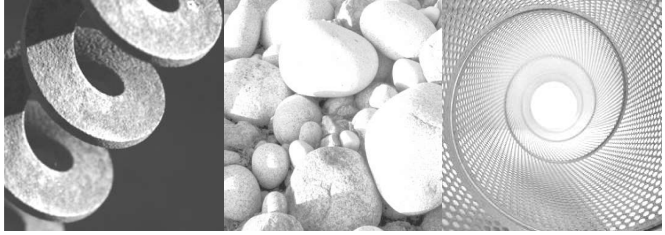


GEI Consultants

Consulting
Engineers and
Scientists

Pre-Design Investigation Work Plan

Nassau Works MGP Site

Kent Avenue and Clymer Street
Brooklyn, New York
NYSDEC Consent Index No. W2-1090-06-06
Site #: 224019B

Submitted to:
National Grid
One MetroTech Center
Brooklyn, NY 11201

Submitted by:
GEI Consultants, Inc., P.C.
455 Winding Brook Drive
Glastonbury, CT 06033
860-368-5300

Revised February 2022
March 2021
Project 093040-2.1205

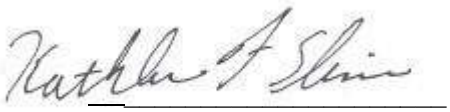
Melissa Felter, P.G., LEP
Senior Geologist

Kathleen Slimon, P.E., LEP
Project Manager

Qualified Environmental Professional's Certification

I, Kathleen Slimon, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).

Date: February 25, 2022



Kathleen Slimon, P.E., LEP
GEI Consultants, Inc., P.C.

Table of Contents

Qualified Environmental Professional's Certification i

Abbreviations and Acronyms iii

Executive Summary iv

1. Introduction 1

2. Site Background 2
2.1 Site Description 2
2.2 Site History 2
2.3 Remedial Investigation and Supplemental Remedial Investigation 4
2.4 Selected Remedy 7

3. Scope of Work 8
3.1 Soil Borings 8
3.2 Recovery Well Installation 9
3.3 DNAPL Recovery Evaluation 10
3.4 Survey 11
3.5 Investigation Derived Waste 11
3.6 Report Preparation 11

4. Schedule 12

References 13

Figures

1. Site Location Map
2. Site Layout and Previous Investigation Locations
3. Proposed Sample Locations

Appendices

A. RI and SRI Cross-Sections

MF/KS:bdp
H:\WPROC\Project\NationalGrid\Nassau\PDIWP\Final PDIWP\workplan.hw224091B.2020-12.nassau_gas_works_PDI-rev-2022-02-25 NG.docx

Abbreviations and Acronyms

bgs	Below ground surface
BNYDC	Brooklyn Navy Yard Development Corporation
BUG	Brooklyn Union Gas Company
CAMP	Community Air Monitoring Plan
Con Edison	Consolidated Edison Company of New York, Inc.
CSOs	Combined Sewer Overflows
DER	Division of Environmental Remediation
DNAPL	Dense Non-Aqueous Phase Liquid
ELAP	Environmental Lab Approval Program
FS	Feasibility Study
FSP	Field Sampling Plan
ft	feet
ft-msl	mean sea level
GEI	GEI Consultants, Inc., P.C.
HASP	Health and Safety Plan
ISMP	Interim Site Management Plan
LNAPL	Light Non-Aqueous Phase Liquid
MGP	Manufactured Gas Plant
MNI	Mobile NAPL Interval
NAPL	Non-Aqueous Phase Liquid
NYCRR	New York Codes, Rules and Regulations
NYSAWQS	New York State Ambient Water Quality Standards
NYSDEC	New York State Department of Environmental Conservation
PAHs	polycyclic aromatic hydrocarbons
PDI	Pre-Design Investigation
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
RI	Remedial Investigation
ROD	Record of Decision
SCOs	Soil Cleanup Objectives
SRI	Supplemental Remedial Investigation
USDOT	United States Department of Transportation

Executive Summary

National Grid and the City of New York (the City), entered into Administrative Order on Consent Index No. W2-1090-06-06 in October 2006 (modified in September 2011) with the New Yok State Department of Environmental Conservation (NYSDEC) to remediate impacts at the Nassau Works manufactured gas plant (MGP), Site No. 224019B, hereinafter "Site". The Site is located in the Borough of Brooklyn, Kings County, New York near the current-day intersection of Kent Avenue and Clymer Street within the northeast portion of a 13-acre parcel, used by the City of New York, that is itself located in the northeastern corner of the ±265-acre Brooklyn Navy Yard industrial park.

The Record of Decision (ROD) for the Site was issued by the NYSDEC in September 2020. The approved remedy for the Site includes a surface cover system, institutional controls and dense non-aqueous phase liquid (DNAPL) recovery. On behalf of National Grid, GEI Consultants, Inc., P.C. (GEI) prepared this Pre-Design Investigation (PDI) Work Plan to evaluate the potential for DNAPL recovery at the Site and in an off-site area identified in the ROD.

The proposed scope of work for the PDI includes installation of a total of 13 soil borings (8 on-site and 5 off-site) in zones of potential DNAPL recovery. Proposed zones of potential DNAPL recovery were identified in the ROD and were selected based on zones of apparent NAPL saturation identified during the Remedial Investigation (RI) that represent the greatest potential for DNAPL recovery. In addition, the potential to recover DNAPL saturation identified in soil boring B46 beneath the Wallabout Channel will be evaluated. DNAPL impacts that are limited to coated material, sheens, staining and thin lenses were not selected for inclusion in the PDI as these areas are unlikely to contain mobile or recoverable DNAPL.

A maximum of seven recovery wells are proposed to be installed to evaluate the potential for DNAPL recovery at the Site and the off-site areas. The installation depths of the recovery wells will be determined by the visual observations made during the soil boring phase of this investigation. Recovery wells will be screened at intervals exhibiting the greatest degree of DNAPL saturation. It is anticipated that two intermediate and two deep recovery wells will be installed on site and two intermediate recovery wells will be installed off site. The DNAPL recovery wells will be gauged for the presence and thickness of DNAPL over a six-month period following installation.

An initial recovery well installation summary report and monthly DNAPL gauging data updates will be prepared and provided to the NYSDEC. A final PDI report will be prepared once the 6-month monitoring period is complete and will include a summary of the DNAPL

gauging and recovery data and recommendations regarding the frequency and location of DNAPL recovery operations warranted at the Site.

1. Introduction

National Grid and the City of New York (the City), entered into Administrative Order on Consent Index No. W2-1090-06-06 in October 2006 (modified in September 2011) with the New Yok State Department of Environmental Conservation (NYSDEC) to remediate impacts at the Nassau Works manufactured gas plant (MGP), Site No. 224019B, hereinafter "Site". The Site is located in the Borough of Brooklyn, Kings County, New York near the current-day intersection of Kent Avenue and Clymer Street. The Site is located in the northeast portion of a 13-acre parcel, used by the City of New York, that is itself located in the northeastern corner of the ±265-acre Brooklyn Navy Yard industrial park (Fig. 1).

The Record of Decision (ROD) for the Site was issued by the NYSDEC in September 2020 (NYSDEC 2020). The approved remedy for the Site includes a surface cover system, institutional controls and dense non-aqueous phase liquid (DNAPL) recovery.

On behalf of National Grid, GEI Consultants, Inc., P.C. (GEI) prepared this Pre-Design Investigation (PDI) Work Plan to evaluate the potential for DNAPL recovery at the Site and in an off-site area identified in the ROD. This work plan includes the following components:

- Site background.
- Scope of work for the Pre-Decision Investigation (PDI).
- Project schedule.

The PDI will be conducted in accordance with the Interim Site Management Plan (ISMP) including the Health and Safety Plan (HASP), Community Air Monitoring Plan (CAMP), Quality Assurance Project Plan (QAPP), and Field Sampling Plan (FSP).

2. Site Background

This section presents a summary description of the Site and its history. A detailed Site description and history are presented in the *Final Remedial Investigation Report, Nassau Gas Works, Brooklyn New York,* prepared by GEI Consultants Inc., dated October 2007 (RI report), and the *Supplemental Remedial Investigation Report, Off-Site Areas, Nassau Gas Works Brooklyn New York,* prepared by GEI Consultants, Inc., P.C. dated February 2017 (Supplemental Remedial Investigation (SRI) report). The Site layout and previous investigation locations are provided on Fig. 2.

2.1 Site Description

The Site is situated among mixed industrial, commercial/manufacturing land uses within the Brooklyn Navy Yard industrial park and off-site residential land uses. The Brooklyn Navy Yard Development Corporation (BNYDC) is the not-for-profit corporation that manages the Navy Yard industrial park under a contract with the City. The BNYDC is currently in the planning stages for an 18-story industrial/commercial development which will include the majority of the Site. The Site is currently used by the City for storage of derelict equipment and supplies and temporary parking of trailers.

Access to the Site is limited by chain-link fencing and a locked gate. There are no significant aboveground structures currently on the Site, and the ground surface of the Site consists of the concrete foundation of the former Navy Yard Boat Shop and pavement. Two surface water bodies are located in the vicinity of the Site. They are the Wallabout Channel (including the Wallabout Channel Barge Basin) and the Navy Yard Basin. Both are man-made waterways. There are no groundwater supply wells on the Site or within a 1-mile radius of the Site.

2.2 Site History

The shoreline of the Brooklyn Navy Yard has changed substantially from the late 1800s to today. The Brooklyn Navy Yard was an industrial behemoth with a multitude of maritime activities which have their own contamination impacts. The Site and vicinity were initially developed for industrial use in the mid-1800s and were subject to considerable filling prior to development. The following is a brief chronological summary of the industrial use of the Site area.

- The Wallabout Oil Works was located on the northern third of the Site and on a portion of the adjacent property (The Con-Edison Parcel) north of the Site from

1860 until prior to 1895. In its 30-year plus history, the Wallabout Oil Works produced significant amounts of non-aqueous phase liquid (NAPL) byproducts and waste very similar to an MGP operation. ExxonMobil is a successor to the Wallabout Oil Works through the Standard Oil ownership chain and acquisition of the Charles Pratt Company.

- Also located on the Con-Edison Parcel bordering the Site to the north, partly overlapping with the former location of the Wallabout Oil Works, a coal-fired power plant (hereinafter Con Edison power plant) operated for over eighty years starting at the turn of the 19th century. This property has been operated by Brooklyn Rapid Transit Company, Brooklyn Manhattan Transit Corporation, State of New York (Metropolitan Transit Authority) and Consolidated Edison Company of New York, Inc. (Con Edison), which used the parcel for plant operations and distribution purposes until 1989 when the plant turbines were decommissioned. All structures associated with the plant have been demolished, and remedial actions were completed under NYSDEC Site Number V00732-2, at the location in February 2014.

