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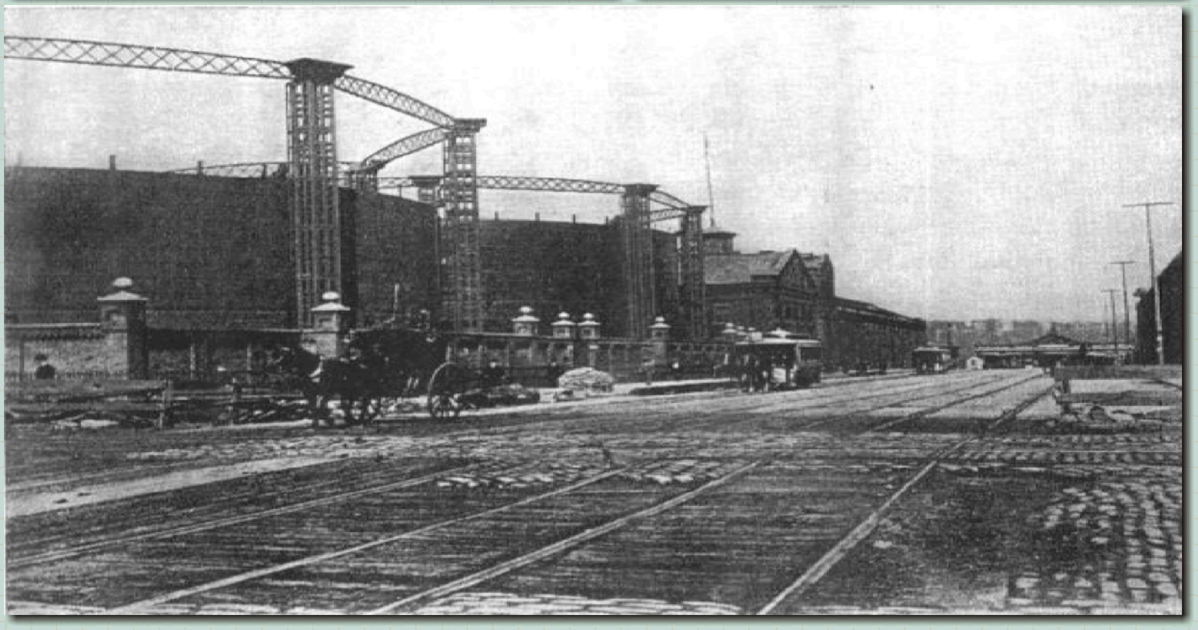
Consolidated Edison Company of New York, Inc.

Site Characterization Report

West 42nd Street Former Manufactured Gas Plant Site
Voluntary Cleanup Agreement
Index No. D2-0003-02-08; Site ID V00531



April 2004

DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

RLA/JOBS/CNED2085(01/21/04)

WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

SITE CHARACTERIZATION REPORT

Prepared for:

CONSOLIDATED EDISON COMPANY
OF NEW YORK, INC.
31-01 20th Avenue, Building 138
Long Island City, New York

Prepared by:

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
330 Crossways Park Drive
Woodbury, New York

APRIL 2004

WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE
SITE CHARACTERIZATION REPORT

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ES.0 EXECUTIVE SUMMARY

Introduction

The Consolidated Edison Company of New York, Inc. (Con Edison) has entered into a Voluntary Cleanup Agreement (VCA) with the New York State Department of Environmental Conservation (NYSDEC) to investigate and if necessary remediate potential contamination at a number of former manufactured gas plant (MGP) properties. One of these properties is known as the West 42nd Street Former MGP Site (VCA Index No. D2-003-02-08), and is located between West 41st Street and West 42nd Street and 11th Avenue and 12th Avenue on the west side of Manhattan, New York. In accordance with the VCA, a Site Characterization Study (SCS) was completed in accordance with the Scope-of-Work presented in a NYSDEC-approved Site Characterization Study Work Plan, dated June 2003.

Site Location and Description

The former West 42nd Street MGP site is located in the Borough of Manhattan, New York City, New York. The former MGP site occupied approximately 5 acres, including all of modern-day Block 1089, the Hudson River water front property immediately west of Block 1089 (now designated as modern-day Block 1107), and the stretch of 12th Avenue currently separating Blocks 1089 and 1107. Block 1089 is further divided into Tax Lots 1 and 3. Tax Lot 1 currently consists of a high-rise apartment building, which occupies approximately 90 percent of the lot. The remaining portion of the lot consists of a landscaped, park-like area and sidewalks. Tax Lot 3 is currently used as a parking lot open to the public. Surface structures on Tax Lot 3 consist of a small wooden kiosk located in the central portion of the site to house the parking attendant.

The area in which the site is located maintains a high population density due to the presence of residential high-rises, office buildings, local attractions, and retail facilities as well as the influx of the workforce population on any given day of the workweek.

Site History

Historical records indicate that the land encompassing the former MGP site was originally part of the Hudson River and likely consisted of a shallow embayment, a tidal creek running through present day Block 1089, and associated tidal wetlands. By 1850, this portion of the Hudson River and associated wetlands appears to have been filled.

The construction of the Metropolitan Gas Light Company’s West 42nd Street plant began in 1860. The plant operated as a coal gasification plant from 1863 into the early 1920s and was likely demolished in approximately 1925. In 1932 the New York Central Railroad Company acquired the former MGP site and constructed a railroad yard with several small associated buildings and a gasoline service station. By the 1980s, the former MGP site was utilized as a parking lot. In 1999-2000 a high-rise apartment building was erected on Tax Lot 1.

Site Hydrogeology

Based on the soil borings completed as part of this site investigation, as well as the documented historic filling that occurred at the former MGP site, the upper 15 to 28 feet of soil across the site consists of fill material containing significant quantities of anthropogenic materials such as brick, concrete, metal and wood timbers. All former MGP structures are located within this fill. Underlying the fill material is a clay unit consisting of a gray to black silty clay. The thickness of this clay unit is highly variable ranging from 2 to 18 feet in thickness. In areas where the clay unit is relatively thick, it appears to serve as an effective confining unit, limiting the vertical migration of contaminants. Below the clay unit exists a sand and weathered bedrock unit up to 13 feet in thickness, which directly rests on unweathered bedrock of the Manhattan Schist Formation.

Groundwater information is limited to the eastern portion of the site within Tax Lot 3. Groundwater within Tax Lot 3 is not tidally influenced and is generally located 8 to 14 feet below grade. Based on available data, groundwater flows in a southerly direction within Tax Lot 3.

Investigation Objectives and Scope of Work

As stated in the Site Characterization Study Work Plan, dated June 2003, the primary objectives of the investigation included:

- Locate the subsurface remnants of MGP structures or other structures that might exist at the site and may be associated with waste source areas or serve as preferential pathways for the migration of MGP residuals or other contamination;
- Delineate the lateral and vertical extent of potential MGP residuals in the soil and groundwater at the site; and
- Characterize site-specific geology and hydrology.

The SCS field program included the following activities:

- Test pit excavation and sampling;
- Subsurface soil boring and sampling;
- Existing monitoring well sampling;
- Groundwater monitoring well installation and sampling;
- Perimeter air monitoring; and
- Surveying and mapping.

Investigation Findings

Tax Lot 1

A total of 11 subsurface soil borings were advanced on Tax Lot 1, and 22 soil samples were selected for chemical analysis. In general, MGP impacts were not observed in shallow subsurface soil of less than 4 feet in depth. The most significant MGP impacts, including the highest volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) and metal concentrations were most prevalent in the Fill Unit below a depth of 10 feet, which places the majority of the impacted soil below the water table. However, at most locations, contaminant concentrations decrease rapidly below a depth of 24 feet. This rapid decrease in contaminant concentrations is likely due to the confining ability of the underlying Clay Unit. Exceptions to this general trend include borings SB-23 and SB-24 where NAPL/tar at saturated conditions was observed to a depth of up to 38 feet and within the Clay Unit. The Bedrock Unit within Tax Lot 1 was not observed to be impacted by MGP residuals.

Based on existing conditions and use of the site, exposure to MGP contaminants would not be expected for most on-site and off-site receptors. Currently, Tax Lot 1 contains a large apartment building and the remaining land is either paved or landscaped. An assessment of indoor and outdoor air quality at Tax Lot 1 concluded that air quality is not being impacted by MGP-related subsurface contamination present at the site.

The only potential for future exposure to MGP contamination at Tax Lot 1 is associated with utility/construction workers who may be involved with on-site excavations in support of the installation or repair of subsurface utilities within or in the vicinity of Tax Lot 1. However, health and safety measures will be implemented during these activities to prevent exposure to subsurface soil contaminants.

Based on the findings described above, additional field investigation is recommended within the vicinity of Tax Lot 1, including:

- A number of potential MGP contaminant source areas are possibly located west of Tax Lot 1, including two former oil tanks and eight former naphtha storage tanks. Therefore, soil borings are recommended in this area to further delineate the western portion of the former MGP across 12th Avenue. Furthermore, additional information is needed to define the nature and extent of MGP residuals identified at soil borings SB-24 and SB-23 that were completed along the eastern sidewalk of 12th Avenue. Therefore, additional soil borings are recommended in this area.
- Installation of shallow (water table) monitoring wells are recommended within the vicinity of Tax Lot 1 in order to determine the nature and extent of chemical constituents in groundwater, determine groundwater flow direction and provide information about possible impacts to the Hudson River. In addition, deep groundwater monitoring wells screened at or near the Bedrock Unit may be warranted to assess the extent of mobile tar/NAPL in the vicinity of 12th Avenue.

The above recommendations can be undertaken independent of the construction activities currently planned for Tax Lot 3. Therefore, the development of Tax Lot 3 will not be delayed by this additional field investigation.

Tax Lot 3

A total of 18 soil borings and 9 test pits were advanced within Tax Lot 3 with a total of 39 subsurface soil samples selected for chemical analysis. All of the subsurface soil samples selected for chemical analysis exhibited detectable levels of VOCs with the maximum total VOC concentration of 865 mg/kg observed in soil sample SB-29 (19-23 feet) collected along the eastern edge of the site, between the northeast and southeast former MGP gas holders. All of the subsurface soil samples selected for chemical analysis exhibited detectable levels of SVOC compounds with the maximum total SVOC concentration of 12,010 mg/kg observed in soil sample TP-02 (9-9.5 feet) collected within the former Purifying House foundation walls.

Evidence of tar/NAPL at saturated levels was not observed in subsurface soil within Tax Lot 3. The most significant MGP impacts were observed in the Fill Unit at depths ranging from 17 to 23 feet below ground surface (bgs), and within and adjacent to the former gas holders. Soil below and adjacent to the northwest and northeast former gas holders exhibited sheens and odors to a depth of up to 31 feet bgs. In addition, evidence of MGP impacts, including light to moderate odors, was observed below the southwest former gas holder up to a depth of 31 feet bgs. The southeast former gas holder exhibited the least amount of MGP impacts with only light to moderate staining and odors observed to 22 feet bgs.

Twenty-nine out of 39 subsurface soil samples selected for analysis exhibited detectable levels of total cyanide. The maximum total cyanide concentration of 1,580 mg/kg was detected in sample SB-17 (9-13 feet). Soil boring SB-17 was completed along the western portion of Tax Lot 3 within the vicinity of the former Purifying House.

In general, MGP impacts were not observed in shallow subsurface soil of less than 5 feet in depth throughout the majority of Tax Lot 3. In addition, the central portion of Tax Lot 3 surrounded by the four former gas holders exhibits little to no evidence of MGP impacts in subsurface soil throughout its vertical extent.

Four existing groundwater monitoring wells and six monitoring wells installed as part of the SCS field investigation were sampled in order to characterize site groundwater quality. Measurable separate-phase NAPL was not detected in any of the on-site monitoring wells.

The highest total VOC and total SVOC concentrations in on-site groundwater were detected in samples collected from monitoring LMW-03 and LMW-04. As discussed above, the sample collected from LMW-03 exhibited a slight sheen and appears to be located within the former NW gas holder. Similarly, LMW-04 appears to be located within the former SW gas holder and both wells are screened well below the water table immediately above the Bedrock Unit. As discussed above, the most significant soil impacts were observed to a depth of 23 feet, well above the Bedrock Unit. Therefore, it is possible that LMW-03 and LMW-04 are serving as vertical migration pathways for contaminants within and below the former gas holders. As a result, the high concentrations of VOCs and SVOCs detected in these wells may actually be associated with the MGP impacted soil that has been identified within and below the former gas holders and not representative of true groundwater quality above the Bedrock Unit. Furthermore, LMW-03 appears to be partially screened with the relatively permeable sand/weathered Bedrock Unit and there is the potential for contaminants entering this well screen to spread horizontally into this geologic unit. However, LMW-04 appears to be fully screened in the relatively impermeable Clay Unit and horizontal migration would not be expected at this well.

Methyl tertiary-butyl ether (MTBE), a common gasoline additive, was detected at concentrations that exceeded NYSDEC Class GA Groundwater Standards at monitoring well LMW-01 located directly downgradient of an Exxon/Mobil Service Station. Based on the review of NYSDEC records, there have been at least three petroleum spills that have occurred at this service station. In 2003, a subsurface investigation conducted at the service station on behalf of the ExxonMobil Refining and Supply Company identified up to 3 feet of free-phase petroleum in on-site monitoring wells, and an off-site BTEX groundwater plume migrating in a southerly direction towards Tax Lot 3. In addition, strong petroleum-like odors were detected emanating from the borehole during the completion of soil boring SB-15, also located downgradient of the service station. This information indicates that on-site groundwater, as well as soil vapor, is being impacted by a petroleum contaminant plume migrating from this Exxon/Mobil Service Station.

Currently, Tax Lot 3 is entirely paved and, therefore, direct exposure to MGP contaminants would not be expected under normal conditions. While groundwater contains MGP contaminants at concentrations in excess of NYSDEC Class GA Groundwater Standards, direct exposure to contaminated groundwater is not expected since groundwater is not used for potable or non-potable uses.

There are plans to construct an apartment building on Tax Lot 3 in the near future. As part of this construction, excavation of subsurface soil and groundwater containing MGP contaminants will be required. Therefore, appropriate health and safety measures will be implemented to prevent the exposure of on-site workers to contaminated subsurface soil and groundwater. In addition, windblown dust and soil vapors will be controlled during the excavation activities in order to eliminate the potential exposure of off-site receptors to MGP contaminants.

The design of the apartment complex includes the construction of a parking garage that will be located partially below the water table. Therefore, in order to prevent contaminated groundwater or volatilized contaminants from seeping into this area, the design of the foundation includes the installation of a vapor control/waterproofing system.

Based on the findings described above, the following is recommended:

- Existing groundwater monitoring wells LMW-03 and LMW-04 should be abandoned in accordance with NYSDEC protocols by over-drilling the well casing and screen and sealing off the borehole annulus with a cement bentonite grout mixture prior to construction of the new building.
- In addition, although the remedial action has not yet been determined, the construction of the apartment building on Tax Lot 3 should include:
  - A health and safety plan designed to prevent exposure of construction workers and off-site receptors to contaminated material during construction of the new apartment building.
  - A soil management plan to ensure that, as part of the construction, all contaminated materials are characterized, handled, staged, transported and disposed in accordance with all relevant federal, state and local regulations.
  - A dewatering management plan to ensure all water generated during dewatering operations as part of the building construction is characterized, treated and discharged in accordance with all relevant federal, state and local regulations.
  - Support piles for the building will be installed using methods that will minimize the potential for downward migration of contamination.
  - Integrate a vapor control/waterproofing system into the construction of the new apartment building.

The development of Tax Lot 3 can be conducted independent of the recommended field investigations to be completed in the vicinity of Tax Lot 1.

1.0 INTRODUCTION

1.1 Site Characterization Study Objectives

The Consolidated Edison Company of New York, Inc. (Con Edison) has entered into a Voluntary Cleanup Agreement (VCA) with the New York State Department of Environmental Conservation (NYSDEC) to investigate and if necessary remediate potential contamination at a number of former manufactured gas plant (MGP) properties. One of these properties is known as the West 42nd Street Former MGP Site (VCA Index No. D2-003-02-08, signed in August 2002), and is located between West 41st Street and West 42nd Street and 11th Avenue and 12th Avenue on the west side of Manhattan, New York. In accordance with the VCA, a work plan to investigate the site was prepared and approved by the NYSDEC. As stated in the Site Characterization Study Work Plan, dated June 2003, the primary objectives of the investigation included:

- Locate the subsurface remnants of MGP structures or other structures that might exist at the site and may be associated with waste source areas or serve as preferential pathways for the migration of MGP residuals or other contamination;
- Delineate the lateral and vertical extent of potential MGP residuals in the soil and groundwater at the site; and
- Characterize site-specific geology and hydrology.

As described in greater detail below, the West 42nd Street former MGP Site actually extended west of the current location of 12th Avenue. However, this SCS focused on that portion of the former MGP site located east of the 12th Avenue. Additional research has been done to evaluate the partial presence of former MGP structures or facilities to the west of the study area.

1.2 Overview of Report

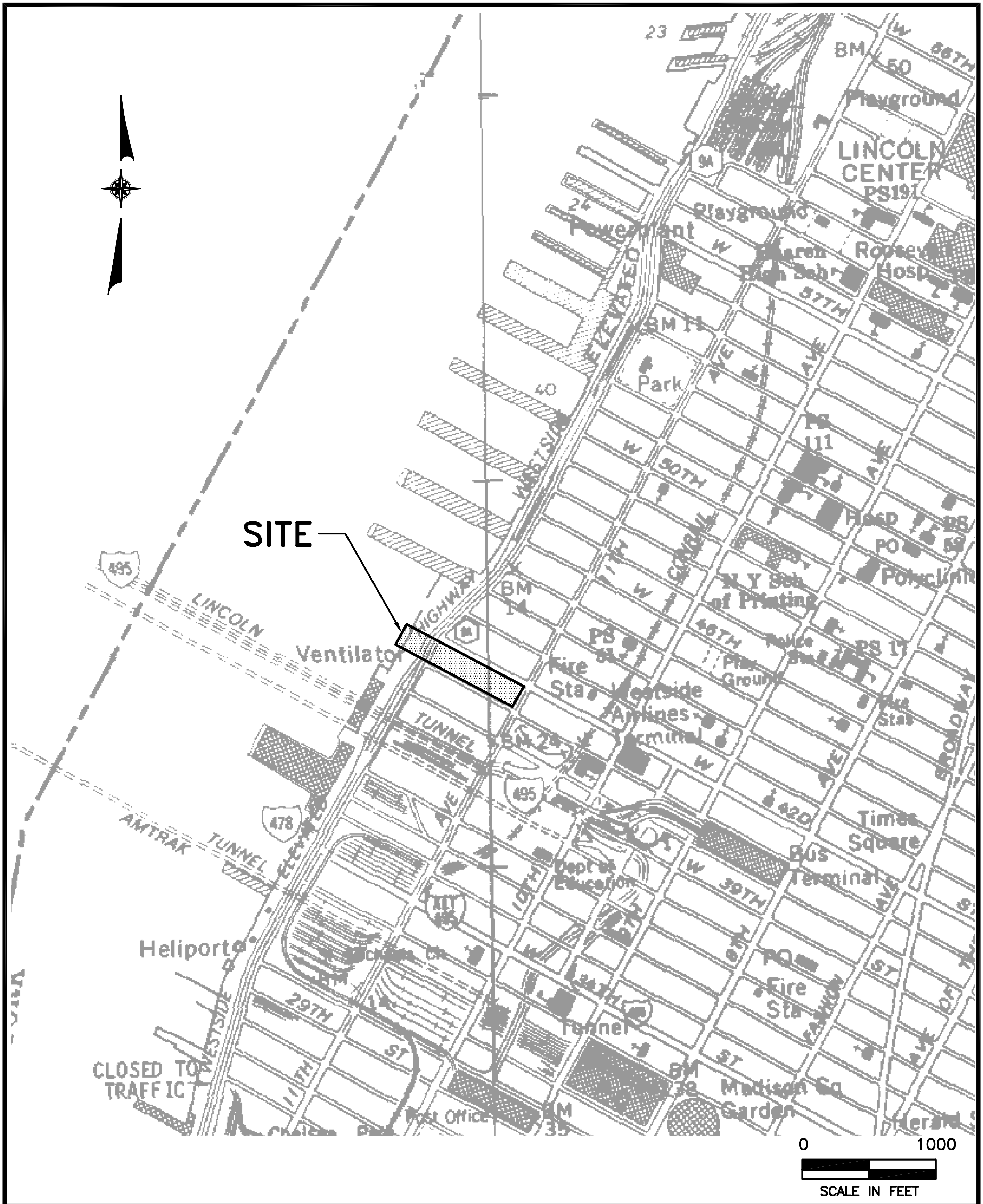
The Site Characterization Report is organized as follows:

- **Executive Summary:** Summarizes and provides an overview of the findings of the data collected as part of the field program completed in October 2003.
- **Section 1.0 - Introduction:** Presents background information and a description of the physical setting of the site and its surroundings. This section also provides the specific objectives of the field program. Section 1.0 summarizes information regarding site history as well as key findings of previous site investigations.
- **Section 2.0 - Site Characterization Activities:** Provides an overview of the field activities associated with the field program. Additionally, it discusses data management and chemical data validation/usability.
- **Section 3.0 - Site Geology and Hydrogeology:** Presents a discussion of the geology and hydrogeology of the site, based on geologic data collected as part of the field program. This section also takes into consideration geologic data obtained during previous site investigations described in Section 1.0.
- **Section 4.0 - Findings:** This section provides a discussion of the chemical compounds and other MGP residuals identified on-site, based on the data collected as part of the field program. Where appropriate, historical data has been used in conjunction with the field program data to provide a better understanding as to the nature and extent of MGP-related chemical compounds, and residuals associated with the site. Finally, this section also includes a qualitative human health exposure assessment.
- **Section 5.0 - Conclusions:** Provides conclusions based on the findings of **Section 4.0** in conjunction with the findings presented in **Section 3.0**.
- **Section 6.0 - References:** Lists all documents and other sources of information utilized in the preparation of this report.

1.3 Site Description and Area of Investigation

Site Description

The former West 42nd Street MGP site is located in the Borough of Manhattan, New York City, New York (see Figure 1-1). The former MGP site occupied approximately 5 acres. As



CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42nd STREET FORMER MANUFACTURED GAS PLANT SITE

SITE LOCATION MAP

Dvirka and Bartilucci
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FIGURE 1-1

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Area of Investigation

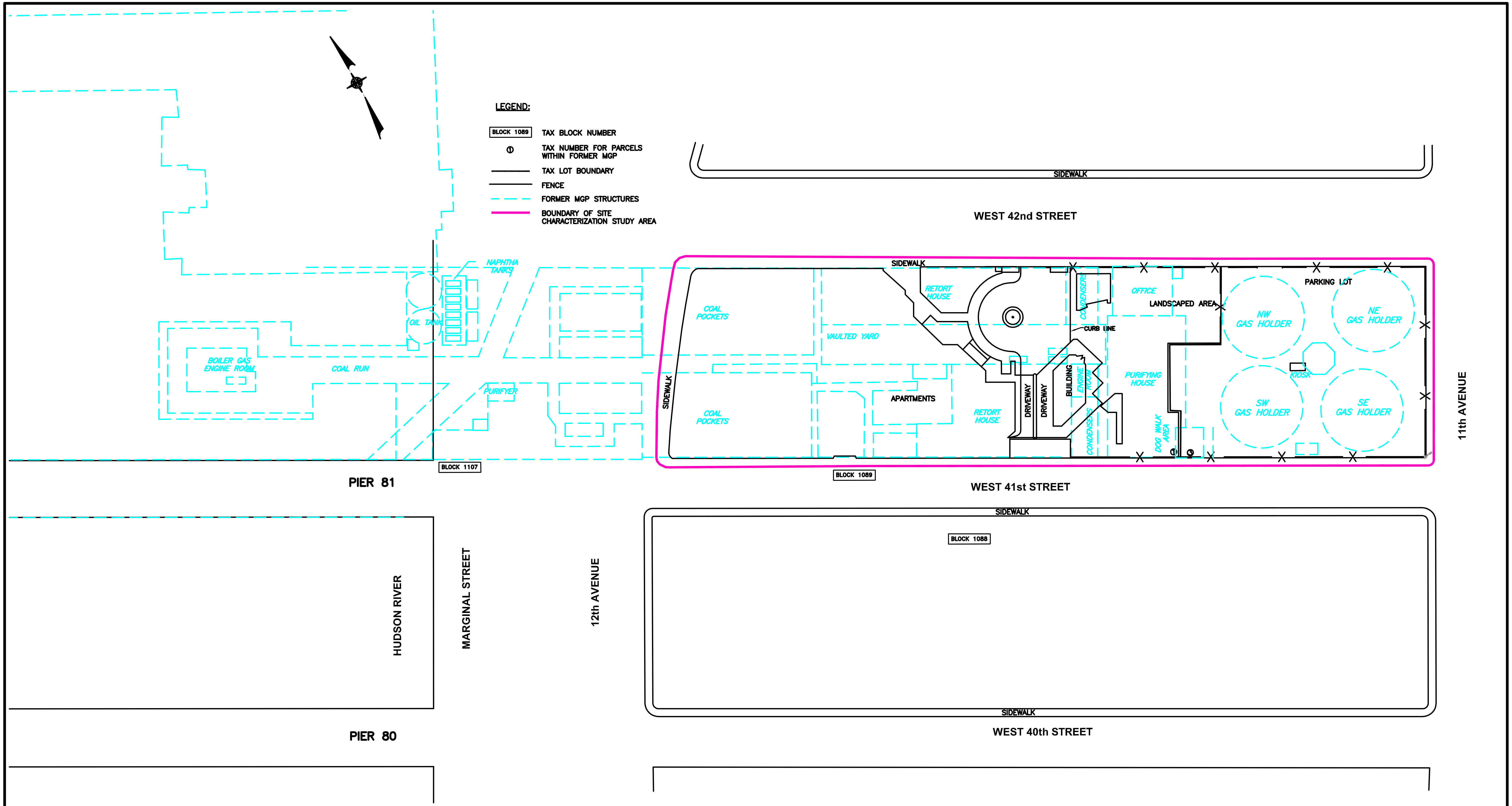
Based on the available historical information concerning the location of the former MGP, it was determined by Con Edison in consultation with the NYSDEC that this SCS would focus on that portion of the former MGP located west of 12th Avenue and within Block 1089. Figure 1-2 graphically depicts the study area of this SCS. Note that Block 1089 is further divided into Tax Lots 1 and 3, which are described below in greater detail.

Tax Lot 1 Description

Tax Lot 1 consists of a high-rise apartment building which occupies approximately 90 percent of the lot. The remaining portion of the lot consists of a landscaped, park-like area and sidewalks. Vacant retail space is located at the western base of the high rise, while the eastern base is occupied by a small café and flower shop. Additionally, an aboveground parking lot is located within the second floor of the high-rise apartment.

Tax Lot 3 Description

Surface structures on Tax Lot 3 consist of a small wooden kiosk located in the central portion of the site to house the parking attendant. The parking lot consists of concrete and asphalt pavement. Extensive asphalt patching has been used to repair cracks and/or areas of degraded concrete. Some areas of the parking lot appeared to gently undulate. At the time of the SCS completed in October 2003, Tax Lot 3 also contained a number of hydraulic car lifts used to



SOURCE: MAP PROVIDED BY CONSOLIDATED EDISON. APPROXIMATE LOCATIONS OF FORMER MGP STRUCTURES BASED ON INTERPRETATION OF SANBORN MAPS AND DRAWINGS PROVIDED BY CONSOLIDATED EDISON CONTAINED WITHIN THE WEST 42nd STREET MANUFACTURED GAS PLANT SITE HISTORY REPORT BY PARSONS, DATED AUGUST 2002 AND THE RIVER PLACE PHASE II, 42nd. STREET AND ELEVENTH AVENUE, GEOTECHNICAL ENGINEERING STUDY BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, P.C., DATED JULY 2000.

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Dvirka
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WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

SITE MAP

FIGURE 1-2

\\Nt4\cadwork\2085\2085-1A.dwg, 04/30/04 04:48:23 PM, DCortes vertically store automobiles and light trucks. The car lifts are located primarily within the eastern half of Tax Lot 3 and along the southern property boundary.

Adjoining Property Description

Properties in the vicinity of the site consist of commercial properties, restaurants, retail stores, and dockage on the Hudson River for private and commercial vessels. Commercial buildings are present to the east and south of the site along 11th Avenue and 41st Street. The World Yacht marina is located west of the site along the Hudson River with frontage along 12th Avenue. Storefront retail facilities are located to the north of the site with frontage along 42nd Street. A bus depot operated by the Metropolitan Transit Authority (MTA) is located south of 41st Street. At the time of SCS, the area buildings were observed to be generally well maintained and the roadways appeared to have been recently paved with few potholes. The area maintains a high population density due to the presence of residential high-rises, office buildings, local attractions, and retail facilities as well as the influx of the workforce population on any given day of the workweek.

Former MGP Layout and Operations

As discussed previously, the former MGP site was located on Blocks 1089 and 1107, as well as the portion of 12th Avenue currently separating the two blocks. Furthermore, a portion of the former MGP was located on a Hudson River pier connected to Block 1107. As shown on Figure 1-2, the former MGP facilities that were on Block 1089 consisted of two coal pockets, two retort houses, a vaulted yard, two condensers, an engine room, an office, a purifying house and four 250,000-cubic foot gas holding tanks. Each gas holder consisted of a cylindrical tank approximately 80 feet in diameter that extended below grade. The former MGP facilities included at the Block 1107 and 12th Avenue included oil tanks, naphtha tanks and a purifier. Located on the former Hudson River pier connected to Block 1107 was a boiler gas engine room and a coal run.

According to the Parsons Historic Report, a complete record of byproduct quantities, reuse, sale, and disposal is not available for the former MGP. However, raw materials for coal gas plants typically included gas coals, enriching coals, boiler fuel, gas oil, lime, and iron oxide. According to the Parsons Historic Report, all of the coal gas residuals, including coke, tar, ammoniacal liquor, and other carbon residuals were offered for sale.

Site History

The following discussion of site history and ownership is based on the information provided in the document entitled, “West 42nd Street Manufactured Gas Plant Site History Report,” dated August 2002, prepared by Parsons under contract with Con Edison. Historical records indicate that the land encompassing the former MGP site was originally part of the Hudson River and likely consisted of a shallow embayment, a tidal creek running through present day Block 1089, and associated tidal wetlands. By 1850, this portion of the Hudson River and associated wetlands had been filled, but appeared to remain undeveloped until construction of the former MGP in 1860.

The construction of the Metropolitan Gas Light Company’s West 42nd Street plant began in 1860. The plant operated as a coal gasification plant from 1863 into the early 1920s. Anthracite coal was delivered by barges or lighters to the company’s Hudson River pier, and then carted to the plant. The coal was stored in two “coal houses” at the western end of Block 1089, then transported to one of two retort houses. The first retort house was constructed along West 42nd Street, and later a second was built and enlarged along West 41st Street. At the eastern end of each retort house were the gas condensers. After passing through the condensers, the gas was then conveyed to the purifying house, located east of the retort houses. The initial purifying house used the Dry-Lime Process, whereas the second purifying house (built to replace the first one after an explosion destroyed it in 1871) used the Laming Process. The Laming Process included the use of wood chips treated with iron oxide and stored in boxes. The iron oxide wood chips would aid in the removal of fine particles, cyanides, sulfides and CO_2 gas. The wood chips could be revived and reused unlike the lime materials. After the purifying house, the gas was pumped to four gas holders located at the eastern end of the block for storage before being distributed to customers. Each of the gas holders was constructed of brick and had a capacity of 250,000 cubic feet. The former MGP operated through the early 1920s and was likely demolished in approximately 1925.

In 1932 the New York Central Railroad Company acquired the former MGP site and constructed a railroad yard with several small associated buildings and a gasoline service station. In 1940, the railroad yard complex and gasoline station were replaced by an “assorting station,” office, and private garage belonging to the Railway Express Agency. The private garage included several underground storage tanks (USTs) that were used to store various petroleum products. The Railway Express Agency structures remained on the block for several decades. By the 1980s, the former MGP site was utilized as a parking lot. In 1999-2000 a high-rise apartment building was erected on Tax Lot 1. At the current time, Tax Lot 3 remains as a parking lot.

Site Ownership

According to the Parsons Historic Report, Charles Appleby sold all of Block 1089 and the portion of Block 1107 immediately west of Block 1089 to the Metropolitan Gas Light Company in 1860. Construction of the Metropolitan’s West 42nd Street MGP began in late 1860 and continued into 1861. The MGP operated through the early 1920s. In 1923, the Consolidated Gas Company sold all of Block 1089 to the New York Edison Company, which was later acquired by Consolidated Gas. By 1925, the MGP was no longer in operation. In 1927, the New York Edison Company sold all of Block 1089 to the New York State Realty and Terminal Company, who in turn sold the block to the New York Central Railroad Company in 1932. Block 1089 had been owned by a series of railroad-affiliated entities through 1967. After 1967, the block passed to a series of real estate companies. Tax Lot 1 is owned by River Place I, LLC, which constructed the current high-rise apartment building. Tax Lot 3 is owned by River Place II, LLC, which has plans to construct an apartment building on this property in the near future.

1.4 Previous Site Investigations

This section provides an overview of previously completed environmental and geotechnical investigations completed at or in the immediate vicinity of the former West 42nd Street former MGP site.

Woodward-Clyde Associates, L.P., *Underground Storage Tank Closure Report*, July 1995, Prepared for Silverstein 42nd Associates, L.P.

The purpose of the closure report was to describe activities related to the closure of three separate UST systems consisting of 18 individual USTs located on Tax Lot 3. The UST systems were believed to be associated with petroleum storage for the Railway Express Agency motor vehicle fleet, and were located laterally, running north and south along the east side of Tax Lot 3. After removing the USTs, 20 post-excavation soil samples and two groundwater samples were collected from within the excavations and surrounding wells. Both soil and groundwater samples were analyzed for compounds listed in the August 1992 NYSDEC Spill Technology and Remediation Series (STARS) Memo #1: “Petroleum-Contaminated Soil Guidance Policy,” Appendix B, Table 1.

Ten soil samples collected from the northeast corner of Tax Lot 3 exceeded the Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values for gasoline-related compounds. Both groundwater samples contained gasoline-related compounds in excess of the NYSDEC Groundwater Quality Criteria, including benzene, n-butylbenzene, ethylbenzene, naphthalene and 1,2,4-trichlorobenzene. Based on the analytical results, Woodward-Clyde Associates, L.P. recommended additional site investigations to determine the extent of the petroleum contamination in the soil.

Woodward-Clyde Associates, L.P., *Results of Environmental Investigation Field Activities*, July 10, 1995, Prepared for Silverstein 42nd Associates, L.P.

This letter report summarized the results of an environmental investigation completed throughout Block 1089 (including both Tax Lot 1 and 3). Phase I of the investigation was completed in February 1995, and consisted of advancing four soil borings and installing four groundwater monitoring wells. The purpose of the Phase I environmental investigation was to make a preliminary determination as to the degree to which the 18 gasoline tanks described in the previous investigation report may have impacted soil and groundwater at Tax Lot 3. Four soil samples were collected from each boring and analyzed for polyaromatic hydrocarbon (PAH) compounds listed in the August 1992 NYSDEC STARS Memo #1. Four groundwater samples were collected from installed monitoring wells, and were analyzed for volatile organic compounds (VOCs) and PAHs from the STARS Memo #1 compound list.

Following the preliminary results of the Phase I sampling, additional Phase II field work commenced on Tax Lot 3 to further evaluate the property with regard to its former use as a manufactured gas plant during the 1800s. Phase II field work was completed in May 1995 and consisted of advancing ten soil borings and installing four groundwater monitoring wells. Twenty-one grab soil samples were collected from the 10 borings at various depths and were analyzed for VOCs, base neutral compounds (BNCs) and Target Analyte List Metals (TAL metals). In addition, three composite soil samples were collected from 0-4 feet below grade for waste classification purposes and were analyzed for full TCLP. Groundwater samples were collected from both the Phase I and Phase II wells for a total of seven groundwater samples (one well was destroyed and therefore not sampled) and analyzed for VOCs, BNCs and TAL metals.

Analytical results of the Phase I and II soil and groundwater sampling indicated that subsurface soil beneath Block 1089 contains petroleum-related compounds (primarily PAHs) and metals in concentrations that exceed NYSDEC TAGM 4046 Soil Cleanup Objectives and STARS Memo Guidance Values. The TCLP data indicated that the shallow soil in Tax Lot 3 would likely be classified as non-hazardous for disposal purposes. Additionally, groundwater analytical results identified petroleum-related compounds (e.g., benzene, toluene, ethylbenzene, xylene [BTEX] and PAHs) and metals at concentrations that exceeded NYSDEC Ambient Water Quality Standards and Guidance Values and STARS Memo Guidance Values.

Woodward-Clyde Associates, L.P., *Results of Environmental Investigations and Plan for Additional Investigations*, September 19, 1995, Prepared for Silverstein 42nd Associates, L.P.

This letter was submitted to the NYSDEC by Woodward-Clyde Associates, L.P. and outlined a scope of work for the execution of a Phase III environmental investigation of Tax Lots 1 and 3. The objectives of this Phase III Study included the following:

- determine the contents of two former underground oil storage tanks;
- determine if polychlorinated biphenyls (PCBs) were present in the two former underground oil storage tanks;
- characterize the quality of the unsaturated soil in the area of the former gas holders on Tax Lot 3;
- analyze additional soil samples for TCLP on the east and west sides of Block 1089; and
- calculate the flux of groundwater beneath the site entering the Hudson River.

Woodward-Clyde Associates, L.P., *Phase III Environmental Sampling Results*, January 30, 1996, Prepared for Silverstein 42nd Associates, L.P.

As part of the Phase III investigation described above, 25 soil borings were advanced to collect soil samples for chemical analysis. Seventeen “near surface” soil samples (at or just below the ground surface) were analyzed for PCBs. Eighteen unsaturated soil samples were analyzed for coal gas waste, including VOCs, Base Neutral Compounds and inorganics. The five most contaminated unsaturated soil samples were also analyzed for the purposes of waste characterization, including TCLP, VOCs, SVOCs, herbicides, pesticides, metals and RCRA characteristics.

All PCB analyses were reported as non-detectable. The waste characterization analyses indicated that the unsaturated soil at Tax Logs 1 and 3 did not contain RCRA characteristic wastes. Therefore, soil remediation was not recommended by Woodward Clyde.

However, the report identified MGP-related contamination beneath the landscaped area on Tax Lot 1 over NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 soil cleanup guidelines. Furthermore, soil data from SB-35 and SB-52 identified soil impacts within the westernmost part of the site near 12th Avenue with total VOCs of 109.2 ppm and 93.2 ppm, respectively, and total semivolatile organic compounds (SVOCs) of 1,005.9 ppm and 2,951.5 ppm, respectively.

> Woodward-Clyde Associates, L.P., *Results of 5/14/96 Groundwater Sampling and Completion of Project at Silverstein 42nd Associates, L.P.*, June 6, 1996, Prepared for Silverstein 42nd Associates, L.P.

The objective of this investigation was to determine if the elevated benzene concentrations associated with the tank removals at Tax Lot 1 had decreased over a 12-month period since the last sampling had occurred in May 1995. Two groundwater monitoring wells located along the eastern edge of Tax Lot 3 were sampled. The two samples were analyzed for the 14 gasoline-related VOCs as specified in the NYSDEC August 1992 STARS Memo #1. The groundwater sample, originally collected from MW-2 as part of the first sample round in May of 1995, exhibited elevated concentrations of benzene, ethylbenzene, naphthalene and xylene (BTEX). However, the second sample round collected from MW-02 in May of 1996 indicated that BTEX compounds had decreased to non-detectable levels at MW-02. The groundwater sample collected in May of 1996 from MW-04 located in the southwest corner of Tax Lot 1 exhibited concentrations of benzene and naphthalene that were similar to the May 1995 sampling event.

> Woodward-Clyde Associates, L.P., *Fate and Transport Calculations to Determine Benzene Concentrations in Groundwater as it Enters the Hudson River*, June 21, 1996, Prepared for Silverstein 42nd Associates, L.P.

Pursuant to the request of the NYSDEC, a fate and transport analysis was performed to determine the potential impact of contaminated site groundwater on the Hudson River. An analytical multidimensional fate and transport model was used to model the potential impacts.

The assessment indicated that the groundwater from the site is likely not impacting the Hudson River.

Woodward-Clyde Associates, L.P., *Human Health and Environmental Risk Evaluation*, August 19, 1996, Prepared for Silverstein 42nd Associates, L.P.

A Human Health and Environmental Risk Evaluation was performed to evaluate the potential risk to human health, and the environment associated with site-related contaminants. The evaluation considered potential exposure to on-site contaminants, as well as potential transport of contaminants from the site to off-site receptors. Based on the findings of the evaluation, Woodward-Clyde Associates concluded that no significant exposures to site-related contamination were expected after redevelopment of Tax Lot 1. After redevelopment, the majority of the site was expected to be covered with building construction at grade. No significant exposures to groundwater contamination were expected due to the fact that groundwater was not used as a potable water supply, and was not expected to be used for this purpose in the future. No significant exposures to surface water (e.g., the Hudson River) were expected due to the removal of the USTs and fuel oil residuals from Tax Lots 1 and 3. No significant exposures through an air migration pathway were expected in the future given that construction of the apartment complex would include an effective cap/cover, which would eliminate the potential for dust generation.

Dames & Moore, *Phase I Environmental Site Assessment*, October 6, 1996, Prepared for the Bank of New York.

The objective of the Phase I was to identify potential environmental conditions associated with the activities at the site, which is necessary for the Bank of New York to finance the property. This report indicated that there was an identified environmental risk at the property due to the presence of contaminated soil and groundwater at the site. However, the soil had been determined through TCLP analysis to be nonhazardous. The report conclusions stated that any future disturbance, excavation or removal of soil from the site must be considered a nonhazardous industrial waste and a NYSDEC Part 364 permit must be obtained for transportation and disposal of excavated soil. In addition, the New York City Department of

Health would need to be involved in the project. The report further recommended the preparation of a Health and Safety Plan for on-site workers involved in foundation construction activities, as well as the establishment of health and safety guidelines associated with future property maintenance.

Consolidated Edison Company of New York, Inc.
Analytical Sample Results from the Vault Installation, 2000

In April of 2000, Con Edison collected soil samples from beneath the sidewalk on 41st Street, directly south of the former MGP site, in association with the construction of an electrical vault. The samples were collected due to the fact that petroleum impacted soil was encountered during the excavation activities. The two soil samples were analyzed for BTEX, TPH, PCBs and Fingerprint Oil ID analysis. The location of the two Con Edison samples are shown on Figure 1-4.

BTEX compounds were detected at the following concentrations: xylenes - 485,000 ppb, benzene - 7,490 ppb, toluene - 5,750 ppb and ethylbenzene - 168,000 ppb. The Fingerprint Oil ID analysis indicated the presence of a substance similar to a mixture of gasoline and a light fuel oil. Additionally, TPH concentrations were detected up to 3,040 ppm; however, PCBs were not detected. On April 13, 2000, Con Edison notified the NYSDEC of the sample results and the case was assigned NYSDEC Spill Number 0000506. The spill was closed on April 25, 2000. During the vault installation on May 25, 2000, one soil sample was collected by Con Edison and analyzed for TCLP VOCs, SVOCs and metals. Only benzene was detected in the VOC analysis at a concentration of 0.016 ppm. No SVOCs were detected; however, barium, lead and selenium were detected in the metals analysis at concentrations of 0.58 ppm, 0.068 ppm and 0.046 ppm, respectively.

Langan Engineering & Environmental Services, P.C.,
Geotechnical Engineering Study for River Place Phase II;
July 2000, Prepared for Silverstein Properties

The objective of this study was to investigate the subsurface conditions at Tax Lot 3 and to develop recommendations related to foundation design and building construction associated with the development of the property. Fifty-two soil borings and three wells were advanced throughout Tax Lot 3 and along the adjacent sidewalks (see Figure 1-3). On-site borings were advanced to depths ranging between 38 to 65 feet below grade. The off-site borings (referred to as “probes”) were advanced to 30 feet below grade at the perimeter of Tax Lot 3. The wells were installed within the northeast, northwest and southwest corners of Tax Lot 3.

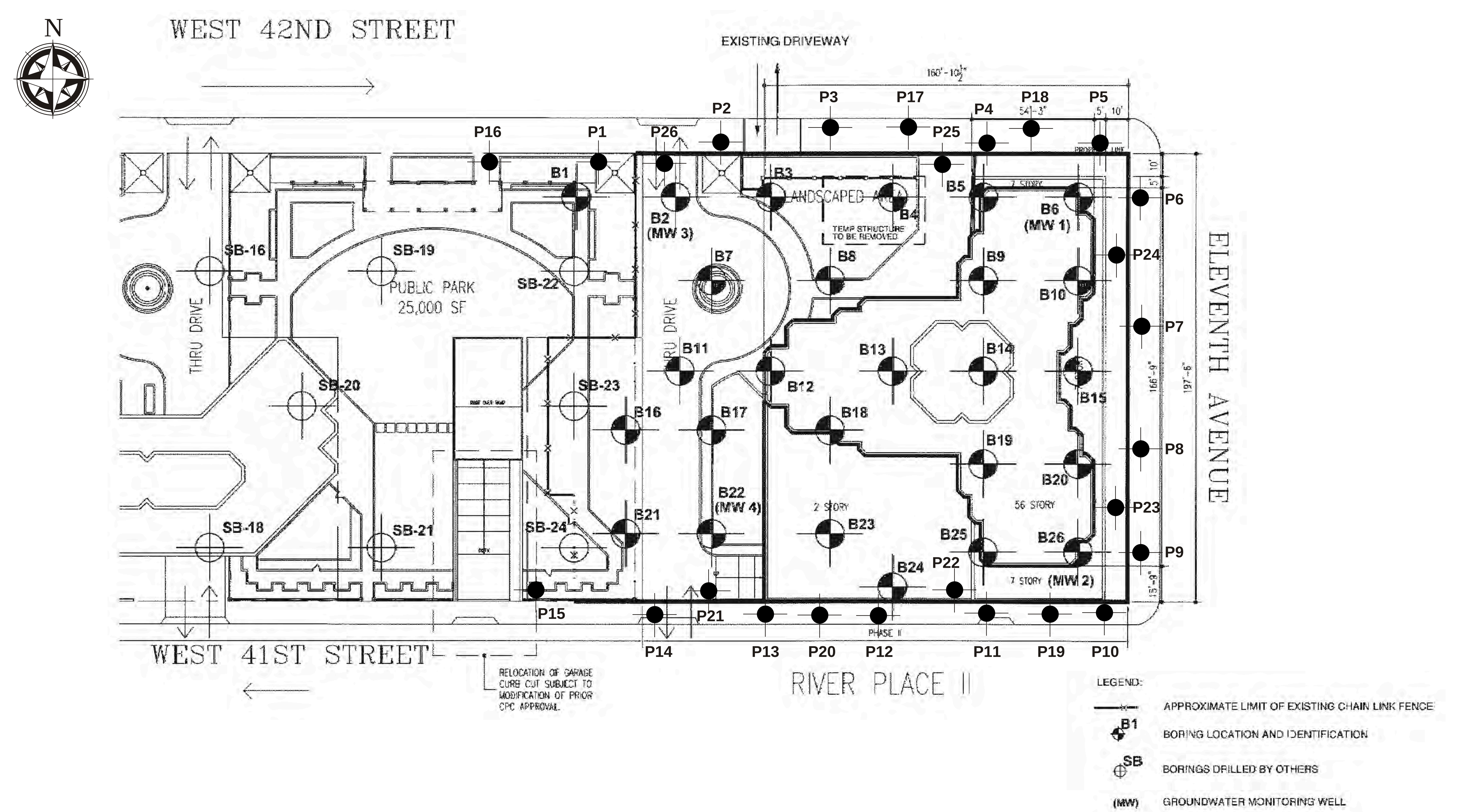
Seventeen soil samples from fourteen boring locations from varying depths were selected for analysis, including VOCs, SVOCs and TCLP. The three newly installed wells and one existing well (located at the southeast corner of Tax Lot 3) were sampled and analyzed for PCBs, metals, BTEX, TPH, cyanide, total suspended solids, oil and grease, pH, ignitablity, amenable cyanide and chromium VI.

Based on the findings of this study, site soil exhibited petroleum-like odors and intermittent soil staining. The majority of borings that exhibited these characteristics were located along the northeastern corner of Tax Lot 3 and impacted soil was primarily observed at depths ranging from 5 to 27 feet below grade. Creosol odors in recovered soil samples were also noted at boring locations B17, B19 and B25 between 20 and 22 feet below grade.

Figure 1-4 graphically displays the total VOC, total SVOC, total BTEX, TPH and total cyanide data for each sample collected as part of the geotechnical investigation. Total VOC concentrations of between 1.8 and 716 ppm were detected at boring locations B5, B14 and B25 in the central portion of Tax Lot 3. Total SVOC concentrations of between 68.2 and 1,748 ppm were also detected at boring locations B5, B14 and B25. In addition, total SVOC concentrations between 93.52 and 67.81 ppm were detected at boring locations B6 and B26 in the central, and along the eastern portions of Tax Lot 3. The groundwater samples collected from the four wells exhibited concentrations of BTEX and metals above NYSDEC groundwater standards.

Parsons, *West 42nd Street Manufactured Gas Plant Site History Report*, August 2002, Prepared for Consolidated Edison Company of New York, Inc.

Parsons was retained by Con Edison to conduct a review of all historical documents concerning the West 42nd Street former MGP site. In fact, the discussion of the history and



SOURCE: LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, P.C.

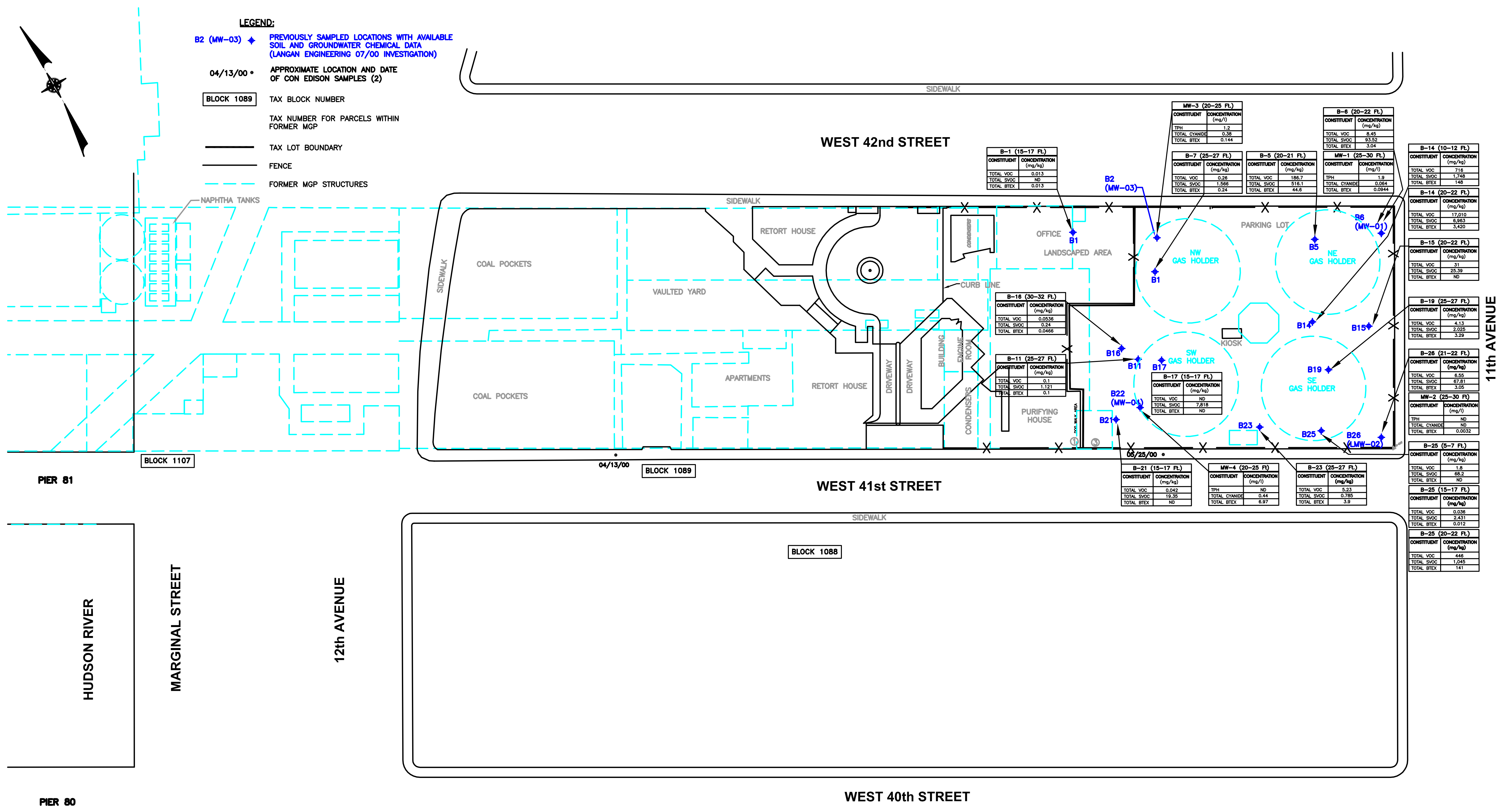
RLA/DWG/CONED2085(11/17/03)

Dvirka
and
Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
GEOTECHNICAL ENGINEERING STUDY - RIVER PLACE, PHASE II
JULY 25, 2000

BORING LOCATION PLAN

FIGURE 1-3



B-1 (15-17 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	0.013
TOTAL SVOC	ND
TOTAL BTEX	0.013

MW-3 (20-25 Ft.)	
CONSTITUENT	CONCENTRATION (mg/l)
TPH	1.2
TOTAL CYANIDE	0.38
TOTAL BTEX	0.144

B-7 (25-27 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	0.26
TOTAL SVOC	1.566
TOTAL BTEX	0.24

B-5 (20-21 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	186.7
TOTAL SVOC	516.1
TOTAL BTEX	44.6

B-6 (20-22 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	8.45
TOTAL SVOC	93.52
TOTAL BTEX	3.04

MW-1 (25-30 Ft.)	
CONSTITUENT	CONCENTRATION (mg/l)
TPH	1.9
TOTAL CYANIDE	0.064
TOTAL BTEX	0.0944

B-14 (10-12 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	716
TOTAL SVOC	1,748
TOTAL BTEX	148

B-14 (20-22 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	17,010
TOTAL SVOC	6,963
TOTAL BTEX	3,420

B-15 (20-22 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	31
TOTAL SVOC	25.39
TOTAL BTEX	ND

B-16 (30-32 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	0.0536
TOTAL SVOC	0.24
TOTAL BTEX	0.0466

B-11 (25-27 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	0.1
TOTAL SVOC	1.121
TOTAL BTEX	0.1

B-17 (15-17 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	ND
TOTAL SVOC	7,818
TOTAL BTEX	ND

B-19 (25-27 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	4.13
TOTAL SVOC	2.025
TOTAL BTEX	3.29

B-26 (21-22 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	6.55
TOTAL SVOC	67.81
TOTAL BTEX	3.05

MW-2 (25-30 Ft)	
CONSTITUENT	CONCENTRATION (mg/l)
TPH	ND
TOTAL CYANIDE	ND
TOTAL BTEX	0.0032

B-25 (5-7 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	1.8
TOTAL SVOC	68.2
TOTAL BTEX	ND

B-25 (15-17 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	0.036
TOTAL SVOC	2.431
TOTAL BTEX	0.012

B-25 (20-22 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	446
TOTAL SVOC	1,045
TOTAL BTEX	141

B-21 (15-17 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	0.042
TOTAL SVOC	19.35
TOTAL BTEX	ND

MW-4 (20-25 Ft)	
CONSTITUENT	CONCENTRATION (mg/l)
TPH	ND
TOTAL CYANIDE	0.44
TOTAL BTEX	6.97

B-23 (25-27 Ft.)	
CONSTITUENT	CONCENTRATION (mg/kg)
TOTAL VOC	5.23
TOTAL SVOC	0.785
TOTAL BTEX	3.9

SOURCE: MAP PROVIDED BY CONSOLIDATED EDISON. APPROXIMATE LOCATIONS OF FORMER MGP STRUCTURES BASED ON INTERPRETATION OF SANBORN MAPS AND DRAWINGS PROVIDED BY CONSOLIDATED EDISON CONTAINED WITHIN THE WEST 42nd STREET MANUFACTURED GAS PLANT SITE HISTORY REPORT BY PARSONS, DATED AUGUST 2002 AND THE RIVER PLACE PHASE II, 42nd. STREET AND ELEVENTH AVENUE, GEOTECHNICAL ENGINEERING STUDY BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, P.C., DATED JULY 2000.

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Dvirka
and
Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

LANGAN ENGINEERING ANALYTICAL DATA SUMMARY MAP

FIGURE 1-4

ownership of the site provided in Section 1.3 of this SCS report is based on the findings of the Parsons report. As part of that assignment, Parsons acquired a database of all state and federal environmental records for the former MGP and surrounding properties. Based on a review of the environmental database provided in the report, there were a total of three recorded petroleum spills associated with the Mobil Station at 561 11th Avenue, New York, New York, located directly north of Tax Lot 3. The spill numbers associated with this adjacent property includes:

- 9009655, spill date 12/05/90, product spilled: gasoline
- 9900078, spill date 4/02/99, product spilled: gasoline
- 9905507, spill date 8/06/99, product spilled: gasoline

The database identified an additional petroleum spill associated with the New York City Transit bus depot located on the corner of West 41st Street and 11th Avenue, directly south of Tax Lots 1 and 3 (8904384, spill date of 8/02/89). Details regarding the type of petroleum spilled or any additional information concerning closure or cleanup of this spill were not provided in the database.

Additionally, the Parsons Historic Report identified an investigation entitled, "May 1994 Final Impact Statement for Route 9a Reconstruction Project." The purpose of this environmental impact statement was to identify the existing environmental conditions from 29th Street to 46th Street along 12th Avenue. During the first phase of sampling (1A), subsurface soil samples were collected from eight borings and soil-gas survey samples were collected from two boring locations, all located between 42nd and 44th Streets. Groundwater samples were also collected from three monitoring wells located at 38th, 39th and 43rd Streets and 12th Avenue. Soil samples were analyzed for VOCs, BTEX, metals and PAHs. The soil-gas survey samples were analyzed for VOCs, while the groundwater samples were analyzed for BTEX, metals and PAHs.

The soil sample analysis indicated the presence of PAHs throughout the area investigated, particularly in samples collected from 41st Street to 46th Street. A sample collected between 41st and 42nd Streets from 40 feet below grade contained BTEX at a concentration of 13 parts per million (ppm). The groundwater analysis detected PAHs in samples collected from 39th and 43rd Streets; however, it should be noted that the groundwater samples reportedly had turbidity readings of over 1,000 nephelometric turbidity units (NTUs), which indicates the samples were of poor quality. The groundwater sample from 39th Street also contained low levels of BTEX. The collected soil-gas survey samples did not detect any VOCs; however, methane was detected at a concentration of greater than 10,000 ppm in one boring located between 43rd and 44th Streets.

A second phase of sampling was conducted as part of this environmental impact statement due to the presence of the identified VOCs, in the deep subsurface soil and groundwater between 40th and 41st Street along 12th Avenue. To better define the southern extent of the contamination, an additional groundwater monitoring well was installed between 39th and 40th Streets along 12th Avenue. Four soil samples (from 2 to 32 feet below grade) and one groundwater sample was collected from this location and analyzed for VOCs, SVOCs, metals, cyanide, total petroleum hydrocarbons (TPH) and TCLP parameters. Additionally groundwater samples were collected from the three existing wells and analyzed for metals.

