B	SSGV Class C	Duplicate of WW-SED-13 (54.5-55) 11/16/2010	WW-SED-14 (0-0.5) 11/11/2010	Duplicate of WW-SED-14 (0-0.5) 11/11/2010	WW-SED-14 (16-17) 11/11/2010	WW-SED-14 (52.5-53) 11/11/2010	WW-SED-15 (0-0.5) 11/9/2010	WW-SED-15 (15.5-16) 11/9/2010	WW-SED-15 (41.5-42) 11/9/2010	WW-SED-16 (0-0.5) 11/9/2010	WW-SED-16 (27-28) 11/9/2010	WW-SED-16 (64-64.5) 11/9/2010	WW-SED-17 (0-0.5) 11/10/2010	WW-SED-17 (33.5-34.5) 11/10/2010	WW-SED-17 (53-54) 11/10/2010	WW-SED-18 (0-0.5) 11/17/2010	WW-SED-18 (18.5-19) 11/17/2010	WW-SED-18 (83.5-84) 11/17/2010	WW-SED-19 (0-0.5) 11/18/2010	WW-SED-19 (41.2-41.5) 11/18/2010	WW-SED-19 (74.5-75) 11/18/2010
PCBs (mg/kg)																						
Aroclor 1242	NE	NE	NA	0.18 UJ	0.17 UJ	NA	NA	0.19 UJ	NA	NA	0.2 UJ	NA	NA	0.17 UJ	NA	NA	0.19 UJ	NA	NA	0.19 UJ	NA	NA
Aroclor 1248	NE	NE	NA	0.18 UJ	0.17 UJ	NA	NA	0.19 UJ	NA	NA	0.2 UJ	NA	NA	0.17 UJ	NA	NA	0.19 UJ	NA	NA	0.19 UJ	NA	NA
Aroclor 1254	NE	NE	NA	0.18 UJ	0.17 UJ	NA	NA	0.19 UJ	NA	NA	0.2 UJ	NA	NA	0.17 UJ	NA	NA	0.19 UJ	NA	NA	0.19 UJ	NA	NA
Aroclor 1260	NE	NE	NA	**0.053 J**	0.17 UJ	NA	NA	**2.4 J**	NA	NA	0.2 UJ	NA	NA	**0.048 J**	NA	NA	0.19 UJ	NA	NA	0.19 UJ	NA	NA
Total PCBs	0.1	1	ND	**0.053**	ND	ND	ND	**2.4**	ND	ND	ND	ND	ND	**0.048**	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides (mg/kg)																						
Aldrin	NE	NE	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
alpha-BHC	NE	NE	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
beta-BHC	NE	NE	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
gamma-BHC	NE	NE	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
delta-BHC	NE	NE	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
alpha-chlordane	0.063	1.4	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
gamma-chlordane	0.063	1.4	NA	0.018 UJ	0.017 UJ	NA	NA	**0.09 JN**	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
4,4-DDD	0.044	5.7	NA	0.018 UJ	0.017 UJ	NA	NA	**0.32 J**	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
4,4'-DDE	0.044	5.7	NA	0.018 UJ	0.017 UJ	NA	NA	**0.025 JN**	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
4,4'-DDT	0.044	5.7	NA	0.018 UJ	0.017 UJ	NA	NA	**0.16 J**	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Dieldrin	0.006	2.3	NA	0.018 UJ	0.017 UJ	NA	NA	**0.052 JN**	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Endosulfan I	0.0001	0.003	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Endosulfan II	0.0001	0.003	NA	0.018 UJ	0.017 UJ	NA	NA	**0.033 JN**	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Endosulfan sulfate	NE	NE	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Endrin	0.006	0.096	NA	0.018 UJ	0.017 UJ	NA	NA	**0.034 J**	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Endrin aldehyde	NE	NE	NA	0.018 UJ	0.017 UJ	NA	NA	**0.052 J**	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Endrin ketone	NE	NE	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Heptachlor	0.071	1.1	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Heptachlor epoxide	0.015	0.22	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Methoxychlor	0.059	NE	NA	0.018 UJ	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.02 UJ	NA	NA	0.017 UJ	NA	NA	0.019 UJ	NA	NA	0.019 UJ	NA	NA
Herbicides (mg/kg)																						
Total Herbicides	NE	NE	NA	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Metals (mg/kg)																						
Aluminum	NE	NE	**2280**	**16100 J**	**15000 J**	**7040 J**	**567 J**	**12900 J**	**6320 J**	**5260 J**	**14900 J**	**13100 J**	**3310**	**14500 J**	**4120 J**	**9290 J**	**15300 J**	**16100 J**	**5660**	**14400 J**	**2050**	**9170**
Antimony	NE	NE	2.2 UJ	5.1 UJ	4.9 UJ	2.8 UJ	2.3 UJ	5.1 UJ	**1.4 J**	2.2 UJ	6 UJ	**1.8 J**	2.2 UJ	**2.5 J**	2.1 UJ	2.3 UJ	5.7 UJ	4.4 UJ	2.4 UJ	5.3 UJ	2.2 UJ	2.3 UJ
Arsenic	8.2	70	**1.3**	**14.4 J**	**12.1 J**	**12.7**	1.1 U	**27.1 J**	**15.8**	**16.5**	**10.8 J**	**78.7 J**	**2.1 J**	**13.5 J**	**4.7 J**	1.2 U	**14.1 J**	**21 J**	1.2 U	**13.8 J**	**2.5**	1.1 U
Barium	NE	NE	**14.2 J**	**105 J**	**80.9 J**	**27.1 J**	**15.7 J**	**263 J**	**125**	**130**	**74.6 J**	**284 J**	**40.4 J**	**82.3 J**	**38 J**	**57.7**	**90.3 J**	**143 J**	**18.7 J**	**76.1 J**	**14.1 J**	**76.1**
Beryllium	NE	NE	0.44 U	**0.83 J**	**0.79 J**	**0.43 J**	**0.41 J**	**0.76 J**	**0.46 J**	**0.29 J**	**0.79 J**	**0.79 J**	**0.35 J**	**0.81 J**	**0.75**	**0.4 J**	**0.81 J**	**0.91 J**	**0.92**	**0.79 J**	0.44 U	**0.4 J**
Cadmium	1.2	9.6	1.1 U	2.5 UJ	2.4 UJ	1.4 U	1.1 U	**0.6 J**	**0.46 J**	**0.27 J**	**0.72 J**	**1.6 J**	1.1 U	2.5 UJ	1.1 UJ	1.2 U	**0.8 J**	**6.3 J**	1.2 U	**0.53 J**	1.1 U	1.1 U
Calcium	NE	NE	**1410**	**6860 J**	**9000 J**	**2390 J**	1150 U	**34900 J**	**9610 J**	**21100 J**	**6900 J**	**4640 J**	**1170 J**	**7610 J**	**7280 J**	**3650 J**	**8970 J**	**7300 J**	**7300**	**8360 J**	**919 J**	1140 U
Chromium	81	370	**6.4 J**	**86.1 J**	**80 J**	**20**	**5.3**	**42 J**	**17.8**	**19.8**	**68.5 J**	**110 J**	**12.2**	**88.7 J**	**26.7**	**22.6**	**88.6 J**	**246 J**	**17.2 J**	**72.6 J**	**5.7 J**	**27.9 J**
Cobalt	NE	NE	**3.4 J**	**13.4 J**	**12.5 J**	**7.4 J**	11.5 U	**13.8 J**	**7 J**	**6.5 J**	**12.5 J**	**11.9 J**	**9 J**	**12.4 J**	**7.2 J**	**17.8**	**12.9 J**	**13.6 J**	11.9 U	**12 J**	**3.2 J**	**8.1 J**
Copper	34	270	**7**	**138 J**	**123 J**	**19.2**	**4.4 J**	**97.7 J**	**88.3**	**48.8**	**115 J**	**604 J**	**11.4**	**128 J**	**19.9**	**41.7**	**124 J**	**316 J**	**12.7 J**	**106 J**	**5.7**	**5.3 J**
Iron	NE	NE	**12700**	**35700 J**	**32700 J**	**35600**	**323**	**37500 J**	**19800**	**28500**	**35400 J**	**33800 J**	**51600**	**31800 J**	**56100**	**30800**	**35900 J**	**36500 J**	**61500**	**33400 J**	**8360**	**15300**
Lead	47	220	**2.2 J**	**209 J**	**157 J**	**38.4**	**4.9**	**317 J**	**264**	**133**	**137 J**	**973 J**	**6.9**	**166 J**	**33.4**	**6.5**	**165 J**	**392 J**	**3.8 J**	**136 J**	**2.8 J**	**5.6 J**
Magnesium	NE	NE	**1590**	**9480 J**	**8750 J**	**4570**	1150 U	**9160 J**	**2730**	**5300**	**9320 J**	**6940 J**	**1180**	**8360 J**	**4970**	**5850**	**9060 J**	**8740 J**	**1990**	**8680 J**	**1310**	**5550**
Manganese	NE	NE	**181 J**	**605 J**	**610 J**	**572**	**3.3 J**	**511 J**	**257**	**373**	**517 J**	**412 J**	**1660**	**524 J**	**775**	**292**	**644 J**	**688 J**	**367 J**	**547 J**	**125 J**	**264 J**
Mercury	0.15	0.71	0.032 U	**1.5 J**	**1.3 J**	**0.36**	**0.06**	**4.5 J**	**0.064**	**0.058**	**2.7 J**	**0.5 J**	0.038 U	**0.84 J**	**0.07**	0.04 U	**1.3 J**	**4.3 J**	0.04 U	**1 J**	0.036 U	0.038 U
Nickel	21	52	**5.9 J**	**37.9 J**	**34.5 J**	**15.4**	9.2 U	**42.2 J**	**29.3**	**31.8**	**34 J**	**40 J**	**6.8 J**	**33.4 J**	**16.4**	**18.1**	**38.1 J**	**51.8 J**	**2.4 J**	**33.8 J**	**5.3 J**	**16.7**
Potassium	NE	NE	**528 J**	**3730 J**	**3500 J**	**2040**	1150 U	**3450 J**	**1050 J**	**1240**	**3310 J**	**2520 J**	**591 J**	**3450 J**	**1160 J**	**2240**	**3860 J**	**3580 J**	1190 U	**3670 J**	**515 J**	**6300**
Selenium	NE	NE	2.2 U	5.1 UJ	4.9 UJ	**1.6 J**	2.3 U	5.1 UJ	3 U	**1.5 J**	6 UJ	**2.8 J**	**2.7 J**	5 UJ	**1.6 J**	**1.5 J**	5.7 UJ	4.4 UJ	2.4 U	5.3 UJ	2.2 U	2.3 U
Silver	1	3.7	2.2 U	**3.7 J**	**4.1 J**	2.8 UJ	2.3 UJ	5.1 UJ	3 UJ	2.2 UJ	**2.5 J**	**1.6 J**	2.2 UJ	**5.2 J**	2.1 UJ	2.3 UJ	**7.1 J**	**11.2 J**	2.4 U	**4.4 J**	2.2 U	2.3 U
Sodium	NE	NE	**1260**	**13900 J**	**12600 J**	**3520**	**904 J**	**936 J**	**334 J**	**377 J**	**13300 J**	**7640 J**	**841 J**	**12800 J**	**1970**	**966 J**	**13700 J**	**9610 J**	**586 J**	**13800 J**	**947 J**	**760 J**
Thallium	NE	NE	2.2 U	5.1 UJ	4.9 UJ	2.8 U	2.3 U	5.1 UJ	3 U	2.2 U	6 UJ	4.1 UJ	2.2 U	5 UJ	2.1 UJ	2.3 U	5.7 UJ	4.4 UJ	2.4 U	5.3 UJ	2.2 U	2.3 U
Vanadium	NE	NE	**11.7**	**44.4 J**	**37.6 J**	**30.7**	**10.3 J**	**48 J**	**23.6**	**23.4**	**36.7 J**	**32.7 J**	**21.7**	**42.7 J**	**30.6**	**48.4**	**41.8 J**	**55.6 J**	**70.5**	**38.9 J**	**9.7 J**	**25.9**
Zinc	150	410	**13.1 J**	**286 J**	**253 J**	**54.2**	**1.4 J**	**372 J**	**304**	**157**	**243 J**	**449 J**	**33.6**	**230 J**	**58.2**	**76.8**	**252 J**	**393 J**	**38.7 J**	**231 J**	**12 J**	**83 J**
Cyanides (mg/kg)																						
Free Cyanide	NE	NE	0.23 U	0.53 UJ	0.49 UJ	0.29 U	0.23 U	0.55 UJ	0.3 U	0.24 U	0.6 UJ	0.43 UJ	0.23 U	0.51 UJ	0.23 U	0.24 U	0.58 UJ	**0.52 J**	0.24 U	0.57 UJ	0.23 U	0.23 U
Other (mg/kg)																						
Total Organic Carbon	NE	NE	NA	**38000**	**39800**	NA	NA	**41300**	NA	NA	**34800**	NA	NA	**40200**	NA	NA	**38100**	NA	NA	**41000**	NA	NA

Table 10. Detected Sediment Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample Name: Sample Depth (ft bss): Sample Date:	**SSGV Class B**	**SSGV Class C**	WW-SED-20 (0-0.5) 11/17/2010	WW-SED-20 (42-42.5) 11/17/2010	WW-SED-20 (58.5-59) 11/17/2010	WW-SED-21 (0-0.5) 11/19/2010	WW-SED-21 (37.5-38) 11/19/2010	WW-SED-21 (46.5-47) 11/19/2010
BTEX (mg/kg)								
Benzene	0.46	1.4	0.013 UJ	**0.49 J**	**0.0014 J**	0.014 UJ	0.3 U	**0.0016 J**
Toluene	0.8	3.3	0.013 UJ	**1.5**	0.0059 U	0.014 UJ	0.3 U	0.0056 U
Ethylbenzene	0.11	0.75	0.013 UJ	**5.1**	0.0059 U	0.014 UJ	**0.13 J**	0.0056 U
Total Xylene	0.091	0.64	0.013 UJ	**20**	0.0059 U	0.014 UJ	**0.81**	**0.00073 J**
Total BTEX	NE	NE	ND	**27.09**	**0.0014**	ND	**0.94**	**0.00233**
NE - not established								
NA - not analyzed	NE	NE	**0.047 J**	3.8 U	0.024 U	**0.059 J**	0.74 U	0.022 U
2-Butanone (Methyl ethyl ketone)	NE	NE	0.026 UJ	1.5 U	0.012 UJ	0.029 UJ	0.3 U	0.011 UJ
Carbon disulfide	NE	NE	0.013 UJ	1.5 U	0.0059 UJ	0.014 UJ	0.3 U	0.0056 U
Chlorobenzene	0.66	4.6	0.013 UJ	1.5 U	0.0059 U	0.014 UJ	0.3 U	0.0056 U
cis-1,2-Dichloroethene	NE	NE	0.013 UJ	1.5 U	0.0059 U	0.014 UJ	0.3 U	0.0056 U
Styrene	NE	NE	0.013 UJ	**9.7**	0.0059 U	0.014 UJ	**0.4**	**0.0015 J**
Tetrachloroethene	2.6	8.8	0.013 UJ	1.5 U	0.0059 U	0.014 UJ	0.3 U	0.0056 U
Vinyl chloride	NE	NE	0.013 UJ	1.5 U	0.0059 U	0.014 UJ	0.3 U	0.0056 U
Total VOCs	NE	NE	**0.047**	**36.79**	**0.0014**	**0.059**	**1.34**	**0.00383**
PAHs (mg/kg)								
Acenaphthene	NE	NE	0.86 UJ	**3.4 J**	0.39 U	0.95 UJ	**0.22 J**	0.37 U
Acenaphthylene	NE	NE	0.86 UJ	**27**	0.39 U	0.95 UJ	**1.9**	0.37 U
Anthracene	NE	NE	0.86 UJ	**18**	0.39 U	0.95 UJ	**1.3**	0.37 U
Benz[a]anthracene	NE	NE	**0.24 J**	**9.5**	0.039 U	**0.24 J**	**0.77**	0.037 U
Benzo[a]pyrene	NE	NE	**0.21 J**	**6.4**	0.039 U	**0.27 J**	**0.59**	0.037 U
Benzo[b]fluoranthene	NE	NE	**0.26 J**	**4.6**	0.039 U	**0.25 J**	**0.43**	0.037 U
Benzo[g,h,i]perylene	NE	NE	**0.14 J**	**2.7 J**	0.39 U	**0.17 J**	**0.2 J**	0.37 U
Benzo[k]fluoranthene	NE	NE	**0.093 J**	**2.4**	0.039 U	**0.12 J**	**0.22**	0.037 U
Chrysene	NE	NE	**0.28 J**	**7.9**	0.39 U	**0.32 J**	**0.8**	0.37 U
Dibenz[a,h]anthracene	NE	NE	0.086 UJ	**0.76**	0.039 U	0.095 UJ	**0.036 J**	0.037 U
Fluoranthene	NE	NE	**0.25 J**	**14**	0.39 U	**0.16 J**	**1.4**	0.37 U
Fluorene	NE	NE	0.86 UJ	**16**	0.39 U	0.95 UJ	**1.5**	0.37 U
Indeno[1,2,3-cd]pyrene	NE	NE	**0.14 J**	**2**	0.039 UJ	**0.17 J**	**0.18**	0.037 U
2-Methylnaphthalene	NE	NE	0.86 UJ	**46**	0.39 U	0.95 UJ	**2.8**	0.37 U
Naphthalene	NE	NE	0.86 UJ	**62**	0.39 U	0.95 UJ	**2.2**	0.37 U
Phenanthrene	NE	NE	**0.4 J**	**54**	0.39 U	**0.22 J**	**4.6**	0.37 U
Pyrene	NE	NE	**0.54 J**	**22**	0.39 U	**0.42 J**	**2.1**	0.37 U
Total PAH 17	4	45	**2.553**	**298.66**	ND	**2.34**	**21.246**	ND
Other SVOCs (mg/kg)								
Bis(2-ethylhexyl)phthalate	NE	NE	**0.66 J**	4 U	0.39 U	**1.1 J**	0.39 U	0.37 U
Butyl benzyl phthalate	NE	NE	0.86 UJ	4 U	0.39 U	0.95 UJ	0.39 U	0.37 U
Carbazole	NE	NE	0.86 UJ	**0.71 J**	0.39 U	0.95 UJ	**0.062 J**	0.37 U
4-Chloroaniline	NE	NE	0.86 UJ	4 U	0.39 U	0.95 UJ	0.39 U	0.37 U
Dibenzofuran	NE	NE	0.86 UJ	**3.3 J**	0.39 U	0.95 UJ	**0.24 J**	0.37 U
1,2-Dichlorobenzene	0.85	6.1	0.86 UJ	4 U	0.39 U	0.95 UJ	0.39 U	0.37 U
1,3-Dichlorobenzene	2.1	7.1	0.86 UJ	4 U	0.39 U	0.95 UJ	0.39 U	0.37 U
1,4-Dichlorobenzene	1.2	5.1	0.86 UJ	4 U	0.39 U	0.95 UJ	0.39 U	0.37 U
Di-n-butyl phthalate	NE	NE	0.86 UJ	4 U	0.39 U	0.95 UJ	0.39 U	0.37 U
4-Methylphenol (p-Cresol)	NE	NE	0.86 UJ	4 U	0.39 U	0.95 UJ	0.39 U	0.37 UJ
3-Nitroaniline	NE	NE	1.7 UJ	8.1 U	0.79 U	1.9 UJ	0.8 U	0.75 U
1,2,4-Trichlorobenzene	2	7.4	0.086 UJ	0.4 U	0.039 U	0.095 UJ	0.039 U	0.037 U
Total SVOCs	NE	NE	**3.213**	**302.67**	ND	**3.44**	**21.548**	ND

Table 10. Detected Sediment Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample Name: / Sample Depth (ft bss): / Sample Date:	SSGV Class B	SSGV Class C	WW-SED-20 (0-0.5) 11/17/2010	WW-SED-20 (42-42.5) 11/17/2010	WW-SED-20 (58.5-59) 11/17/2010	WW-SED-21 (0-0.5) 11/19/2010	WW-SED-21 (37.5-38) 11/19/2010	WW-SED-21 (46.5-47) 11/19/2010
PCBs (mg/kg)								
Aroclor 1242	NE	NE	0.17 UJ	NA	NA	0.19 UJ	NA	NA
Aroclor 1248	NE	NE	0.17 UJ	NA	NA	0.19 UJ	NA	NA
Aroclor 1254	NE	NE	0.17 UJ	NA	NA	0.19 UJ	NA	NA
Aroclor 1260	NE	NE	0.17 UJ	NA	NA	0.19 UJ	NA	NA
Total PCBs	0.1	1	ND	ND	ND	ND	ND	ND
Pesticides (mg/kg)								
Aldrin	NE	NE	0.017 UJ	NA	NA	0.019 UJ	NA	NA
alpha-BHC	NE	NE	0.017 UJ	NA	NA	0.019 UJ	NA	NA
beta-BHC	NE	NE	0.017 UJ	NA	NA	0.019 UJ	NA	NA
gamma-BHC	NE	NE	0.017 UJ	NA	NA	0.019 UJ	NA	NA
delta-BHC	NE	NE	0.017 UJ	NA	NA	0.019 UJ	NA	NA
alpha-chlordane	0.063	1.4	0.017 UJ	NA	NA	0.019 UJ	NA	NA
gamma-chlordane	0.063	1.4	0.017 UJ	NA	NA	0.019 UJ	NA	NA
4,4-DDD	0.044	5.7	0.017 UJ	NA	NA	0.019 UJ	NA	NA
4,4'-DDE	0.044	5.7	0.017 UJ	NA	NA	0.019 UJ	NA	NA
4,4'-DDT	0.044	5.7	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Dieldrin	0.006	2.3	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Endosulfan I	0.0001	0.003	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Endosulfan II	0.0001	0.003	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Endosulfan sulfate	NE	NE	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Endrin	0.006	0.096	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Endrin aldehyde	NE	NE	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Endrin ketone	NE	NE	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Heptachlor	0.071	1.1	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Heptachlor epoxide	0.015	0.22	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Methoxychlor	0.059	NE	0.017 UJ	NA	NA	0.019 UJ	NA	NA
Herbicides (mg/kg)								
Total Herbicides	NE	NE	ND	NA	NA	ND	NA	NA
Metals (mg/kg)								
Aluminum	NE	NE	**13500 J**	**2280**	**974**	**15400 J**	**2970**	**2250**
Antimony	NE	NE	5.1 UJ	2.3 UJ	2.2 UJ	5.4 UJ	2.3 UJ	2.2 UJ
Arsenic	8.2	70	**11.8 J**	**2.9**	1.1 U	**14.9 J**	1.2 U	1.1 U
Barium	NE	NE	**88.6 J**	**17.8 J**	**2.3 J**	**92.5 J**	**28.7 J**	**19.8 J**
Beryllium	NE	NE	**0.72 J**	**0.4 J**	0.45 U	**0.82 J**	**0.31 J**	0.44 U
Cadmium	1.2	9.6	**1.6 J**	1.2 U	1.1 U	**0.97 J**	1.2 U	1.1 U
Calcium	NE	NE	**8210 J**	**1670**	1110 U	**8510 J**	**10700**	**1780**
Chromium	81	370	**107 J**	**11.4 J**	**4 J**	**97.3 J**	**14.1 J**	**7.2 J**
Cobalt	NE	NE	**11.2 J**	**7.6 J**	**3.3 J**	**12.6 J**	**5.8 J**	**3.7 J**
Copper	34	270	**137 J**	**13.3 J**	**16**	**140 J**	**13.2**	**7.3**
Iron	NE	NE	**32100 J**	**55500**	**517**	**34900 J**	**25100**	**10400**
Lead	47	220	**230 J**	**6.1 J**	**10.8 J**	**195 J**	**11.2 J**	**2 J**
Magnesium	NE	NE	**8120 J**	**1610**	1110 U	**9160 J**	**5710**	**1700**
Manganese	NE	NE	**601 J**	**1150 J**	**5.8 J**	**600 J**	**458 J**	**197 J**
Mercury	0.15	0.71	**1.3 J**	0.037 U	0.033 U	**1.3 J**	**0.042**	0.036 U
Nickel	21	52	**35.9 J**	**9.1 J**	**3.7 J**	**36.5 J**	**11**	**5.5 J**
Potassium	NE	NE	**3340 J**	**401 J**	**68 J**	**3960 J**	**893 J**	**421 J**
Selenium	NE	NE	5.1 UJ	2.3 U	2.2 U	5.4 UJ	2.3 U	2.2 U
Silver	1	3.7	**5.4 J**	**0.41 J**	2.2 U	**4.2 J**	2.3 U	2.2 U
Sodium	NE	NE	**12800 J**	**778 J**	**406 J**	**14100 J**	**1460**	**917 J**
Thallium	NE	NE	5.1 UJ	2.3 U	2.2 U	5.4 UJ	2.3 U	2.2 U
Vanadium	NE	NE	**38.4 J**	**31.1**	**2 J**	**41.8 J**	**16.3**	**13.5**
Zinc	150	410	**259 J**	**37.8 J**	**34.6 J**	**261 J**	**31.1 J**	**13 J**
Cyanides (mg/kg)								
Free Cyanide	NE	NE	**1.1 J**	0.24 U	0.24 U	0.57 UJ	0.24 U	0.22 U
Other (mg/kg)								
Total Organic Carbon	NE	NE	**38900**	NA	NA	**40600**	NA	NA

Notes:
mg/kg - milligrams/kilogram or parts per million (ppm)
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
SVOCs - semivolatile organic compounds

Total BTEX, Total VOCs, Total PAHs, Total SVOCs and Total PCBs are calculated using detects only.