- The Nassau Works MGP was operating by circa 1873 and ceased operations prior to 1935. The works were originally independent, owned by the Nassau Gas Light Company. In 1895, the Nassau Gas Light Company was acquired by the Brooklyn Union Gas Company (hereinafter "BUG").

- During World War I (1914 to 1918), a toluol plant constructed by the United States Government was located within the footprint of the Site and extracted toluol and benzol for the production of explosives to support the World War I effort. The toluol plant operations included four (4) light oil storage tanks near the northern boundary of the Site.

- In 1941, BUG sold the Site to the United States Navy to accommodate ship-building operations at the Brooklyn Navy Yard, the largest United States government owned shipbuilding yard until it closed in 1965. The Site was redeveloped by the United States Navy and included a Boat Shop and Saw Mill. In 1942, approximately 0.46 acres of the Site were dredged to create the Wallabout Channel Barge Basin.

- On June 18, 1970, the United States government sold the Brooklyn Navy Yard to the City of New York. On March 19, 1984, the Brooklyn Navy Yard Development Corporation, a not-for-profit agency, entered into a 99-year lease with the City of New York for management and operation of the former Brooklyn Navy Yard property. The New York City Department of Sanitation utilized the

Site for salt storage operations which initiated between 1996 and 2002 and continued through 2012. The Site is currently vacant and used for storage.

In 1942, approximately 0.46 acres of the Site were dredged to create the Wallabout Channel Barge Basin. The Wallabout Channel Barge Basin and portions of the Wallabout Channel were actively dredged until at least 1957 during operations by the U.S. Navy. Since the mid-1900s combined sewer overflows (CSOs) have operated and discharged to the Wallabout Channel, including the Wallabout Channel Barge Basin. In addition, cooling water and ash pit materials were historically discharged to the Wallabout Channel from the Con Edison power plant.

2.3 Remedial Investigation and Supplemental Remedial Investigation

The RI of the Site and adjacent areas within the Brooklyn Navy Yard was completed between 2004 and 2005. The RI delineated the lateral and vertical extent of the investigated impacts both on the Site and within the Brooklyn Navy Yard. The extent of the investigated impacts on the abutting Con-Edison Parcel to the north, at 500 Kent Avenue; in the Wallabout Channel and Wallabout Channel Barge Basin; and in the Navy Yard Basin to the southwest were delineated during the SRI, which was completed in 2014. The investigation locations and the lateral extent of visual impacts delineated are presented in Fig. 2. The vertical extent of visual impacts is illustrated on RI and SRI Report cross-sections provided in Appendix A.

Key findings of the RI and SRI are as follows:

<u>Stratigraphy</u>

- Soil borings indicated that the shallowest subsurface materials consist of fill underlain by alluvial, marsh and harbor deposits. Beneath these materials, glacial till, glacial outwash sands, glacial lake clay, Gardiners Clay, and bedrock were encountered, although not all of these materials were observed in each boring.

<u>Non-Aqueous Phase Liquid</u>

- Areas of subsurface DNAPL and petroleum-related impacts (collectively NAPL impacts) were identified in the RI and SRI. The origin of these impacts can be from numerous sources that utilized and produced similar feedstock materials and byproducts and in turn are likely to account for delineated NAPL impacts observed in the study area. Potential sources of delineated NAPL impacts include:

- Wallabout Oil Works (located on the Site and on the Con-Edison Parcel).
- ConEdison power plant, New York City's former power plant and other operations supporting Brooklyn Rapid Transit and Brooklyn-Manhattan Transit rail operations (located on the Con-Edison Parcel).
- Nassau Works MGP.
- U.S. Government toluol plant (located on the Site).
- Filling associated with the Brooklyn Navy Yard.
- Navy Yard operations on the Site.
- New York City Department of Sanitation operations (located on the Site).

These former operations used and/or produced similar feedstocks and products which can generate similar environmental impacts including petroleum and NAPL.

- NAPL-related impacts were identified beneath the western portion of the Site which includes the location of the former Wallabout Oil Works. The NAPL associated with historic operations of both the Nassau Works and the Wallabout Oil Works, including portions on the Con-Edison Parcel, include a DNAPL that generally migrated downward through fill and coarse-grained soils until it encountered glacial deposits (glacial lacustrine and till). A portion of the DNAPL migrated on top of the glacial lake deposits to the southwest. The remainder of the DNAPL migrated downward to the top of the Gardiners Clay. Some DNAPL penetrated the Gardiners Clay within lenses of fine sand in the clay on the western portion of the Site and west of the Site, adjacent to the Wallabout Channel Barge Basin at 103 ft below grade.

- Petroleum-related impacts (staining, sheen and odors) were observed (between 0 and 5 ft below ground surface) at and above the water table. The shallowest indications of DNAPL staining and odors were observed at a depth of approximately 5.5 ft below ground surface at one location in the northern portion of the Site. The shallowest residual-DNAPL impacts (i.e., DNAPL coatings or lenses) were detected at approximately 15 ft below ground surface. A portion of the NAPL spread northward under the southwestern corner of the Con-Edison Parcel and to the northwest of the Site beneath the Wallabout Channel near the contact with the glacial deposits (outwash sand and glacial till). Isolated and sporadic lenses of NAPL-impacted soils were observed from 22 to 90 ft below ground surface on the Con-Edison Parcel north of the Site. Shallow petroleum

impacts were encountered above the deeper NAPL impacts at or near the water table in the footprint of the Wallabout Oil Works beneath the SRI area. Petroleum-impacted soils (sheen and staining within petroleum odors) were observed near the water table (between 5 ft and 15 ft below ground surface).

- Areas of deep NAPL-saturated soils were observed below the harbor deposits in glacial till deposits between approximately 20 and 70 ft below the mudline within the Wallabout Channel and between approximately 25 and 39 ft below the mudline within the Barge Basin. Some deep NAPL was observed on top of the Gardiners Clay (located at approximately 95 to 104 ft below grade) and within sand lenses and/or factures in the upper portion of the Gardiners Clay. The deepest NAPL impacts were observed in boring B45 at approximately 95 ft below the mudline of the Wallabout Channel.

- Measurable DNAPL was detected in monitoring wells at two locations during the RI.

    - 2.45 ft of DNAPL were measured in monitoring well MW-2D in 2005. The DNAPL was pumped out in February 2005. No measurable DNAPL was detected the following day. MW-2D is located on the northwest portion of the Site and is screened from 75 to 95 ft below ground surface, at the surface of the Gardiners Clay unit.

    - 8.5 ft of DNAPL were measured in MW-14I in 2005. Accumulated DNAPL within monitoring well MW-14I was removed in February 2005. One hour after DNAPL removal, approximately 4 ft of DNAPL were measured in the well. Approximately 7 ft of DNAPL accumulated in MW-14I within 24 hours of DNAPL removal. Monitoring well MW-14I was located within the western extent of the RI study area and is screened at 35 to 45 ft bgs primarily within alluvial sand across a 2-ft thick NAPL saturated zone at the top of the well screen. The NAPL saturated zone is within a coarser sand unit above a silty-sand unit.

<u>Sediments</u>

- A blanket of organic-rich harbor deposits ranging up to 30-ft thick was observed in the Wallabout Channel/Wallabout Channel Barge Basin and Navy Yard Basin. These sediments represent materials that have accumulated since the last maintenance dredging by the United States Navy between 1957 and 1961 and were observed to contain non-MGP impacts relating to CSO and industrial

discharges. Petroleum impacts were observed within the Navy Yard Basin sediments and within the Wallabout Channel sediments.

Soil Analytical Results

- The soil analytical data indicates that soil above the water table on the Site does not exceed the 6 NYCRR Part 375 Restricted Use Commercial Soil Cleanup Objectives (SCOs) and/or the subsurface soil cleanup guidance for total polycyclic aromatic hydrocarbons (PAHs) of 500 ppm, for soil beneath a cover system at industrial or commercial use sites, presented in the NYSDEC CP-51 Soil Cleanup Guidance, dated October 21, 2010 (CP-51).
- There were 3 soil samples collected from the 4 to 15 ft bgs depth interval for which detected analytical concentrations exceeded the Industrial Use SCOs. These three samples are B15 (5.5-6), TP-204 (5.5), AB3-SS1 (7-8).

Groundwater Analytical Results

- Analysis of groundwater samples identified dissolved phase concentrations of volatile organic compounds and semi-volatile organic compounds above New York State Ambient Water Quality Standards (NYSAWQS) in shallow and deep groundwater monitoring wells.

2.4 Selected Remedy

The remedy selected by the NYSDEC in the ROD for the Site includes a surface cover system, institutional controls and DNAPL recovery. The distribution of DNAPL at the Site indicates that DNAPL is likely not mobile, however, there is the potential for the recovery of pockets of DNAPL collected within permeable lenses located above less permeable lenses in the subsurface. A PDI is required to determine the potential for recoverable DNAPL and to evaluate the potential DNAPL recovery rates.

The PDI locations identified in the ROD are based on review of available data and the identification of DNAPL saturated lenses (Fig. 3). Measurable DNAPL was detected at two monitoring wells during the RI, as described above: MW-2D was located on the northwest portion of the Site and was screened from 75 to 95 ft below ground surface, at the surface of the Gardiners Clay unit; and MW-14I was located off-Site and was screened from 35 to 45 ft bgs primarily within alluvial sand across a 2-ft thick NAPL saturated zone within a coarser sand unit above a silty-sand unit. The majority of wells installed during the RI and SRI have been destroyed and/or cannot be located. Therefore, additional investigation is required to locate areas of potentially recoverable DNAPL. The detailed scope of work for the PDI is presented below.

3. Scope of Work

The objectives of the below scope of work are to confirm areas of apparent DNAPL saturation (based on visual observation) previously identified in the RI via soil borings and to install wells, screened across the apparent DNAPL saturation zones, to assess the potential recoverability of DNAPL. Proposed areas of potential DNAPL recovery (Fig. 3) were selected based on zones of apparent NAPL saturation identified during the RI within permeable units located above less permeable silt and/or clay units. These areas represent the greatest potential for DNAPL recovery as DNAPL at these locations has the potential to be present above residual saturation levels. In addition, the potential to recover DNAPL saturation identified in soil boring B46, beneath the Wallabout Channel, will be evaluated. DNAPL impacts that are limited to coated material, sheens, staining and thin lenses were not selected for inclusion in the PDI as these areas are unlikely to contain mobile or recoverable DNAPL.