Under this second phase, no VOCs were detected in any of the soil samples. PAHs were detected in the 2- to 6-foot and 8- to 10-foot soil samples with total PAH concentrations of up to 10 ppm. PAHs were not detected in the deeper samples. Additionally, TPH and metals were detected at fairly low levels in all four samples with all TPH values being less than 100 ppm.

The only organic compounds detected in the groundwater sample collected from the newly installed well was xylene at 3 ppb and bis(2-Ethylhexyl)phthalate at 34 ppb. However, these two compounds were also detected in the method blank and, therefore, most likely associated with laboratory contamination. PAHs or TPH were not detected in the sample.

Metals analysis was performed on groundwater samples collected from four wells: a newly installed well and three existing wells. The report indicated that several metals were detected at levels above NYSDEC Class GA groundwater standards in the unfiltered samples. However, no specific details were provided in the report as to the specific metals detected in the samples.

Roux Associates, Inc., *Subsurface Investigation and Quarterly Monitoring Report*, August 27, 2003, Prepared for the ExxonMobil Refining and Supply Company

Roux Associates, Inc. prepared a Subsurface Investigation and Quarterly Monitoring Report, which documents data associated with a environmental monitoring program conducted from May 2003 through July 2003 on behalf of the ExxonMobil Refining & Supply Company (ExxonMobil). As discussed previously, a Mobil Service Station is located directly north of Tax Lot 3, across 42nd Street, and there are at least three NYSDEC-documented petroleum spills associated with the site. The investigation activities performed as part of this program included on-site and off-site subsurface investigations with Geoprobe equipment, installation of four monitoring wells, monthly liquid level gauging, and quarterly groundwater sampling and laboratory analysis.

The Roux report identified significant petroleum contamination within and downgradient of the Mobil Service Station. Free-phase hydrocarbon was identified within the Mobil Station site with up to 3 feet of product measured at Roux's MW-3, located 50 feet to the north of Tax Lot 3. However, the majority of the contamination appears to be located in the northeast corner of the Mobil station site. Based on the Roux investigation, groundwater flows in a southerly direction, making the Mobil station site directly upgradient of Tax Lot 3.

The groundwater data documents a BTEX groundwater plume migrating off the Mobil Station site to the south. Based on the available data, the BTEX plume has likely impacted Tax Lot 3. Total BTEX concentrations of up to 14.1 ppm were detected in groundwater samples collected from sample points located on the southern sidewalk of 42nd Street, adjacent to Tax Lot 3.

2.0 SITE CHARACTERIZATION ACTIVITIES

2.1 Introduction

This section provides an overview of the field activities associated with the Site Characterization Study (SCS) of the West 42nd Street former MGP site. The field investigation program was completed in accordance with the NYSDEC-approved Site Characterization Work Plan, dated June 2003. However, the work plan was modified and expanded in a number of areas as the program progressed in order to address unforeseen field conditions. All deviations from the work plan were approved by Con Edison and NYSDEC prior to implementation and were documented by the D&B Field Operations Manager.

This section identifies all the modifications and increases to the original scope of work as presented in the work plan. In addition, this section provides information on data management and chemical data validation and usability. Table 2-1 provides a summary of all soil borings, test pits and monitoring wells completed as part of the SCS field program. Table 2-2 summarizes the laboratory methods used to analyze each type of environmental sample selected for chemical analysis. All sample locations are shown on Figure 2-1.

2.2 Test Pits

As shown on Figure 2-1, nine test pits were completed within Tax Lot 3 in order to identify the presence of any remaining former MGP subsurface structures as well as the presence of tar or non-aqueous phase liquid (NAPL) within this portion of the former MGP site. The original work plan included the completion of two test pits within the landscaped area of Tax Lot 1. However, the two test pits (TP-10 and TP-11) were eliminated from the scope of work due to the disruption that would have resulted to the landscaped area. The information relating to the Purifying House structure was obtained from TP-02, SB-08, SB-18, SB-19 and SB-28. The NYSDEC concurred with this change to the work plan.

TABLE 2-1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
SUMMARY OF FIELD INVESTIGATION PROGRAM

Sample Location Designation	Task Description	Depth (Feet)	Date		Lead Geologist	Samples Selected for Analysis		Significant Deviations from Work Plan
			Start	Completion		Sample Depth (s) (Feet)	Sample Analysis	
TEST PIT EXCAVATIONS								
TP-01	Test Pit Excavation & Subsurface Soil Sampling	8	8/14/03	8/14/03	KP	5-5.5	VOCs, SVOCs, TAL Metals and Total Cyanide	TP-01 was moved approx. 5' east to remain within the parking lot area. Test pit was increased in size by 60 square feet.
TP-02	Test Pit Excavation & Subsurface Soil Sampling	10	8/12/03	8/13/03	KP	9-9.5	VOCs, SVOCs, TAL Metals and Total Cyanide	TP-02 was increased in size by 274 square feet.
TP-03	Test Pit Excavation & Subsurface Soil Sampling	10.5	8/19/03	8/19/03	KP	3.5-4	VOCs, SVOCs, TAL Metals and Total Cyanide	TP-03 was moved approx. 12' northeast to avoid undermining the kiosk. Test pit was increased in size by 266.5 square feet.
TP-04	Test Pit Excavation & Subsurface Soil Sampling	9.25	8/13/03	8/18/03	KP	8-8.5	VOCs, SVOCs, TAL Metals and Total Cyanide	TP-04 was increased in size by 185 square feet.
TP-05	Test Pit Excavation & Subsurface Soil Sampling	11.5	8/20/03	8/20/03	KP	11-11.5	VOCs, SVOCs, TAL Metals and Total Cyanide	TP-05 was moved approx. 3' north and 20' east to move away from the south site boundary wall and hydraulic car lift lines. Test pit was increased in size by 140 square feet.
TP-06	Test Pit Excavation & Subsurface Soil Sampling	10	8/22/03	8/22/03	KP	9.5-10	VOCs, SVOCs, TAL Metals and Total Cyanide	TP-06 was moved approx. 20' south and 12.5' east because TP-07 revealed the northwestern portion of the southeast gas holder and the originally proposed test pit location would not have uncovered a holder wall. Test pit was increased in size by 80 square feet.
TP-07	Test Pit Excavation & Subsurface Soil Sampling	10.5	8/19/03	8/19/03	KP	10-10.5	VOCs, SVOCs, TAL Metals and Total Cyanide	TP-07 was moved approx. 4' south to avoid undermining the integrity of the telephone pole. Test pit was increased in size by 252 square feet.

TABLE 2-1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
SUMMARY OF FIELD INVESTIGATION PROGRAM

Sample Location Designation	Task Description	Depth (Feet)	Date		Lead Geologist	Samples Selected for Analysis		Significant Deviations from Work Plan
			Start	Completion		Sample Depth (s) (Feet)	Sample Analysis	
TEST PIT EXCAVATIONS (continued)								
TP-08	Test Pit Excavation & Subsurface Soil Sampling	11	8/21/03	8/21/03	KP	10.5-11	VOCs, SVOCs, TAL Metals and Total Cyanide	TP-08 was increased in size by 164 square feet.
TP-09	Test Pit Excavation & Subsurface Soil Sampling	10.5	8/19/03	8/19/03	KP	10-10.5	VOCs, SVOCs, TAL Metals and Total Cyanide	TP-09 was moved approx. 2' west to avoid undermining the hydraulic car lifts. Test pit was increased in size by 164.5 square feet.
SOIL BORINGS								
SB-01	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	32	9/2/03	9/2/03	KP	22-26, 26-32	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-01 was completed in accordance with work plan.
SB-02	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	19	9/3/03	9/22/03	KP	17-19, 29-31	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-02 was completed in accordance with work plan.
SB-03	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	19	9/4/03	9/5/03	KP	17-19	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-03 was terminated at 19' bgs to avoid drilling through holder bottom and was not advanced to bedrock as per the work plan. A new boring was advanced downgradient and outside the holder (within the landscaped area) and was designated SB-28.
SB-04	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	32.9	9/18/03	9/18/03	KP	10-16	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-04 was moved to within TP-02 to have equally distant sample locations along the Purifying House eastern wall.

TABLE 2-1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
SUMMARY OF FIELD INVESTIGATION PROGRAM

Sample Location Designation	Task Description	Depth (Feet)	Date		Lead Geologist	Samples Selected for Analysis		Significant Deviations from Work Plan
			Start	Completion		Sample Depth (s) (Feet)	Sample Analysis	
SOIL BORINGS (continued)								
SB-05	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	19.5	9/9/03	9/9/03	KP	18-19.5	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-5 was moved to within TP-3 to avoid the kiosk.
SB-06	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	33	9/9/03	9/9/03	KP	9-11	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-06 was completed in accordance with work plan.
SB-07	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	39.5	9/3/03	9/4/03	KP	27-29, 33-35	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-07 was completed in accordance with work plan.
SB-08	Geoprobe Soil Boring & Subsurface Soil Sampling	30	10/2/03	10/2/03	KP	12-16, 28-30	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-8 was moved 8' west to the southern tip of the walking path in the landscaped area.
SB-09	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	33.5	9/5/03	9/5/03	KP	11-15, 31-33.5	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-09 was completed in accordance with work plan.
SB-10	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	42	9/11/03	9/11/03	KP	20-24, 26-28	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-10 was moved approx. 15' northeast to within TP-5 to avoid car lifts and hydraulic lines.
SB-11	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	29	9/10/03	9/17/03	KP	10-12	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-11 was relocated to the south because refusal was encountered three times at original sampling location.

TABLE 2-1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
SUMMARY OF FIELD INVESTIGATION PROGRAM

Sample Location Designation	Task Description	Depth (Feet)	Date		Lead Geologist	Samples Selected for Analysis		Significant Deviations from Work Plan
			Start	Completion		Sample Depth (s) (Feet)	Sample Analysis	
SOIL BORINGS (continued)								
SB-12	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	28.8	9/8/03	9/8/03	KP	21-23, 27-28.8	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-12 was completed in accordance with work plan.
SB-13	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	21.4	9/16/03	9/16/03	KP	19-21.4	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-13 was moved 2' east to avoid car lifts and hydraulic lines.
SB-14	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	56	9/12/03	9/15/03	KP	17-19, 30-32	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-14 was completed in accordance with work plan.
SB-15	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	19	9/12/03	9/12/03	KP	7-9, 13-15	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-15 was terminated at 19' bg to avoid drilling through the gas holder bottom and was not advanced to bedrock as per the work plan. A new boring was advanced within the gas holder and was designated SB-27. SB-12 is designated as the downgradient boring of the NE gas holder as per the work plan.
SB-16	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	49	9/16/03	9/16/03	KP	19-21.4, 25-27	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-16 was completed in accordance with work plan.
SB-17	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	33	9/9/03	9/10/03	KP	9-13, 21-23	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-17 was moved 2' west in order to get closer to the fence and obtain soil classification data for the landscaped area.
SB-18	Geoprobe Soil Boring & Subsurface Soil Sampling	31	9/26/03	9/26/03	KP	9-13, 23-25	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-18 was completed in accordance with work plan.

TABLE 2-1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
SUMMARY OF FIELD INVESTIGATION PROGRAM

Sample Location Designation	Task Description	Depth (Feet)	Date		Lead Geologist	Samples Selected for Analysis		Significant Deviations from Work Plan
			Start	Completion		Sample Depth (s) (Feet)	Sample Analysis	
SOIL BORINGS (continued)								
SB-19	Geoprobe Soil Boring & Subsurface Soil Sampling	26.2	10/2/03	10/2/03	KP	20-24, 24-26.2	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-19 was moved 25' north and 25'west to the northern tip of the walking path in the landscaped area.
SB-20	Geoprobe Soil Boring & Subsurface Soil Sampling	32	10/2/03	10/2/03	KP	12-16, 16-20	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-20 was completed in accordance with work plan.
SB-21	Geoprobe Soil Boring & Subsurface Soil Sampling	38.9	9/30/03	9/30/03	KP	12-16, 36-38.9	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-21 was completed in accordance with work plan.
SB-22	Geoprobe Soil Boring & Subsurface Soil Sampling	49	9/29/03	9/29/03	KP	12-16, 36-44	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-22 was relocated to within the loading dock area in River Place I, through consultation with Con Edison, NYSDEC and the property owner. The revised location may provide a better understanding of soil characteristics under the apartment building.
SB-23	Geoprobe Soil Boring & Subsurface Soil Sampling	54.5	9/30/03	9/30/03	KP	20-24', 52-54.4'	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-23 was completed in accordance with work plan.
SB-24	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	38	9/30/03	10/3/03	KP	30-32, 34-36, 36-38	VOCs, SVOCs, TAL Metals and Total Cyanide, Environmental Forensic Analysis on 36-38 interval	SB-24 was not advanced to bedrock. Due to the amount of mobile DNAPL/tar encountered, there was a concern that advancing the boring further into the underlying clay confining unit which may potentially create a pathway for vertical migration.
SB-25	Geoprobe Soil Boring & Subsurface Soil Sampling	38	10/1/03	10/1/03	KP	12-16, 24-28	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-25 was completed in accordance with work plan.

TABLE 2-1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
SUMMARY OF FIELD INVESTIGATION PROGRAM

Sample Location Designation	Task Description	Depth (Feet)	Date		Lead Geologist	Samples Selected for Analysis		Significant Deviations from Work Plan
			Start	Completion		Sample Depth (s) (Feet)	Sample Analysis	
SOIL BORINGS (continued)								
SB-26	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	28.5	9/29/03	10/6/03	KP	9-13, 16-19	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-26 was moved 4' to the north to within the sidewalk after refusal was hit at 19'.
SB-27	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	42	9/22/03	9/23/03	KP	18-20, 29-31	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-27 was added to the program to provide a better understanding of soil characteristics within and below the northeast gas holder.
SB-28	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	28.5	9/25/03	9/25/03	KP	11-13	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-28 was added to the program to provide additional soil characteristic information from within the landscaped area.
SB-29	Hollow Stem Auger Soil Boring & Subsurface Soil Sampling	52	9/24/03	9/25/03	KP	19-23, 39-41	VOCs, SVOCs, TAL Metals and Total Cyanide	SB-29 was added to the program to provide additional soil classification information between the northeast and southeast gas holders and additional information downgradient of contamination observed within boring SB-16.

TABLE 2-1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
SUMMARY OF FIELD INVESTIGATION PROGRAM

Sample Location Designation	Task Description	Depth (Feet)	Date		Lead Geologist	Samples Selected for Analysis		Significant Deviations from Work Plan
			Start	Completion		Sample Depth (s) (Feet)	Sample Analysis	
GROUNDWATER MONITORING WELLS								
MW-01	Groundwater Monitoring Well Installation and Groundwater Sampling	19	9/25/03	9/25/03	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was moved 25' south and 22' west to be outside and downgradient of the northwest gas holder.
MW-02	Groundwater Monitoring Well Installation and Groundwater Sampling	19	9/9/03	9/9/03	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was completed in accordance with work plan.
MW-03	Groundwater Monitoring Well Installation and Groundwater Sampling	19	9/8/03	9/8/03	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was completed in accordance with work plan.
MW-04	Groundwater Monitoring Well Installation and Groundwater Sampling	19	9/10/03	9/10/03	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was completed in accordance with work plan.
MW-05	Groundwater Monitoring Well Installation and Groundwater Sampling	19	9/24/03	9/24/03	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was moved 8' north and 12' east to be outside the southeast gas holder and within SB-10 boring location.
MW-06	Groundwater Monitoring Well Installation and Groundwater Sampling	19	9/17/03	9/17/03	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was completed in accordance with work plan.

TABLE 2-1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
SUMMARY OF FIELD INVESTIGATION PROGRAM

Sample Location Designation	Task Description	Depth (Feet)	Date		Lead Geologist	Samples Selected for Analysis		Significant Deviations from Work Plan
			Start	Completion		Sample Depth (s) (Feet)	Sample Analysis	
EXISTING GROUNDWATER MONITORING WELLS								
LMW-01	Sampling Groundwater Monitoring Well Installed during the July 2000 Geotechnical Engineering Study	39.95	10/09/2003 (Development Only)	10/09/2003 (Development Only)	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was sampled in accordance with the (modified) work plan.
LMW-02	Sampling Groundwater Monitoring Well Installed during the July 2000 Geotechnical Engineering Study	27.81	10/09/2003 (Development Only)	10/09/2003 (Development Only)	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was sampled in accordance with the (modified) work plan.
LMW-03	Sampling Groundwater Monitoring Well Installed during the July 2000 Geotechnical Engineering Study	29.27	10/08/2003 (Development Only)	10/08/2003 (Development Only)	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was sampled in accordance with the (modified) work plan.
LMW-04	Sampling Groundwater Monitoring Well Installed during the July 2000 Geotechnical Engineering Study	31.4	10/08/2003 (Development Only)	10/08/2003 (Development Only)	KP	--	VOCs, SVOCs, TAL Metals, Total Cyanide and Amenable Cyanide	Well was sampled in accordance with the (modified) work plan.

NOTES:
-- : Not Available VOCs : Volatile Organic Contaminants SVOCs : Semivolatile Organic Contaminants TAL Metals : Target Analyte List Metals
N/A : Not Applicable

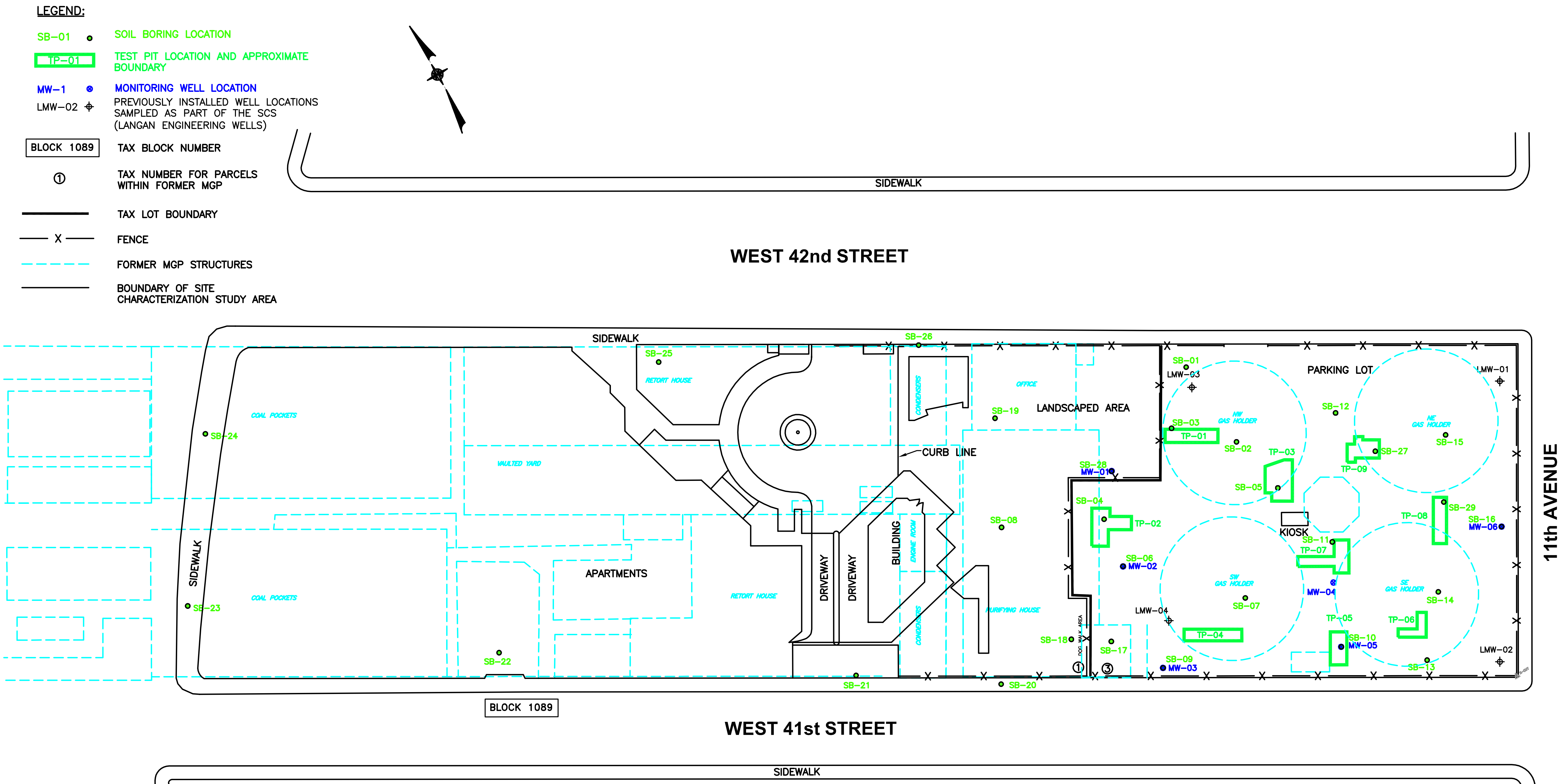
TABLE 2-2
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION REPORT
SAMPLE MEDIA, CHEMICAL CONSTITUENTS AND ANALYTICAL METHODS

SAMPLE MEDIA AND ANALYTICAL METHOD		
Chemical Constituents	**Soil**	**Groundwater**
VOCs	USEPA Method 8260	USEPA Method 8260
SVOCs	USEPA Method 8270	USEPA Method 8270
TAL Metals	USEPA Methods 6000/7000	USEPA Methods 6000/7000
Total Cyanide	USEPA Method 9012	USEPA Method 9012
Amenable Cyanide	--	USEPA Method OIA-1677
Forensic Hydrocarbon Fingerprint	USEPA Modified Method 8100	--

Note:

-- : Not sampled/analyzed.



SOURCE: MAP PROVIDED BY CONSOLIDATED EDISON. APPROXIMATE LOCATIONS OF FORMER MGP STRUCTURES BASED ON INTERPRETATION OF SANBORN MAPS AND DRAWINGS PROVIDED BY CONSOLIDATED EDISON CONTAINED WITHIN THE WEST 42nd STREET MANUFACTURED GAS PLANT SITE HISTORY REPORT BY PARSONS, DATED AUGUST 2002 AND THE RIVER PLACE PHASE II, 42nd. STREET AND ELEVENTH AVENUE, GEOTECHNICAL ENGINEERING STUDY BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, P.C., DATED JULY 2000.

0 60
SCALE IN FEET

Dvirka
and
Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

SAMPLE LOCATION MAP

FIGURE 2-1

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The test pits were completed using a tire-mounted backhoe. Each test pit was excavated to the groundwater interface or to the maximum depth to which the backhoe was able to safely excavate (approximately 11 feet), whichever was encountered first. Generally, each test pit measured approximately 30 feet long and 5 to 10 feet wide. However, in some cases, test pits were enlarged in an effort to identify the type and orientation of former gas plant structures. During excavation activities, the test pit walls and floor were investigated for evidence of MGP-related contamination (e.g., odors, staining, sheens, NAPL, elevated PID readings) and remnant structures. Soil from the test pits was described in accordance with the Unified Soil Classification System. During test pit activities, excavated soil was monitored for the presence of VOCs using a PID and visual/odor inspection. Test pits were logged and photographed. Test pit logs are provided in Appendix A and photographs are provided in Appendix B.

When visibly impacted soil was encountered in a test pit, one composite sample was collected from the test pit sidewalls for chemical analysis approximately 2 feet below the impacted zone. The purpose of this sample was to attempt to define the vertical extent of the impacted material. If the vertical extent of the impacted soil could not be confirmed due to a limitation in test pit depth, a grab sample was collected from the most contaminated zone (based on visual observations and PID readings) and analyzed. The vertical extent of impacts in that area was then confirmed as part of the soil boring program. When visibly impacted materials were no longer encountered in a test pit, one composite sample was collected for chemical analysis from the bottom of the test pit to confirm that impacted soil was not present. In several cases, multiple samples were collected from larger test pits. Additionally, when a holder foundation was encountered, the configuration of the test pit was modified in order to uncover a greater portion of the foundation and to observe the structural integrity and orientation of the foundation.

All soil samples selected for analysis during the test pit program were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs) by EPA Method 8260, TCL semivolatile organic compounds (SVOCs) by EPA Method 8270, Target Analyte List (TAL) metals by EPA Method 6000/7000 Series and total cyanide by EPA Method 9012.

Test pits remained open only for the time required to perform the excavation, log and photograph the subsurface conditions, collect samples, and measure the dimensions of any subsurface features. The excavated soil was temporarily placed on plastic sheeting adjacent to the test pit and placed back into the excavation in the reverse order from which it was removed. When additional backfill materials were needed to restore the excavation to grade, bluestone was placed within the excavation. All test pits were then marked for follow-up survey.

The excavator bucket was decontaminated between each test pit location in accordance with the work plan.

Due to the fact that the test pits were completed in a portion of Tax Lot 3 that is used as a commercial parking area, each test pit excavation area was repaved with a 2-inch layer of asphalt. Prior to paving, each excavation was sawcut and compacted. In addition, all asphalt patches were lined with heated tar to ensure a proper seal.

For the purpose of characterizing the soil placed in on-site roll-offs, samples were collected directly from the 20-yard roll-off containers and were biased towards soil which visibly appeared to be most contaminated. The results of these analyses were used to properly characterize this investigation-derived waste at a Con Edison-approved disposal facility.

2.3 Soil Borings

Upon completion of the test pit excavations, a total of 29 soil borings were advanced to characterize subsurface soil, obtain a better understanding of bedrock topography, and to collect additional subsurface soil samples for laboratory analysis. Information acquired from the completed test pit program influenced the number, location and depth of the soil borings. Specifically, the test pit program provided a better understanding as to the location of former structures, as well as the extent of MGP residuals in shallow subsurface soil. It should be noted that soil borings SB-27, SB-28 and SB-29 were not part of the original Work Plan scope of work, but were added to the field program to obtain additional information within the southeast (SE) gas holder, park area and downgradient of impacted material found at SB-16, respectively.

The majority of soil borings were advanced to bedrock using a truck mounted drill rig. Bedrock was typically encountered between 19 and 55 feet below grade. The drill rig was equipped with 2-inch inside diameter hollow stem auger (HSA) drilling capabilities to advance through concrete and other subsurface obstacles. Where the HSA drilling method was unsuccessful and refusal was encountered, mud-rotary drilling techniques were implemented. Additionally, for soil boring locations where auger and mud-rotary techniques were not feasible due to access restrictions (i.e., landscaped area, loading dock and sidewalk), Geoprobe direct push technology was used for soil collection. In accordance with the work plan, soil borings installed within the former gasholders were advanced through the holder foundations only if NAPL-impacted materials were not encountered immediately above the holder foundation. At several locations, including SB-02 and SB-14, a steel surface casing was grouted into the holder foundation so that subsurface samples could be collected below the holder without the potential for vertical migration of tar or NAPL through the borehole annulus.

Soil samples were collected on a continuous basis using 2-foot long, 2-inch diameter, split-spoon samplers from the auger and mud-rotary capable drill rigs and 4-foot long, 2-inch diameter macrocore samplers from the Geoprobe rig. Each sample was split lengthwise and logged by field personnel. Logging consisted of: describing the soil in accordance with the Unified Soil Classification; describing any evidence of contamination (e.g., oil-like or tar-like NAPL, staining, sheens, odors); and screening for VOCs using a PID.

The following rationale was used in the selection of soil samples for laboratory analysis:

- One sample was collected from the zone with the highest PID readings or visual impacts. If no visual impacts or elevated PID readings were observed, a sample was collected from directly above the water table.
- If contamination was observed, an additional sample was collected below the impacted zone at or near the base of the boring to define the vertical extent of impacts at that location.

The samples were submitted to the laboratory for analysis of TCL VOCs, TCL SVOCs, TAL metals and total cyanide. Drill cuttings were placed in 55-gallon steel drums or placed in a 20-yard roll-off container for disposal in accordance with the work plan.

Five of the 29 soil borings were advanced at least 4 feet into bedrock to ascertain bedrock properties/competency and estimate potential migration pathways for contaminants. Once the bedrock interface was reached with the HSAs, an NX rock corer was advanced into the rock in order to collect a representative core sample. Rock cores were preserved in core boxes.

All sampling equipment (e.g., augers, split-spoon samplers and Geoprobe downhole equipment and tools) were decontaminated between sampling locations. Decontamination was conducted in accordance with the work plan. Soil boring locations were marked for identification during follow-up survey work.

Restoration activities associated with the well installation program included backfilling borings with native material. However, if a significant zone of contaminated soil was encountered, or if a boring was advanced through a gas holder foundation, a bentonite/cement grout was used to seal off the boring. All soil boring locations were capped off with bluestone and an asphalt patch.

2.4 Monitoring Well Installation and Development

Six groundwater monitoring wells were installed as part of the field program for use in providing groundwater quality and flow information, and to determine the presence/absence of NAPL in groundwater at the site. The actual location of each well is shown on Figure 2-1. In consultation with the NYSDEC, the proposed locations of the wells presented in the SCS Work Plan were modified in the field based on the results of the test pit investigation, soil boring field screening and available sample analytical results. Based on the understanding of site hydrogeology presented in the Parsons Historic Report, as well as the fate and transport of MGP residuals within the subsurface environment, all monitoring wells were installed in unconsolidated sediments (overburden) and were set so that the well screen intercepts the water table.

All overburden monitoring wells were installed using 6 ½-inch diameter HSAs and a truck-mounted drill rig. The overburden wells were constructed of 2-inch diameter PVC with 10 feet of 0.02 slotted screens. Each well was constructed so that approximately 7 feet of the 10-foot screen was below the water table. A 2-foot sump was provided at the bottom of each well to provide a reservoir for dense non-aqueous phase liquid (DNAPL) accumulation. The annular space around the well screen was backfilled with sand filter pack extending from the bottom of the well to 1 to 2 feet above the screen. The annular space around the well riser was sealed with bentonite pellets extending 1 to 2 feet above the sand filter pack (Morie #2) and completed with a cement mixture to approximately 1 foot below grade. All monitoring wells were completed with flush-mounted locking manhole covers. A summary of the monitoring well construction for all six wells is provided in Table 2-3.

After a minimum of 24-hours following installation, each newly installed monitoring well was developed via pumping. Additionally, the four on-site existing wells were also developed. A minimum of three to five well volumes was pumped from each well. The well development water was monitored for turbidity and water quality indicators (i.e., pH, dissolved oxygen, oxidation-reduction potential, temperature, and specific conductivity) with measurements collected approximately every 10 minutes. Development continued until turbidity measurements were less than 50 nephelometric turbidity units (NTUs) for three successive readings or until water quality indicators stabilized, whichever occurred first. The criteria for stabilization required three successive readings within 10% for pH, temperature and specific conductivity.

HSAs were decontaminated between monitoring well locations by steam cleaning using a tap water/Simple Green® solution. Decontamination was conducted in accordance with the work plan. All monitoring well drill cuttings, well development water, decontamination, and purge water was containerized in 55-gallon steel drums, 20-yard roll-off containers or poly tanks and handled in accordance with the work plan. Restoration activities included asphalt patching

TABLE 2-3
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
MONITORING WELL CONSTRUCTION SUMMARY

MONITORING WELL	WELL DEPTH (feet bgs)	TOTAL DEPTH (feet bgs)	MEASURING POINT ELEVATION[(1)] (feet)	CASING DIAMETER (inches)	SCREENED DEPTHS (feet bgs)		ANNULAR FILLS (feet bgs)		
					Interval	Description	Interval	Type	Material
MW-01	19.00	29.00	7.54	2.00	7-17	0.020" Slotted PVC	0-3	Seal	Cement
							3-5	Seal	Bentonite
							5-19	Filter	Sand Pack (Morie #2)
MW-02	19.00	33.00	8.26	2.00	7-17	0.020" Slotted PVC	0-3	Seal	Cement
							3-5	Seal	Bentonite
							5-19	Filter	Sand Pack (Morie #2)
MW-03	19.00	35.00	9.28	2.00	7-17	0.020" Slotted PVC	0-3	Seal	Cement
							3-5	Seal	Bentonite
							5-19	Filter	Sand Pack (Morie #2)
MW-04	19.00	19.00	9.15	2.00	7-17	0.020" Slotted PVC	0-3	Seal	Cement
							3-5	Seal	Bentonite
							5-19	Filter	Sand Pack (Morie #2)
MW-05	19.00	42.00	10.01	2.00	7-17	0.020" Slotted PVC	0-3	Seal	Cement
							3-5	Seal	Bentonite
							5-19	Filter	Sand Pack (Morie #2)
MW-06	19.00	49.00	10.15	2.00	7-17	0.020" Slotted PVC	0-3	Seal	Cement
							3-5	Seal	Bentonite
							5-19	Filter	Sand Pack (Morie #2)

Notes:
(1) Top of casing elevation
bgs: Below ground surface

around the manhole covers for wells located in the parking lot area and a cement pad placed around MW-01 located in the park area.

2.5 Groundwater Sampling and Water Level Measurements

Several days following the development of monitoring wells, groundwater samples were collected from the newly installed wells, as well as the four existing wells. Prior to collecting the samples, the depth to groundwater was measured in the wells using an electronic oil/water interface probe attached to a measuring tape accurate to 0.01 foot. The probe was lowered to the bottom of each well to check for the presence of DNAPL.

The water level data, well diameter and depth were used to calculate the volume of water in each well. The wells were then purged using low-flow purging techniques as described in the work plan. Groundwater samples were collected using dedicated pump tubing and hand bailers, and placed directly into laboratory-supplied sample bottles. The samples were submitted for laboratory analysis for Target Compound List (TCL) VOCs, TCL SVOCs, TAL metals, total cyanide and amenable cyanide. Sample containers for VOC and metals analysis were pre-preserved in the laboratory.

All nondedicated sampling equipment (e.g., submersible pumps and oil/water interface probe) were decontaminated between sampling locations in accordance with the work plan. All decontamination water was placed in 55-gallon drums or poly tanks and handled as described in work plan.

Water Level Measurements

In addition to the initial round of groundwater levels to be obtained during the sampling activities described in the previous section, four rounds of synoptic water level measurements were collected around high and low tides in order to assess the tidal influence on groundwater flow at the site. Water levels were obtained at each of the new and existing monitoring wells at the site. Each well was also gauged for the presence of NAPL during each round of measurements. Water level and NAPL measurements are presented in Table 2-4.

2.6 Site Survey

At the completion of installation activities, all test pits, soil borings and monitoring wells were surveyed by a New York State-licensed surveyor for production of a composite base map. Two elevation measurements were taken at each well location: the elevation on the rim of the gate box or protective casing and the elevation of the top of PVC casing. The survey elevations were measured to an accuracy of 0.01 foot in accordance with the National Geodetic Vertical Datum of 1929 (an approximation of mean sea level).

2.7 Historical Map Research Investigation

An additional historical map research investigation was completed to help further identify the location of the former naphthalene and light oil tanks formally located on Block 1107. In all, five Sanborn maps (1890-1930), ten Bromley maps (1897-1974) and one Hyde map (1913) were obtained. Section 4.5 provides background information and a description of the findings, while the maps have been provided in Appendix E.

2.8 Laboratory Analysis and Data Management

The data collected as part of and in support of the field investigations for the site and surrounding areas was managed using the GIS/Key Data Management System. GIS/Key was utilized for the management of both geological and chemical data. Boring logs and monitoring well construction logs were entered into GIS/Key in order to establish a geological database as well as produce geologic cross sections for the site.

TABLE 2-4
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY
GROUNDWATER MEASUREMENTS AND CALCULATED ELEVATIONS

MONITORING WELL	DATE / TIME		TIDE	MEASURING POINT ELEVATION $^{(1)}$ (feet above MSL)	DEPTH TO WATER (feet)	WATER ELEVATION (feet above MSL)
MW-01	11/7/03	1:37 PM	Low Tide	7.54	7.67	-0.13
	11/10/03	8:54 AM	High Tide		7.85	-0.31
	11/10/03	12:20 PM	Mid Tide		7.83	-0.29
	11/10/03	3:37 PM	Low Tide		7.80	-0.26
MW-02	11/7/03	1:37 PM	Low Tide	8.26	8.70	-0.44
	11/10/03	8:54 AM	High Tide		8.84	-0.58
	11/10/03	12:20 PM	Mid Tide		8.79	-0.53
	11/10/03	3:37 PM	Low Tide		8.72	-0.46
MW-03	11/7/03	1:37 PM	Low Tide	9.28	12.65	-3.37
	11/10/03	8:54 AM	High Tide		12.81	-3.53
	11/10/03	12:20 PM	Mid Tide		12.81	-3.53
	11/10/03	3:37 PM	Low Tide		12.77	-3.49
MW-04	11/7/03	1:37 PM	Low Tide	9.15	9.36	-0.21
	11/10/03	8:54 AM	High Tide		9.60	-0.45
	11/10/03	12:20 PM	Mid Tide		9.57	-0.42
	11/10/03	3:37 PM	Low Tide		9.57	-0.42
MW-05	11/7/03	1:37 PM	Low Tide	10.01	13.85	-3.84
	11/10/03	8:54 AM	High Tide		13.96	-3.95
	11/10/03	12:20 PM	Mid Tide		13.94	-3.93
	11/10/03	3:37 PM	Low Tide		13.95	-3.94
MW-06	11/7/03	1:37 PM	Low Tide	10.15	12.26	-2.11
	11/10/03	8:54 AM	High Tide		12.36	-2.21
	11/10/03	12:20 PM	Mid Tide		12.35	-2.20
	11/10/03	3:37 PM	Low Tide		12.34	-2.19
LMW-01	11/7/03	1:37 PM	Low Tide	9.33	16.18	-6.85
	11/10/03	8:54 AM	High Tide		16.31	-6.98
	11/10/03	12:20 PM	Mid Tide		16.25	-6.92
	11/10/03	3:37 PM	Low Tide		16.22	-6.89
LMW-02	11/7/03	1:37 PM	Low Tide	10.77	19.70	-8.93
	11/10/03	8:54 AM	High Tide		19.70	-8.93
	11/10/03	12:20 PM	Mid Tide		19.70	-8.93
	11/10/03	3:37 PM	Low Tide		19.70	-8.93
LMW-03	11/7/03	1:37 PM	Low Tide	8.72	4.51	4.21
	11/10/03	8:54 AM	High Tide		4.87	3.85
	11/10/03	12:20 PM	Mid Tide		4.84	3.88
	11/10/03	3:37 PM	Low Tide		4.84	3.88
LMW-04	11/7/03	1:37 PM	Low Tide	9.19	--	--
	11/10/03	8:54 AM	High Tide		--	--
	11/10/03	12:20 PM	Mid Tide		--	--
	11/10/03	3:37 PM	Low Tide		--	--

Notes:
(1) Top of casing elevation.
MSL: mean sea level
-- : Information not available.

The analytical data was transmitted by the laboratory, in both hard copy and electronic disk deliverable (EDD) format. The EDD was submitted in a database file (dbf) format for direct import into GIS/Key. Once the data was imported into GIS/Key, reports were generated and checked against the hard copy data packages to ensure data integrity and completeness.

2.9 Data Validation/Data Usability Summary

Data validation was performed in accordance with the USEPA Region I validation guidelines for organic and inorganic data review. These validation guidelines are regional modifications to the National Functional Guidelines for organic and inorganic data review (USEPA 1994). Validation included the following:

- Verification of 100% of all QC sample results (both qualitative and quantitative);
- Verification of the identification of 100% of all sample results (both positive hits and nondetects);
- Recalculation of 10% of all investigative sample results; and
- Preparation of a Data Usability Summary Report (DUSR).

Data reduction, validation, and reporting procedures were followed as required by the Quality Assurance Project Plan dated June 2003.

2.10 Data Usability Summary Report

Soil boring, test pit and groundwater samples were collected as part of the field investigation at the Con Ed West 42nd Street site. The samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), Target Analyte List (TAL) metals and total cyanide. The groundwater samples were also analyzed for amenable cyanide. sample analysis was performed by Mitkem Corporation in accordance with USEPA SW-846 methodologies and NYSDEC 6/00 Analytical Services Protocol (ASP) requirements.

The data packages submitted by Mitkem were reviewed for completeness and contractual compliance. Data validation was performed in accordance with the USEPA guidelines. The findings of the validation process are summarized below.

All samples were analyzed within the method specified holding times with the exception of the SVOC fraction of MW-05. The semivolatile fraction of sample MW-05 was extracted with a contaminated blank. The sample was re-extracted 7 days from receipt; however, the data from the re-extract is considered the best set and has been included on the data summary tables.

Several of the volatile and semivolatile samples had surrogate recoveries and/or internal standard area counts outside QC limits. These samples were re-extracted and/or reanalyzed and the most contractually compliant results have been summarized on the data summary tables. In addition, several of the volatile and semivolatile samples required reanalysis at secondary dilutions due to select compound concentrations exceeding the instrument calibration range. The results of the select compounds were taken from the diluted analysis and are qualified with a “D” on the data summary tables.

The bis(2-ethylhexyl)phthalate result for sample TP-1 has been qualified as non-detect due to blank contamination. That is, the method blank associated with the sample also contained bis(2-ethylhexyl)phthalate and the sample concentration was less than five times that of the blank.

All results for sample SB-01 (22-26’) have been qualified as estimated due to percent solid of 20 percent.

The semivolatile fraction of sample SB-02 (17-19’) was reanalyzed at a dilution due to the high concentration of target compounds in the initial undiluted run; however, several of the compounds were diluted out. Therefore, the data from the initial run is considered the best set and the affected compounds have been qualified “E” on the data summary tables.

The laboratory reported naphthalene in both the VOC and SVOC analysis; however, for site assessment purposes, the results from the SVOC analysis are the ones that have been reported and utilized. As part of the review process, the naphthalene results for both fractions were compared to assess accuracy in both analyses.

The work plan stated that the groundwater samples were to be run for available cyanide. Upon review of the methodologies, it was deemed that the method for amenable cyanide would yield the same result as that for available cyanide. The QC runs for the amenable cyanide indicated that the analysis was complete and accurate.

No other problems were found with the sample results and all data is deemed valid and usable for environmental assessment purposes, as qualified above.

3.0 SITE GEOLOGY AND HYDROGEOLOGY

3.1 Introduction

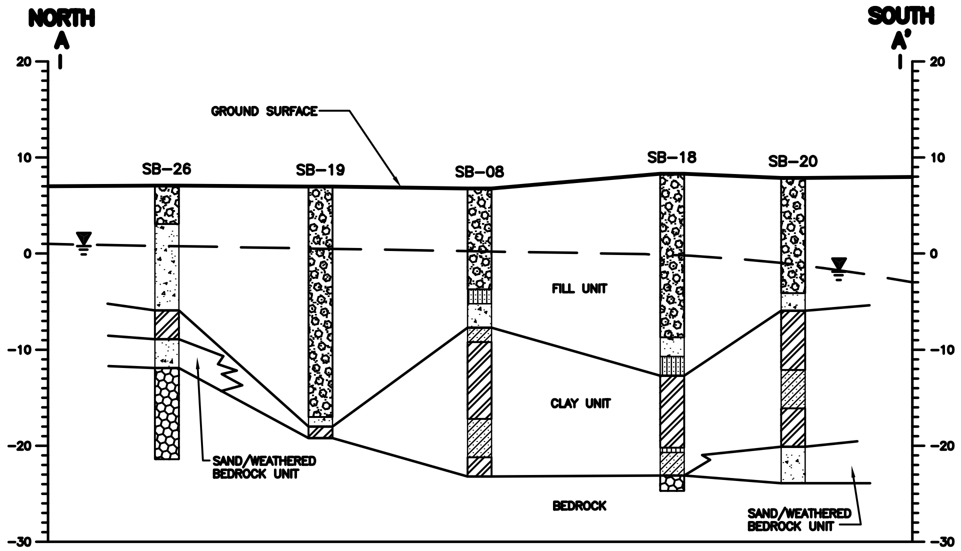
The following section presents the findings, as well as a discussion and interpretation of geologic and hydrogeologic data collected during the field investigation. Information utilized in support of this evaluation include the following:

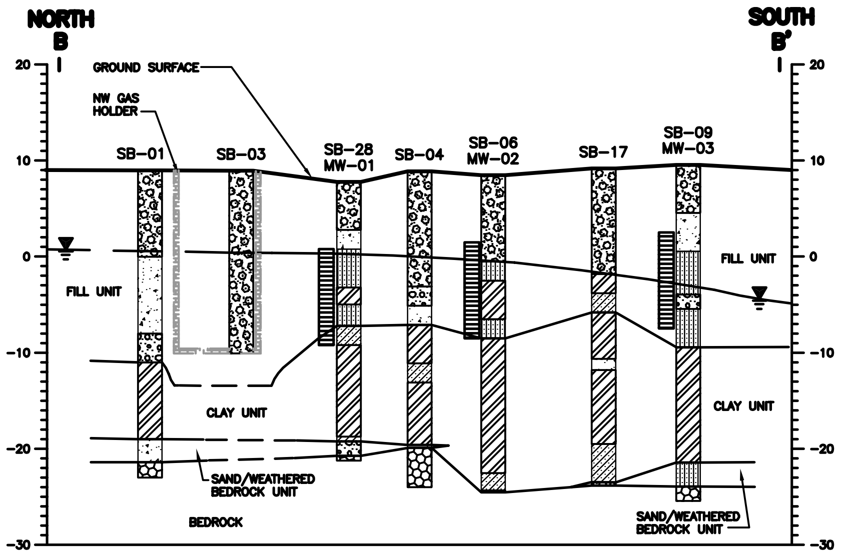
- Logs from completed test pits, borings and groundwater monitoring wells;
- Hydraulic head measurements from the on-site groundwater monitoring wells.
- Geologic data obtained from previously completed site investigations;
- Historical maps showing the former shoreline of the Hudson River;

Based on the information described above, six geologic cross sections of the site were generated, and are provided on Figures 3-1 through 3-4. Figures 3-1 and 3-2 present north-south geologic cross sections A-A', B-B' C-C' and D-D' which traverse the site from West 42nd Street to West 41st Street. Cross section A-A' traverses the landscaped area. Cross sections B-B', C-C' and D-D' traverse the western, central and eastern portions of Tax Lot 3, respectively. Figures 3-3 and 3-4 present east-west cross sections E-E' and F-F', which traverse the site from 12th to 11th Avenues. The locations of test pits, borings and monitoring wells referenced in this section are shown on Figure 2-1, and the logs are included in Appendix A.

3.2 Site Stratigraphy

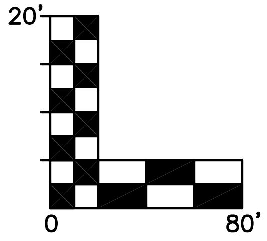
The review of available historic maps indicate that prior to the 1840s, the land that comprised the former MGP site consisted of a shallow embayment of the Hudson River referred to as Norton's Cove. The historic maps also indicate that the easternmost portion of the former MGP site (Tax Lot 3) included a small tidal stream that discharged to Norton's Cove. By the 1850s, much of Norton's Cove, along with the tidal creek, appears to have been filled.

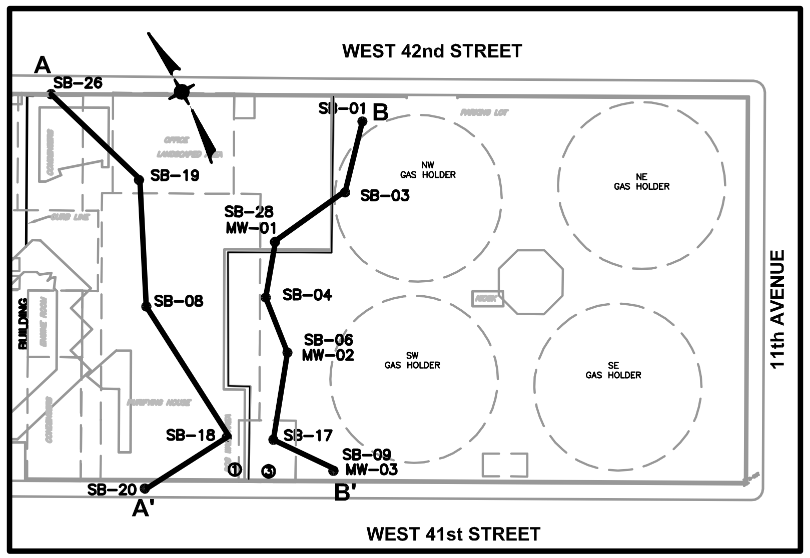




LEGEND

- FILL AND/OR TOPSOIL
- FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL
- SILT TO CLAY RICH SILT
- SILTY SAND TO SILT WITH SAND
- CLAY
- CLAY WITH SAND
- GRAVEL, GRAVEL WITH SAND
- BEDROCK
- MATERIAL NOT LOGGED
- SOIL BORING
- WELL SCREEN FOR MONITORING WELL
- GROUND SURFACE
- STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED
- ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED





KEY MAP
SHOWING CROSS-SECTION LINE

SCALE:1"=100'

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and
Bartilucci
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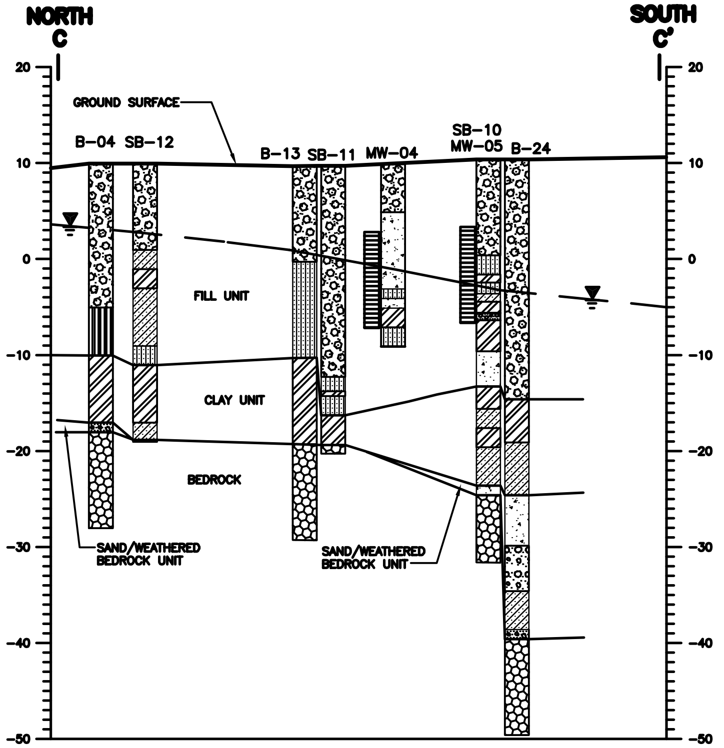
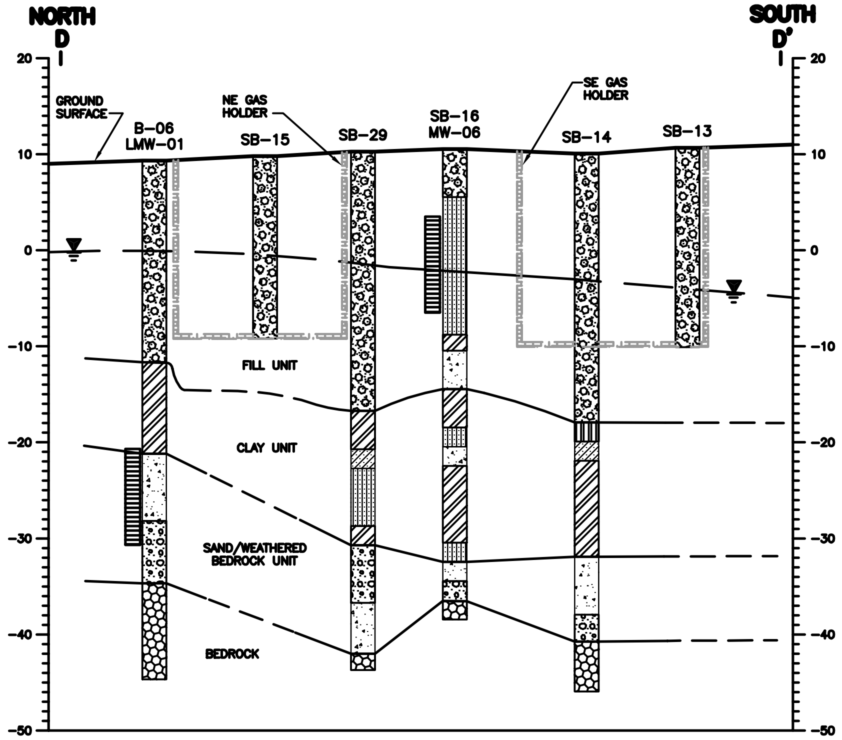
WEST 42nd STREET FORMER MANUFACTURED GAS PLANT SITE

NORTH-SOUTH GEOLOGIC CROSS SECTIONS A-A' AND B-B'

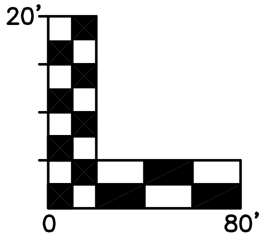
FIGURE 3-1

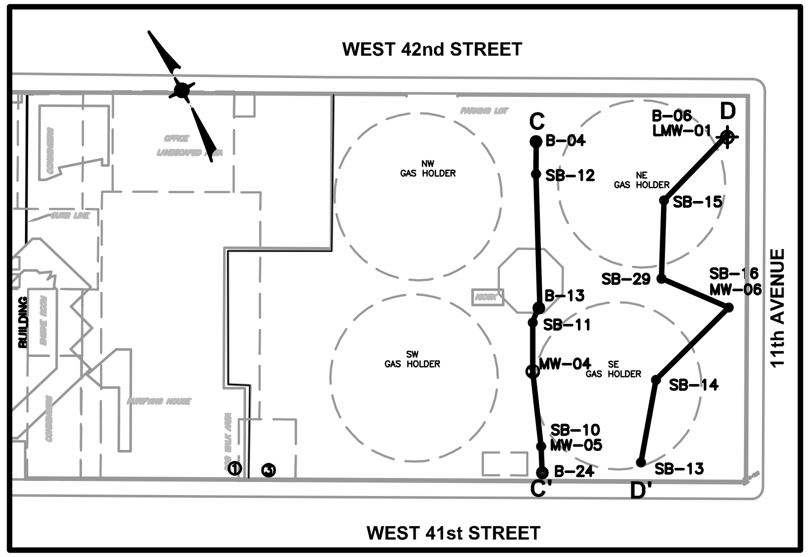




LEGEND

- ⁂ FILL AND/OR TOPSOIL
- ▨ FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL
- ▥ SILT TO CLAY RICH SILT
- ▥ SILTY SAND TO SILT WITH SAND
- ▨ CLAY
- ▨ CLAY WITH SAND
- ⁂ GRAVEL, GRAVEL WITH SAND
- ● BEDROCK
- ☐ MATERIAL NOT LOGGED
- ▥ SOIL BORING
- ▤ WELL SCREEN FOR MONITORING WELL
- ── GROUND SURFACE
- ── ─ ─ STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED
- ─▼─ ─ ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED





KEY MAP
SHOWING CROSS-SECTION LINE

SCALE:1"=100'

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NORTH-SOUTH GEOLOGIC CROSS SECTIONS C-C' AND D-D'

FIGURE 3-2

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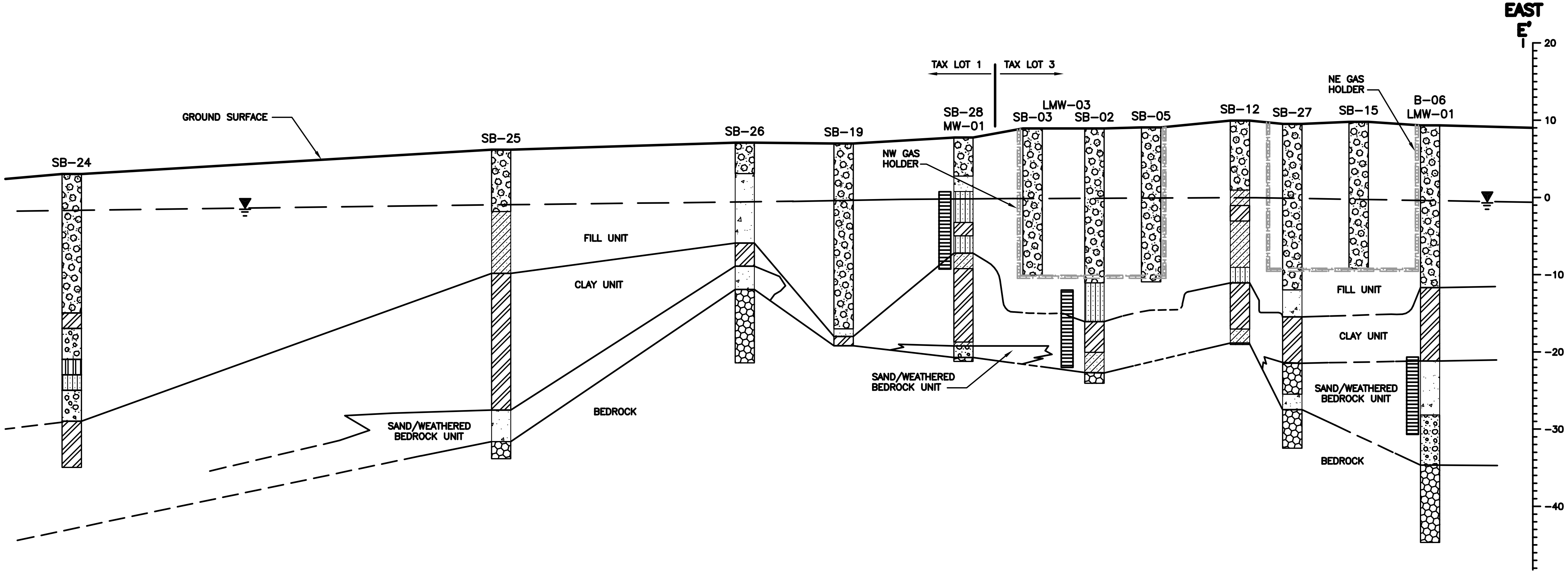
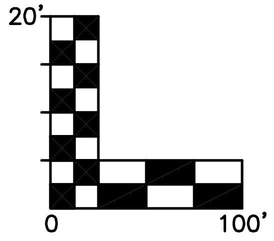
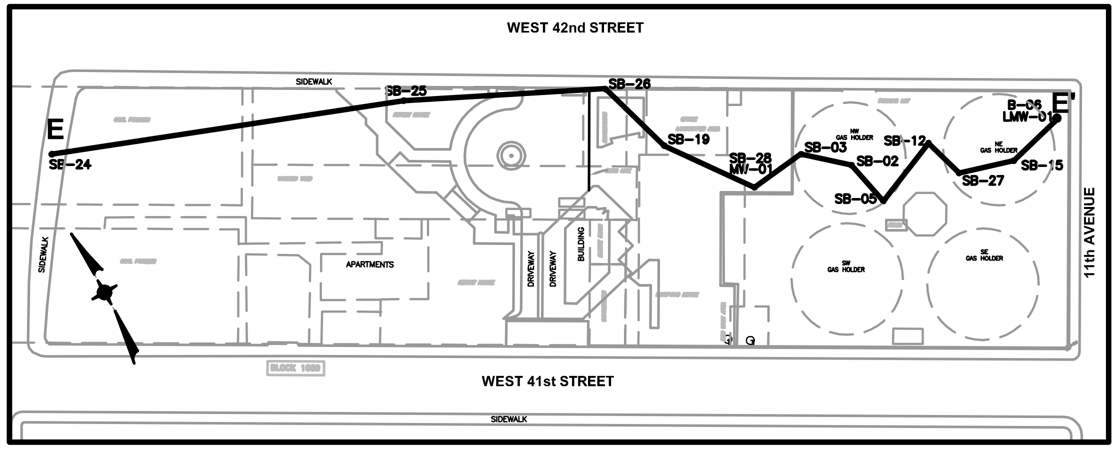


LEGEND

░	FILL AND/OR TOPSOIL
⁘	FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL
▥	SILT TO CLAY RICH SILT
▥	SILTY SAND TO SILT WITH SAND
▨	CLAY
▨	CLAY WITH SAND
░	GRAVEL, GRAVEL WITH SAND
▦	BEDROCK
☐	MATERIAL NOT LOGGED
▥	SOIL BORING
▤	WELL SCREEN FOR MONITORING WELL
━━━	GROUND SURFACE
── ─ ─	STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED
─▼─	ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED





KEY MAP SHOWING CROSS-SECTION LINE

SCALE:1"=150'

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EAST-WEST GEOLOGIC CROSS SECTION E-E'

FIGURE 3-3

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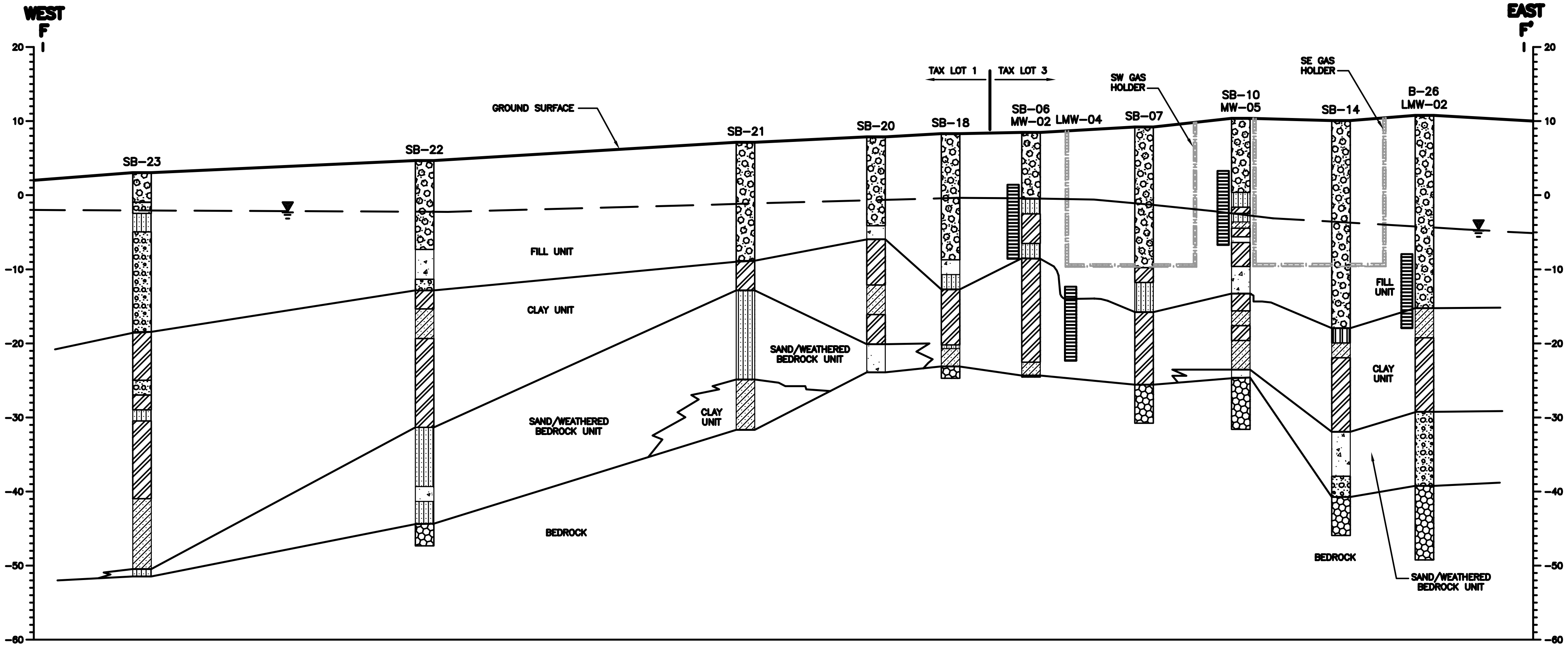
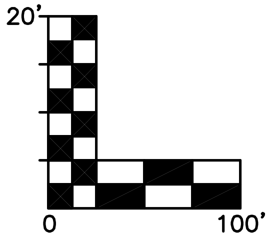
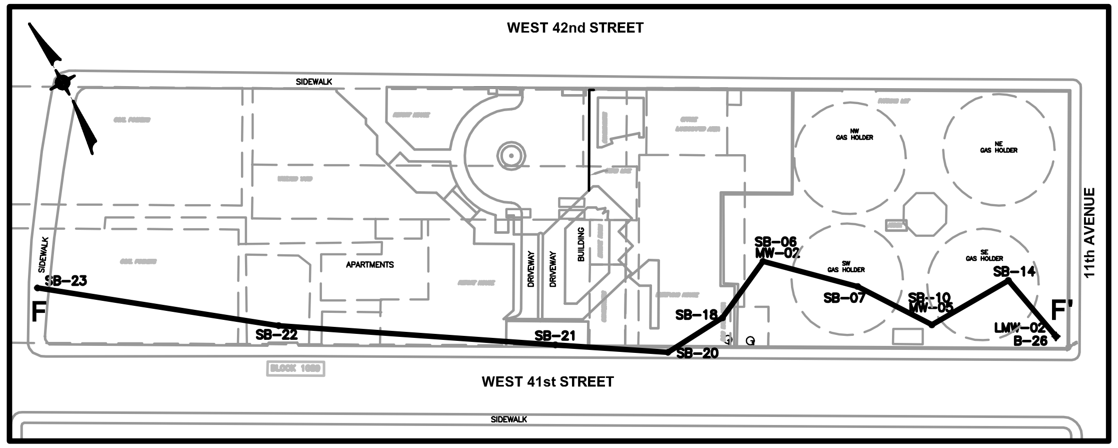


LEGEND

- ⁂ FILL AND/OR TOPSOIL
- ░ FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL
- ▥ SILT TO CLAY RICH SILT
- ▥ SILTY SAND TO SILT WITH SAND
- ▨ CLAY
- ▨ CLAY WITH SAND
- ⁂ GRAVEL, GRAVEL WITH SAND
- ○ BEDROCK
- ☐ MATERIAL NOT LOGGED
- ▯ SOIL BORING
- ▤ WELL SCREEN FOR MONITORING WELL
- ——— GROUND SURFACE
- ——— — — STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED
- —▼— ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED





KEY MAP
SHOWING CROSS-SECTION LINE

SCALE:1"=150'

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CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42nd STREET FORMER MANUFACTURED GAS PLANT SITE

EAST-WEST GEOLOGIC CROSS SECTION F-F'

FIGURE 3-4

Throughout the next 10 years additional fill appears to have been added, creating the western shoreline of the site prior to construction of the MGP.