NE - not established
NA - not analyzed

Bolding indicates a detected result value
Gray shading and bolding indicates that the detected result value qualifies as a Class B sediment
Yellow shading and bolding indicates that the detected result value qualifies as a Class C sediment

NYSDEC Screening and Assessment of Contaminated Sediment. Effective date June 24, 2014
SSGV = Saltwater Sediment Guidance Values classes B and C as identified in Table 6 of the NYSDEC Screening and Assessment of Contaminated Sediment

Validation Qualifiers:
J - estimated value
JN - analyte is presumptively present at an approximated quantity
R - rejected
U - indicates not detected to the reporting limit
UJ - not detected at or above the reporting limit shown and the reporting limit is estimated

Table 11. Final Groundwater Parameters
Former Williamsburg Works MGP Site
Brooklyn, New York

Sample Location/ Well ID	Date	Flow Rate (mL/min)	Depth to Water at Time of Sampling (ft)	Parameters								
				Temperature (ºC)	pH (std units)	Conductivity (uS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	ORP (mV)	Odor	Color	Sheen
WW-MW-01	11/4/2009	170.34	15.34	17.59	6.47	2251	-5.5	0.57	-82.5	none	clear	none
WW-MW-02	11/4/2009	223.34	11.83	20.13	6.72	3588	1.6	0.80	-96.9	slight	clear	slight
WW-MW-03	11/4/2009	185.49	8.41	18.96	6.96	4214	3.2	1.04	-172.6	slight	clear	moderate
WW-MW-04	11/4/2009	158.99	6.01	18.26	7.10	1980	0.8	0.34	-169.8	none	clear	none
WW-MW-05	11/5/2009	261.19	8.25	17.73	7.04	3016	4.2	0.62	-157.8	slight	clear	none
WW-MW-06	11/4/2009	283.91	5.08	16.45	7.48	4158	1.8	0.42	-186.0	slight	clear	slight
WW-MW-07	11/5/2009	253.62	2.53	16.37	7.01	1330	1.3	0.27	-45.1	slight	clear	none
WW-MW-08	11/5/2009	242.27	4.90	16.98	7.22	2525	6.9	0.39	-178.6	slight	clear/yellowish	none
WW-MW-10	11/5/2009	189.27	4.59	16.28	7.01	1850	15.0	0.32	-163.9	moderate	clear	none
WW-MW-11	11/5/2009	189.27	5.96	17.70	6,48	2170	2.8	0.61	-185.8	slight	clear/yellowish	slight
WW-MW-12	11/5/2009	314.19	4.81	16.12	6.46	6381	0.1	1.07	-407.9	strong	clear	none
WW-MW-13	11/6/2009	261.19	6.69	15.83	6.75	6343	-0.8	10.66	-374.1	strong	clear	none
WW-MW-14	11/6/2009	355.83	3.54	16.71	6.81	31633	-8.7	6.11	1.3	none	clear	none
WW-MW-15	11/6/2009	238.48	4.83	15.26	6.36	30985	-1.4	7.89	-264.1	none	clear	none
WW-MW-16	11/4/2009	162.77	3.44	19.59	6.81	1398	6.4	0.37	-150.5	none	clear	none
WW-MW-17	11/5/2009	189.27	4.79	17.88	7.16	2072	0.9	0.43	-118.7	none	clear	none
WW-MW-18	12/20/2012	252.36	2.49	15.30	7.30	2166	5.6	0.29	-222.9	moderate	clear	none
WW-MW-19	12/20/2012	227.13	2.90	11.70	6.11	7605	0.4	0.41	-134.8	moderate	clear	none
WW-MW-20	12/20/2012	210.3	9.45	18.40	6.93	2333	0.0	0.34	-153.8	moderate	clear	none
WW-MW-21	12/20/2012	189.26	4.81	16.36	7.25	724	0.0	0.36	-171.5	none	clear	none
WW-MW-22	12/20/2012	191.67	6.05	14.66	7.27	14384	-5.0	0.33	-202.5	moderate	clear	none

Notes:
mL/min = milliliters per minute
NTU = Nephelometric Turbidity Units
ºC = Degrees Celsius
mg/L = milligrams per liter
mV = millivolts
uS/cm = micro Siemens per centimeter

Table 12. Detected Groundwater Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	NYS AWQS	Parcel 1 - [Block 2288 Lot 1]											Adjacent to Parcel 1			Parcel 2 [Block 2287 ot 1]						
													Wythe Ave. ROW	N. 11th St. ROW	N. 12th St. ROW							
Sample Name:		WW-SB-19	WW-SB-19	Duplicate of WW-SB-19	WW-SB-19	WW-SB-21	Duplicate of WW-SB-21	WW-SB-21	WW-SB-21	WW-SB-22	WW-SB-22	WW-SB-22	WW-MW-01	WW-MW-02	WW-MW-03	WW-SB-03	WW-SB-05	WW-SB-07	WW-MW-04	Duplicate of WW-MW-04	WW-MW-05	WW-MW-17
Sample Depth (feet):		(5-15)	(25-35)	(25-35)	(40-50)	(4-14)	(4-14)	(15-25)	(40-50)	(6-16)	(35-45)	(55-65)	(13-23)	(7.4-17.4)	(4-14)	(5-10)	(3-8)	(2.5-7.5)	(10-20)	(10-20)	(4-14)	(4-14)
Sample Date:		7/28/2009	7/29/2009	7/29/2009	7/29/2009	7/8/2009	7/8/2009	7/22/2009	7/23/2009	7/8/2009	7/27/2009	7/27/2009	11/4/2009	11/4/2009	11/4/2009	7/14/2009	7/15/2009	7/15/2009	11/4/2009	11/5/2009	11/5/2009	11/5/2009
BTEX (ug/L)																						
Benzene	1	**79**	**44**	**36**	5 U	**330**	**370**	**4000**	**8300**	**43**	**1300**	**9600**	5 U	5 U	5 U	**3700**	**3000**	**19000**	**8.7**	**9.2**	**9200**	5 U
Toluene	5	**170**	**91 J**	**59 J**	**64**	**3.7 J**	**4.5 J**	**2000**	**2700**	5 U	**360**	**1100**	5 U	5 U	5 U	**110 J**	**1600**	**3300**	**5.2**	**5.4**	**13000**	5 U
Ethylbenzene	5	**35**	**45**	**40**	**11**	**46**	**50**	**850**	**1600**	**1 J**	**160**	**1400**	5 U	5 U	5 U	**3000**	**1300**	**2300**	**16**	**17**	**2700**	5 U
Total Xylene	5	**190**	**95**	**75**	**55**	**58**	**65**	**3200**	**1800**	5 U	**290**	**1500**	5 U	5 U	5 U	**1800**	**1600**	**2400**	**21**	**23**	**6200**	5 U
Total BTEX	NE	**474**	**275**	**210**	**130**	**437.7**	**489.5**	**10050**	**14400**	**44**	**2110**	**13600**	ND	ND	ND	**8610**	**7500**	**27000**	**50.9**	**54.6**	**31100**	ND
Other VOCs (ug/L)																						
Acetone	50*	10 U	10 U	10 U	10 U	40 U	40 U	500 U	1000 U	10 U	**55 J**	1000 U	10 U	10 U	10 UJ	400 U	250 U	1000 U	10 UJ	10 UJ	1000 U	10 U
2-Butanone (Methyl ethyl ketone)	50*	10 U	10 U	10 U	10 U	40 U	40 U	500 U	1000 U	10 U	100 U	1000 U	10 U	10 U	10 UJ	400 U	250 U	1000 U	10 U	10 U	1000 U	10 U
Chloroform	7	**7.9**	**7.6**	**7.1**	**3.1 J**	20 U	20 U	250 U	500 U	5 U	50 U	500 U	5 U	5 U	5 U	200 U	120 U	500 U	5 U	5 U	500 U	5 U
Cyclohexane	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichlorobenzene	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,1-Dichloroethene	0.07	5 U	**1.4 J**	**1.5 J**	5 U	20 U	20 U	250 U	500 U	5 U	50 U	500 U	5 U	5 U	5 U	200 U	120 U	500 U	5 U	5 U	500 U	5 U
cis-1,2-Dichloroethene	5	**1.1 J**	**21**	**19**	**4.9 J**	20 U	20 U	250 U	**130 J**	5 U	**97**	500 U	5 U	**14**	5 U	200 U	120 U	500 U	**4.4 J**	**4.9 J**	500 U	5 U
trans-1,2-Dichloroethene	5	5 U	**30 J**	**29 J**	5 U	20 U	20 U	250 U	**240 J**	5 U	50 U	500 U	5 U	5 U	5 U	200 U	120 U	500 U	**0.91 J**	**1.1 J**	500 U	5 U
Isopropyl benzene	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether (MTBE)	10*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylcyclohexane	NE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5	5 U	5 U	5 U	5 U	20 U	20 U	**400**	500 U	5 U	**16 J**	500 U	5 U	5 U	5 U	200 U	120 U	**240 J**	**1.9 J**	**2.1 J**	**2600**	5 U
Tetrachloroethene	5	5 U	5 U	5 U	5 U	20 U	20 U	250 U	500 U	5 U	50 U	500 U	5 U	5 U	5 U	200 U	120 U	500 U	5 U	5 U	500 U	5 U
Trichloroethene	5	5 U	**42**	**38**	5 U	**2.9 J**	20 U	250 U	500 U	5 U	50 U	500 U	5 U	5 U	5 U	200 U	120 U	500 U	**2.6 J**	**3 J**	500 U	5 U
Vinyl chloride	2	5 U	**1.4 J**	**1.3 J**	5 U	20 U	20 U	250 U	500 U	5 U	**14 J**	500 U	5 U	5 U	5 U	200 U	120 U	500 U	**1.2 J**	**1.2 J**	500 U	5 U
Total VOCs	NE	**483**	**378.4**	**305.9**	**138**	**440.6**	**489.5**	**10450**	**14770**	**44**	**2292**	**13600**	ND	**14**	ND	**8610**	**7500**	**27240**	**61.91**	**66.9**	**33700**	ND
PAHs (ug/L)																						
Acenaphthene	20*	**4.5**	**3 J**	**2 J**	4.2 U	**42**	**58**	**29 J**	**42 J**	**3.1 J**	**40 J**	**82 J**	4 U	4 U	**0.33 J**	**86 J**	**240 J**	**190 J**	**3 J**	**3 J**	400 U	**2 J**
Acenaphthylene	NE	**1.4 J**	**0.71 J**	**0.52 J**	4.2 U	40 U	**2 J**	**18 J**	**53 J**	**0.66 J**	**24 J**	200 U	4 U	4 U	4 U	400 U	**57 J**	800 U	**11**	**12**	**270 J**	4 U
Anthracene	50*	**2.5 J**	4.2 U	4 UJ	4.2 U	**3.3 J**	**4.3 J**	210 U	200 U	**0.59 J**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	**3.7 J**	**3.5 J**	400 U	4 U
Benz[a]anthracene	0.002*	**0.8 J**	4.2 U	4 UJ	4.2 U	40 U	20 U	210 U	200 U	4 U	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	4 U	4.2 U	400 UJ	4 U
Benzo[g,h,i]perylene	NE	4 U	4.2 U	4 UJ	4.2 U	40 U	20 U	210 U	200 U	**5.5**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	4 U	4.2 U	400 U	4 U
Chrysene	0.002*	**0.92 J**	4.2 U	4 UJ	4.2 U	40 U	20 U	210 U	200 U	4 U	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	4 U	4.2 U	400 UJ	4 U
Fluoranthene	50*	**1.1 J**	4.2 U	4 UJ	4.2 U	40 U	**2.2 J**	210 U	200 U	**0.39 J**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	**1.1 J**	**1.1 J**	400 U	4 U
Fluorene	50*	**5.3**	**0.65 J**	**0.53 J**	4.2 U	**8.1 J**	**11 J**	210 U	**21 J**	**1.2 J**	210 U	200 U	4 U	4 U	4 U	400 U	**86 J**	800 U	**9.8**	**10**	**37 J**	**0.59 J**
Indeno[1,2,3-cd]pyrene	0.002*	4 UJ	4.2 UJ	4 UJ	4.2 UJ	40 U	20 U	210 U	200 U	**5.3**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	4 U	4.2 U	400 U	4 U
2-Methylnaphthalene	NE	**17**	**3.6 J**	**2.5 J**	4.2 U	**35 J**	**28**	**180 J**	**280**	4 U	**220**	**220**	4 U	4 U	4 U	**380 J**	**840**	**940**	**35**	**45**	**720**	**1.1 J**
Naphthalene	10*	**6.8**	**28**	**21 J**	4.2 U	**440 J**	**180 J**	**3400**	**2200**	4 U	**2000**	**2600**	**0.53 J**	**0.87 J**	4 U	**5800**	**5200**	**8700**	**43**	**56**	**6600**	**4.1**
Phenanthrene	50*	**12**	**1.2 J**	**0.89 J**	4.2 U	**15 J**	**21**	**24 J**	**21 J**	**1.7 J**	210 U	200 U	4 U	4 U	4 U	400 U	**110 J**	800 U	**15**	**17**	400 U	**0.68 J**
Pyrene	50*	**2.4 J**	4.2 U	4 UJ	4.2 U	40 U	**2 J**	210 U	200 U	**0.38 J**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	**2.8 J**	**2.6 J**	400 UJ	4 U
Total 17 PAHs	NE	**54.72**	**37.16**	**27.44**	ND	**543.4**	**308.5**	**3651**	**2617**	**18.82**	**2284**	**2902**	**0.53**	**0.87**	**0.33**	**6266**	**6533**	**9830**	**124.4**	**150.2**	**7627**	**8.47**
Other SVOCs (ug/L)																						
Bis(2-ethylhexyl)phthalate	5	4 U	4.2 U	**0.94 J**	4.2 U	40 U	20 U	210 U	200 U	**2.8 J**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	**1.1 J**	**1.9 J**	400 UJ	4 U
Butyl benzyl phthalate	50*	4 U	4.2 U	4 UJ	4.2 U	40 U	20 U	210 U	200 U	**1.8 J**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	4 U	4.2 U	400 UJ	4 U
Carbazole	NE	**3.1 J**	**0.49 J**	**0.36 J**	4.2 U	**6 J**	**7.8 J**	210 U	200 U	**0.74 J**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	4 U	4.2 U	400 U	4 U
Dibenzofuran	NE	**2.3 J**	4.2 U	4 UJ	4.2 U	40 U	**5.8 J**	210 U	200 U	4 U	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	**1.1 J**	**1 J**	400 U	4 U
Diethyl phthalate	50*	4 U	4.2 U	4 UJ	4.2 U	40 U	20 U	210 U	200 U	**1.1 J**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	4 U	4.2 U	400 U	4 U
Di-n-butyl phthalate	50	**0.4 J**	4.2 U	4 UJ	4.2 U	40 U	20 U	210 U	200 U	**0.82 J**	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	4 U	4.2 U	400 U	4 U
2-Methylphenol (o-Cresol)	1	4 U	**0.39 J**	4 U	4.2 U	40 U	20 U	210 U	200 U	4 U	210 U	200 U	4 U	4 U	4 U	400 U	**34 J**	800 U	4 U	4.2 U	**34 J**	4 U
4-Methylphenol (p-Cresol)	1	4 U	**0.76 J**	**0.45 J**	4.2 U	40 U	20 U	210 U	200 U	4 U	210 U	200 U	4 U	4 U	4 U	400 U	**46 J**	800 U	4 U	4.2 U	**34 J**	4 U
Phenol	1	4 U	4.2 U	**0.33 J**	4.2 U	**22 J**	**9.9 J**	210 U	200 U	4 U	210 U	200 U	4 U	4 U	4 U	400 U	400 U	800 U	4 U	4.2 U	400 U	4 U
Total SVOCs	NE	**60.52**	**38.8**	**29.52**	ND	**571.4**	**332**	**3651**	**2617**	**26.08**	**2284**	**2902**	**0.53**	**0.87**	**0.33**	**6266**	**6613**	**9830**	**126.6**	**153.1**	**7695**	**8.47**
PCBs (ug/L)																						
Totoal PCBs	NE	ND	NA	NA	NA	ND	ND	NA	NA	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides (ug/L)																						
Aldrin	ND	0.052 UJ	NA	NA	NA	**0.028 J**	**0.044 J**	NA	NA	0.05 U	NA	NA	0.05 U	0.05 U	0.052 U	0.05 UJ	0.05 U	0.05 UJ	0.054 U	0.053 U	0.052 U	0.052 U
alpha-BHC	0.01	0.052 UJ	NA	NA	NA	0.05 U	0.05 U	NA	NA	0.05 U	NA	NA	0.05 U	0.05 U	0.052 U	0.05 UJ	0.05 U	0.05 UJ	0.054 U	0.053 U	0.052 U	0.052 U
beta-BHC	0.04	**0.021 J**	NA	NA	NA	0.05 U	0.05 UJ	NA	NA	0.05 U	NA	NA	0.05 U	**0.013 J**	0.052 U	**0.092 JN**	0.05 U	0.05 UJ	0.054 U	0.053 U	**0.14 J**	0.052 U
delta-BHC	0.04	0.052 UJ	NA	NA	NA	0.05 U	0.05 UJ	NA	NA	0.05 U	NA	NA	0.05 U	0.05 U	0.052 U	**0.084 J**	0.05 U	0.05 UJ	0.054 U	0.053 U	**0.057 JN**	0.052 U
alpha-chlordane	NE	0.052 UJ	NA	NA	NA	0.05 U	0.05 UJ	NA	NA	0.05 U	NA	NA	0.05 U	0.05 U	0.052 U	0.05 UJ	0.05 U	0.05 UJ	0.054 U	0.053 UJ	0.052 UJ	0.052 UJ
gamma-Chlordane	NE	0.052 UJ	NA	NA	NA	0.05 U	0.05 UJ	NA	NA	0.05 U	NA	NA	0.05 U	0.05 U	0.052 U	**0.069 JN**	0.05 U	0.05 UJ	0.054 U	0.053 U	0.052 U	0.052 U
4,4'-DDT	0.2	0.1 UJ	NA	NA	NA	0.1 U	0.1 UJ	NA	NA	0.1 U	NA	NA	0.1 U	0.1 U	0.1 U	0.1 UJ	**0.11 J**	0.1 UJ	0.11 U	0.11 U	0.1 U	0.1 U
Endosulfan I	NE	0.052 UJ	NA	NA	NA	0.05 U	0.05 UJ	NA	NA	0.05 U	NA	NA	0.05 U	0.05 U	0.052 U	0.05 UJ	0.05 U	0.05 UJ	0.054 U	0.053 U	**0.052**	0.052 U
Endosulfan II	NE	0.1 UJ	NA	NA	NA	**0.035 J**	0.1 UJ	NA	NA	0.1 U	NA	NA	0.1 U	0.1 U	0.1 U	0.1 UJ	0.1 U	0.1 UJ	0.11 U	0.11 U	0.1 U	0.1 U
Heptachlor	0.04	0.052 UJ	NA	NA	NA	0.05 U	0.05 UJ	NA	NA	0.05 U	NA	NA	0.05 U	0.05 U	0.052 U	0.05 UJ	**0.033 J**	0.05 UJ	0.054 U	0.053 U	0.052 U	0.052 U
Heptachlor epoxide	0.03	0.052 UJ	NA	NA	NA	0.05 U	0.05 UJ	NA	NA	0.05 U	NA	NA	0.05 U	0.05 U	0.052 U	**0.04 J**	0.05 U	0.05 UJ	0.054 U	0.053 U	0.052 U	0.052 U
Herbicides (ug/L)																						
Total Herbicides	NE	ND	NA	NA	NA	ND	ND	NA	NA	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 12. Detected Groundwater Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	NYS AWQS	Parcel 1 - [Block 2288 Lot 1]											Adjacent to Parcel 1			Parcel 2 [Block 2287 ot 1]						
													Wythe Ave. ROW	N. 11th St. ROW	N. 12th St. ROW							
Sample Name:		WW-SB-19	WW-SB-19	Duplicate of WW-SB-19	WW-SB-19	WW-SB-21	Duplicate of WW-SB-21	WW-SB-21	WW-SB-21	WW-SB-22	WW-SB-22	WW-SB-22	WW-MW-01	WW-MW-02	WW-MW-03	WW-SB-03	WW-SB-05	WW-SB-07	WW-MW-04	Duplicate of WW-MW-04	WW-MW-05	WW-MW-17
Sample Depth (feet):		(5-15)	(25-35)	(25-35)	(40-50)	(4-14)	(4-14)	(15-25)	(40-50)	(6-16)	(35-45)	(55-65)	(13-23)	(7.4-17.4)	(4-14)	(5-10)	(3-8)	(2.5-7.5)	(10-20)	(10-20)	(4-14)	(4-14)
Sample Date:		7/28/2009	7/29/2009	7/29/2009	7/29/2009	7/8/2009	7/8/2009	7/22/2009	7/23/2009	7/8/2009	7/27/2009	7/27/2009	11/4/2009	11/4/2009	11/4/2009	7/14/2009	7/15/2009	7/15/2009	11/4/2009	11/5/2009	11/5/2009	11/5/2009
Total Metals (ug/L)																						
Aluminum	NE	**14100 J**	**289 J**	**289 J**	**11700 J**	250 U	250 U	**3260**	**869**	**411 J**	**1010 J**	**4900 J**	500 U	500 U	500 U	**307 J**	**308 J**	**4430 J**	500 U	500 U	**105 J**	500 U
Arsenic	25	**6.6**	15 U	15 U	**11.9**	**14.8 J**	**10.4 J**	**4.9 J**	15 U	**8.4 J**	15 U	15 U	15 U	15 U	15 U	**17.6 J**	**35.2**	**16.4**	15 U	15 U	15 U	15 U
Barium	1000	**256**	**157**	**166**	**354**	**789**	**810**	**726**	**98.5**	**200**	**528**	**293**	**172**	**315**	**436**	**3440**	**131**	**405**	**91.5**	**93.3**	**250**	**50.4**
Beryllium	3*	**1.1 J**	5 U	5 U	**1.2 J**	5 U	5 U	**0.29 J**	5 U	5 U	5 U	**0.64 J**	5 U	5 U	5 U	5 UJ	5 U	5 U	5 U	5 U	5 U	5 U
Calcium	NE	**45700**	**109000**	**112000**	**99600**	**32300**	**33700**	**41000**	**66900**	**137000**	**296000**	**85400**	**132000**	**191000**	**181000**	**182000**	**98500**	**58200**	**59500**	**58500**	**56200**	**108000**
Chromium	50	**33**	5 U	5 U	**31.7**	5 UJ	5 UJ	**7.6 J**	**1.1 J**	5 U	**4 J**	**20**	**0.55 J**	**1.2 J**	**0.73 J**	5 UJ	5 U	**12.1**	5 U	5 U	**0.73 J**	5 U
Cobalt	NE	**13**	**0.86 J**	**0.93 J**	**36.3**	**11.7 J**	**11.5 J**	**13.9 J**	**1.6 J**	**1.6 J**	**1 J**	**5.3**	**1.5 J**	**2.2 J**	5 U	**4.2 J**	**0.72 J**	**5.4**	5 U	5 U	**4.6 J**	**0.99 J**
Copper	200	**55.6 J**	**2.6 J**	**2.5 J**	**43.3 J**	10 U	10 U	10 UJ	10 U	R	**4.7 J**	**33.1 J**	**1.7 J**	10 U	10 U	10 UJ	10 UJ	**44.6 J**	10 U	**1.9 J**	**6.8**	**7.7 J**
Iron	300	**34900**	**15800**	**16500**	**40400**	**2320**	**2390**	**8890**	**2420**	**3390**	**22400**	**21000**	**25500**	**9480**	**29100**	**21100**	**1630**	**8010**	**2330**	**2350**	**2840**	**629**
Lead	25	**24.4**	15 U	15 U	**23.1**	15 UJ	15 UJ	15 UJ	15 U	15 U	15 U	**9.9**	15 U	15 U	15 U	**189**	**133**	**479**	15 U	15 U	15 U	15 U
Magnesium	35000*	**13200**	**39700**	**41100**	**38800**	**256000**	**267000**	**261000**	**29100**	**34100**	**62500**	**39300**	**36600**	**37300**	**31700**	**208000**	**11100**	**11400**	**5730**	**5800**	**10800**	**12200**
Manganese	300	**581**	**2800**	**2900**	**1080**	**135**	**139**	**332**	**452**	**1820**	**6270**	**466**	**2080**	**3480**	**1130**	**331**	**211**	**1210**	**241**	**243**	**566**	**81.5**
Mercury	0.7	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.2 U	0.2 U	0.4 U	0.4 U	0.4 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.52**	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	**22.5**	5 U	5 U	**32.4**	5 U	5 U	**4.7 J**	5 U	**1.6 J**	**3.8 J**	**8.7**	**3 J**	**2.1 J**	**2.6 J**	**12 J**	**28.8**	**53.3**	**7.4 J**	**8.2 J**	**32.8 J**	**14.4 J**
Potassium	NE	**18900 J**	**16700 J**	**17600 J**	**7600 J**	**123000 J**	**126000 J**	**115000**	**15500**	**16700 J**	**32000 J**	**14800 J**	**37600 J**	**15800 J**	**40000 J**	**182000 J**	**21900 J**	**107000 J**	**24500 J**	**24500 J**	**45300 J**	**23400 J**
Selenium	10	38 UJ	38 UJ	38 UJ	38 UJ	38 UJ	38 UJ	38 UJ	38 U	38 UJ	38 UJ	38 UJ	38 U	38 UJ	38 U	38 UJ	38 UJ	38 UJ	38 U	38 U	38 U	38 U
Sodium	20000	**43400 J**	**118000 J**	**122000 J**	**41400 J**	**208000 J**	**217000 J**	**205000**	**56500**	**93500 J**	**842000 J**	**106000 J**	**294000**	**496000**	**735000**	**3290000 J**	**562000 J**	**1600000 J**	**363000**	**356000**	**779000**	**316000**
Vanadium	NE	**52.7**	5 U	5 U	**52.9**	**3.4 J**	**3.7 J**	**14.8 J**	**4.2 J**	**3.8 J**	**3.1 J**	**15.8**	**3.8 J**	**3.6 J**	**3.4 J**	**7.1 J**	**12.3**	**52.3**	**1.8 J**	**1.7 J**	**4.7 J**	**2.6 J**
Zinc	2000*	**66**	25 U	25 U	**75.9**	25 U	25 U	25 U	25 U	25 U	**7.3 J**	**26.7**	25 UJ	25 UJ	**6 J**	**92.2**	**52.4**	**403**	25 UJ	25 UJ	**7.5 J**	25 UJ
Cyanides (ug/L)																						
Total Cyanide	200	**29.2**	**9.7 J**	**10**	**297**	**3540**	**3900**	**3140**	**58.6**	**60.9**	**40**	**95.4**	10 U	**3.8 J**	**8 J**	**517**	**166**	**319**	**21.9**	**24.9**	**94.7**	**281**
Other (ug/L)																						
Ammonia	2000	**440**	**1300**	**1200**	**870**	**610**	**600**	**960**	**3800**	**960**	**7600**	**9200**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 12. Detected Groundwater Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	NYS AWQS	Adjacent to Parcel 2			Parcel 6 [Block 2277 Lot 1]		Adjacent to Parcel 6	Parcels 3, 4, and 5 [Block 2287 Lots 16 and 30, Block 2294 Lot 1]				Adjacent to Parcels 3, 4, and 5					
		N. 11th St. ROW		N. 12th St. ROW			Kent Ave. ROW					N. 11th St. ROW		N. 12th St. ROW			Kent Ave. ROW
Sample Name:		WW-MW-06	WW-MW-08	WW-MW-07	WW-MW-18	WW-MW-19	WW-MW-16	WW-MW-14	WW-MW-21	Duplicate of WW-MW-21	WW-MW-22	WW-MW-11	WW-MW-12	WW-MW-10	WW-MW-13	WW-MW-15	WW-MW-20
Sample Depth (feet):		(0.3-10.3)	(0.3-10.3)	(1-11)	(4-14)	(4-14)	(4-14)	(4-14)	(8-18)	(8-18)	(4-14)	(4-14)	(5-15)	(4-14)	(4-14)	(4-14)	(6-16)
Sample Date:		11/4/2009	11/5/2009	11/5/2009	12/20/2012	12/20/2012	11/4/2009	11/6/2009	12/20/2012	12/20/2012	12/20/2012	11/5/2009	11/5/2009	11/5/2009	11/6/2009	11/6/2009	12/20/2012
BTEX (ug/L)																	
Benzene	1	270	570	23	1 U	1 U	5 U	5 U	0.39 J	0.38 J	0.43 J	320	180	29	540	1.7 J	1.5
Toluene	5	13 J	64 J	9	0.15 J	1 U	5 U	5 U	1 U	1 U	1 U	38 J	0.99 J	3.1 J	7 J	5 U	1 U
Ethylbenzene	5	940	2800	8.4	1 U	1 U	5 U	5 U	1 U	1 U	0.26 J	1600	3.1 J	330	190	5 U	1 U
Total Xylene	5	690	3100	60	3 U	3 U	5 U	5 U	3 U	3 U	3 U	280	3.7 J	200	100	5 U	3 U
Total BTEX	NE	1913	6534	100.4	0.15	ND	ND	ND	0.39	0.38	0.69	2238	187.79	562.1	837	1.7	1.5
Other VOCs (ug/L)																	
Acetone	50*	100 U	200 U	10 U	5 U	5 U	10 U	10 U	5 UJ	5 UJ	5 U	100 U	10 U	16 J	50 U	10 U	5 U
2-Butanone (Methyl ethyl ketone)	50*	100 U	200 U	10 U	1.5 J	5 U	10 U	10 U	1.4 J	1.1 J	5 U	100 U	10 U	20 U	50 U	10 U	5 U
Chloroform	7	50 U	100 U	5 U	1 U	1 U	5 U	5 U	1 U	1 U	1 U	50 U	5 U	10 U	25 U	5 U	1 U
Cyclohexane	NE	NA	NA	NA	1.6	0.85 J	NA	NA	1 U	1 U	1 U	NA	NA	NA	NA	NA	1.3
1,2-Dichlorobenzene	3	NA	NA	NA	1 U	1 U	NA	NA	0.24 J	0.3 J	1 U	NA	NA	NA	NA	NA	1 U
1,1-Dichloroethene	0.07	50 U	100 U	5 U	1 U	1 U	5 U	5 U	1 U	1 U	1 U	50 U	5 U	10 U	25 U	5 U	1 U
cis-1,2-Dichloroethene	5	50 U	100 U	5 U	1 U	1 U	5 U	5 U	0.82 J	0.81 J	1 U	50 U	5 U	10 U	25 U	5 U	1 U
trans-1,2-Dichloroethene	5	50 U	100 U	5 U	1 U	1 U	5 U	5 U	1 U	1 U	1 U	50 U	5 U	10 U	25 U	5 U	1 U
Isopropyl benzene	5	NA	NA	NA	0.18 J	0.2 J	NA	NA	1 U	1 U	1 U	NA	NA	NA	NA	NA	1 U
Methyl tert-butyl ether (MTBE)	10*	NA	NA	NA	5.4	0.33 J	NA	NA	0.22 J	0.21 J	1 U	NA	NA	NA	NA	NA	0.35 J
Methylcyclohexane	NE	NA	NA	NA	1.5	0.44 J	NA	NA	1 U	1 U	0.73 J	NA	NA	NA	NA	NA	0.3 J
Styrene	5	50 U	100 U	22	1 U	1 U	5 U	5 U	1 U	1 U	1 U	50 U	5 U	10 U	25 U	5 U	1 U
Tetrachloroethene	5	50 U	100 U	5 U	1 U	1 U	5 U	5 U	0.67 J	0.89 J	1 U	50 U	5 U	10 U	25 U	5 U	1 U
Trichloroethene	5	50 U	100 U	5 U	1 U	1 U	5 U	5 U	0.95 J	0.86 J	1 U	50 U	5 U	10 U	25 U	5 U	1 U
Vinyl chloride	2	50 U	100 U	5 U	1 U	1 U	5 U	5 U	0.25 J	1 U	1 U	50 U	5 U	10 U	25 U	5 U	0.62 J
Total VOCs	NE	1913	6534	122.4	10.33	1.82	ND	ND	4.94	4.55	1.42	2238	187.79	578.1	837	1.7	4.07
PAHs (ug/L)																	
Acenaphthene	20*	60 J	140 J	1.4 J	1.2 J	0.88 J	4 U	4.2 U	2.5 U	0.23 J	2.2 J	140 J	1 J	28 J	100	7.8	2.2 U
Acenaphthylene	NE	200 U	800 U	8.3	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	2.4 U	830 U	4.2 U	40 U	42 U	4.3 U	2.2 U
Anthracene	50*	200 U	800 U	1 J	2.2 U	0.23 J	4 U	4.2 U	2.5 U	2.2 U	0.93 J	830 U	4.2 U	40 U	5.4 J	0.52 J	2.2 U
Benz[a]anthracene	0.002*	200 UJ	800 U	8 UJ	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	2.4 U	830 U	4.2 U	40 U	42 U	4.3 U	2.2 U
Benzo[g,h,i]perylene	NE	200 U	800 U	8 U	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	2.4 U	830 U	4.2 U	40 UJ	42 U	4.3 U	2.2 U
Chrysene	0.002*	200 UJ	800 U	8 UJ	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	2.4 U	830 U	4.2 U	40 U	42 U	4.3 U	2.2 U
Fluoranthene	50*	200 U	800 U	0.71 J	2.2 U	0.35 J	4 U	4.2 U	2.5 U	2.2 U	0.62 J	830 U	4.2 U	40 U	3.5 J	1.2 J	2.2 U
Fluorene	50*	20 J	800 U	2.9 J	2.2 U	0.64 J	4 U	4.2 U	2.5 U	2.2 U	1.1 J	830 U	4.2 U	13 J	21 J	2.3 J	2.2 U
Indeno[1,2,3-cd]pyrene	0.002*	200 U	800 U	8 U	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	2.4 U	830 U	4.2 U	40 UJ	42 U	4.3 U	2.2 U
2-Methylnaphthalene	NE	120 J	540 J	24	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	1.1 J	620 J	4.2 U	110	17 J	4.3 U	2.2 U
Naphthalene	10*	2500	4000	120	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	0.74 J	6300	0.59 J	580	370	1.4 J	2.2 U
Phenanthrene	50*	24 J	800 U	3.8 J	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	2.7	830 U	4.2 U	15 J	35 J	3.5 J	2.2 U
Pyrene	50*	200 UJ	800 U	1.6 J	2.2 U	0.3 J	4 U	4.2 U	2.5 U	2.2 U	0.6 J	830 U	4.2 U	3.6 J	4.3 J	0.56 J	2.2 U
Total 17 PAHs	NE	2724	4680	163.71	1.2	2.4	ND	ND	ND	0.23	9.99	7060	1.59	749.6	556.2	17.28	ND
Other SVOCs (ug/L)																	
Bis(2-ethylhexyl)phthalate	5	200 UJ	800 U	8 UJ	22 U	22 U	0.64 J	4.2 U	25 U	22 U	24 U	830 U	4.2 U	40 U	42 U	4.3 U	22 U
Butyl benzyl phthalate	50*	200 UJ	800 U	8 UJ	11 U	11 U	4 U	4.2 U	12 U	11 U	12 U	830 U	4.2 U	40 U	42 U	4.3 U	11 U
Carbazole	NE	200 U	800 U	8 U	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	2.4 U	830 U	4.2 U	40 U	5.8 J	4.3 U	2.2 U
Dibenzofuran	NE	200 U	800 U	8 U	11 U	11 U	4 U	4.2 U	12 U	11 U	12 U	830 U	4.2 U	40 U	5.2 J	2 J	11 U
Diethyl phthalate	50*	200 U	800 U	8 U	11 U	11 U	4 U	4.2 U	12 U	11 U	12 U	830 U	4.2 U	40 U	42 U	4.3 U	11 U
Di-n-butyl phthalate	50	200 U	800 U	8 U	11 U	11 U	4 U	4.2 U	12 U	11 U	12 U	830 U	4.2 U	40 U	42 U	4.3 U	11 U
2-Methylphenol (o-Cresol)	1	200 U	800 U	8 U	11 U	11 U	4 U	4.2 U	12 U	11 U	12 U	830 U	4.2 U	40 U	42 U	4.3 U	11 U
4-Methylphenol (p-Cresol)	1	200 U	800 U	8 U	NA	NA	4 U	4.2 U	NA	NA	NA	830 U	4.2 U	40 U	42 U	4.3 U	NA
Phenol	1	200 U	800 U	8 U	2.2 U	2.2 U	4 U	4.2 U	2.5 U	2.2 U	2.4 U	830 U	4.2 U	40 U	3.2 J	4.3 U	2.2 U
Total SVOCs	NE	2724	4680	163.71	1.2	2.4	0.64	ND	ND	0.23	9.99	7060	1.59	749.6	570.4	19.28	ND
PCBs (ug/L)																	
Totoal PCBs	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides (ug/L)																	
Aldrin	ND	0.052 U	0.052 U	0.052 U	0.054 UJ	0.058 UJ	0.05 U	0.052 U	0.058 UJ	0.053 UJ	0.058 UJ	0.052 UJ	0.052 UJ	0.054 U	0.053 U	0.053 U	0.054 UJ
alpha-BHC	0.01	0.052 U	0.052 U	0.052 U	0.054 UJ	0.058 UJ	0.05 U	0.052 U	0.058 UJ	0.053 UJ	0.058 UJ	0.052 UJ	0.052 UJ	0.054 U	0.053 U	0.02 J	0.054 UJ
beta-BHC	0.04	0.052 U	0.052 U	0.052 U	0.054 U	0.058 U	0.05 U	0.052 U	0.058 U	0.053 U	0.058 U	0.052 UJ	0.052 UJ	0.054 U	0.053 U	0.053 U	0.063
delta-BHC	0.04	0.011 J	0.019 J	0.052 U	0.054 U	0.058 U	0.05 U	0.052 U	0.058 U	0.053 U	0.058 UJ	0.041 J	0.052 UJ	0.054 U	0.053 U	0.053 U	0.054 U
alpha-chlordane	NE	0.052 U	0.052 UJ	0.052 UJ	0.054 U	0.058 U	0.05 U	0.052 UJ	0.058 U	0.053 U	0.058 U	0.052 UJ	0.052 UJ	0.054 UJ	0.053 U	0.029 J	0.054 U
gamma-Chlordane	NE	0.052 U	0.052 U	0.052 U	NA	NA	0.05 U	0.052 U	NA	NA	NA	0.052 UJ	0.052 UJ	0.054 U	0.053 U	0.053 U	NA
4,4'-DDT	0.2	0.1 UJ	0.028 J	0.1 U	0.054 U	0.058 U	0.1 U	0.1 U	0.058 U	0.053 U	0.058 UJ	0.1 UJ	0.1 UJ	0.11 U	0.11 U	0.11 U	0.054 U
Endosulfan I	NE	0.052 U	0.052 U	0.012 J	0.054 U	0.058 U	0.05 U	0.052 U	0.058 U	0.053 U	0.058 U	0.052 UJ	0.052 UJ	0.054 U	0.053 U	0.053 U	0.054 U
Endosulfan II	NE	0.1 U	0.1 U	0.1 U	0.054 U	0.058 U	0.1 U	0.1 U	0.058 U	0.053 U	0.058 U	0.1 UJ	0.1 UJ	0.11 U	0.11 U	0.11 U	0.054 U
Heptachlor	0.04	0.052 U	0.052 U	0.052 U	0.054 UJ	0.058 UJ	0.05 U	0.052 U	0.058 UJ	0.053 UJ	0.058 UJ	0.052 UJ	0.052 UJ	0.054 U	0.053 U	0.053 U	0.054 UJ
Heptachlor epoxide	0.03	0.052 U	0.052 U	0.052 U	0.054 U	0.058 U	0.05 U	0.052 U	0.058 U	0.053 U	0.058 U	0.052 UJ	0.052 UJ	0.054 U	0.053 U	0.053 U	0.054 U
Herbicides (ug/L)																	
Total Herbicides	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 12. Detected Groundwater Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Location:	NYS AWQS	Adjacent to Parcel 2			Parcel 6 [Block 2277 Lot 1]		Adjacent to Parcel 6	Parcels 3, 4, and 5 [Block 2287 Lots 16 and 30, Block 2294 Lot 1]				Adjacent to Parcels 3, 4, and 5					
		N. 11th St. ROW		N. 12th St. ROW			Kent Ave. ROW					N. 11th St. ROW		N. 12th St. ROW			Kent Ave. ROW
Sample Name:		WW-MW-06	WW-MW-08	WW-MW-07	WW-MW-18	WW-MW-19	WW-MW-16	WW-MW-14	WW-MW-21	Duplicate of WW-MW-21	WW-MW-22	WW-MW-11	WW-MW-12	WW-MW-10	WW-MW-13	WW-MW-15	WW-MW-20
Sample Depth (feet):		(0.3-10.3)	(0.3-10.3)	(1-11)	(4-14)	(4-14)	(4-14)	(4-14)	(8-18)	(8-18)	(4-14)	(4-14)	(5-15)	(4-14)	(4-14)	(4-14)	(6-16)
Sample Date:		11/4/2009	11/5/2009	11/5/2009	12/20/2012	12/20/2012	11/4/2009	11/6/2009	12/20/2012	12/20/2012	12/20/2012	11/5/2009	11/5/2009	11/5/2009	11/6/2009	11/6/2009	12/20/2012
Total Metals (ug/L)																	
Aluminum	NE	500 U	**128 J**	500 U	**56**	30 U	500 U	2500 U	30 U	30 U	150 U	500 U	500 U	**297**	500 U	2500 U	30 U
Arsenic	25	**7.6 J**	15 U	15 U	**1.5**	**5**	15 U	**32 J**	**5.4**	**4.9**	**8.1**	15 U	**9.1 J**	15 U	**6.4 J**	**42.8 J**	**1.5**
Barium	1000	**201**	**128**	**195**	**98**	**690**	**103**	**58.9**	**100**	**100**	**200**	**195**	**224**	**119**	**137**	**100**	**220**
Beryllium	3*	5 U	5 U	5 U	1 U	1 U	5 U	25 U	1 U	1 U	5 U	5 U	5 U	5 U	5 U	25 U	1 U
Calcium	NE	**71100**	**49700**	**71200**	**130000**	**330000**	**53700**	**266000**	**68000**	**68000**	**270000**	**127000**	**234000**	**56900**	**170000**	**247000**	**86000**
Chromium	50	5 U	**0.92 J**	**0.62 J**	2 U	2 U	**0.96 J**	**74.2**	2 U	2 U	10 U	**0.63 J**	5 U	**0.79 J**	5 U	25 U	2 U
Cobalt	NE	5 U	**1.3 J**	**2.5 J**	**0.26 J**	**0.48 J**	5 U	**6.4 J**	**1**	**1.1**	**0.22 J**	5 U	5 U	5 U	5 U	25 U	**0.26 J**
Copper	200	**1.9 J**	**4.1 J**	**72.4**	**0.45 J**	**1.4 J**	10 U	**44.1**	**0.85 J**	**0.67 J**	10 U	10 U	**3.1 J**	**2 J**	**7.1 J**	50 U	**0.38 J**
Iron	300	**11400**	**4690**	**161**	**5900 J**	**41000 J**	**13400**	**334 J**	**3900 J**	**3900 J**	**2200 J**	**1740**	**1940**	**5000**	**2390**	**310 J**	**7800 J**
Lead	25	15 U	15 U	**25.9**	**1.1**	1 UJ	15 U	75 U	1 U	1 U	5 U	15 U	15 UJ	15 U	15 U	75 U	1 U
Magnesium	35000*	**5080**	**3450**	**13400**	**39000**	**100000**	**10800**	**697000**	**10000**	**10000**	**430000**	**19500**	**79400**	**7080**	**130000**	**688000**	**18000**
Manganese	300	**790**	**216**	**542**	**280**	**1200**	**899**	**48.7**	**1200**	**1200**	**230**	**559**	**613**	**489**	**270**	**55.3**	**960**
Mercury	0.7	0.2 U	0.2 U	**0.4 J**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	**16.8 J**	**15.8 J**	**15.1 J**	1 U	1 U	5 UJ	**159 J**	**1.1**	**1.1**	**1.2 J**	**26.2 J**	**11.8 J**	**1.7 J**	5 UJ	25 UJ	**0.17 J**
Potassium	NE	**19700 J**	**42900 J**	**15500 J**	**28000**	**21000**	**15100 J**	**379000 J**	**21000**	**22000**	**110000**	**24900 J**	**55500 J**	**13100 J**	**71100 J**	**377000 J**	**13000**
Selenium	10	38 U	38 U	38 U	5 U	**12**	38 U	190 U	5 U	5 U	**34**	38 U	38 UJ	38 U	38 U	190 U	5 U
Sodium	20000	**873000**	**525000**	**187000**	**170000**	**870000**	**210000**	**5990000**	**110000**	**110000**	**3100000**	**362000**	**1080000**	**343000**	**982000**	**5980000**	**210000**
Vanadium	NE	**3.4 J**	**8.1**	**3.8 J**	1 U	**0.18 J**	**1.7 J**	**26.1**	1 U	1 U	**0.8 J**	**7.7**	**26.7 J**	**2.6 J**	**6.9**	**30.7**	1 U
Zinc	2000*	25 UJ	25 UJ	**108 J**	5 U	5 U	25 UJ	**459 J**	**8.7**	5 U	**43**	25 UJ	**49.9 J**	25 UJ	**10.2 J**	125 UJ	5 U
Cyanides (ug/L)																	
Total Cyanide	200	**102**	**323**	**19.7**	10 U	10 U	10 U	10 U	10 U	10 U	**21**	**211**	**39.4**	**23.5**	10 U	10 U	10 U
Other (ug/L)																	
Ammonia	2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 12. Detected Groundwater Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Notes:
Analytes in blue are not detected in any sample
ug/L - micrograms per liter or parts per billion (ppb)
BTEX - benzene, toluene, ethylbenzene, and xylenes
VOCs - volatile organic compounds
PAHs - polycyclic aromatic hydrocarbons
PCBs - polychlorinated biphenyls
SVOCs - semivolatile organic compounds