3.1 Soil Borings

Thirteen soil borings (B-100 through B-112) are proposed, as shown in Fig. 3. Eight soil borings (B-100 through B-107) are proposed for installation on the Site; four borings (B-108 through B-111) will be installed to the southwest of the Site, across the Wallabout Channel Barge Basin; and, northwest of the Site, one soil boring (B-112) will be installed on the east side of Kay Avenue.

The eight on-site soil borings (B-100 through B-107) will be advanced to the top of the Gardiners Clay, approximately 90 to 100 ft below grade. Lenses of DNAPL saturation previously observed on-site were located at intermediate intervals above lenses of less permeable material from depths of 30 to 90 ft below grade with the deeper zones identified in the northwest corner of the Site to depths of approximately 95 ft below grade above the Gardiners Clay.

Four soil borings (B-108 through B-111) will be advanced off-site to the southwest. Lenses of DNAPL saturation previously observed off-site were located at intermediate intervals above lenses of less permeable material at depths of approximately 40 to 55 ft below grade. Soil borings B-108 through B-111 will terminate at the top of the first low permeability layer encountered below a zone of DNAPL saturation. DNAPL saturation does not include observations that are limited to coated material, sheens, staining and thin lenses. If a zone of DNAPL saturation is not observed, soil borings B-108 through B-111will terminate at 60 ft below grade, as DNAPL impacts were not identified off-site below this depth during the RI.

One soil boring (B-112) will be advanced west of B46 and east of Kay Avenue, on the off-site property to the northwest of the Site. Zones of DNAPL saturation observed in B46 were located at intermediate intervals at elevation between -47 and -51 feet mean sea level (ft-msl) or depths of approximately 56 to 60 ft below grade. Boring B-112 will be advanced to 70 ft below grade which is approximately 10 ft below previously observed DNAPL saturation impacts at B46. The advancement of a soil boring at this location may be difficult due the potential presence of numerous subsurface obstructions associated with multiple reconfigurations of the shoreline and with former Navy Yard infrastructure and with the current site use. Therefore, a maximum of three attempts will be made to advance one soil boring at this location..

Actual drilling locations will be determined based upon the subsurface utility clearance activities, a geophysical survey, permanent above-ground structures, and property owner requirements. Each boring location will be pre-cleared for utilities to at least 5 ft below grade using soft-dig methods that may include vacuum excavation. The soil borings will be installed with a Sonic Drilling rig in accordance with drilling methods and procedures in the FSP. Soil cores will be collected continuously from each location for soil description logging. Soils cores will be described according to the Unified Soil Classification System and examined for any physical evidence of contamination (e.g., staining, presence of fill materials, sheens, odors, identification of DNAPL and level of saturation, etc.). All soil cores will be photographed, and observations will be recorded in a field log.

Each subsurface soil boring will be abandoned by tremie grouting the boring from the bottom of the boring to the top. Drilling and sampling equipment will be decontaminated between each sample location as described in the FSP.

3.2 Recovery Well Installation

A maximum of seven recovery wells (RW-1 through RW-6) are proposed to evaluate the potential for DNAPL recovery at Site and to the south of the Site, across the Wallabout Channel Barge Basin. The installation depths of the recovery wells will be determined by the visual observations made during the soil boring phase of this investigation. Recovery wells will be screened at intervals exhibiting the greatest degree of DNAPL saturation. It is anticipated that two intermediate and two deep recovery wells will be installed on-site and two intermediate recovery wells will be installed off-site to the southwest. An additional intermediate off-site recovery well will be installed along Kay Avenue if one or more zones of potentially recoverable DNAPL saturation are identified at soil boring B-112. Deep recovery wells will have screened depths ranging from 90 to 100 ft below ground surface at DNAPL saturated lenses above the Gardiners Clay. Intermediate recovery wells will have

screened depths ranging from approximately 30 to 70 ft below ground surface at DNAPL saturated lenses located above less permeable units.

The recovery wells will be constructed of 4-inch diameter poly vinyl chloride (PVC) installed using a Sonic Drilling rig. Each recovery well will consist of a 2-ft sump; a 0.020-inch slotted well screen across the zone on DNAPL saturation; PVC riser to the surface; and a flush mounted road box. The annular space between the borehole and the sump will be backfilled with a bentonite clay seal to the bottom of the screen, then the annular space between the well screen to 2 ft above the top of the screen will be backfilled with silica sand. A 2-ft bentonite clay seal will be placed above the sand pack and the remaining annular space will be filled to grade with cement/bentonite grout.

Following installation, the recovery wells will be developed by alternately surging and pumping the wells as described in the FSP.

3.3 DNAPL Recovery Evaluation

The DNAPL recovery wells will be gauged for the presence and thickness of DNAPL in accordance with the following minimum schedule:

- Immediately prior to and after well development.
- One day following development.
- One week following development.
- Two weeks following development.
- Monthly for 6-months following development.

DNAPL gauging will be performed using an interface probe and a weighted tape as described in the FSP. The depth to the bottom of the well and the thickness of DNAPL will be measured to the nearest 0.1-ft at each recovery well during each gauging event.

If no measurable DNAPL is identified in a recovery well during all of the monthly gauging events throughout a 6-month time frame, then a recommendation will be made to abandon the well via tremie grouting and removal of the surface encasement.

If the rate of DNAPL recovery is such that DNAPL will accumulate to greater than 2-ft in thickness within the well sump prior to the next gauging event, then the DNAPL gauging frequency will be increased to a frequency determined based on the observed DNAPL accumulation rate. The accumulated DNAPL will be removed from the well prior to exceeding the top of the sump. If sufficient DNAPL accumulates in a well, the applicability of using the PREDicT™ (Precision Recoverability Evaluation for DNAPL via Transmissivity) model to quantify the DNAPL recoverability will be evaluated.

3.4 Survey

The soil boring and recovery well locations will be surveyed following installation by a New York State Licensed Land Surveyor. The elevation of each location will be determined to ±0.01 ft and will be tied into the Site benchmark. All locations and elevations will be referenced to the New York State Plane Eastern Zone North American Datum 1983 and North American Vertical Datum 1988.

3.5 Investigation Derived Waste

Soil cuttings, decontamination and well development fluids, and DNAPL will be contained within United States Department of Transportation (USDOT) 55-gallon drums and disposed at a National Grid-approved disposal facility.

Waste characterization samples will be taken to characterize any soil, groundwater, and DNAPL produced during PDI activities. The waste characterization samples will be analyzed by a New York State Environmental Lab Approval Program (ELAP) accredited laboratory for analytes required by the disposal facility.

3.6 Report Preparation

Upon completion of DNAPL recovery well installation field activities GEI will prepare a summary report presenting the soil boring logs; recovery well construction details; the results of the CAMP monitoring; and initial DNAPL gauging data results and interpretation. Monthly data updates will be prepared throughout the 6-month NAPL monitoring period. These data updates will include the DNAPL gauging data, recharge observed and the estimated recharge rate. A final PDI report will be prepared once the 6-month monitoring period is complete. The final PDI report will include a summary of the DNAPL gauging and recovery data and recommendations regarding the frequency and location of DNAPL recovery operations warranted at the Site.

4. Schedule

PDI field activities will commence following NYSDEC approval of this Work Plan. The following approximate schedule will be finalized following the approval of this Work Plan.

- Drilling will commence approximately four weeks following Work Plan approval and is expected to be completed in one month.

- National Grid will provide NYSDEC a DNAPL recovery well installation summary report within six weeks of the completion of PDI drilling activities. The well installation summary report will include soil boring logs, well construction logs and a figure identifying the location of soil borings and DNAPL recovery wells.

- National Grid will provide monthly data updates to NYSDEC throughout the 6-month NAPL monitoring period. These data updates will include the DNAPL gauging data, recharge observed, and the estimated recharge rates.

- Once the 6-month monitoring period is complete, the final results will be presented to the NYSDEC in a PDI report along with a recommendation regarding the frequency and location of DNAPL recovery operations warranted at the Site. The PDI report will be submitted to NYSDEC 12-weeks following the completion of the DNAPL recovery evaluation.

References

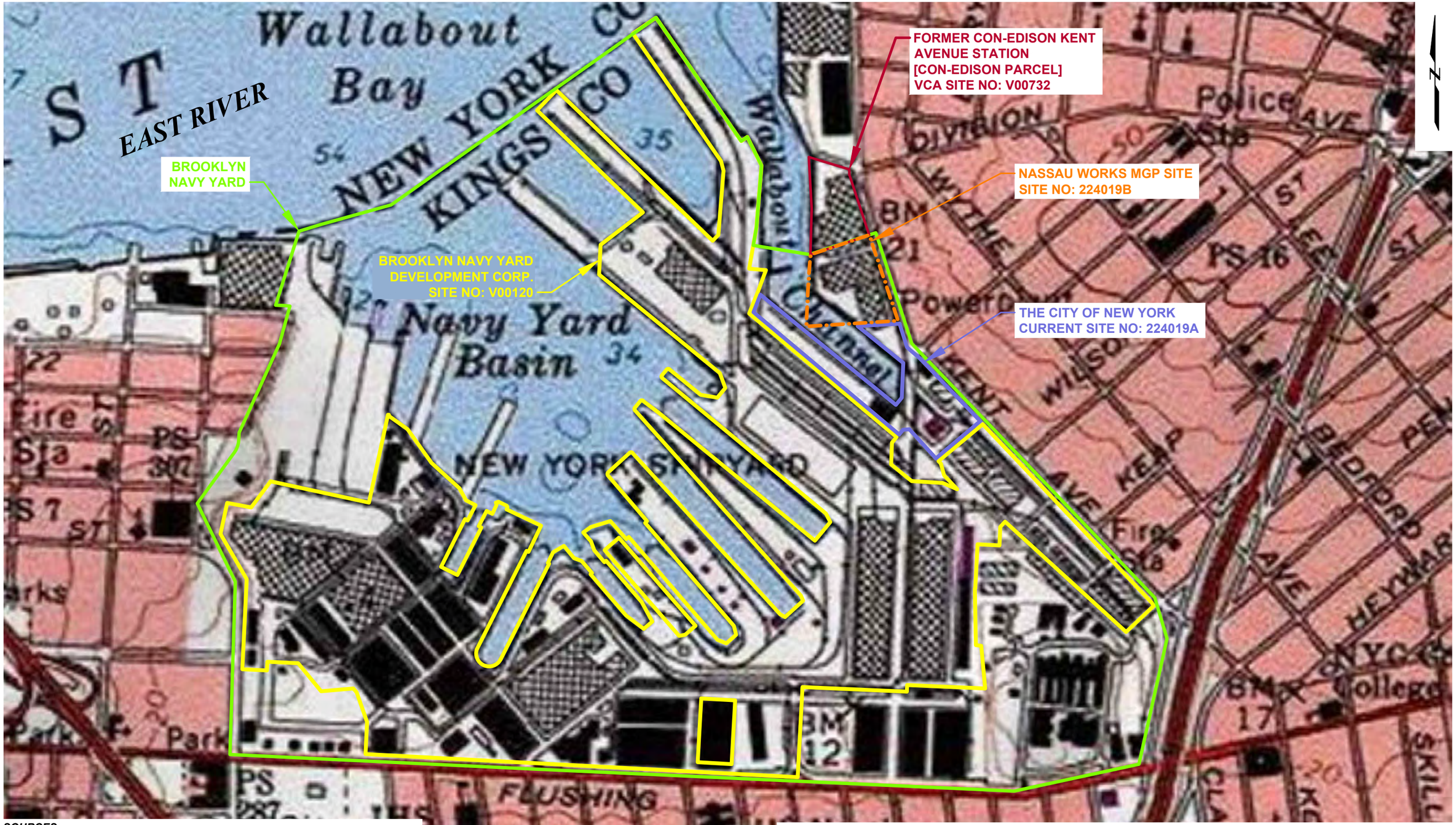
GEI (2007). Final Remedial Investigation Report-Nassau Gas Works for the Nassau Gas Works, Site No. 2-24-019A, W2-1090-06-06 (Operable Unit 2), October.