Based on the soil borings completed as part of this site investigation, as well as the documented historic filling that occurred at the former MGP site, the upper 15 to 25 feet of soil across the site consists of fill material containing significant quantities of anthropogenic materials such as brick, concrete, metal and wood timbers. All former MGP structures uncovered during the Test Pitting Program were located within this fill. At the lower portion of the fill, there exists a discontinuous thinner strata of sand-rich soil that contains little to no anthropogenic materials. While this sand-rich strata does not contain a large amount of anthropogenic material, it is assumed that it is also non-native fill material due to the fact that it directly overlies a dense silty clay, which is believed to be the former bottom of Norton’s Cove. Mollusk and gastropod shell fragments were encountered in many of the samples recovered from the silty clay, indicative of a marine environment. A number of discontinuous lenses of sand were encountered in the silty clay that likely represent former tidal channels and creeks such as the tidal creek referenced above. Below the clay unit exists a discontinuous layer of sand, which directly rests on weathered and unweathered bedrock of the Manhattan Schist Formation. Based on these findings, the site stratigraphy appears to be divided into the following geologic units:

- Fill Unit and Former MGP Structures
- Clay Unit
- Sand/Weathered Bedrock Unit
- Bedrock

The following presents additional discussion concerning each unit.

3.2.1 Fill Unit and Former MGP Foundation Structures

The Fill Unit which directly underlies Tax Lots 1 and 3 consists of a silty to gravelly sand containing relatively large quantities of anthropogenic materials such as brick, wood timbers, concrete and metal. The Fill Unit also contains large blocks of mica schist up to 4 square feet in area. Due to the variability of grain size, the Fill Unit likely exhibits highly variable permeability. The color of the fill ranges from gray, brown, black and tan, with some yellow and red. As shown on the cross sections provided on Figures 3-1 through 3-4, the Fill Unit appears to be up to 28 feet thick in the vicinity of the former gas holders. In general, the Fill Unit is 15 to 25 feet thick within Tax Lot 3. The Fill Unit also gradually increases in thickness under Tax Lot 1 towards the Hudson River with a maximum thickness of 32 feet at SB-24, located along 12th Avenue. The unit appears to be at a minimum thickness of 13 feet at SB-26, located along the southern sidewalk of West 42nd Street.

The Fill Unit was investigated as part of the test pit phase of the field investigation, which was designed to locate the subsurface remnants of MGP structures and/or other historic subsurface structures that might exist at the site. Underground structures within the fill were encountered in the following test pits:

- At test pit TP-02, two brick walls were encountered along the westernmost edge of the excavation. Based on historical maps of the former MGP structures at the site, the two brick walls are believed to be associated with the eastern edge of the former Purifying House located on Tax Lot 3. The top of the easternmost wall was approximately 4 feet bgs and 2 feet wide, while the adjacent wall, located approximately 5 feet to the west, was 6 feet bgs and 2 feet wide. The two walls were joined by a common foundation approximately 9 feet bgs. Saturated soil with an apparent sheen was observed between the two walls. The easternmost wall is believed to be the outer edge of the Purifying House and is located approximately 10 feet further west than originally believed based on a previously completed review of historical documents.

- A concrete foundation and vertical concrete wall were encountered along the northern portion of test pit TP-03. The foundation covered approximately 145 square feet in area and the wall extended 2 feet high from approximately 4 feet bgs. A 1955 Bromley Map Plate (Plate 69), provided in Appendix E of this report, depicts a central railway platform and office utilized by the Railway Express Agency located within the central portion of Tax Lot 3 running east to west. Based on the location and orientation of the concrete foundation and wall, we believe that the uncovered structures represent a portion of the northwest corner of the railway office foundation and wall.

- A horizontal brick wall was encountered along the southwestern portion of test pit TP-06. Based on its location and historic maps, the brick wall is assumed to be part of the southeast (SE) former gas holder which had collapsed to the east, within the former gas holder.

- A brick wall was encountered running northeast to southwest through the southern portion of test pit TP-07. The top of the wall was approximately 2 feet bgs and 2 feet wide, and based on an obvious SE curvature, the brick wall was assumed to be associated with the southeast former gas holder. Additionally, a 12-inch pipe was encountered running vertically just outside (and possibly connected) to the former gas holder brick wall. The pipe was encountered approximately 10 feet bgs with a metal cover and extended 19.5 feet bgs based on sounding measurements. The metal cover was removed and a disposable bailer was used to collect an observation sample from the water within the pipe. Although strong naphthalene-like odors were present, no apparent NAPL or sheen was observed from the water. Based on the close proximity of the pipe to the former gas holder brick wall and the vertical direction, the pipe is believed to be a main gas line associated with the SE former gas holder. Furthermore, a concrete foundation and an associated vertical concrete wall were uncovered directly over the southern portion of the former gas holder brick wall approximately 1.5 feet bgs. The concrete structure was constructed directly on top of the former gas holder brick wall with a portion of the brick wall removed in order to accommodate the concrete foundation. Several historic maps show a gasoline station within this general area; however, it cannot be ascertained whether the observed concrete structure was part of the railway office found in TP-03 or part of the former gasoline station given both were built in close proximity of one another and constructed with similar materials.

- A brick wall was encountered running east to west through the central portion of test pit TP-08. Due to the limits of the excavation, it could not be determined as to the direction in which the brick wall was curving. However, due to the close proximity of the wall to the southeast portion of the site and the lack of evidence of former structures within SB-29 (just north of the test pit), the brick wall was assumed to be associated with the SE former gas holder wall.

Within portions of the site, the Fill Unit transitions into a sand-rich zone between a depth of 4 and 24 feet bgs, consisting of a brown to black stained and poorly sorted coarse to medium sand. The black colorization may be attributed to tar staining in the vicinity of the former gas holders and the Purifying House. Due to this staining, as well as the overall variation in grain size of the shallower fill material, the boundary between the upper and lower fill zones is not obvious at all locations. However, the sand-rich fill zone appears to be present within the vicinity of the former gas holders. As shown on the east-west cross sections provided on Figures 3-3 and 3-4, the sand-rich fill zone is encountered up to 6 feet thick below the former gas holder foundations as indicated by SB-02, SB-07 and SB-27. It is possible that the sand-rich fill zone represents fill material placed on top of the clay unit in order to construct the holder foundations, as well as other former MGP structures. Due to the coarse nature of this fill unit, it likely exhibits fairly high porosity.

3.2.2 Clay Unit

Immediately below the fill exists a continuous Clay Unit. The Clay Unit consists of a dense gray to black organic silty clay, containing peat and wood in some areas. The peat likely represents former tidal marsh areas within Norton’s Cove prior to filling. In addition, numerous samples of the Clay Unit contained fragments of mollusks and gastropods typical of marine environments further supporting the hypothesis that the Clay Unit likely represents the former bottom of Norton’s Cove. As shown on the north-south cross sections provided on Figures 3-1 and 3-2, the Clay Unit also contains a number of discontinuous silty sand lenses which are likely associated with channels and tidal creeks. These “channel deposits” appear to be oriented in an east-west direction which would be expected if the former channels were flowing towards the Hudson River. The Clay Unit ranges in thickness from less than 2 feet at SB-19, located within the Landscaped Area, to as much as 18 feet at SB-25. Under Tax Lot 3, the clay unit is typically 8 to 14 feet thick. Additionally, as shown on the east-west cross sections, the Clay Unit increases in thickness under Tax Lot 1 towards the Hudson River. Due to its thickness and clay-rich nature, the Clay Unit likely serves as an effective confining unit.

3.2.3 Sand/Weathered Bedrock Unit

A relatively thin and discontinuous layer of poorly sorted sand is present at several locations within the site immediately below the Clay Unit. This sand layer also appears to contain a thin zone of weathered bedrock resting directly on competent unweathered bedrock and, therefore, it is referred to as the Sand/Weathered Bedrock Unit. The Sand/Weathered Bedrock Unit contains varying amounts of coarse gravel, along with angular boulders and cobbles of mica schist. As illustrated on the north-south and east-west cross sections, this geologic unit is thickest within the eastern portion of Tax Lot 3 but virtually absent in the western portion of Tax Lot 3. As indicated on the east-west cross sections, the Sand/Weathered

Bedrock Unit is present on Tax Lot 1 and as much as 13 feet thick at SB-22, located within the loading bay along West 41st Street.

3.2.4 Bedrock

Underlying all the unconsolidated geologic units discussed above exists a black to gray crystalline mica schist of the Manhattan Schist Formation. Core samples of the bedrock were collected at five boring locations up to 10 feet in depth. Inspection of the recovered cores indicates the bedrock, while being fairly competent, contained numerous horizontal and vertical factures which may serve as secondary porosity or groundwater pathways within the bedrock.

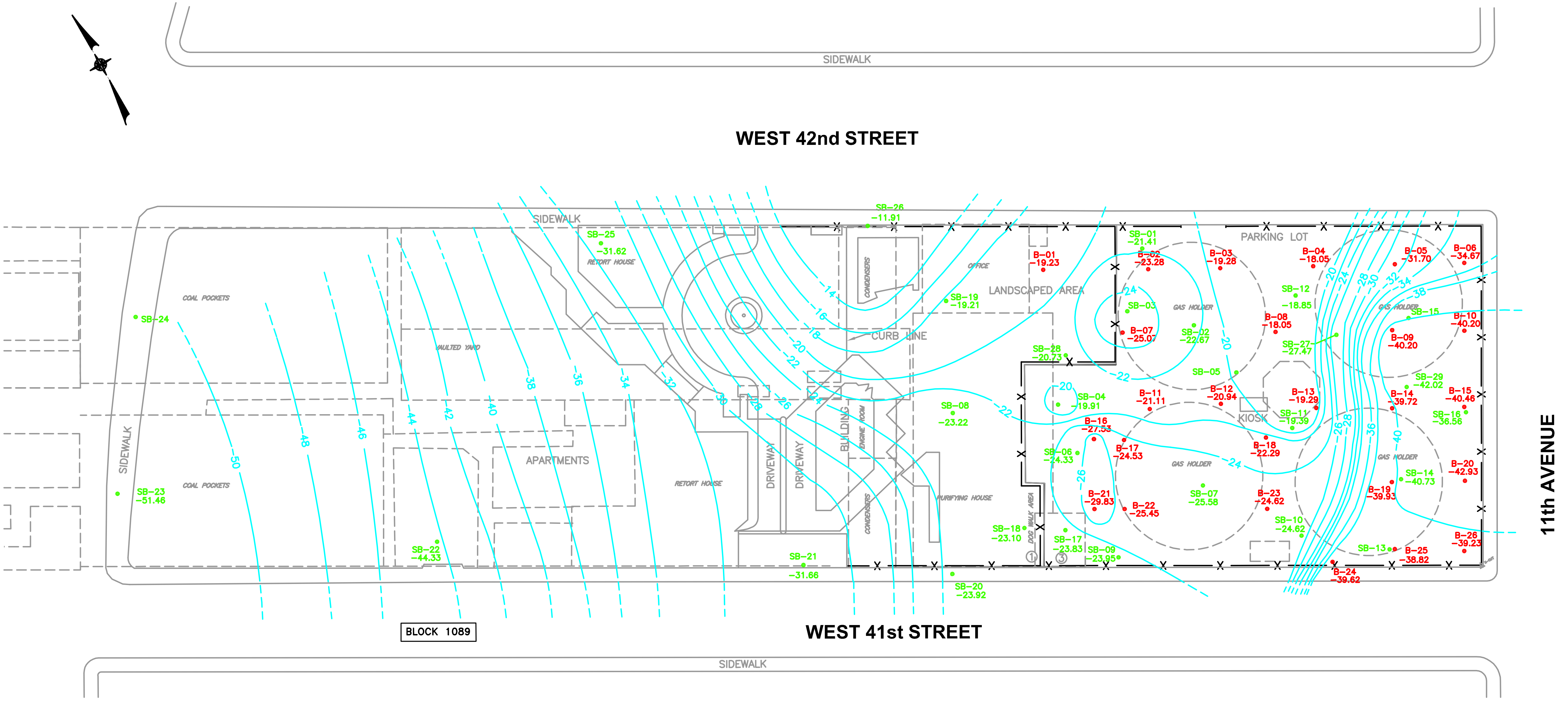
Figure 3-5 provides the contour surface of the bedrock based on the borings completed as part of the SCS, as well as the Langan Engineering geotechnical study completed in July 2000. Based on the review of Figure 3-5, the bedrock surface is relatively flat within the western half of Tax Lot 3 with an elevation between 19 and 24 feet below mean sea level (msl). However, the bedrock appears to dip steeply to the east in the eastern third of Tax Lot 3 and dips to the west at a gentler slope under Tax Lot 1, towards the Hudson River.

3.3 Site Hydrogeology

As discussed in Section 2.5, all monitoring wells installed as part of the SCS were installed on the eastern portion of the site within Tax Lot 3. As a result, the discussion of site hydrogeology is limited to this portion of the former MGP site.

Tidal Influence

In order to determine if groundwater at Tax Lot 3 is tidally influenced, water levels were collected during high, mid and low tidal stages of the Hudson River on one day. Based on these hydraulic head measurements presented on Table 2-4, groundwater elevations within Tax Lot 3 are *not* tidally influenced.



LEGEND:

—— –20 – – – BEDROCK SURFACE CONTOUR, IN FEET (MSL) DASHED WHERE INFERRED

SB–07 –25.58 ● SOIL BORING LOCATION WITH ELEVATION OF BEDROCK SURFACE, FEET (MSL)

B–22 –25.45 ● LANGAN ENGINEERING GEOTECHNICAL ENGINEERING STUDY, JULY 2000 SOIL BORING LOCATION WITH ELEVATION OF BEDROCK SURFACE, FEET (MSL)

0 60
SCALE IN FEET

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WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

ELEVATION OF BEDROCK SURFACE

FIGURE 3-5

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Hydraulic Conductivity of Geologic Units

The review of well development records for the six shallow monitoring wells installed in the Fill Unit as part of the SCS, indicate these wells exhibited relatively poor flow rates, with the maximum sustained pumping rates ranging from 0.1 to 0.25 gallons per minute (gpm). Pumping above these rates resulted in the wells running dry in a relatively short period of time. In addition, recharge rates after discontinuing pumping was found to be as low as 1 foot per hour. This data indicates that while the hydraulic conductivity of the Fill Unit is highly variable due to the nature of the material, hydraulic conductivities are relatively low and the material has poor water transmitting properties.

While well construction records are not available for the four existing monitoring wells installed within Tax Lot 3 prior to Con Edison undertaking the SCS, the wells appear to be screened within the Sand/Weathered Bedrock Unit and/or the overlying Clay Unit based on the measured total depth of each well.

Based on the depth of existing monitoring wells LMW-01 and LMW-03 and site stratigraphy, both wells appear to be screened primarily within the Sand/Weathered Bedrock Unit. Sustained pumping rates of between 0.5 and 1.0 gpm were achieved for these wells during redevelopment indicating the Sand/Weathered Bedrock Unit has a relatively low hydraulic conductivity, but fair water transmitting properties when compared to the other site geologic units.

Existing monitoring wells LMW-02 and LMW-04 appear to be primarily screened within the Clay Unit. Both monitoring wells exhibited very poor pumping rates of less than 0.1 gpm and LMW-02 was pumped dry at less than 0.1 gpm. This data supports the concept that the Clay Unit has poor water transmitting properties and serves as an effective confining unit.

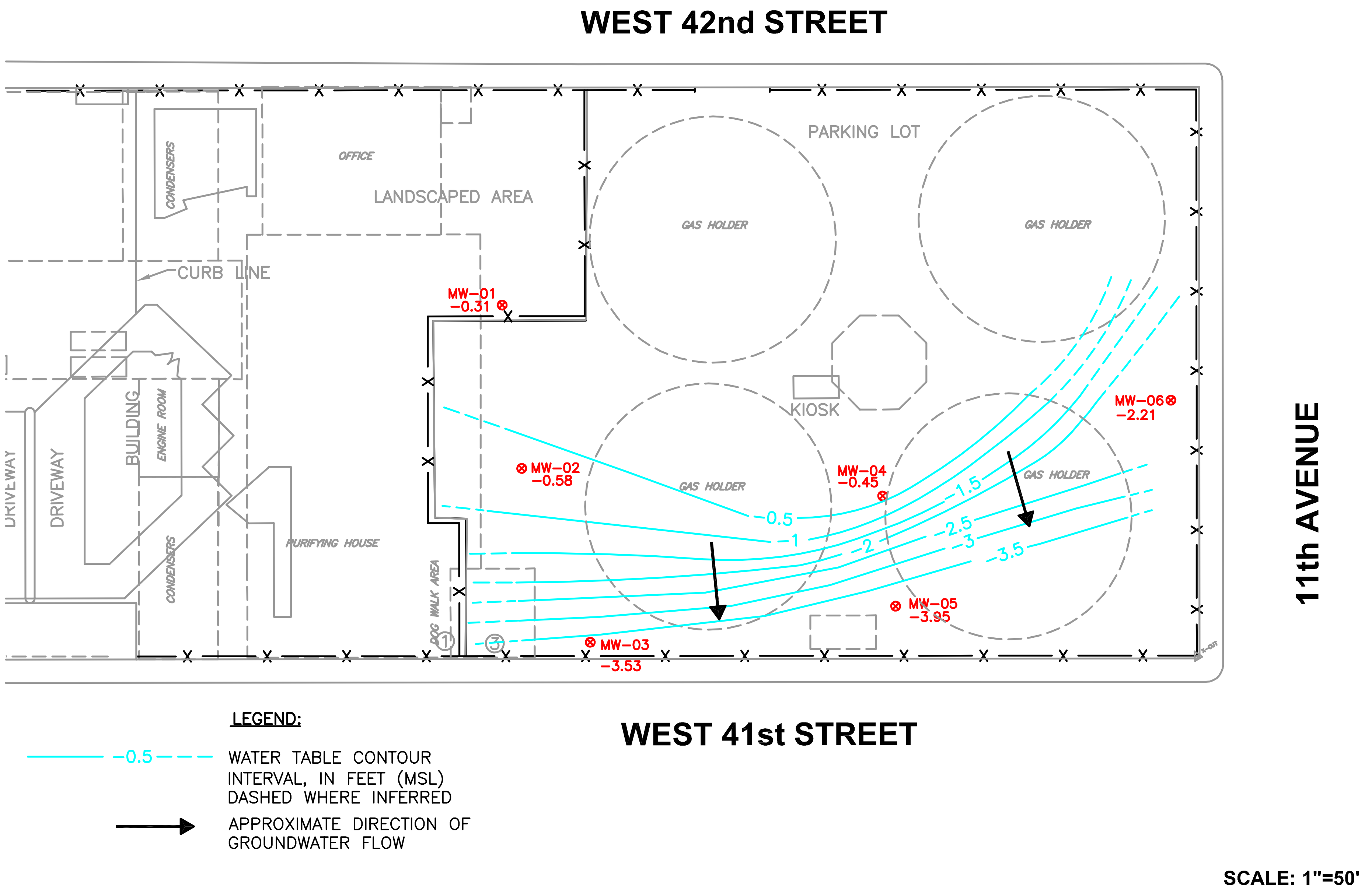
Groundwater Flow

Groundwater flow patterns are complex within Tax Lot 3 due to a number of factors, including:

- The majority of the soil below the water table is comprised of fill material with highly variable permeabilities and hydraulic conductivities.
- The former gas holder foundations were constructed below the water table and, therefore, likely obstruct the flow of groundwater.
- Prior to development, the site consisted of a shallow marine embayment with a number of tidal channels and tidal creeks oriented in an east/west direction. These former channels/creeks may serve as preferred flow pathways for groundwater.
- The site is located in a highly urbanized area containing numerous storm sewers and utility conduits that may serve as “drains” for groundwater, directly influencing groundwater flow direction.
- The ongoing “dewatering” of basements, subway tunnels or other structures in the vicinity of the site also have a direct influence on groundwater flow rates and direction.

Figure 3-6 is a water table contour map for Tax Lot 3 that was generated using water level measurements from the six on-site wells installed at the water table as part of the SCS. Note that the existing on-site wells were not utilized in Figure 3-6 as these wells were screened well below the water table. Based on the review of Figure 3-6, groundwater generally appears to flow in a southerly direction at Tax Lot 3 and is generally located 8 to 14 feet below grade.

It is worthy to note that environmental investigations previously conducted within the former MGP site assumed groundwater flow to be in a westerly direction towards the Hudson River. However, the 2003 site investigation conducted at the Exxon/Mobil Service Station located directly north of Tax Lot 3 by Roux Associates determined that the groundwater flow direction is to the south. It is likely that groundwater flow at Tax Lot 3 is being influenced by one or more of the factors listed and described above.



Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

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WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

WATER TABLE CONTOUR MAP
HIGH TIDE - NOVEMBER 10, 2003

FIGURE 3-6

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4.0 FINDINGS

4.1 Introduction

This section provides a detailed discussion of the Site Characterization Study (SCS) chemical results. The analytical data from this SCS field investigation along with relevant historical data and other information are used to identify the presence and types of chemicals in the environment, their likely source(s), and the extent to which various chemical constituents have migrated on or from the site. In addition, this section provides an assessment of exposure pathways in which individuals might be exposed to site related chemical constituents.

The discussion of the investigation results is organized according to the subdivision of the site where the site has been grouped into two general investigation areas; Tax Lot 1 and Tax Lot 3. The Tax Lot 1 field investigation was limited to the completion of soil borings, whereas the Tax Lot 3 field investigation included soil borings, test pits and groundwater monitoring wells.

Figure 2-1 in Section 2.0 provides the surveyed locations of all completed sample locations along with the approximate locations of former MGP structures located on the site. Appendix C contains data tables summarizing the analytical results of all samples collected during the investigation. The sum total of all positively detected volatile organic compounds (VOCs), benzene, toluene, ethylbenzene, xylene (BTEX), semivolatile organic compounds (SVOCs), polycyclic aromatic hydrocarbons (PAHs) and carcinogenic PAHs (CaPAHs) are also provided in the data summary tables.

The assessment of the presence of chemicals in the environment was performed using sample analytical results and physical descriptions of recovered sample media. In addition, the analytical results of the investigation were compared to NYSDEC regulatory standards, criteria and guidelines (SCGs) for *screening* purposes. The analytical data tables provided in Appendix C include a column for SCGs including those presented in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046 Recommended Soil Cleanup

Objectives for soil dated January 24, 1994 (hereinafter referred to as RSCOs), and the Class GA groundwater standards and guidance values provided in the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 for groundwater (hereinafter referred to as NYSDEC groundwater standards). Concentrations of chemical constituents that exceed the SCGs are bracketed on the data tables.

The following terminology and descriptions were used to describe the visual and olfactory observations made during the field investigation, as well as to describe the nature of the observed materials.

- **Nonaqueous phase liquid (NAPL):** NAPL is a liquid that does not readily dissolve in water and can exist as a separate fluid phase. Tar and oil released in a soil/water environment will behave as NAPLs. NAPLs are subdivided into two types, those that are lighter than water (light nonaqueous phase liquid or LNAPL) and those with a density greater than water (dense nonaqueous phase liquid or DNAPL). Being lighter than water, LNAPLs will float on water. A common example of an LNAPL would be gasoline or oil floating on water. DNAPLs, being denser than water, would tend to sink through water. Though examples of DNAPLs in everyday life are not very common, an analogy to a DNAPL in water would be an oil and vinegar salad dressing where the vinegar represents the water. When the oil and vinegar mixture is shaken, it is momentarily mixed as an emulsion. However, after settling, the oil being lighter than the water/vinegar remains at the top of the container whereas the vinegar settles to the bottom.

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

- **Blebs:** Observed discrete sphericals or pockets of NAPL within a soil or groundwater sample. The characteristics of the observed NAPL were used in the description (i.e., tar blebs or petroleum blebs).

- **Stained:** The soil sample exhibited a discoloration not associated with natural processes. The color of the observed stain was used and if the characteristics of the staining material were discernible, they were also noted (i.e., tar-stained or petroleum-stained).

- **Sheen:** The iridescence observed within a soil sample or the surface of a groundwater sample created by the presence of small quantities of NAPL.

- **Odor:** If an odor was present, it was described based on its relative intensity and characteristics. Relative odor intensity was described using terms such as strong, moderate and faint. Descriptive terms such as tar-like, naphthalene-like or petroleum-like odors were also used when such determinations could be made.

- **Coal Tar:** Coal Tar is a byproduct of the manufactured gas process and is typically comprised of a broad spectrum of hydrocarbon compounds including BTEX compounds, PAHs and phenols. Coal tar can be encountered in a solid, semi-solid or liquid state. Similar to petroleum, coal tar does not readily dissolve in water and will exist as a NAPL when released in a soil/water environment.

BTEX compounds were the principal VOCs detected in samples and are the common VOCs associated with coal tar. SVOCs were also detected at the site with PAHs being the common subset of SVOCs in coal tar. For purposes of this report, PAHs include the compounds listed below.

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

Of these PAHs, the following are considered carcinogenic by USEPA.

- Benzo(a)anthracene
- Dibenzo(a,h)anthracene
- Benzo(a)pyrene
- Benzo(k)fluoranthene
- Indeno(1,2,3-cd)pyrene
- Benzo(b)fluoranthene
- Chrysene

4.2 Subsurface Soil

4.2.1 Tax Lot 1

Provided in Appendix C are the analytical results for subsurface soil samples. VOC results are summarized in Table 4, SVOC results are summarized in Table 5, and TAL metals and cyanide results are summarized in Table 6.

Volatile Organic Compounds (VOCs)

All of the subsurface soil samples selected for chemical analysis from the 11 soil boring locations advanced within Tax Lot 1 exhibited detectable levels of VOCs. In general, the highest total VOC concentrations were detected in samples that exhibited naphthalene and hydrocarbon-like odors, sheens and black tar staining. Additionally, these samples typically exhibited PID measurements in excess of 100 ppm. A review of the VOC data presented on Table 4 in Appendix C indicates that total VOCs exceed their respective RSCOs in 10 out of 22 samples. In almost all of the subsurface soil samples exhibiting detectable levels of VOCs, BTEX compounds were most predominant. Total xylene and benzene are the most frequently detected VOC compounds above their respective RSCO with 13 out of 22 samples and 10 out of 22 samples, respectively; whereas, toluene and ethylbenzene each exceed their RSCOs in only 8 out of 22 samples. Additionally, methylene chloride and 2-butanone each exceed their RSCOs in 5 out of 22 samples and acetone exceeded in 4 out of 22 samples. However, methylene chloride, 2-butanone and acetone are common laboratory contaminants and are not typically associated with MGP residuals, and therefore, it can be assumed that they are not attributable to site contamination.

Table 4-1 summarizes data related to subsurface soil samples collected from locations which exceeded RSCOs for total VOCs along with the approximate location of each sample in relation to former MGP structures/features. The table also includes PID measurements and indicates whether any physical evidence of saturated NAPL was noted in the samples.

TABLE 4-1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TAX LOT 1 SUBSURFACE SOIL SAMPLES EXHIBITING TOTAL VOLATILE ORGANIC COMPOUND CONCENTRATIONS THAT EXCEED NYSDEC SOIL CLEANUP OBJECTIVES*

Sample ID (Boring and Sample Depth)	Total VOC Concentration (mg/kg)	Location (in Relation to Former MGP Structure/Feature)	PID (ppm)	Evidence of NAPL at Saturated Conditions Noted in Sample
SB-24 (36-38)	5,930	Along eastern sidewalk of 12th Avenue, within northern most former coal pocket.	111	Yes
SB-24 (30-32)	4,020	Along eastern sidewalk of 12th Avenue, within northern most former coal pocket.	68.6	Yes
SB-19 (20-24)	1,267	Northern tip of stone dust walkway, within former MGP office area.	129	No
SB-23 (20-24)	579	Along eastern sidewalk of 12th Avenue, within former south coal pockets.	132	Yes
SB-18 (9-13)	177.4	Within the dog walk compound, along the eastern edge of the former Purifying House.	51	No
SB-08 (12-16)	91.8	Southern tip of stone dust walkway, within former Purifying House.	313	No
SB-24 (34-36)	76.4	Along eastern sidewalk of 12th Avenue, within northern most former coal pocket.	27.5	Yes
SB-26 (9-13)	62	Along southern sidewalk of 42nd Street, within northern most former condenser area.	130	No
SB-26 (16-19)	31.5	Along southern sidewalk of 42nd Street, within northern most former condenser area.	56	No
SB-22 (12-16)	18.6	Within the loading dock, within the vicinity of the former south coal pockets.	7.6	No

Note:

* Based on samples collected as part of the Site Characterization Study investigation.

Additionally, Figure 4-1 presents total VOC and total SVOC concentrations in subsurface soil within Tax Lot 1.

As shown in Table 4-1 the first, second and seventh highest total VOC concentrations of 5,930 mg/kg, 4,020 mg/kg and 76.4 mg/kg were detected at in borehole SB-24 in soil samples collected from 36-38 feet, 30-32 feet and 34-36 feet, respectively. In SB-24 (36-38 feet) and SB-24 (30-32 feet), methylene chloride, benzene, toluene, ethylbenzene and total xylene compounds exceeded their respective RSCOs, whereas SB-24 (34-36 feet), exceeded for toluene, ethylbenzene and total xylene. As shown on Figure 2-1, soil boring SB-24 was completed along the eastern sidewalk of 12th Avenue within the northernmost former coal pocket. While the greatest total VOC concentration was detected in the sample collected from the 36 to 38-foot interval, it is believed that the sample may have actually been impacted by a DNAPL source from the 30 to 32-foot interval due to the fact that the borehole appeared to be filling with a mobile DNAPL after drilling beyond 32 feet at SB-24. Therefore, the VOC concentrations detected at the 36 to 38-foot interval are likely biased high and do not accurately represent “true” VOC concentrations at this depth. Due to the infiltration of DNAPL into the borehole annulus, the borehole was terminated and grouted with a cement bentonite slurry. Further advancement was ceased to avoid vertical mobilization of DNAPL within the boring and penetrating the clay unit. The subsurface soil recovered from SB-24 at 30 to 32 feet bgs exhibited evidence of DNAPL at saturated levels, strong naphthalene-like odors, black tar staining and PID measurements of up to 68.6 ppm.

The third highest total VOC concentration of 1,267 mg/kg was detected in soil sample SB-19 (20-24 feet). Benzene, toluene, ethylbenzene and total xylene compounds exceeded their respective RSCO in this sample. This sample was collected from soil boring SB-19 located on the northern tip of the stone dust walkway within the landscaped area and within the boundary of the office building associated with the former MGP. The subsurface soil recovered at 20 to 24 feet bgs exhibited evidence of strong naphthalene-like odors, black tar staining and PID measurements of up to 129 ppm. However, VOC concentrations decreased with increasing depth at SB-19 with a total VOC concentration of 0.874 mg/kg observed in the sample collected at 24 to 26.2 feet bgs.

LEGEND:

SB-01 ●	SOIL BORING LOCATION
TP-01	TEST PIT LOCATION AND APPROXIMATE BOUNDARY
MW-1 ⊗	MONITORING WELL LOCATION
LMW-02 ⌖	PREVIOUSLY INSTALLED WELL LOCATIONS SAMPLED AS PART OF THE SCS (LANGAN ENGINEERING WELLS)
BLOCK 1089	TAX BLOCK NUMBER
①	TAX NUMBER FOR PARCELS WITHIN FORMER MGP
━━━	TAX LOT BOUNDARY
—— X ——	FENCE
- - - -	FORMER MGP STRUCTURES
———	BOUNDARY OF SITE CHARACTERIZATION STUDY AREA

SOIL BORING SAMPLES

SB-08		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
12 - 16	**91.80**	**1,835.70**
28 - 30	6.16	20.044

SB-18		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
9 - 13	**177.40**	**1,844.20**
23 - 25	0.203	1.241

SB-19		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
20 - 24	**1,267.00**	**5,189.80**
24 - 26.2	0.874	53.72

SB-20		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
12 - 16	0.052	56.50
16 - 20	3.318	15.059

SB-21		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
12 - 16	0.063	218.40
36 - 38.9	0.047	33.233

SB-22		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
12 - 16	**18.60**	173.166
36 - 44	1.222	3.982

SB-23		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
20 - 24	**579.00**	**6,658.40**
52 - 54.5	**1.44**	570.96

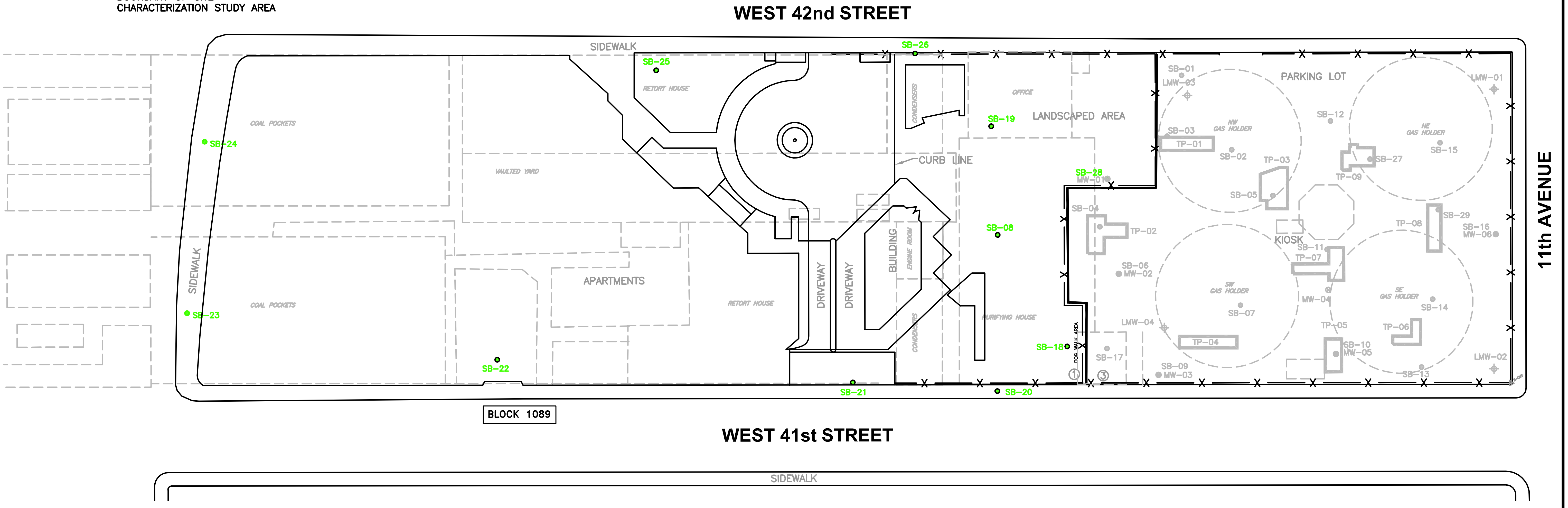
SB-24		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
30 - 32	**4,020.00**	**167,800.00**
34 - 36	**76.40**	41.84
36 - 38	**5,930.00**	**264,460.00**

SB-25		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
12 - 16	7.14	**769.10**
24 - 28	7.26	4.948

SB-26		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
9 - 13	**62.00**	**1,684.91**
16 - 19	**31.50**	**10,286.00**

SB-28		
Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
11 - 13	0.147	0.056

NOTE:
SHADED BOXES INDICATE TOTAL VOC AND TOTAL SVOC CONCENTRATIONS THAT EXCEED THE NYSDEC TAGM 4046 APPENDIX A RECOMMENDED SOIL CLEANUP OBJECTIVES OF 10 mg/Kg and 500 mg/Kg, RESPECTIVELY.



SOURCE: MAP PROVIDED BY CONSOLIDATED EDISON. APPROXIMATE LOCATIONS OF FORMER MGP STRUCTURES BASED ON INTERPRETATION OF SANBORN MAPS AND DRAWINGS PROVIDED BY CONSOLIDATED EDISON CONTAINED WITHIN THE WEST 42nd STREET MANUFACTURED GAS PLANT SITE HISTORY REPORT BY PARSONS, DATED AUGUST 2002 AND THE RIVER PLACE PHASE II, 42nd. STREET AND ELEVENTH AVENUE, GEOTECHNICAL ENGINEERING STUDY BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, P.C., DATED JULY 2000.

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SCALE IN FEET

Dvirka
and
Bartilucci
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A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

TOTAL VOC AND TOTAL SVOC SUBSURFACE SOIL ANALYTICAL DATA FOR TAX LOT 1

FIGURE 4-1

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The fourth highest total VOC concentration of 579 mg/kg was detected in soil sample SB-23 (20-24 feet). Benzene, toluene, ethylbenzene and total xylene compounds exceeded their respective RSCO in this sample. This sample was collected from soil boring SB-23 located along the eastern sidewalk of 12th Avenue within the southernmost former coal pocket. The subsurface soil recovered at 20 to 24 feet bgs exhibited a strong hydrocarbon-like odor, black tar staining and PID measurements up to 132 ppm. However, VOC concentrations decreased with increasing depth at SB-23 with a total VOC concentration of 1.436 mg/kg observed in the sample collected at 52 to 54.5 feet bgs.

The fifth and sixth highest total VOC concentrations of 177.4 mg/kg and 91.8 mg/kg were detected in soil samples SB-18 (9-13 feet) and SB-08 (12-16 feet), respectively. In SB-18 (9-13 feet), benzene, toluene, ethylbenzene and total xylene compounds exceeded their respective RSCOs, whereas SB-08 (12-16 feet) exceeded for methylene chloride, toluene, ethylbenzene and total xylene. Soil borings SB-18 and SB-08 were completed within the vicinity of the former Purifying House. The referenced soil samples exhibited strong naphthalene-like odors and PID measurements up to 177.4 ppm. However, VOC concentrations decreased with increasing depth with total VOC concentrations of 0.203 mg/kg and 6.16 mg/kg observed in soil samples SB-18 (23-25 feet) and SB-08 (28-30 feet), respectively.

The eighth and ninth highest total VOC concentrations of 62 mg/kg and 31.5 mg/kg were detected in borehole SB-26 from (9-13 feet) and (16-19 feet), respectively. In SB-26 (9-13 feet), ethylbenzene and total xylene compounds exceeded their respective RSCOs, whereas SB-26 (16-19 feet), exceeded for benzene, toluene and total xylene. Soil boring SB-26 was completed along the southern sidewalk of 42nd street, within the vicinity of the northernmost former condenser. The subsurface soil observed in this boring exhibited strong naphthalene-like and hydrocarbon-like odors, black tar staining, a sheen and PID measurements up to 130 ppm. It is worthy to note that the 16-19 foot sample was collected below the water table and just above the bedrock due to the fact that bedrock is relatively shallow in this area of Tax Lot 1.

The tenth highest total VOC concentration of 18.6 mg/kg was detected in soil sample SB-22 (12-16 feet). In SB-22 (12-16 feet), benzene and total xylene compounds exceeded their respective RSCOs. Soil boring SB-22 was completed within the apartment building's loading dock, within the vicinity of the southernmost former coal pockets. The referenced soil sample exhibited strong naphthalene-like odors, black tar staining, a sheen and PID measurements up to 7.6 ppm. However, VOC concentrations decreased with increasing depth with a total VOC concentration of 1.222 mg/kg observed in soil sample SB-22 (36-44 feet).

As illustrated by Figure 4-1, the highest VOC concentrations detected in subsurface soil within Tax Lot 1 were generally observed in samples collected from a depth of 9 to 24 feet bgs and within the Fill Unit, which is described in Section 3.2.1. However, at most locations, VOC concentrations decrease rapidly below this depth. This is likely due to the confining ability of the Clay Unit (described in Section 3.2.2), which directly underlies the Fill Unit. Exceptions to this general trend include borings SB-23 and SB-24 where elevated VOC concentrations were observed at depths of up to 38 feet, and within the Clay Unit.

Semi-Volatile Organic Compounds (SVOCs)

All of the subsurface soil samples selected for chemical analysis from the 11 soil boring locations advanced within Tax Lot 1 exhibited detectable levels of SVOCs. In general, the highest total SVOCs were detected in samples that exhibited naphthalene/hydrocarbon-like odors, sheens and black tar staining. In almost all of the subsurface soil samples exhibiting detectable levels of SVOCs, PAH compounds were most predominant. A review of the SVOC concentrations presented on Table 5 in Appendix C indicates that the following SVOCs were the most frequent compounds to exceed their respective RSCO: benzo(a)pyrene (17 out of 22 samples), dibenzo(a,h)anthracene (16 out of 22 samples), benzo(b)fluoranthene (16 out of 22 samples), benzo(a)anthracene (15 out of 22 samples), chrysene (15 out of 22 samples) and naphthalene (13 out of 22 samples).

Table 4-2 summarizes data related to subsurface soil samples collected from locations, which exceeded RSCOs for total SVOCs along with the approximate location of each sample in relation to former MGP structures/features. The table also includes PID measurements and indicates whether any physical evidence of saturated NAPL was noted in the samples. Additionally, Figure 4-1 presents total VOC and total SVOC concentrations in subsurface soil within Tax Lot 1.

As shown on Table 4-2 and Figure 4-1, the maximum total SVOC concentration observed in subsurface soil within Tax Lot 1 was 264,460 mg/kg detected in soil sample SB-24 (36-38 feet). More than 20 percent (or 56,000 mg/kg out of 264,460 mg/kg) of the total SVOC concentration in this sample was comprised of naphthalene. The second highest total SVOC concentration of 167,800 mg/kg was detected within the same borehole from 30-32 feet bgs. In both samples, 18 out of 64 SVOC compounds analyzed exceeded their respective RSCO, all of which being PAHs. As discussed previously, soil boring SB-24 was completed along the eastern sidewalk of 12th Avenue within the northernmost former coal pocket. It is believed that subsurface soil sample SB-24 (36-38 feet) was impacted by a DNAPL source from the 30 to 32-foot interval. Therefore, while this sample exhibits the greatest total SVOC concentration within Tax Lot 1, it is likely biased high due to the infiltration of the DNAPL and does not represent “true” total SVOC concentrations at this depth. The subsurface soil recovered from SB-24 at 30 to 32 feet bgs exhibited evidence of DNAPL, strong naphthalene-like odors, black tar staining and PID measurements of up to 68.6 ppm.

The third highest total SVOC concentration of 10,286 mg/kg was detected in subsurface soil sample SB-26 (16-19 feet). Seventeen out of 64 compounds analyzed exceeded their respective RSCO in this sample, all of which being PAHs. Soil boring SB-26 was completed along the southern sidewalk of 42nd Street, within the vicinity of the northernmost former condenser. The subsurface soil recovered at 16 to 19 feet bgs exhibited strong naphthalene-like and hydrocarbon-like odors, black tar staining, a sheen and PID measurements of up to 56 ppm. It is worthy to note that this sample was collected below the water table and just above bedrock due to the fact that bedrock is relatively shallow in this area of Tax Lot 1.

TABLE 4-2

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TAX LOT 1 SUBSURFACE SOIL SAMPLES EXHIBITING TOTAL SEMIVOLATILE ORGANIC COMPOUND CONCENTRATIONS THAT EXCEED NYSDEC SOIL CLEANUP OBJECTIVES*

Sample ID (Boring and Sample Depth)	Total SVOC Concentration (mg/kg)	Location (in Relation to Former MGP Structure/Feature)	PID (ppm)	Evidence of NAPL at Saturated Conditions Noted in Sample
SB-24 (36-38)	264,460	Along eastern sidewalk of 12th Avenue, within northern most former coal pocket.	111	Yes
SB-24 (30-32)	167,800	Along eastern sidewalk of 12th Avenue, within northern most former coal pocket.	68.6	Yes
SB-26 (16-19)	10,286	Along southern sidewalk of 42nd Street, within northern most former condenser area.	56	No
SB-23 (20-24)	6,658.40	Along eastern sidewalk of 12th Avenue, within southern most former coal pocket.	132	No
SB-19 (20-24)	5,189.80	Northern tip of stone dust walkway, within former MGP office area.	129	No
SB-18 (9-13)	1,844.20	Within the dog walk compound, along the eastern edge of the former Purifying House.	51	No
SB-08 (12-16)	1,835.70	Southern tip of stone dust walkway, within former Purifying House.	313	No
SB-26 (9-13)	1,684.91	Along southern sidewalk of 42nd Street, within northern most former condenser area.	130	No
SB-25 (12-16)	769.1	Along southern sidewalk of 42nd Street, within northern most former Retort House.	14.5	No
SB-23 (52-54.5)	570.96	Along eastern sidewalk of 12th Avenue, within southern most former coal pocket.	41.1	Yes

Note:

* Based on samples collected as part of the Site Characterization Study investigation.

The fourth highest total SVOC concentration of 6,658.4 mg/kg was detected in subsurface soil sample SB-23 (20-24 feet). Eighteen out of 64 SVOC compounds analyzed exceeded their respective RSCO in this sample, all of which being PAHs. Soil boring SB-23 was completed along the eastern sidewalk of 12th Avenue, within the southernmost former coal pocket. The subsurface soil recovered at 20 to 24 feet bgs in this sample exhibited strong hydrocarbon-like odors, black tar staining and PID measurements of up to 132 ppm, and was collected at or just above the Clay Unit. However, SVOC concentrations decreased with increasing depth at this location with a total SVOC concentration of 570.96 mg/kg observed in the sample collected at 52-54.4 feet bgs.

The fifth highest total SVOC concentration of 5,189.8 mg/kg was detected in soil sample SB-19 (20-24 feet). Eighteen out of 64 SVOC compounds analyzed exceeded their respective RSCO in this sample, all of which being PAHs. Soil boring SB-19 was completed on the northern tip of the stone-dust walkway, within the former MGP office area. The subsurface soil recovered at 20 to 24 feet bgs exhibited strong naphthalene-like odors, black tar staining, blebs, sheen and PID measurements of up to 129 ppm, and was collected at or just above the Clay Unit. However, SVOC concentrations decreased rapidly with increasing depth with a total SVOC concentration of 53.72 mg/kg observed in the sample collected at 24-26.2 feet bgs.

As illustrated by Figure 4-1 and consistent with the distribution of VOCs, the highest SVOC concentrations detected in subsurface soil within Tax Lot 1 were observed in samples collected from a depth of 9 to 24 feet bgs, and within the Fill Unit. However, at most locations, SVOC concentrations decrease rapidly below this depth. This rapid decrease in SVOC concentrations is likely due to the confining ability of the underlying Clay Unit. Exceptions to this general trend include borings SB-23 and SB-24 where elevated SVOC concentrations were observed to a depth of up to 38 feet, and within the Clay Unit.

TAL Metals and Cyanide

TAL metals detected in subsurface soil samples selected for chemical analysis from Tax Lot 1 have been compared to RSCOs and are provided in Appendix C on Table 6. Total cyanide was observed at detectable concentrations in 14 out of the 22 subsurface soil samples. The ranges of TAL metal and total cyanide concentrations in the subsurface soil samples on Tax Lot 1 are summarized in Table 4-3.

As shown on Table 4-3, the highest concentrations of lead, mercury and total cyanide were found in sample SB-08 (12-16 feet). Soil boring SB-08 was advanced in the central portion of the landscaped area in the vicinity of the former Purifying House. Soil recovered at this boring from 12 to 16 feet bgs consisted of a black tar stained sand with a sheen and a strong naphthalene-like odor. TAL metals that were most frequently detected in excess of RSCOs included iron (21 out of 22 soil samples collected), zinc (20 out of 22 soil samples collected) and chromium (19 out of 22 soil samples collected).

4.2.2 Tax Lot 3

Provided in Appendix C are the analytical results for subsurface soil samples. VOC results are summarized in Table 1 for test pits and Table 4 for soil borings. SVOC results are summarized in Table 2 for test pits and Table 5 for soil borings. TAL metals and cyanide results are summarized in Table 3 for test pits and Table 6 for soil borings.

Volatile Organic Compounds (VOCs)

All of the subsurface soil samples selected for chemical analysis from the 18 soil boring locations and 9 test pit locations advanced within Tax Lot 3 exhibited detectable levels of VOCs. In general, the highest total VOC concentrations were detected in samples that exhibited naphthalene/hydrocarbon-like odors, sheens and black tar staining. Additionally, these samples typically exhibited PID measurements in excess of 100 ppm. A review of VOC data presented on Table 1 and Table 4 in Appendix C indicates that total VOCs exceed their respective RSCOs in

TABLE 4-3

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TAX LOT 1 SUBSURFACE SOIL SAMPLES EXHIBITING TAL METALS AND TOTAL CYANIDE CONCENTRATIONS THAT EXCEED NYSDEC SOIL CLEANUP OBJECTIVES*

Constituents with RSCO Exceedances	NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives (mg/kg)	Concentration Range	Frequency of Exceeding Soil Cleanup Objectives	Sample Exhibiting Maximum Concentration
Arsenic	7.5 or SB	2.1 to 24.2 mg/kg	9 of 22	SB-22 (12-16)
Beryllium	0.16 or SB	ND to 0.96 mg/kg	15 of 22	SB-18 (23-25)
Cadmium	10[1]	ND to 5.1 mg/kg	8 of 22	SB-24 (30-32)
Chromium	50[1]	0.86 to 65.8 mg/kg	19 of 22	SB-24 (30-32)
Copper	25 or SB	0.94 to 99.1 mg/kg	10 of 22	SB-22 (12-16)
Iron	2,000 or SB	987 to 92,900 mg/kg	21 of 22	SB-24 (30-32)
Lead	400	2.9 to 841 mg/kg	2 of 22	SB-08 (12-16)
Mercury	0.1	ND to 3.2 mg/kg	12 of 22	SB-08 (12-16)
Nickel	13 or SB	0.79 to 24.8 mg/kg	17 of 22	SB-18 (23-25)
Selenium	2 or SB	ND to 6.8 mg/kg	19 of 22	SB-22 (12-16)
Zinc	20 or SB	4.2 to 136 mg/kg	20 of 22	SB-22 (12-16)
Total Cyanide	----	ND to 126 mg/kg	NA	SB-08 (12-16)

Notes:

* Based on samples collected as part of the Site Characterization Study investigation.
SB: Site background
----: not established
[1]: As per proposed 4/95 NYSDEC TAGM
NA: Not applicable

11 out of 39 samples. In almost all of the subsurface soil samples exhibiting detectable levels of VOCs, BTEX compounds were most predominant. Benzene and total xylene are the most frequently detected VOC compounds above their respective RSCO. Benzene exceeded the RSCOs in 10 out of 39 samples and total xylene in 9 out of 39 samples; whereas, both toluene and ethylbenzene exceed their RSCOs in only 4 out of 39 soil samples. Additionally, methylene chloride exceeded its RSCO in 3 out of 39 samples. However, methylene chloride is a common laboratory contaminant and is not typically associated with MGP residuals and, therefore, it can be assumed that it is not attributable to site contamination.

Table 4-4 summarizes data related to subsurface soil samples collected from locations, which exceeded RSCOs for total VOCs along with the approximate location of each sample in relation to former MGP structures/features. The table also includes PID measurements and indicates whether any physical evidence of saturated NAPL was noted in the samples. Additionally, Figure 4-2 presents total VOC and total SVOC concentrations in subsurface soil within Tax Lot 3.

As shown in Table 4-4, the first and fifth highest total VOC concentrations of 865 mg/kg and 74.3 mg/kg were detected in soil samples SB-29 (19-23 feet) and SB-16 (13-15 feet), respectively. Toluene, ethylbenzene and total xylene exceeded RSCOs in SB-29 (19-23 feet); whereas, in SB-16 (13-15 feet), only ethylbenzene exceeded its respective RSCO. Soil borings SB-29 and SB-16 were completed along the eastern edge of Tax Lot 3, within the vicinity of the former northeast (NE) and SE gas holders. Each subsurface soil sample exhibited strong naphthalene/hydrocarbon-like odors, black tar staining and PID measurements up to 801 ppm. However, VOC concentrations decreased with increasing depth with total VOC concentrations of 0.032 mg/kg and 0.304 mg/kg observed in soil samples SB-29 (39-41 feet) and SB-16 (25-27 feet), respectively.

The second, third and fifth highest total VOC concentrations of 410.7 mg/kg, 242.4 mg/kg and 35.1 mg/kg were detected in soil samples SB-02 (17-19 feet), SB-05 (18-19.5 feet) and SB-03 (17-19 feet), respectively. In SB-02 (17-19 feet), benzene and total xylene exceeded RSCOs, whereas SB-03 (17-19 feet), exceeded for benzene, toluene

TABLE 4-4
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TAX LOT 3 SUBSURFACE SOIL SAMPLES EXHIBITING TOTAL VOLATILE ORGANIC COMPOUND CONCENTRATIONS THAT EXCEED NYSDEC SOIL CLEANUP OBJECTIVES*

Sample ID (Boring and Sample Depth)	Total VOC Concentration (mg/kg)	Location (in Relation to Former MGP Structure/Feature)	PID (ppm)	Evidence of NAPL at Saturated Conditions Noted in Sample
SB-29 (19-23)	865	Along eastern edge of the site, in-between the northeast and southeast former MGP gas holders.	801	No
SB-02 (17-19)	410.7	Within former northwest gas holder.	800	No
SB-05 (18-19.5)	242.4	Within former northwest gas holder.	299	No
SB-13 (19-21.4)	78.3	Within former southeast gas holder.	1186	No
SB-16 (13-15)	74.3	Along eastern edge of the site, sidegradient of the northeast and southeast former MGP gas holders.	104	No
SB-27 (29-31)	36.9	Within former northeast gas holder.	85	No
SB-03 (17-19)	35.1	Within former northwest gas holder.	1440	No
SB-15 (7-9)	28.468	Within former northeast gas holder.	1787	No
SB-27 (18-20)	27.5	Within former northeast gas holder.	145	No
TP-08 (10.5-11)	17	Along eastern edge of the site, in-between the northeast and southeast former MGP gas holders.	99	No
SB-14 (17-19)	12.626	Within former southeast gas holder.	70	No

Note:
* Based on samples collected as part of the Site Characterization Study investigation.