Total BTEX, Total VOCs, Total PAHs, Total SVOCs and Total PCBs are calculated using detects only.
Total PAH16 is calculated using the EPA16 list of analytes: Acenaphthene, Acenaphthylene, Anthracene, Benz[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Dibenz[a,h]anthracene, Fluoranthene, Fluorene, Indeno[1,2,3-cd]pyrene, Naphthalene, Phenanthrene, and Pyrene
Total PAH17 is calculated using the EPA16 list of analytes plus 2-Methylnaphthalene

NYS AWQS - New York State Ambient Water Quality Standards and Guidance Values for GA groundwater
* indicates the value is a guidance value and not a standard

NE - not established
NA - not analyzed
ND - not detected; total concentration is listed as ND because no compounds were detected in the group

Bolding indicates a detected concentration
Gray shading indicates that the detected result value exceeds NYS AWQS

Validation Qualifiers:
J - estimated value
JN - analyte is presumptively present at an approximated quantity
R - rejected
U - indicates not detected to the reporting limit
UJ - not detected at or above the reporting limit shown and the reporting limit is estimated

Table 13. Detected Indoor/Outdoor Air and Sub-Slab Vapor Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Constituents	Sub-Slab Soil Vapor			Indoor Air				Outdoor Air	
	WW-SV-01	WW-SV-02	Duplicate of WW-SV-02	EPA BASE Indoor Air Concentrations 90th Percentile	WW-IA-01	WW-IA-02	Duplicate of WW-IA-01	EPA BASE Outdoor Air Concentrations 90th Percentile	WW-OA-01
BTEX (ug/m3)									
Benzene	**0.29**	**0.29**	**0.3**	9.4	**3.7**	**1.9**	**3**	6.6	**1.2**
Toluene	**15**	**15**	**17**	43	**450**	**410**	**370**	33.7	**5**
Ethylbenzene	**1.2**	**0.65**	**0.67**	5.7	**2.5 J**	**1.6**	**1.1 J**	3.5	**0.88**
Xylene, m,p-	**4.2**	**2.4**	**2.7**	22.2	**7.3 J**	**4.9**	**2.4 J**	12.8	**2.9**
Xylene, o-	**1.4**	**0.93**	**1**	7.9	**2.2 J**	**1.5**	**0.68 J**	4.6	**0.85**
Other VOCs (ug/m3)									
Acetaldehyde	7.2 UJ	7.2 UJ	**16 J**	NE	**12 J**	7.2 UJ	**8.8 J**	NE	7.2 UJ
Acetone	**7.6**	**3.8 J**	**22 J**	98.9	**27**	**18**	**21**	43.7	**15**
Acrolein (propenal)	**0.43 J**	**0.36 J**	**1.6 J**	NE	**2.2**	**1.2**	**1.7**	NE	**1.1**
Bromomethane	0.31 U	0.31 U	0.31 U	<1.7	0.31 U	**0.061 J**	**0.06 J**	<1.6	0.31 U
Butane	**1**	**0.42**	**0.37**	NE	**30**	**10**	**25**	NE	**4.7**
Butanone, 2-	**1.1 J**	**0.79 J**	**3.2 J**	12	**3.8**	**2.2**	**2.8**	11.3	**1.9**
Carbon disulfide	**0.13 J**	**0.23 J**	**0.11 J**	4.2	**0.17 J**	**0.046 J**	**0.062 J**	3.7	**0.04 J**
Carbon tetrachloride	**0.89**	0.5 U	0.5 U	<1.3	**0.67**	**0.54**	**0.51**	0.7	**0.55**
Chloroethane	0.21 U	0.21 U	0.21 U	1.1	0.21 U	0.21 U	**0.04 J**	1.2	0.21 U
Chloroform	**2**	**0.64**	**0.83**	1.1	**1**	**0.77**	**0.85**	0.6	**0.2 J**
Chloromethane	**0.19 J**	**0.17 J**	**0.26 J**	3.7	**1.5**	**1.3**	**1.3**	3.7	**1.1**
Cyclohexane	**0.27 J**	**0.15 J**	**0.21 J**	NE	**1.1**	**0.62 J**	**0.88**	NE	**0.32 J**
Decane, n-	**2.9**	**2.9**	**3.5**	17.5	**2.1 J**	**6.3**	**0.23 J**	7.6	**1.3 J**
Dichlorobenzene, 1,2-	**0.23 J**	**0.88 J**	**0.22 J**	1.2	0.48 U	0.48 U	0.48 U	1.2	0.48 U
Dichlorobenzene, 1,3-	**0.43 J**	**0.37 J**	**1.5 J**	<2.4	0.48 U	0.48 U	0.48 U	<2.2	0.48 U
Dichlorobenzene, 1,4-	0.48 U	**0.23 J**	0.48 U	5.5	**0.16 J**	**0.2 J**	0.48 U	1.2	0.48 U
Dichlorodifluoromethane	**1.9**	**0.95 J**	**1.7 J**	16.5	**3.9**	**3.4**	**3.3**	8.1	**3.4**
Dichloroethane, 1,1-	0.32 U	**0.082 J**	**0.1 J**	0.7	0.32 U	0.32 U	0.32 U	0.6	0.32 U
Dichloroethane, 1,2-	0.32 U	0.32 U	0.32 U	<0.9	**0.11 J**	0.32 U	0.32 U	<0.8	0.32 U
Dodecane, n-	**0.31 J**	**2.8**	**2.8**	15.9	2.8 U	**0.37 J**	2.8 U	10.4	2.8 U
Ethanol	**5.3 J**	**2.3 J**	**3.3 J**	210	**41 J**	**27 J**	**34 J**	57	**12 J**
Ethyl toluene, 4- (Ethyltoluene, p-)	**2**	0.79 U	0.79 U	3.6	**0.75 J**	**0.75 J**	0.79 U	3	**0.42 J**
Freon-113 (Trichloro-1,2,2-trifluoroethane, 1,1,2-)	**0.51 J**	**0.97**	**1.2**	NE	**0.64**	**0.55 J**	**0.54 J**	NE	**0.52 J**
Freon-114 (Cryofluorane)	0.56 U	0.56 U	0.56 U	NE	**0.31 J**	**0.27 J**	**0.29 J**	NE	**0.36 J**
Heptane, n-	**0.24 J**	**0.18 J**	**0.23 J**	NE	**7.8 J**	**2.2**	**4.8 J**	NE	**1.2**
Hexane, n-	**1.2**	**0.94**	**0.95**	10.2	**3.2**	**2.4**	**3.1**	6.4	**2**
Hexanone,2-	**0.18 J**	0.82 U	**0.61 J**	NE	**0.41 J**	**0.15 J**	**0.23 J**	NE	**0.11 J**
Indan	**0.41 J**	0.39 UJ	0.39 UJ	NE	0.39 UJ	0.39 UJ	0.39 UJ	NE	0.39 UJ
Isopropyl Alcohol (Propanol, 2-)	**0.69 J**	**0.27 J**	**0.43 J**	250	**42**	**24**	**33**	16.5	**2.5**
Methyl-2-pentanone,4-	**0.17 J**	0.82 U	**0.21 J**	6	**0.58 J**	**0.43 J**	**0.42 J**	1.9	**0.31 J**
Methylene chloride	**2.8**	0.77 U	0.72 U	10	1.1 UJ	**1.6**	**2.2 J**	6.1	**1.9**
Naphthalene	1 U	1 U	**0.21 J**	5.1	1 U	1 U	1 U	4.9	1 U
Nonane	**0.46 J**	**0.36 J**	**0.41 J**	7.8	**1.3 J**	**1.8**	**0.18 J**	2.8	**0.66 J**