GEI (2017). Supplemental Remedial Investigation Report, Off-Site Areas, Nassau Gas Works, Brooklyn New York, Site No. 2-24-019B, February.

GEI (2019). Feasibility Study, Nassau Gas Works, Brooklyn New York, Site No. 224019B, November.

NYSDEC (2020). Record of Decision, K-Nassau Works MGP, Manufactured Gas Plant Program, Brooklyn, Kings County, Site No. 224019B, September.

Figures



SOURCES:

1. USGS TOPOGRAPHIC MAP VIA ESRI USA TOPO MAPS, © 2013 NATIONAL GEOGRAPHIC SOCIETY, I-CUBED
2. MAP OF U.S. NAVY YARD, NEW YORK, NY,F-569-S·244, SIGNED BY P.R. YATES, CAPTAIN, (C.E.C.), U.S. NAVY, PUBLIC WORKS OFFICER, DATE: 06/30/1944, SCALE: 1" = 100'.
3. *FIGURE 2: SITE MAP, BROOKLYN NAVY YARD, 63 FLUSHING AVENUE, BROOKLYN, NY.,* PREPARED BY CORE ENVIRONMENTAL CONSULTANTS, SCALE: 1" = 200', DATE: 3/21/2018.

0 500' 1000'

SCALE: 1" = 500'

Pre-Design Investigation Work Plan
Nassau Works MGP
Brooklyn, New York

nationalgrid

GEI Consultants

SITE LOCATION MAP

Project 093040 | March 2021 | Fig. 1

\\GTB2L-PHERI I:\Project\National Grid\Nassau\CAD\Figures\PDIWP\093040_PDIWP_SLM.dwg - 11/9/2020

DETAIL OF CONSOLIDATED EDISON PROPERTY - POST-REMEDIATION/SRI

NOTE:

VISUAL IMPACTS SHOWN ARE FOR BORINGS / MONITORING WELLS COMPLETED PRIOR TO THE 2014 SRI.

0 40' 80'
SCALE: 1" = 40'

LEGEND:

- EXTENT OF NASSAU WORKS MGP SITE SITE NO: 224019B
- EXTENT OF THE CITY OF NEW YORK SITE NO. 224019A
- BROOKLYN NAVY YARD DEVELOPMENT CORPORATION SITE
- EXTENT OF FORMER CON-EDISON KENT AVENUE STATION (CON-EDISON PARCEL)
- DISCHARGE TUNNEL
- FORMER POWER PLANT STRUCTURE/ FEATURE
- FORMER PRE-MGP/POWER GENERATING STATION STRUCTURE
- FORMER MANUFACTURED GAS PLANT (MGP) STRUCTURE
- U.S. GOVERNMENT TOLUOL PLANT STRUCTURE

PREVIOUS SAMPLE LOCATIONS

- MW-3SR — EXISTING MONITORING WELL
- MW-8S — REMEDIAL INVESTIGATION (RI/SRI) INSTALLED MONITORING WELL
- B3 — RI/SRI INSTALLED SOIL BORING
- MW-10S — SUPPLEMENTARY SITE ASSESSMENT (SSA) INSTALLED MONITORING WELL
- AB-4 — SSA INSTALLED BORING LOCATION
- PB-G1 — PREVIOUS (CDF) GEOTECHNICAL BORING
- DB-5 — PRE-IRM SOIL BORING (SHAW 2012)
- MW-1/PBL-9 — MONITORING WELL BY SHAW ENVIRONMENTAL, INC. (SHAW, 2007)
- PBL-5 — SOIL BORING TEMPORARY WELL (SHAW, 2007)
- PBL-1 — SITE INVESTIGATION SOIL BORING/ TEST PIT (SHAW, 2007)
- S-08 — PHASE II ESA SOIL BORING (LMS, 2000)
- W-08 — PHASE II ESA TEMPORARY WELL (LMS, 2000)

PHYSICAL OBSERVATIONS SUMMARY

- SOIL BORING LOCATION WITH NO VISUAL EVIDENCE OF IMPACTS
- SOIL BORING LOCATION WITH VISUAL EVIDENCE OF DNAPL
- PETROLEUM SHEEN OR STAINING
- INFERRED LATERAL EXTENT OF DNAPL BASED UPON VISUAL IMPACTS
- SRI STUDY AREA

SOURCES:

1. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO *(HTTP://WWW.GOOGLE.COM/EARTH/)*, IMAGERY DATE: 6/23/2012, ACCESSED ON: 10/23/2014.
2. *FIGURE 2: AREAS OF INVESTIGATION RECORD OF DECISION*, NYSDEC, MARCH 2009.
3. *FINAL INVESTIGATION REPORT NASSAU GAS WORKS*, OCTOBER 2007, REVISED 2008.
4. *FIGURE NO. 2: SITE PLAN, PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT*, HOLZMACHER, MCLONDON & MURELL, P.C., SEPTEMBER 10, 1999.
5. *FIGURE NO. 2: PHASE II SITE INVESTIGATION REPORT KENT AVENUE SITE*, PREPARED BY LAWLER, MATUSKY & SKELLY ENGINEERS, LLP, FEBRUARY 6, 2000.
6. *FIGURE NO. 2: PHASE II SITE INVESTIGATION REPORT ADDENDUM FORMER KENT AVENUE GENERATING STATION FACILITY*, PREPARED BY LMS ENGINEERS, LLP, FEBRUARY 16, 2000.
7. *FIGURE NO. 5: SITE INVESTIGATION SUMMARY REPORT: CONSOLIDATED EDISON FORMER KENT AVENUE GENERATING STATION*, PREPARED BY SHAW ENVIRONMENTAL, INC., APRIL 2007.
8. *FIGURE 9: AREAS OF INSUFFICIENT SVOC DATA, CONEDISON FORMER GENERATING STATION*, PREPARED BY SHAW, APRIL 30, 2010.
9. *FIGURE NO. 2: PRE-INTERIM REMEDIAL MEASURE (IRM) INVESTIGATION SUMMARY REPORT FORMER KENT AVENUE GENERATING STATION*, PREPARED BY SHAW ENVIRONMENTAL, INC., AUGUST 2012.
10. SANBORN FIRE INSURANCE MAPS, 1887 AND 1918.

0 80' 160'
SCALE: 1" = 80'

Pre-Design Investigation Work Plan
Nassau Gas Works Former MGP Site
Brooklyn, New York

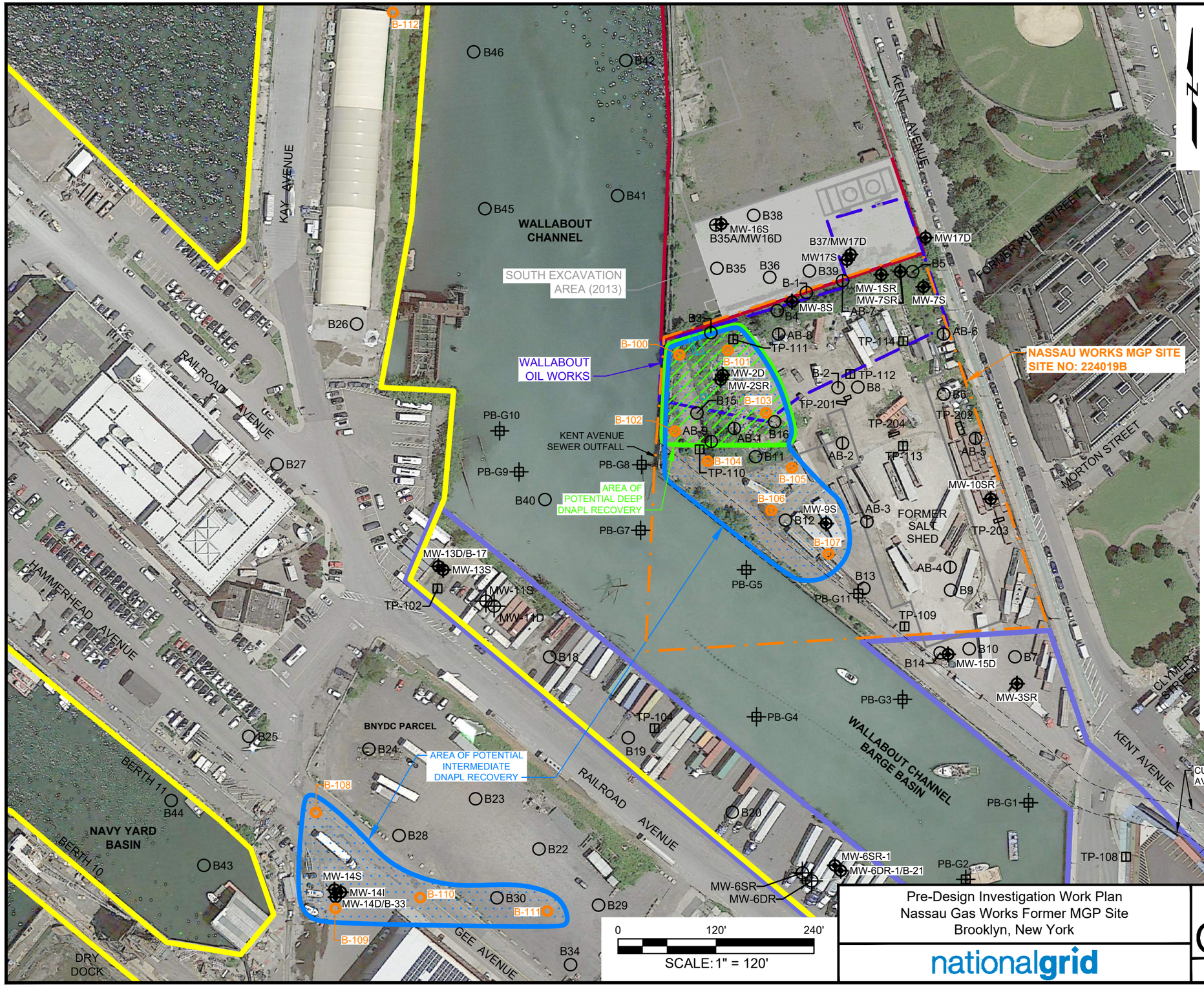
nationalgrid

GEI Consultants

SITE LAYOUT AND PREVIOUS INVESTIGATION LOCATIONS

Project 093040 | March 2021 | Fig. 2

\\Gtb-pzcc-1\ I:\Project\National Grid\Nassau\CAD\Figures\PDIWP\093040_PDIWP_SLOT.dwg - 10/12/2020