LEGEND:

SB–01 ●	SOIL BORING LOCATION
TP–01 ▭	TEST PIT LOCATION AND APPROXIMATE BOUNDARY
MW–1 ⊗	MONITORING WELL LOCATION
LMW–02 ⌖	PREVIOUSLY INSTALLED WELL LOCATIONS SAMPLED AS PART OF THE SCS (LANGAN ENGINEERING WELLS)
BLOCK 1089	TAX BLOCK NUMBER
①	TAX NUMBER FOR PARCELS WITHIN FORMER MGP
━━━	TAX LOT BOUNDARY
—— X ——	FENCE
– – – –	FORMER MGP STRUCTURES
———	BOUNDARY OF SITE CHARACTERIZATION STUDY AREA

TEST PIT AND SOIL BORING SAMPLES

TP-01

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
5 - 5.5	0.014	35.51

TP-02

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
9 - 9.5	3.9	**12,010**

TP-03

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
3.5 - 4	0.015	50.3

TP-04

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
8 - 8.5	0.151	8.012

TP-05

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
11 - 11.5	0.292	98.345

TP-06

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
9.5 - 10	0.03	1.497

TP-07

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
10 - 10.5	0.128	4

TP-08

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
10.5 - 11	**16.96**	92.847

TP-09

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
10 - 10.5	0.006	5.203

SB-01

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
22 - 26	0.694	60.17
26 - 32	0.019	29.19

SB-02

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
17 - 19	**411**	**3,256**
29 - 31	0.066	0.341

SB-03

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
17 - 19	**35**	**1,598**

SB-04

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
10 - 16	0.068	33.443

SB-05

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
18 - 19.5	**242**	**7,502**

SB-06

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
9 - 11	0.094	1.71

SB-07

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
27 - 29	0.907	6.318
33 - 35	0.04	87.053

SB-09

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
11 - 15	0.053	8.898
31 - 33.5	0.104	4.9

SB-10

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
20 - 24	0.261	0.92
26 - 28	0.06	0.276

SB-11

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
10 - 12	0.016	1.9

SB-12

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
21 - 23	2.65	45.217
27 - 28.8	0.792	1.01

SB-13

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
19 - 21.4	**78**	34.262

SB-14

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
17 - 19	**13**	31.452
30 - 32	0.017	0.13

SB-15

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
7-9	**28**	3.697
13 - 15	0.033	1.1

SB-16

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
13 - 15	**74**	53.45
25 - 27	0.304	2.297

SB-17

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
9 - 13	0.408	**584**
21 - 23	0.028	0.806

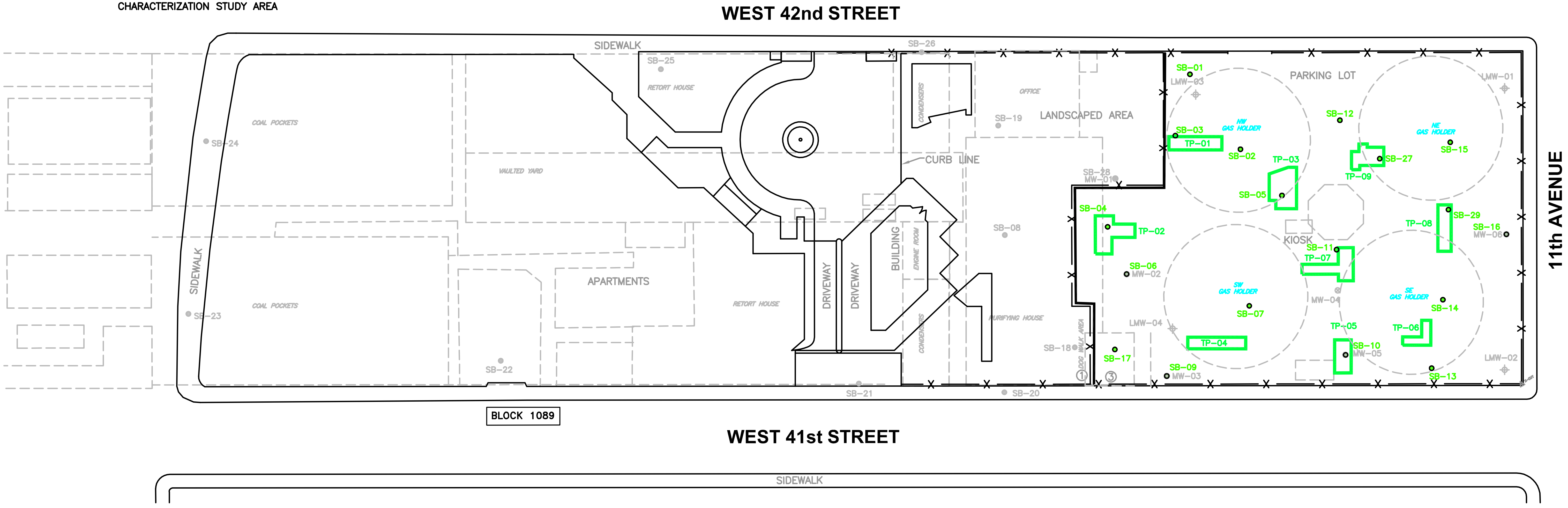
SB-27

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
18 - 20	**28**	**832**
29 - 31	**37**	89.327

SB-29

Depth Feet	Total VOC mg/kg	Total SVOC mg/kg
19 - 23	**865**	259.09
39 - 41	0.032	1.13

NOTE:
SHADED BOXES INDICATE TOTAL VOC AND TOTAL SVOC CONCENTRATIONS THAT EXCEED THE NYSDEC TAGM 4046 APPENDIX A RECOMMENDED SOIL CLEANUP OBJECTIVES OF 10 mg/Kg and 500 mg/Kg, RESPECTIVELY.



SOURCE: MAP PROVIDED BY CONSOLIDATED EDISON. APPROXIMATE LOCATIONS OF FORMER MGP STRUCTURES BASED ON INTERPRETATION OF SANBORN MAPS AND DRAWINGS PROVIDED BY CONSOLIDATED EDISON CONTAINED WITHIN THE WEST 42nd STREET MANUFACTURED GAS PLANT SITE HISTORY REPORT BY PARSONS, DATED AUGUST 2002 AND THE RIVER PLACE PHASE II, 42nd. STREET AND ELEVENTH AVENUE, GEOTECHNICAL ENGINEERING STUDY BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, P.C., DATED JULY 2000.

0 60
SCALE IN FEET

Dvirka
and
Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

TOTAL VOC AND TOTAL SVOC SUBSURFACE SOIL ANALYTICAL DATA FOR TAX LOT 3

FIGURE 4-2

\\Nt4\cadwork\2085\2085-A01.dwg, 04/30/04 02:19:14 PM, DCortes and total xylene and SB-05 (18-19.5 feet), exceeded for all four BTEX compounds. Soil borings SB-02, SB-03 and SB-05 were completed within the former northwest (NW) gas holder and the three referenced soil samples were collected directly above the former gas holder foundation. Each soil sample exhibited a slight to moderate naphthalene-like odor, black tar staining and PID measurements up to 1,440 ppm. However, no VOC compounds exceeded their respective RSCOs in soil sample SB-02 (29-31 feet) collected below the holder foundation.

The fourth highest total VOC concentration of 78.3 mg/kg was detected in soil sample SB-13 (19-21.4 feet). In SB-13 (19-21.4 feet), benzene, toluene and total xylene exceeded RSCOs. Soil boring SB-13 was completed within the former southeast gas holder and the referenced soil samples were collected directly above the former gas holder foundation. This soil sample exhibited a slight naphthalene-like odor, black tar staining and PID measurements up to 1,186 ppm.

The sixth, eighth, ninth and tenth highest total VOC concentrations of 36.9 mg/kg, 28.468 mg/kg, 27.5 mg/kg and 17 mg/kg were detected in soil samples SB-27 (29-31 feet), SB-15 (7-9 feet), SB-27 (18-20 feet) and TP-08 (10.5-11 feet), respectively. In SB-27 (29-31 feet), toluene, ethylbenzene and total xylene compounds exceeded their respective RSCOs; whereas, SB-27 (18-20 feet) and TP-08 (10.5-11 feet) exceeded for only total xylene. Although SB-15 (7-9 feet) exhibited detectable levels of VOCs, no compounds exceeded their respective RSCOs. The referenced soil borings were completed within the northeast former gas holder. The referenced soil samples exhibited strong naphthalene-like and hydrocarbon-like odors, a sheen and PID measurements up to 1,787 ppm.

The eleventh highest total VOC concentration of 12.6 mg/kg was detected in soil sample SB-14 (17-19 feet). In SB-14 (17-19 feet), benzene and total xylene compounds exceeded their respective RSCOs. Soil boring SB-14 was completed within the southeast former gas holder. The subsurface soil observed in this boring exhibited slight to strong naphthalene-like odor and PID measurements up to 12.6 ppm. However, VOC concentrations decreased with increasing depth with a total VOC concentration of 0.017 mg/kg observed in soil sample SB-14 (30-32 feet).

As shown on Figure 4-2, the highest VOC concentrations were detected in the Fill Unit at depths ranging from 17 to 23 feet bgs, and within and adjacent to the former gas holders. Furthermore, the samples exhibiting the highest VOC concentrations were collected from immediately above the former holder bottom foundations or, in the case of SB-29 (19-23 feet), immediately outside of the former holder bottoms. However, below a depth of 25 feet, VOC concentrations appear to decrease rapidly, which is likely due to the confining ability of the Clay Unit underlying the Fill Unit.

Figure 4-2 illustrates that the majority of subsurface soil samples selected for laboratory analysis at depths shallower that 16 feet bgs exhibit total VOC concentrations ranging from non-detectable to less than 1.0 mg/kg. Two exceptions to this general observation include TP-08 (10.5-11 feet) and SB-16 (13-15 feet), which exhibited total VOC concentrations of 22.86 and 74.3 mg/kg, respectively.

Semi-Volatile Organic Compounds (SVOCs)

All of the subsurface soil samples selected for chemical analysis from the 18 soil boring locations and 9 test pit locations advanced within Tax Lot 3 exhibited detectable levels of SVOCs. In general, the highest total SVOCs were detected in samples that exhibited naphthalene/hydrocarbon-like odors, sheens and black tar staining. In almost all of the subsurface soil samples exhibiting detectable levels of SVOCs, PAH compounds were most predominant. A review of the SVOC concentrations presented on Table 2 and 5 in Appendix C indicates the following SVOCs were the most frequent compounds to exceed their respective RSCO: benzo(a)pyrene (25 out of 39 samples), benzo(a)anthracene (20 out of 39 samples), chrysene (18 out of 39 samples), naphthalene (14 out of 39 samples), benzo(b)fluoranthene (11 out of 39 samples), dibenzo(a,h anthracene (9 out of 39 samples) and benzo(k)fluoranthene (9 out of 39 samples).

Table 4-5 summarizes data related to subsurface soil samples collected from locations which exceeded RSCOs for total SVOCs along with the approximate location of each sample in

TABLE 4-5
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TAX LOT 3 SUBSURFACE SOIL SAMPLES EXHIBITING TOTAL SEMIVOLATILE ORGANIC COMPOUND CONCENTRATIONS THAT EXCEED NYSDEC SOIL CLEANUP OBJECTIVES*

Sample ID (Boring and Sample Depth)	Total SVOC Concentration (mg/kg)	Location (in Relation to Former MGP Structure/Feature)	PID (ppm)	Evidence of NAPL at Saturated Conditions Noted in Sample
TP-02 (9-9.5)	12,010	Within former Purifying House foundation walls.	11.9	No
SB-05 (18-19.5)	7,502	Within former northwest gas holder.	299	No
SB-02 (17-19)	3,255.9	Within former northwest gas holder.	800	No
SB-03 (17-19)	1,597.5	Within former northwest gas holder.	1440	No
SB-27 (18-20)	832.1	Within former northeast gas holder.	145	No
SB-17 (9-13)	583.6	Along the western edge of the site, in the vicinity of the Former Purifying House.	5.4	No

Note:

* Based on samples collected as part of the Site Characterization Study investigation.

relation to former MGP structures/features. The table also includes PID measurements and indicates whether any physical evidence of saturated NAPL was noted in the samples. Additionally, Figure 4-2 presents total VOC and total SVOC concentrations in subsurface soil within Tax Lot 3.

As shown on Table 4-5, the highest and sixth highest total SVOC concentrations of 12,010 mg/kg and 583.6 mg/kg were detected in soil samples TP-02 (9-9.5 feet) and SB-17 (9-13 feet), respectively. Eighteen out of 64 SVOC compounds analyzed exceeded their respective RSCO in sample TP-02 (9-9.5 feet), all of which being PAHs; whereas, SB-17 (9-13 feet) exhibited exceedances for 11 out of the 64 SVOC compounds analyzed. The sample collected from test pit TP-02 was from soil situated between the two parallel eastern former Purifying House walls as described in Section 3.2.1. Similarly, soil sample SB-17 (9-13 feet) was collected within the southeastern wall of the former Purifying House. Both subsurface soil samples exhibited slight to moderate naphthalene/hydrocarbon-like odors, black tar staining and PID measurements up to 11.9 ppm. However, SVOC concentrations appear to decrease with increasing depth with a total SVOC concentration of 33.443 mg/kg observed in adjacent soil boring SB-04 at a depth of 10 to 16 feet bgs and a total SVOC concentration of 0.806 mg/kg observed in soil boring SB-17 at a depth of 21 to 23 feet bgs.

The second, third and fourth highest total SVOC concentrations of 7,502 mg/kg, 3,255.9 mg/kg and 1,597.5 mg/kg were detected in soil samples SB-05 (18-19.5 feet), SB-02 (17-19 feet) and SB-03 (17-19 feet), respectively. SB-05 (18-19.5 feet) exhibited exceedances of RSCOs for 13 out of the 64 SVOC compounds analyzed; whereas, SB-02 (17-19 feet), exhibited exceedances for 9 out of the 64 SVOC compounds analyzed and SB-03 (17-19 feet) for 11 out of the 64 SVOC compounds analyzed. These three soil borings were completed within the former NW gas holder. All three subsurface soil samples were collected directly above the former gas holder foundation and exhibited a slight to moderate naphthalene-like odor, black tar staining and PID measurements up to 1,440 ppm. However, SVOC compounds appear to decrease with increasing depth with a total SVOC concentration of 0.341 mg/kg observed in soil sample SB-02 (29-31 feet) collected below the holder foundation.

The fifth highest total SVOC concentration of 832.081 mg/kg was detected in subsurface soil sample SB-27 (18-20 feet). Naphthalene, 2-Methylnaphthalene and benzo(a)pyrene were the only SVOC compounds to exceed their respective RSCOs in this sample. Soil boring SB-27 was completed within the former NE gas holder. SB-27 (18-20 feet) was collected directly above the former gas holder foundation and exhibited a strong naphthalene-like odor and PID measurements up to 145 ppm. However, SVOC concentrations appear to decrease with increasing depth with a total SVOC concentration of 89.327 mg/kg observed at a depth of 29 to 31 feet bgs.

As shown on Figure 4-2 and consistent with the VOC results, the SVOC data indicates that the highest SVOC concentrations were generally observed in samples collected from the Fill Unit at depths ranging from 17 to 23 feet and within and adjacent to the former gas holder foundations on Tax Lot 3. Additionally, SVOC data from test pit location TP-02 indicates that elevated SVOC concentrations were also observed within the vicinity of the former Purifying House at a depth of 9 to 10 feet bgs. As with VOC, SVOC concentrations generally decreased in subsurface soil with increasing depth even in the areas where the highest levels of SVOCs were detected.

TAL Metals and Cyanide

TAL metals detected in subsurface soil samples on Tax Lot 3 were compared to RSCOs and have been provided on Table 3 for test pits and Table 6 for soil borings in Appendix C. Total cyanide was observed at detectable concentrations in 28 out of the 39 subsurface soil samples selected for analysis. The ranges of TAL metal and total cyanide concentrations in the subsurface soil samples are summarized in Table 4-6.

As shown on Table 4-6, the highest concentrations of mercury were detected in samples SB-04 (10-16 feet) and TP-02 (9-9.5 feet), at 1.8 mg/kg and 22 mg/kg, respectively. Both SB-04 and TP-02 were advanced along the easternmost wall of the Purifying House. Soil recovered from 9 to 16 feet bgs consisted of a black stained sand with sheens and strong naphthalene-like odors. In addition, the two referenced samples exhibited lead at 390 mg/kg and 247 mg/kg.

TABLE 4-6
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TAX LOT 3 SUBSURFACE SOIL SAMPLES EXHIBITING TAL METALS AND TOTAL CYANIDE CONCENTRATIONS THAT EXCEED NYSDEC SOIL CLEANUP OBJECTIVES*

Constituents with RSCO Exceedances	NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives (mg/kg)	Concentration Range	Frequency of Exceeding Soil Cleanup Objectives	Sample Exhibiting Maximum Concentration
Arsenic	7.5 or SB	ND to 35.6 mg/kg	5 of 39	TP-02 (9-9.5)
Beryllium	0.16 or SB	ND to 1.8 mg/kg	37 of 39	SB-01 (22-26)
Chromium	50[1]	9.8 to 79.1 mg/kg	29 of 39	SB-07 (33-35)
Copper	25 or SB	8.5 to 77.5 mg/kg	17 of 39	TP-01 (5-5.5)
Iron	2,000 or SB	7,560 to 94,900 mg/kg	39 of 39	TP-02 (9-9.5)
Mercury	0.1	ND to 22.2 mg/kg	23 of 39	TP-02 (9-9.5)
Nickel	13 or SB	0.79 to 27.3 mg/kg	27 of 39	TP-03 (3.5-4)
Vanadium	150 or SB	13 to 197 mg/kg	2 of 39	SB-07 (33-35)
Zinc	20 or SB	22.0 to 220 mg/kg	39 of 39	TP-01 (5-5.5)
Total Cyanide	----	ND to 1,580 mg/kg	NA	SB-17 (9-13)

Notes:
* Based on samples collected as part of the Site Characterization Study investigation.
SB: Site background
----: not established
[1]: As per proposed 4/95 NYSDEC TAGM
NA: Not applicable

However, these concentrations are below the lead RSCO of 400 mg/kg. TAL metals that were most frequently detected in excess of RSCOs included iron (39 out of 39 soil samples collected), zinc (39 out of 39 soil samples collected) and beryllium (37 out of 39 soil samples collected). A maximum total cyanide concentration of 1,580 mg/kg was detected in subsurface soil sample SB-17 (9 to 13 feet). Soil boring SB-17 was completed approximately 20 feet east of the former Purifying House. Total cyanide compounds are commonly found in purifier or oxide box wastes generated through the purification of the manufactured gas.

4.3 Groundwater

Groundwater quality within Tax Lot 3 was characterized through the collection and analysis of groundwater samples collected from 4 existing groundwater monitoring wells and 6 newly installed groundwater monitoring wells. All new and existing monitoring wells were sampled in October 2003.

VOC and SVOC results for groundwater samples collected from groundwater monitoring wells are summarized in Appendix C on Table 7 and Table 8, respectively. TAL metals and total cyanide results are presented in Table 9.

The following discussion presents the findings of the groundwater sampling completed as part of the SCS field investigation.

Volatile Organic Compounds (VOCs)

All 10 groundwater samples collected from the groundwater monitoring wells exhibited detectable levels of VOCs. In almost all of the groundwater samples exhibiting detectable levels of VOCs, BTEX compounds were the most predominant compounds detected with BTEX comprising approximately 80% of the total VOC in all samples. A review of the VOC data presented on Table 7 in Appendix C indicates benzene and ethylbenzene are the most frequently detected VOC compounds above their respective NYSDEC groundwater standard, with 9 out of 10 samples and 6 out of 10 samples, respectively; whereas, total xylene and isopropylbenzene each exceed their standards in 5 out of 10 samples. Additionally, toluene, 1,3,5-trimethylbenzene and 1,2,4-trimethylbenzene each exceeded their standards in 4 out of 10 samples; whereas, n-propylbenzene exceeded its standard in 3 out of 10 samples. Methyl tert-butyl ether exceeded its standard in 2 out of 10 samples; whereas, 1,2 dichloroethane, styrene, sec-butylbeneze and 4-isopropyltoluene each exceeded their standards in only 1 out of 10 samples.

Table 4-7 summarizes total VOC concentrations of the groundwater samples along with the approximate locations of these samples in relation to former MGP structures/features. The table also indicates whether any physical evidence of NAPL was noted in these samples. In addition, Figure 4-3 summarizes VOC and SVOC compounds that exceed NYSDEC groundwater standards at each monitoring well.

As indicated in Table 4-7, the highest levels of VOC in groundwater were detected along the western edge of Tax Lot 3 in the vicinity of the former Purifying House and gas holders. In general, the highest VOC concentrations were detected in the samples collected from the existing groundwater monitoring wells LMW-03 and LMW-04 that were installed within the former gas holders and screened just above the bedrock unit. None of the groundwater samples exhibited evidence of a separate phase layer of NAPL; however, each well, with the exception of MW-01 and MW-02, exhibited naphthalene-like odors. Table 4-7 indicates that there were three groundwater samples that exhibited total VOC concentrations in excess of 1,000 ug/l, and that each of these samples were collected within the vicinity of the westernmost former gas holders. In addition, the groundwater sample collected from MW-06 also exhibited a total VOC concentration of 4,068 mg/kg. MW-06 is located on the eastern boundary of Tax Lot 3 sidegradient of the easternmost former gas holders.

The maximum total VOC concentration of 11,980 ug/l was detected in the groundwater sample collected from existing groundwater monitoring well LMW-03, located in the northwest corner of Tax Lot 3. This well was previously installed during the geotechnical engineering study within the NW former gas holder. The well was screened just above the bedrock from 22

TABLE 4-7

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE

SITE CHARACTERIZATION STUDY

TOTAL VOC AND TOTAL SVOC CONCENTRATIONS IN GROUNDWATER SAMPLES*

Well ID	Total VOC Concentration (ug/l)	Total SVOC Concentration (ug/l)	Location (in Relation to Former MGP Structure/Feature)	Well Screen Interval (feet bgs)	Evidence of NAPL Noted in Sample
LMW-01	104	41	Upgradient of the former northeast gas holder.	30-40	No
LMW-02	11	33	Downgradient of the former southeast gas holder.	Information not Available	No
LMW-03	11,980	5,279	Within the former northwest gas holder.	22-32	No
LMW-04	10,577	743	Within the former southwest gas holder.	25-35	No
MW-01	41	ND	In vicinity of former Purifying House and MGP process area on Tax Lot 1.	7-17	No
MW-02	1,943	247	In vicinity of former Purifying House and MGP process area on Tax Lot 3.	7-17	No
MW-03	224	16	Downgradient of the former southwest gas holder.	7-17	No
MW-04	635	51	In the central vicinity of former gas holders.	7-17	No
MW-05	143	3	In southside of Tax Lot 3, downgradient of former gas holders.	7-17	No
MW-06	4,068	2,921	In eastside of Tax Lot 3, sidegradient of former gas holders.	7-17	No

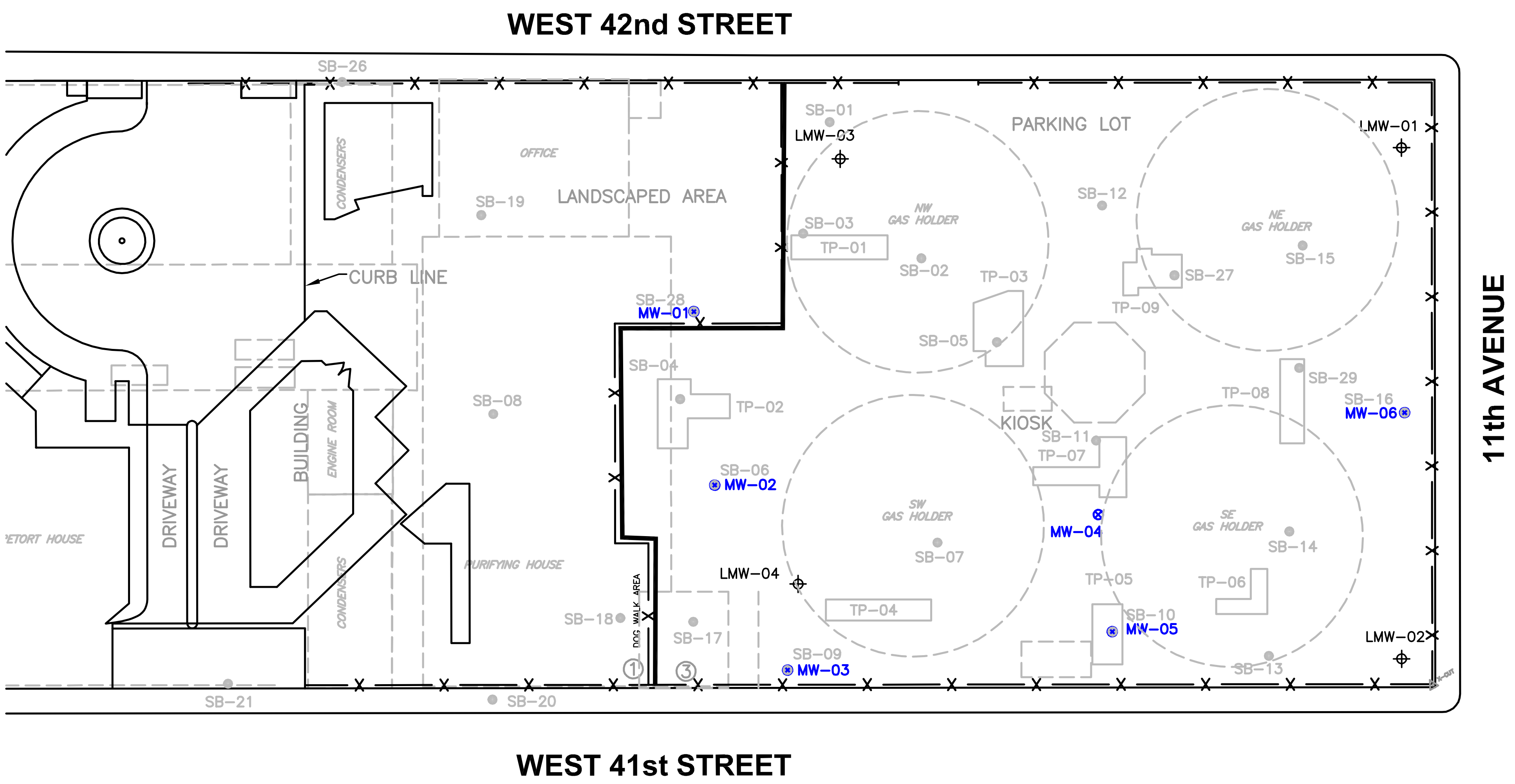
Note:

* Based on samples collected as part of the Site Characterization Study investigation.

ND: Not Detected.

LEGEND:

SB-01 ●	SOIL BORING LOCATION
TP-01	TEST PIT LOCATION AND APPROXIMATE BOUNDARY
MW-1 ⊗	MONITORING WELL LOCATION
LMW-02 ⊕	PREVIOUSLY INSTALLED WELL LOCATIONS SAMPLED AS PART OF THE SCS (LANGAN ENGINEERING WELLS)
BLOCK 1089	TAX BLOCK NUMBER
①	TAX NUMBER FOR PARCELS WITHIN FORMER MGP
	TAX LOT BOUNDARY
—X—	FENCE
– – –	FORMER MGP STRUCTURES
	BOUNDARY OF SITE CHARACTERIZATION STUDY AREA



MONITORING WELL SAMPLES

	LMW-01		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	MTBE	17	10
	Benzene	37	1
	Ethylbenzene	10	5
	Total Xylenes	12	5
	Total VOCs	104	10,000
SVOCs	Naphthalene	31	10
	Total SVOCs	41	500,000

	LMW-02		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	Total VOCs	11	10,000
SVOCs	1,2,4-Trichlorobenzene	16	5
	Total SVOCs	33	500,000

	LMW-03		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	Benzene	870	1
	Toluene	470	5
	Ethylbenzene	650	5
	Total Xylenes	4,600	5
	Styrene	28	5
	Isopropylbenzene	420	5
	n-Propylbenzene	100	5
	1,3,5-Trimethylbenzene	1,400	5
	1,2,4-Trimethylbenzene	3,400	5
	sec-Butylbenzene	6	5
	4-Isopropyltoluene	36	5
	Total VOCs	11,980	10,000
SVOCs	Naphthalene	3,800	10
	Acenaphthene	35	20
	Fluorene	54	50
	Phenanthrene	140	50
	Fluoranthene	97	50
	Pyrene	100	50
	Benzo (a) anthracene	44	0.002
	Chrysene	39	0.002
	bis(2-Ethylhexyl)phthalate	25	5
	Benzo(b)fluoranthene	45	0.002
	Benzo(k)fluoranthene	19	0.002
	Benzo(a)pyrene	40	ND
	Indeno(1,2,3-cd)pyrene	17	0.002
	Total SVOCs	5,279	500,000

NOTE:
CONCENTRATIONS SHOWN FOR INDIVIDUAL COMPOUNDS THAT EXCEED NYSDEC GROUNDWATER STANDARDS. IN ADDITION, CONCENTRATIONS OF TOTAL VOCs AND TOTAL SVOCs SHOWN FOR ALL GROUNDWATER SAMPLES.

	LMW-04		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	Benzene	10,000	1
	1,2-Dichloroethane	89	0.6
	Toluene	53	5
	Ethylbenzene	210	5
	Total Xylenes	140	5
	Isopropylbenzene	31	5
	n-Propylbenzene	7	5
	1,3,5-Trimethylbenzene	9	5
	1,2,4-Trimethylbenzene	27	5
	Total VOCs	10,577	10,000
SVOCs	Phenol	40	1
	Naphthalene	620	10
	Total SVOCs	743	500,000

	MW-01		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	Benzene	39	1
	Total VOCs	41	10,000
SVOCs	Total SVOCs	ND	500,000

	MW-02		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	MTBE	13	10
	Benzene	1,600	1
	Toluene	12	5
	Ethylbenzene	120	5
	Total Xylenes	140	5
	Isopropylbenzene	10	5
	1,3,5-Trimethylbenzene	10	5
	1,2,4-Trimethylbenzene	35	5
	Total VOCs	1,897	10,000
SVOCs	Phenol	22	1
	Naphthalene	220	10
	Total SVOCs	247	500,000

	MW-03		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	Benzene	220	1
	Total VOCs	224	10,000
SVOCs	Phenol	11	1
	Total SVOCs	16	500,000

	MW-04		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	Benzene	620	1
	Isopropylbenzene	7	5
	Total VOCs	634	10,000
SVOCs	Phenol	8	1
	Naphthalene	23	10
	Total SVOCs	51	500,000

	MW-05		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	Benzene	120	1
	Ethylbenzene	8	5
	Total VOCs	143	10,000
SVOCs	Total SVOCs	3	500,000

	MW-06		
	Constituent	Concentration ug/l	Standard ug/l
VOCs	Benzene	1,600	1
	Toluene	28	5
	Ethylbenzene	1,700	5
	Total Xylenes	350	5
	Isopropylbenzene	120	5
	n-Propylbenzene	24	5
	1,3,5-Trimethylbenzene	32	5
	1,2,4-Trimethylbenzene	200	5
	Total VOCs	3,810	10,000
SVOCs	2,4-Dimethylphenol	48	1
	Naphthalene	2,800	10
	Total SVOCs	2,921	500,000

SOURCE: MAP PROVIDED BY CONSOLIDATED EDISON. APPROXIMATE LOCATIONS OF FORMER MGP STRUCTURES BASED ON INTERPRETATION OF SANBORN MAPS AND DRAWINGS PROVIDED BY CONSOLIDATED EDISON CONTAINED WITHIN THE WEST 42nd STREET MANUFACTURED GAS PLANT SITE HISTORY REPORT BY PARSONS, DATED AUGUST 2002 AND THE RIVER PLACE PHASE II, 42nd. STREET AND ELEVENTH AVENUE, GEOTECHNICAL ENGINEERING STUDY BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, P.C., DATED JULY 2000.

0 50
SCALE IN FEET

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and
Bartilucci
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A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

ANALYTICAL GROUNDWATER DATA

FIGURE 4-3

\\Nt4cadwork\2085\2085i-A03.dwg, 04/30/04 02:22:01 PM, DCortes to 32 feet bgs. Groundwater recovered from LMW-03 exhibited a slight sheen and a strong naphthalene-like odor.

The second highest total VOC concentration of 10,577 ug/l was detected in the groundwater sample collected from existing groundwater monitoring well LMW-04, located in the southwest corner of Tax Lot 3 and within the former southwest (SW) gas holder. Note that benzene was detected at a concentration of 10,000 ug/l in this sample, which equates to over 94 percent of the total VOC concentration. Such a predominance of benzene in groundwater at a former MGP site is not typical and, therefore, may be considered anomalous. This well was installed during a previous geotechnical engineering study completed in July 2000 within the former SW gas holder. The well was screened just above the bedrock from 25 to 35 feet bgs. Groundwater recovered from LMW-04 exhibited a moderate naphthalene-like odor.

The third highest total VOC concentration of 4,068 ug/l was detected in the groundwater sample collected from newly installed groundwater monitoring well MW-06, located along the eastern boundary of Tax Lot 3 sidegradient of the former gas holders. The well was screened at the groundwater interface from 7 to 17 feet bgs. Groundwater recovered from MW-06 exhibited a moderate naphthalene-like odor.

The fourth highest total VOC concentration of 1,943 ug/l was detected in the groundwater sample collected from newly installed groundwater monitoring well MW-02, located between the SW former gas holder and the former Purifying House. The well was screened at the groundwater interface from 7 to 17 feet bgs. Groundwater recovered from MW-02 exhibited a slight naphthalene-like odor.

As shown on Figure 4-3, methyl tertiary-butyl ether (MTBE) was also detected at concentrations that exceeded the NYSDEC groundwater standard of 10 ug/l for MTBE in groundwater monitoring wells LMW-01 and MW-02. MTBE was detected at a concentration of 17 ug/l from the groundwater sample collected from LMW-01, located within the northeast corner of Tax Lot 3, directly downgradient of the adjacent Exxon/Mobil service station. MTBE was detected at a concentration of 13 ug/l from the groundwater sample collected from MW-02, located along the western boundary of Tax Lot 3 east of the former Purifying House. MTBE is not associated with MGP-related constituents and was introduced as an additive to gasoline in 1979 with widespread use starting in the mid-1980s. As discussed in Section 1.4, the Exxon/Mobil station located immediately upgradient of Tax Lot 3 is an active NYSDEC petroleum spill site.

As previously stated and as shown on Figure 4-3, other VOCs detected in the collected groundwater samples at concentrations exceeding NYSDEC groundwater standards, other than BTEX compounds, included 1,2-dichloroethane, styrene, isopropyl benzene, n-propylbenzene, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, sec-butyl benzene and 4-isopropyl toluene. However, these compounds were also observed in samples that exhibited elevated concentrations of BTEX compounds.

<u>Semi-Volatile Organic Compounds (VOCs)</u>

Nine out of 10 groundwater samples collected from the groundwater monitoring wells exhibited detectable levels of SVOCs. In almost all of the groundwater samples exhibiting detectable levels of SVOCs, PAHs were the most predominant compounds with BTEX comprising approximately 89% of the total SVOC in all samples. A review of the SVOC data presented on Table 8 in Appendix C indicates that naphthalene is the most frequently detected SVOC above its respective NYSDEC groundwater standard with 6 out of 10 samples exceeding the standard of 10 ug./l. Additionally, phenol exceeded its standard in 3 out of 10 samples; whereas, bis(2-ethylhexyl)phthalate exceeded its standard in 2 out of 10 samples. 1,2,4-trichlorobenzene, acenaphthene, fluorene, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene and 2,4-dimethylphenol each exceeded their standards in only 1 out of 10 samples.

Table 4-7 summarizes on-site groundwater samples that exhibited the highest SVOC concentrations along with the approximate locations of these samples in relation to former MGP structures/features. The table also indicates any physical evidence of NAPL was noted in these samples. In addition, Figure 4-3 summarizes all VOC or SVOC compounds that exceed NYSDEC groundwater standards at each monitoring well location.

As indicated in Table 4-7 and consistent with the distribution of VOCs in groundwater, the highest levels of SVOCs in groundwater were detected along the western boundary of Tax Lot 3, just east of the former Purifying House. Additionally, elevated levels of SVOCs were also detected in the sample collected from newly installed groundwater monitoring well MW-06, located along the eastern boundary of the Tax Lot 3 sidegradient of the former gas holders.

The highest total SVOC concentration of 5,279 ug/l was detected in the groundwater sample collected from existing groundwater monitoring well LMW-03, located in the northwest corner of Tax Lot 3. Groundwater recovered from LMW-03 exhibited a slight sheen and a strong naphthalene-like odor. In addition, the predominant SVOC in the groundwater sample was naphthalene detected at a concentration of 3,800 ug/l or 72% of the total SVOC concentration. Overall, 13 out of the 64 SVOC compounds exceeded their respective NYSDEC groundwater standards in the sample collected from LMW-03.

The second highest total SVOC concentration of 2,921 ug/l was detected in the groundwater sample collected from newly installed groundwater monitoring well MW-06 located along the eastern boundary of Tax Lot 3 and sidegradient of the former gas holders. Groundwater recovered from MW-06 exhibited a moderate naphthalene-like odor. In addition, the predominant SVOC in the groundwater sample was naphthalene at a concentration of 2,800 ug/l or 95.8 % of the total SVOC concentration.

The third highest total SVOC concentration of 743 ug/l was detected in the groundwater sample collected from existing groundwater monitoring well LMW-04 located in the southwest corner of Tax Lot 3. Groundwater recovered from LMW-04 exhibited a slight sheen and a strong naphthalene-like odor. In addition, the predominant SVOC in the groundwater sample was naphthalene at a concentration of 620 ug/l or 83% of the total SVOC concentration.

The fourth highest total SVOC concentration of 247 ug/l was detected in the groundwater sample collected from newly installed groundwater monitoring well MW-02 located along the western boundary of Tax Lot 3 and directly east of the former Purifying House. Groundwater recovered from MW-02 exhibited a slight naphthalene-like odor. In addition, the predominant SVOC in the groundwater sample was naphthalene at a concentration of 220 ug/l or 89% of the total SVOC concentration.

As previously stated, SVOCs, other than PAH compounds, detected in the groundwater samples included phenol, 1,2,4-trichlorobenzene, bis(2-Ethylhexyl)phthalate and 2,4-dimethylphenol. Generally, however, these compounds were observed in samples that also exhibited elevated concentrations of PAH compounds.

As discussed in Section 3.0, groundwater appears to flow in a southerly direction within Tax Lot 3. Based on this flow direction, monitoring wells LMW-01 and LMW-03 would be considered upgradient, and wells MW-03, MW-05 and LMW-02 downgradient, with respect to the former MGP structures located within this portion of the site. As discussed above, upgradient well LMW-03 exhibited relatively high concentrations of VOC and SVOCs, whereas the listed downgradient wells exhibit significantly lower concentrations of these same chemical constituents. In addition, LMW-01 exhibited the gasoline additive MTBE in excess of the NYSDEC groundwater standard of 10 ug/l for this compound. The presence of MTBE at LMW-01 is likely attributable to the documented petroleum contamination associated with the Exxon/Mobil service station located upgradient of Tax Lot 3 on the corner of West 42nd Street and 11th Avenue.

While LMW-03 is located upgradient of the majority of former MGP structures, the well appears to have been installed through the foundation of the former NW gas holder and screened below the holder foundation from 30 to 40 feet bgs. Although no documentation could be provided as to the construction of this well, it is possible that the well was not constructed with a surface casing set into the holder foundation. Without this protective casing, monitoring well LMW-03 may be serving as a pathway for the downward migration of tar and related contaminants from within the gas holder, and into the underlying Clay Unit and bedrock unit. As a result, the relatively high concentrations of VOC and SVOCs detected at this well could actually be associated with the tar-impacted soil that has been observed inside the former NW gas holder during the completed soil boring program. Similarly, LMW-04 appears to have been installed through the SW former gas holder and screened below the holder foundation between 30 to 40 feet below grade. LMW-04 also exhibits elevated concentrations of VOC and SVOCs. Therefore, LMW-04 could also be serving as a pathway for MGP-related compounds to be introduced to the underlying Clay Unit and bedrock.

TAL Metals and Cyanide

Metals analysis of groundwater samples collected from existing and newly installed monitoring wells located on Tax Lot 3 have been compared to NYSDEC groundwater standards and have been provided in Appendix C on Table 9. The ranges of TAL metal and total cyanide concentrations above SCG in the groundwater samples are summarized in Table 4-8.

As shown in Table 4-8, the highest concentrations of arsenic, barium, iron, manganese and sodium were found in the groundwater sample collected from existing monitoring well LMW-01 located in the northeast portion of Tax Lot 3 upgradient of the former gas holders. The well was screened just above the bedrock from 30 to 40 feet bgs. TAL metals that were most frequently detected in excess of NYSDEC groundwater standards included iron (10 out of 10 groundwater samples collected), manganese (9 out of 10 groundwater samples collected) and sodium (9 out of 10 groundwater samples collected). However, the elevated concentrations of these metals could be associated with a wide range of sources other than the former MGP. Total cyanide concentrations in four groundwater samples including MW-02 (270 ug/l), MW-04 (282 ug/l), LMW-03 (207 ug/l) and LMW-04 (275 ug/l) exceeded NYSDEC groundwater standards of 200 ug/l. Total cyanide compounds are commonly found in purifier or oxide box wastes which are generated through the purification of the manufactured gas.

TABLE 4-8
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TAX LOT 3 GROUNDWATER MONITORING WELL SAMPLES EXHIBITING TAL METALS AND TOTAL CYANIDE CONCENTRATIONS THAT EXCEED NYSDEC GROUNDWATER STANDARDS*

Constituents with NYSDEC Groundwater Standard Exceedances	NYSDEC Class GA Groundwater Standard or Guidance Value (ug/l)	Concentration Range	Frequency of Exceeding NYSDEC Groundwater Standard	Sample Exhibiting Maximum Concentration
Arsenic	25 ST	ND to 651 ug/l	1 of 10	LMW-01
Barium	1,000 ST	46.8 to 1,420 ug/l	1 of 10	LMW-01
Iron	300 ST^	827 to 22,500 ug/l	10 of 10	LMW-01
Lead	25 ST	ND to 51.7 ug/l	2 of 10	MW-03
Magnesium	35,000 GV	2,350 to 67,300 ug/l	6 of 10	MW-06
Manganese	300 ST^	213 to 2,750 ug/l	9 of 10	LMW-01
Sodium	20,000 ST	5,030 to 404,000 ug/l	9 of 10	LMW-01
Total Cyanide	200 ST	ND to 282 ug/l	4 of 10	MW-04

Notes:
* Based on samples collected as part of the Site Characterization Study investigation.
ST: Standard
GV: Guidance Value
^: Standard for the sum of Iron and Manganese is 500 ug/l.

4.4 Extent of MGP-Related Impacts

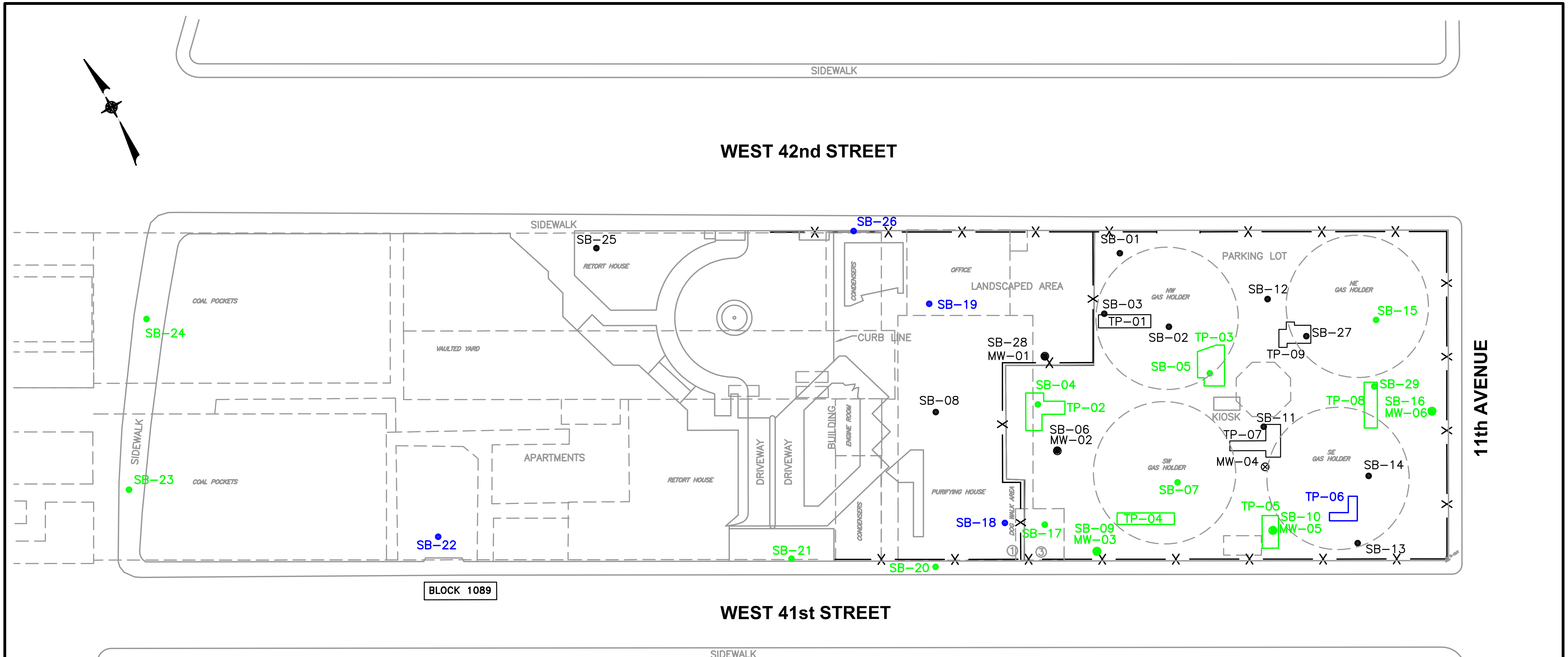
Figures 4-4 through 4-6 graphically depict the locations of soil borings and test pits completed as part of this investigation where evidence of MGP related impacts were noted in subsurface soil, including: NAPL or tar saturated conditions; heavy staining, blebs or sheens; or light to moderate staining and/or naphthalene/hydrocarbon-like odors. Figures 4-4 through 4-6 also graphically illustrate where these conditions were encountered if one or more soil samples exhibited these physical conditions in the shallow (0 to 10 feet bgs), intermediate (10 to 20 feet bgs) and deep (greater than 20 feet bgs) soil zones, respectively. In addition, Figures 4-7 through 4-12 graphically depict this same information vertically in geologic cross sections that traverse the site from West 42nd Street to West 41st Street and 11th Avenue and 12th Avenue.

Shallow Soil

Tax Lot 1

As indicated by Figure 4-4 and the geologic cross sections on Figures 4-7, 4-11 and 4-12, NAPL and/or tar saturated conditions were not observed in shallow subsurface soil (0 to 10 feet bgs) within Tax Lot 1. In addition, no evidence of MGP impacts was observed in shallow soil above a depth of 4 feet. However, several samples recovered below a depth of 7 feet from four borings located on Tax Lot 1 exhibited heavy staining and/or blebs and sheens including:

- SB-18 and SB-19 located within the landscaped area, in the vicinity of the former Purifying House;
- SB-22 located within the loading dock, in the vicinity of the former Retort House; and
- SB-26 located on the south sidewalk of West 42nd Street, in the vicinity of the northernmost former condenser.



LEGEND:

SB-01 ● SOIL BORING LOCATION

TP-01 TEST PIT LOCATION

MW-01 ⊗ MONITORING WELL LOCATION

SB-03 🟥 NAPL/TAR SATURATED

SB-18 🟦 HEAVY STAINING, BLEBS, SHEENS

SB-05 🟩 LIGHT-MODERATE STAINING, AND/OR NAPHTHALENE/HYDROCARBON-LIKE ODORS

BLOCK 1089 TAX BLOCK NUMBER

① TAX NUMBER FOR PARCELS WITHIN FORMER MGP

——— TAX LOT BOUNDARY

— X — FENCE

— — — FORMER MGP STRUCTURES

0 60
SCALE IN FEET

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CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

FIELD OBSERVATIONS OF SUBSURFACE SOIL (0-10 FEET)

FIGURE 4-4

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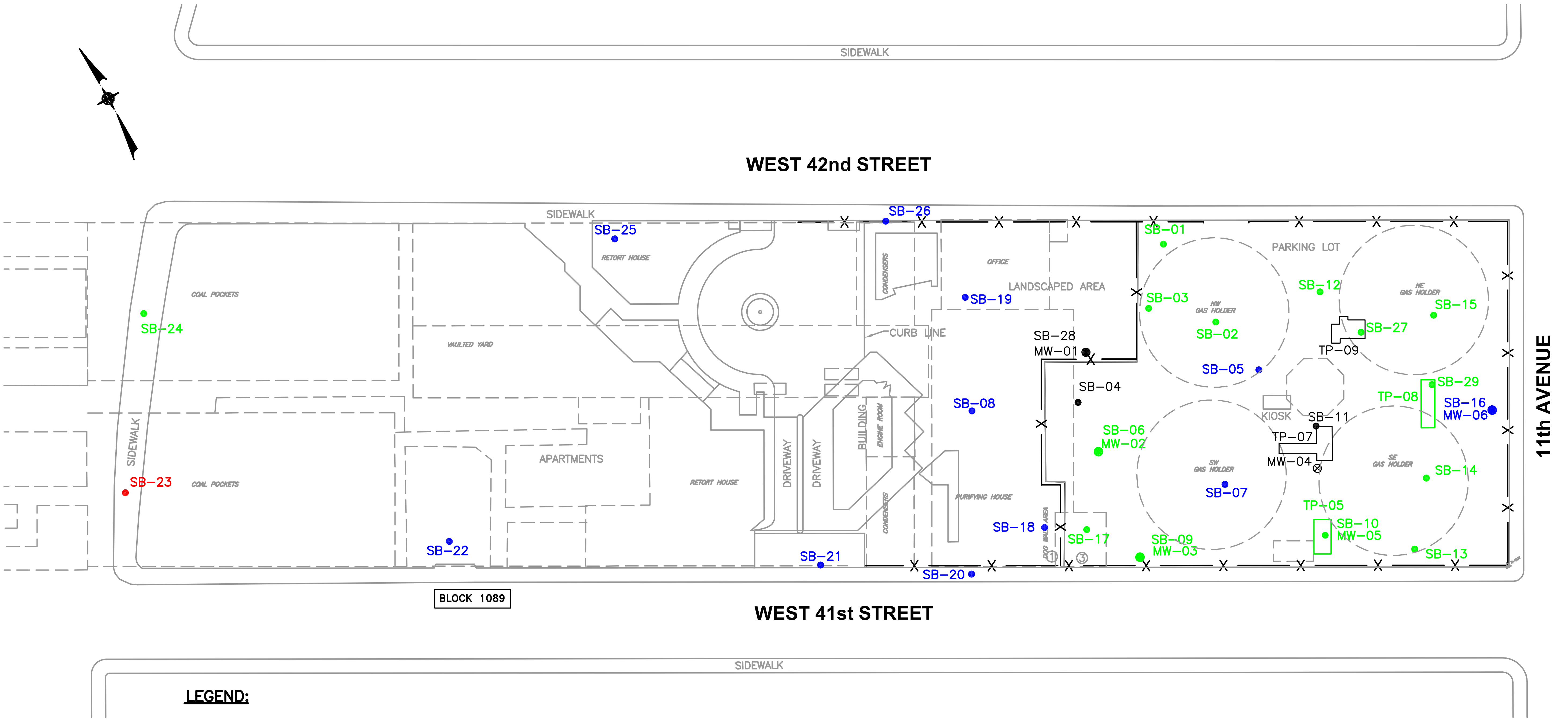

LEGEND:

SB–01 ● SOIL BORING LOCATION

TP–07 TEST PIT LOCATION

MW–1 ⊗ MONITORING WELL LOCATION

SB–23 🟥 NAPL/TAR SATURATED

SB–18 ☐ HEAVY STAINING, BLEBS, SHEENS

SB–10 🟩 LIGHT–MODERATE STAINING, AND/OR NAPHTHALENE/HYDROCARBON–LIKE ODORS

BLOCK 1089 TAX BLOCK NUMBER

① TAX NUMBER FOR PARCELS WITHIN FORMER MGP

—— TAX LOT BOUNDARY

—X— FENCE

– – – FORMER MGP STRUCTURES

0 60
SCALE IN FEET

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WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

FIELD OBSERVATIONS OF SUBSURFACE SOIL (10-20 FEET)

FIGURE 4-5

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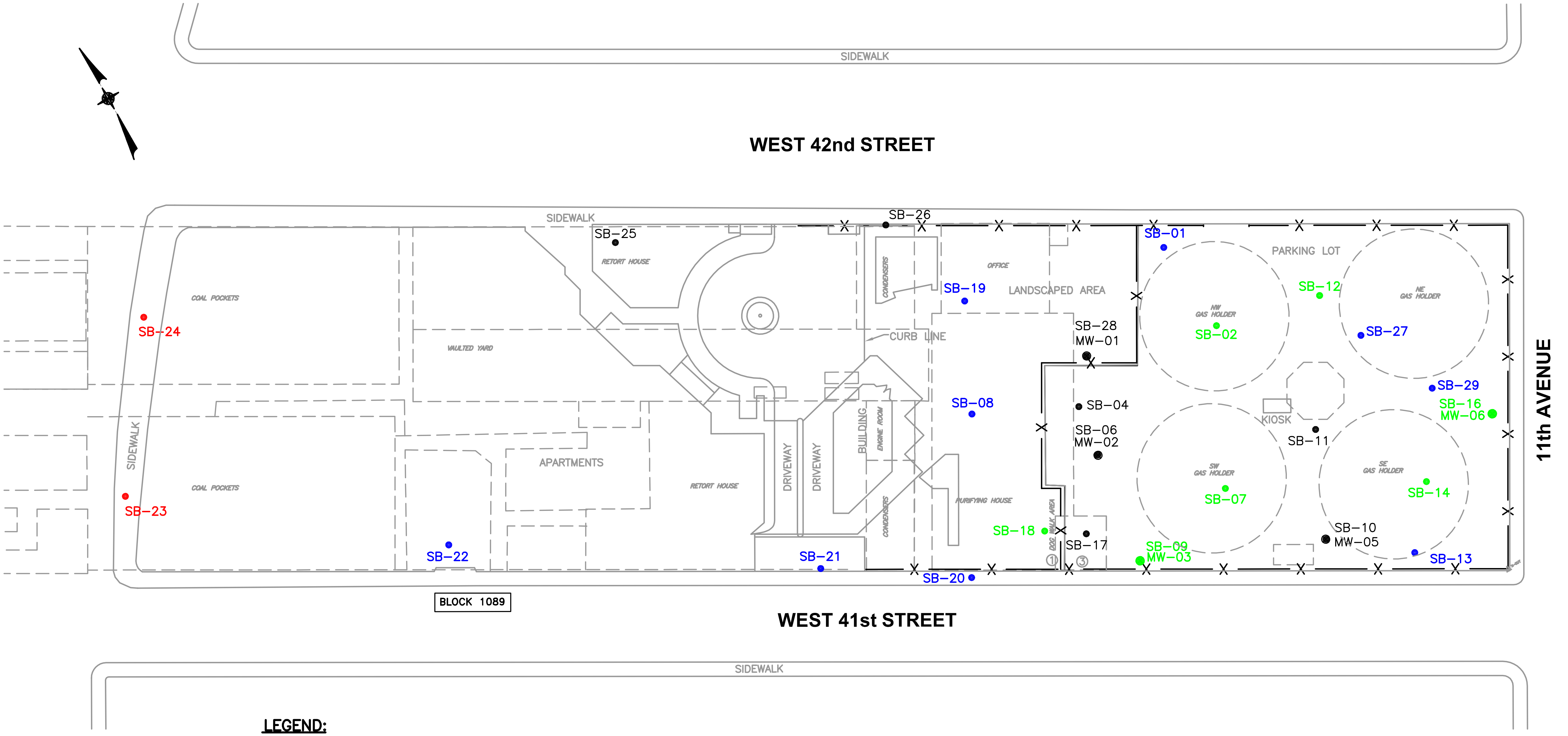

LEGEND:

SB–01 ● SOIL BORING LOCATION

MW–01 ⊗ MONITORING WELL LOCATION

SB–23 ☐ NAPL/TAR SATURATED

SB–22 ☐ HEAVY STAINING, BLEBS, SHEENS

SB–02 ☐ LIGHT–MODERATE STAINING, AND/OR NAPHTHALENE/HYDROCARBON–LIKE ODORS

BLOCK 1089 TAX BLOCK NUMBER

① TAX NUMBER FOR PARCELS WITHIN FORMER MGP

——— TAX LOT BOUNDARY

— X — FENCE

– – – FORMER MGP STRUCTURES

0 60
SCALE IN FEET

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WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

FIELD OBSERVATIONS OF SUBSURFACE SOIL (> 20 FEET)

FIGURE 4-6

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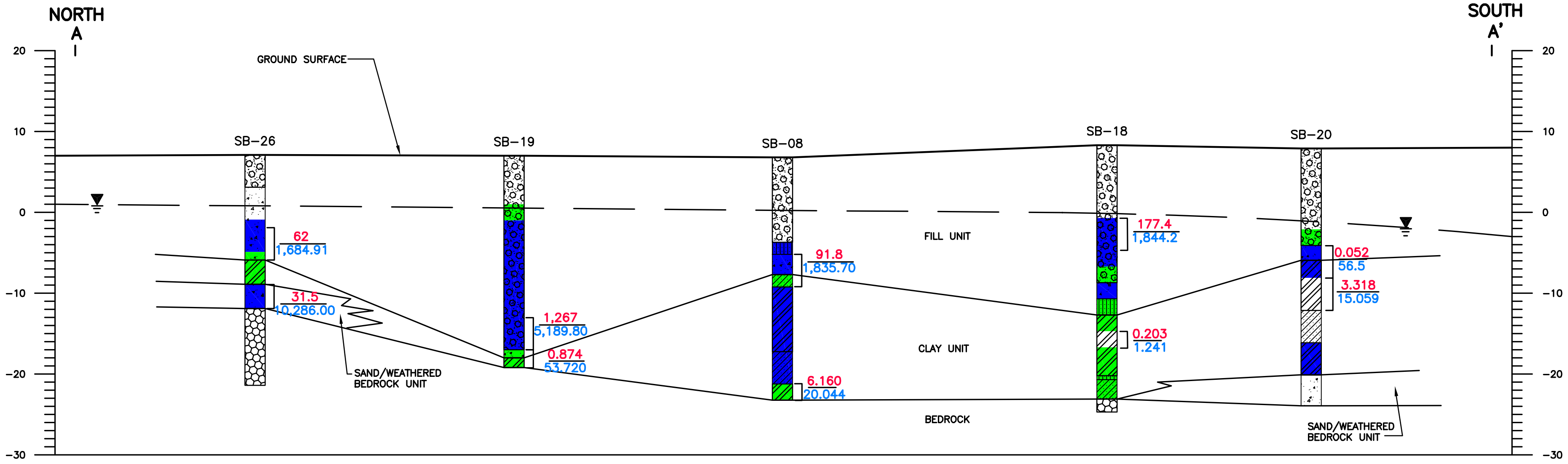
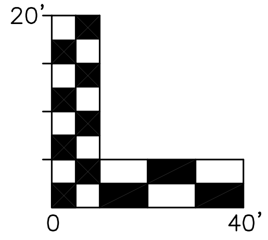
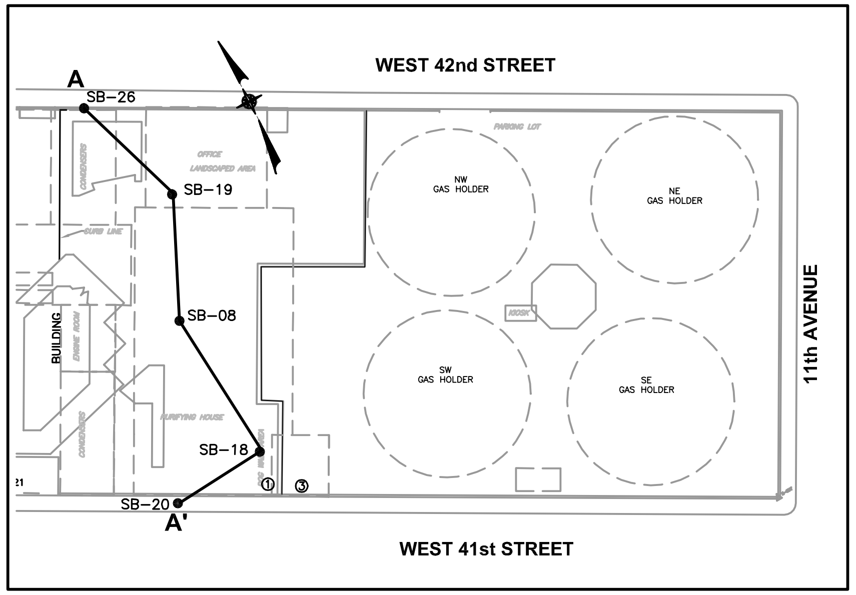