Table 13. Detected Indoor/Outdoor Air and Sub-Slab Vapor Analytical Results
Former Williamsburg Works MGP Site
Brooklyn, New York

Constituents	Sub-Slab Soil Vapor			Indoor Air				Outdoor Air	
	WW-SV-01	WW-SV-02	Duplicate of WW-SV-02	EPA BASE Indoor Air Concentrations 90th Percentile	WW-IA-01	WW-IA-02	Duplicate of WW-IA-01	EPA BASE Outdoor Air Concentrations 90th Percentile	WW-OA-01
Octane, n-	**0.28 J**	**0.19 J**	**0.24 J**	4.5	**0.85**	**0.6 J**	**0.33 J**	1.6	**0.34 J**
Pentane	**0.31 J**	**0.17 J**	**0.14 J**	NE	**4.9**	**3.2**	**4.2**	NE	**1.9**
Styrene	**0.15 J**	**0.1 J**	**0.13 J**	1.9	**0.37**	**0.21 J**	**0.1 J**	1.3	**0.1 J**
Tertiary butyl Alcohol (t-Butyl alcohol)	**0.13 J**	**0.048 J**	**0.13 J**	NE	**0.17 J**	**0.063 J**	**0.069 J**	NE	**0.061 J**
Tetrachloroethene	**78**	**5.5**	**6.4**	15.9	**110 J**	**88**	**78 J**	6.5	**1.8**
Trichloroethane, 1,1,1-	**7**	**8.1**	**10**	20.6	**0.095 J**	**0.077 J**	**0.076 J**	2.6	**0.079 J**
Trichloroethene	**1.9**	**0.13 J**	**0.12 J**	4.2	**12**	**9.9**	**9.2**	1.3	**0.16 J**
Trichlorofluoromethane	**1.4**	**1.6**	**1.9**	18.1	**1.7**	**1.6**	**1.6**	4.3	**1.6**
Trimethylbenzene, 1,2,3-	**0.74 J**	**0.58 J**	**0.74 J**	NE	**0.45 J**	**0.9 J**	0.39 UJ	NE	0.39 UJ
Trimethylbenzene, 1,2,4-	**4.4**	**3.4**	**4.4**	9.5	**1.5 J**	**2.7**	**0.24 J**	5.8	**0.99**
Trimethylbenzene, 1,3,5-	**1.4**	**0.8**	**1.2**	3.7	**0.52**	**0.75**	0.39 U	2.7	**0.29 J**
Trimethylpentane, 2,2,4-	**0.23 J**	**0.12 J**	**0.14 J**	NE	**1.7**	**0.93**	**1.3**	NE	**0.58 J**
Undecane, n-	**1.7 J**	**3.6**	**5.3**	22.6	**0.88 J**	**3.3**	2.6 U	14.8	**0.58 J**
Other (%)									
Helium	0.21 U	0.19 U	0.18 U	NE	NA	NA	NA	NE	NA

Notes:

Samples were collected on November 18, 2009

ug/m^3 - micrograms per cubic meter

BTEX - Benzene, Toluene, Ethylbenzene, and Xylenes (a subset of VOCs)

VOCs - Volatile Organic Compounds

NE - Not Established

NA - Not Analyzed

Bolding indicates a detection

Shading and bolding indicates that the detected concentration is above the guidance it was compared to

Environmental Protection Agency (EPA) Building Assessment Survey Evaluation (BASE) Source: NYSDOH, October 2006. Summary of Indoor and Outdoor Levels of Volatile Organic Compounds from selected public and commercial office buildings reported in various locations within office settings in NYS, 1994-1996.

Data Qualifiers:

U - Not detected at or above the reporting limit shown

UJ - Not detected at or above the reporting limit shown and the reporting limit is estimated

J - Estimated value

Sample Designations:

WW-IA-01: Indoor air sample collected from the eastern corner of the 35 Kent Avenue building

WW-IA-02: Indoor air sample collected from the north west portion of the 35 Kent Avenue building

Duplicate of WW-IA-02 : Duplicate indoor air sample collected from the eastern corner of the 35 Kent Avenue building

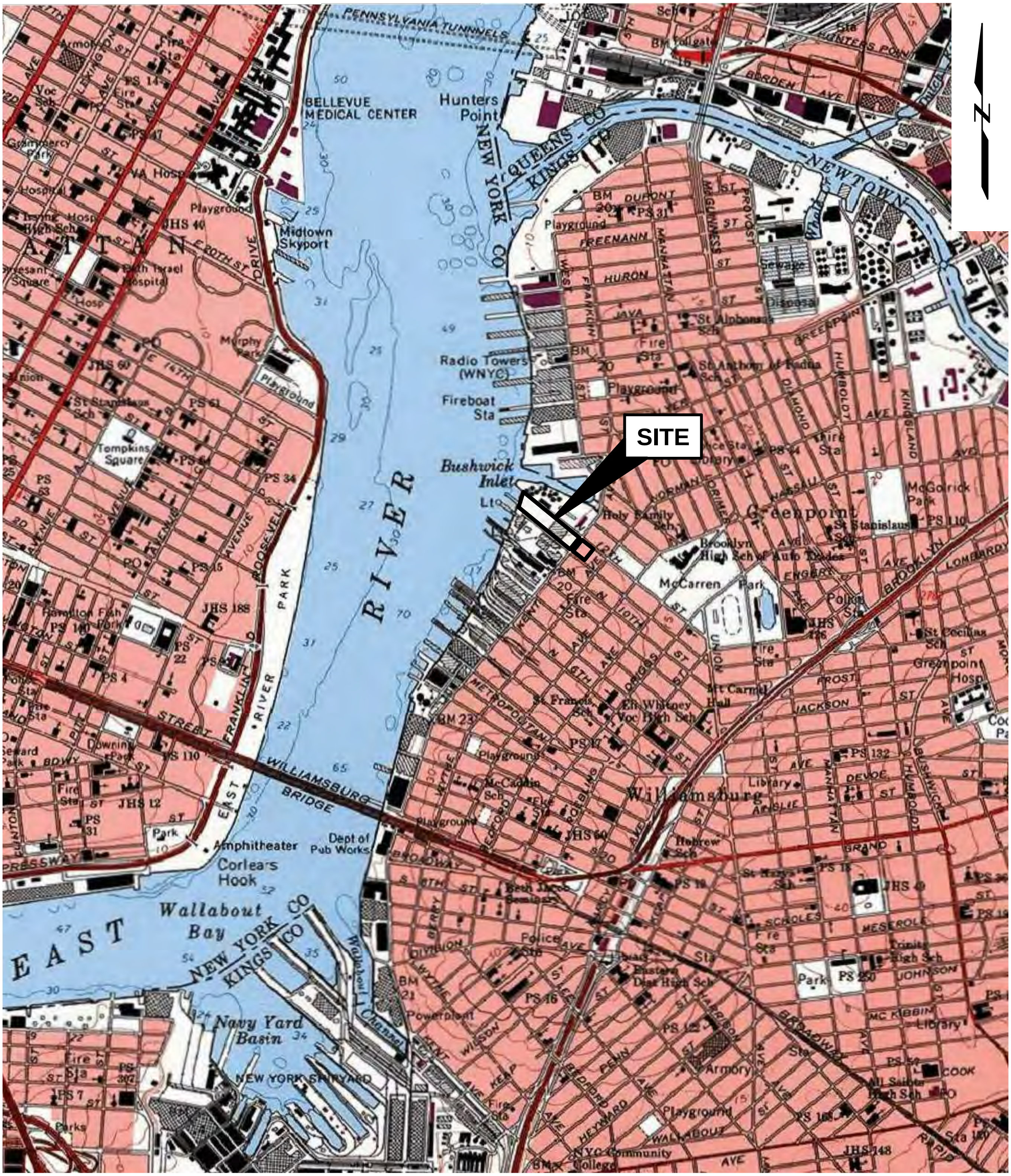
WW-OA-01 - Outdoor: Ambient air sample collected outside the 35 Kent Avenue building on the corner of North 12th Street and Kent Avenue

WW-SV-01: Sub-slab vapor sample collected beneath the floor slab in the southern portion of the 35 Kent Avenue building (Parcel 1)

WW-SV-02: Sub-slab vapor sample collected beneath the floor slab in the central portion of the 35 Kent Avenue building (Parcel 1)

Duplicate of WW-SV-02: Duplicate sub-slab vapor sample collected beneath the floor slab in the central portion of the 35 Kent Avenue building (Parcel 1)

Figures



SOURCE:
Map created with TOPO! ® ©2001 National Geographic (www.nationalgeographic.com/topo)

0 2000' 4000'
SCALE: 1" = 2000'

Remedial Investigation Report
Williamsburg Works Former MGP Site
Borough Of Brooklyn, New York

nationalgrid

GEI Consultants

SITE LOCATION MAP

Project 093060

January 2015

Fig. 1

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LEGEND

APPROXIMATE CURRENT PROPERTY BOUNDARY
APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
HISTORIC NON-MGP STRUCTURES

OTHER INVESTIGATION SAMPLE LOCATIONS

SOIL BORING [4, 5, 6, 7]
SEDIMENT CORE [5, 7]
MONITORING WELL [4, 5, 6]
RECOVERY WELL [9]
TEST PIT [10]
PETROLEUM PLUME [6, 7]

0 150 300
SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.
4. SITE INVESTIGATION REPORT BAYSIDE FUEL OIL COMPANY, PREPARED BY: METCALF AND EDDY OF NEW YORK, INC. NOVEMBER 2006.
5. SITE INVESTIGATION REPORT PROPERTY WEST OF KENT AVENUE BETWEEN AND INCLUDING NORTH 10TH AND NORTH 12TH STREETS, PREPARED BY: METCALF AND EDDY OF NEW YORK, INC., NOVEMBER 2006.
6. SITE INVESTIGATION REPORT 9TH STREET EQUITIES, LLC, PREPARED BY: METCALF AND EDDY OF NEW YORK, INC., AUGUST 2006.
7. SITE INVESTIGATION REPORT MOTIVA ENTERPRISES, LLC / BUSHWICK CREEK INLET, PREPARED BY: METCALF AND EDDY OF NEW YORK, INC., NOVEMBER 2006.
8. EXCAVATION PLAN FOR PUMP HOUSE, SETTLING TANK, AND OIL SEPARATOR, WILLIAMSBURG WORKS, ID 36, THE BROOKLYN UNION GAS CO, DATED NOV. 9/08.
9. URS CORPORATION, NAPL RECOVERY WELLS, CONSTRUCTION COMPLETION REPORT, NOVEMBER 2014.
10. URS CORPORATION, IRM DESIGN INVESTIGATION BORING LOGS AND LOCATION MAP PROVIDED TO GEI CONSULTANTS, INC VIA EMAIL ON FEBRUARY 12, 2013.

Remedial Investigation Report Williamsburg Works Former MGP Site Borough of Brooklyn, New York	GEI Consultants	HISTORIC NON-MGP STRUCTURES AND PETROLEUM PLUME LOCATIONS
nationalgrid	Project 093060	January 2015 Fig. 2

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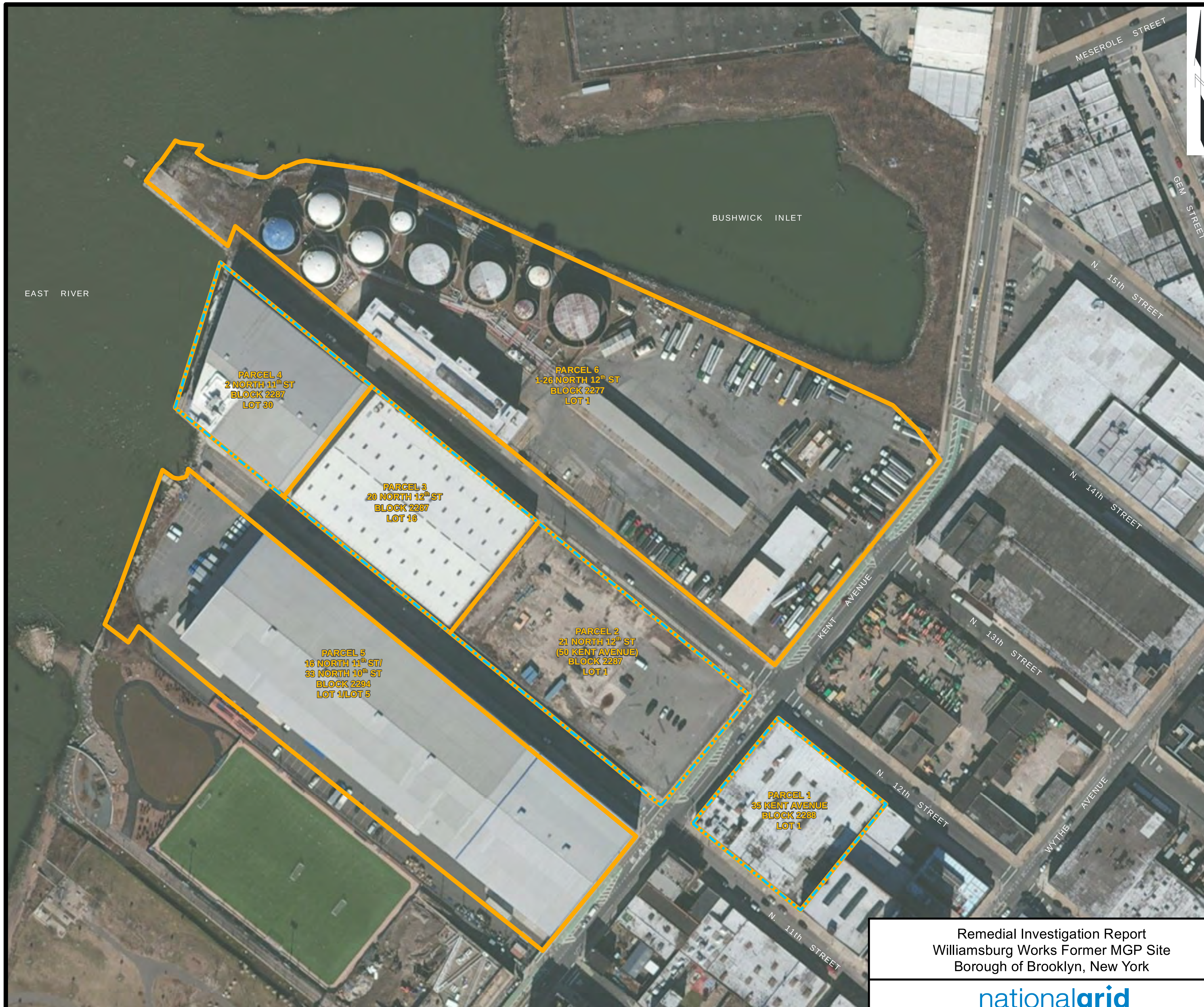

LEGEND

APPROXIMATE CURRENT PROPERTY BOUNDARY
APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY

0 150 300
SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM

2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).

3. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.

4. NEW YORK CITY DEPARTMENT OF CITY PLANNING, MAP PLUTO PARCELS

Remedial Investigation Report Williamsburg Works Former MGP Site Borough of Brooklyn, New York	GEI Consultants	REMEDIAL INVESTIGATION PARCEL IDENTIFICATION MAP
nationalgrid	Project 093060	January 2015 Fig. 3

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LEGEND

- APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
- FORMER PRATT PROPERTY
- PARCEL BOUNDARIES
- Text — SITE OPERATOR/OWNER

0 150 300

SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY
4. NEW YORK CITY DEPARTMENT OF CITY PLANNING, MAPPLUTO PARCELS
5. ENVIRONMENTAL RECORDS FROM EDR REPORT INQUIRY NUMER 2119865.2s

Remedial Investigation Report
Williamsburg Works Former MGP Site
Borough of Brooklyn, New York

nationalgrid

GEI Consultants

ENVIRONMENTAL RECORDS

Project 093060 | January 2015 | Fig. 4

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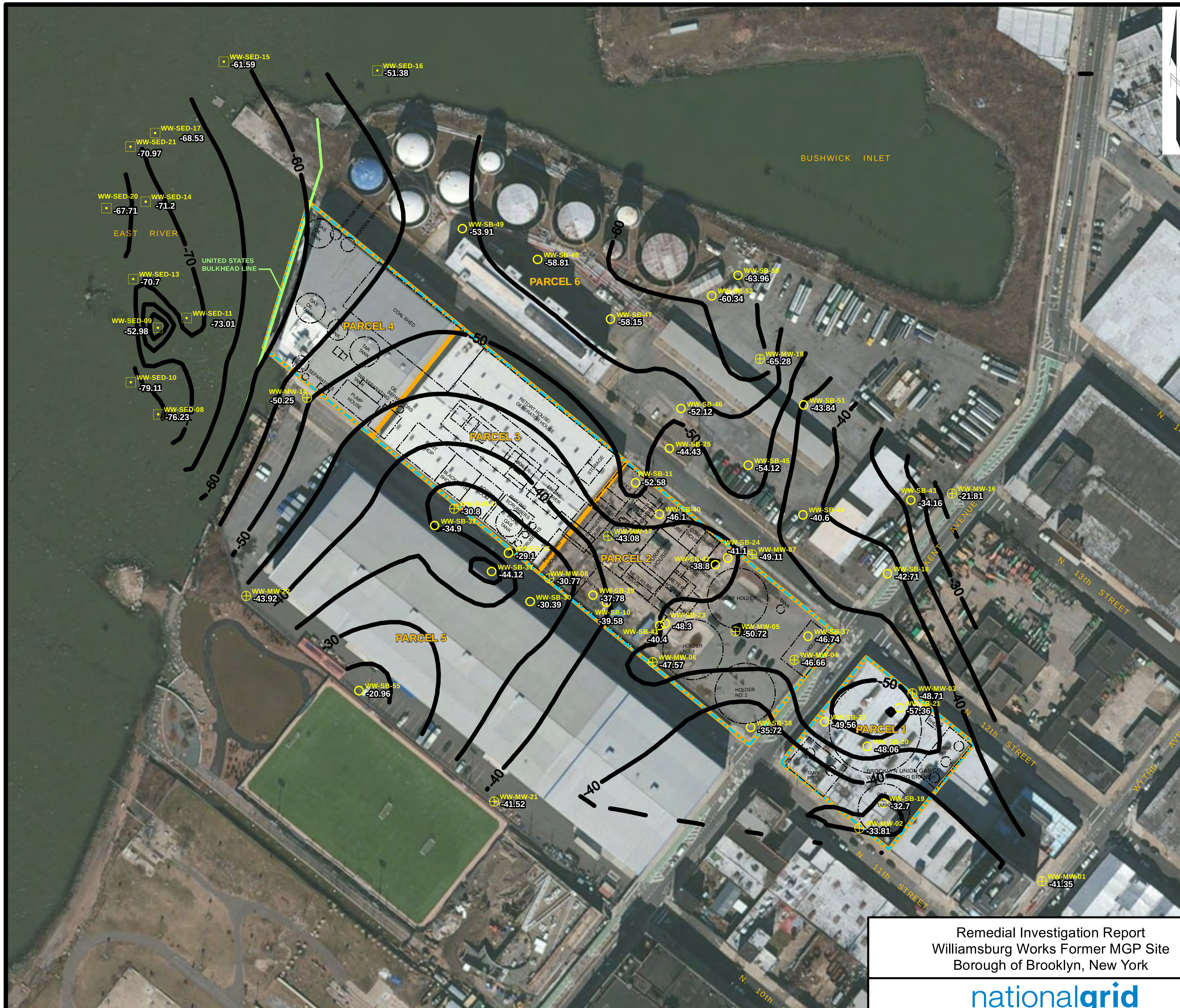

LEGEND

APPROXIMATE CURRENT PROPERTY BOUNDARY
APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
HISTORIC MGP STRUCTURES

REMEDIAL INVESTIGATION SAMPLES

WW-MW-05 MONITORING WELL LOCATION
WW-SB-03 SOIL BORING WITH TEMPORARY GROUNDWATER SAMPLE LOCATION
WW-SED-01 SEDIMENT SAMPLE LOCATION
WW-SB-01 SOIL BORING LOCATION
-40.21 CLAY ELEVATION (FEET NAVD88)
-40 CLAY CONTOUR (FEET NAVD88)

NOTE:
1. CLAY ELEVATIONS AND CONTOURS ARE IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM (NAVD88).
2. CONTOURS MADE BY SURFER CONTOURING AND 3D SURFACE MAPPING SOFTWARE

0 150 300
SCALE, FEET

SOURCE:
1. AERIAL PHOTOGRAPH ESRI AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
4. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.
5. SURVEY OF WILLIAMSBURG WORKS BOUNDARIES, EXISTING CONDITIONS, AND SAMPLE LOCATIONS CONDUCTED BY GEI CONSULTANTS, INC. SURVEYED BY NEW YORK STATE-LICENSED LAND SURVEYOR No. 050146.

Remedial Investigation Report
Williamsburg Works Former MGP Site
Borough of Brooklyn, New York

nationalgrid

GEI Consultants

CLAY SURFACE ELEVATION CONTOUR MAP

Project 093060 | January 2015 | Fig. 5

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LEGEND

- APPROXIMATE CURRENT PROPERTY BOUNDARY
- APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
- HISTORIC MGP STRUCTURES
- 2 GROUNDWATER CONTOUR (FEET NAVD88)
- 2 INFERRED GROUNDWATER CONTOUR (FEET NAVD88)
- WW-MW10 MONITORING WELL LOCATION
- 2.23 GROUNDWATER ELEVATION (FEET NAVD88)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. CONTOURS MADE BY LINEAR INTERPOLATION WITH MANUAL SMOOTHING TO ADJUST ARTIFACTS OF INTERPOLATION BETWEEN RELATIVELY DISTANT WELLS.

2. GROUNDWATER ELEVATIONS AND CONTOURS ARE IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM (NAVD88).

0 150 300

SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM

2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).

3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.

4. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.

5. SURVEY OF WILLIAMSBURG WORKS BOUNDARIES, EXISTING CONDITIONS, AND SAMPLE LOCATIONS CONDUCTED BY GEI CONSULTANTS, INC. SURVEYED BY NEW YORK STATE-LICENSED LAND SURVEYOR No. 050146.