LEGEND:

- EXTENT OF NASSAU WORKS MGP SITE NO: 224019B
- BOUNDARY OF SITE NO. 224019A
- BROOKLYN NAVY YARD DEVELOPMENT CORPORATION SITE
- AREA OF POTENTIAL DEEP DNAPL RECOVERY
- AREA OF POTENTIAL INTERMEDIATE DNAPL RECOVERY

PROPOSED SAMPLE LOCATIONS

- B-100 — PROPOSED DEEP PRE-DESIGN INVESTIGATION BORING
- B-104 — PROPOSED INTERMEDIATE PRE-DESIGN INVESTIGATION BORING

PREVIOUS SAMPLE LOCATIONS

- MW-3SR — EXISTING MONITORING WELL
- MW-8S — REMEDIAL INVESTIGATION (RI/SRI) INSTALLED MONITORING WELL
- B3 — RI/SRI INSTALLED SOIL BORING
- MW-10S — SUPPLEMENTARY SITE ASSESSMENT (SSA) INSTALLED MONITORING WELL
- AB-4 — SSA INSTALLED BORING LOCATION
- PB-G1 — PREVIOUS (CDF) GEOTECHNICAL BORING

SOURCES:

1. Aerial Photograph Obtained From Google Earth Pro *(http://www.google.com/earth/)*, Imagery Date: 6/26/2019, Accessed on: 2/22/2021.
2. *Figure 2: Areas of Investigation Record of Decision,* NYSDEC, March 2009.
3. *Final Investigation Report Nassau Gas Works*, October 2007, Revised 2008.
4. *Figure No. 2: Site Plan, Phase I Environmental Site Assessment Report,* Holzmacher, McLondon & Murell, P.C., September 10, 1999.
5. *Figure No. 2: Phase II Site Investigation Report Kent Avenue Site,* Prepared by Lawler, Matusky & Skelly Engineers, LLP, February 6, 2000.
6. *Figure No. 2: Phase Ii Site Investigation Report Addendum Former Kent Avenue Generating Station Facility,* Prepared By LMS Engineers, LLP, February 16, 2000.
7. *Figure No. 5: Site Investigation Summary Report: Consolidated Edison Former Kent Avenue Generating Station,* Prepared by Shaw Environmental, Inc., April 2007.
8. *Figure 9: Areas of Insufficient SVOC Data, ConEdison Former Generating Station,* Prepared by Shaw, April 30, 2010.
9. *Figure No. 2: Pre-Interim Remedial Measure (IRM) Investigation Summary Report Former Kent Avenue Generating Station,* Prepared By Shaw Environmental, Inc., August 2012.
10. Sanborn Fire Insurance Maps, 1887 and 1918.

0 120' 240'

SCALE: 1" = 120'

Pre-Design Investigation Work Plan
Nassau Gas Works Former MGP Site
Brooklyn, New York

nationalgrid

GEI Consultants

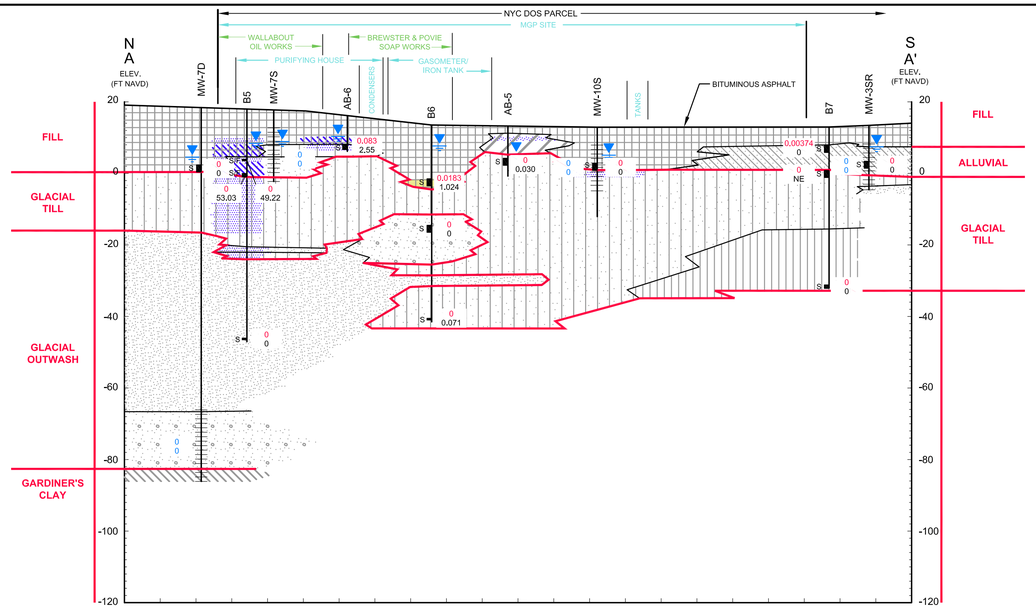
PROPOSED SAMPLE LOCATIONS

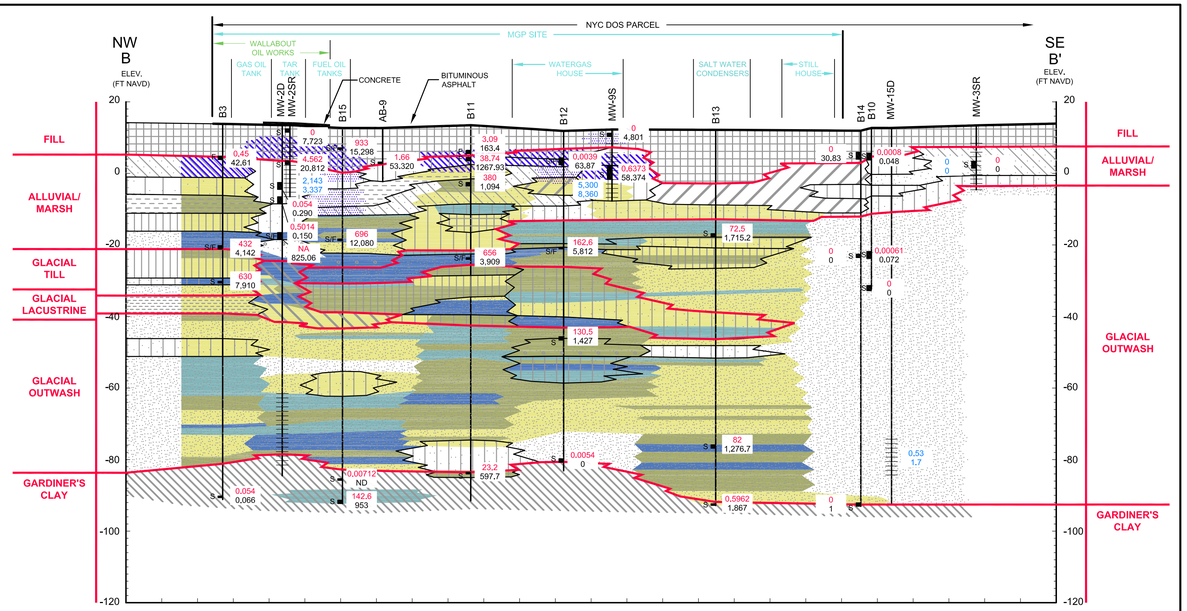
Project 093040 | February 2022 | Fig. 3

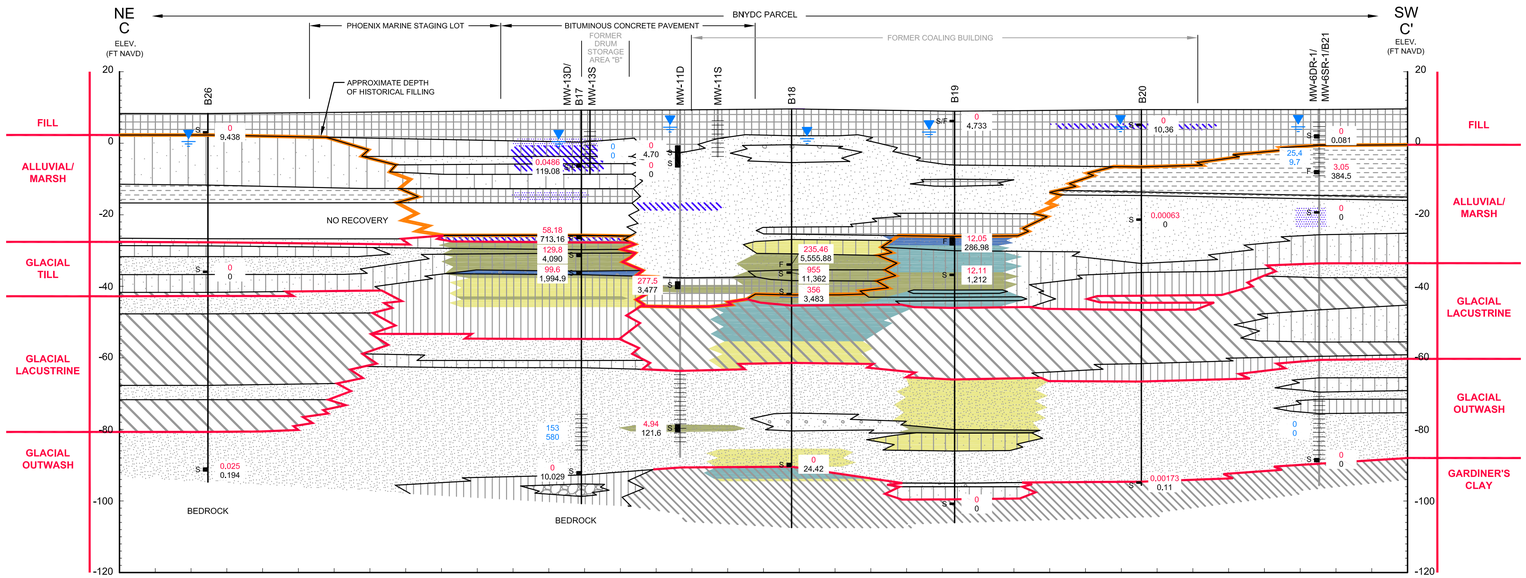
\\Gtb-pzcc-1\ I:\Project\National Grid\Nassau\CAD\Figures\PDIWP\093040_PDIWP_PSMA.dwg - 3/3/2021

Appendix A

RI and SRI Cross-Sections







CROSS SECTION LOCATION MAP

NOTE:
PROPERTY BOUNDARIES AND HISTORIC FEATURE LOCATIONS ARE APPROXIMATE.