LEGEND

- FILL AND/OR TOPSOIL
- FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL
- SILT TO CLAY RICH SILT
- SILTY SAND TO SILT WITH SAND
- ▨ CLAY
- ▨ CLAY WITH SAND
- GRAVEL, GRAVEL WITH SAND
- BEDROCK
- ☐ MATERIAL NOT LOGGED
- 🟥 NAPL/TAR SATURATED
- 🟦 HEAVY STAINING, BLEBS, SHEENS
- 🟩 LIGHT−MODERATE STAINING, AND/OR NAPHTHALENE/HYDROCARBON−LIKE ODORS
- 62 / 1,684.91 — TOTAL VOC (mg/kg) / TOTAL SVOC (mg/kg) SOIL
- SOIL BORING
- WELL SCREEN FOR MONITORING WELL
- GROUND SURFACE
- STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED
- ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED





KEY MAP
SHOWING CROSS−SECTION LINE

SCALE:1"=100'

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and
Bartilucci
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CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42nd STREET FORMER MANUFACTURED GAS PLANT SITE

FIELD OBSERVATIONS OF SUBSURFACE SOIL-DEPICTED VERTICALLY IN NORTH-SOUTH GEOLOGIC CROSS SECTION A-A'

FIGURE 4-7

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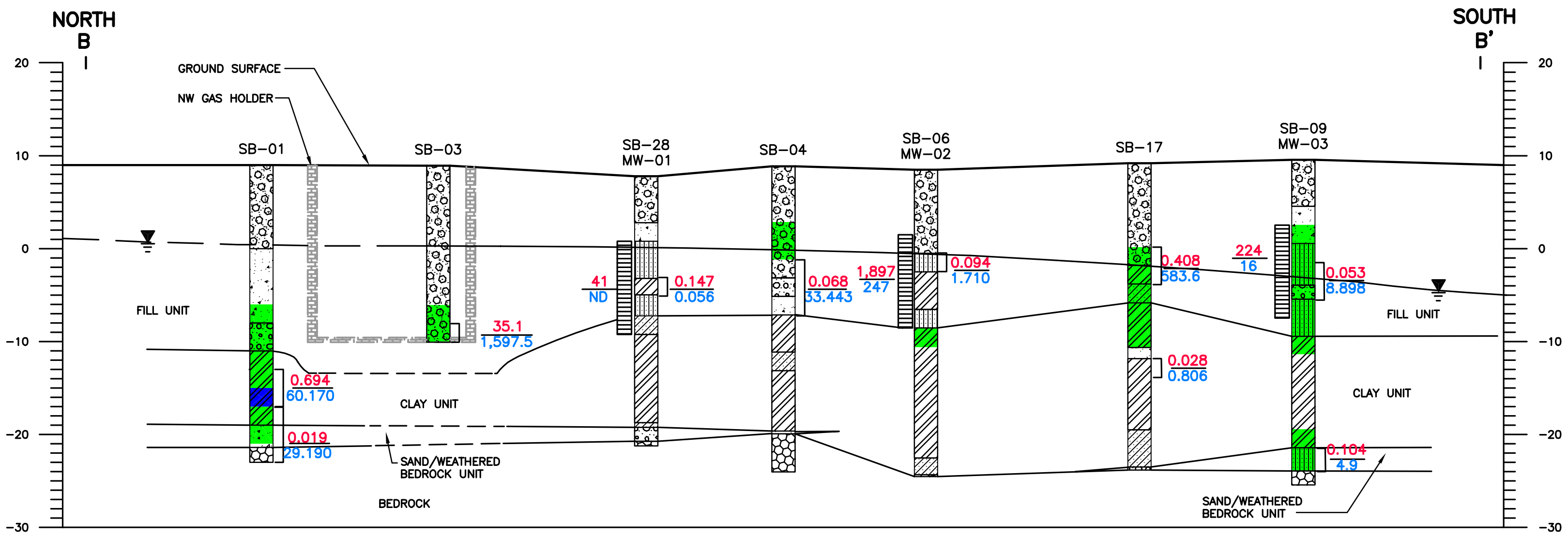


LEGEND

FILL AND/OR TOPSOIL

FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL

SILT TO CLAY RICH SILT

SILTY SAND TO SILT WITH SAND

▨ CLAY

CLAY WITH SAND

GRAVEL, GRAVEL WITH SAND

BEDROCK

☐ MATERIAL NOT LOGGED

🟥 NAPL/TAR SATURATED

🟦 HEAVY STAINING, BLEBS, SHEENS

🟩 LIGHT−MODERATE STAINING, AND/OR NAPHTHALENE/HYDROCARBON−LIKE ODORS

SOIL BORING

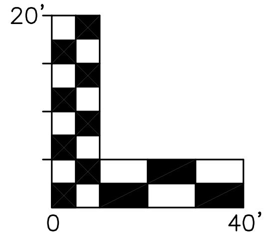
WELL SCREEN FOR MONITORING WELL

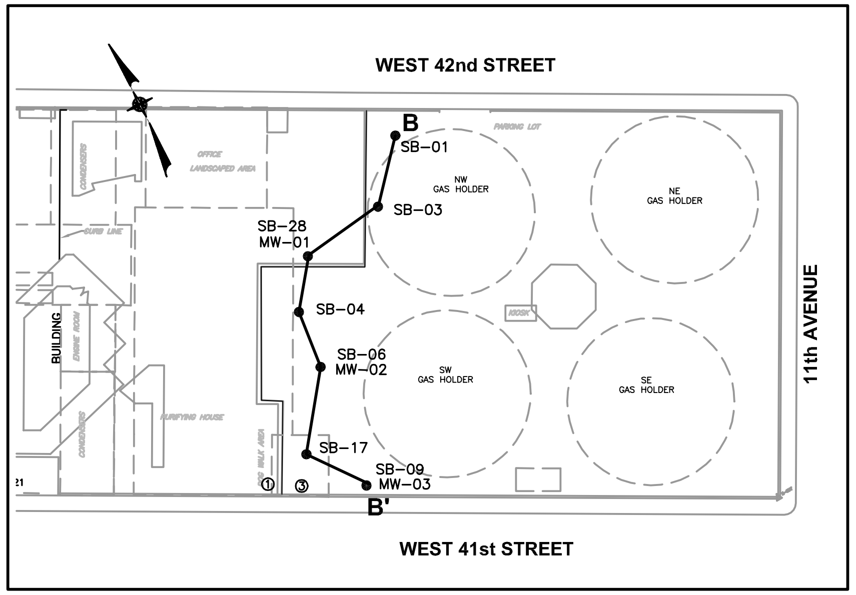
GROUND SURFACE

STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED

ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED

41 ND	TOTAL VOC (ug/L) TOTAL SVOC (ug/L)	GROUNDWATER
0.147 0.056	TOTAL VOC (mg/kg) TOTAL SVOC (mg/kg)	SOIL





KEY MAP
SHOWING CROSS−SECTION LINE

SCALE:1"=100'

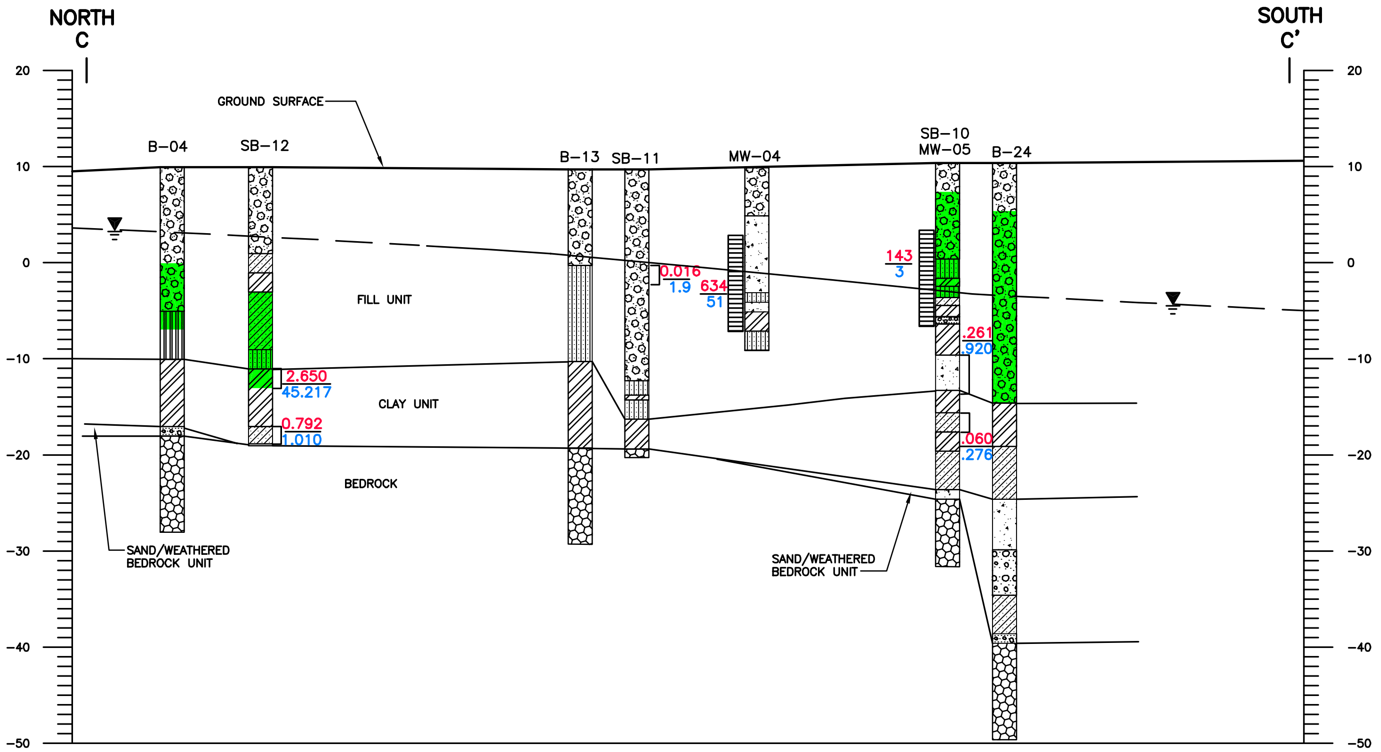
Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42nd STREET FORMER MANUFACTURED GAS PLANT SITE

FIELD OBSERVATIONS OF SUBSURFACE SOIL-DEPICTED VERTICALLY IN NORTH-SOUTH GEOLOGIC CROSS SECTION B-B'

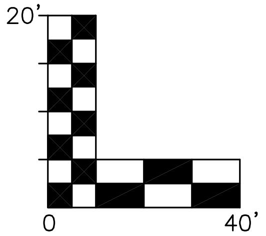
FIGURE 4-8

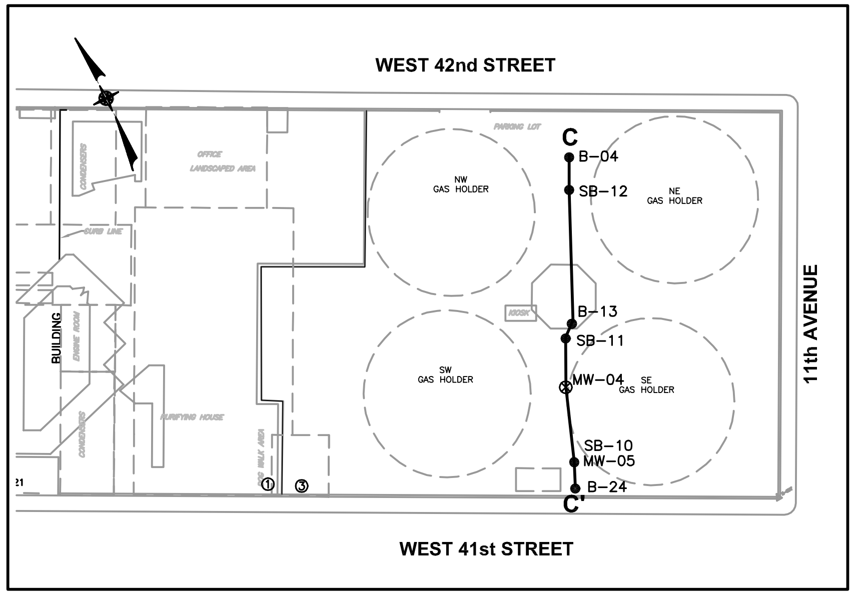
\\Nt4\cadwork\2085\FIELD-ABCD.dwg, 04/30/04 02:27:24 PM, DCortes



LEGEND

- ▨ FILL AND/OR TOPSOIL
- ▨ FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL
- ▥ SILT TO CLAY RICH SILT
- ▥ SILTY SAND TO SILT WITH SAND
- ▨ CLAY
- ▨ CLAY WITH SAND
- ▨ GRAVEL, GRAVEL WITH SAND
- ▨ BEDROCK
- ☐ MATERIAL NOT LOGGED
- 🟥 NAPL/TAR SATURATED
- 🟦 HEAVY STAINING, BLEBS, SHEENS
- 🟩 LIGHT-MODERATE STAINING, AND/OR NAPHTHALENE/HYDROCARBON-LIKE ODORS
- 634 / 51 — TOTAL VOC (ug/L) / TOTAL SVOC (ug/L) GROUNDWATER
- 2.650 / 45.217 — TOTAL VOC (mg/kg) / TOTAL SVOC (mg/kg) SOIL
- ▥ SOIL BORING
- ▤ WELL SCREEN FOR MONITORING WELL
- ——— GROUND SURFACE
- ——— — — STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED
- ▼ ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED





KEY MAP
SHOWING CROSS-SECTION LINE

SCALE:1"=100'

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42nd STREET FORMER MANUFACTURED GAS PLANT SITE

FIELD OBSERVATIONS OF SUBSURFACE SOIL-DEPICTED VERTICALLY IN NORTH-SOUTH GEOLOGIC CROSS SECTION C-C'

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and
Bartullci
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FIGURE 4-9

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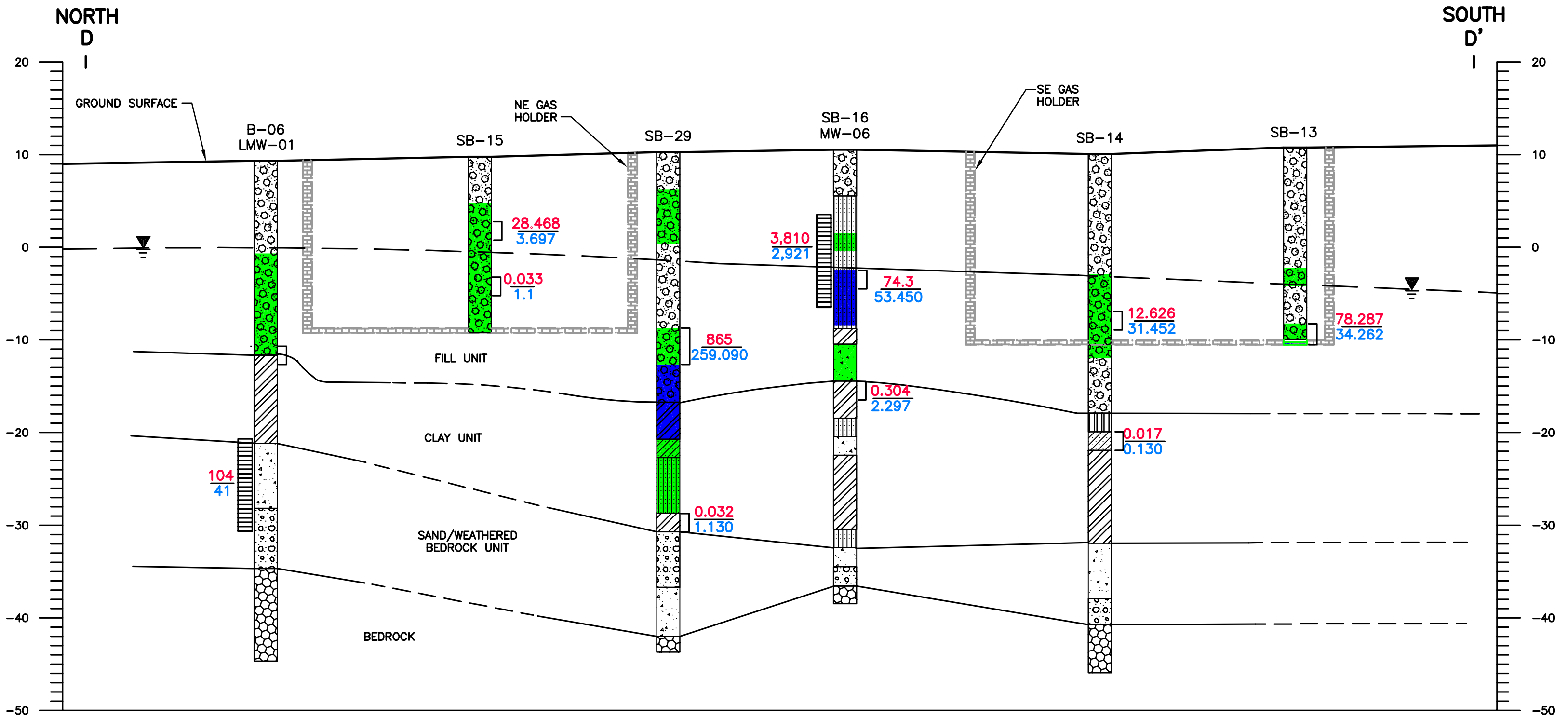


LEGEND

▨ FILL AND/OR TOPSOIL

▨ FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL

▨ SILT TO CLAY RICH SILT

▨ SILTY SAND TO SILT WITH SAND

▨ CLAY

▨ CLAY WITH SAND

▨ GRAVEL, GRAVEL WITH SAND

▨ BEDROCK

☐ MATERIAL NOT LOGGED

🟥 NAPL/TAR SATURATED

🟦 HEAVY STAINING, BLEBS, SHEENS

🟩 LIGHT-MODERATE STAINING, AND/OR NAPHTHALENE/HYDROCARBON-LIKE ODORS

SOIL BORING

WELL SCREEN FOR MONITORING WELL

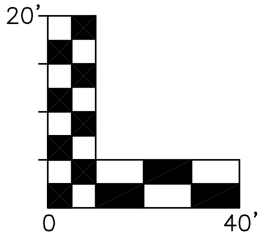
GROUND SURFACE

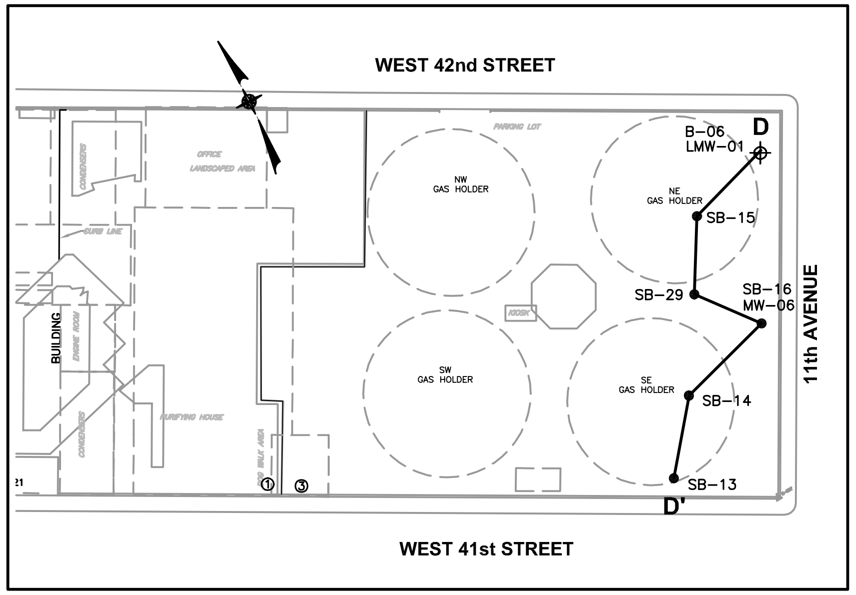
STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED

ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED

3,810 / 2,921 — TOTAL VOC (ug/L) / TOTAL SVOC (ug/L) GROUNDWATER

78.287 / 34.262 — TOTAL VOC (mg/kg) / TOTAL SVOC (mg/kg) SOIL





KEY MAP
SHOWING CROSS-SECTION LINE
SCALE:1"=100'

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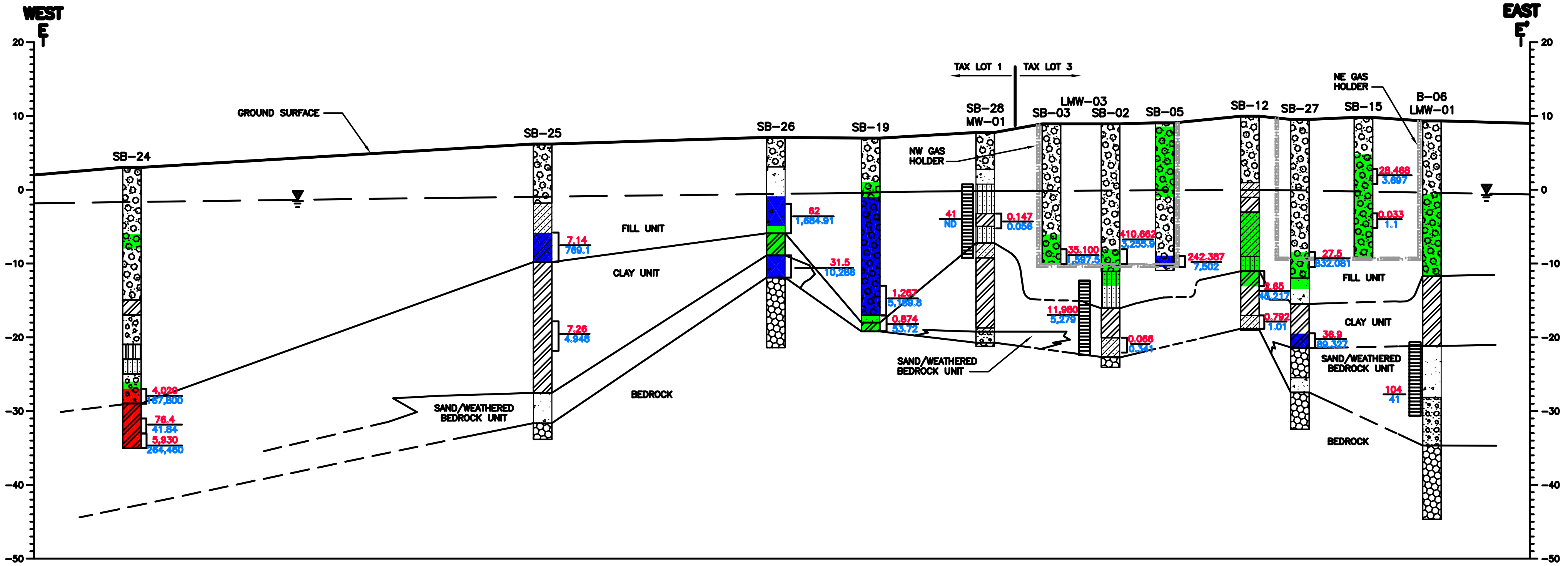
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42nd STREET FORMER MANUFACTURED GAS PLANT SITE

FIELD OBSERVATIONS OF SUBSURFACE SOIL-DEPICTED VERTICALLY IN NORTH-SOUTH GEOLOGIC CROSS SECTION D-D'

FIGURE 4-10

\\Nt4\cadwork\2085\FIELD-ABCD.dwg, 04/30/04 02:28:56 PM, DCortes



LEGEND

- ⛬ FILL AND/OR TOPSOIL
- ⬚ FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL
- ▥ SILT TO CLAY RICH SILT
- ▥ SILTY SAND TO SILT WITH SAND
- ▨ CLAY
- ▨ CLAY WITH SAND
- ⛬ GRAVEL, GRAVEL WITH SAND
- ⬡ BEDROCK
- ☐ MATERIAL NOT LOGGED
- 🟥 NAPL/TAR SATURATED
- 🟦 HEAVY STAINING, BLEBS, SHEENS
- 🟩 LIGHT-MODERATE STAINING, AND/OR NAPHTHALENE/HYDROCARBON-LIKE ODORS

41 / ND ▥ TOTAL VOC (ug/L) / TOTAL SVOC (ug/L) GROUNDWATER

0.147 / 0.056 TOTAL VOC (mg/kg) / TOTAL SVOC (mg/kg) SOIL

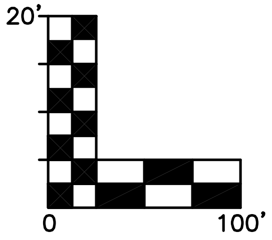
▯ SOIL BORING

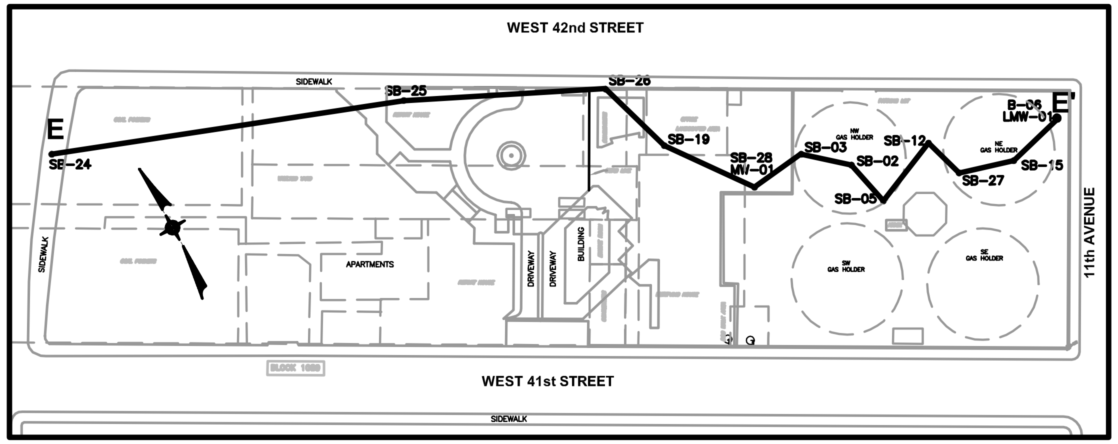
▥ WELL SCREEN FOR MONITORING WELL

——— GROUND SURFACE

——— — — — STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED

——▼— — — ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED





KEY MAP
SHOWING CROSS-SECTION LINE
SCALE:1"=150'

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A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42nd STREET FORMER MANUFACTURED GAS PLANT SITE

FIELD OBSERVATIONS OF SUBSURFACE SOIL-DEPICTED VERTICALLY IN EAST-WEST GEOLOGIC CROSS SECTION E-E'

FIGURE 4-11

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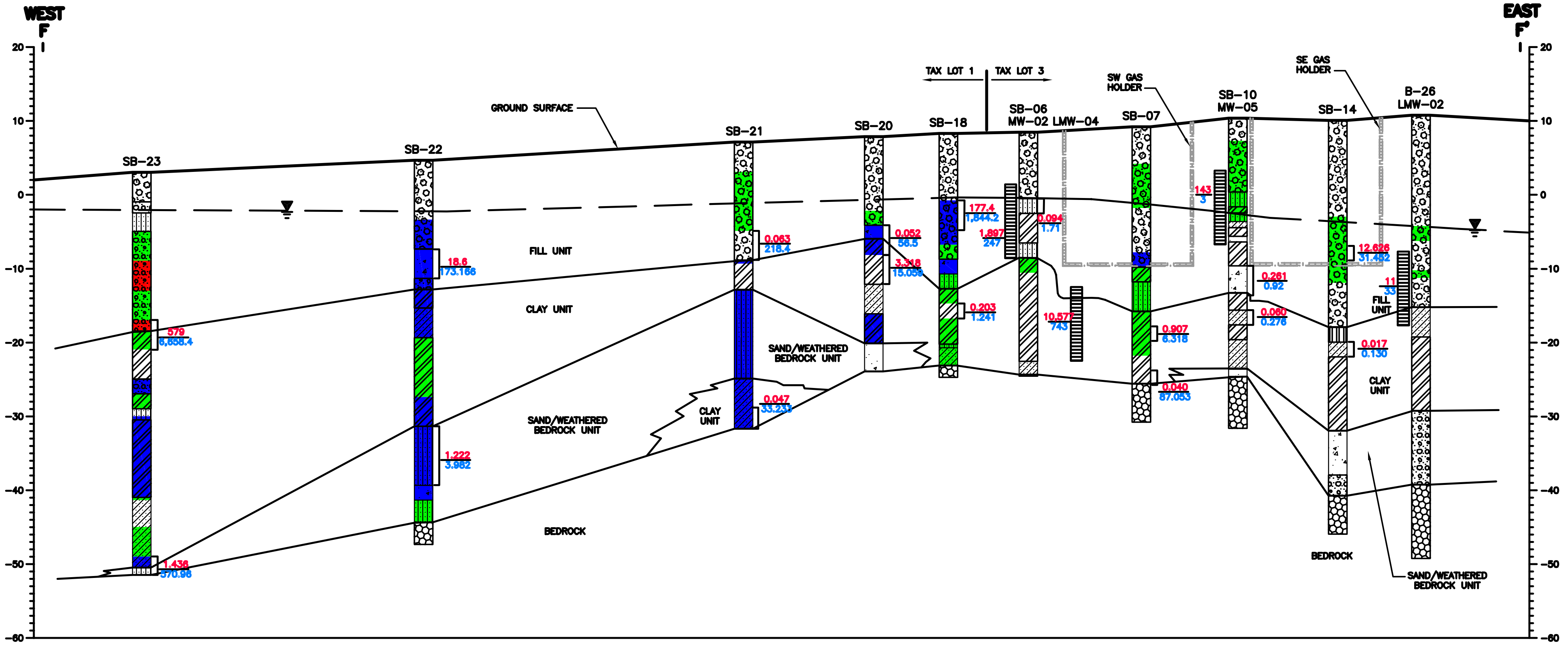


LEGEND

▨ FILL AND/OR TOPSOIL

▨ FINE, MED. TO COARSE SANDS TO FINE, MED. TO COARSE SANDS WITH GRAVEL

▨ SILT TO CLAY RICH SILT

▨ SILTY SAND TO SILT WITH SAND

▨ CLAY

▨ CLAY WITH SAND

▨ GRAVEL, GRAVEL WITH SAND

▨ BEDROCK

☐ MATERIAL NOT LOGGED

🟥 NAPL/TAR SATURATED

🟦 HEAVY STAINING, BLEBS, SHEENS

🟩 LIGHT-MODERATE STAINING, AND/OR NAPHTHALENE/HYDROCARBON-LIKE ODORS

1,897 / 247 — TOTAL VOC (ug/L) / TOTAL SVOC (ug/L) GROUNDWATER

1.436 / 570.96 — TOTAL VOC (mg/kg) / TOTAL SVOC (mg/kg) SOIL

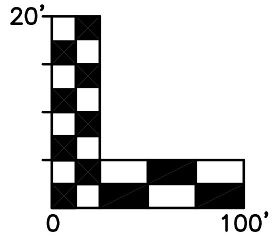
SOIL BORING

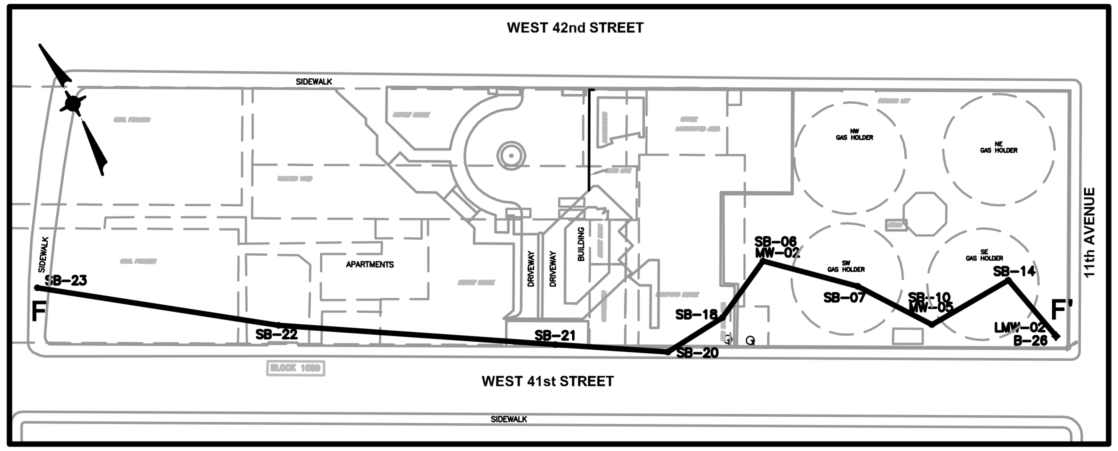
WELL SCREEN FOR MONITORING WELL

GROUND SURFACE

STRATAGRAPHIC CONTACT, DASHED WHERE INFERRED

ELEVATION OF WATER TABLE GIVEN IN FEET ABOVE MEAN SEA LEVEL. DASHED WHERE INFERRED





KEY MAP SHOWING CROSS-SECTION LINE

SCALE:1"=150'

Dvirka
and
Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42nd STREET FORMER MANUFACTURED GAS PLANT SITE

FIELD OBSERVATIONS OF SUBSURFACE SOIL-DEPICTED VERTICALLY IN EAST-WEST GEOLOGIC CROSS SECTION F-F'

FIGURE 4-12

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At boring SB-08 completed in the landscaped area, little to no evidence of MGP impacts were noted in recovered soil samples collected above a depth of 10 feet bgs. Furthermore, soil samples recovered from SB-28, also completed in the landscaped area, exhibited little to no evidence of MGP impacts to a depth of 29 feet where the boring was terminated.

Tax Lot 3

As shown on the provided figures, NAPL/tar saturated conditions were not observed in the shallow zone within Tax Lot 3. In addition, no evidence of MGP impacts was noted in shallow soil above a depth of 5 feet with the exception of light soil staining observed at SB-05 located in the NW former gas holder and naphthalene-like odors at TP-08 located in the SE former gas holder. Below 5 feet, light to moderate soil staining and/or odors were noted within the former Purifying House (TP-02) and the SW former gas holder (TP-04 and SB-07). Additionally, a sheen was noted at TP-06 located in the SE former gas holder. Finally, shallow subsurface soil at SB-15 exhibited strong hydrocarbon odors. However, soil boring SB-15 was completed downgradient of the Exxon/Mobil service station, which is a known NYSDEC petroleum spill site.

Finally, the shallow soil zone within the central portion of Tax Lot 3, as indicated by soil recovered from TP-07, SB-11 and MW-04, did not exhibit evidence of MGP impacts.

Intermediate Soil

Tax Lot 1

Figure 4-2 and the geologic cross section on Figure 4-12 indicate that soil boring SB-23, completed within the southernmost former coal pocket along 12th Avenue, exhibited NAPL/tar saturated conditions at intervals within the intermediate soil zone (10 to 20 feet bgs). The review of the cross sections provided on Figures 4-7, 4-11 and 4-12 illustrate that MGP-related impacts are most prevalent below a depth of 10 feet within Tax Lot 1 which places the majority of the impacted soil below the water table within this portion of the former MGP. MGP impacts were not observed within the intermediate soil zone in Tax Lot 1 at soil boring SB-28 located within the landscaped area. SB-24, located on 12th Avenue, exhibited only a very slight naphthalene-like odor at 10 to 11 feet bgs in the intermediate soil zone.

Tax Lot 3

As illustrated by Figure 4-2 and the geologic cross sections on Figures 4-8 through 4-12, areas of staining and/or odors were observed throughout Tax Lot 3 in the intermediate soil zone, including within and in the vicinity of all four former gas holders. However, NAPL/tar saturated conditions were not observed within the intermediate soil zone. Note that the former holder foundation bottoms are situated within the lower limit of the intermediate soil zone. In general, soil recovered immediately above the former holder foundation bottoms exhibited light to heavy tar staining, sheens and hydrocarbon and/or naphthalene-like odors. In addition, similar conditions were observed at SB-16, located between and to the east of the NE and SE former gas holders.

Deep Soil

Tax Lot 1

The review of the cross sections provided on Figures 4-7, 4-11 and 4-12 indicate that MGP impacts are not present in subsurface soil within the deep soil zone (greater than 20 feet bgs) at soil borings SB-25 and SB-26 both located along the southern sidewalk of West 42nd Street and SB-28 located within the landscaped area. It is important to note that bedrock was encountered at 20 feet during the completion of SB-26. Subsurface soil samples collected from the remaining borings completed at Tax Lot 1 exhibited evidence of MGP impacts within the deep zone with soil staining and/or odors observed as deep as the bedrock/soil interface at SB-18, SB-19, SB-21, SB-22 and SB-23. Soil borings SB-18, SB-19 and SB-21 are located in areas where the Clay Unit is relatively thin or absent.

Similar to the intermediate soil zone, NAPL/tar was observed at saturated conditions in the deep soil zone at SB-23. Furthermore, soil staining, sheens and odors were observed intermittently throughout the Clay Unit at this boring. In addition, NAPL/tar was observed at saturated conditions in the deep zone at SB-24; however, as detailed in Section 4.2.1, this boring was terminated at 38 feet in order to avoid the vertical migration of this mobile NAPL/tar.

Tax Lot 3

Note that the deep soil zone within Tax Lot 3 generally includes soil below the foundations of the former gas holders. Soil samples recovered from borings completed in Tax Lot 3 indicate MGP impacts are present within the deep soil zone below and adjacent to all former gas holders; however, NAPL/tar was not encountered at saturated levels. The most significant impacts appear to be present within the vicinity of the NW and NE former gas holders with a hydrocarbon-like odor and sheen observed to 30 feet bgs at SB-01 (located immediately northwest of the NW former holder) and a sheen and moderate naphthalene-like odor observed to a depth of 31 feet bgs at SB-27 (located within the NE former holder). At both locations, evidence of MGP impacts penetrates the Clay Unit. In addition, evidence of MGP impacts including hydrocarbon/naphthalene-like odors were observed below the SW former gas holder up to a depth of 31 feet bgs at SB-07. The SE former gas holder exhibited the least amount of MGP impacts within the deep soil zone with soil staining and odors observed to only 22 feet bgs at SB-14 immediately below the holder foundation bottom.

In general, while MGP impacts were observed in the deep soil zone within Tax Lot 3, these impacts do not appear to exceed 25 feet in depth and do not penetrate the Clay Unit at most boring locations. However, at several boring locations including SB-01, SB-07, SB-09 and SB-29, evidence of impact, including sheens and odors have been observed up to 39 feet bgs.

Finally, the deep soil zone within the central portion of Tax Lot 3, as indicated by soil samples recovered from SB-11, did not exhibit evidence of MGP impacts.

4.5 Historical Map Research Investigation

On November 20, 2003, D&B conducted a historical map research investigation to help further identify the location and extent of the former naphthalene and light oil tanks formerly located adjacent to the Hudson River bulkhead and associated with the former MGP site. Various experts on New York City history were consulted. Based on historian Ann Buttenwieser's recommendation, the research investigation began at City Hall Library located at 31 Chambers Street, New York, New York. Mrs. Buttenwieser recommended consulting the references entitled, "Department of Docks and Ferries," which are produced annually. Map years between 1901-1936 were searched; however, information related to the site and its associated naphtha/oil tanks located near Pier 81 could not be obtained. Similarly, City Hall Library's historical map files were searched; however, no relevant information regarding the site could be obtained.

Additionally, D&B visited the New York Public Library located on the corner of Fifth Avenue and 42nd Street in Manhattan, as per the recommendations of geographer Jack Eichenbaum. In the Map Department (Room 117), D&B reviewed and copied hardcopy and microfilm versions of historical maps dating from 1890-1974. In all, 5 Sanborn maps (1890-1930), 10 Bromley maps (1897-1974) and 1 Hyde map (1913) were obtained, and are provided in Appendix E.

After careful review of these historical maps, it was noted that the naphtha/oil tanks located adjacent to Pier 81 appeared on the 1926 Bromley map but were not present on the 1930 Bromley map. In addition, it was observed that the shoreline had not changed significantly within this time period (1926-1930). Based on the review of these historical maps, it is apparent that the former naphtha and oil tanks were located on-shore and not on Pier 81. Given that the shoreline appears to have changed little since the former MGP was in operation, it can be concluded that the foundations for these tanks may be present between the western side of 12th Avenue and the present day Hudson River bulkhead beneath the parking lot of commercial waterfront operations.

In addition, it appears that the naphtha/oil tanks were removed between the years 1926 and 1930. This corresponds to Parsons Site History Report, which states that “The PCS report for 1925 indicates the MGP was no longer in operation, suggesting the change in ownership corresponded with the end of the MGP’s use/life.” The Parsons report also states that the MGP was demolished in the 1920’s; however, the report does not mention the fate of the naphtha/oil tanks.

4.6 Human Health Exposure Assessment

The purpose of this exposure assessment is to determine how and when an individual might be exposed to contaminants of potential concern associated with the West 42nd Street former MGP site. A contaminant of potential concern (COPC) is any chemical detected in a medium, which could produce adverse health effects under the right conditions of dose and exposure. For exposure to occur, there must be a complete “pathway of exposure” where a person can come into contact with contaminants of potential concern. For a pathway to be complete, there must be: 1) a source or medium containing the COPC; 2) a location where human contact could take place (i.e., an exposure point); and 3) a feasible means for the COPC to enter into the person’s body. The person who could come into contact with the COPC at an exposure point is called a “receptor.” The ways in which the COPC can enter the body are called “routes of exposure.” Ingestion (by mouth), dermal (contact with skin) and inhalation (breathing into the lungs) are the routes of exposure considered in this and other human health risk assessments. Consistent with the New York State Department of Health (NYSDOH) and other regulatory agencies, this assessment considers both current and potential future exposures.

As with any exposure assessment, this assessment is not intended to predict disease outcome, but rather, is meant to be used as a tool to make decisions regarding the need for remediation or the institution of precautionary measures, such as limiting the affected area to non-residual land uses. Given the available information for this site, and keeping the purpose of the assessment in mind, the following evaluation for the West 42nd Street former MGP site is qualitative, with an emphasis on exposure assessment. Consistent with the presentation of the environmental data in Section 4.0, the exposure assessment is presented by medium of interest.

4.6.1 Surface Soil

Surface soil samples were not collected as part of the SCS due to the fact that Tax Lots 1 and 3 are currently paved with concrete or asphalt and the majority of Tax Lot 1 is currently occupied by an apartment building. While a portion of Tax Lot 1 contains a landscaped area with areas of grass sod and flower beds, the top several feet of soil used to construct these areas reportedly consists of fill from an off-site location brought in for construction. Therefore, exposure to surface soil containing site related contaminants is not expected under current site conditions.

According to information provided by the current site owner, there are plans to construct an apartment building on Tax Lot 3 in the near future. Therefore, appropriate health and safety measures will be implemented during construction activities to prevent the exposure of on-site workers to contaminants that may be present in surface soil. In addition, windblown dust and soil vapors will be controlled during the excavation activities in order to eliminate the potential exposure of off-site receptors to MGP contaminants.

However, no significant exposures to surface soils via direct contact are expected after the construction of the apartment complex due to the fact that the redevelopment plans for Tax Lot 3 reportedly call for the coverage of the majority of the property by an apartment building, which will prevent soil contact. In landscaped areas, which will not be covered by buildings, the upper 2 feet of surficial soils will reportedly be removed and replaced with 2 feet of clean soil.

4.6.2 Subsurface Soil

Subsurface soil samples were collected for chemical analysis from test pits and soil borings. The locations of these samples are shown on Figure 2-1, provided in Section 2.0. Thirty-four out of 61 of the subsurface soil samples contained VOCs (predominantly BTEX) at levels exceeding RSCOs. RSCOs for SVOCs (predominantly PAHs) were exceeded in 46 of the

61 subsurface soil samples analyzed for SVOCs. Metals and total cyanide were also detected at concentrations above RSCOs in numerous subsurface soil samples.

Based on the current site setting of Tax Lots 1 and 3, exposure to contaminated subsurface soil would not be expected for most on-site and off-site receptors. The only significant potential for exposure to the subsurface soil contaminants under current conditions is for utility/construction workers who may need to complete on-site excavations associated with the installation or repair of subsurface utilities. During excavation activities, workers could be exposed to subsurface soil contaminants through several routes of exposure, including dermal contact and inhalation.

As discussed previously, there are plans to construct an apartment building on Tax Lot 3 in the near future. The proposed building design includes the construction of a below grade garage and foundation footings that will require soil excavation to a depth of up to 15 feet below grade. As a result, excavation of subsurface soil containing relatively high concentrations of VOCs, SVOCs, metals and cyanide will be required. Therefore, appropriate health and safety measures will be implemented to prevent the exposure of on-site workers to contaminated subsurface soil during excavation and foundation construction activities. In addition, due to the proximity of the site to city sidewalks and streets, wind-blown dust and vapors will be controlled during excavation activities in order to eliminate the potential exposure of off-site receptors to MGP contaminants.

4.6.3 Groundwater

Note that as discussed in Section 2.4, the investigation of groundwater quality as part of the SCS was limited to Tax Lot 3 and, therefore, the evaluation of exposure pathways for this environmental media is limited to this portion of the site.

Groundwater sampling conducted at Tax Lot 3 has shown that site groundwater is contaminated with VOCs, SVOCs, metals and cyanide in excess of NYSDEC groundwater standards. However, under current conditions, exposure to this contaminant source is not expected given the fact that groundwater is not used for any potable or nonpotable uses. Under current site conditions, utility/construction workers may need to complete on-site excavations in order to repair or install subsurface utilities, however, on-site groundwater is approximately 8 to 14 feet below grade at Tax Lot 3 and, therefore, it is unlikely that groundwater would be encountered under these types of activities.

On-site groundwater represents a potential source of contamination to the Hudson River through discharge of groundwater to the river. As discussed in Section 1.4, the Hudson River is classified as a Class I saline surface water within the vicinity of the former MGP site and, as such, is not considered a potential source of potable water supply. Therefore, potential exposures to humans would likely be limited to recreational use of the river, primarily for boating in this reach of the Hudson River. Thus, the potential for substantial human exposure to contaminants from the site via surface water is extremely limited.

While under current conditions exposure to contaminated groundwater is not expected, the planned construction of the apartment building will require excavation below the water table. Similar to subsurface soil, on-site groundwater represents a significant contaminant source in which on-site workers could be exposed through direct dermal contact, as well as inhalation of contaminants that may volatilize from the groundwater; therefore, appropriate health and safety measures will be implemented. In addition, due to the proximity of Tax Lot 3 to city sidewalks and streets, volatilized groundwater will be controlled during excavation activities in order to eliminate the potential exposure of off-site receptors to MGP contaminants.

The construction of the apartment building within Tax Lot 3 calls for the construction of a parking garage that will be located partially below the water table. Therefore, there is a potential for contaminated groundwater or for gaseous contaminants that have volatilized from the groundwater to seep into this area after building construction. However, according to the property owner, the design of the foundation includes the installation of a vapor control/ waterproofing system to prevent this potential exposure pathway from occurring throughout the expected life of the building.

4.6.4 Air

Under current conditions, inhalation of contaminants released to the air through the volatilization of these compounds from subsurface soil and groundwater is a potential exposure pathway for on-site receptors located on Tax Lot 1 due to the fact that this property is currently used for residential purposes. However, an assessment of indoor and outdoor air was conducted at the apartment building located on Tax Lot 1 (in April of 2003) to ascertain whether air quality within the apartment buildings was being adversely affected by the subsurface contamination identified within Tax Lot 1. The report for this assessment is provided in Appendix F and was prepared by RETEC Group, Inc. (RETEC) under contract with Con Edison.

After an initial inspection of the building by RETEC, a total of three indoor air samples were collected from the ground floor of the building. Four air samples were collected from outside of the building for comparison purposes. Results indicated that the air quality was not impacted by subsurface intrusion of vapors emanating from any MGP-related material. Compounds detected in the indoor air samples were present in concentrations within the range of typical background levels for indoor air quality or were comparable to the results of the outdoor air samples.

Two compounds were detected at concentrations above the typical range for background residential indoor air (above the 95th percentile): acetone and bromomethane. These compounds were also detected in the outdoor (ambient) samples at similar concentrations. The concentrations of these compounds were detected at relatively low concentrations and at least two orders of magnitude below Occupational Safety and Health Administration (OSHA) worker guidance Permissible Exposure Limits (PELs), and below American Conference of Governmental Industrial Hygienists - Threshold Limit Values (ACGIH-TLV).

RETC concluded in the assessment that the quality of the air sampled within the apartment building at Tax Lot 3 is generally within the range expected for indoor air, and that the indoor air quality does not appear to be impacted by subsurface intrusion of vapors emanating from any MGP-related subsurface contamination. Similar exposure conditions can be assumed to be encountered at the future apartment building to be constructed on Tax Lot 3.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents a discussion of the conclusions and recommendations associated with the nature and extent of chemical constituents present at the West 42nd Street former MGP site, based on the findings of the Site Characterization Study field investigation, as well as the human health exposure assessment. Where appropriate, additional investigation activities are recommended to further delineate the nature and extent of known chemical constituents.

5.1 Tax Lot 1 - Field Investigation

Subsurface Soil

- A total of 11 subsurface soil borings were advanced on Tax Lot 1 and 22 soil samples were selected for chemical analysis. All of the subsurface soil samples selected for chemical analysis exhibited detectable levels of VOCs with the maximum total VOC concentration of 5,930 mg/kg observed in soil sample SB-24 (36-38 feet) collected along the east side of 12th Avenue immediately adjacent to the northernmost former coal pocket. SB-24 exhibited evidence of mobile tar/NAPL. As with total VOC concentrations, all of the subsurface soil samples selected for chemical analysis exhibited detectable levels of SVOCs with the maximum total SVOC concentration of 264,460 mg/kg also observed in soil sample SB-24 (36-38 feet).

- Fourteen out of 22 subsurface soil samples selected for analysis exhibited detectable levels of total cyanide. The maximum cyanide concentration of 126 mg/kg was detected in sample SB-08 (12-16 feet). Subsurface soil sample SB-08 (12-16 feet) also exhibited elevated levels of lead and mercury at concentrations of 841 and 3.2 mg/kg, respectively. Soil boring SB-08 was completed within the central portion of the landscaped area within the vicinity of the former Purifying House and exhibited a sheen and strong naphthalene-like odor.

- In general, MGP impacts were not observed in shallow subsurface soil of less than 4 feet in depth. The most significant MGP impacts, including the highest VOCs, SVOCs and metal concentrations were most prevalent in the Fill Unit below a depth of 10 feet, which places the majority of the impacted soil below the water table. However, at most locations, contaminant concentrations decrease rapidly below a depth of 24 feet. This rapid decrease in contaminant concentrations is likely due to the confining ability of the underlying Clay Unit. Exceptions to this general trend include borings SB-23 and SB-24 where NAPL/tar at saturated conditions was observed to a depth of up to 38 feet and within the Clay Unit.

- The Bedrock Unit within Tax Lot 1 was not observed to be impacted by MGP residuals.

Human Health Exposure Assessment

- Based on existing conditions and use of the site, exposure to MGP contaminants would not be expected for most on-site and off-site receptors. Currently Tax Lot 1 contains a large apartment building and the remaining land is either paved or landscaped. An assessment of indoor and outdoor air quality at Tax Lot 1 concluded that air quality is not being impacted by MGP-related subsurface contamination present at the site.
- The only potential for future exposure to MGP contamination at Tax Lot 1 is associated with utility/construction workers who may be involved with on-site excavations in support of the installation or repair of subsurface utilities within or in the vicinity of Tax Lot 1. However, health and safety measures will be implemented during these activities, to prevent exposure to subsurface soil contaminants.

Recommendations

Based on the findings described above, additional field investigation is recommended within the vicinity of Tax Lot 1, including:

- Findings of this investigation indicate that a number of potential MGP contaminant source areas are possibly located west of Tax Lot 1, including two former oil tanks and eight former naphtha storage tanks. Therefore, soil borings are recommended in this area to further delineate the western portion of the former MGP across 12th Avenue. Furthermore, additional information is needed to define the nature and extent of MGP residuals identified at soil borings SB-24 and SB-23 that were completed along the eastern sidewalk of 12th Avenue. Therefore, additional soil borings are recommended in this area.
- Installation of shallow (water table) monitoring wells are recommended within the vicinity of Tax Lot 1 in order to determine the nature and extent of chemical constituents in groundwater, determine groundwater flow direction and provide information about possible impacts to the Hudson River. In addition, deep groundwater monitoring wells screened at or near the Bedrock Unit may be warranted to assess the extent of mobile tar/NAPL in the vicinity of 12th Avenue.

The above recommendations can be undertaken independent of the construction activities currently planned for Tax Lot 3. Therefore, the development of Tax Lot 3 will not be delayed by this additional field investigation. Remedial actions for Tax Lot 1 and areas located to the west, if warranted, will be considered pending the outcome of the recommended investigations.

5.2 Tax Lot 3 - Field Investigation

Subsurface Soil

- A total of 18 soil borings and 9 test pits were advanced within Tax Lot 3 with a total of 39 subsurface soil samples selected for chemical analysis. All of the subsurface soil samples selected for chemical analysis exhibited detectable levels of VOCs with the maximum total VOC concentration of 865 mg/kg observed in soil sample SB-29 (19-23 feet) collected along the eastern edge of the site, between the northeast and southeast former MGP gas holders. All of the subsurface soil samples selected for chemical analysis exhibited detectable levels of SVOC compounds with the maximum total SVOC concentration of 12,010 mg/kg observed in soil sample TP-02 (9-9.5 feet) collected within the former Purifying House foundation walls.

- Twenty-nine out of 39 subsurface soil samples selected for analysis exhibited detectable levels of total cyanide. The maximum total cyanide concentration of 1,580 mg/kg was detected in sample SB-17 (9-13 feet). Soil boring SB-17 was completed along the western portion of Tax Lot 3 within the vicinity of the former Purifying House.

- Evidence of tar/NAPL at saturated levels was not observed in subsurface soil within Tax Lot 3. In general, MGP impacts were not observed in shallow subsurface soil of less than 5 feet in depth throughout the majority of Tax Lot 3.

- The most significant MGP impacts were observed in the Fill Unit at depths ranging from 17 to 23 feet bgs, and within and immediately adjacent to the former gas holders. Furthermore, the samples exhibiting the highest VOC concentrations were collected from immediately above the former holder bottom foundations or, in the case of SB-29, immediately outside of the former holder bottoms. Soil below and adjacent to the NW and NE former gas holders exhibited sheens and odors to a depth of up to 31 feet bgs. In addition, evidence of MGP impacts, including light to moderate odors, were observed below the SW former gas holder up to a depth of 31 feet bgs. The SE former gas holder exhibited the least amount of MGP impacts with only light to moderate staining and odors observed to 22 feet bgs.

- At most boring locations, MGP residuals do not appear to penetrate the Clay Unit within Tax Lot 3, indicating that it serves as an effective confining unit limiting the vertical migration of these contaminants. However, at several locations, including SB-01, SB-07, SB-09 and SB-29, evidence of MGP residuals were encountered within the Clay Unit. The MGP residuals and associated chemical constituents are able to penetrate the Clay Unit due to one or more of the following factors:

  - In several areas, the Clay Unit is relatively thin or absent.

  - The Clay Unit has been shown to contain silty sand lenses that can increase the vertical permeability of the Clay Unit where present.

  - In areas where NAPL/tar may have existed at saturated levels, the mobility of this material may have been sufficient to penetrate the Clay Unit.

- The Bedrock Unit was not observed to be impacted by MGP residuals within Tax Lot 3.

Groundwater

- Depth to groundwater within Tax Lot 3 ranges from 8 to 14 feet below grade, with groundwater generally flowing to the south.

- Measurable separate-phase NAPL was not detected in any of the monitoring wells; however, moderate to strong naphthalene-like odors were encountered in all the wells with the exceptions of MW-01 and MW-02. In addition, LMW-03 exhibited evidence of a slight sheen. Based on boring log information, LMW-03 appears to be located within the former NW gas holder.

- The highest total VOC and total SVOC concentrations in on-site groundwater were detected in samples collected from monitoring LMW-03 and LMW-04. As discussed above, the sample collected from LMW-03 exhibited a slight sheen and appears to be located within the former NW gas holder. Similarly, LMW-04 appears to be located within the former SW gas holder and both wells are screened well below the water table immediately above the Bedrock Unit. As discussed above, the most significant soil impacts were observed to a depth of 23 feet, well above the Bedrock Unit. Therefore, it is possible that LMW-03 and LMW-04 are serving as vertical migration pathways for contaminants within and below the former gas holders. As a result, the high concentrations of VOCs and SVOCs detected in these wells may actually be associated with the MGP impacted soil that has been identified within and below the former gas holders and not representative of true groundwater quality above the Bedrock Unit. Furthermore, LMW-03 appears to be partially screened with the relatively permeable sand/weathered Bedrock Unit and there is the potential for contaminants entering this well screen to spread horizontally into this geologic unit. However, LMW-04 appears to be fully screened in the relatively impermeable Clay Unit and horizontal migration would not be expected at this well.

- The third highest total VOC concentration and the second highest total SVOC concentration identified in on-site groundwater were detected in the groundwater sample collected from MW-06 screened at the water table between the easternmost former gas holders. In addition, based on a southerly direction of groundwater flow, MW-06 is located downgradient of an Exxon/Mobil Service Station, a known NYSDEC petroleum spill site.