Remedial Investigation Report Williamsburg Works Former MGP Site Borough of Brooklyn, New York	GEI Consultants	NOVEMBER 2, 2009 HIGH TIDE GROUNDWATER SURFACE ELEVATION CONTOURS
nationalgrid	Project 093060	January 2015 Fig. 6

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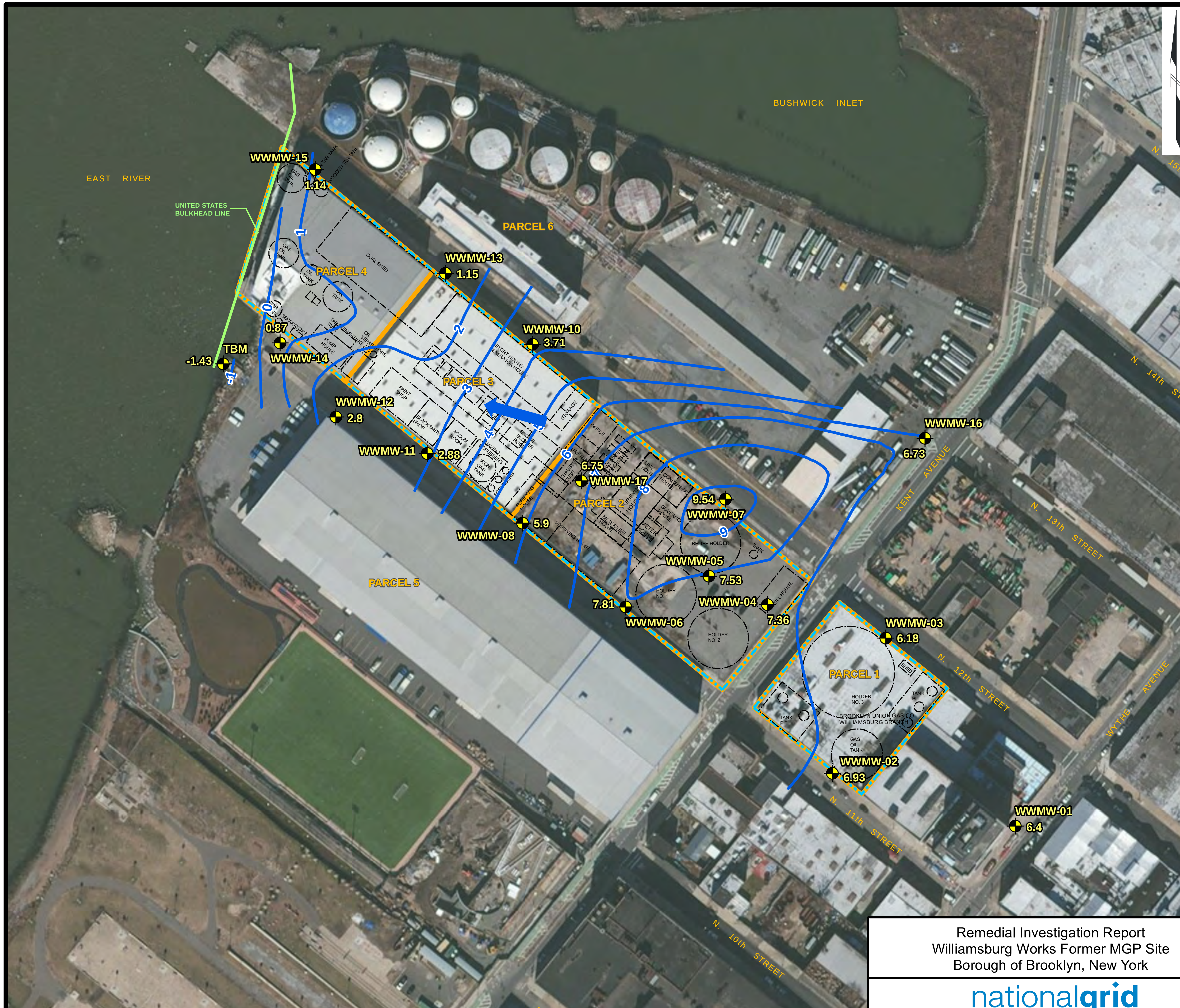


LEGEND

- APPROXIMATE CURRENT PROPERTY BOUNDARY
- APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
- HISTORIC MGP STRUCTURES
- 2 GROUNDWATER CONTOUR (FEET NAVD88)
- WW-MW10 MONITORING WELL LOCATION
- 2.23 GROUNDWATER ELEVATION (FEET NAVD88)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. CONTOURS MADE BY LINEAR INTERPOLATION WITH MANUAL SMOOTHING TO ADJUST ARTIFACTS OF INTERPOLATION BETWEEN RELATIVELY DISTANT WELLS.
2. GROUNDWATER ELEVATIONS AND CONTOURS ARE IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM (NAVD88).

0 150 300

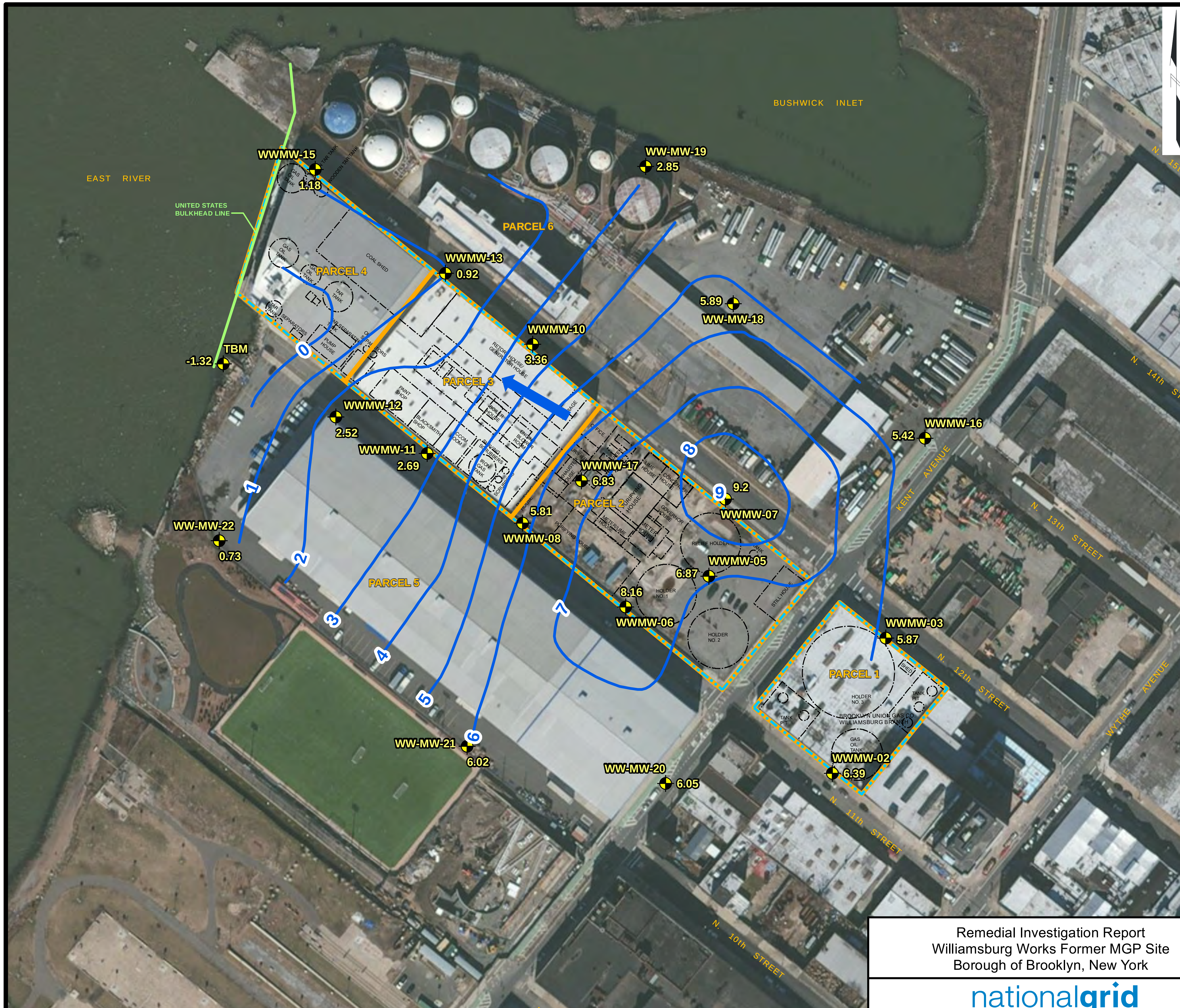
SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
4. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.
5. SURVEY OF WILLIAMSBURG WORKS BOUNDARIES, EXISTING CONDITIONS, AND SAMPLE LOCATIONS CONDUCTED BY GEI CONSULTANTS, INC. SURVEYED BY NEW YORK STATE-LICENSED LAND SURVEYOR No. 050146.

Remedial Investigation Report Williamsburg Works Former MGP Site Borough of Brooklyn, New York	GEI Consultants	NOVEMBER 2, 2009 LOW TIDE GROUNDWATER SURFACE ELEVATION CONTOURS
nationalgrid	Project 093060	January 2015 Fig. 7

J:\Projects\National_Grid\Williamsburg\Remedial Investigation\01-2015\GW_Elev_low_Nov2009.mxd



LEGEND

- APPROXIMATE CURRENT PROPERTY BOUNDARY
- APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
- HISTORIC STRUCTURE
- 2 GROUNDWATER CONTOUR (FEET NAVD88)
- WW-MW10 MONITORING WELL LOCATION
- 2.23 GROUNDWATER ELEVATION (FEET NAVD88)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. CONTOURS MADE BY LINEAR INTERPOLATION WITH MANUAL SMOOTHING TO ADJUST ARTIFACTS OF INTERPOLATION BETWEEN RELATIVELY DISTANT WELLS.

2. GROUNDWATER ELEVATIONS AND CONTOURS ARE IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM (NAVD88).

3. WW-MW-01 AND WW-MW-04 WERE UNABLE TO BE LOCATED AND WERE NOT INCLUDED IN THE GROUNDWATER CALCULATIONS.

0 150 300

SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM

2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).

3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.

4. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.

5. SURVEY OF WILLIAMSBURG WORKS BOUNDARIES, EXISTING CONDITIONS, AND SAMPLE LOCATIONS CONDUCTED BY GEI CONSULTANTS, INC. SURVEYED BY NEW YORK STATE-LICENSED LAND SURVEYOR No. 050146.

Remedial Investigation Report Williamsburg Works Former MGP Site Borough of Brooklyn, New York	GEI Consultants	DECEMBER 19, 2012 LOW TIDE GROUNDWATER SURFACE ELEVATION CONTOURS
nationalgrid	Project 093060	January 2015 Fig. 8

J:\Projects\National_Grid\Williamsburg\Remedial Investigation\01-2015\GW_Elev_Low_Dec2012_.mxd

LEGEND

- APPROXIMATE CURRENT PROPERTY BOUNDARY
- APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
- HISTORIC MGP STRUCTURES
- HISTORIC NON-MGP STRUCTURES
- TAR SATURATED
- LENSES WITH TAR SATURATION
- BLEBS, GLOBS, LENSES, COATINGS
- TAR STAINING, SHEEN
- PETROLEUM SHEEN, STAINING
- TAR/NAPHTHALENE ODORS
- PETROLEUM ODORS
- NO PHYSICAL OBSERVATIONS OBSERVED

0 150 300
SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
4. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.
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10. URS CORPORATION IRM DESIGN INVESTIGATION BORING LOGS AND LOCATION MAP PROVIDED TO GEI CONSULTANTS, INC. VIA EMAIL ON FEBRUARY 12, 2013.

Remedial Investigation Report
Williamsburg Works Former MGP Site
Borough of Brooklyn, New York

nationalgrid

GEI Consultants

OBSERVED PHYSICAL IMPACTS UNSATURATED ZONE

Project 093060 | January 2015 | Fig. 9

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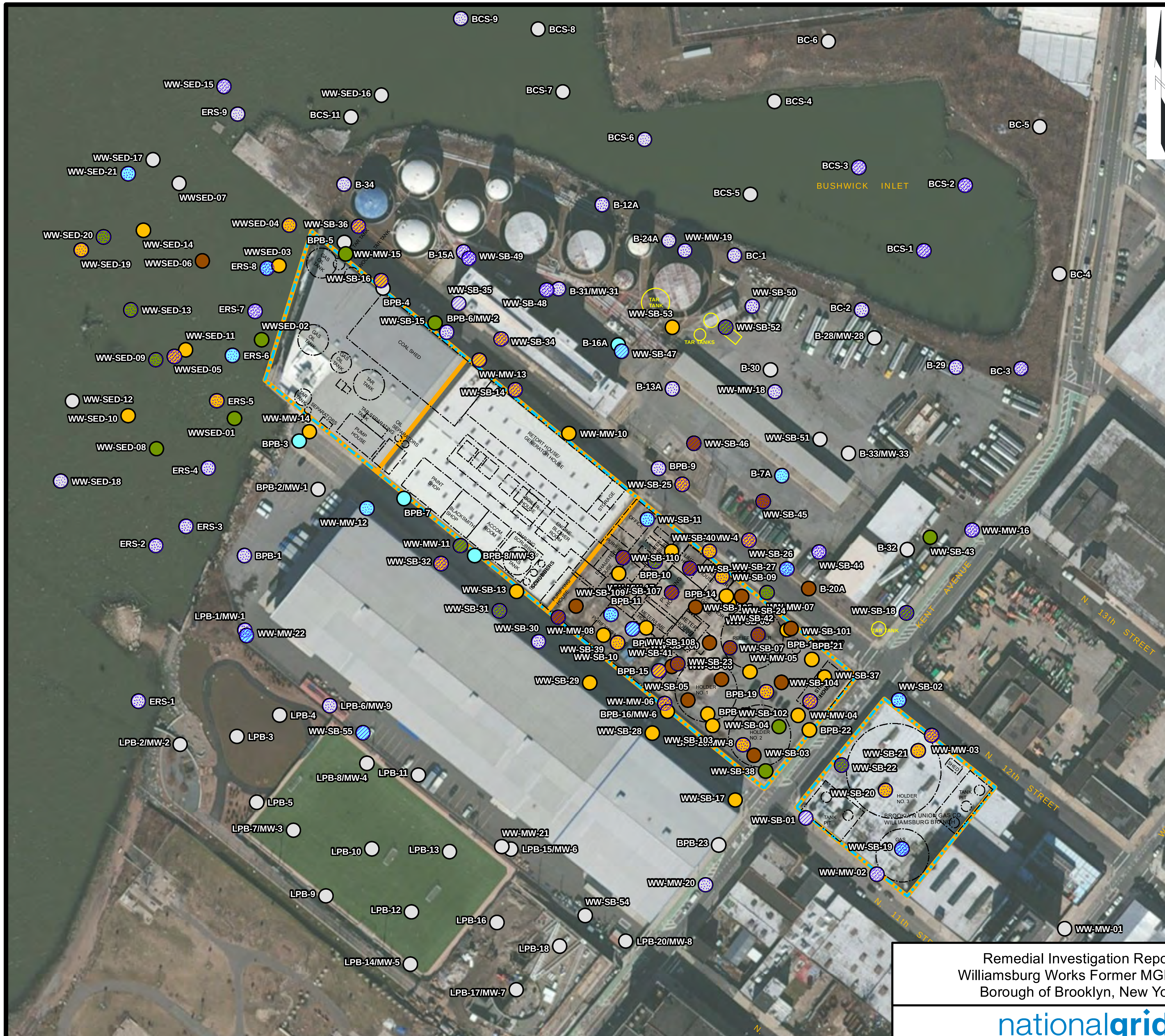

LEGEND

- APPROXIMATE CURRENT PROPERTY BOUNDARY
- APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
- HISTORIC MGP STRUCTURES
- HISTORIC NON-MGP STRUCTURES
- TAR SATURATED
- LENSES WITH TAR SATURATION
- BLEBS, GLOBS, LENSES, COATINGS
- TAR STAINING, SHEEN
- PETROLEUM SHEEN, STAINING
- TAR/NAPHTHALENE ODORS
- PETROLEUM ODORS
- NO PHYSICAL OBSERVATIONS OBSERVED

0 150 300

SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
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Remedial Investigation Report Williamsburg Works Former MGP Site Borough of Brooklyn, New York	GEI Consultants	OBSERVED PHYSICAL IMPACTS SATURATED ZONE ABOVE CLAY
nationalgrid	Project 093060	January 2015 Fig. 10

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LEGEND

- APPROXIMATE CURRENT PROPERTY BOUNDARY
- APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
- HISTORIC MGP STRUCTURES
- HISTORIC NON-MGP STRUCTURES
- TAR SATURATED
- LENSES WITH TAR SATURATION
- BLEBS, GLOBS, LENSES, COATINGS
- TAR STAINING, SHEEN
- PETROLEUM SHEEN, STAINING
- TAR/NAPHTHALENE ODORS
- PETROLEUM ODORS
- NO PHYSICAL OBSERVATIONS OBSERVED

0 150 300

SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
4. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.
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Remedial Investigation Report Williamsburg Works Former MGP Site Borough of Brooklyn, New York	GEI Consultants	OBSERVED PHYSICAL IMPACTS CLAY AND DEEPER
nationalgrid	Project 093060	January 2015 Fig. 11

J:\Projects\National_Grid\Williamsburg\Remedial Investigation\01-2015\Visual_Impacts_Clay_Deeper.mxd

SOURCE:
1. 2011 ESRI WORLD IMAGERY
2. HISTORIC RARE PLANTS AND ANIMALS LAYER FROM NYDEC ENVIRONMENTAL RESOURCE MAPPER (www.dec.ny.gov/imsmaps/erm/viewer.htm)
3. OPEN SPACE AND OUTDOOR RECREATION FROM MAPPLUTO, UPDATED NOV 2009.

0 750 1,500
SCALE, FEET

Remedial Investigation Report
Williamsburg Works Former MGP Site
Borough of Brooklyn, New York

nationalgrid

GEI Consultants

FISH AND WILDLIFE RESOURCES

Project 093060 | January 2015 | Fig. 12

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Plates

LEGEND

- APPROXIMATE CURRENT PROPERTY BOUNDARY
- APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
- HISTORIC MGP STRUCTURES
- HISTORIC NON-MGP STRUCTURES
- A — A' CROSS-SECTION LOCATION

REMEDIAL INVESTIGATION SAMPLE LOCATIONS

WW-IA-01	INDOOR AIR
WW-MW-05	MONITORING WELL
WW-SB-03	SOIL BORING WITH TEMPORARY GROUNDWATER POINT
WW-SED-01	SEDIMENT CORE
WW-SS-01	SURFACE SOIL
WW-SV-01	SOIL VAPOR POINT
WW-SB-01	SOIL BORING
WW-OA-01	OUTDOOR AIR
WW-TP-01	TEST PIT

OTHER INVESTIGATION SAMPLE LOCATIONS

WW-SB-101	SOIL BORING [6, 7, 8, 9, 10]
BCS-1	SEDIMENT CORE [7, 9]
B-26/MW-1	MONITORING WELL [6, 7, 8, 10]
NRW-1	RECOVERY WELL [11]
WW-TP-01	TEST PIT [10]

NOTES:

1. THE LOCATION OF WW-SB-35 WAS NOT SURVEYED AND IS APPROXIMATE.
2. SURFACE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.
3. THE TAR TANKS SHOWN ON BAYSIDE FUEL WERE OWNED BY PRATT WORKS.

0 80 160
SCALE, FEET

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
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10. URS CORPORATION IRM DESIGN INVESTIGATION BORING LOGS AND LOCATION MAP PROVIDED TO GEI CONSULTANTS, INC. VIA EMAIL ON FEBRUARY 12, 2013.
11. URS CORPORATION, NAPL RECOVERY WELLS, CONSTRUCTION COMPLETION REPORT, NOVEMBER 2014.

Remedial Investigation Report Williamsburg Works Former MGP Site Borough of Brooklyn, New York	GEI Consultants	SAMPLE LOCATIONS AND LINES OF SECTION
nationalgrid	Project 093060	January 2015 Plate 1

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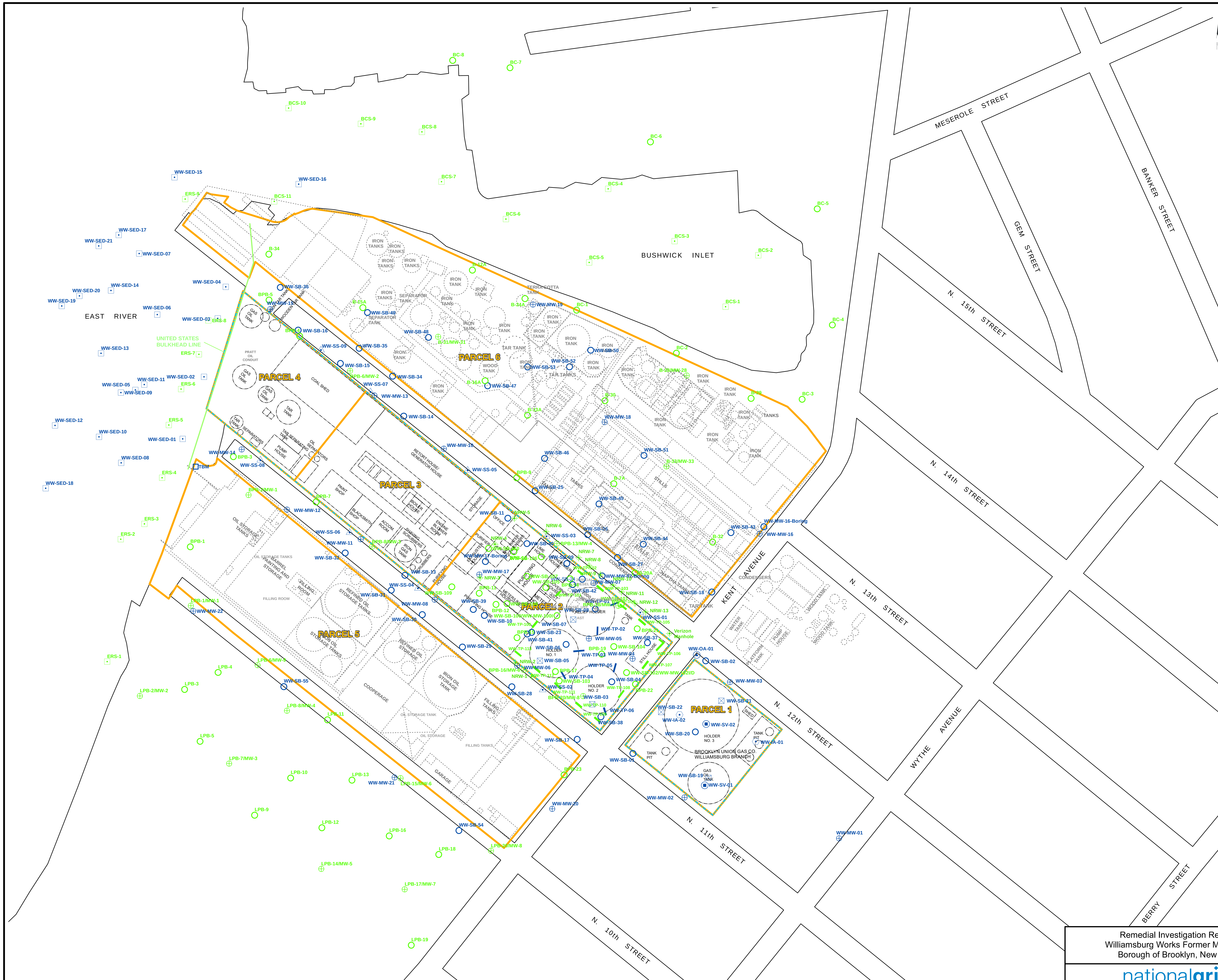

LEGEND

	APPROXIMATE CURRENT PROPERTY BOUNDARY
	APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
	HISTORIC MGP STRUCTURES
	HISTORIC NON-MGP STRUCTURES

REMEDIAL INVESTIGATION SAMPLE LOCATIONS

WW-IA-01	INDOOR AIR
WW-MW-05	MONITORING WELL
WW-SB-03	SOIL BORING WITH TEMPORARY GROUNDWATER POINT
WW-SED-01	SEDIMENT CORE
WW-SS-01	SURFACE SOIL
WW-SV-01	SOIL VAPOR POINT
WW-SB-01	SOIL BORING
WW-OA-01	OUTDOOR AIR
WW-TP-01	TEST PIT

OTHER INVESTIGATION SAMPLE LOCATIONS

WW-SB-101	SOIL BORING [6, 7, 8, 9, 10]
BCS-1	SEDIMENT CORE [7, 9]
B-3/MW-3	MONITORING WELL [6, 7, 8, 10]
NRW-2	RECOVERY WELL[11]
WW-TP-01	TEST PIT [10]

NOTES:

1. THE LOCATION OF WW-SB-35 WAS NOT SURVEYED AND IS APPROXIMATE.
2. SURFACE SOIL SAMPLE LOCATIONS ARE APPROXIMATE.

SOURCE:

1. NEW YORK CITY DEPARTMENT OF CITY PLANNING, MAP PLUTO PARCELS.
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
4. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.
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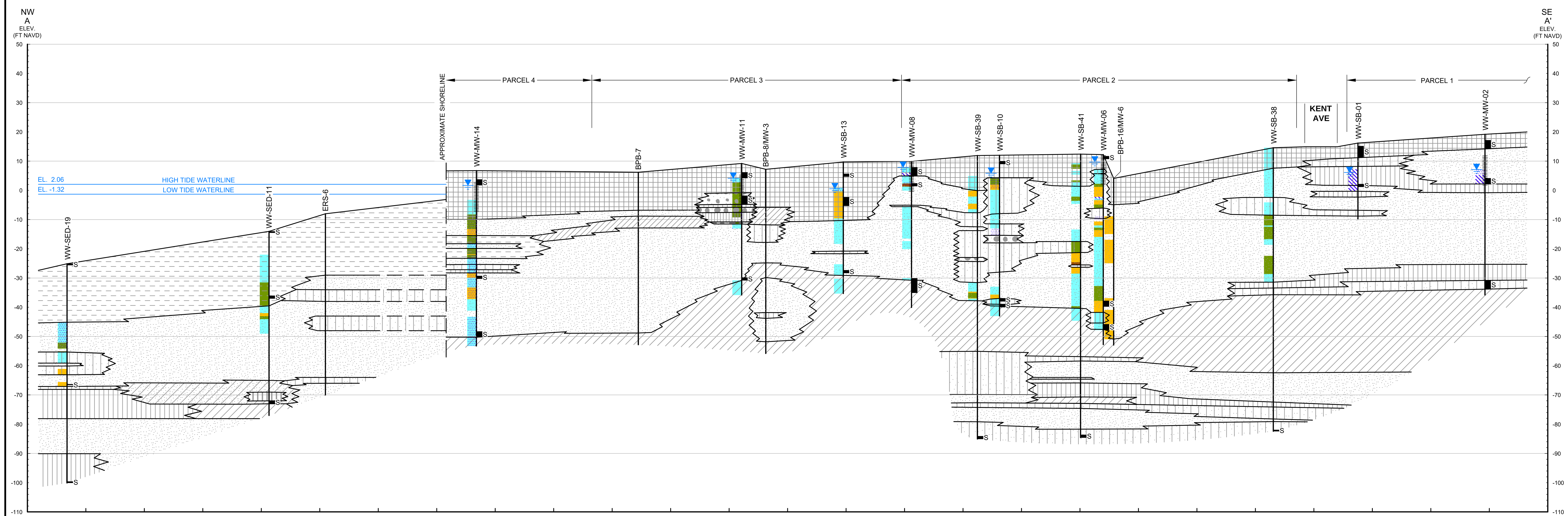
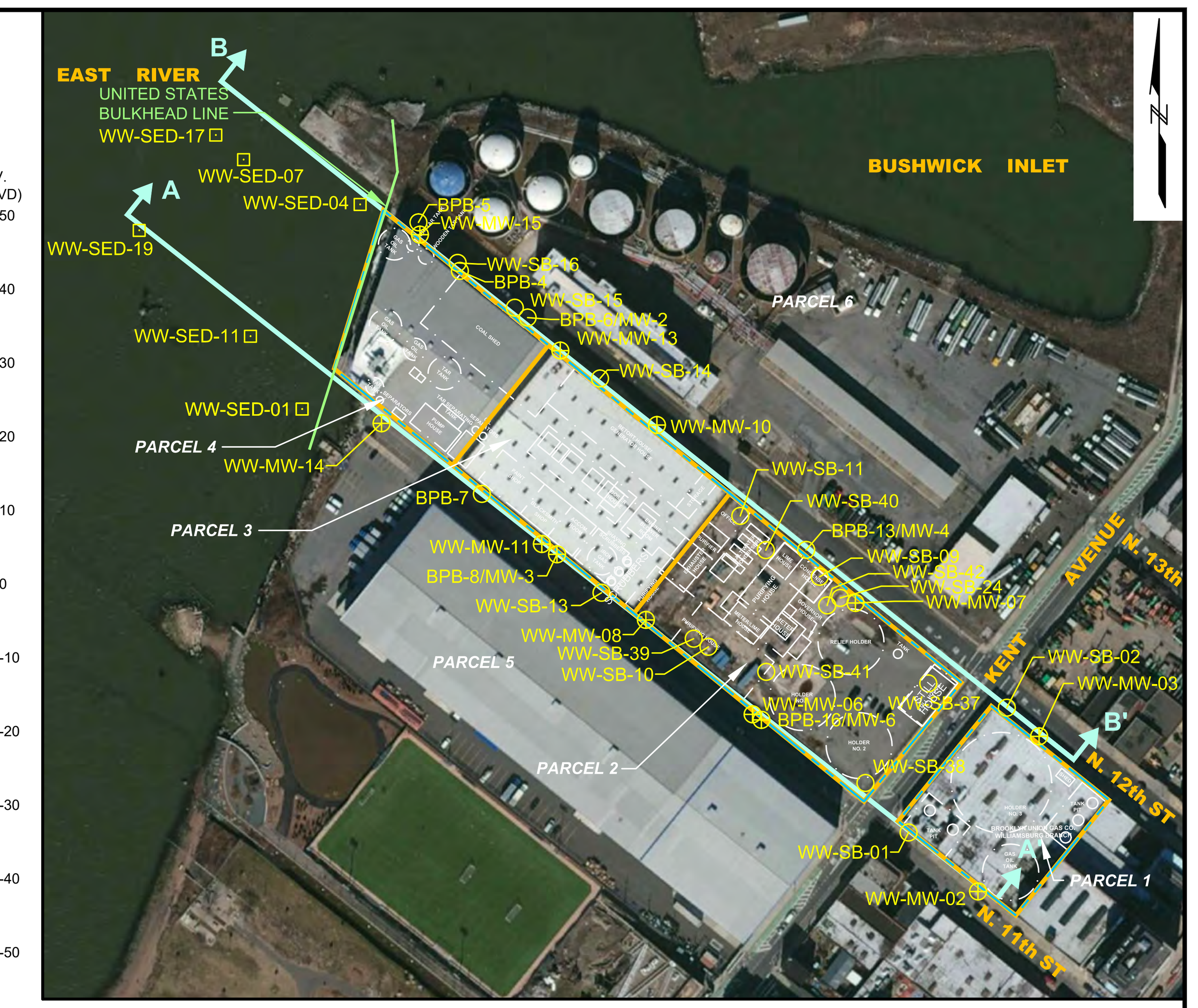
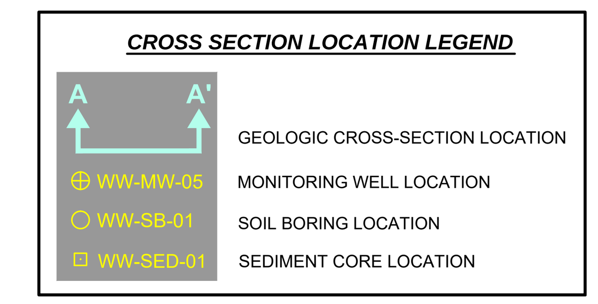
Remedial Investigation Report Williamsburg Works Former MGP Site Borough of Brooklyn, New York	GEI Consultants	HISTORICAL STRUCTURES AND SAMPLE LOCATION MAP
nationalgrid	Project 093060	January 2015 Plate 2

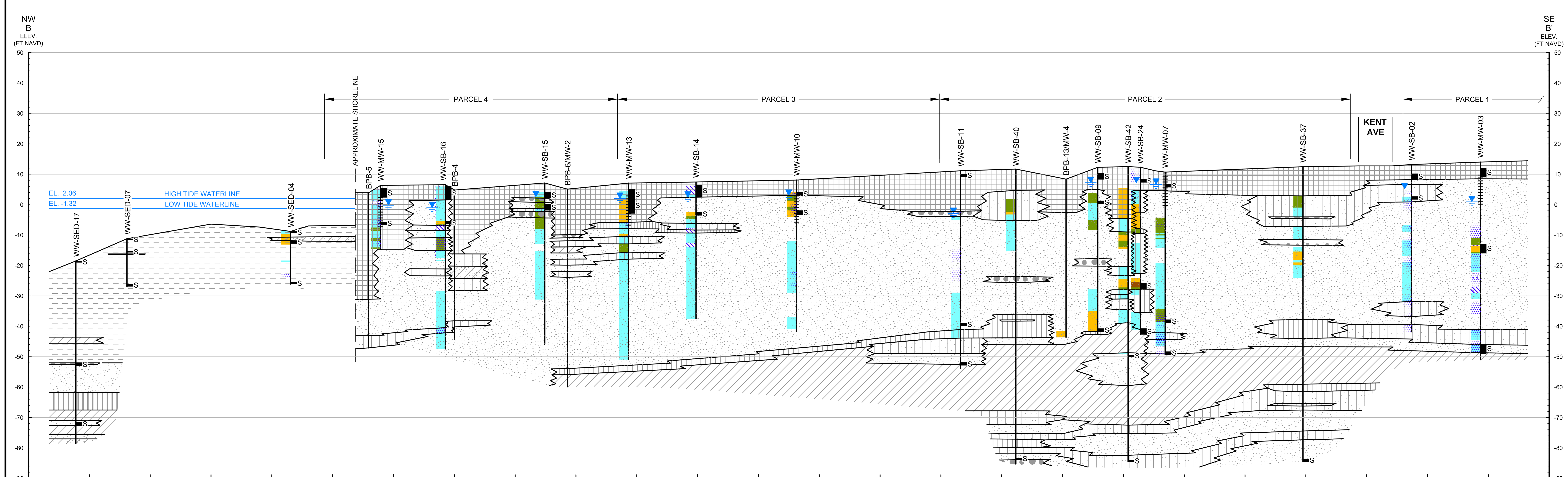
J:\Projects\National_Grid\Williamsburg\Remedial Investigation\01-2015\Sample Locations2.mxd

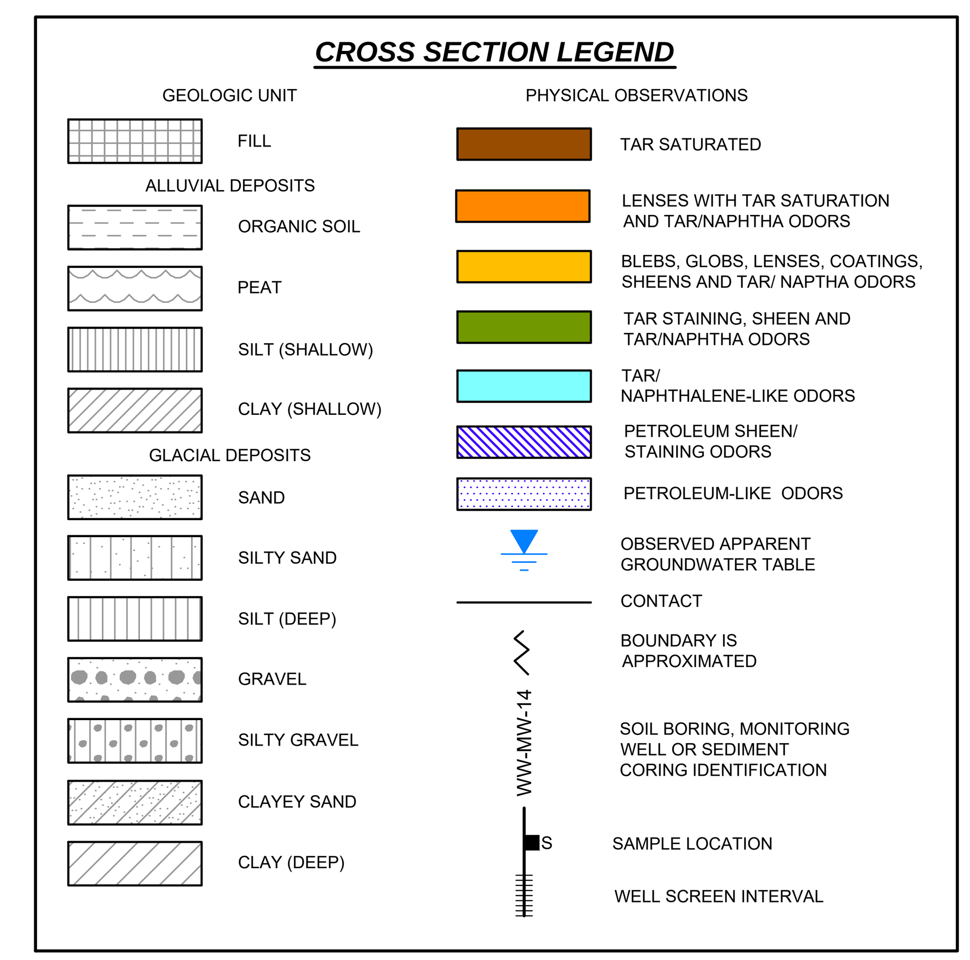




CROSS-SECTION LOCATION







NOTE:

1. HIGH AND LOW TIDE WATERLINE MEASUREMENTS ARE FROM THE 12/19/12 GROUNDWATER GAUGING EVENT.

SOURCES:

1. AERIAL PHOTOGRAPH OBTAINED FROM ARCGIS ONLINE WORLD IMAGERY MAP SERVICE, ACCESSED ON 03/11/13.
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
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HORIZONTAL SCALE: 1" = 60'
0 60' 120'

0 20' 40'
VERTICAL SCALE: 1" = 20'
NOTE: 3x VERTICAL EXAGGERATION

Remedial Investigation Report
Williamsburg Works Former MGP Site
Borough Of Brooklyn, New York

nationalgrid

GEI Consultants

GEOLOGIC CROSS SECTIONS
A-A' AND B-B'

Project 093060 | January 2015 | Plate 3

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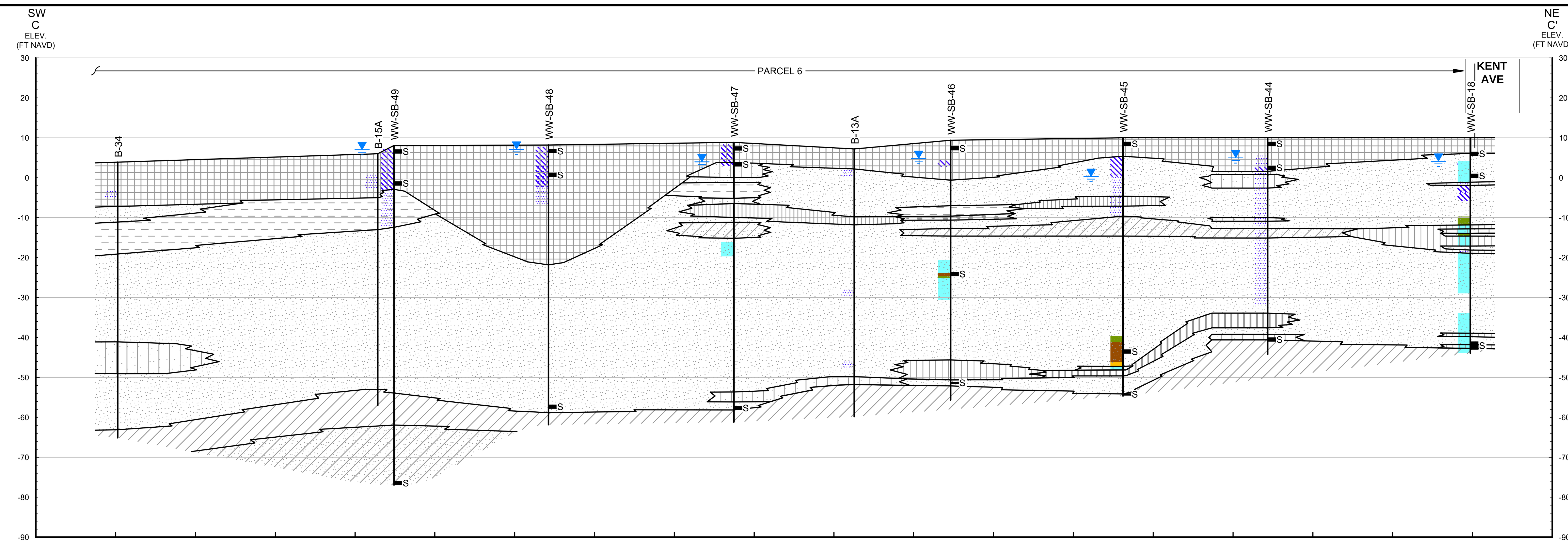


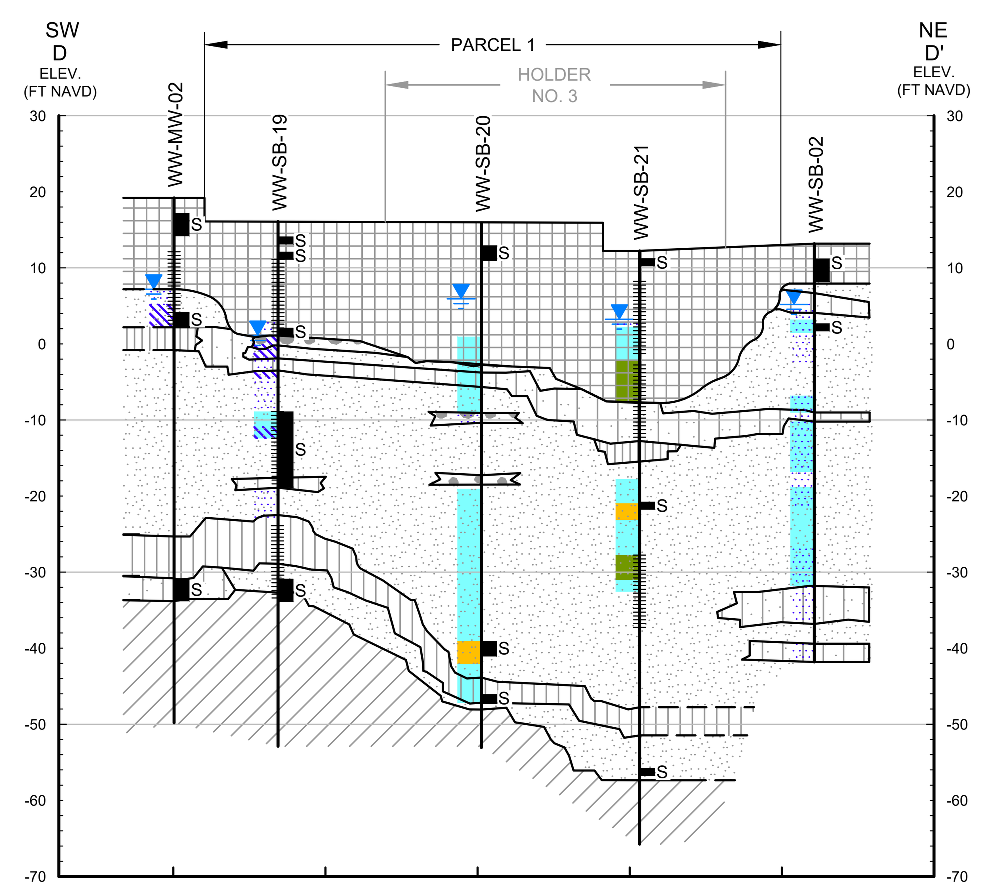
CROSS-SECTION LOCATION

0 200' 400'

SCALE: 1" = 200'

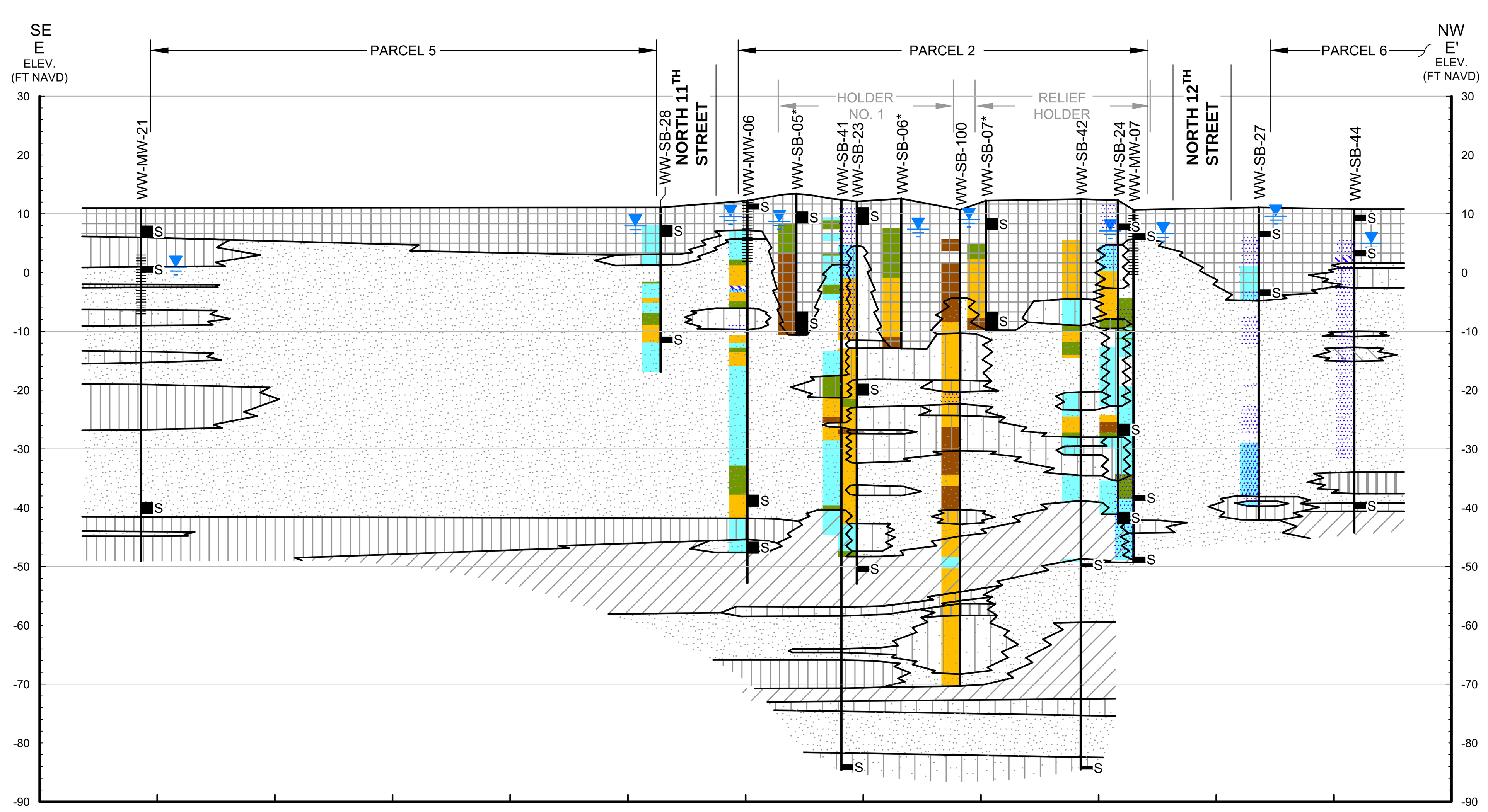
CROSS SECTION LOCATION LEGEND

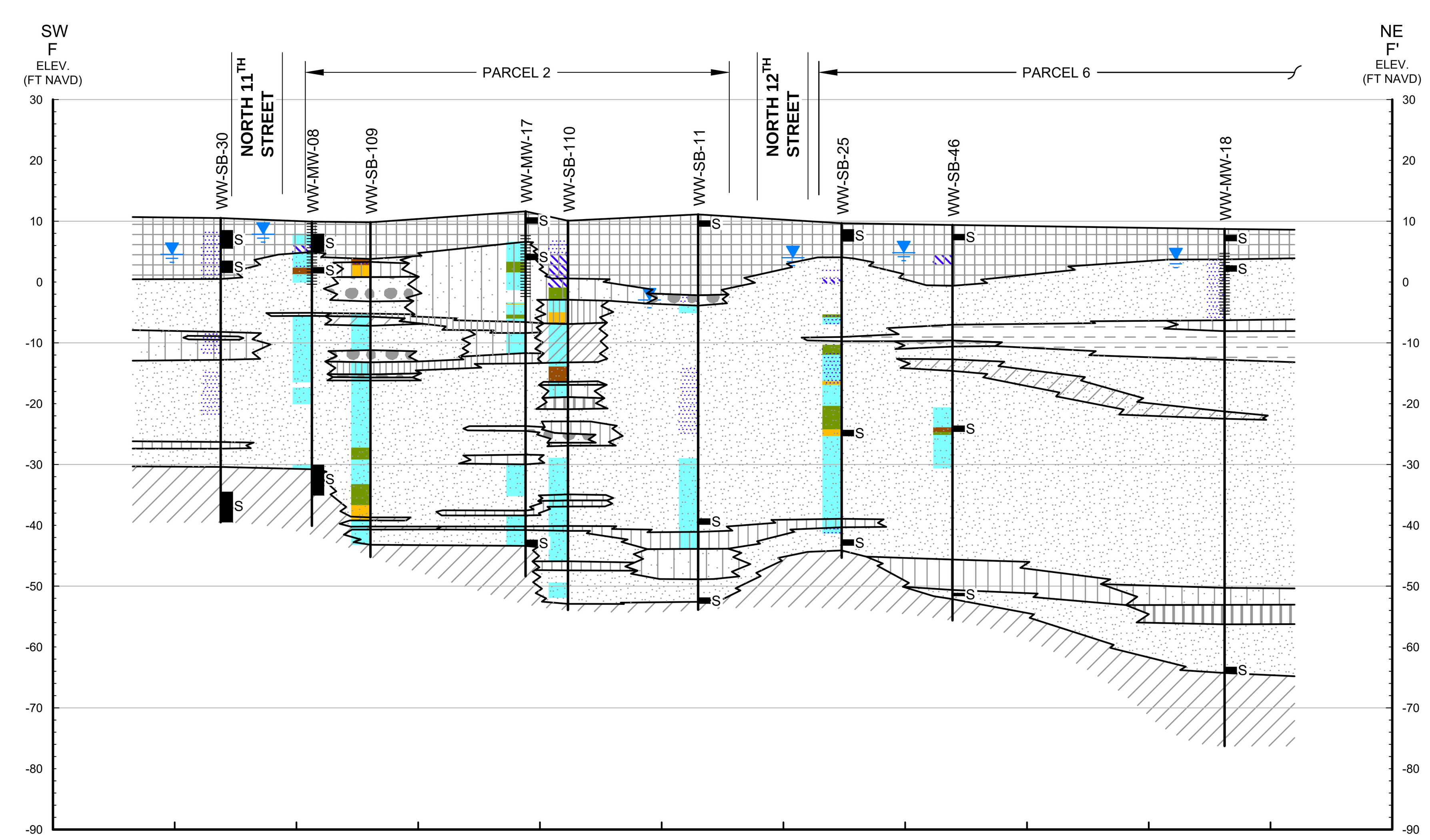
C C'	GEOLOGIC CROSS-SECTION LOCATION
WW-MW-08	MONITORING WELL LOCATION
WW-SB-06	SOIL BORING LOCATION
WW-SB-07	SOIL BORING WITH TEMPORARY GROUNDWATER SAMPLE LOCATION



CROSS SECTION LEGEND

GEOLOGIC UNIT		PHYSICAL OBSERVATIONS	
	FILL		TAR SATURATED
ALLUVIAL DEPOSITS			LENSES WITH TAR SATURATION AND TAR/NAPHTHA ODORS
	ORGANIC SOIL		BLEBS, GLOBS, LENSES, COATINGS, SHEENS AND TAR/ NAPTHA ODORS
	PEAT		TAR STAINING, SHEEN AND TAR/NAPHTHA ODORS
	SILT (SHALLOW)		TAR/ NAPHTHALENE-LIKE ODORS
	CLAY (SHALLOW)		PETROLEUM SHEEN/ STAINING ODORS
GLACIAL DEPOSITS			PETROLEUM-LIKE ODORS
	SAND		OBSERVED APPARENT GROUNDWATER TABLE
	SILTY SAND		CONTACT
	SILT (DEEP)		BOUNDARY IS APPROXIMATED
	GRAVEL	WW-MW-14	SOIL BORING, MONITORING WELL OR SEDIMENT CORING IDENTIFICATION
	SILTY GRAVEL	S	SAMPLE LOCATION
	CLAYEY SAND		WELL SCREEN INTERVAL
	CLAY (DEEP)		