LEGEND

- ALLUVIAL DEPOSITS: GRAVELLY-SAND; SAND (shallow)
- MARSH DEPOSITS: SILT (shallow); SILT-SAND; SILT-CLAY; CLAY (shallow); SANDY CLAY; GRAVELLY SILT; PEAT
- GLACIAL TILL DEPOSITS: SILT (deep); SILT-SAND; SAND, SILT, CLAY
- GLACIAL LACUSTRINE DEPOSITS: CLAY (deep); SILT-CLAY
- GLACIAL OUTWASH DEPOSITS: SAND (deep); GRAVELLY-SAND; COBBLE ZONE
- FILL: FILL
- PRE-GLACIAL DEPOSITS: GARDINER'S CLAY
- PHYSICAL OBSERVATIONS: TAR SATURATED; TAR STAINING, SHEEN, AND TAR/NAPHTHA ODORS; BLEBS, GLOBS, LENSES, COATINGS AND TAR/NAPHTHA ODORS; TAR/NAPHTHALENE-LIKE ODORS; PETROLEUM SHEEN/ STAINING ODORS; PETROLEUM ODORS
- CONTACT
- CONTACT IS APPROXIMATED
- OBSERVED APPARENT GROUNDWATER TABLE BASED UPON BORING INFORMATION
- MW-14D/B-33: SOIL BORING/ MONITORING WELL IDENTIFICATION
- BORING
- ANALYTICAL SOIL SAMPLE INTERVAL: S 15,97 BTEX mg/kg; 472,2 PAH mg/kg
- ANALYTICAL GROUNDWATER SAMPLE INTERVAL: F FORENSIC SOIL SAMPLE INTERVAL
- BTEX ug/L 15,97; PAH ug/L 472,2: WELL SCREEN INTERVAL

NOTES:
1. LABORATORY ANALYTICAL RESULT INFORMATION SHOWN ON THIS FIGURE WERE OBTAINED FROM REMEDIAL INVESTIGATIONS COMPILED BY GEI CONSULTANTS, INC. FROM OCTOBER TO DECEMBER 2004 AND SUPPLEMENTARY SITE ASSESSMENT INVESTIGATION COMPLETED BY HDR ENGINEERING IN 1997.
2. BTEX STANDS FOR BENZENE, TOLUENE, ETHYLBENZENE AND TOTAL XYLENES.
3. PAH STANDS FOR POLYCYCLIC AROMATIC HYDROCARBONS.

VERTICAL SCALE, FEET (0, 20, 40) — HORIZONTAL SCALE, FEET (0, 60, 120)

NOTE: VERTICAL EXAGGERATION = 3X

REMEDIAL INVESTIGATION REPORT
NASSAU GAS WORKS FORMER MGP SITE
BROOKLYN, NEW YORK

KEYSPAN CORPORATION
BROOKLYN, NEW YORK

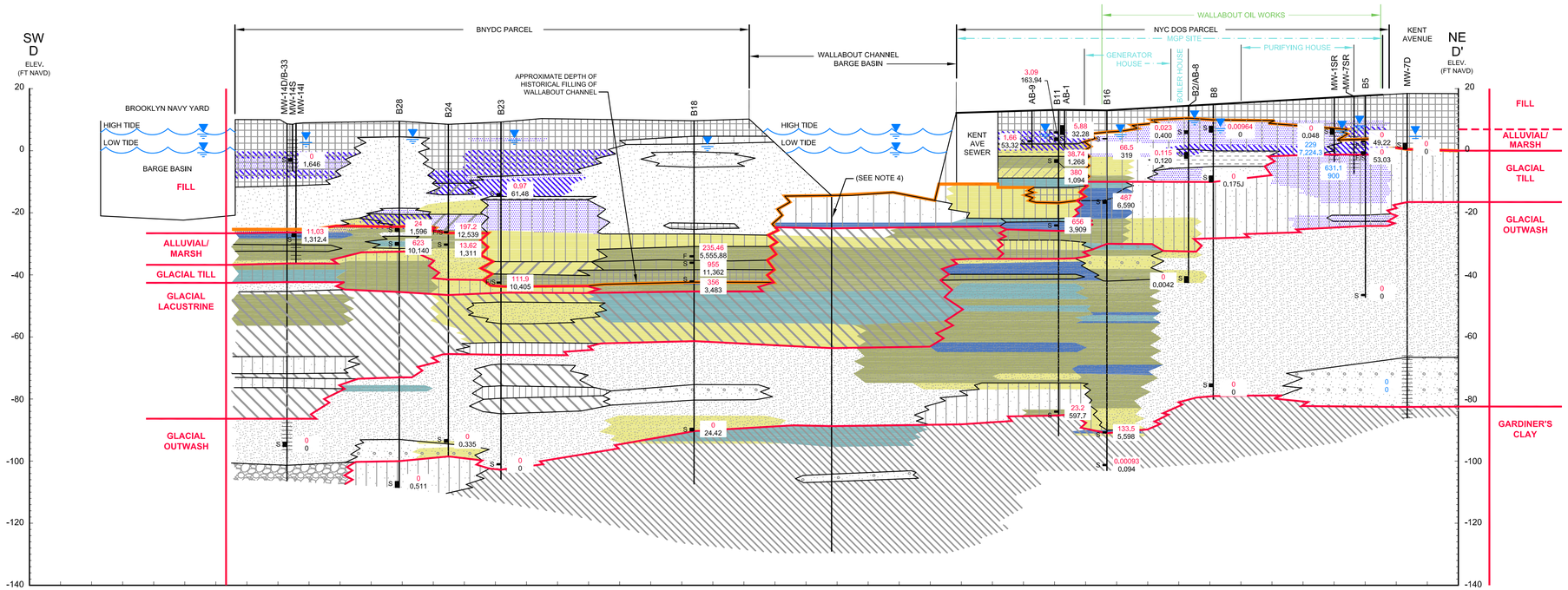
Project 061140-6-1501

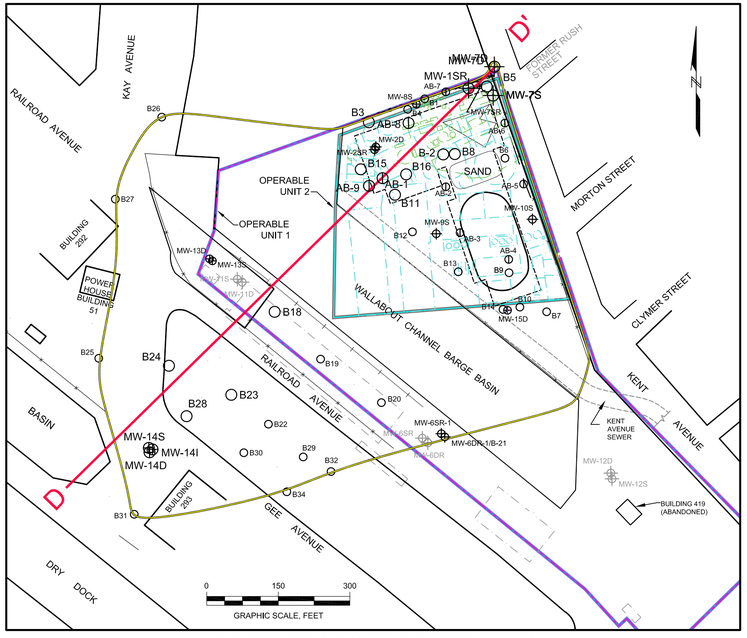
GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CONNECTICUT 06033

CROSS SECTIONS A-A', B-B' AND C-C'

October 2007 — Plate 3

I:\GEI\KEYSPAN\Nassau\RI\Final RI - October 2007\Plates\ Nassau X Sections.dwg \Oct 19, 2007





CROSS SECTION LOCATION MAP

NOTE:

PROPERTY BOUNDARIES AND HISTORIC FEATURE LOCATIONS ARE APPROXIMATE.

LEGEND

ALLUVIAL DEPOSITS
- GRAVELLY-SAND
- SAND (shallow)

MARSH DEPOSITS
- SILT (shallow)
- SILT-SAND
- SILT-CLAY
- CLAY (shallow)
- SANDY CLAY
- GRAVELLY SILT
- PEAT

GLACIAL TILL DEPOSITS
- SILT (deep)
- SILT-SAND
- SAND, SILT, CLAY

GLACIAL LACUSTRINE DEPOSITS
- CLAY (deep)
- SILT-CLAY

GLACIAL OUTWASH DEPOSITS
- SAND (deep)
- GRAVELLY-SAND
- COBBLE ZONE

FILL
- FILL

PRE-GLACIAL DEPOSITS
- GARDINER'S CLAY

PHYSICAL OBSERVATIONS
- TAR SATURATED
- TAR STAINING, SHEEN, AND TAR/NAPHTHA ODORS
- BLEBS, GLOBS, LENSES, COATINGS AND TAR/NAPHTHA ODORS
- TAR/NAPHTHALENE-LIKE ODORS
- PETROLEUM SHEEN/ STAINING ODORS
- PETROLEUM ODORS

- CONTACT
- CONTACT IS APPROXIMATED
- OBSERVED APPARENT GROUNDWATER TABLE BASED UPON BORING INFORMATION
- MW-14D/B-33 — SOIL BORING/ MONITORING WELL IDENTIFICATION
- BORING
- ANALYTICAL SOIL SAMPLE INTERVAL (S): 15,97 BTEX mg/kg; 472,2 PAH mg/kg
- ANALYTICAL GROUNDWATER SAMPLE INTERVAL (F): BTEX ug/L 15,97; PAH ug/L 472,2
- FORENSIC SOIL SAMPLE INTERVAL
- WELL SCREEN INTERVAL

NOTES:

1. LABORATORY ANALYTICAL RESULT INFORMATION SHOWN ON THIS FIGURE WERE OBTAINED FROM REMEDIAL INVESTIGATIONS COMPILED BY GEI CONSULTANTS, INC. FROM OCTOBER TO DECEMBER 2004 AND SUPPLEMENTARY SITE ASSESSMENT INVESTIGATION COMPLETED BY HDR ENGINEERING IN 1997.
2. BTEX STANDS FOR BENZENE, TOLUENE, ETHYLBENZENE AND TOTAL XYLENES.
3. PAH STANDS FOR POLYCYCLIC AROMATIC HYDROCARBONS.
4. GEOLOGIC INFORMATION WAS OBTAINED FROM BORING 64 NAVY YARD EXTENSION, SHEET 4, BORING LOGS PART 3 OF 9, DECEMBER 1943.