- MTBE, a common gasoline additive, was detected at concentrations that exceeded NYSDEC Class GA Groundwater Standards at monitoring wells LMW-01 and MW-02. LMW-01 is located within the northeast corner of Tax Lot 3, directly downgradient of an Exxon/Mobil Service Station. Based on the review of NYSDEC records, there have been at least three petroleum spills that have occurred at this service station. In 2003, a subsurface investigation conducted at the service station on behalf of the ExxonMobil Refining and Supply Company identified up to 3 feet of free-phase petroleum in on-site monitoring wells, and an off-site BTEX groundwater plume migrating in a southerly direction towards Tax Lot 3. In addition, strong petroleum-like odors were detected emanating from the borehole during the completion of soil boring SB-15, also located downgradient of the service station. This information indicates that on-site groundwater, as well as soil vapor, is being impacted by a petroleum contaminant plume migrating from the Exxon/Mobil Service Station.

- Analysis of samples collected from the groundwater monitoring wells indicates exceedances of NYSDEC Class GA Groundwater Standards for metal concentrations within all on-site wells. Elevated cyanide concentrations were encountered in MW-02, MW-04, LMW-03 and LMW-04 with a maximum cyanide concentration of 282 ug/l observed at monitoring well MW-04 located within the central portion of Tax Lot 3.

Human Health Exposure Assessment

- Based on current conditions and use of the site, exposure to MGP contaminants would not be expected for most on-site and off-site receptors. Currently Tax Lot 3 is entirely paved and, therefore, direct exposure to subsurface contaminants would not be expected under normal conditions.

- While groundwater exhibited VOCs, SVOCs, cyanide and metals in excess of NYSDEC Class GA Groundwater Standards, direct exposure to contaminated groundwater is not expected since groundwater is not used for potable or non-potable uses. Groundwater within Tax Lot 3 represents a potential contaminant source to the Hudson River. While the Hudson River is not used as a potable water source in the vicinity of the site, it is used for recreational purposes. Therefore, there is a limited potential for the exposure of off-site receptors to site-related contaminants via a surface water exposure pathway.

- There are plans to construct an apartment building on Tax Lot 3 in the near future. Figure 5-1 provides the approximate “footprint” of the proposed apartment building along with the limits of an associated below grade parking garage and basement area. The proposed below grade garage and foundation footings will require soil excavation to a depth of up to 15 feet below grade. As a result, excavation of subsurface soil and groundwater containing relatively high concentrations of VOCs, SVOCs, metals and cyanide will be required. Therefore, appropriate health and safety measures will be implemented during excavation and foundation construction activities to prevent the exposure of on-site workers to contaminated subsurface soil and groundwater. In addition, windblown dust and soil vapors will be controlled during the excavation activities in order to eliminate the potential exposure of off-site receptors to MGP contaminants.

- As shown on Figure 5-1, the design of the apartment building within Tax Lot 3 calls for the construction of a parking garage that will be located partially below the water table. Therefore, in order to prevent contaminated groundwater or volatilized contaminants from seeping into this area, the design of the foundation includes the installation of a vapor control/waterproofing system.

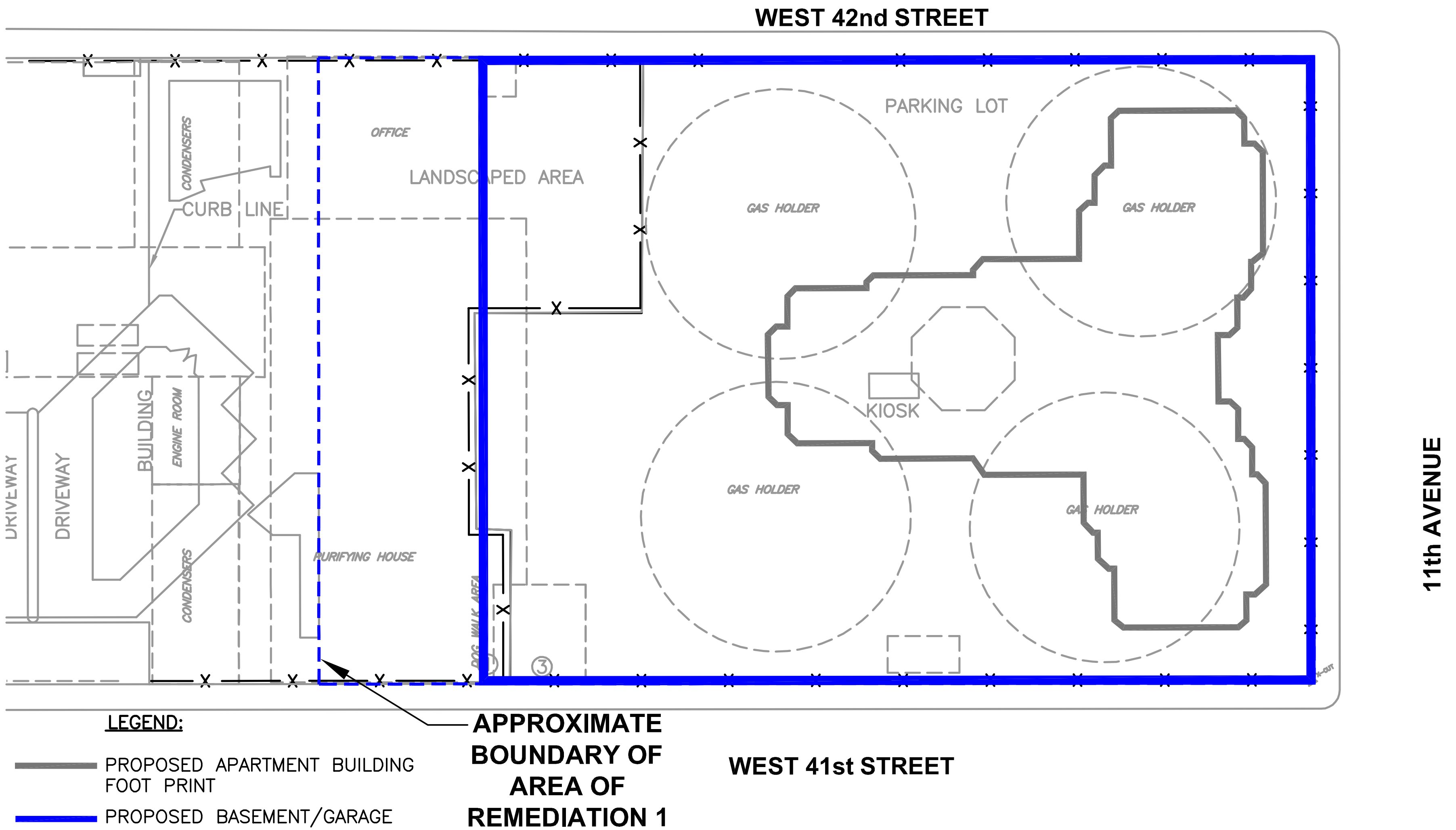
Recommendations

- Based on available soil and groundwater data and information on well construction, it appears that existing wells LMW-03 and LMW-04 could be serving as a pathway for MGP-related contaminants to vertically migrate from within and below the former holder foundations and into the underlying Clay and sand/weathered Bedrock Units. Therefore, it is recommended that these wells be abandoned in accordance with NYSDEC protocols by overdrilling the well casing and screen and sealing off the bore hole annulus with a cement bentonite grout mixture prior to construction of the new building.

- In addition, although the remedial action has not yet been determined, the construction of the apartment building on Tax Lot 3 should include:

  – A health and safety plan designed to prevent exposure of construction workers and off-site receptors to MGP-contaminated material during construction of the new apartment building. A soil management plan to ensure that, as part of the construction, all MGP-contaminated materials are characterized, handled, staged, transported and disposed in accordance with all relevant federal, state and local regulations.

  – A dewatering management plan to ensure MGP-impacted groundwater generated during dewatering operations as part of the building construction is characterized, treated and discharged in accordance with all relevant federal, state and local regulations.



LEGEND:

▬ PROPOSED APARTMENT BUILDING FOOT PRINT

🟦 PROPOSED BASEMENT/GARAGE FOOT PRINT APPROXIMATELY 11 FEET BELOW GROUND SURFACE

SOURCE: MAP PROVIDED BY CONSOLIDATED EDISON. APPROXIMATE LOCATIONS OF FORMER MGP STRUCTURES BASED ON INTERPRETATION OF SANBORN MAPS AND DRAWINGS PROVIDED BY CONSOLIDATED EDISON CONTAINED WITHIN THE WEST 42nd STREET MANUFACTURED GAS PLANT SITE HISTORY REPORT BY PARSONS, DATED AUGUST 2002 AND THE RIVER PLACE PHASE II, 42nd. STREET AND ELEVENTH AVENUE, GEOTECHNICAL ENGINEERING STUDY BY LANGAN ENGINEERING AND ENVIRONMENTAL SERVICES, P.C., DATED JULY 2000. REFERENCED CELL PLAN BY COSTAS KONDYLIS AND PARTNERS, LLP, ARCHITECTS, FOUNDATION PLAN, DRAWING NO. FS-100, FS-300

SCALE: 1"=50'

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CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET
FORMER MANUFACTURED GAS PLANT SITE

PROPOSED TAX LOT 3 CONSTRUCTION FOOT PRINT FOR APARTMENT BUILDING

FIGURE 5-1

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- Support piles for the building will be installed using methods that will minimize the potential for downward migration of MGP contamination.

- Integration of a vapor control/waterproofing system into the construction of the new apartment building.

The development of Tax Lot 3 can be conducted independent of the recommended field investigations to be completed in the vicinity of Tax Lot 1.

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APPENDIX A

FIELD PROGRAM TEST PIT/BORING LOGS AND WELL COMPLETION REPORTS

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Site Id: TP-01

Location: West 42nd Street

Purpose: Test Pit

Date(s): 08/14/03 - 08/14/03

Total Depth: 8.00'

Elevation: 8.99'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Backhoe

Contractor: Brookside

Borehole Dia.:

Remarks: Sample selected for analysis from 5-5.5'.
Total surface area of test pit = 120 sq ft.

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
	■	0-2'	0.0 ppm		0.1' asphalt, to 0.75' reinforced concrete Dark brown-black, med-coarse sandy FILL, concrete, brick, some mica schist cobbles, loose, moist
	■	2-4'	0.0 ppm		Same as above
5	■	4-6'	0.0 ppm		Same as above, wet - water encountered throughout at 8'
	■	6-8'	0.0 ppm	- - - -	Base of test pit - 8 ft.
10					Note: No structures encountered within test pit. Water encountered at 8' below grade was murky but exhibited no sheen or NAPL. 8" pipe encountered in eastern end of test pit running north-south at 4' below grade. Soil sample was collected at approximately 5' below grade from stained material along southern wall of test pit.
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Site Id: TP-02

Location: West 42nd Street

Purpose: Test Pit

Date(s): 08/12/03 - 08/13/03

Total Depth: 10.00'

Elevation: 8.66'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Backhoe

Contractor: Brookside

Borehole Dia.:

Remarks: Sample selected for analysis from 9-9.5'.
Total surface area of test pit = 334 sq ft.

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
		0-2'	0.0 ppm		0.25' asphalt
		2-4'	0.0 ppm		Dk brown, med-coarse sandy FILL w/some cobbles, crushed brick/concrete, loose, moist
5		4-6'	0.0 ppm		Dk brown, med-coarse sandy FILL w/some cobbles, brick, abandoned pipe, trace wood, loose, moist
		6-8'	0.0 ppm		Dk brown, sandy clayey FILL, some brick, wood, some black staining, slight hydrocarbon-like odor, loose-dense, moist
		8-10'	11.9 ppm		Dk brown-black, coarse sandy clayey FILL, some wood, black staining, slight hydrocarbon-like odor, dense, moist-wet
10					Base of test pit - 10 ft.

Note: Two brick walls running north-south encountered at 4' and 6' below grade approximately 5' apart. A concrete foundation was encountered between the two walls at 9.8' below grade. Dark water with a slight sheen was encountered on the concrete. A soil sample was collected on top of the concrete foundation. A 12" pipe was encountered at 3.5' below grade about 6-12" east of brick wall. I-beam located at far eastern end of excavation.

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Site Id: TP-03

Location: West 42nd Street

Purpose: Test Pit

Date(s): 08/19/03 - 08/19/03

Total Depth: 10.00'

Elevation: 9.31'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Backhoe

Contractor: Brookside

Borehole Dia.:

Remarks: Sample selected for analysis from 3.5-4'.
Total surface area of test pit = 326.5 sq ft.

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
	■	0-2'	0.0 ppm		0.25' asphalt, to 0.5' reinforced concrete
	■				Lt brown, med sandy FILL, trace pebbles and asphalt, loose, moist
	■	2-4'	0.0 ppm		Same as above, trace brick, light gray staining
	■				Same as above
5	■	4-6'	0.0 ppm		
	■	6-8'	0.0 ppm		Same as above, large boulders, cut rock w/cemented brick
	■	8-10'	0.0 ppm		Same as above, wet
10				- - - -	Base of test pit – 10 ft.
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Note: 9" thick concrete slab encountered at 3.5' below grade at northern end of the test pit approximately 12' north of the kiosk. Soil not impacted above or below the slab. 5" thick concrete wall encountered at western wall of test pit 2' below grade. Water encountered at approximately approximately 10' feet below grade. Soil sample collected at 3.5-4' below grade from above the slab.

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Site Id: TP-04

Location: West 42nd Street

Purpose: Test Pit

Date(s): 08/13/03 – 08/18/03

Total Depth: 10.00'

Elevation: 9.35'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Backhoe

Contractor: Brookside

Borehole Dia.:

Remarks: Sample selected for analysis from 8–8.5'.
Total surface area of test pit = 245 sq ft.

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
	■	0–2'	0.0 ppm		0.1' asphalt, to 0.5' concrete
	■	2–4'	0.0 ppm		Dk brown–black, med–coarse sandy FILL, some brick, concrete, wood and mica schist boulders, slight hydrocarbon–like odor, loose, moist
5	■	4–6'	3.3 ppm		Same as above, strong hydrocarbon–like odor, wet
	■	6–8'	1.9 ppm		Dk brown–black, m–c sandy FILL, scattered wood, brick conglomerate, some concrete and mica schist boulders, strong HC–like odor, loose, wet
	■	8–10'	10 ppm		Dk brown–black, m–c sandy FILL, wood, some brick, concrete and mica schist boulders, some staining, strong hydrocarbon–like odor, loose, wet
10					Base of test pit – 10 ft.
15					Note: A pipe with wires was encountered at approximately 2.8' below grade. A 2x8' board was encountered at 4' below grade at easternmost end of test pit and exhibited a strong hydrocarbon–like odor and a PID reading of 191 ppm. Murky water encountered at eastern end of test pit at 8–10' below grade with no sheen or NAPL. Soil sample collected at 8–8.5' below grade from stained soil around wood debris at eastern end of test pit.
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Site Id: TP-05

Location: West 42nd Street

Purpose: Test Pit

Date(s): 08/20/03 - 08/20/03

Total Depth: 11.50'

Remarks: Sample selected for analysis from 11-11.5'.
Total surface area of test pit = 200 sq ft.

Elevation: 10.27'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Backhoe

Contractor: Brookside

Borehole Dia.:

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
		0-2'	0.0 ppm		0.7' concrete Brown, m-c sandy FILL, trace concrete, brick, pebbles, loose, moist
		2-4'	3.0 ppm		Same as above, weak naphthalene-like odor, dense Same as above
5		4-6'	4.0 ppm		Same as above
		6-8'	8.0 ppm		Same as above
		8-10'	11 ppm		Same as above
10		10-11.5'	12 ppm		Base of test pit - 11.5 ft.
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Note: Wall comprised of wood sheeting encountered at easternmost end of test pit. Naphthalene-like odor from excavation and soil pile.

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Site Id: TP-06

Location: West 42nd Street

Purpose: Test Pit

Date(s): 08/21/03 - 08/22/03

Total Depth: 10.00'

Elevation: 10.62'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Backhoe

Contractor: Brookside

Borehole Dia.:

Remarks: Sample selected for analysis from 9.5-10'.
Total surface area of test pit = 140 sq ft.

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
	■	0-2'	0.0 ppm		0.1' asphalt, to 0.5' concrete Br-bk, m-c sandy FILL, trace brick, concrete, pebbles, loose, moist-dry
	■	2-4'	0.0 ppm		Brown, medium-coarse sandy FILL, some brick, trace concrete and pebbles, loose, moist
5	■	4-6'	0.0 ppm		Same as above
	■	6-8'	0.0 ppm		Same as above
	■	8-10'	15 ppm		Black, medium-coarse sandy silty FILL, trace brick, concrete and boulders, slight hydrocarbon-like odor, slight sheen on water, dense, wet
10					Base of test pit - 10 ft.
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Note: Horizontal brick wall encountered throughout southwest portion of test pit at 2' below grade. Wall assumed to be top of collapsed holder wall. Steel pipe encountered at southern end of test pit, east of brick wall.

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Site Id: TP-07

Location: West 42nd Street

Purpose: Test Pit

Date(s): 08/19/03 - 08/20/03

Total Depth: 10.50'

Elevation: 9.58'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Backhoe

Contractor: Brookside

Borehole Dia.:

Remarks: Sample selected for analysis from 10-10.5'.
Total surface area of test pit = 312 sq ft.

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
	■	0-2'	0.0 ppm		0.25' asphalt Brown, medium-coarse sandy FILL, some brick, concrete, pebbles and boulders, brick layer at 1-2', loose, moist
	■	2-4'	0.0 ppm		Same as above, no brick layer
5	■	4-6'	0.0 ppm		Black, medium-coarse sandy FILL, peat, some clay and organic material, some brick, pebbles, loose-dense, moist-wet
	■	6-8'	0.0 ppm		Same as above, wet
10	■	8-10.5'	0.0 ppm		Base of test pit - 10.5 ft.
15					Note: Brick wall encountered at southern end of test pit running from northeast to southwest with an apparent southeast bend. A concrete foundation was encountered south and above the brick wall. 12" metal pipe located just outside the brick wall, vertical in direction. Top was removed and pipe was observed to be filled with water. An observation sample of the water indicated a strong naphthalene-like odor, however, little to no sheen and no NAPL was observed. Soil sample was collected at 10-10.5' below grade next to the brick wall.
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Site Id: TP-08

Location: West 42nd Street

Purpose: Test Pit

Date(s): 08/21/03 - 08/21/03

Total Depth: 11.00'

Elevation: 10.31'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Backhoe

Contractor: Brookside

Borehole Dia.:

Remarks: Sample selected for analysis from 10.5-11'.
Total surface area of test pit = 224 sq ft.

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
	■	0-2'	0.0 ppm		0.7' concrete Br, med-coarse sandy FILL, trace brick, boulders, concrete, loose, moist
	■	2-4'	0.0 ppm		Same as above, pipe debris
5	■	4-6'	82.9 ppm		Brown-gray, med-coarse sandy FILL, trace brick, boulders, concrete, staining, strong naphthalene-like odor, loose-dense, wet
	■	6-8'	36.5 ppm		Brown-gray, silty fine-coarse sandy FILL, trace brick, boulders, concrete staining, strong naphthalene-like odor, loose-dense, wet
	■	8-10'	85.5 ppm		Same as above
10	■	10-11'	99 ppm		Same as above
				- - - -	Base of test pit - 11 ft.
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25					

Note: Concrete wall along western boundary of test pit was encountered 1' below grade. A brick wall was located in the central portion of the test pit up to 3' below grade running east-west. 4" steel pipe encountered 2.5' below grade at both northernmost and southermost ends of test pit.

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Site Id: TP-09

Location: West 42nd Street

Purpose: Test Pit

Date(s): 08/19/03 – 08/19/03

Total Depth: 10.50'

Remarks: Sample selected for analysis from 10–10.5'
Total surface area of test pit = 224.5 sq ft.

Elevation: 9.47'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Backhoe

Contractor: Brookside

Borehole Dia.:

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
	■	0–2'	0.0 ppm		0.7' concrete
	■	2–4'	0.0 ppm		Brown–black, medium–coarse sandy FILL, some brick, concrete and boulders, loose, moist
5	■	4–6'	0.0 ppm		Same as above, murky water rushed into excavation
	■	6–8'	0.0 ppm		Same as above, wet from water within excavation
	■	8–10.5'	0.0 ppm		Same as above
10	■			– – – –	Base of test pit – 10.5'
					Note: No structures found within test pit.
15					
20					
25					

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Site Id: SB-01

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/02/03 - 09/02/03

Total Depth: 32.00'

Elevation: 8.99'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Hand Auger from 0-5' HSA from 5-32'

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Samples selected for analysis at 22-26' and 26-32'. Unable to obtain PID readings due to heavy precipitation.
WH:Weight of Hammer
HSA:Hollow Stem Auger

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.8' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'		18 8 8 7		Brown, fine-medium sandy FILL, trace brick fragments, wet
		7-9'		9 8 6 7		Same as above
10		9-11'		7 7 9 5		Brown, medium-coarse SAND, trace schist fragments, wet
		11-13'		13 6 3 3		Same as above from 11-11.5', to brown-black, medium-coarse SAND, some schist fragments, loose, wet
		13-15'		WH WH 1 1		Brown-black, medium-coarse SAND, some schist fragments, loose, wet
15		15-17'		3 2 2 9		Same as above, slight hydrocarbon-like odor in tip of spoon
		17-19'		9 >100		Black, coarse GRAVEL, schist fragments, some coarse sand, strong hydrocarbon-like odor, wet
						No recovery (boulder from 19-20')
20		20-22'		32 30 17 11		Black, silty CLAY, some wood and peat, slight hydrocarbon-like odor, dense, wet
		22-24'		17 11 8 6		Black, silty CLAY, some peat, trace wood, slight hydrocarbon-like odor, dense, wet
25		24-26'		WH 1 1 2		Black, silty CLAY, slight sheen, slight hydrocarbon-like odor, dense, wet
		26-28'				Gray, CLAY, slight hydrocarbon-like odor, dense, wet
		28-30'		12 12 21 71		Brown, coarse SAND, some rock fragments, slight hydrocarbon-like odor, loose, wet

Location: West 42nd Street

Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-01

Total Depth: 32.00'

Borehole Dia.: 4.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		30–32'		6 8 >100		Brown, coarse SAND, some schist, loose, wet (bedrock at 30.4') Base of boring – 30.4 ft.
35						
40						
45						
50						
55						
60						
65						

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Site Id: SB-02

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/03/03 - 09/22/03

Total Depth: 33.00'

Elevation: 8.93'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: HA from 0-5' HSA from 5-19' MR 19-33'

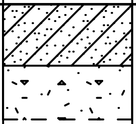
Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Samples selected for analysis at 17-19' and 29-31'. Unable to obtain PID readings due to heavy precipitation.
WH:Weight of Hammer HA:Hand Auger
HSA: Hollow Stem Auger MR:Mud Rotary

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.2' asphalt, to 0.75' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'		6 4 24 10		Dark brown, coarse sandy FILL, trace brick fragments, loose, moist
		7-9'		8 14 11 9		Same as above, trace mica-schist fragments
10		9-11'		1 2 1 2		Dark brown, medium sandy FILL, loose, moist
		11-13'		2 6 4 4		Same as above, wet
		13-15'		3 3 2 2		Black, fine sandy FILL, some brick, dense, wet
15		15-17'		2 2 4 2		Same as above
		17-19'	800 ppm	WH WH 2 49		Black, silty FILL w/fine sand, trace concrete, slight-moderate naphthalene-like odor, dense, wet (gas holder foundation at 19')
20		20-22'	92.2 ppm	4 9 25 50		Gray-black, coarse SAND, some silt, some wood, strong naphthalene-like odor, dense, wet
		23-25'		WH 1 2 1		No recovery
25		25-27'	0.2 ppm	WH		Gray, CLAY, dense, wet
		27-29'	0.0 ppm	WH WH 1 3		No recovery, trace shells on split spoon
		29-31'	0.0 ppm	9 12		Gray, fine SAND, some silty clay, loose, wet

Location: West 42nd Street	Site Id: SB-02
Purpose: Soil Boring	Total Depth: 33.00'
Consulting Firm: Dvirka & Bartilucci	Borehole Dia.: 4.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		31-33'	0.0 ppm	24 55 90 >100		Gray, coarse SAND and GRAVEL, some weathered bedrock, loose, wet (bedrock at 31.6') Base of boring - 31.6 ft.
35						
40						
45						
50						
55						
60						
65						

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Site Id: SB-03

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/04/03 - 09/05/03

Total Depth: 19.00'

Elevation: 8.93'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Hand Auger from 0-5' HSA from 5-19'

Contractor: Jersey Boring

Borehole Dia.: 6.25in

Remarks: Sample selected for analysis at 17-19'.
SB-03 was stopped at 19' (bottom of gas holder)
as per work plan, but was continued as SB-28
downgradient and within the landscaped area.
WH:Weight of Hammer

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.8' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'	0.0 ppm	3 3 3 3		Brown, medium-coarse sandy FILL, some mica, loose, moist
		7-9'	3.8 ppm	7 5 9 7		Brown, medium-coarse sandy FILL, some mica schist fragments, dense, moist
10		9-11'	0.0 ppm	17 10 6 7		Brown-gray, coarse sandy FILL, some mica schist fragments, dense, wet
		11-13'	0.0 ppm	14 4 4 5		Dark brown, coarse sandy FILL, trace pebbles, loose, wet
		13-15'	0.0 ppm	2 2 2 2		Dark brown, medium sandy FILL, mica fragments, loose, wet
15		15-17'	0.0 ppm	2 1 1 1		Gray-black, silty sandy FILL, strong hydrocarbon-like odor, loose, wet
		17-19'	1440 ppm	1 4 >50		Dk brown-gray, silty sandy FILL from 17-18.2', strong hydrocarbon-like odor, loose, to black, silty FILL w/fine sand, trace concrete in tip, slight-moderate naphthalene-like odor, dense, wet
						Base of boring - 19 ft. (gas holder foundation at 19')
20						
25						

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Site Id: SB-04

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/18/03 - 09/18/03

Total Depth: 32.90'

Elevation: 8.89'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Hollow Stem Auger

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Sample selected for analysis at 10-16'. Completed within TP-02. Moved 13' south of its original proposed location to have equidistant locations along the Purifier House east wall.
WH:Weight of Hammer

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-10'	0.0 ppm			0.25' asphalt Dk brown, med-coarse sandy FILL w/some cobbles, crushed brick/concrete, loose, moist
			0.0 ppm			Dk brown, med-coarse sandy FILL w/some cobbles, brick, abandoned pipe, trace wood, loose, moist
5			0.0 ppm			Dk br, sandy clayey FILL, some brick, wood, some black staining, weak odor, loose-dense, moist
			0.0 ppm			Dk br-black, coarse sandy clayey FILL, some wood, black staining, weak odor, dense, moist-wet
			11.9 ppm			
10		10-12'	0.1 ppm	1 1 2 5		Brown, coarse sandy FILL, some brick fragments, brick in tip of spoon, loose, wet
		12-14'	0.1 ppm	6 7 >100		Black, GRAVEL w/wood, loose, wet
15		14-16'	0.0 ppm	8 7 6 7		Black, medium-coarse SAND, some wood, trace silt, dense, wet
		16-18'	0.0 ppm	4 3 3 2		Gray-black, CLAY, some silt, dense, wet
		18-20'	0.0 ppm	WH WH 2 3		Same as above, trace seashells
20		20-22'	0.2 ppm	WH WH 2 2		Gray, medium sandy CLAY, trace seashells, dense, wet
		22-24'	0.0 ppm	WH		Gray, silty CLAY, trace seashells, dense, wet
25		24-26'	0.0 ppm	WH WH 3 3		Same as above
		26-28'	0.0 ppm	WH		Same as above
		28-30'	0.0 ppm	WH >100		Same as above from 28-28.5', to gray-bk, coarse SAND w/mica schist fragments, loose, wet (bedrock at 28.8')

Location: West 42nd Street

Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-04

Total Depth: 32.90'

Borehole Dia.: 4.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
					▨	Mica schist in rock core
						Base of boring – 32.9 ft.
35						
40						
45						
50						
55						
60						
65						

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Site Id: SB-05

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/09/03 - 09/09/03

Total Depth: 20.00'

Elevation: 9.06'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Hollow Stem Auger

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Sample selected for analysis at 18-19.5'. SB-05 was moved from its original proposed location to within TP-03 in order to avoid the kiosk. Split spoon sampling started at 10'. WH:Weight of Hammer

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-10'	0.0 ppm			0.25' asphalt, to 0.5' reinforced concrete
						Lt brown, medium sandy FILL, trace pebbles and asphalt, loose, moist
			0.0 ppm			Same as above, trace brick, light gray staining
						Same as above
5			0.0 ppm			
						Same as above, large boulders, cut rock w/cemented brick
			0.0 ppm			
						Same as above, wet
			0.0 ppm			
10		10-12'	0.0 ppm	WH WH 4 2		Brown, coarse sandy FILL, trace mica, loose, wet
		12-14'	0.0 ppm	WH 1 13 11		Brown-black, coarse sandy FILL, trace schist, dense, wet
15		14-16'	0.0 ppm	1 2 4 2		Brown, coarse-medium sandy FILL, loose, wet
		16-18'	0.0 ppm	8 48 21 18		Same as above from 16-16.5', brick from 16.5-17', wet
		18-20'	299 ppm	3 4 5 >100		Black, c sandy FILL, some brick, sheen, strong naphthalene-like, odor loose, wet (gas holder foundation at 19.5')
20						Base of boring - 19.5 ft.
25						

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Site Id: SB-06

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/09/03 - 09/09/03

Total Depth: 33.00'

Elevation: 8.47'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Hand Auger from 0-5' HSA from 5-33'

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Sample selected for analysis at 9-11'.
WH:Weight of Hammer
HSA:Hollow Stem Auger

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.25' asphalt, to 0.75' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'	0.1 ppm	10 7 5 3		Light brown, fine-medium sandy FILL, trace concrete, loose, dry
		7-9'		4 4 6 4		No recovery
10		9-11'	1.5 ppm	3 10 8 4		Black, silty SAND, dense, wet
		11-13'	1.8 ppm	WH		Gray, CLAY, moderately plastic, moist
		13-15'	5.3 ppm	WH 7		Gray-black, CLAY, dense, moist
15		15-17'	2.5 ppm	1 3 4 6		Black, silty SAND, trace mica, wet
		17-19'	4.8 ppm	3 3 3 3		Black, silty CLAY, trace mica schist fragments, slight naphthalene-like odor, wet
20		19-21'	3.5 ppm	WH 1 2 2		Black, silty CLAY from 19-20.8', loose, wet, to gray, CLAY from 20.8-21', dense, wet
		21-23'	2.0 ppm	WH		Gray, CLAY, dense, wet
		23-25'	0.5 ppm	WH		Same as above
25		25-27'	0.2 ppm	WH		Same as above, trace seashells
		27-29'	0.1 ppm	WH		Same as above
		29-31'	0.2 ppm	WH		Gray, silty CLAY, moderately plastic, wet

Location: West 42nd Street

Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-06

Total Depth: 33.00'

Borehole Dia.: 4.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
	■	31–33'	0.2 ppm	3 3 5 9 11 >50	▨	Gray, sandy CLAY, some mica schist, loose, wet (bedrock at 32.8') Base of boring – 32.8 ft.
35						
40						
45						
50						
55						
60						
65						

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Site Id: SB-07

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/03/03 - 09/04/03

Total Depth: 40.00'

Elevation: 9.22'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: HA from 0-5' HSA from 5-35' RC 35-40'

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Samples selected for analysis at 27-29' and 33-35'. Unable to obtain PID readings throughout most of boring due to heavy precipitation.
WH:Weight of Hammer HA:Hand Auger
HSA:Hollow Stem Auger RC:NX Rock Core

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.5' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'		1 6 9 5		Black, silty FILL w/fine sand and clay, slight hydrocarbon-like odor, dense, wet
		7-9'		4 1 4 6		Black, silty FILL w/fine sand, slight hydrocarbon-like odor, dense, wet
10		9-11'		4 21 8 4		Same as above, some schist fragments from 9.7-9.8'
		11-13'		WH		Gray, silty clayey FILL, loose, wet
		13-15'		WH 2 4 1		Gray, silty FILL w/fine sand, loose, wet
15		15-17'		WH WH 3 2		Gray, silty FILL w/fine-coarse sand, loose, wet
		17-19'		1 2 2 76		Same as above, w/black tar-like band at bottom of split spoon (gas holder foundation at 18.5')
20		19-21'		2 1 1 3		Gray, silty CLAY, strong hydrocarbon-like odor, dense, wet
		21-23'	23 ppm	17 18 5 6		Gray, silty SAND, trace wood, slight-moderate naphthalene-like odor, dense, wet
		23-25'		1 1 2 1		No recovery
25		25-27'	38 ppm	WH WH 1 1		Gray, CLAY, trace wood, slight naphthalene-like odor, wet
		27-29'	41 ppm	1 2 1 1		Gray, silty CLAY, trace wood, slight naphthalene-like odor, loose, wet
		29-31'		1/1' 1		Same as above

Location: West 42nd Street

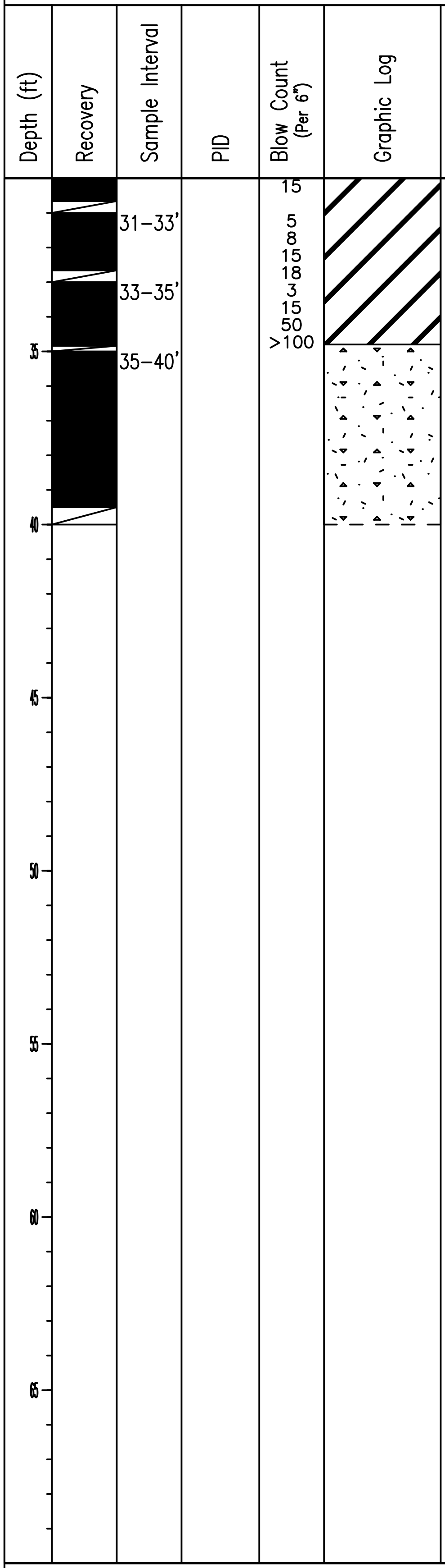
Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-07

Total Depth: 40.00'

Borehole Dia.: 4.25in



Material Description

Gray, CLAY, trace wood, trace weathered bedrock, dense, wet

Gray, CLAY from 33–34.5', GRAVEL (mica schist fragments) from 34.5–34.8', dense, wet (bedrock at 34.8')

(NX Rock Core from 35–40')

Dark gray, mica schist from 35–35.8', to milky white, pegmatite from 35.8–39.5'

Base of boring – 39.5 ft.

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Site Id: SB-08

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 10/02/03 - 10/02/03

Total Depth: 30.00'

Elevation: 6.78'

Datum: Mean Sea Level

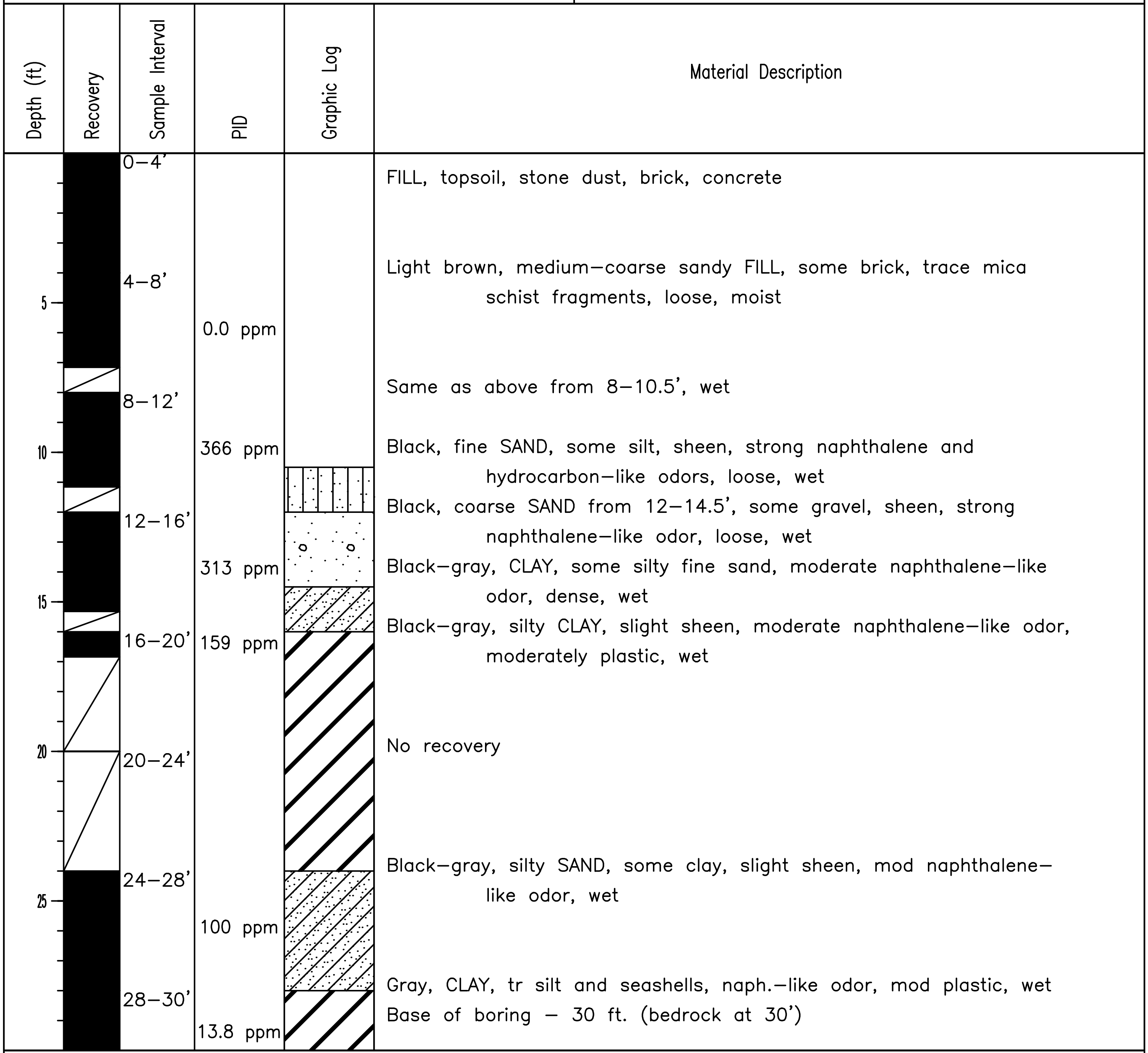
Logged By: K. Panella

Drilling Method: HA from 0-4' GP from 4-30'

Contractor: Jersey Boring

Borehole Dia.: 2.00in

Remarks: Samples selected for analysis at 12-16' and 28-30'. Moved from original location to the south tip of the walking path in the landscaped area.
WH:Weight of Hammer HA:Hand Auger
GP:Geoprobe



Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
		0-4'			FILL, topsoil, stone dust, brick, concrete
5		4-8'	0.0 ppm		Light brown, medium-coarse sandy FILL, some brick, trace mica schist fragments, loose, moist
		8-12'			Same as above from 8-10.5', wet
10			366 ppm		Black, fine SAND, some silt, sheen, strong naphthalene and hydrocarbon-like odors, loose, wet
		12-16'			Black, coarse SAND from 12-14.5', some gravel, sheen, strong naphthalene-like odor, loose, wet
15			313 ppm		Black-gray, CLAY, some silty fine sand, moderate naphthalene-like odor, dense, wet
		16-20'	159 ppm		Black-gray, silty CLAY, slight sheen, moderate naphthalene-like odor, moderately plastic, wet
20					No recovery
		20-24'			
25		24-28'			Black-gray, silty SAND, some clay, slight sheen, mod naphthalene-like odor, wet
			100 ppm		
		28-30'	13.8 ppm		Gray, CLAY, tr silt and seashells, naph.-like odor, mod plastic, wet Base of boring - 30 ft. (bedrock at 30')

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Site Id: SB-09

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/05/03 - 09/05/03

Total Depth: 35.00'

Elevation: 9.55'

Datum: Mean Sea Level

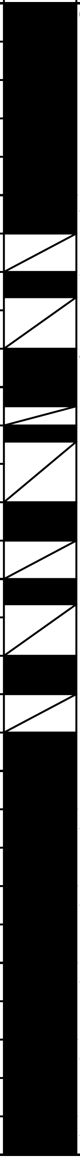
Logged By: K. Panella

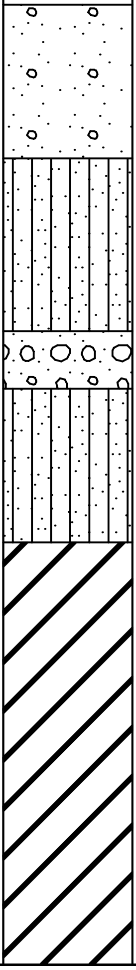
Drilling Method: Hand Auger from 0-5' HSA from 5-35'

Contractor: Jersey Boring

Borehole Dia.: 6.25in

Remarks: Samples selected for analysis at 11-15' and 31-33.5'.
WH:Weight of Hammer
HSA:Hollow Stem Auger





Depth (ft)	Sample Interval	PID	Blow Count (Per 6")	Material Description
	0-5'			0.75' reinforced concrete FILL, topsoil, brick, concrete
5	5-7'	0.0 ppm	8 6 4 4	Brown, medium SAND, some mica fragments, loose, dry
	7-9'	8.3 ppm	7 6 5 3	Dark brown-black, medium SAND, some mica fragments, slight hydrocarbon-like odor, dense, moist
10	9-11'	1.3 ppm	4 2 1 1	Black, silty fine SAND, slight hydrocarbon-like odor, dense, moist
	11-13'	3.5 ppm	3 1 2 4	Gray, silty fine SAND, slight hydrocarbon-like odor, dense, moist
	13-15'	2.2 ppm	12 11 4 3	Black, silty fine SAND from 13-13.5', mica fragments from 13.5-14', slight hydrocarbon-like odor, dense, wet
15	15-17'	1.6 ppm	1 2 18 23	Black, silty fine SAND, slight hydrocarbon-like odor, dense, wet
	17-19'	1.5 ppm	3 14 20 6	Same as above
	19-21'	2.5 ppm	3 2 4 3	Black-gray, CLAY, trace seashells, slight hydrocarbon-like odor, dense, wet
20	21-23'	5.2 ppm	WH 1 1 WH	Black-gray, CLAY, dense, wet
	23-25'	2.5 ppm		Gray, CLAY, trace seashells, trace wood, dense, moist
25	25-27'	0.5 ppm	WH 2 2 2	Same as above
	27-29'	0.6 ppm	WH WH 1 1	Same as above, some seashells
	29-31'	4.7 ppm	WH WH	Gray, silty CLAY, slight hydrocarbon-like odor, dense, wet

Location: West 42nd Street

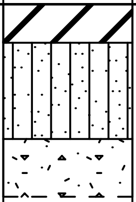
Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-09

Total Depth: 35.00'

Borehole Dia.: 6.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		31–33'	23.4 ppm	2 2 3 3 3 2		Gray, silty fine SAND, slight hydrocarbon–like odor, dense, wet
		33–35'	0.5 ppm			Same as above (bedrock at 33.5') Base of boring – 33.5 ft.
35						
40						
45						
50						
55						
60						
65						

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Site Id: SB-10

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/11/03 - 09/11/03

Total Depth: 42.00'

Elevation: 10.38'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: HSA from 0-35' NX Rock Core from 35-42'

Contractor: Jersey Boring

Borehole Dia.: 6.25in

Remarks: Samples selected for analysis at 20-24' and 26-28'. Moved 15' northeast of its original location to within TP-05 in order to avoid car lifts and hydraulic lines.
WH:Weight of Hammer HSA:Hollow Stem Auger

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
5		0-10'	0.0 ppm 3.0 ppm 4.0 ppm 8.0 ppm 11.0 ppm			0.7' concrete Brown, m-c sandy FILL, trace concrete, brick and pebbles, loose, moist Same as above, weak naphthalene-like odor, dense Same as above Same as above Same as above
10		10-12'	0.5 ppm 12.0 ppm	2 3 5 7		Black, silty fine SAND, slight naphthalene-like odor, loose, moist
		12-14'	1.5 ppm	WH 1 2 1		Brown-gray, silty CLAY from 12-12.8', moderately plastic, wet, to black, SILT w/coarse sand, slight naphthalene-like odor, loose, wet
15		14-16'	4.1 ppm	2 1 1 1		Black, fine-medium sandy CLAY from 14-15.7', loose, wet, to gray, silty CLAY, dense, moist
		16-18'	0.2 ppm	3 2 1 1		Black, coarse SAND and GRAVEL (schist fragments) from 16-16.75', loose, wet, to gray, silty CLAY, dense, moist
		18-20'	0.2 ppm	WH		Gray, CLAY, trace medium sand, trace organic material, dense, moist
20		20-22'	6.4 ppm	WH 2 2 3		Gray, medium-coarse SAND, trace silt, trace organic material, loose, wet
		22-24'	6.2 ppm	WH WH 1 1		Gray, medium-coarse SAND from 22-23.7', loose, wet, to gray, silty CLAY, trace organic material, dense, moist
25		24-26'	1.2 ppm	WH		Gray, CLAY, trace silt, trace organic material, dense, moist
		26-28'	0.5 ppm	WH 1 1 2		Gray, CLAY, some silt and fine sand, some organic material, wood, dense, moist
		28-30'	0.5 ppm	WH		Gray, CLAY, trace silt and organic material, very dense, moist

Location: West 42nd Street

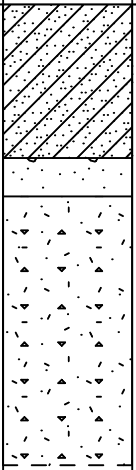
Site Id: SB–10

Purpose: Soil Boring

Total Depth: 42.00'

Consulting Firm: Dvirka & Bartilucci

Borehole Dia.: 6.25in



Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		30–32'	0.2 ppm	WH 1 1 5		Gray, CLAY, some fine sand, trace organic material, loose, wet Gray, medium–coarse sandy CLAY, moderately plastic, wet
		32–34'	0.4 ppm	1 3 20 26		Gray, fine–medium SAND, some gravel, loose, wet
35		34–36'	0.6 ppm	24 >100		(bedrock at 35') (NX Rock Core from 35–42') Granite
		36–37'				
		37–42'				
40						
						Base of boring – 42 ft.
45						
50						
55						
60						
65						

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Site Id: SB-11

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/10/03 – 09/17/03

Total Depth: 30.00'

Elevation: 9.71'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Hand Auger from 0-5' HSA from 5-30'

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Sample selected for analysis at 10-12'.
Moved 17.5' south of its original location to within TP-07 due to multiple refusals.
WH:Weight of Hammer HSA:Hollow Stem Auger
H2S:Hydrogen Sulfide

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
0 5	■	0-10'	0.0 ppm 0.0 ppm 0.0 ppm 0.0 ppm 0.0 ppm			0.25' asphalt Brown, med-coarse sandy FILL, some brick, concrete, pebbles and boulders, brick layer at 1-2', loose, moist Same as above, no brick layer Black, medium-coarse sandy FILL, peat, some clay and organic material, some brick, pebbles, loose-dense, moist-wet Same as above, wet
10	■ ▨	10-12'	0.0 ppm	3 3 3 3		Brown-black, fine-medium sandy FILL, some clay, loose, wet
	▨	12-14'		4 2 2 5		No recovery
15	■ ▨	14-16'	0.5 ppm	8 11 6 3		Dark brown, silty FILL w/medium-coarse gravel, some mica schist, trace fine-coarse sand, loose, wet
	■ ▨	16-18'	0.0 ppm	2 1 1 2		Dark brown-black, silty FILL w/medium-coarse sand, trace gravel, loose, wet
	■ ▨	18-20'	0.2 ppm	1 3 4 11		Dark brown, silty FILL w/medium-coarse gravel, some brick fragments, trace fine-coarse sand, loose, wet
20	■ ▨	20-22'	0.9 ppm	20 40 20 30		Dark brown, silty FILL w/medium-coarse sand, some fine-coarse gravel, some brick fragments, loose, wet
	■	22-24'	1.6 ppm	1 1 2 2	▥ ▨	Dark brown-black, silty f-c SAND, silty CLAY from 23.5-24', trace f-m gravel, slight organic (H2S-like) odor, loose, wet
25	■	24-26'	0.0 ppm	WH	▥	Dark brown-black, silty f-c SAND, trace silty clay, trace gravel, trace organic material, slight organic (H2S-like) odor, wet
	■	26-28'	0.3 ppm	WH 2	▨	Gray, CLAY, some silt, dense, wet
	■ ▨	28-30'	0.2 ppm	WH >100	▨ ∴	Same as above, some gravel (bedrock at 29.1') Base of boring – 29.1 ft.

Dvirka
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Bartilucci
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Site Id: SB-12

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/08/03 - 09/08/03

Total Depth: 29.00'

Remarks: Samples selected for analysis at 21-23' and 27-28.8'.
WH:Weight of Hammer
HSA:Hollow Stem Auger

Elevation: 9.95'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Hand Auger from 0-5' HSA from 5-29'

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.75' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'	0.0 ppm	3 3 4 5		Brown-gray, coarse sandy FILL, some mica schist, loose, dry
		7-9'	0.3 ppm	3 3 3 3		Brown-black, coarse sandy FILL, trace mica fragments, loose, dry
10		9-11'	0.4 ppm	3 2 3 3		Brown-black, sandy CLAY, dense, wet
		11-13'	0.3 ppm	3 4 7 5		Gray, CLAY, dense, moist
		13-15'	0.5 ppm	6 13 6 3		Black-gray, sandy CLAY, trace mica schist fragments, slight hydrocarbon-like odor, dense, wet
15		15-17'	27.5 ppm	3 WH WH 3		Black-gray, sandy CLAY, slight naphthalene-like odor, dense, wet
		17-19'	8.5 ppm	1 4 5 6		Same as above
20		19-21'	27.9 ppm	5 WH 3 4		Black-gray, silty SAND, slight naphthalene-like odor, dense, wet
		21-23'	32.6 ppm	5 7 3 3		Gray-black, CLAY, moderate naphthalene-like odor, dense, wet
		23-25'	13.1 ppm	WH WH 1 1		Gray, CLAY, dense, moist
25		25-27'	19.5 ppm	WH WH 14 14		Same as above
		27-29'	4.5 ppm	4 1 4 >50		Gray, sandy CLAY, mica schist at 28.8', dense, moist (bedrock at 28.8') Base of boring - 28.8 ft.

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Site Id: SB-13

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/16/03 - 09/16/03

Total Depth: 23.00'

Remarks: Sample selected for analysis at 19-21.4'.
Moved 35' east of its original proposed location
in order to avoid hydraulic lifts.
WH:Weight of Hammer
HSA:Hollow Stem Auger

Elevation: 10.68'

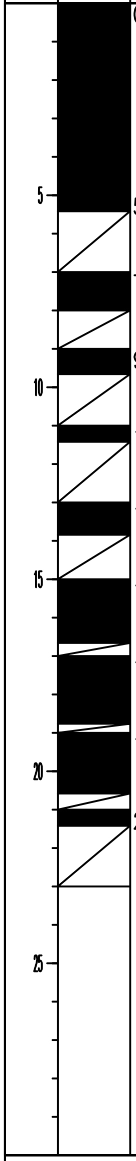
Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Hand Auger from 0-5' HSA from 5-23'

Contractor: Jersey Boring

Borehole Dia.: 6.25in



Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.5' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'	0.0 ppm	1 2 3 3		Brown-black, medium-coarse sandy FILL, trace silt and gravel, loose, moist
		7-9'	0.5 ppm	1 6 28 7		Brown, fine sandy FILL, some silt, trace gravel, loose, moist
10		9-11'	0.1 ppm	5 4 3 5		Brown, fine sandy FILL, some silt, trace gravel, trace brick, loose, wet
		11-13'	0.2 ppm	1 4 5 13		Black, gravelly FILL, some fine sand, some silt, wet
		13-15'	1.5 ppm	4 9 6 6		Brown-gray, fine sandy FILL, some silt, trace gravel, slight hydrocarbon-like odor, loose, wet
15		15-17'	1.7 ppm	4 2 3 9		Gray, fine-medium sandy FILL, some silt and clay, trace gravel, loose, wet
		17-19'	0.0 ppm	5 15 17 12		Gray, clayey FILL, some silt, some brick, dense, wet
20		19-21'	9.9 ppm	3 3 4 4		Same as above, slight naphthalene-like odor
		21-23'	1186 ppm	>100	- - - - -	Gray, clayey FILL, some silt, 1" band of black tar-like clay, concrete in tip of spoon, strong naphthalene-like odor, wet (gas holder foundation at 21.4') Base of boring - 21.4 ft.
25						

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Site Id: SB-14

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/12/03 - 09/15/03

Total Depth: 56.00'

Elevation: 10.07'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: HA from 0-5' HSA from 5-51' RC 51-56'

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Samples selected for analysis at 17-19' and 30-32'.
WH:Weight of Hammer HA:Hand Auger
HSA:Hollow Stem Auger RC:NX Rock Core

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.5' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'	0.3 ppm	9 20 28 14		Brown, coarse sandy FILL, some gravel, brick fragments, loose, dry
		7-9'	0.3 ppm	9 >100		Brown-gray, silty FILL w/clay, trace wood, 1" of shale in tip of spoon, dense, moist
10		9-11'	0.3 ppm	WH 2 6 3		Brown-gray, silty FILL w/clay, some gravel (mica schist, shale), dense, moist
		11-13'	0.4 ppm	8 12 11 8		Brown-gray, silty FILL w/clay, some mica schist fragments, dense, moist
		13-15'	1.6 ppm	9 20 38 40		Brown-gray, coarse sandy FILL, some silt and gravel, some mica schist, trace brick, slight naphthalene-like odor, wet
15		15-17'	0.4 ppm	1 14 37 12		Same as above, some brick, trace concrete
		17-19'	70 ppm	49 21 6 >50		Brown-gray-black, m-c sandy FILL, some silt, slight-strong naphthalene-like odor, concrete in tip of spoon, wet
20		19-21'				(gas holder foundation at 19', drilled through to 21')
		21-23'	65 ppm	5 6 34 72		Br-bk, c sandy FILL, some silt and gravel, naph.-like odor, wet, to bk, FILL, wood w/tar staining and strong naph.-like odor, wet (hard material from 22-28')
25		24-26'		2 2 2 1		No recovery, trace wood
		26-28'		2 5 6 6		No recovery, trace wood
		28-30'	0.0 ppm	WH		Gray, SILT, some wood, loose, wet

Location: West 42nd Street

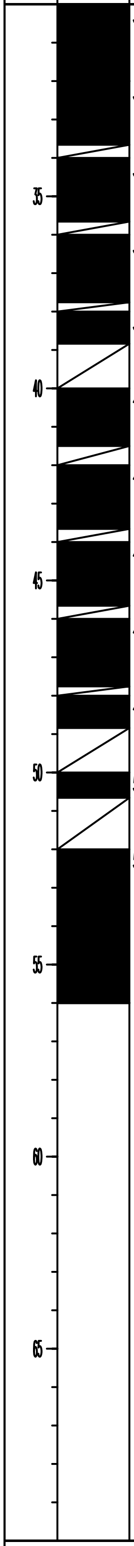
Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

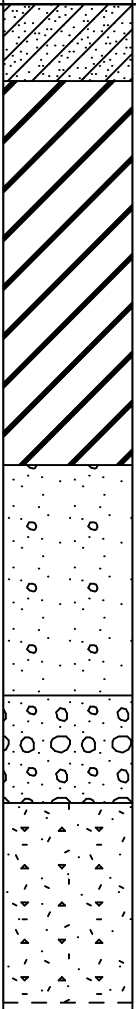
Site Id: SB-14

Total Depth: 56.00'

Borehole Dia.: 4.25in



Sample Interval	PID	Blow Count (Per 6")
30–32'	0.0 ppm	8 20 30 50
32–34'	0.0 ppm	6 10 16 17
34–36'	0.0 ppm	8 16 35 30
36–38'	0.0 ppm	17 25 37 61
38–40'	0.0 ppm	20 75 70 23
40–42'	0.0 ppm	40 53 87 75
42–44'	0.0 ppm	50 52 60 65
44–46'	0.0 ppm	34 82 >100 >100
46–48'	0.0 ppm	34 73 96 >100
48–50'	0.0 ppm	60 >100
50–52'	0.0 ppm	55 >100
52–56'		



Material Description

Gray–br, CLAY, some silt and c sand, trace gravel, dense, wet

Gray–brown, CLAY, some silt, trace medium sand, dense, wet

Gray, CLAY, trace silt, dense, wet

Same as above, trace gravel

Gray, CLAY, trace silt, weathered bedrock in tip of spoon, dense, wet

Gray, CLAY, trace silt and gravel, dense, wet

Brown, medium–fine SAND, some gravel, trace mica schist, dense, wet

Brown, medium–coarse SAND, some gravel, dense, wet

Brown, m–c SAND, some gravel, some weathered bedrock (mica schist), dense, wet

Brown, medium–coarse GRAVEL, some silt, trace fine–coarse sand, some weathered bedrock (mica schist), dense, wet

Brown, medium–coarse GRAVEL, some silt, trace fine–coarse sand, some weathered bedrock (pegmatite), dense, wet

(bedrock at 50.8')

White/light gray granite in core

Base of boring – 56 ft.