HORIZONTAL SCALE: 1" = 60'

0 60' 120'

0 20' 40'

VERTICAL SCALE: 1" = 20'

NOTE: 3x VERTICAL EXAGGERATION

NOTE:

1. HIGH AND LOW TIDE WATERLINE MEASUREMENTS ARE FROM THE 12/19/12 GROUNDWATER GAUGING EVENT.

SOURCES:

1. AERIAL PHOTOGRAPH OBTAINED FROM ARCGIS ONLINE WORLD IMAGERY MAP SERVICE, ACCESSED ON 03/11/13.
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
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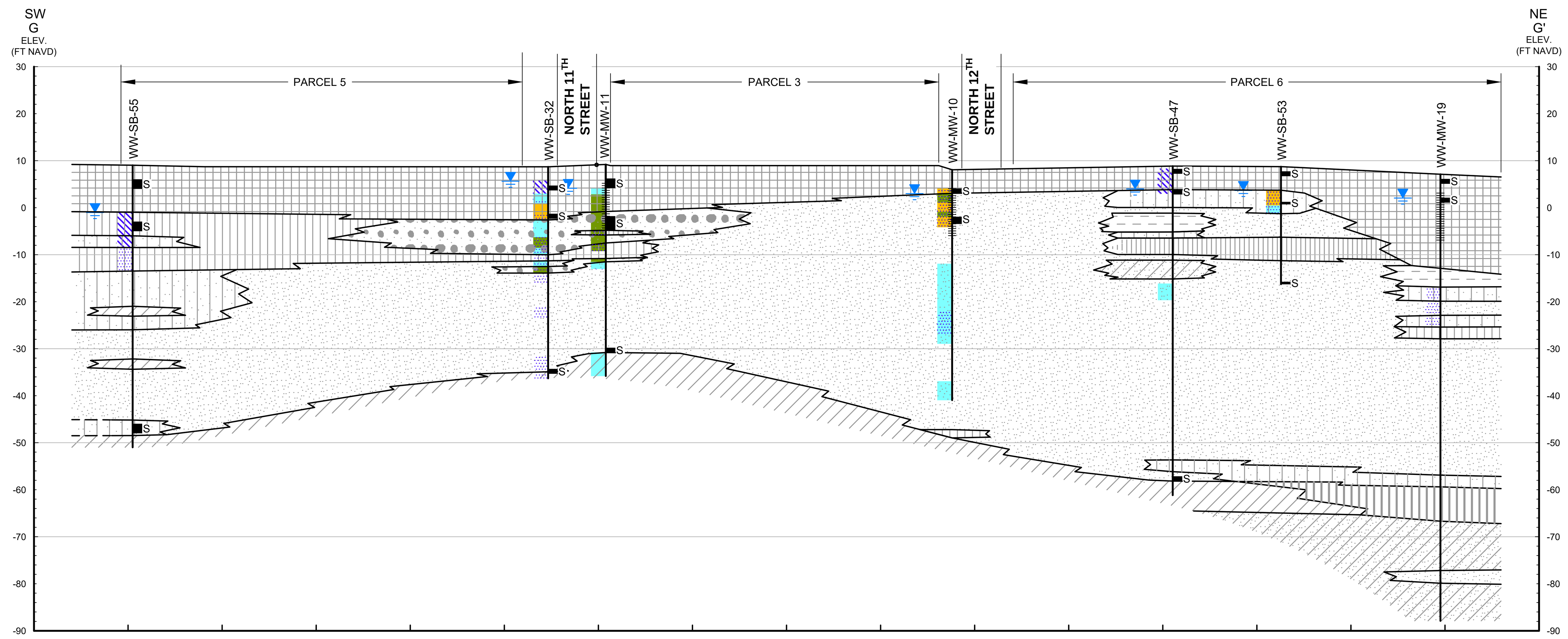
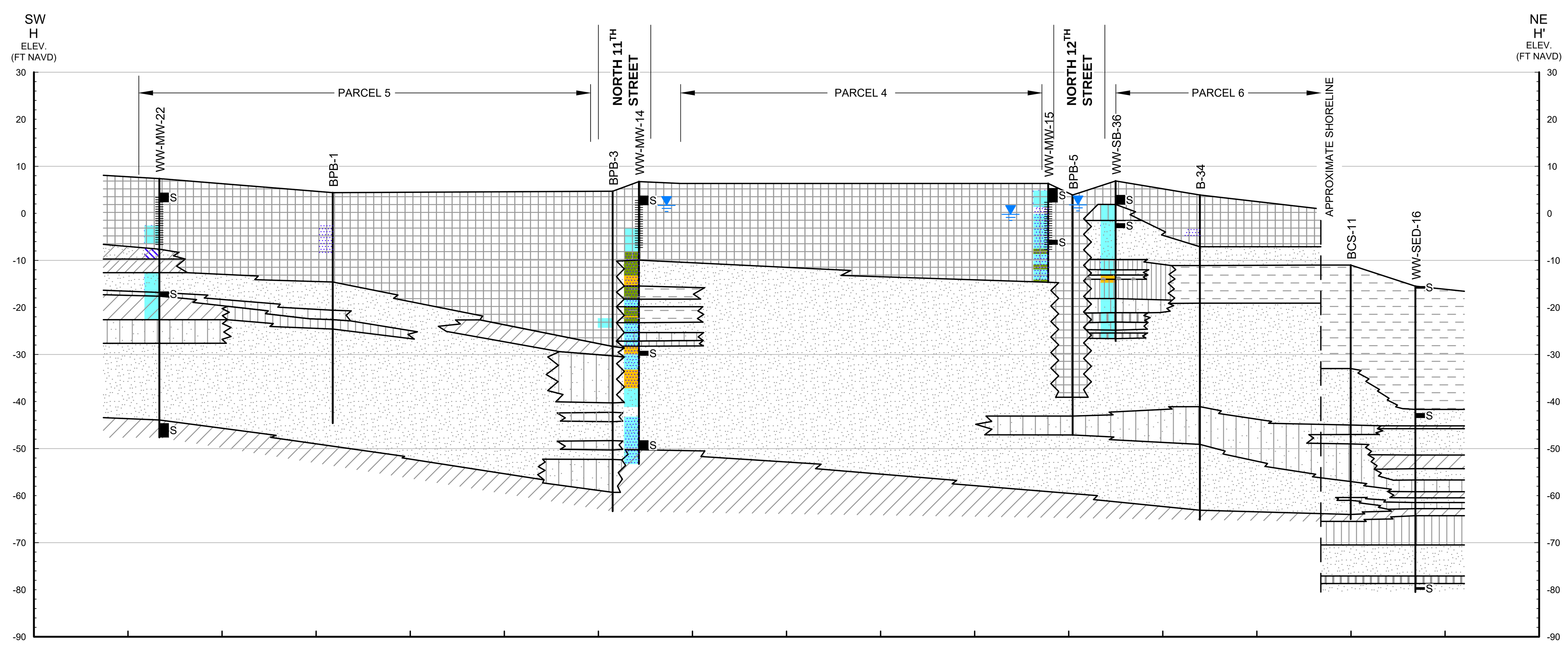
Remedial Investigation Report Williamsburg Works Former MGP Site Borough Of Brooklyn, New York	GEI Consultants	GEOLOGIC CROSS SECTIONS C-C', D-D', E-E', AND F-F'
nationalgrid	Project 093060	January 2015 — Plate 4

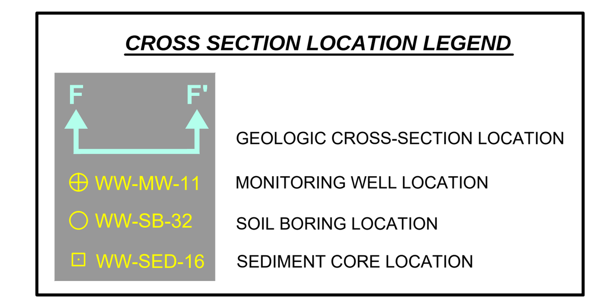


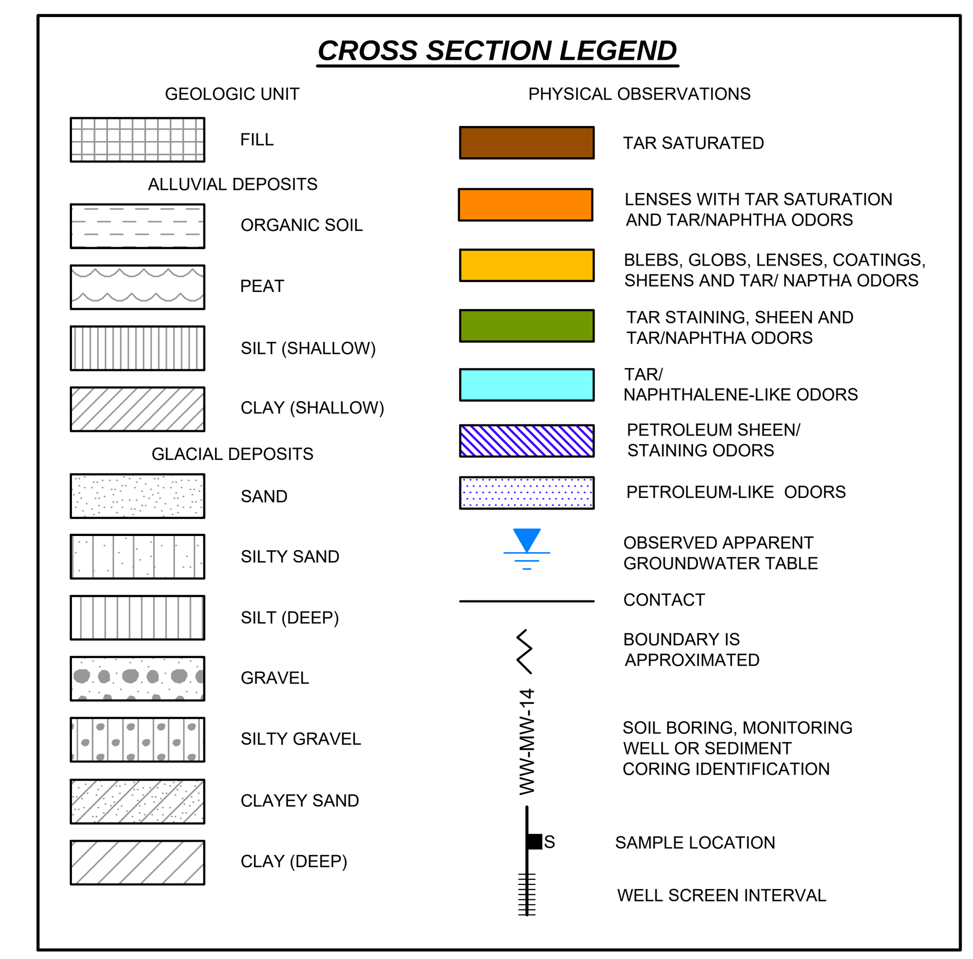


CROSS-SECTION LOCATION

0 200' 400'

SCALE: 1" = 200'





NOTES:

1. HIGH AND LOW TIDE WATERLINE MEASUREMENTS ARE FROM THE 12/19/12 GROUNDWATER GAUGING EVENT.
2. RI BORING WW-MW-11 WAS USED IN CROSS SECTION F-F' RATHER THAN PREVIOUS BORING BPP-8/MW-3 WHICH IS LOCATED CLOSER TO THE CROSS SECTION LINE.

SOURCES:

1. AERIAL PHOTOGRAPH OBTAINED FROM ARCGIS ONLINE WORLD IMAGERY MAP SERVICE, ACCESSED ON 03/11/13.
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
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HORIZONTAL SCALE: 1" = 60'
0 60' 120'

0 20' 40'
VERTICAL SCALE: 1" = 20'
NOTE: 3x VERTICAL EXAGGERATION

Remedial Investigation Report
Williamsburg Works Former MGP Site
Borough Of Brooklyn, New York

nationalgrid

GEI Consultants

GEOLOGIC CROSS SECTIONS
G-G' AND H-H'

Project 093060 | January 2015 | Plate 5

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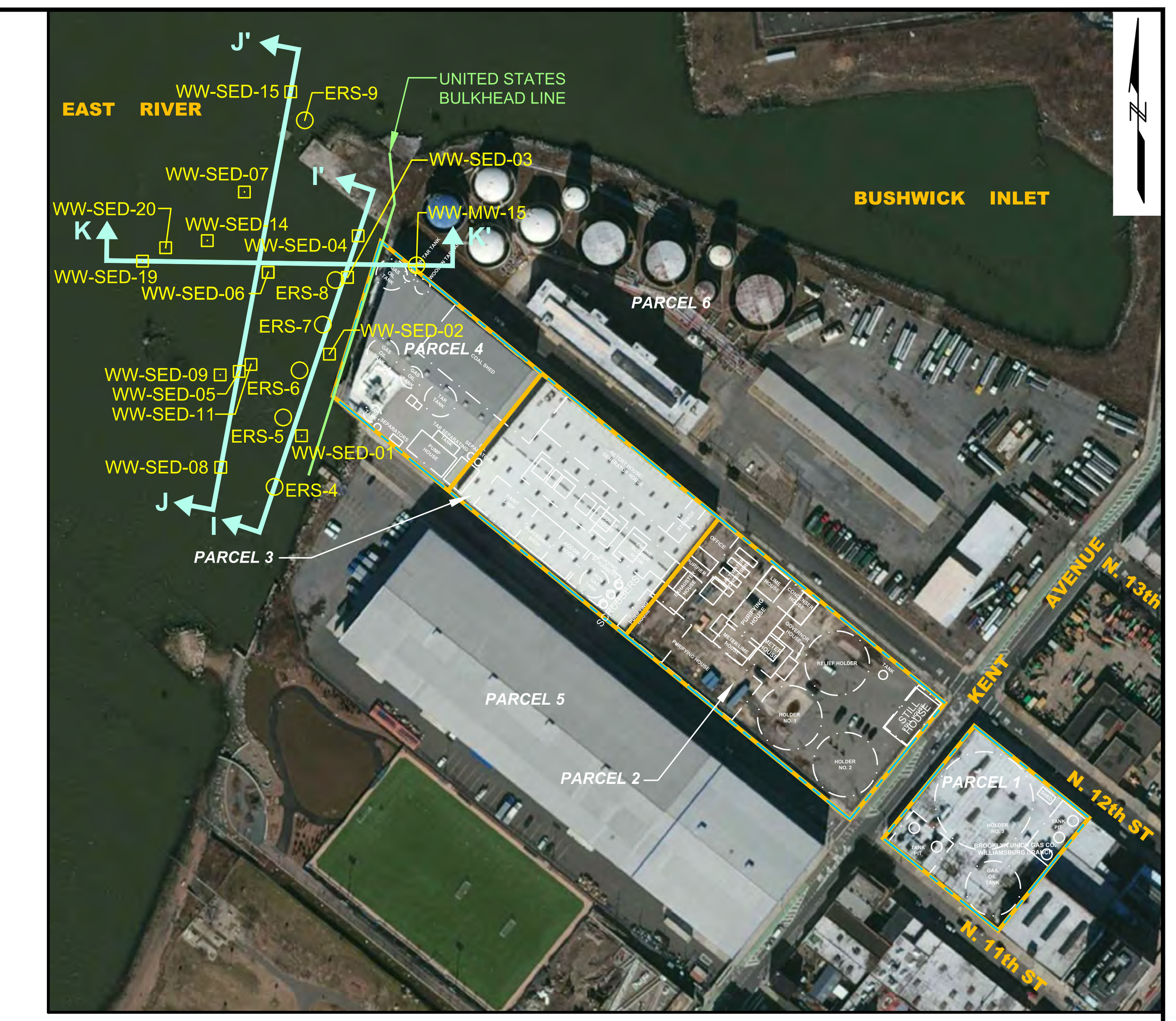
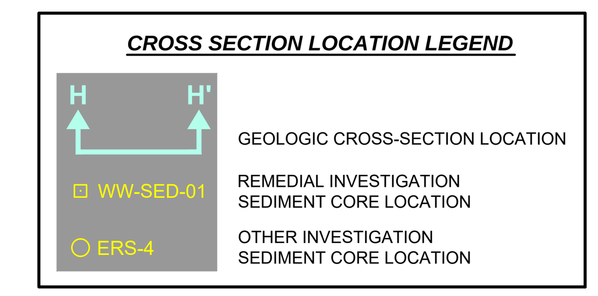
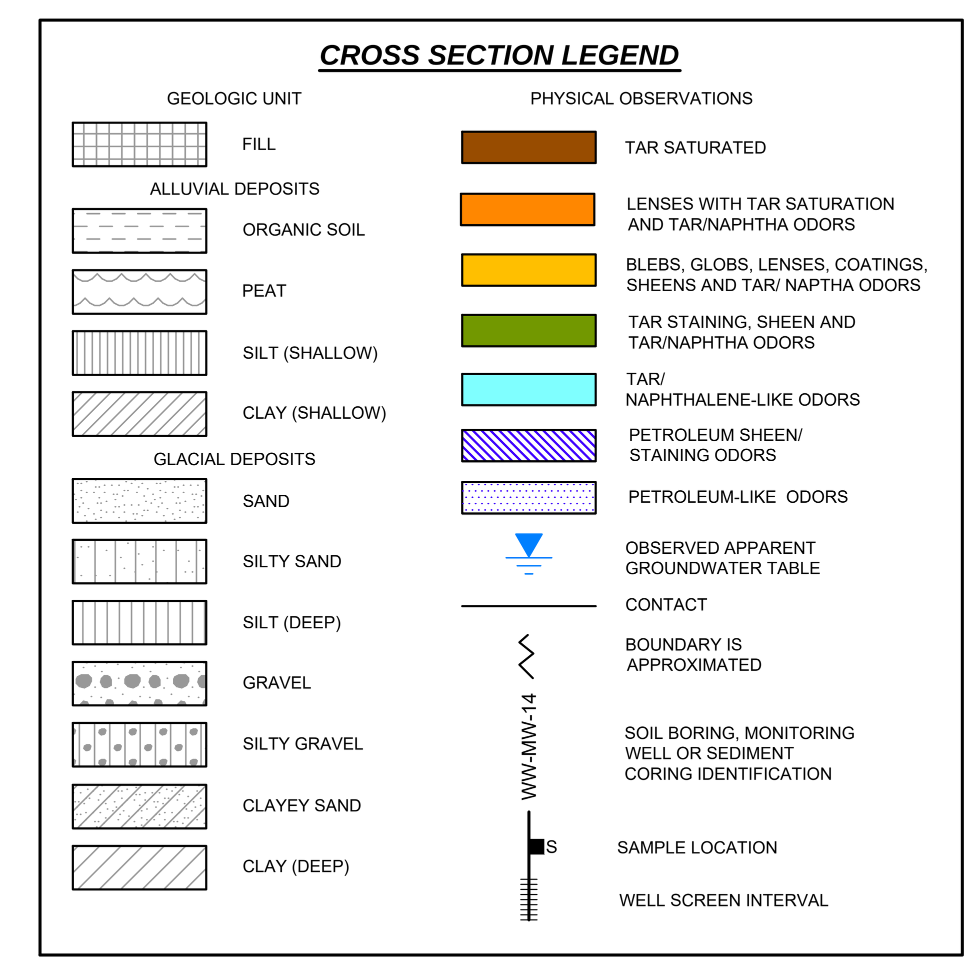


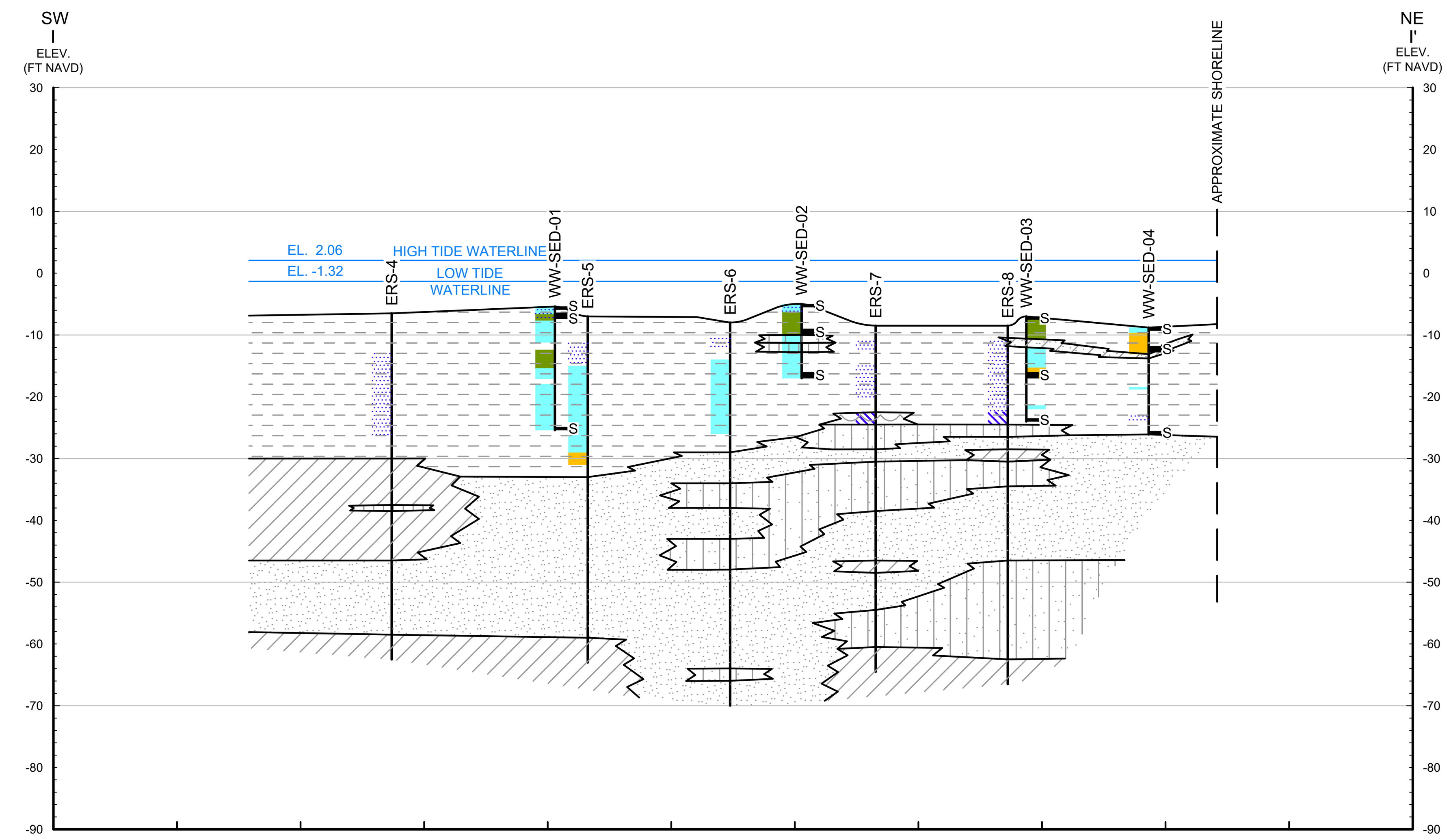
CROSS-SECTION LOCATION

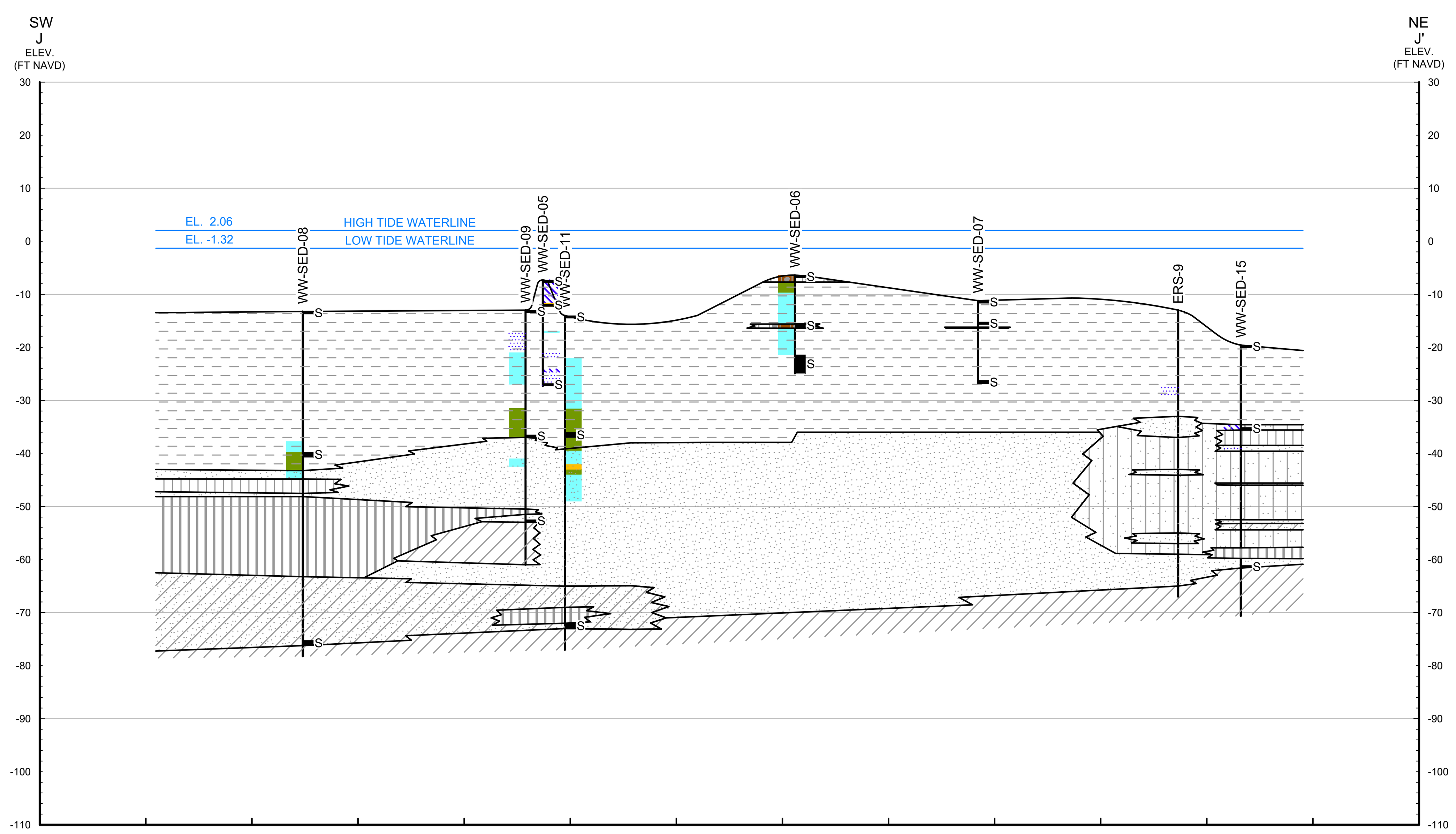
0 200' 400'