40
20
0
VERTICAL SCALE, FEET

0
60
120
HORIZONTAL SCALE, FEET

NOTE: VERTICAL EXAGGERATION = 3X

REMEDIAL INVESTIGATION REPORT
NASSAU GAS WORKS FORMER MGP SITE
BROOKLYN, NEW YORK

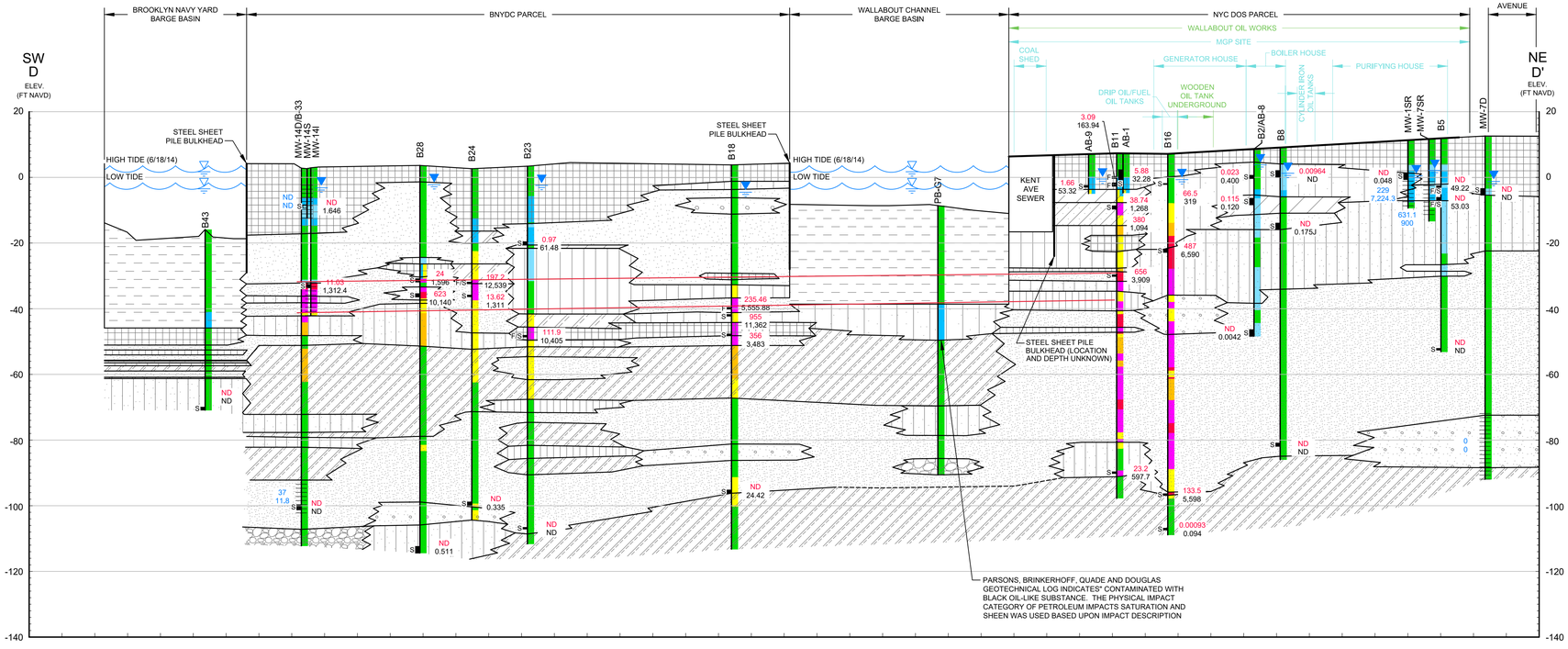
KEYSPAN CORPORATION
BROOKLYN, NEW YORK

Project 061140-6-1501

GEI Consultants
455 WINDING BROOK DRIVE
SUITE 201
GLASTONBURY, CONNECTICUT 06033

CROSS SECTION D-D'

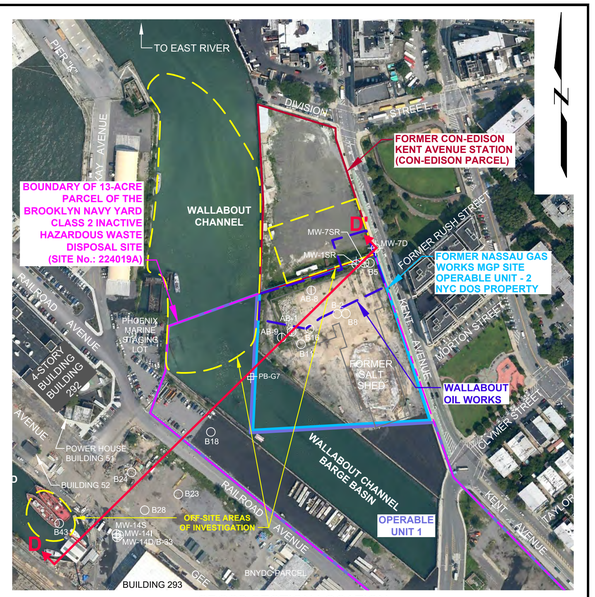
October 2007 — Plate 4



HORIZONTAL SCALE: 1" = 60'

VERTICAL SCALE: 1" = 20'

NOTE: 3x VERTICAL EXAGGERATION



CROSS SECTION LOCATION

SCALE: 1" = 200'

LEGEND

FILL
- FILL

RECENT HARBOR DEPOSITS
- ORGANIC SOIL

ALLUVIAL DEPOSITS
- GRAVELLY-SAND
- SAND (shallow)

MARSH DEPOSITS
- SILT (shallow)
- SILT-SAND
- SILT-CLAY
- CLAY (shallow)
- SANDY CLAY
- GRAVELLY SILT
- PEAT

GLACIAL TILL DEPOSITS
- SILT (deep)
- SILT-SAND
- SAND, SILT, CLAY

GLACIAL LACUSTRINE DEPOSITS
- CLAY (deep)
- SILT-CLAY

GLACIAL OUTWASH DEPOSITS
- SAND (deep)
- GRAVELLY-SAND
- BOULDERS

PRE-GLACIAL DEPOSITS
- GARDINER'S CLAY

BEDROCK
- BEDROCK

PHYSICAL OBSERVATIONS
- TAR SATURATED
- COATED MATERIAL, LENSES
- BLEBS, GLOBS, SHEEN
- STAINING, ODORS
- PETROLEUM IMPACTS SATURATION & SHEEN
- PETROLEUM IMPACTS STAINING & ODOR
- NO OBSERVED IMPACTS
- CONTACT
- CONTACT IS APPROXIMATED
- GROUNDWATER ELEVATION MEASURED IN WELL
- OBSERVED APPARENT GROUNDWATER TABLE BASED UPON BORING INFORMATION
- B37/MW17D — SOIL BORING/MONITORING WELL IDENTIFICATION
- G — GEOTECHNICAL SAMPLE INTERVAL — BORING
- S — ANALYTICAL SOIL SAMPLE INTERVAL — 15.97 BTEX mg/kg; 472.2 PAH mg/kg
- F — FORENSIC SOIL SAMPLE INTERVAL
- ANALYTICAL GROUNDWATER SAMPLE INTERVAL — BTEX ug/L 15.97; PAH ug/L 472.2 — WELL SCREEN INTERVAL

SOURCES:

1. Aerial Photograph Obtained from Google Earth Pro *(http://www.google.com/earth/)*, Imagery Date: 6/23/2012, Accessed on: 10/23/2014.
2. Figure No.1, *Operable Unit Boundaries 15 Acre Brooklyn Navy Yard Site,* Prepared By Quay Consulting, LLC., September 29, 2005.
3. *Final Investigation Report Nassau Gas Works*, October 2007, Revised 2008.
4. *90% Geotechnical Report, Brooklyn Navy Yard Confined Disposal Facility, Brooklyn, New York*, Prepared by Parsons Brinkerhoff Quade & Douglass, Inc., March 2004.
5. *Plate 2: Existing Conditions and Sample Locations* from Remedial Investigation Report, Prepared by GEI *Consultants, Inc., December 2006.*
6. *Figure 2: Site Plan, Former Kent Avenue Generating Station, 500 Kent Avenue, Brooklyn, NY,* Prepared By Shaw Environmental, Inc., Scale: 1" = 50', Date: 04/05/12.
7. *Figure 3: Soil Analytical Data, Former Kent Avenue Generating Station, 500 Kent Avenue, Brooklyn, NY,* Prepared By Shaw Environmental & Infrastructure, Scale: 1" = 50', Date: 01/24/07.
8. *Figure 4: Pre-Design Investigation Boring Location Plan, ConEdison Former Generating Station, 500 Kent Avenue, Brooklyn, NY,* Prepared By Shaw Environmental & Infrastructure, Scale: 1" = 50', Date: 02/19/10.
9. *Figure 2: Pre-IRM Soil Boring Locations, Former Kent Avenue Generating Station, 500 Kent Avenue, Brooklyn, NY,* Prepared By Shaw Environmental, Inc., Scale: 1" = 50', Date: 06/22/12.
10. *Figure 2: Site Plan, Consolidated Edison Company of New York, Inc., Kent Avenue Station, 500 Kent Avenue, Brooklyn, New York,* Prepared By H2MGroup, Not to Scale, Date: 7/28/99.