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Site Id: SB-15
Location: West 42nd Street
Purpose: Soil Boring
Date(s): 09/12/03 - 09/12/03
Total Depth: 19.00'
Elevation: 9.80'
Datum: Mean Sea Level
Logged By: K. Panella
Drilling Method: Hand Auger from 0-5' HSA from 5-19'
Contractor: Jersey Boring
Borehole Dia.: 4.25in

Remarks: Samples selected for analysis at 7-9' and 13-15'. Boring was terminated at 19' at bottom of gas holder as per work plan.
WH:Weight of Hammer
HSA:Hollow Stem Auger

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.5' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'	1309 ppm	23 45 50 27		Brown, coarse sandy FILL, some coarse gravel, some mica schist, strong hydrocarbon-like odor, loose, dry
		7-9'	1787 ppm	27 73 37 41		Same as above
10		9-11'	95 ppm	3 4 5 3		Gray, silty coarse sandy FILL, trace gravel, trace mica schist fragments, strong hydrocarbon-like odor, loose, wet
		11-13'	5.0 ppm	1 6 8 16		Gray, silty clayey FILL, some mica, strong hydrocarbon-like odor, moderately plastic, wet
		13-15'	2.0 ppm	18 14 7 7		Gray, coarse sandy FILL, trace gravel, moderate hydrocarbon-like odor, loose, wet
15		15-17'	3.1 ppm	4 4 8 12		Same as above
		17-19'	1.9 ppm	3 9 2 3		Gray, medium-coarse sandy FILL, some silt, moderate hydrocarbon-like odor, loose, wet (gas holder foundation at 19') Base of boring - 19 ft.
20						
25						

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A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Site Id: SB-16

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/16/03 - 09/16/03

Total Depth: 49.00'

Elevation: 10.54'

Datum: Mean Sea Level

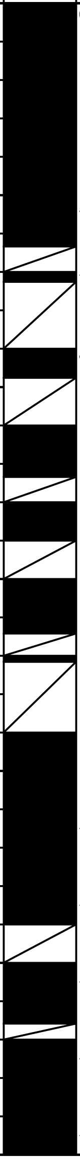
Logged By: K. Panella

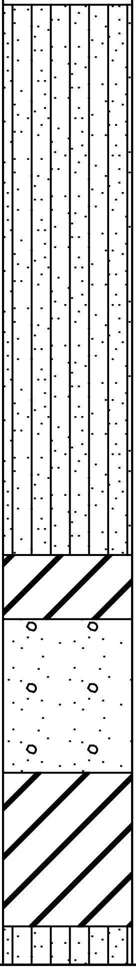
Drilling Method: Hand Auger from 0-5' HSA from 5-49'

Contractor: Jersey Boring

Borehole Dia.: 6.25in

Remarks: Samples selected for analysis at 19-21.4' and 25-27'.
WH:Weight of Hammer
HSA:Hollow Stem Auger





Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.2' asphalt, to 0.5' reinforced concrete FILL, topsoil, brick, concrete
5		5-7'	0.0 ppm	1 1 1 2		Brown, silty fine SAND, trace gravel, trace seashells, loose, moist
		7-9'	0.4 ppm	70 >100		Brown, silty fine SAND, loose, moist
10		9-11'	2.0 ppm	1 2 2 4		Brown, fine SAND, some silt, some wood, slight naphthalene-like odor, wet
		11-13'	0.7 ppm	1 2 1 4		Brown-gray, fine SAND, some silt, loose, wet
		13-15'	104 ppm	8 9 6 6		Black, fine silty SAND, sheen, strong hydrocarbon-like odor, loose, wet
15		15-17'	7.7 ppm	3 5 7 4		Black-brown, silty fine SAND, sheen, strong hydrocarbon-like odor, loose, wet
		17-19'	5.4 ppm	1 2 4 3		Same as above, slight hydrocarbon-like odor
20		19-21'	5.0 ppm	3 2 3 4		Gray, medium SAND w/silt from 19-19.3', loose, wet, to gray, CLAY w/organic material, dense, wet
		21-23'	0.6 ppm	3 3 4 6		Gray, medium-coarse SAND, slight hydrocarbon-like odor, loose, wet
		23-25'	11.6 ppm	WH		Same as above
25		25-27'	0.0 ppm	1 1 2 1		Gray, CLAY, dense, wet
		27-29'	0.8 ppm	WH WH 22		Same as above
		29-31'	1.5 ppm	3 3		Gray, medium-coarse SAND, some silt, trace clay, loose, wet

Location: West 42nd Street

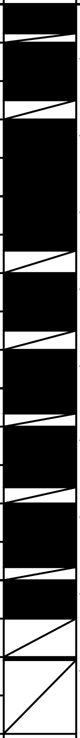
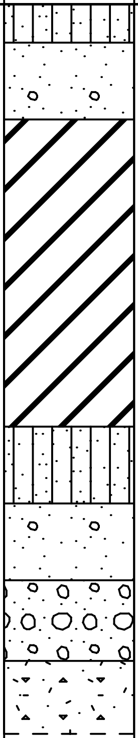
Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-16

Total Depth: 49.00'

Borehole Dia.: 6.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		31-33'	0.9 ppm	6 8 9 12		Gray, fine-medium SAND, trace gravel, loose, wet
		33-35'	0.8 ppm	8 7 5 7		Gray, CLAY, trace silt, dense, wet
35		35-37'	0.8 ppm	13 6 5 9		Same as above
		37-39'	0.0 ppm	18 35 4 9		Same as above, moist
		39-41'	0.0 ppm	11 14 50 34		Same as above, some weathered bedrock
40		41-43'	0.0 ppm	35 34 21 40		Brown-gray, silty fine SAND, some gravel, dense, wet
		43-45'	0.0 ppm	62 61 27 32		Brown, fine-medium SAND, some gravel, dense, wet
45		45-47'	0.2 ppm	46 58 20 >100		Brown, GRAVEL, some f sand, some silt, weathered bedrock (mica schist) in tip of spoon, loose, wet
		47-49'	0.0 ppm	>100		GRAVEL, mica schist fragments, loose, wet (bedrock at 47.1') Base of boring - 47.1 ft.
50						
55						
60						
65						

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A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Site Id: SB-17

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/09/03 - 09/10/03

Total Depth: 33.00'

Elevation: 9.17'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: Hand Auger from 0-5' HSA from 5-33'

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Samples selected for analysis at 9-13' and 21-23'. Moved 2' west of its original proposed location to obtain soil classification data for the landscaped area.
WH:Weight of Hammer HSA:Hollow Stem Auger

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				0.2' concrete FILL, topsoil, brick, concrete
5		5-7'				No recovery (boulder at 5')
		7-9'	0.0 ppm	80 34 16 7		Light brown, fine-medium sandy FILL, some brick and concrete, loose, dry
10		9-11'	5.4 ppm	3 25 >100		Black, coarse sandy FILL, some gravel, metal in tip of split spoon, slight-mod. naphthalene-like odor, loose, wet
		11-13'	3.1 ppm	13 11 9 6		Black, silty CLAY, slight-moderate naphthalene-like odor, dense, wet
		13-15'	3.3 ppm	1 30 10 10		Black, sandy CLAY, some wood, slight naphthalene-like odor, moderately plastic, wet
15		15-17'	2.3 ppm	4 16 15 13		Black-gray, silty CLAY, some wood, slight naphthalene-like odor, dense, wet
		17-19'	0.7 ppm	3 2 2 2		Same as above
20		19-21'	0.5 ppm	2 1 2 3		Same as above from 19-19.8' w/trace shells, to gray, coarse SAND, wet
		21-23'	0.4 ppm	1 1 1 1		Gray, CLAY, dense, wet
		23-25'	0.0 ppm	WH WH WH 3		Same as above
25		25-27'	0.0 ppm	WH WH 2 2		Same as above
		27-29'	0.0 ppm	WH		Same as above from 27-28.7', to gray, sandy CLAY, moderately plastic, wet
		29-31'	1.4 ppm	2 1 1		Gray, sandy CLAY, moderately plastic, wet

Location: West 42nd Street	Site Id: SB-17
Purpose: Soil Boring	Total Depth: 33.00'
Consulting Firm: Dvirka & Bartilucci	Borehole Dia.: 4.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
	■	31-33'	10.4 ppm	1 1 WH 16	▨	Gr, sandy CLAY, mod. plastic, wet, to mica schist fragments (bedrock at 33') Base of boring - 33 ft.
35						
40						
45						
50						
55						
60						
65						

Dvirka and Bartilucci
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

Site Id: SB-18

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/26/03 - 09/26/03

Total Depth: 33.00'

Elevation: 8.30'

Datum: Mean Sea Level

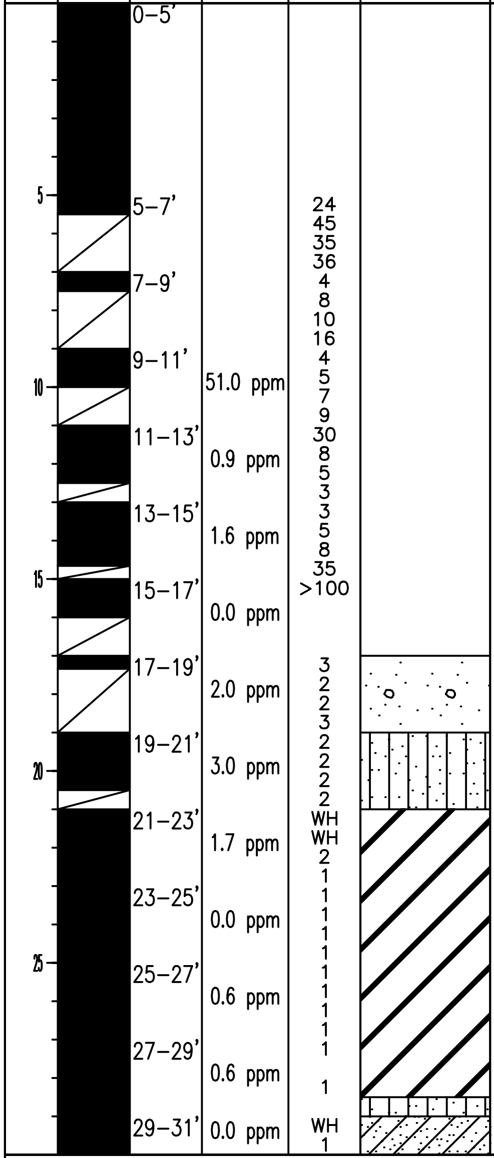
Logged By: K. Panella

Drilling Method: Hand Auger from 0-5' HSA from 5-33'

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Samples selected for analysis at 9-13' and 23-25'. Unable to obtain PID readings from 5-9' due to heavy precipitation.
WH:Weight of Hammer
HSA:Hollow Stem Auger



Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-5'				FILL, topsoil, brick, concrete
5		5-7'		24 45 35 36		Gray-brown, gravelly FILL, some silty fine sand, dry
		7-9'		4 8 10 16		Gray, coarse sandy FILL w/some gravel, crushed red brick in bottom 3", dry
10		9-11'	51.0 ppm	4 5 7 9		Gray, coarse sandy FILL w/some red brick, to bk, fine sandy FILL, trace silt, sheen, strong naphthalene-like odor, loose, wet
		11-13'	0.9 ppm	30 8 5 3		Gray, silty clayey FILL, trace f sand, to bk, coarse sandy FILL, trace gravel and silt, sheen, strong naphthalene-like odor, wet
		13-15'	1.6 ppm	3 5 8 35		Bk, coarse sandy FILL, trace gravel and silt, 6" of bk stained wood on bottom, sheen, strong naphthalene-like odor, wet
15		15-17'	0.0 ppm	>100		Black, fine sandy FILL, trace silt, 4" of bk stained wood on bottom, strong naphthalene-like odor, wet
		17-19'	2.0 ppm	3 2 2 3		Black, fine SAND, sheen, naphthalene-like odor, loose, wet
20		19-21'	3.0 ppm	2 2 2 2		Black-gray, fine SAND, some silt, trace wood, slight to moderate naphthalene-like odor, loose, wet
		21-23'	1.7 ppm	WH WH 2 1		Black-gray, silty CLAY, trace fine sand and shells, slight naphthalene-like odor, dense, wet
		23-25'	0.0 ppm	1 1 1 1		Gray, CLAY, trace organics and shells, dense, wet
25		25-27'	0.6 ppm	1 1 1 1		Black-gray, CLAY, trace silt, trace organics and shells, slight naphthalene-like odor, dense, wet
		27-29'	0.6 ppm	1 1		Bk-gray, CLAY, bottom 6" silty sand, trace silt and shells, organics, slight naphthalene-like odor, med-dense, wet
		29-31'	0.0 ppm	WH 1		Gray, silty SAND w/some clay, shells, sl naphthalene-like odor, wet

Location: West 42nd Street

Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-18

Total Depth: 33.00'

Borehole Dia.: 4.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
	■	31-33'	0.0 ppm	1 1 >100	▨	Gray, silty fine-med SAND, some clay, trace shells and organics, slight naphthalene-like odor, wet (bedrock at 31.4') Base of boring - 31.4 ft.
35						
40						
45						
50						
55						
60						
65						

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Site Id: SB-19
Location: West 42nd Street
Purpose: Soil Boring
Date(s): 10/02/03 - 10/02/03
Total Depth: 26.20'
Remarks: Samples selected for analysis at 20-24' and 24-26.2'.

Elevation: 6.99'
Datum: Mean Sea Level
Logged By: K. Panella
Drilling Method: Geoprobe
Contractor: Jersey Boring
Borehole Dia.: 2.00in

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
		0-4'	0.0 ppm		Brown, FILL w/topsoil and stone dust from 0-0.7', dry, to light brown, fine-medium sandy FILL, trace gravel and brick, dense, dry Same as above
5		4-8'	123 ppm		Brown-black, silty FILL w/fine sand, trace clay, moderate hydrocarbon-like odor, wet
10		8-12'	755 ppm		Black, silty FILL w/fine sand, trace clay and coarse gravel, sheen, strong hydrocarbon and naphthalene-like odors, wet
15		12-16'	158 ppm		Black, fine sandy FILL w/some silt, trace gravel, sheen, trace NAPL blebs, strong hydrocarbon and naphthalene-like odors, loose-dense, wet
		16-20'			No recovery
20		20-24'	129 ppm		Black, silty FILL, trace gravel and coal, sheen w/NAPL blebs, strong naphthalene-like odor, wet
25		24-26.2'	129 ppm 125 ppm		Black-lt brown, fine-med SAND, slight-moderate naphthalene-like odor, dense, wet, to bk-gray, CLAY, trace silt and seashells, mod naphthalene-like odor, wet (bedrock at 26.2') Base of boring - 26.2 ft.

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Site Id: SB-20

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 10/02/03 - 10/02/03

Total Depth: 31.80'

Elevation: 7.88'

Datum: Mean Sea Level

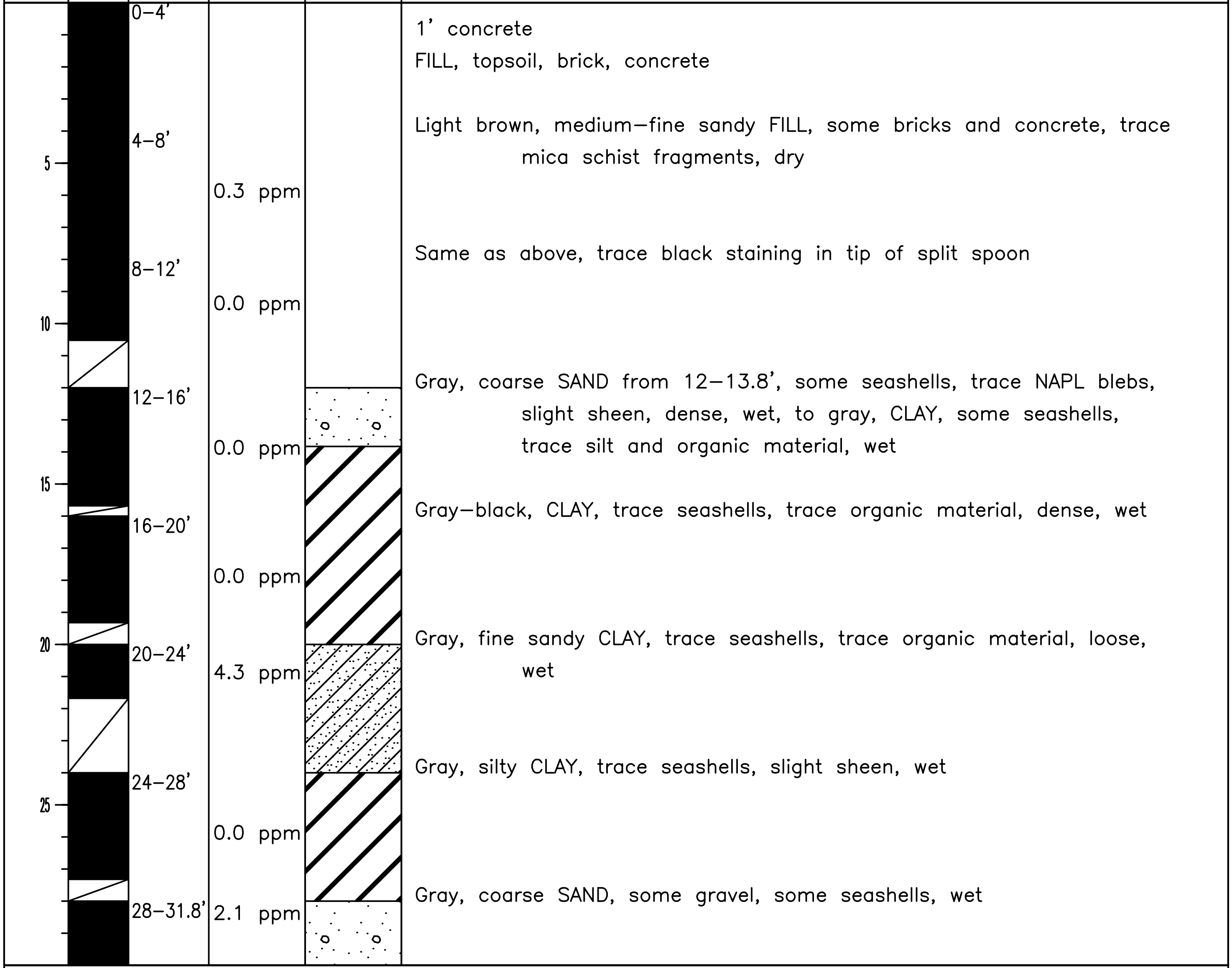
Logged By: C. Scharkopf

Drilling Method: HA from 0-5' GP from 4-31.8'

Contractor: Jersey Boring

Borehole Dia.: 2.00in

Remarks: Samples selected for analysis at 12-16' and 16-20'.
WH:Weight of Hammer
HA:Hand Auger
GP:Geoprobe



Sample Interval	PID	Material Description
0-4'		1' concrete FILL, topsoil, brick, concrete
4-8'	0.3 ppm	Light brown, medium-fine sandy FILL, some bricks and concrete, trace mica schist fragments, dry
8-12'	0.0 ppm	Same as above, trace black staining in tip of split spoon
12-16'	0.0 ppm	Gray, coarse SAND from 12-13.8', some seashells, trace NAPL blebs, slight sheen, dense, wet, to gray, CLAY, some seashells, trace silt and organic material, wet
16-20'	0.0 ppm	Gray-black, CLAY, trace seashells, trace organic material, dense, wet
20-24'	4.3 ppm	Gray, fine sandy CLAY, trace seashells, trace organic material, loose, wet
24-28'	0.0 ppm	Gray, silty CLAY, trace seashells, slight sheen, wet
28-31.8'	2.1 ppm	Gray, coarse SAND, some gravel, some seashells, wet

Location: West 42nd Street

Purpose: Soil Boring

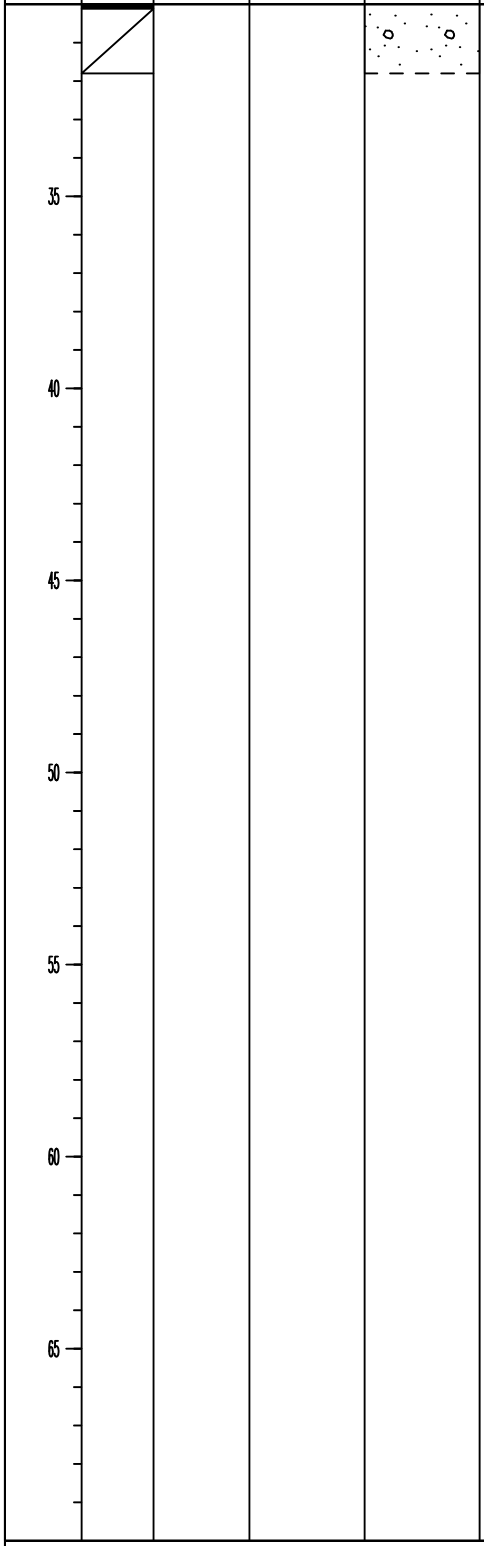
Consulting Firm: Dvirka & Bartilucci

Site Id: SB-20

Total Depth: 31.80'

Borehole Dia.: 2.00in

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description



Gray, coarse SAND, some gravel, some seashells, wet (bedrock at 31.8')

Base of boring – 31.8 ft.

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Site Id: SB-21

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/30/03 - 09/30/03

Total Depth: 38.80'

Remarks: Samples selected for analysis at 12-16' and 36-38.8'.
WH:Weight of Hammer
HA:Hand Auger
GP:Geoprobe

Elevation: 7.14'

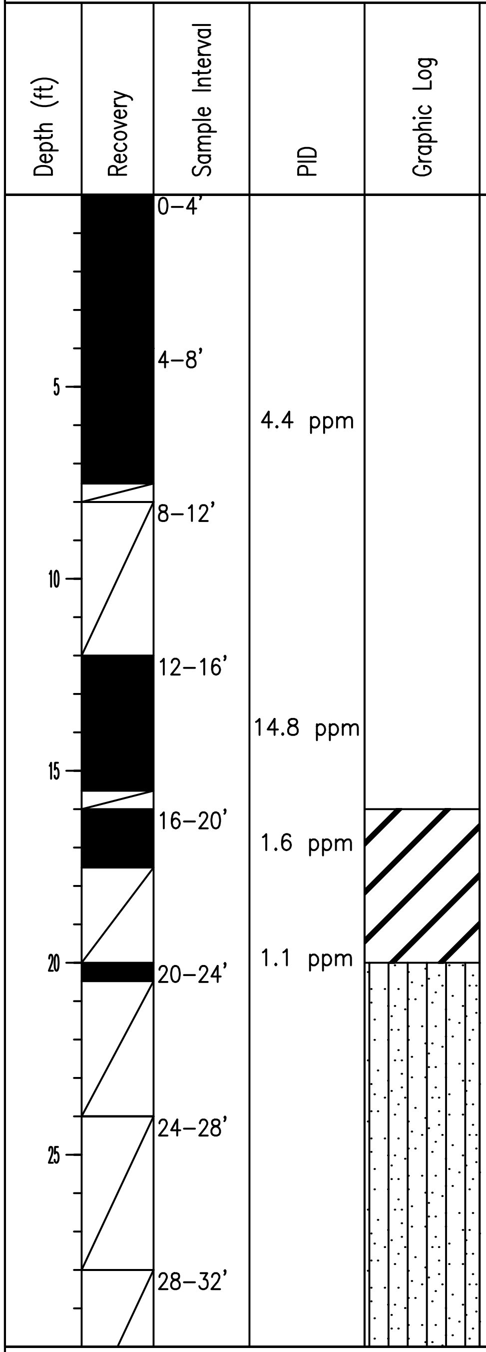
Datum: Mean Sea Level

Logged By: C. Scharkopf

Drilling Method: HA from 0-5' GP from 4-38.8'

Contractor: Jersey Boring

Borehole Dia.: 2.00in



Sample Interval	PID	Material Description
0-4'		1' concrete FILL, topsoil, brick, concrete
4-8'	4.4 ppm	Brown, FILL, some fine-coarse sand and topsoil, some brick fragments and concrete, some wood chips, very slight hydrocarbon-like odor, dense, moist
8-12'		No recovery
12-16'	14.8 ppm	Brown, silty FILL w/fine-coarse sand, some fine-coarse gravel, some wood chips, some organic material, slight sheen, slight hydrocarbon-like odor, dense, wet
16-20'	1.6 ppm	Brown-dark brown, silty CLAY, some organic material, slight sheen from 16-16.3', medium dense, wet
20-24'	1.1 ppm	Brown, silty fine-coarse SAND, some organic material, slight sheen, very slight hydrocarbon-like odor, medium dense, wet
24-28'		No recovery
28-32'		No recovery

Location: West 42nd Street

Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB–21

Total Depth: 38.80'

Borehole Dia.: 2.00in

Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
		32–36'	1.1 ppm		Dark gray, silty CLAY w/some fine–coarse sand and gravel, some intermittant brown staining throughout, sheen, very slight hydrocarbon–like odor, dense, wet
35					
		36–38.8'	1.5 ppm		Same as above, seashell fragments, mica schist in tip of split spoon (bedrock at 38.8')
					Base of boring – 38.8 ft.
40					
45					
50					
55					
60					
65					

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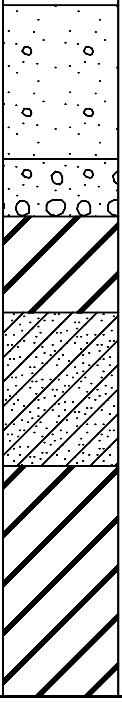
Site Id: SB-22
Location: West 42nd Street
Purpose: Soil Boring
Date(s): 09/29/03 - 09/29/03
Total Depth: 52.00'
Elevation: 4.67'
Datum: Mean Sea Level
Logged By: A. Caniano
Drilling Method: Hand Auger from 0-4' GP from 4-52'
Contractor: Jersey Boring
Borehole Dia.: 2.00in

Remarks: Samples selected for analysis at 12-16' and 36-44'. Moved from its original proposed location to within the loading dock area in River Place I.
WH:Weight of Hammer
GP:Geoprobe



Depth (ft)	Recovery	Sample Interval	PID	Graphic Log	Material Description
		0-4'			0.75' concrete FILL, topsoil, brick, concrete
5		4-8'	0.0 ppm		Dark brown, medium-coarse sandy FILL, some gravel, chunks of concrete, red brick fragments and some coal at 4.5', wood fragments at 4.75', loose, moist
10		8-12'	0.5 ppm		Dark brown, fine sandy FILL, some silt, red brick at 8.7', sheen, slight naphthalene-like odor, medium dense, wet
15		12-16'	7.6 ppm		Brown, medium-coarse SAND w/some gravel, black staining from 12.5-16', sheen, strong naphthalene-like odor, loose, wet
		16-20'	5.7 ppm		Black, coarse SAND and GRAVEL, heavy staining, sheen - strong on gravel, strong naphthalene-like odor, loose, wet Black, CLAY w/silt, staining, sheen, strong naphthalene-like odor, medium dense, wet
20		20-24'	4.2 ppm		Black, CLAY, some sand, gravel and wood, heavy staining, sheen - strong on gravel, naphthalene-like odor, medium dense, wet
25		24-28'	2.2 ppm		Black, CLAY, staining, strong naphthalene-like odor, medium dense, wet Gray, CLAY, naphthalene-like odor, medium dense, wet
		28-32'			No recovery

Location: West 42nd Street

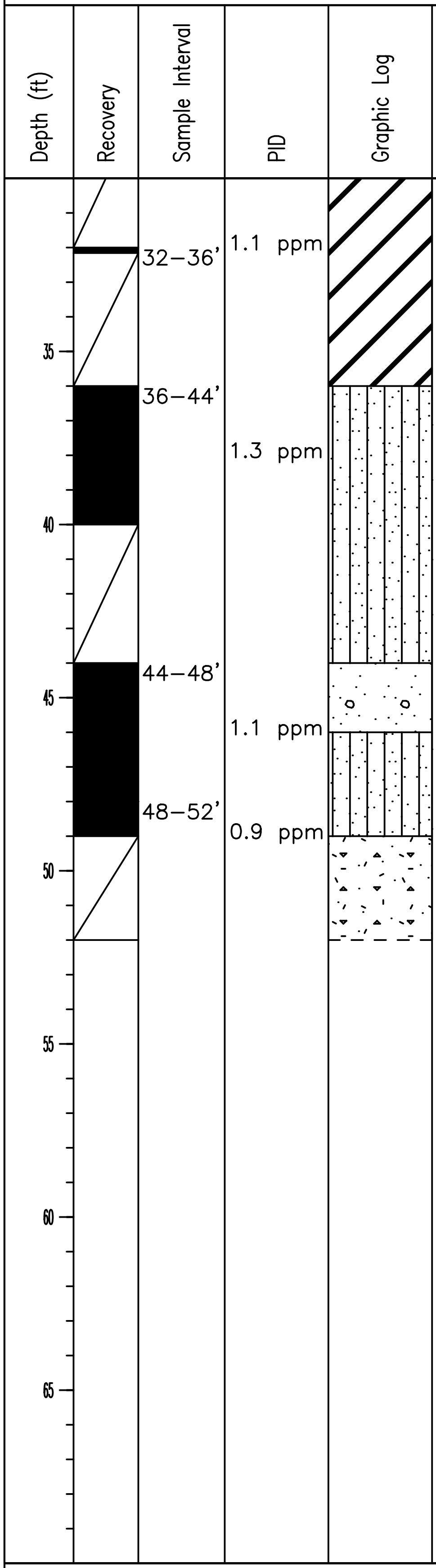
Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-22

Total Depth: 52.00'

Borehole Dia.: 2.00in



Material Description

Gray/black, CLAY w/some silt, some shells, sheen on water, naphthalene-like odor, medium dense, wet

Gray, medium–fine SAND, some silt and gravel, little clay near bottom, sheen on gravel, naphthalene–like odor – stronger near top, medium dense, wet (driller overpushed to improve recovery)

Dark gray, coarse SAND w/gravel, sheen on gravel, naphthalene–like odor, loose, wet

Gray, fine sandy SILT, slight naphthalene–like odor, dense, wet

Gray, medium–coarse SAND, gravel, some silt, naphthalene–like odor, loose, wet (bedrock at 49')

Base of boring – 49 ft.

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Site Id: SB-23

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/30/03 - 09/30/03

Total Depth: 54.50'

Remarks: Samples selected for analysis at 20-24' and 52-54.4'.
HA:Hand Auger
GP:Geoprobe

Elevation: 3.04'

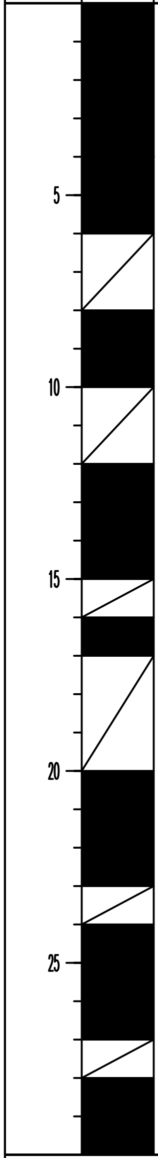
Datum: Mean Sea Level

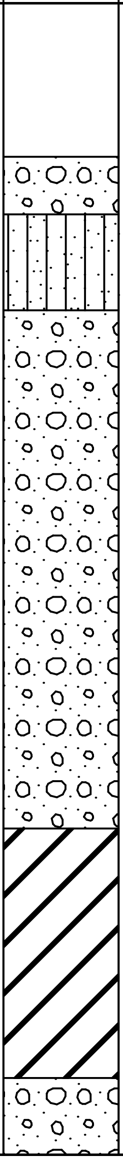
Logged By: C. Scharkopf

Drilling Method: HA from 0-5' GP from 4-54.5'

Contractor: Jersey Boring

Borehole Dia.: 2.00in





Sample Interval	PID	Material Description
0-4'		1' concrete FILL, topsoil, brick, concrete
4-8'	0.8 ppm	Brown-dark brown-gray, fine-coarse SAND and GRAVEL, some silty sand and gravel from 5.5-6', loose, moist-wet
8-12'	1.6 ppm	Dark brown, medium-coarse silty GRAVEL, some fine-coarse sand, very slight hydrocarbon-like odor, loose, wet
12-14'	97.0 ppm	Brown, coarse GRAVEL, to black, coarse GRAVEL from 14.5-15', heavily stained/saturated w/tar, sheen, strong hydrocarbon-like odor, loose, wet
16-20'	46.3 ppm	Brown-black, medium-coarse GRAVEL, some coarse sand, strong hydrocarbon-like odor, loose, wet
20-24'	132 ppm	Black, coarse SAND and GRAVEL, little silt, heavily stained/saturated with tar, sheen, strong fuel oil-like odor, loose, wet, to black, CLAY from 21.5-23', some gravel, fuel oil-like odor, medium dense, wet
24-28'	3.3 ppm	Black, CLAY, trace gravel, sheen, slight hydrocarbon-like odor, medium dense, wet
28-32'		Black, med-coarse SAND and GRAVEL, little silt, sheen, hydrocarbon-like odor, wet

Location: West 42nd Street

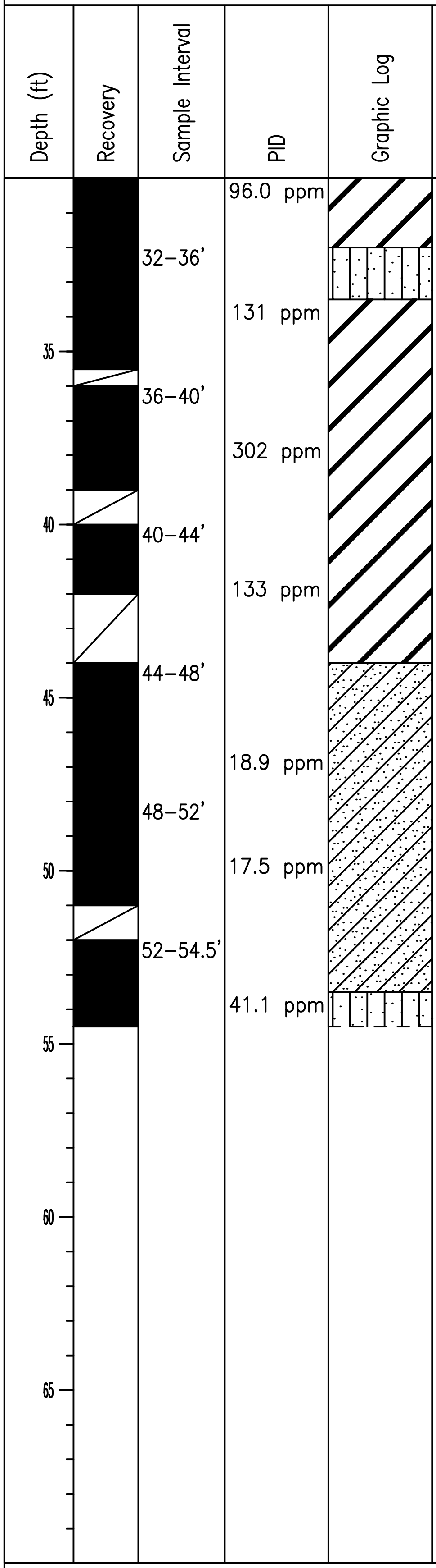
Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-23

Total Depth: 54.50'

Borehole Dia.: 2.00in



Sample Interval	PID	Material Description
	96.0 ppm	Black, CLAY, seashells, slight hydrocarbon-like odor, dense, wet
32-36'		Black-dark gray, silty fine-coarse SAND, trace fine-medium gravel from 32-33'
	131 ppm	Gray, CLAY, sheen, strong hydrocarbon-like odor, medium dense, wet
		Dark gray-gray, silty CLAY, some wood, slight sheen, strong hydrocarbon-like odor, soft-medium dense, wet
36-40'		
	302 ppm	
		Dark brown, silty CLAY w/fine-coarse gravel, little fine-coarse sand, sheen, strong hydrocarbon-like odor, soft, wet
40-44'		
	133 ppm	
44-48'		Dark gray, CLAY w/some fine sand, trace fine-coarse gravel, some seashells, slight hydrocarbon-like odor from 44-44.3', strong organic (H2S-like) odor from 44.3-48', soft-medium dense, moist-wet
	18.9 ppm	
		Dark gray, silty CLAY w/some fine-coarse sand, some seashells, slight hydrocarbon-like odor to organic (H2S-like) odor, soft, wet
48-52'		
	17.5 ppm	
52-54.5'		Dk gr-br, silty CLAY w/f-c SAND from 52-53.5', silty f-c SAND from 53.5-54.5', trace mica schist, sheen and mod hydrocarbon-like odor from 52-53.5', loose-med dense, wet (bedrock at 54.5')
	41.1 ppm	
		Base of boring - 54.5 ft.

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Site Id: SB-24

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/30/03 - 10/03/03

Total Depth: 38.00'

Elevation: 3.04'

Datum: Mean Sea Level

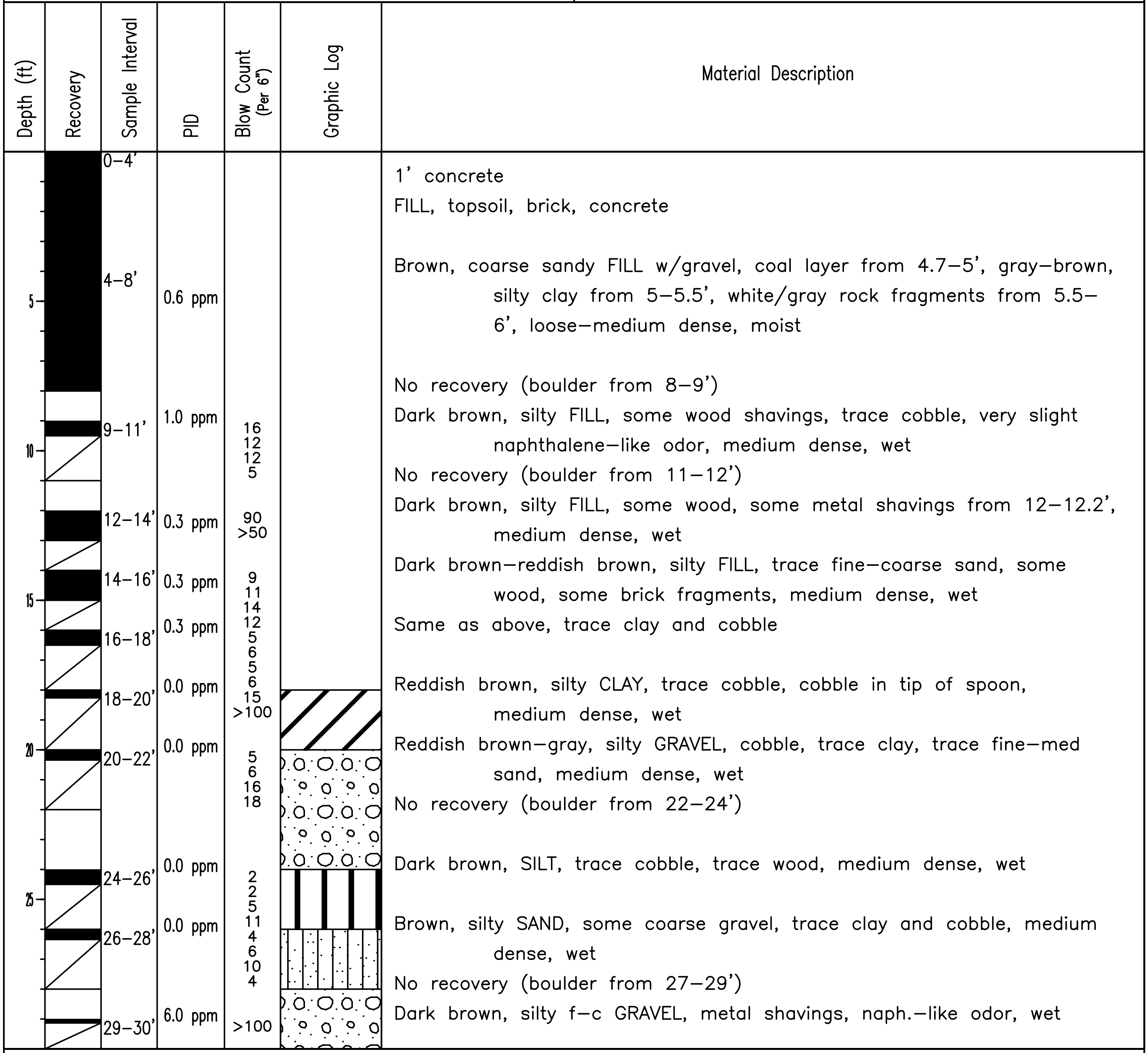
Logged By: C. Scharkopf

Drilling Method: HA 0-5' GP 4-8' HSA 8-11' MR 11-38'

Contractor: Jersey Boring

Borehole Dia.: 4.25in

Remarks: Samples selected for analysis at 30-32', 34-36' and 36-38'. Utilized Mud Rotery from 11-38' due to multiple refusals while drilling 0-11'.
HA:Hand Auger GP:Geoprobe
HSA:Hollow Stem Auger MR:Mud Rotary



Sample Interval	PID	Blow Count (Per 6")	Material Description
0-4'			1' concrete FILL, topsoil, brick, concrete
4-8'	0.6 ppm		Brown, coarse sandy FILL w/gravel, coal layer from 4.7-5', gray-brown, silty clay from 5-5.5', white/gray rock fragments from 5.5-6', loose-medium dense, moist
			No recovery (boulder from 8-9')
9-11'	1.0 ppm	16 12 12 5	Dark brown, silty FILL, some wood shavings, trace cobble, very slight naphthalene-like odor, medium dense, wet
			No recovery (boulder from 11-12')
12-14'	0.3 ppm	90 >50	Dark brown, silty FILL, some wood, some metal shavings from 12-12.2', medium dense, wet
14-16'	0.3 ppm	9 11 14 12	Dark brown-reddish brown, silty FILL, trace fine-coarse sand, some wood, some brick fragments, medium dense, wet
16-18'	0.3 ppm	5 6 5 6	Same as above, trace clay and cobble
18-20'	0.0 ppm	15 >100	Reddish brown, silty CLAY, trace cobble, cobble in tip of spoon, medium dense, wet
20-22'	0.0 ppm	5 6 16 18	Reddish brown-gray, silty GRAVEL, cobble, trace clay, trace fine-med sand, medium dense, wet
			No recovery (boulder from 22-24')
24-26'	0.0 ppm	2 2 5 11	Dark brown, SILT, trace cobble, trace wood, medium dense, wet
26-28'	0.0 ppm	4 6 10 4	Brown, silty SAND, some coarse gravel, trace clay and cobble, medium dense, wet
			No recovery (boulder from 27-29')
29-30'	6.0 ppm	>100	Dark brown, silty f-c GRAVEL, metal shavings, naph.-like odor, wet

Location: West 42nd Street

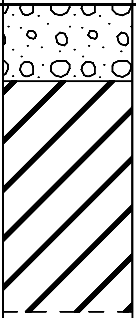
Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-24

Total Depth: 38.00'

Borehole Dia.: 4.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		30-32'	68.6 ppm	27 75 >100		Hard material from 29.5-30', to bk, GRAVEL, some cobble, some wood, tar/NAPL saturated throughout, v strong naph.-like odor, wet
		32-34'	136 ppm	45 40 35 >100		Gray, CLAY, some wood, some metal shavings, tar/NAPL saturated-stained throughout, strong naph.-like odor, sheen, m dense, wet
35		34-36'	27.5 ppm	4 5 5 5		Gray, CLAY, some wood, tar/NAPL stained-saturated from 34-34.3', sheen, strong napthalene-like odor, dense, wet
		36-38'	111 ppm	1		Black, CLAY, tar/NAPL, very strong naphthalene-like odor, sheen, wet
						Base of boring - 38 ft.
40						
45						
50						
55						
60						
65						

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Site Id: SB-25

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 10/01/03 - 10/01/03

Total Depth: 40.00'

Elevation: 6.18'

Datum: Mean Sea Level

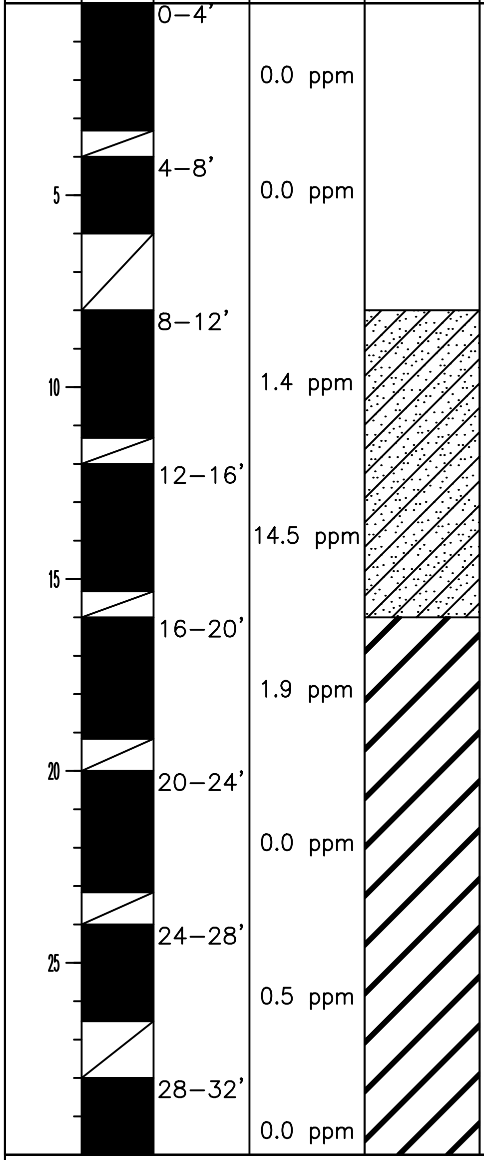
Logged By: K. Panella

Drilling Method: HA from 0-5' GP from 5-38'

Contractor: Jersey Boring

Borehole Dia.: 2.00in

Remarks: Samples selected for analysis at 12-16' and 24-28'.
WH:Weight of Hammer
HA:Hand Auger
GP:Geoprobe



Sample Interval	PID	Material Description
0-4'	0.0 ppm	Black-brown TOPSOIL and coarse sandy FILL, trace crushed yellow brick, moist
4-8'	0.0 ppm	Brown, medium-coarse sandy FILL, some silt, trace crushed yellow brick
8-12'	1.4 ppm	Black, coarse SAND, some silty clay, loose, wet
12-16'	14.5 ppm	Black, medium-coarse SAND, some silty clay, sheen, slight naphthalene-like and hydrocarbon-like odor
16-20'	1.9 ppm	Black, silty CLAY, dense, wet
20-24'	0.0 ppm	Gray, CLAY, trace silt, dense, wet
24-28'	0.5 ppm	Same as above, trace shells
28-32'	0.0 ppm	Same as above

Location: West 42nd Street

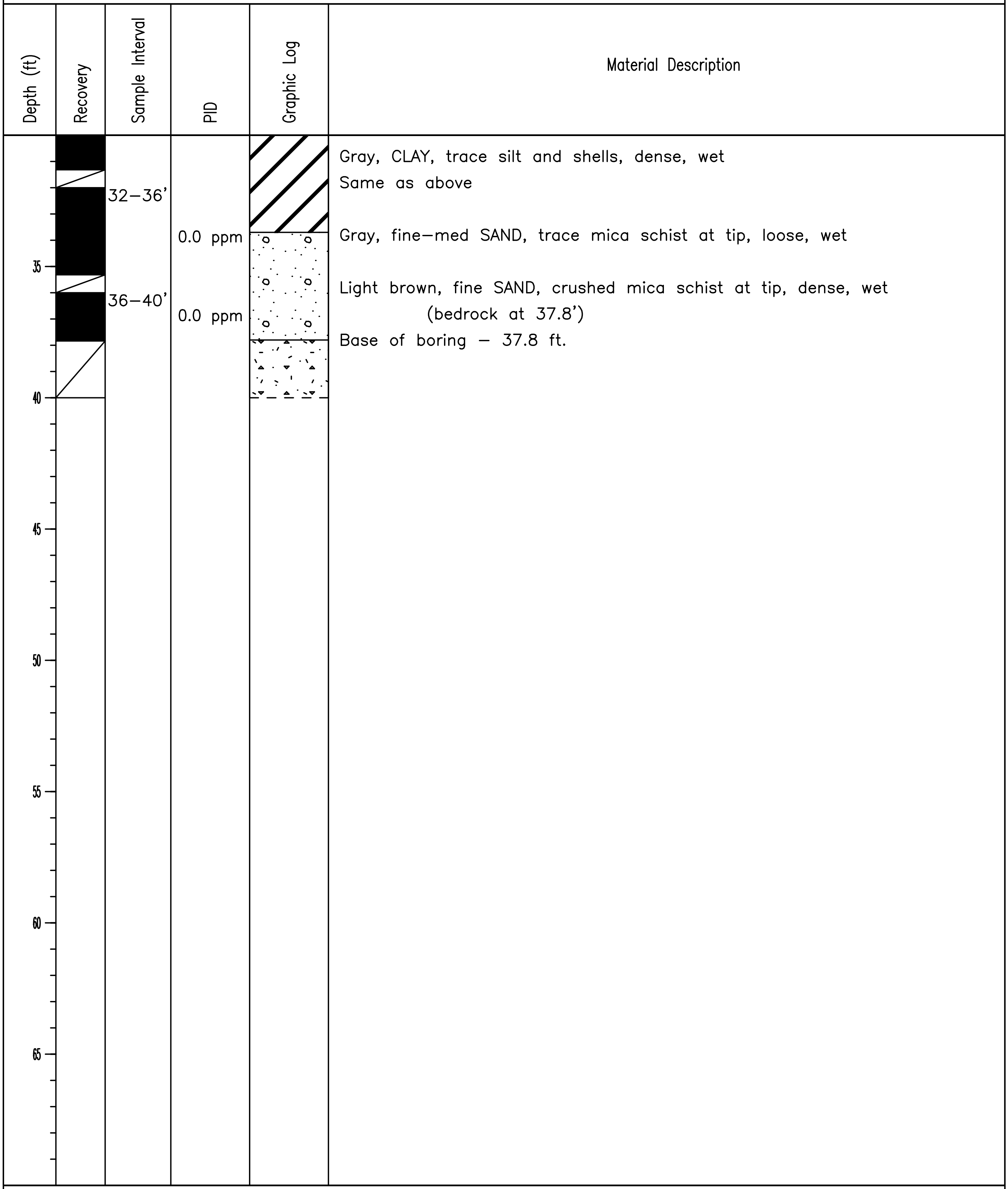
Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-25

Total Depth: 40.00'

Borehole Dia.: 2.00in



Gray, CLAY, trace silt and shells, dense, wet

Same as above

Gray, fine–med SAND, trace mica schist at tip, loose, wet

Light brown, fine SAND, crushed mica schist at tip, dense, wet
(bedrock at 37.8')

Base of boring – 37.8 ft.

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Site Id: SB-26

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/29/03 - 10/06/03

Total Depth: 28.50'

Elevation: 7.09'

Datum: Mean Sea Level

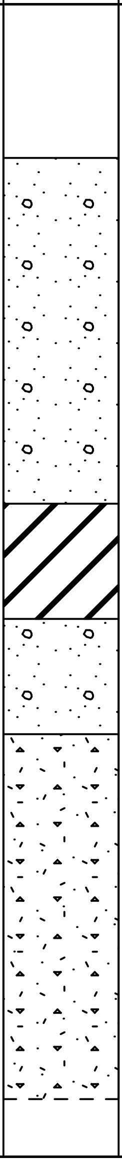
Logged By: K. Panella

Drilling Method: HA from 0-5' GP from 4-19' RC 19-29'

Contractor: Jersey Boring

Borehole Dia.: 2.00in

Remarks: Samples selected for analysis at 9-13', 16-19'. Moved 4' north of original proposed location.
HA:Hand Auger GP:Geoprobe
RC:NX Rock Core



Depth (ft)	Sample Interval	PID	Material Description
	0-4'		Black-brown TOPSOIL and coarse sandy FILL, trace crushed yellow brick, moist
5	4-8'	0.0 ppm	Light brown, medium-coarse SAND, trace mica schist fragments, loose, moist
			Same as above
10	8-12'	130 ppm	Black, coarse SAND, some rock fragments, sheen, moderate-strong naphthalene and hydrocarbon-like odors, loose, wet
			Same as above
15	12-16'	156 ppm	Black, silty CLAY, strong naphthalene-like odor, dense, wet
	16-19'		Black, coarse SAND, sheen, strong naphthalene and hydrocarbon-like odors, loose, wet
		56 ppm	Brown, fine-medium SAND, loose, wet (bedrock at 19')
20			Quartz w/trace mica in rock core
			Same as above
25			Same as above Base of boring - 28.5 ft.

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Site Id: SB-27

Location: West 42nd Street

Purpose: Soil Boring

Date(s): 09/22/03 - 09/23/03

Total Depth: 42.00'

Remarks: Samples selected for analysis at 18-20' and 29-31'. Completed within TP-09.
WH:Weight of Hammer
HSA:Hollow Stem Auger
RC:NX Rock Core

Elevation: 9.53'

Datum: Mean Sea Level

Logged By: K. Panella

Drilling Method: HSA from 0-31' RC from 31-42'

Contractor: Jersey Boring

Borehole Dia.: 6.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-10'	0.0 ppm			0.7' concrete Brown-bk, med-coarse sandy FILL, some brick, concrete and boulders, loose, moist
			0.0 ppm			Same as above, murky water rushed into excavation
5			0.0 ppm			Same as above, wet from water within excavation
			0.0 ppm			Same as above
			0.0 ppm			
10		10-12'	0.0 ppm	10 7 5 5		Gray, medium-coarse sandy FILL, trace crushed mica schist, loose, wet
		12-14'	0.0 ppm	2 4 5 5		Gray-red, fine-medium sandy FILL, trace mica, loose, wet
15		14-16'	0.0 ppm	5 11 10 8		Gray, coarse sandy FILL, trace gravel, loose, wet
		16-18'	0.0 ppm	3 3 4 2		Gray, fine-medium sandy FILL, loose, wet
		18-20'	145 ppm	1 2 3 2		Gray-black, fine sandy FILL, strong naphthalene-like odor, loose, wet (hit refusal at 20' at holder bottom)
20						0.5' crushed concrete
		21-23'	203 ppm	1 3 5 >100		Black, fine SAND, staining, strong naphthalene-like odor, wet
		23-25'		WH WH WH 3		No recovery, no sheen or odor on split spoon
25		25-27'	4.0 ppm	WH WH 2 3		Gray, CLAY, trace silty fine sand, trace wood and organics, wet
		27-29'	5.2 ppm	WH		Same as above
		29-31'	85.0 ppm	1 >100		Same as above, some silt, sheen, slight-mod naphthalene-like odor

Location: West 42nd Street

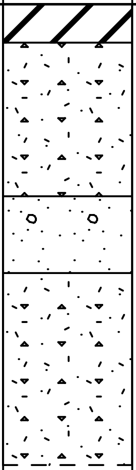
Purpose: Soil Boring

Consulting Firm: Dvirka & Bartilucci

Site Id: SB-27

Total Depth: 42.00'

Borehole Dia.: 6.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		31–35'				1' of black shale from 31–32' Core barrel driven to 35' – no recovery from 32–35'
35		35–37'	0.2 ppm	3 4 50 >100		Dark brown, medium SAND, trace gravel, 0.1' band of black medium sand, wet (bedrock at 37', rock core collected)
40		37–42'				Shale and pegmatite in rock core Base of boring – 42 ft.
45						
50						
55						
60						
65						

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Site Id: SB-28
Location: West 42nd Street
Purpose: Soil Boring
Date(s): 09/25/03 – 09/25/03
Total Depth: 29.00'
Elevation: 7.77'
Datum: Mean Sea Level
Logged By: K. Panella
Drilling Method: Hand Auger from 0–5' HSA from 5–29'
Contractor: Jersey Boring
Borehole Dia.: 6.25in

Remarks: Sample selected for analysis at 11–13'.
WH:Weight of Hammer
HSA:Hollow Stem Auger

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0–5'				FILL, topsoil, brick, concrete
5		5–7'	0.0 ppm	1 3 6 6		Light brown, medium SAND, trace silt and gravel, loose, moist
		7–9'	0.0 ppm	3 9 4 2		Black, silty SAND, trace medium sand, loose, moist
10		9–11'	0.0 ppm	3 2 3 3		Same as above, shale stuck in tip of split spoon
		11–13'	0.2 ppm	1 2 2 7		Gray, CLAY, trace shells, dense, to black, silty fine SAND in bottom 2", moist
		13–15'	0.0 ppm	3 3 4 3		Black, silty fine–medium SAND, loose, wet
15		15–17'	0.0 ppm	1 3 1 1		Same as above, some clay
		17–19'	0.0 ppm	WH WH 2 2		Black, CLAY w/some silt, chunk of wood at 18.5', loose–medium, wet
20		19–21'	0.0 ppm	3 2 2 2		Gray–black, CLAY, some silt, trace fine–medium sand, trace shells, dense, wet
		21–23'	0.0 ppm	WH WH 1 1		Gray, CLAY, trace silt, trace shells and organics, dense, wet
		23–25'	0.0 ppm	WH		Same as above
25		25–27'	0.0 ppm	WH WH 5 3		Same as above, some coarse sand and gravel from 26.5–27'
		27–29'	0.0 ppm	30 21 40 >100		Brown, coarse SAND and GRAVEL, black mica schist at tip, loose, wet (bedrock at 28.5')
						Base of boring – 28.5 ft.