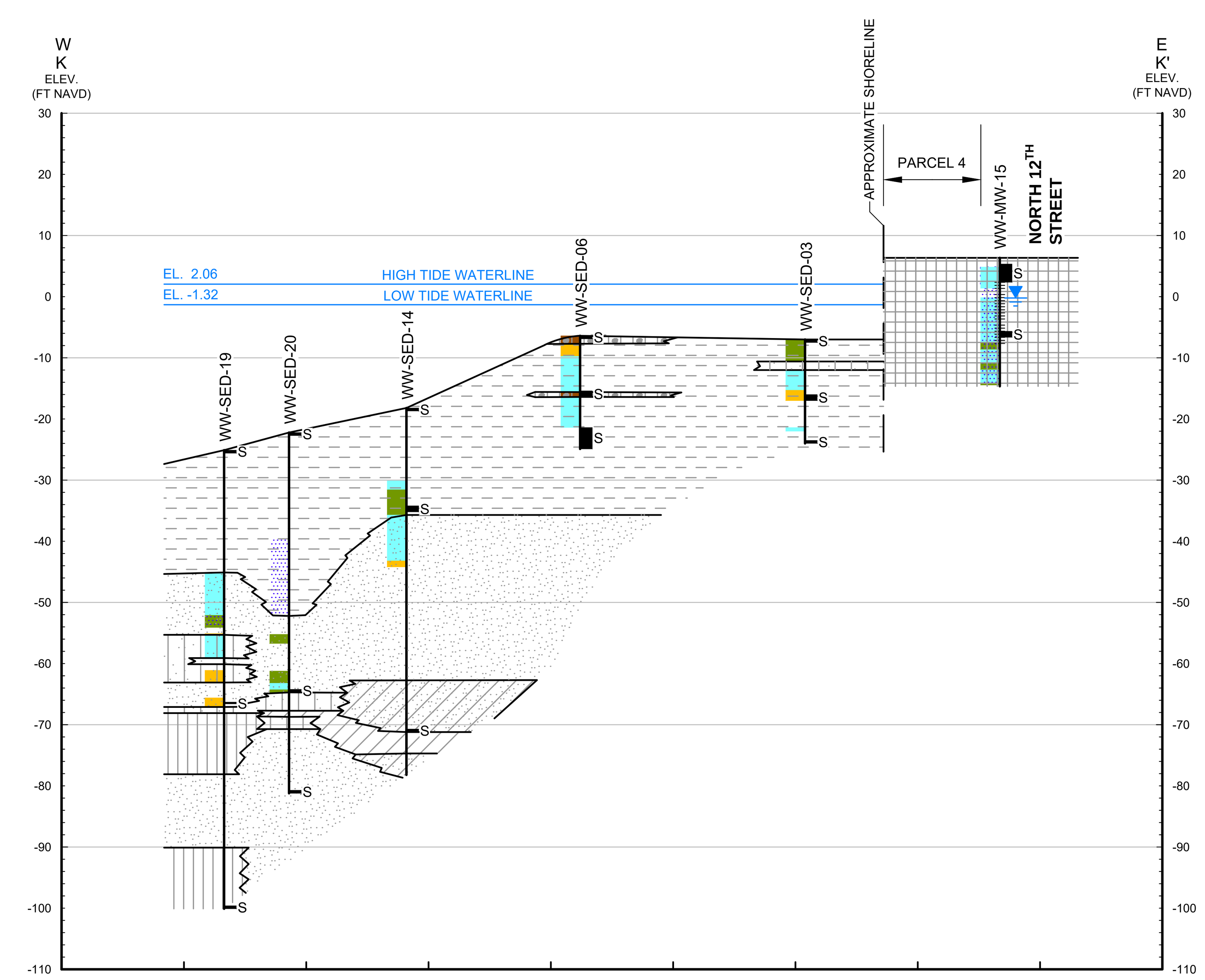
SCALE: 1" = 200'











NOTE:

1. HIGH AND LOW TIDE WATERLINE MEASUREMENTS ARE FROM THE 12/19/12 GROUNDWATER GAUGING EVENT.

SOURCES:

1. AERIAL PHOTOGRAPH OBTAINED FROM ARCGIS ONLINE WORLD IMAGERY MAP SERVICE, ACCESSED ON 03/11/13.
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
4. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM http://www.oasisnyc.net, ACCESSED JANUARY 2008.
5. SURVEY OF WILLIAMSBURG WORKS BOUNDARIES, EXISTING CONDITIONS, AND SAMPLE LOCATIONS CONDUCTED BY GEI CONSULTANTS, INC. SURVEYED BY NEW YORK STATE-LICENSED LAND SURVEYOR No. 050146.
6. SITE INVESTIGATION REPORT PROPERTY WEST OF KENT AVENUE BETWEEN AND INCLUDING NORTH 10TH AND NORTH 12TH STREETS, PREPARED BY: METCALF AND EDDY OF NEW YORK, INC., NOVEMBER 2006.

HORIZONTAL SCALE: 1" = 60'

0 60' 120'

0 20' 40'

VERTICAL SCALE: 1" = 20'

NOTE: 3x VERTICAL EXAGGERATION

Remedial Investigation Report
Williamsburg Works Former MGP Site
Borough Of Brooklyn, New York

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GEOLOGIC CROSS SECTIONS
I-I', J-J', AND K-K'

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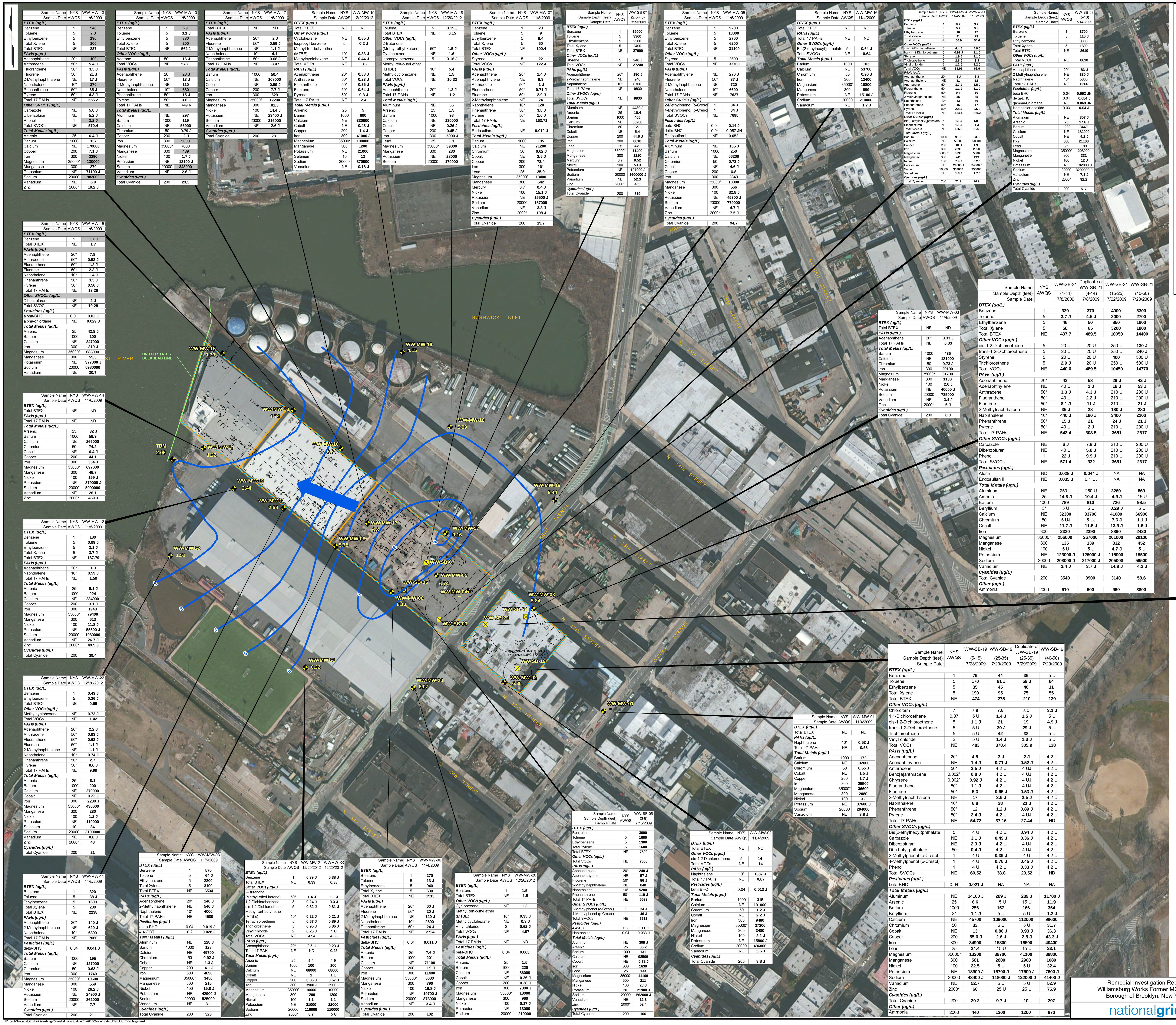
\\gtb1v-fs01\ I:\Project\National Grid\Williamsburg\Draft RI Report\Drawings\2015-01\Willimasburg MGP-XSections.dwg - 10/17/2017



Sample Name: / Sample Depth (feet): / Sample Date:	NYS AWQS	WW-SB-21 (4-14) 7/8/2009	Duplicate of WW-SB-21 (4-14) 7/8/2009	WW-SB-21 (15-25) 7/22/2009	WW-SB-21 (40-50) 7/23/2009
BTEX (ug/L)					
Benzene	1	**330**	**370**	**4000**	**8300**
Toluene	5	**3.7 J**	**4.5 J**	**2000**	**2700**
Ethylbenzene	5	**46**	**50**	**850**	**1600**
Total Xylene	5	**58**	**65**	**3200**	**1800**
Total BTEX	NE	**437.7**	**489.5**	**10050**	**14400**
Other VOCs (ug/L)					
cis-1,2-Dichloroethene	5	20 U	20 U	250 U	**130 J**
trans-1,2-Dichloroethene	5	20 U	20 U	250 U	**240 J**
Styrene	5	20 U	20 U	**400**	500 U
Trichloroethene	5	**2.9 J**	20 U	250 U	500 U
Total VOCs	NE	**440.6**	**489.5**	**10450**	**14770**
PAHs (ug/L)					
Acenaphthene	20*	**42**	**58**	**29 J**	**42 J**
Acenaphthylene	NE	40 U	**2 J**	**18 J**	**53 J**
Anthracene	50*	**3.3 J**	**4.3 J**	210 U	200 U
Fluoranthene	50*	40 U	**2.2 J**	210 U	200 U
Fluorene	50*	**8.1 J**	**11 J**	210 U	**21 J**
2-Methylnaphthalene	NE	**35 J**	**28**	**180 J**	**280**
Naphthalene	10*	**440 J**	**180 J**	**3400**	**2200**
Phenanthrene	50*	**15 J**	**21**	**24 J**	**21 J**
Pyrene	50*	40 U	**2 J**	210 U	200 U
Total 17 PAHs	NE	**543.4**	**308.5**	**3651**	**2617**
Other SVOCs (ug/L)					
Carbazole	NE	**6 J**	**7.8 J**	210 U	200 U
Dibenzofuran	NE	40 U	**5.8 J**	210 U	200 U
Phenol	1	**22 J**	**9.9 J**	210 U	200 U
Total SVOCs	NE	**571.4**	**332**	**3651**	**2617**
Pesticides (ug/L)					
Aldrin	ND	**0.028 J**	**0.044 J**	NA	NA
Endosulfan II	NE	**0.035 J**	0.1 UJ	NA	NA
Total Metals (ug/L)					
Aluminum	NE	250 U	250 U	**3260**	**869**
Arsenic	25	**14.8 J**	**10.4 J**	**4.9 J**	15 U
Barium	1000	**789**	**810**	**726**	**98.5**
Beryllium	3*	5 U	5 U	**0.29 J**	5 U
Calcium	NE	**32300**	**33700**	**41000**	**66900**
Chromium	50	5 UJ	5 UJ	**7.6 J**	**1.1 J**
Cobalt	NE	**11.7 J**	**11.5 J**	**13.9 J**	**1.6 J**
Iron	300	**2320**	**2390**	**8890**	**2420**
Magnesium	35000*	**256000**	**267000**	**261000**	**29100**
Manganese	300	**135**	**139**	**332**	**452**
Nickel	100	5 U	5 U	**4.7 J**	5 U
Potassium	NE	**123000 J**	**126000 J**	**115000**	**15500**
Sodium	20000	**208000 J**	**217000 J**	**205000**	**56500**
Vanadium	NE	**3.4 J**	**3.7 J**	**14.8 J**	**4.2 J**
Cyanides (ug/L)					
Total Cyanide	200	**3540**	**3900**	**3140**	**58.6**
Other (ug/L)					
Ammonia	2000	**610**	**600**	**960**	**3800**

Sample Name: / Sample Depth (feet): / Sample Date:	NYS AWQS	WW-SB-22 (6-16) 7/8/2009	WW-SB-22 (35-45) 7/27/2009	WW-SB-22 (55-65) 7/27/2009
BTEX (ug/L)				
Benzene	1	**43**	**1300**	**9600**
Toluene	5	5 U	**360**	**1100**
Ethylbenzene	5	**1 J**	**160**	**1400**
Total Xylene	5	5 U	**290**	**1500**
Total BTEX	NE	**44**	**2110**	**13600**
Other VOCs (ug/L)				
Acetone	50*	10 U	**55 J**	1000 U
cis-1,2-Dichloroethene	5	5 U	**97**	500 U
Styrene	5	5 U	**16 J**	500 U
Vinyl chloride	2	5 U	**14 J**	500 U
Total VOCs	NE	**44**	**2292**	**13600**
PAHs (ug/L)				
Acenaphthene	20*	**3.1 J**	**40 J**	**82 J**
Acenaphthylene	NE	**0.66 J**	**24 J**	200 U
Anthracene	50*	**0.59 J**	210 U	200 U
Benzo[g,h,i]perylene	NE	**5.5**	210 U	200 U
Fluoranthene	50*	**0.39 J**	210 U	200 U
Fluorene	50*	**1.2 J**	210 U	200 U
Indeno[1,2,3-cd]pyrene	0.002*	**5.3**	210 U	200 U
2-Methylnaphthalene	NE	4 U	**220**	**220**
Naphthalene	10*	4 U	**2000**	**2600**
Phenanthrene	50*	**1.7 J**	210 U	200 U
Pyrene	50*	**0.38 J**	210 U	200 U
Total 17 PAHs	NE	**18.82**	**2284**	**2902**
Other SVOCs (ug/L)				
Bis(2-ethylhexyl)phthalate	5	**2.8 J**	210 U	200 U
Butyl benzyl phthalate	50*	**1.8 J**	210 U	200 U
Carbazole	NE	**0.74 J**	210 U	200 U
Diethyl phthalate	50*	**1.1 J**	210 U	200 U
Di-n-butyl phthalate	50	**0.82 J**	210 U	200 U
Total SVOCs	NE	**26.08**	**2284**	**2902**
Total Metals (ug/L)				
Aluminum	NE	**411 J**	**1010 J**	**4900 J**
Arsenic	25	**8.4 J**	15 U	15 U
Barium	1000	**200**	**528**	**293**
Beryllium	3*	5 U	5 U	**0.64 J**
Calcium	NE	**137000**	**296000**	**85400**
Chromium	50	5 U	**4 J**	**20**
Cobalt	NE	**1.6 J**	**1 J**	**5.3**
Copper	200	R	**4.7 J**	**33.1 J**
Iron	300	**3390**	**22400**	**21000**
Lead	25	15 U	15 U	**9.9**
Magnesium	35000*	**34100**	**62500**	**39300**
Manganese	300	**1820**	**6270**	**466**
Nickel	100	**1.6 J**	**3.8 J**	**8.7**
Potassium	NE	**16700 J**	**32000 J**	**14800 J**
Sodium	20000	**93500 J**	**842000 J**	**106000 J**
Vanadium	NE	**3.8 J**	**3.1 J**	**15.8**
Zinc	2000*	25 U	**7.3 J**	**26.7**
Cyanides (ug/L)				
Total Cyanide	200	**60.9**	**40**	**95.4**
Other (ug/L)				
Ammonia	2000	**960**	**7600**	**9200**

Sample Name: / Sample Depth (feet): / Sample Date:	NYS AWQS	WW-SB-19 (5-15) 7/28/2009	WW-SB-19 (25-35) 7/29/2009	Duplicate of WW-SB-19 (25-35) 7/29/2009	WW-SB-19 (40-50) 7/29/2009
BTEX (ug/L)					
Benzene	1	**79**	**44**	**36**	5 U
Toluene	5	**170**	**91 J**	**59 J**	**64**
Ethylbenzene	5	**35**	**45**	**40**	**11**
Total Xylene	5	**190**	**95**	**75**	**55**
Total BTEX	NE	**474**	**275**	**210**	**130**
Other VOCs (ug/L)					
Chloroform	7	**7.9**	**7.6**	**7.1**	**3.1 J**
1,1-Dichloroethene	0.07	5 U	**1.4 J**	**1.5 J**	5 U
cis-1,2-Dichloroethene	5	**1.1 J**	**21**	**19**	**4.9 J**
trans-1,2-Dichloroethene	5	5 U	**30 J**	**29 J**	5 U
Trichloroethene	5	5 U	**42**	**38**	5 U
Vinyl chloride	2	5 U	**1.4 J**	**1.3 J**	5 U
Total VOCs	NE	**483**	**378.4**	**305.9**	**138**
PAHs (ug/L)					
Acenaphthene	20*	**4.5**	**3 J**	**2 J**	4.2 U
Acenaphthylene	NE	**1.4 J**	**0.71 J**	**0.52 J**	4.2 U
Anthracene	50*	**2.5 J**	4.2 U	4 UJ	4.2 U
Benz[a]anthracene	0.002*	**0.8 J**	4.2 U	4 UJ	4.2 U
Chrysene	0.002*	**0.92 J**	4.2 U	4 UJ	4.2 U
Fluoranthene	50*	**1.1 J**	4.2 U	4 UJ	4.2 U
Fluorene	50*	**5.3**	**0.65 J**	**0.53 J**	4.2 U
2-Methylnaphthalene	NE	**17**	**3.6 J**	**2.5 J**	4.2 U
Naphthalene	10*	**6.8**	**28**	**21 J**	4.2 U
Phenanthrene	50*	**12**	**1.2 J**	**0.89 J**	4.2 U
Pyrene	50*	**2.4 J**	4.2 U	4 UJ	4.2 U
Total 17 PAHs	NE	**54.72**	**37.16**	**27.44**	ND
Other SVOCs (ug/L)					
Bis(2-ethylhexyl)phthalate	5	4 U	4.2 U	**0.94 J**	4.2 U
Carbazole	NE	**3.1 J**	**0.49 J**	**0.36 J**	4.2 U
Dibenzofuran	NE	**2.3 J**	4.2 U	4 UJ	4.2 U
Di-n-butyl phthalate	50	**0.4 J**	4.2 U	4 UJ	4.2 U
2-Methylphenol (o-Cresol)	1	4 U	**0.39 J**	4 U	4.2 U
4-Methylphenol (p-Cresol)	1	4 U	**0.76 J**	**0.45 J**	4.2 U
Phenol	1	4 U	4.2 U	**0.33 J**	4.2 U
Total SVOCs	NE	**60.52**	**38.8**	**29.52**	ND
Pesticides (ug/L)					
beta-BHC	0.04	**0.021 J**	NA	NA	NA
Total Metals (ug/L)					
Aluminum	NE	**14100 J**	**289 J**	**289 J**	**11700 J**
Arsenic	25	**6.6**	15 U	15 U	**11.9**
Barium	1000	**256**	**157**	**166**	**354**
Beryllium	3*	**1.1 J**	5 U	5 U	**1.2 J**
Calcium	NE	**45700**	**109000**	**112000**	**99600**
Chromium	50	**33**	5 U	5 U	**31.7**
Cobalt	NE	**13**	**0.86 J**	**0.93 J**	**36.3**
Copper	200	**55.6 J**	**2.6 J**	**2.5 J**	**43.3 J**
Iron	300	**34900**	**15800**	**16500**	**40400**
Lead	25	**24.4**	15 U	15 U	**23.1**
Magnesium	35000*	**13200**	**39700**	**41100**	**38800**
Manganese	300	**581**	**2800**	**2900**	**1080**
Nickel	100	**22.5**	5 U	5 U	**32.4**
Potassium	NE	**18900 J**	**16700 J**	**17600 J**	**7600 J**
Sodium	20000	**43400 J**	**118000 J**	**122000 J**	**41400 J**
Vanadium	NE	**52.7**	5 U	5 U	**52.9**
Zinc	2000*	**66**	25 U	25 U	**75.9**
Cyanides (ug/L)					
Total Cyanide	200	**29.2**	**9.7 J**	**10**	**297**
Other (ug/L)					
Ammonia	2000	**440**	**1300**	**1200**	**870**

LEGEND

	APPROXIMATE CURRENT PROPERTY BOUNDARY
	APPROXIMATE BOUNDARY OF FORMER MGP PROPERTY
	HISTORIC MGP STRUCTURES
2	GROUNDWATER CONTOUR (FEET NAVD88)
WW-MW-10	MONITORING WELL LOCATION
WW-SB-04	SOIL BORING WITH TEMPORARY GROUNDWATER POINT
2.23	GROUNDWATER ELEVATION (FEET NAVD88)
TBM	TIDAL BENCHMARK
	GROUNDWATER FLOW DIRECTION
NYS AWQS	NEW YORK STATE AMBIENT WATER QUALITY STANDARDS AND GUIDANCE VALUES FOR GA GROUNDWATER
ND	NOT DETECTED
NE	NO ESTABLISHED NYS AWQS
J	ESTIMATED VALUE
JN	ANALYTE IS PRESUMPTIVELY PRESENT AT AN APPROXIMATED QUANTITY
*	THE VALUE IS A GUIDANCE VALUE AND NOT A STANDARD
BOLD	DETECTED CONCENTRATION
9200	THE DETECTED RESULT VALUE EXCEEDS NYS AWQS
ug/L	MICROGRAMS PER LITER OR PARTS PER BILLION (ppb)
BTEX	BENZENE, TOLUENE, ETHYLBENZENE, AND XYLENES
PAHs	POLYCYCLIC AROMATIC HYDROCARBONS
SVOCs	SEMIVOLATILE ORGANIC COMPOUNDS
VOCs	VOLATILE ORGANIC COMPOUNDS

0 80 160
SCALE, FEET

NOTES:

1. CONTOURS MADE BY LINEAR INTERPOLATION WITH MANUAL SMOOTHING TO ADJUST ARTIFACTS OF INTERPOLATION BETWEEN RELATIVELY DISTANT WELLS.
2. GROUNDWATER CONTOURS AND ELEVATIONS ARE IN FEET ABOVE NORTH AMERICAN VERTICAL DATUM (NAVD88)
3. WW-MW-01 AND WW-MW-04 WERE UNABLE TO BE LOCATED AND WERE NOT INCLUDED IN THE GROUNDWATER CALCULATIONS.
4. PERMANENT WELLS WERE INSTALLED SPANNING THE GROUNDWATER SURFACE. TEMPORARY GROUNDWATER POINTS WERE INSTALLED AT VARIOUS DEPTHS SHOWN ON THE ANALYTICAL SAMPLE TABLES.

SOURCE:

1. AERIAL PHOTOGRAPH 2011 ESRI WORLD IMAGERY AND ITS DATA SUPPLIERS ACCESSED VIA ARCGISONLINE.COM
2. SANBORN FIRE INSURANCE MAPS (1887 THROUGH 1996).
3. HISTORIC MAP OF BROOKLYN UNION GAS, DATED JULY 27, 1921.
4. NEW YORK CITY OPEN ACCESSIBLE SPACE INFORMATION SYSTEM HTTP://WWW.OASISNYC.NET ACCESSED JANUARY 2008.
5. SURVEY OF WILLIAMSBURG WORKS BOUNDARIES, EXISTING CONDITIONS, AND SAMPLE LOCATIONS CONDUCTED BY GEI CONSULTANTS, INC. SURVEYED BY NEW YORK STATE-LICENSED LAND SURVEYOR No. 050146.

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DECEMBER 19, 2012 HIGH TIDE GROUNDWATER CONTOURS AND GROUNDWATER ANALYTICAL SUMMARY

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