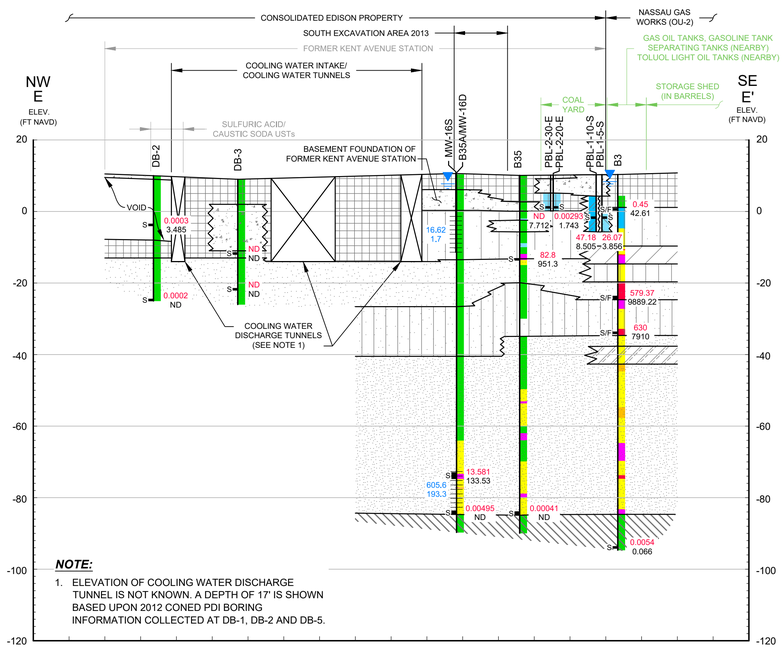
Supplemental Remedial Investigation - Off-Site Areas
Nassau Gas Works Former MGP Site
Brooklyn, New York

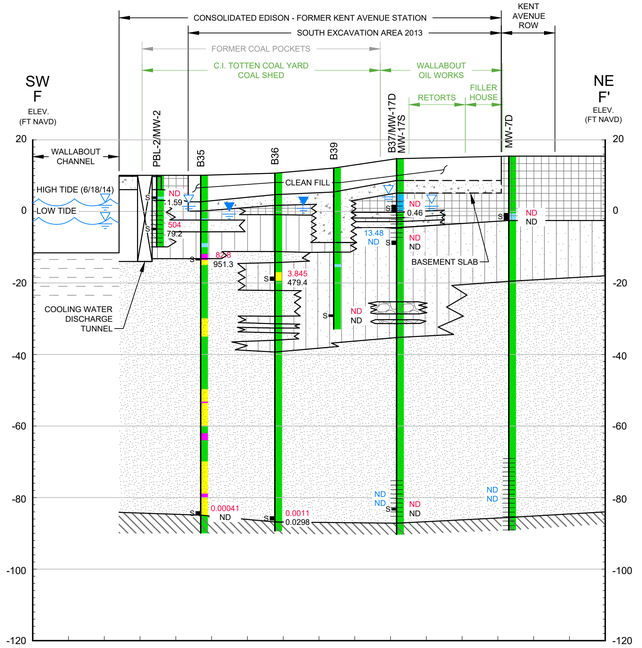
nationalgrid

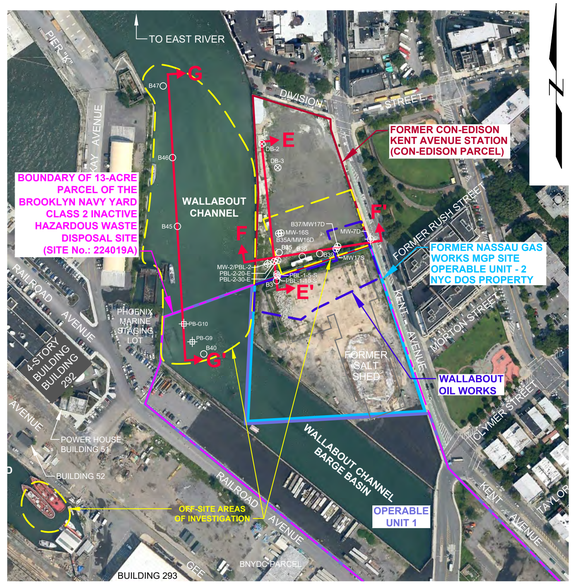
GEI Consultants

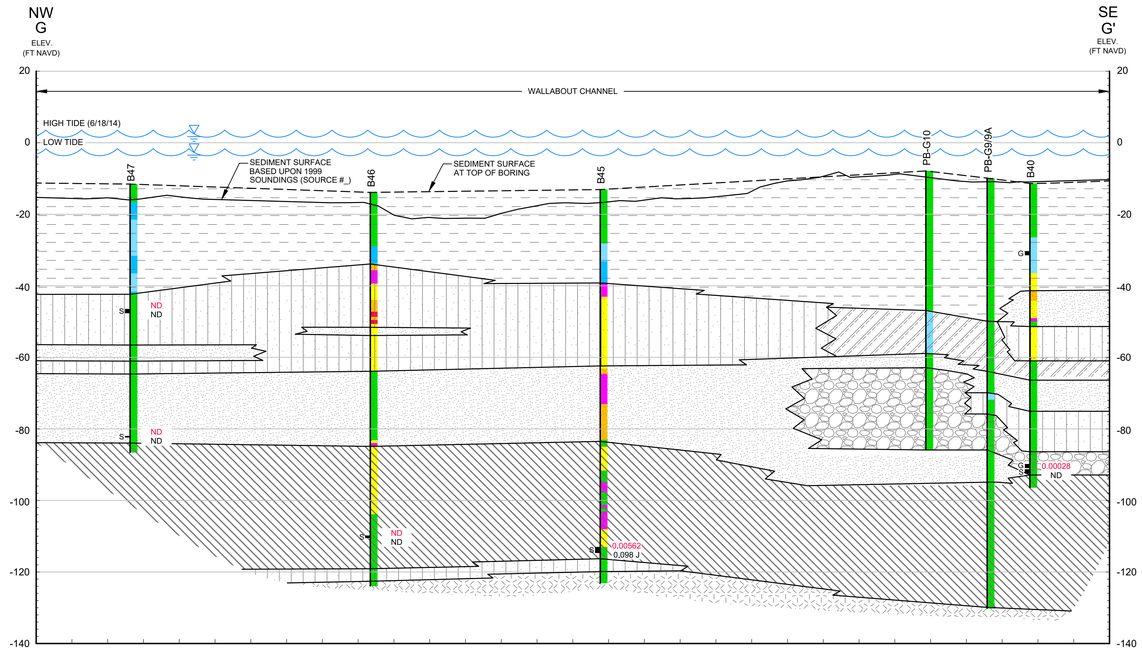
CROSS SECTION
D-D'

Project 093040 | February 2017 | Fig. 27









HORIZONTAL SCALE: 1" = 60'
0 60' 120'
0 20' 40'
VERTICAL SCALE: 1" = 20'
NOTE: 3x VERTICAL EXAGGERATION

LEGEND

FILL
- FILL

RECENT HARBOR DEPOSITS
- ORGANIC SOIL

ALLUVIAL DEPOSITS
- GRAVELLY-SAND
- SAND (shallow)

MARSH DEPOSITS
- SILT (shallow)
- SILT-SAND
- SILT-CLAY
- CLAY (shallow)
- SANDY CLAY
- GRAVELLY SILT
- PEAT

GLACIAL TILL DEPOSITS
- SILT (deep)
- SILT-SAND
- SAND, SILT, CLAY

GLACIAL LACUSTRINE DEPOSITS
- CLAY (deep)
- SILT-CLAY

GLACIAL OUTWASH DEPOSITS
- SAND (deep)
- GRAVELLY-SAND
- BOULDERS

PRE-GLACIAL DEPOSITS
- GARDINER'S CLAY

BEDROCK
- BEDROCK

PHYSICAL OBSERVATIONS
- TAR SATURATED
- COATED MATERIAL, LENSES
- BLEBS, GLOBS, SHEEN
- STAINING, ODORS
- PETROLEUM IMPACTS SATURATION & SHEEN
- PETROLEUM IMPACTS STAINING & ODOR
- NO OBSERVED IMPACTS
- CONTACT
- CONTACT IS APPROXIMATED
- GROUNDWATER ELEVATION MEASURED IN WELL
- OBSERVED APPARENT GROUNDWATER TABLE BASED UPON BORING INFORMATION
- B37/MW17D — SOIL BORING/MONITORING WELL IDENTIFICATION
- G — BORING
- GEOTECHNICAL SAMPLE INTERVAL
- S — ANALYTICAL SOIL SAMPLE INTERVAL (15.97 BTEX mg/kg; 472.2 PAH mg/kg)
- F — FORENSIC SOIL SAMPLE INTERVAL
- ANALYTICAL GROUNDWATER SAMPLE INTERVAL (BTEX ug/L 15.97; PAH ug/L 472.2)
- WELL SCREEN INTERVAL

SOURCES:

1. Aerial Photograph Obtained from Google Earth Pro *(http://www.google.com/earth/)*, Imagery Date: 6/23/2012, Accessed on: 10/23/2014.
2. Figure No.1, *Operable Unit Boundaries 15 Acre Brooklyn Navy Yard Site,* Prepared By Quay Consulting, LLC., September 29, 2005.
3. *Final Investigation Report Nassau Gas Works*, October 2007, Revised 2008.
4. *90% Geotechnical Report, Brooklyn Navy Yard Confined Disposal Facility, Brooklyn, New York*, Prepared by Parsons Brinkerhoff Quade & Douglass, Inc., March 2004.
5. *Plate 2: Existing Conditions and Sample Locations* from Remedial Investigation Report, Prepared by GEI *Consultants, Inc., December 2006.*
6. *Figure 2: Site Plan, Former Kent Avenue Generating Station, 500 Kent Avenue, Brooklyn, NY,* Prepared By Shaw Environmental, Inc., Scale: 1" = 50', Date: 04/05/12.
7. *Figure 3: Soil Analytical Data, Former Kent Avenue Generating Station, 500 Kent Avenue, Brooklyn, NY,* Prepared By Shaw Environmental & Infrastructure, Scale: 1" = 50', Date: 01/24/07.
8. *Figure 4: Pre-Design Investigation Boring Location Plan, ConEdison Former Generating Station, 500 Kent Avenue, Brooklyn, NY,* Prepared By Shaw Environmental & Infrastructure, Scale: 1" = 50', Date: 02/19/10.
9. *Figure 2: Pre-IRM Soil Boring Locations, Former Kent Avenue Generating Station, 500 Kent Avenue, Brooklyn, NY,* Prepared By Shaw Environmental, Inc., Scale: 1" = 50', Date: 06/22/12.
10. *Figure 2: Site Plan, Consolidated Edison Company of New York, Inc., Kent Avenue Station, 500 Kent Avenue, Brooklyn, New York,* Prepared By H2MGroup, Not to Scale, Date: 7/28/99.

Supplemental Remedial Investigation - Off-Site Areas
Nassau Gas Works Former MGP Site
Brooklyn, New York

nationalgrid

GEI Consultants

CROSS SECTIONS
E-E', F-F' AND G-G'

Project 093040 | February 2017 | Fig. 28