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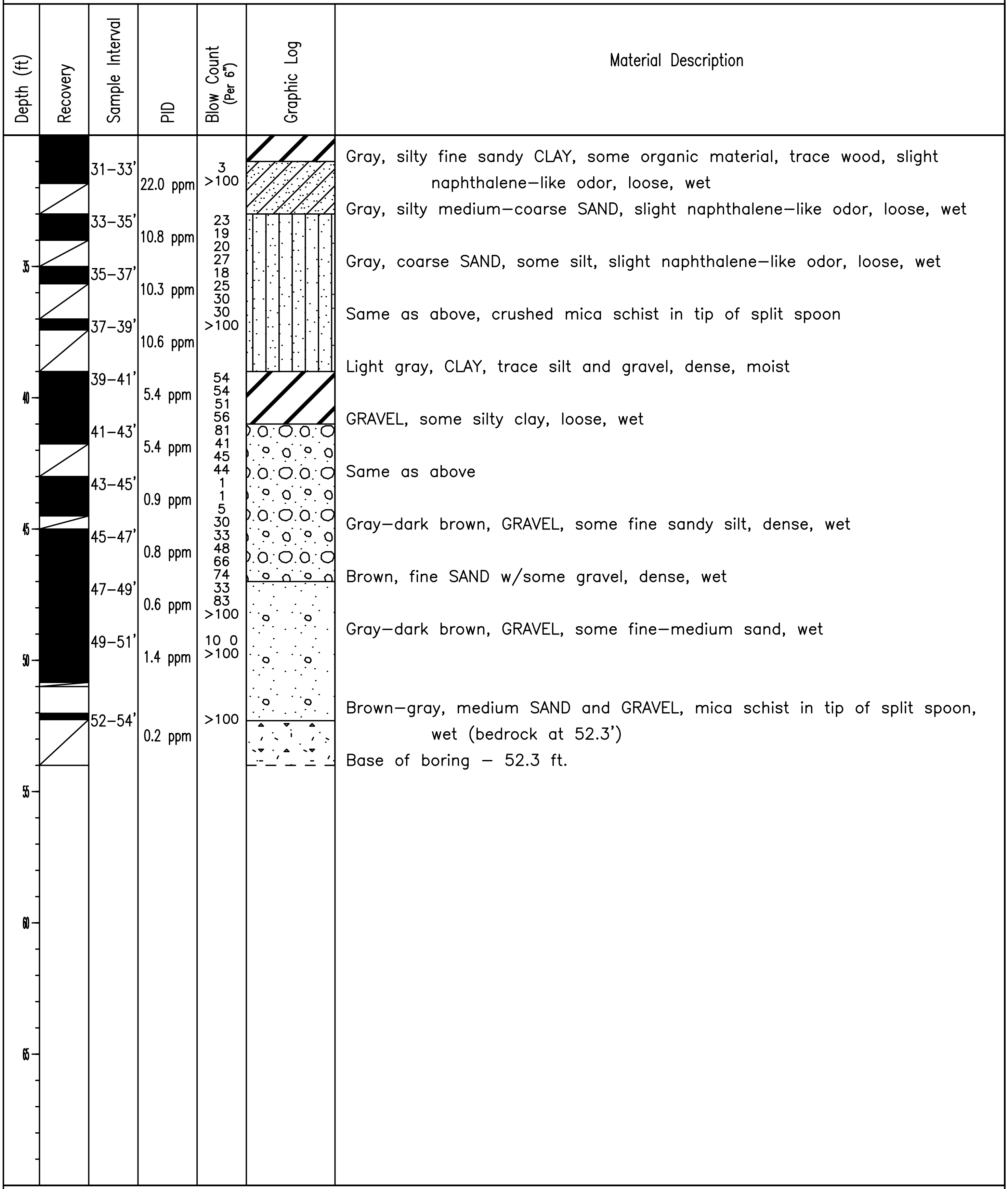
Site Id: SB-29
Location: West 42nd Street
Purpose: Soil Boring
Date(s): 09/24/03 - 09/25/03
Total Depth: 54.00'
Remarks: Samples selected for analysis at 19-23' and 39-41'. Completed within TP-08.
WH:Weight of Hammer

Elevation: 10.28'
Datum: Mean Sea Level
Logged By: K. Panella
Drilling Method: Hollow Stem Auger
Contractor: Jersey Boring
Borehole Dia.: 6.25in

Depth (ft)	Recovery	Sample Interval	PID	Blow Count (Per 6")	Graphic Log	Material Description
		0-10'	0.0 ppm			0.7' concrete
						Br, med-coarse sandy FILL, trace brick, boulders, concrete, loose, moist
			0.0 ppm			Same as above, pipe debris
5			82.9 ppm			Brown-gray, med-coarse sandy FILL, trace brick, boulders, concrete, staining, strong naphthalene-like odor, loose-dense, wet
			36.5 ppm			Brown-gray, silty fine-coarse sandy FILL, trace brick, boulders, concrete staining, strong naphthalene-like odor, loose-dense, wet
						Same as above
			85.5 ppm			
10		10-12'	99.0 ppm 0.0 ppm	19 6 7 6		Dk brown-black, medium-coarse sandy FILL, trace fine sand and crushed mica, loose, wet
		12-14'	0.0 ppm	2 9 >100		Same as above to mica schist boulder at 12.5', augered past boulder to 15'
15		15-17'	0.0 ppm	12 11 7 6		Lt gray, fine sandy FILL, some coarse sand and gravel, loose, wet
		17-19'	0.0 ppm	9 6 6 3		Gray, coarse-medium sandy FILL, trace crushed mica schist, wet
20		19-21'	602 ppm	4 5 4 4		Same as above, to bottom 2" of black, fine sandy FILL, trace clay, strong naphthalene-like odor, wet
		21-23'	801 ppm	3 4 21 10		Fine sandy FILL, trace clay, 2" crushed concrete and 1" wood at bottom, strong naphthalene-like odor, wet
		23-25'		3 1 1 2		No recovery, strong naphthalene-like odor and slight sheen on split spoon
25		25-27'	14 ppm	WH 1 1 1		No recovery, same as above on split spoon
		27-29'	4.8 ppm	WH		Gray, CLAY, trace silt and organics, slight naphthalene-like odor, slight sheen on split spoon, dense, wet
		29-31'	25.0 ppm	WH		Same as above, trace wood

Location: West 42nd Street	Site Id: SB-29
Purpose: Soil Boring	Total Depth: 54.00'
Consulting Firm: Dvirka & Bartilucci	Borehole Dia.: 6.25in



Sample Interval	PID	Blow Count (Per 6")	Material Description
31–33'	22.0 ppm	3 >100	Gray, silty fine sandy CLAY, some organic material, trace wood, slight naphthalene–like odor, loose, wet
33–35'	10.8 ppm	23 19 20 27	Gray, silty medium–coarse SAND, slight naphthalene–like odor, loose, wet
35–37'	10.3 ppm	18 25 30 30	Gray, coarse SAND, some silt, slight naphthalene–like odor, loose, wet
37–39'	10.6 ppm	>100	Same as above, crushed mica schist in tip of split spoon
39–41'	5.4 ppm	54 54 51 56	Light gray, CLAY, trace silt and gravel, dense, moist
41–43'	5.4 ppm	81 41 45 44	GRAVEL, some silty clay, loose, wet
43–45'	0.9 ppm	1 1 5 30	Same as above
45–47'	0.8 ppm	33 48 66 74	Gray–dark brown, GRAVEL, some fine sandy silt, dense, wet
47–49'	0.6 ppm	33 83 >100	Brown, fine SAND w/some gravel, dense, wet
49–51'	1.4 ppm	10 0 >100	Gray–dark brown, GRAVEL, some fine–medium sand, wet
52–54'	0.2 ppm	>100	Brown–gray, medium SAND and GRAVEL, mica schist in tip of split spoon, wet (bedrock at 52.3')

Base of boring – 52.3 ft.

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Site Id: MW-01

Date(s): 09/25/03 – 09/25/03

Datum: Mean Sea Level

Elevation: 7.77'

Measuring Point: 7.54'

Completed Depth: 19.00'

Total Depth: 29.00'

Location: West 42nd Street

Purpose: Monitoring Well, Shallow

Logged By: K. Panella

Drilling Method: Hollow Stem Auger

Borehole Dia.: 6.25in

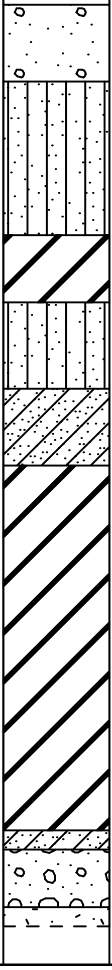
Contractor: Jersey Boring

Screens:
type: Slotted size: 0.020in dia: 2.00in fm: 7.00' to: 17.00'

Remarks: Logged from boring SB-28.
MW-01 was moved to outside and downgradient of the northwest gas holder.

Depth (ft)	Recovery	Sample Interval	PID	Material Description
		0–5'		FILL, topsoil, brick, concrete
5		5–7'	0.0 ppm	Light brown, medium SAND, trace silt and gravel, loose, moist
		7–9'	0.0 ppm	Black, silty SAND, trace medium sand, loose, moist
10		9–11'	0.0 ppm	Same as above, shale stuck in tip of split spoon
		11–13'	0.2 ppm	Gray, CLAY, trace shells, dense, to black, silty fine SAND in bottom 2", moist
		13–15'	0.0 ppm	Black, silty fine–medium SAND, loose, wet
15		15–17'	0.0 ppm	Same as above, some clay
		17–19'	0.0 ppm	Black, CLAY w/some silt, chunk of wood at 18.5', loose–medium, wet
20		19–21'	0.0 ppm	Gray–black, CLAY, some silt, trace fine–medium sand, trace shells, dense, wet
		21–23'	0.0 ppm	Gray, CLAY, trace silt, trace shells and organics, dense, wet
		23–25'	0.0 ppm	Same as above
25		25–27'	0.0 ppm	Same as above, some coarse sand and gravel from 26.5–27'
		27–29'	0.0 ppm	Brown, coarse SAND and GRAVEL, black mica schist at tip, loose, wet (bedrock at 28.5')
				Base of boring – 28.5 ft.

Graphic Log



Screen Zones

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Site Id: MW-02

Date(s): 09/09/03 - 09/09/03

Datum: Mean Sea Level

Elevation: 8.47'

Measuring Point: 8.26'

Completed Depth: 19.00'

Total Depth: 33.00'

Location: West 42nd Street

Purpose: Monitoring Well, Shallow

Logged By: K. Panella

Drilling Method: Hollow Stem Auger

Borehole Dia.: 6.25in

Contractor: Jersey Boring

Screens:
type: Slotted size: 0.020in dia: 2.00in fm: 7.00' to: 17.00'

Remarks: Logged from boring SB-06.

Depth (ft)	Recovery	Sample Interval	PID	Material Description	Graphic Log	Screen Zones
	■	0-5'		0.25' asphalt, to 0.75' reinforced concrete FILL, topsoil, brick, concrete		□
5	■ ◩	5-7'	0.1 ppm	Light brown, fine-medium sandy FILL, trace concrete, loose, dry		□
	◩	7-9'		No recovery		▤
10	■ ◩	9-11'	1.5 ppm	Black, silty SAND, dense, wet	▒	▤
	■	11-13'	1.8 ppm	Gray, CLAY, moderately plastic, moist	▨	▤
	■	13-15'	5.3 ppm	Gray-black, CLAY, dense, moist	▨	▤
15	■	15-17'	2.5 ppm	Black, silty SAND, trace mica, wet	▒	▤
	■	17-19'	4.8 ppm	Black, silty CLAY, trace mica schist fragments, slight naphthalene-like odor, wet	▨	□
20	■	19-21'	3.5 ppm	Black, silty CLAY from 19-20.8', loose, wet, to gray, CLAY from 20.8-21', dense, wet	▨	
	■	21-23'	2.0 ppm	Gray, CLAY, dense, wet	▨	
	■	23-25'	0.5 ppm	Same as above	▨	
25	■	25-27'	0.2 ppm	Same as above, trace seashells	▨	
	■	27-29'	0.1 ppm	Same as above	▨	
	■	29-31'	0.2 ppm	Gray, silty CLAY, moderately plastic, wet	▨	

Consulting Firm: Dvirka & Bartilucci

Site Id: MW-02

Location: West 42nd Street

Date(s): 09/09/03 - 09/09/03

Purpose: Monitoring Well, Shallow

Total Depth: 33.00'

Depth (ft)	Recovery	Sample Interval	PID	Material Description	Graphic Log	Screen Zones
	■	31–33'	0.2 ppm	Gray, sandy CLAY, some mica schist, loose, wet (bedrock at 32.8') Base of boring – 32.8 ft.	▨	
35						
40						
45						
50						
55						
60						
65						

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CONSULTING ENGINEERS
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Site Id: MW-03

Date(s): 09/08/03 - 09/08/03

Datum: Mean Sea Level

Elevation: 9.55'

Measuring Point: 9.28'

Completed Depth: 19.00'

Total Depth: 35.00'

Location: West 42nd Street

Purpose: Monitoring Well, Shallow

Logged By: K. Panella

Drilling Method: Hollow Stem Auger

Borehole Dia.: 6.25in

Contractor: Jersey Boring

Screens:
type: Slotted size: 0.020in dia: 2.00in fm: 7.00' to: 17.00'

Remarks: Logged from boring SB-09.

Depth (ft)	Recovery	Sample Interval	PID	Material Description	Graphic Log	Screen Zones
		0-5'		0.75' reinforced concrete FILL, topsoil, brick, concrete		
5		5-7'	0.0 ppm	Brown, medium SAND, some mica fragments, loose, dry		
		7-9'	8.3 ppm	Dark brown-black, medium SAND, some mica fragments, slight hydrocarbon-like odor, dense, moist		
10		9-11'	1.3 ppm	Black, silty fine SAND, slight hydrocarbon-like odor, dense, moist		
		11-13'	3.5 ppm	Gray, silty fine SAND, slight hydrocarbon-like odor, dense, moist		
		13-15'	2.2 ppm	Black, silty fine SAND from 13-13.5', mica fragments from 13.5-14', slight hydrocarbon-like odor, dense, wet		
15		15-17'	1.6 ppm	Black, silty fine SAND, slight hydrocarbon-like odor, dense, wet		
		17-19'	1.5 ppm	Same as above		
20		19-21'	2.5 ppm	Black-gray, CLAY, trace seashells, slight hydrocarbon-like odor, dense, wet		
		21-23'	5.2 ppm	Black-gray, CLAY, dense, wet		
		23-25'	2.5 ppm	Gray, CLAY, trace seashells, trace wood, dense, moist		
25		25-27'	0.5 ppm	Same as above		
		27-29'	0.6 ppm	Same as above, some seashells		
		29-31'	4.7 ppm	Gray, silty CLAY, slight hydrocarbon-like odor, dense, wet		

Consulting Firm: Dvirka & Bartilucci

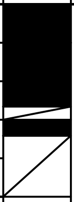
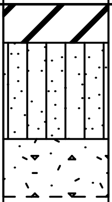
Site Id: MW-03

Location: West 42nd Street

Date(s): 09/08/03 – 09/08/03

Purpose: Monitoring Well, Shallow

Total Depth: 35.00'

Depth (ft)	Recovery	Sample Interval	PID	Material Description	Graphic Log	Screen Zones
		31–33'	23.4 ppm	Gray, silty fine SAND, slight hydrocarbon–like odor, dense, wet		
		33–35'	0.5 ppm	Same as above (bedrock at 33.5') Base of boring – 33.5 ft.		
35						
40						
45						
50						
55						
60						
65						

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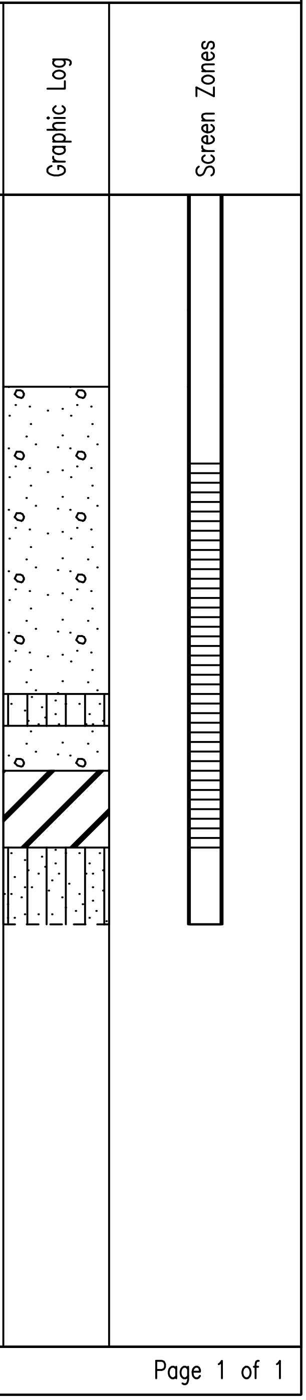
Site Id: MW-04
Date(s): 09/10/03 - 09/10/03
Datum: Mean Sea Level
Elevation:
Measuring Point: 9.15'
Completed Depth: 19.00'
Total Depth: 19.00'
Screens:
type: Slotted size: 0.020in dia: 2.00in fm: 7.00' to: 17.00'
Location: West 42nd Street
Purpose: Monitoring Well, Shallow
Logged By: K. Panella
Drilling Method: Hand Auger from 0-5' HSA from 5-19'
Borehole Dia.: 6.25in
Remarks: HSA:Hollow Stem Auger
Contractor: Jersey Boring

Depth (ft)	Sample Interval	PID	Material Description
	0–5'		FILL, topsoil, brick, concrete
5	5–7'	0.0 ppm	Black–gray, medium–coarse SAND, loose, moist
	7–9'	0.0 ppm	Same as above
	9–11'	1.1 ppm	Black, coarse SAND, some mica schist fragments, loose, wet
10			
	11–13'	0.5 ppm	Same as above
	13–15'	3.5 ppm	Black, coarse SAND w/silt, some mica fragments, loose, wet, to gray, coarse SAND, loose, wet
15	15–17'	3.1 ppm	Black–gray, silty CLAY, moderately plastic, wet
	17–19'	4.6 ppm	Gray, silty fine SAND, trace clay, moderately plastic, wet
			Base of boring – 19 ft.
20			
25			



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Site Id: MW-05

Date(s): 09/24/03 - 09/24/03

Datum: Mean Sea Level

Elevation: 10.38'

Measuring Point: 10.01'

Completed Depth: 19.00'

Total Depth: 42.00'

Location: West 42nd Street

Purpose: Monitoring Well, Shallow

Logged By: K. Panella

Drilling Method: Hollow Stem Auger

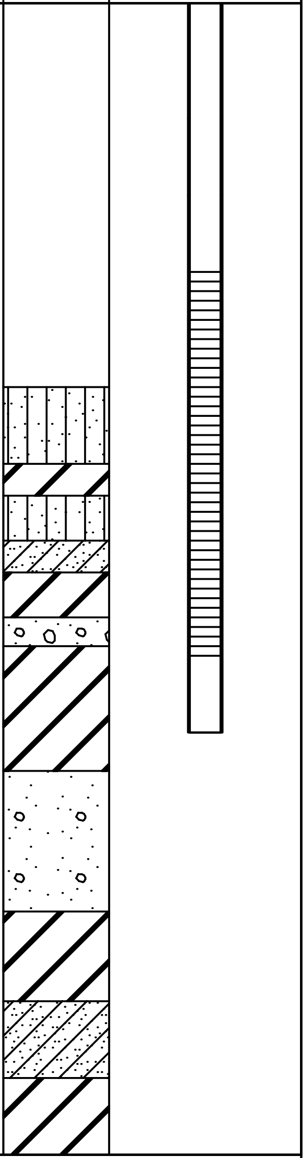
Borehole Dia.: 6.25in

Contractor: Jersey Boring

Screens:
type: Slotted size: 0.020in dia: 2.00in fm: 7.00' to: 17.00'

Remarks: Logged from boring SB-10.

Depth (ft)	Recovery	Sample Interval	PID	Material Description	Graphic Log	Screen Zones
		0-10'	0.0 ppm	0.7' concrete Br, m-c sandy FILL, trace concrete, brick and pebbles, loose, moist		
			3.0 ppm	Same as above, weak naphthalene-like odor, dense Same as above		
5			4.0 ppm	Same as above		
			8.0 ppm	Same as above		
			11.0 ppm			
10		10-12'	0.5 ppm 12.0 ppm	Black, silty fine SAND, slight naphthalene-like odor, loose, moist		
		12-14'	1.5 ppm	Brown-gray, silty CLAY from 12-12.8', moderately plastic, wet, to bk, SILT w/coarse sand, slight naphthalene-like odor, loose, wet		
15		14-16'	4.1 ppm	Black, fine-medium sandy CLAY from 14-15.7', loose, wet, to gray, silty CLAY, dense, moist		
		16-18'	0.2 ppm	Black, coarse SAND and GRAVEL (schist fragments) from 16-16.75', loose, wet, to gray, silty CLAY, dense, moist		
		18-20'	0.2 ppm	Gray, CLAY, trace medium sand, trace organic material, dense, moist		
20		20-22'	6.4 ppm	Gray, medium-coarse SAND, trace silt, trace organic material, loose, wet		
		22-24'	6.2 ppm	Gray, medium-coarse SAND from 22-23.7', loose, wet, to gray, silty CLAY, trace organic material, dense, moist		
25		24-26'	1.2 ppm	Gray, CLAY, trace silt, trace organic material, dense, moist		
		26-28'	0.5 ppm	Gray, CLAY, some silt and fine sand, some organic material, wood, dense, moist		
		28-30'	0.5 ppm	Gray, CLAY, trace silt and organic material, very dense, moist		



Consulting Firm: Dvirka & Bartilucci

Site Id: MW–05

Location: West 42nd Street

Date(s): 09/24/03 – 09/24/03

Purpose: Monitoring Well, Shallow

Total Depth: 42.00'

Depth (ft)	Recovery	Sample Interval	PID	Material Description	Graphic Log	Screen Zones
		30–32'	0.2 ppm	Gray, CLAY, some fine sand, trace organic material, loose, wet		
		32–34'	0.4 ppm	Gray, medium–coarse sandy CLAY, moderately plastic, wet		
35		34–36'	0.6 ppm	Gray, fine–medium SAND, some gravel, loose, wet (bedrock at 35') (NX Rock Core from 35–42')		
		36–37'		Granite		
		37–42'				
40						
				Base of boring – 42 ft.		
45						
50						
55						
60						
65						

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Site Id: MW-06

Date(s): 09/17/03 – 09/17/03

Datum: Mean Sea Level

Elevation: 10.54'

Measuring Point: 10.15'

Completed Depth: 19.00'

Total Depth: 49.00'

Location: West 42nd Street

Purpose: Monitoring Well, Shallow

Logged By: K. Panella

Drilling Method: Hollow Stem Auger

Borehole Dia.: 6.25in

Contractor: Jersey Boring

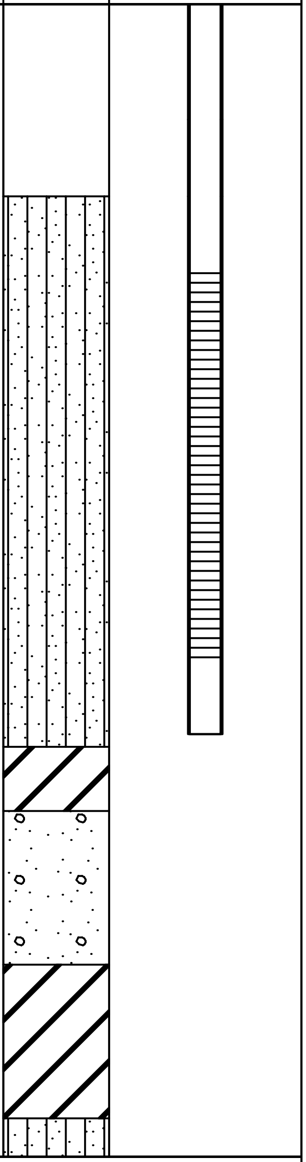
Screens:
type: Slotted size: 0.020in dia: 2.00in fm: 7.00' to: 17.00'

Remarks: Logged from boring SB–16.

Depth (ft)	Recovery	Sample Interval	PID	Material Description
		0–5'		0.2' asphalt, to 0.5' reinforced concrete FILL, topsoil, brick, concrete
5		5–7'	0.0 ppm	Brown, silty fine SAND, trace gravel, trace seashells, loose, moist
		7–9'	0.4 ppm	Brown, silty fine SAND, loose, moist
10		9–11'	2.0 ppm	Brown, fine SAND, some silt, some wood, slight naphthalene–like odor, wet
		11–13'	0.7 ppm	Brown–gray, fine SAND, some silt, loose, wet
		13–15'	104 ppm	Black, fine silty SAND, sheen, strong hydrocarbon–like odor, loose, wet
15		15–17'	7.7 ppm	Black–brown, silty fine SAND, sheen, strong hydrocarbon–like odor, loose, wet
		17–19'	5.4 ppm	Same as above, slight hydrocarbon–like odor
20		19–21'	5.0 ppm	Gray, medium SAND w/silt from 19–19.3', loose, wet, to gray, CLAY w/organic material, dense, wet
		21–23'	0.6 ppm	Gray, medium–coarse SAND, slight hydrocarbon–like odor, loose, wet
		23–25'	11.6 ppm	Same as above
25		25–27'	0.0 ppm	Gray, CLAY, dense, wet
		27–29'	0.8 ppm	Same as above
		29–31'	1.5 ppm	Gray, medium–coarse SAND, some silt, trace clay, loose, wet

Graphic Log

Screen Zones



Consulting Firm: Dvirka & Bartilucci	Site Id: MW-06
Location: West 42nd Street	Date(s): 09/17/03 - 09/17/03
Purpose: Monitoring Well, Shallow	Total Depth: 49.00'

Depth (ft)	Recovery	Sample Interval	PID	Material Description	Graphic Log	Screen Zones
		31-33'	0.9 ppm	Gray, fine-medium SAND, trace gravel, loose, wet		
		33-35'	0.8 ppm	Gray, CLAY, trace silt, dense, wet		
35		35-37'	0.8 ppm	Same as above		
		37-39'	0.0 ppm	Same as above, moist		
40		39-41'	0.0 ppm	Same as above, some weathered bedrock		
		41-43'	0.0 ppm	Brown-gray, silty fine SAND, some gravel, dense, wet		
		43-45'	0.0 ppm	Brown, fine-medium SAND, some gravel, dense, wet		
45		45-47'	0.2 ppm	Brown, GRAVEL, some f sand, some silt, weathered bedrock (mica schist) in tip of spoon, loose, wet		
		47-49'	0.0 ppm	GRAVEL, mica schist fragments, loose, wet (bedrock at 47.1') Base of boring - 47.1 ft.		
50						
55						
60						
65						

APPENDIX B

TEST PIT FIELD ACTIVITIES PHOTO DOCUMENTATION

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

Breaking up asphalt and concrete at location TP-01, looking north.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

TP-01 excavated to 10 feet below grade, looking east.

08/13/03

Inside eastern wall of of Purifying House within TP-02, looking west .

Liquid encountered between the inner and outer wall of the Purifying House within TP-02, looking southwest.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

Concrete slab encountered in TP-03, looking north.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

08/19/03

Excavated TP-03 to 11 feet below grade, looking southwest.

Excavated TP-04 to 11 feet below grade, looking west.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

Decontamination procedures between test pits.

Excavated TP-05 to 10 feet below grade, looking south.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

Excavated soil and wood from TP-05, looking northwest.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

Excavated TP-06 to 11 feet below grade, looking north.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site


08/22/2002

08/22/03

Excavated TP-06 to 11 feet below grade, looking south.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

Metal main gas line cover encountered in TP-07 at 10.5 feet below grade.

Main gas pipe encountered in TP-07.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

08/19/03

Gas holder brick wall encountered in TP-07, looking southeast.

Excavated TP-07 to 11 feet below grade, looking northwest.

D&B - Site Photographs - Con Edison Site Characterization Study
West 42nd Street Former Manufactured Gas Plant Site
Test Pit Field Activities

08/21/03

Gas holder brick wall encountered in TP-08, looking north.

Gas holder brick wall encountered in TP-08, looking south.

Excavated TP-09 to 10 feet below grade, looking south.

APPENDIX C

SITE CHARACTERIZATION ANALYTICAL RESULTS - DATA SUMMARY TABLES

TABLE 1
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TEST PIT SOIL SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**TP-01**	**TP-02**	**TP-03**	**TP-04**	**TP-05**	**TP-06**	**TP-07**	**TP-08**	**TP-09**	**LABORATORY QUANTITATION LIMITS** (ug/Kg)	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives** (ug/Kg)
SAMPLE DEPTH (FT)	5-5.5	9-9.5	3.5-4	8-8.5	11-11.5	9.5-10	10-10.5	10.5-11	10-10.5		
DATE OF COLLECTION	8/14/03	8/13/03	8/19/03	8/18/03	8/20/03	8/22/03	8/19/03	8/21/03	8/18/03		
DILUTION FACTOR	1.0	1000.0	1.0	1.0	1.0	1.0	1.0	250.0	1.0		
PERCENT SOLIDS	85.0	66.0	86.0	85.0	81.0	77.0	86.0	77.0	84.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg		
Dichlorodifluoromethane	U	U	U	U	U	U	U	U	U	5	--
Chloromethane	U	U	U	U	U	U	U	U	U	5	--
Vinyl Chloride	U	U	U	U	U	U	U	U	U	5	200
Bromomethane	U	U	U	U	U	U	U	U	U	5	--
Chloroethane	U	U	U	U	U	U	U	U	U	5	1900
Trichlorofluoromethane	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethene	U	U	U	U	U	U	U	U	U	5	400
Acetone	U*	U	14	88	180	19	100	U	6	5	200
Idomethane	U	U	U	U	U	U	U	U	U	5	--
Carbon Disulfide	U	U	U	U	U	U	1 J	U	U	5	2700
Methylene Chloride	U*	2,400 J	U*	U*	U	U*	U*	U	U*	5	100
trans-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	300
Methyl tert-butyl ether	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethane	U	U	U	U	U	U	U	U	U	5	200
Vinyl acetate	U	U	U	U	U	U	U	U	U	5	--
2-Butanone	14	U	U	28	50	U	24	U	U	5	300
cis-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	--
2,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Bromochloromethane	U	U	U	U	U	U	U	U	U	5	--
Chloroform	U	U	U	U	U	U	U	U	U	5	300
1,1,1-Trichloroethane	U	U	U	U	U	U	U	U	U	5	800
1,1-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
Carbon Tetrachloride	U	U	U	U	U	U	U	U	U	5	600
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	5	100
Benzene	U	U	U	2 J	45	9	U	U	U	5	60
Trichloroethene	U	U	U	U	U	U	U	U	U	5	700
1,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Dibromomethane	U	U	U	U	U	U	U	U	U	5	--
Bromodichloromethane	U	U	U	U	U	U	U	U	U	5	--
cis-1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
4-Methyl-2-pentanone	U	U	U	U	U	U	U	U	U	5	1000
Toluene	U	U	1 J	6	15	U	3 J	U	U	5	1500
trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	U	5	--

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
B: Constituent concentration is less than the CRDL, but greater than the IDL.
U*: Result qualified as non-detect based on validation criteria

NOTES:

☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 1 (continued)
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TEST PIT SOIL SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**TP-01**	**TP-02**	**TP-03**	**TP-04**	**TP-05**	**TP-06**	**TP-07**	**TP-08**	**TP-09**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (IN)	5-5.5	9-9.5	3.5-4	8-8.5	11-11.5	9.5-10	10-10.5	10.5-11	10-10.5		
DATE OF COLLECTION	8/14/03	8/13/03	8/19/03	8/18/03	8/20/03	8/22/03	8/19/03	8/21/03	8/18/03		
DILUTION FACTOR	1.0	1000.0	1.0	1.0	1.0	1.0	1.0	250.0	1.0		
PERCENT SOLIDS	85.0	66.0	86.0	85.0	81.0	77.0	86.0	77.0	84.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	300
Tetrachloroethene	U	U	U	U	U	U	U	U	U	5	1,400
2-Hexanone	U	U	U	U	U	U	U	U	U	5	--
Dibromochloromethane	U	U	U	U	U	U	U	U	U	5	--
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	5	--
Chlorobenzene	U	U	U	U	U	U	U	U	U	5	1,700
1,1,1,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	--
Ethylbenzene	U	U	U	4 J	U	U	U	1,800	U	5	5,500
m,p-Xylene	U	U	U	3 J	U	U	U	4,000	U	5	--
o-Xylene	U	U	U	1 J	U	U	U	1,900	U	5	--
Xylene (total)	U	U	U	4	U	U	U	**5,900**	U	5	1,200
Styrene	U	U	U	U	U	U	U	U	U	5	--
Bromoform	U	U	U	U	U	U	U	U	U	5	--
Isopropylbenzene	U	U	U	4 J	U	U	U	420 J	U	5	--
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	600
Bromobenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichloropropane	U	U	U	U	U	U	U	U	U	5	400
n-Propylbenzene	U	U	U	1 J	U	U	U	320 J	U	5	--
2-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
1,3,5-Trimethylbenzene	U	1,500 J	U	2 J	U	U	U	2,000	U	5	--
4-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
tert-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trimethylbenzene	U	U	U	12	2 J	U	U	6,200	U	5	--
sec-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
4-Isopropyltoluene	U	U	U	U	U	2 J	U	U	U	5	--
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	8,500
n-Butylbenzene	U	U	U	U	U	U	U	320 J	U	5	--
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	7,900
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	3,400
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	--
Total BTEX	0	0	1	16	60	9	3	7,700	0	--	--
Total VOCs	14	3,900	15	151	292	30	128	**16,960**	6	--	10,000

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
B: Constituent concentration is less than the CRDL, but greater than the IDL.
D: Result taken for reanalysis at a secondary dilution
U*: Result qualified as non-detect based on validation criteria

NOTES:

▭ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 2

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

TEST PIT SOIL SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	TP-01	TP-02	TP-03	TP-04	TP-05	TP-06	TP-07	TP-08	TP-09	LABORATORY QUANTITATION LIMITS	NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives
SAMPLE DEPTH (FT)	5-5.5	9-9.5	3.5-4	8-8.5	11-11.5	9.5-10	10-10.5	10.5-11	10-10.5		
DATE OF COLLECTION	8/14/03	8/13/03	8/19/03	8/18/03	8/20/03	8/22/03	8/19/03	8/21/03	8/18/03		
DILUTION FACTOR	1.0	400.0	1.0	1.0	1.0	1.0	1.0	250.0	1.0		
PERCENT SOLIDS	85.0	66.0	86.0	85.0	81.0	77.0	86.0	77.0	84.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
Phenol	U	U	U	U	U	U	U	**50 J**	U	550	30 OR MDL
bis(2-Chloroethyl)ether	U	U	U	U	U	U	U	U	U	550	----
2-Chlorophenol	U	U	U	U	U	U	U	U	U	550	800
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	550	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	550	8,500
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	550	7,900
2-Methylphenol	U	U	U	U	U	U	U	U	U	550	100 OR MDL
2,2-Oxybis (1-Chloropropane)	U	U	U	U	U	U	U	U	U	550	----
4-Methylphenol	U	U	U	U	U	U	U	81 J	U	550	900
N-Nitroso-di-n-propylamine	U	U	U	U	U	U	U	U	U	550	----
Hexachloroethane	U	U	U	U	U	U	U	U	U	550	----
Nitrobenzene	U	U	U	U	U	U	U	U	U	550	200 OR MDL
Isophorone	U	U	U	U	U	U	U	U	U	550	4,400
2-Nitrophenol	U	U	U	U	U	U	U	U	U	550	330 OR MDL
2,4-Dimethylphenol	U	U	U	U	U	U	U	U	U	550	----
2,4-Dichlorophenol	U	U	U	U	U	U	U	U	U	550	400
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	550	3,400
Naphthalene	1,200	**350,000**	260 J	4,000	**28,000 D**	130 J	130 J	**77,000 D**	U	550	13,000
4-Chloroaniline	U	U	U	U	U	U	U	U	U	550	220 OR MDL
bis (2-Chloroethoxy) methane	U	U	U	U	U	U	U	U	U	550	----
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	550	----
4-Chloro-3-methylphenol	U	U	U	U	U	U	U	U	U	550	240 OR MDL
2-Methylnaphthalene	140 J	**330,000**	140 J	1,000	180 J	U	U	5,200	U	550	36,400
Hexachlorocyclopentadiene	U	U	U	U	U	U	U	U	U	550	----
2,4,6-Trichlorophenol	U	U	U	U	U	U	U	U	U	1400	----
2,4,5-Trichlorophenol	U	U	U	U	U	U	U	U	U	550	100
2-Chloronaphthalene	U	U	U	U	U	U	U	U	U	1400	----
2-Nitroaniline	U	U	U	U	U	U	U	U	U	550	430 OR MDL
Dimethylphthalate	U	U	U	U	U	U	U	U	U	550	2,000
2,6-Dinitrotoluene	U	U	U	U	U	U	U	U	U	550	1,000
Acenaphthylene	150 J	**120,000 J**	110 J	61 J	140 J	U	U	480	U	550	41,000
3-Nitroaniline	U	U	U	U	U	U	U	U	U	1400	500 OR MDL
Acenaphthene	440	**90,000 J**	620	770	590	U	U	370 J	U	550	50,000
2,4-Dinitrophenol	U	U	U	U	U	U	U	U	U	1400	200 OR MDL
4-Nitrophenol	U	U	U	U	U	U	U	U	U	1400	100 OR MDL
Dibenzofuran	350 J	**410,000**	340 J	640	290 J	U	U	610	U	550	6,200

TABLE 2 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE

SITE CHARACTERIZATION STUDY

TEST PIT SOIL SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID SAMPLE DEPTH (FT) DATE OF COLLECTION DILUTION FACTOR PERCENT SOLIDS UNITS	**TP-01** 5-5.5 8/14/03 1.0 85.0 ug/Kg	**TP-02** 9-9.5 8/13/03 400.0 66.0 ug/Kg	**TP-03** 3.5-4 8/19/03 1.0 86.0 ug/Kg	**TP-04** 8-8.5 8/18/03 1.0 85.0 ug/Kg	**TP-05** 11-11.5 8/20/03 1.0 81.0 ug/Kg	**TP-06** 9.5-10 8/22/03 1.0 77.0 ug/Kg	**TP-07** 10-10.5 8/19/03 1.0 86.0 ug/Kg	**TP-08** 10.5-11 8/21/03 250.0 77.0 ug/Kg	**TP-09** 10-10.5 8/18/03 1.0 84.0 ug/Kg	**LABORATORY QUANTITATION LIMITS** (ug/Kg)	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives** (ug/Kg)
2,4-Dinitrotoluene	U	U	U	U	U	U	U	U	U	550	----
Diethylphthalate	U	U	U	U	U	U	U	U	U	550	7,100
Fluorene	390	**260,000**	640	370 J	600	U	U	540	U	550	50,000
4-Chlorophenyl-phenylether	U	U	U	U	U	U	U	U	U	550	----
4-Nitroaniline	U	U	U	U	U	U	U	U	U	1400	----
4,6-Dinitro-2-methylphenol	U	U	U	U	U	U	U	U	U	1400	----
N-Nitrosodiphenylamine	U	U	U	U	U	U	U	U	U	550	----
4-Bromophenyl-phenylether	U	U	U	U	U	U	U	U	U	550	----
Hexachlorobenzene	U	U	U	U	U	U	U	U	U	550	410
Pentachlorophenol	U	U	U	U	U	U	U	U	U	1400	1,000 OR MDL
Phenanthrene	2,000	**2,000,000**	5,400	600	7,300 D	160 J	200 J	1,300	450	550	50,000
Anthracene	1,000	**520,000**	1,400	U	2,200	U	53 J	470	130 J	550	50,000
Carbazole	130 J	150,000 J	620	140 J	340 J	U	47 J	130 J	U	550	----
Di-n-butylphthalate	U	U	U	U	U	U	U	U	U	550	8,100
Fluoranthene	3,800	**1,600,000**	8,200 D	100 J	11,000 D	180 J	510	1,300	840	550	50,000
Pyrene	4,700 D	**1,700,000**	7,800 D	130 J	11,000 D	160 J	550	1,700	940	550	50,000
Butylbenzylphthalate	U	U	U	U	U	U	U	U	U	550	50,000
3,3'-Dichlorobenzidine	U	U	U	U	U	U	U	U	U	550	----
Benzo (a) anthracene	**3,400**	**750,000**	**4,400**	U	**7,000 D**	110 J	**360 J**	**660**	**510**	550	224 OR MDL
Chrysene	**3,100**	**780,000**	**4,000**	54 J	**5,600**	120 J	380	**570**	**450**	550	400
bis(2-Ethylhexyl)phthalate	340 BJ	U	120 J	44 J	45 J	240 J	39 J	88 J	68 J	550	50,000
Di-n-octylphthalate	U	U	U	U	U	U	U	U	U	550	50,000
Benzo(b)fluoranthene	**4,600**	**800,000**	**6,000**	57 J	**7,800 D**	130 J	530	730	550	550	1,100
Benzo(k)fluoranthene	**2,200**	**490,000**	**2,300**	U	**3,500**	57 J	240 J	380 J	310 J	550	1,100
Benzo(a)pyrene	**3,400**	**660,000**	**4,000**	46 J	**6,300**	**96 J**	**410**	**590**	**460**	550	61 OR MDL
Indeno(1,2,3-cd)pyrene	1,900	**470,000**	1,800	U	2,900	58 J	240 J	280 J	230 J	550	3,200
Dibenzo(a,h)anthracene	**470**	**110,000 J**	**550**	U	**760**	U	**71 J**	**68 J**	**55 J**	550	14 OR MDL
Benzo(g,h,i)perylene	1,800	**420,000**	1,600	U	2,800	56 J	240 J	250 J	210 J	550	50,000
Total PAHs	34,550	11,120,000	49,080	6,188	97,490	1,257	3,914	86,688	5,135		----
Total Carcinogen PAHs	19,070	4,060,000	23,050	157	33,860	571	2,231	3,278	2,565		----
Total SVOCs	35,510	**12,010,000**	50,300	8,012	98,345	1,497	4,000	92,847	5,203		500,000

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at dilution

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S), where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
---: not established
☐ Indicates value exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
NA: sample not analyzed for this analyte

TABLE 3

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE

SITE CHARACTERIZATION STUDY

TEST PIT SOIL SAMPLING RESULTS
TARGET ANALYTE LIST (TAL) METALS AND CYANIDE

SAMPLE ID	**TP-01**	**TP-02**	**TP-03**	**TP-04**	**TP-05**	**TP-06**	**TP-07**	**TP-08**	**TP-09**	**INSTRUMENT DETECTION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	5-5.5	9-9.5	3.5-4	8-8.5	11-11.5	9.5-10	10-10.5	10.5-11	10-10.5		
DATE OF COLLECTION	8/14/03	8/13/03	8/19/03	8/18/03	8/20/03	8/22/03	8/19/03	8/21/03	8/18/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
PERCENT SOLIDS	85.0	66.0	86.0	85.0	81.0	77.0	86.0	77.0	84.0		
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	mg/kg
Aluminum	8,140	2,370	10,900	6,250	9,210	9,480	8,340	8,610	6,490	13	SB
Antimony	1.8	U	0.41 B	U	U	U	U	U	U	8	SB
Arsenic	6	**35.6**	4.7	**14.2**	3.5	4	3.3	2.3	1.4	3	7.5 or SB
Barium	131	48 B	139	84.6	109	99.6	97.1	101	68.5	1	300 or SB
Beryllium	**0.27 B**	U	**0.55**	**0.41**	**0.55**	**0.46**	**0.45**	**0.67**	**0.6**	1	0.16 or SB
Cadmium	1.1	1.4 B	0.24 B	U	U	U	U	0.056 B	0.067 B	1	10*
Calcium	6440	5840	8,970	5,440	3,440	9,140	4,200	5,630	2,890	8	SB
Chromium	21.2	46.1	29.6	15.3	15.2	17.1	16.4	18	14.6	1	50*
Cobalt	8.3	3.1 B	10.4	5.1	7.7	8.4	7	8.7	9.4	2	30 or SB
Copper	**77.5**	**50.1**	**51.6**	24.5	**32.6**	23.5	**32.2**	**33.3**	**29.9**	1	25 or SB
Iron	**29600**	**94900**	**20900**	**13700**	**17400**	**16500**	**14900**	**17500**	**14200**	20	2,000 or SB
Lead	154	247	192	68.3	125	120	75.7	76.1	76.2	2	400
Magnesium	5140	5980	6,600	3,620	2,970	3,840	3,280	4,090	3,960	8	SB
Manganese	347	363	242	236	194	426	541	484	211	4	SB
Mercury	**0.58**	**22.2**	**1**	**0.14**	**0.6**	**0.22**	**2.3**	**0.24**	**0.16**	0.2	0.1
Nickel	**25.2 B**	8.4 B	**27.3**	**13.8**	**16.1**	**15.6**	**16.4**	**20.2**	**22.1**	2	13 or SB
Potassium	3530 B	2010 B	4,680	798	1,210	1,390	2,310	2,010	2,540	20	SB
Selenium	U	U	U	U	U	1.1 B	U	U	U	4	2 or SB
Silver	1.8	U	0.78 B	0.53 B	0.69 B	0.43 B	0.5 B	0.49 B	0.87 B	1	SB
Sodium	168	1360 B	1380	112	156	175	193	243	97.1	9	SB
Thallium	U	U	U	U	U	U	U	U	U	5	SB
Vanadium	27.4	40.1 B	33.1	17.8	22.4	22.3	23.7	22.9	19.1	1	150 or SB
Zinc	**220**	**156**	**137**	**64.9**	**72.1**	**69.6**	**69.2**	**82.3**	**123**	1	20 or SB
Total Cyanide	1.4	0.76 B	2.9	U	1.2	1.1 B	2.6	0.48 B	U	1	----

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound concentration is less than the CRDL but greater than the IDL.

NOTES:

To determine the detection limit for each sample, use the following equation: (CRDL)*(DF)*(100/%S) where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.

SB: Site background

----: not established

*: as per proposed 4/95 NYSDEC TAGM

☐ Indicates value exceeds the NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective

TABLE 4

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-01**	**SB-01**	**SB-02**	**SB-02**	**SB-03**	**SB-04**	**SB-05**	**SB-06**	**SB-07**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	22-26	26-32	17-19	29-31	17-19	10-16	18-19.5	9-11	27-29		
DATE OF COLLECTION	9/2/03	9/2/03	9/3/03	9/22/03	9/5/03	9/18/03	9/9/03	9/9/03	9/3/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	400.0	1.0	1.0	1.0	5.0		
PERCENT SOLIDS	20.0	78.0	82.0	93.0	76.0	78.0	75.0	78.0	77.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
Dichlorodifluoromethane	28	7	2 J	U	U	U	U	U	U	5	--
Chloromethane	U	U	U	U	U	U	U	U	U	5	--
Vinyl Chloride	U	U	U	U	U	U	U	U	U	5	200
Bromomethane	U	U	U	U	U	U	U	U	U	5	--
Chloroethane	5 J	U	U	U	U	U	U	U	U	5	1900
Trichlorofluoromethane	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethene	U	U	U	U	U	U	U	U	U	5	400
Acetone	42	8	46	65	U	53	35	75	53	5	200
Idomethane	U	U	U	U	U	U	U	U	U	5	--
Carbon Disulfide	12 J	1 J	2 J	U	U	U	U	U	U	5	2700
Methylene Chloride	12 J	3 J	2 J	1 J	U	U	2 J	2 J	17 J	5	100
trans-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	300
Methyl tert-butyl ether	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethane	U	U	U	U	U	10	U	U	U	5	200
Vinyl acetate	U	U	U	U	U	U	U	U	U	5	--
2-Butanone	U	U	10	U	U	U	U	U	U	5	300
cis-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	--
2,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Bromochloromethane	U	U	U	U	U	U	U	U	U	5	--
Chloroform	U	U	U	U	U	U	U	U	U	5	300
1,1,1-Trichloroethane	U	U	U	U	U	U	U	U	U	5	800
1,1-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
Carbon Tetrachloride	U	U	U	U	U	U	U	U	U	5	600
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	5	100
Benzene	22 J	U	**610 E**	U	**3,200**	2 J	**15,000 DJ**	17	**300**	5	60
Trichloroethene	U	U	U	U	U	U	U	U	U	5	700
1,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Dibromomethane	U	U	U	U	U	U	U	U	U	5	--
Bromodichloromethane	U	U	U	U	U	U	U	U	U	5	--
cis-1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
4-Methyl-2-pentanone	8 J	U	U	U	U	U	U	U	U	5	1000
Toluene	U	U	760 E	U	**6,600**	U	**33,000 DJ**	U	22 J	5	1500
trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	U	5	--

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:

☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-01**	**SB-01**	**SB-02**	**SB-02**	**SB-03**	**SB-04**	**SB-05**	**SB-06**	**SB-07**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (IN)	22-26	26-32	17-19	29-31	17-19	10-16	18-19.5	9-11	27-29		
DATE OF COLLECTION	9/2/03	9/2/03	9/3/03	9/22/03	9/5/03	9/18/03	9/9/03	9/9/03	9/3/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	400.0	1.0	1.0	1.0	5.0		
PERCENT SOLIDS	20.0	78.0	82.0	93.0	76.0	78.0	75.0	78.0	77.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	300
Tetrachloroethene	U	U	U	U	U	U	U	U	U	5	1,400
2-Hexanone	11 J	U	U	U	U	U	U	U	U	5	--
Dibromochloromethane	U	U	U	U	U	U	U	U	U	5	--
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	5	--
Chlorobenzene	U	U	U	U	U	U	U	U	U	5	1,700
1,1,1,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	--
Ethylbenzene	110	U	2,000 E	U	4,400	U	**21,000 DJ**	U	200	5	5,500
m,p-Xylene	47	U	190,000 DJ	U	12,000	U	80,000 D	U	160	5	--
o-Xylene	34	U	75,000 DJ	U	3,600	U	27,000 DJ	U	80	5	--
Xylene (total)	81	U	**265,000 DJ**	U	**15,600**	U	**107,000 D**	U	240	5	1,200
Styrene	U	U	U	U	U	U	70	U	U	5	--
Bromoform	U	U	U	U	U	U	U	U	U	5	--
Isopropylbenzene	52	U	160	U	U	U	140	U	9 J	5	--
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	600
Bromobenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichloropropane	U	U	U	U	U	U	U	U	U	5	400
n-Propylbenzene	15 J	U	460 E	U	U	U	140	U	U	5	--
2-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
1,3,5-Trimethylbenzene	34	U	1,400 E	U	1,400 J	U	18,000 DJ	U	17 J	5	--
4-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
tert-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trimethylbenzene	120	U	140,000 DJ	U	3,900	U	48,000 D	U	32	5	--
sec-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
4-Isopropyltoluene	130	U	U	U	U	U	U	U	17 J	5	--
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	8,500
n-Butylbenzene	12 J	U	210	U	U	U	U	U	U	5	--
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	7,900
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	3,400
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichlorobenzene	U	U	U	U	U	3 J	U	U	U	5	--
Total BTEX	213	0	268,370	0	29,800	2	176,000	17	762	--	--
Total VOCs	694	19	**410,662**	66	**35,100**	68	**242,387**	94	907	--	10,000

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:

☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-07**	**SB-08**	**SB-08**	**SB-09**	**SB-09**	**SB-10**	**SB-10**	**SB-11**	**SB-12**	**LABORATORY QUANTITATION LIMITS** (ug/Kg)	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives** (ug/Kg)
SAMPLE DEPTH (FT)	33-35	12-16	28-30	11-15	31-33.5	20-24	26-28	10-12	21-23		
DATE OF COLLECTION	9/3/03	10/2/03	10/2/03	9/5/03	9/5/03	9/11/03	9/11/03	9/17/03	9/8/03		
DILUTION FACTOR	1.0	4000.0	400.0	1.0	1.0	1.0	1.0	1.0	50.0		
PERCENT SOLIDS	77.0	81.0	78.0	81.0	70.0	80.0	78.0	82.0	68.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg		
Dichlorodifluoromethane	U	U	U	U	U	U	U	U	U	5	--
Chloromethane	U	U	U	U	U	U	U	U	U	5	--
Vinyl Chloride	U	U	U	U	U	U	U	U	U	5	200
Bromomethane	U	U	U	U	U	U	U	U	U	5	--
Chloroethane	U	U	U	U	U	U	U	U	U	5	1900
Trichlorofluoromethane	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethene	U	U	U	U	U	U	U	U	U	5	400
Acetone	21	U	U	49	25	37	45	14	U	5	200
Idomethane	U	U	U	U	U	U	U	U	U	5	--
Carbon Disulfide	U	U	U	U	2 J	2 J	4 J	U	U	5	2700
Methylene Chloride	2 J	**5,000 J**	**540 J**	2 J	2 J	2 J	2 J	2 J	U	5	100
trans-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	300
Methyl tert-butyl ether	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethane	U	U	U	U	U	U	U	U	U	5	200
Vinyl acetate	U	U	U	U	U	U	U	U	U	5	--
2-Butanone	U	U	**510 J**	U	U	U	7	U	U	5	300
cis-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	--
2,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Bromochloromethane	U	U	U	U	U	U	U	U	U	5	--
Chloroform	U	U	U	U	U	U	U	U	U	5	300
1,1,1-Trichloroethane	U	U	U	U	U	U	U	U	U	5	800
1,1-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
Carbon Tetrachloride	U	U	U	U	U	U	U	U	U	5	600
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	5	100
Benzene	8	U	U	2 J	**70**	43	2 J	U	**230 J**	5	60
Trichloroethene	U	U	U	U	U	U	U	U	U	5	700
1,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Dibromomethane	U	U	U	U	U	U	U	U	U	5	--
Bromodichloromethane	U	U	U	U	U	U	U	U	U	5	--
cis-1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
4-Methyl-2-pentanone	U	U	U	U	U	U	U	U	U	5	1000
Toluene	U	**5,800 J**	U	U	U	U	U	U	U	5	1500
trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	U	5	--

QUALIFIERS:
U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:
☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-07**	**SB-08**	**SB-08**	**SB-09**	**SB-09**	**SB-10**	**SB-10**	**SB-11**	**SB-12**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (IN)	33-35	12-16	28-30	11-15	31-33.5	20-24	26-28	10-12	21-23		
DATE OF COLLECTION	9/3/03	10/2/03	10/2/03	9/5/03	9/5/03	9/11/03	9/11/03	9/17/03	9/8/03		
DILUTION FACTOR	1.0	4000.0	400.0	1.0	1.0	1.0	1.0	1.0	50.0		
PERCENT SOLIDS	77.0	81.0	78.0	81.0	70.0	80.0	78.0	82.0	68.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	300
Tetrachloroethene	U	U	U	U	U	U	U	U	U	5	1,400
2-Hexanone	U	U	U	U	U	U	U	U	U	5	--
Dibromochloromethane	U	U	U	U	U	U	U	U	U	5	--
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	5	--
Chlorobenzene	U	U	U	U	U	U	U	U	U	5	1,700
1,1,1,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	--
Ethylbenzene	4 J	**11,000 J**	730 J	U	3 J	110	U	U	760	5	5,500
m,p-Xylene	3 J	25,000	1,500 J	U	U	35	U	U	900	5	--
o-Xylene	2 J	10,000 J	600 J	U	U	12	U	U	310 J	5	--
Xylene (total)	5 J	**35,000**	**2,100 J**	U	U	47	U	U	**1,210**	5	1,200
Styrene	U	U	U	U	U	U	U	U	U	5	--
Bromoform	U	U	U	U	U	U	U	U	U	5	--
Isopropylbenzene	U	U	U	U	2 J	7	U	U	U	5	--
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	600
Bromobenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichloropropane	U	U	U	U	U	U	U	U	U	5	400
n-Propylbenzene	U	U	U	U	U	1 J	U	U	U	5	--
2-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
1,3,5-Trimethylbenzene	U	10,000 J	680 J	U	U	2 J	U	U	110 J	5	--
4-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
tert-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trimethylbenzene	U	25,000	1,600 J	U	U	10	U	U	340 J	5	--
sec-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
4-Isopropyltoluene	U	U	U	U	U	U	U	U	U	5	--
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	8,500
n-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	7,900
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	3,400
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	--
Total BTEX	17	51,800	2,830	2	73	200	2	0	2,200	--	--
Total VOCs	40	**91,800**	6,160	53	104	261	60	16	2,650	--	10,000

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:

☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-12**	**SB-13**	**SB-14**	**SB-14**	**SB-15**	**SB-15**	**SB-16**	**SB-16**	**SB-17**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	27-28.8	19-21.4	17-19	30-32	7-9	13-15	13-15	25-27	9-13		
DATE OF COLLECTION	9/8/03	9/16/03	9/12/03	9/15/03	9/12/03	9/12/03	9/16/03	9/16/03	9/9/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	50.0	1.0	2500.0	1.0	1.0		
PERCENT SOLIDS	80.0	78.0	85.0	85.0	85.0	86.0	85.0	84.0	83.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
Dichlorodifluoromethane	U	U	U	U	U	U	U	U	U	5	--
Chloromethane	U	U	U	U	U	U	U	U	U	5	--
Vinyl Chloride	U	U	U	U	U	U	U	U	U	5	200
Bromomethane	U	U	U	U	U	U	U	U	U	5	--
Chloroethane	U	U	U	U	U	U	U	U	U	5	1900
Trichlorofluoromethane	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethene	U	U	U	U	U	U	U	U	U	5	400
Acetone	27	47	10	13	U	19	U	30	20	5	200
Idomethane	U	U	U	U	U	U	U	U	U	5	--
Carbon Disulfide	2 J	U	1 J	U	U	U	U	2 J	5 J	5	2700
Methylene Chloride	2 J	U	2 J	3 J	U	2 J	U	3 J	2 J	5	100
trans-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	300
Methyl tert-butyl ether	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethane	U	U	U	U	U	U	U	U	U	5	200
Vinyl acetate	U	U	U	U	U	U	U	U	U	5	--
2-Butanone	U	U	U	U	U	U	U	U	U	5	300
cis-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	--
2,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Bromochloromethane	U	U	U	U	U	U	U	U	U	5	--
Chloroform	U	U	U	U	U	U	U	U	U	5	300
1,1,1-Trichloroethane	U	U	U	U	U	U	U	U	U	5	800
1,1-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
Carbon Tetrachloride	U	U	U	U	U	U	U	U	U	5	600
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	5	100
Benzene	**120**	**6,400 DJ**	**900 E**	1 J	U	U	U	14	28	5	60
Trichloroethene	U	U	U	U	U	U	U	U	U	5	700
1,2-Dichloropropane	U	U	U	U	910	U	U	U	U	5	--
Dibromomethane	U	U	U	U	U	U	U	U	U	5	--
Bromodichloromethane	U	U	U	U	U	U	U	U	U	5	--
cis-1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
4-Methyl-2-pentanone	U	U	U	U	U	U	U	U	U	5	1000
Toluene	20	**17,000 D**	690 E	U	U	U	U	59	14	5	1500
trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	U	5	--

QUALIFIERS:
U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:
☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-12**	**SB-13**	**SB-14**	**SB-14**	**SB-15**	**SB-15**	**SB-16**	**SB-16**	**SB-17**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (IN)	27-28.8	19-21.4	17-19	30-32	7-9	13-15	13-15	25-27	9-13		
DATE OF COLLECTION	9/8/03	9/16/03	9/12/03	9/15/03	9/12/03	9/12/03	9/16/03	9/16/03	9/9/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	50.0	1.0	2500.0	1.0	1.0		
PERCENT SOLIDS	80.0	78.0	85.0	85.0	85.0	86.0	85.0	84.0	83.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	300
Tetrachloroethene	U	U	U	U	U	U	U	U	U	5	1,400
2-Hexanone	U	U	U	U	U	U	U	U	U	5	--
Dibromochloromethane	U	U	U	U	U	U	U	U	U	5	--
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	5	--
Chlorobenzene	U	U	U	U	U	U	U	U	U	5	1,700
1,1,1,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	--
Ethylbenzene	190	3,000 DJ	1,600 E	U	590	U	**11,000 J**	90	230 E	5	5,500
m,p-Xylene	230	20,000	2,500 E	U	290	U	U	56	17	5	--
o-Xylene	140	7,800 DJ	2,100 E	U	78 J	U	U	50	10	5	--
Xylene (total)	370	**27,800 D**	**4,600 E**	U	368	U	U	106	27	5	1,200
Styrene	U	8,100 DJ	1,200 E	U	U	U	U	U	7	5	--
Bromoform	U	U	U	U	U	U	U	U	U	5	--
Isopropylbenzene	6 J	110	53	U	5,000	3 J	7,700 J	U	U	5	--
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	600
Bromobenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichloropropane	U	U	U	U	U	U	U	U	U	5	400
n-Propylbenzene	2 J	430 E	370 E	U	6,000	2 J	3,400 J	U	2 J	5	--
2-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
1,3,5-Trimethylbenzene	11	4,400 DJ	1,400 E	U	U	U	10,000 J	U	U	5	--
4-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
tert-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trimethylbenzene	42	11,000 DJ	1,800 E	U	U	U	39,000	U	30	5	--
sec-Butylbenzene	U	U	U	U	4,200	3 J	U	U	U	5	--
4-Isopropyltoluene	U	U	U	U	5,600	U	U	U	43	5	--
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	8,500
n-Butylbenzene	U	U	U	U	5,800	4 J	3,200 J	U	U	5	--
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	7,900
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	3,400
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	--
Total BTEX	700	54,200	7,790	1	958	0	11,000	269	299	--	--
Total VOCs	792	**78,287**	**12,626**	17	**28,468**	33	**74,300**	304	408	--	10,000

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:

☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-17**	**SB-18**	**SB-18**	**SB-19**	**SB-19**	**SB-20**	**SB-20**	**SB-21**	**SB-21**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	21-23	9-13	23-25	20-24	24-26.2	12-16	16-20	12-16	36-38.9		
DATE OF COLLECTION	9/10/03	9/26/03	9/26/03	10/2/03	10/2/03	10/2/03	10/2/03	9/30/03	9/30/03		
DILUTION FACTOR	1.0	4500.0	1.0	4000.0	50.0	3.1	50.0	50.0	1.0		
PERCENT SOLIDS	94.0	78.0	56.0	63.0	86.0	73.0	64.0	78.0	75.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
Dichlorodifluoromethane	U	U	U	U	U	U	U	U	U	5	--
Chloromethane	U	U	U	U	U	U	U	U	U	5	--
Vinyl Chloride	U	U	U	U	U	U	U	U	U	5	200
Bromomethane	U	U	U	U	U	U	U	U	U	5	--
Chloroethane	U	U	U	U	U	U	U	U	U	5	1900
Trichlorofluoromethane	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethene	U	U	U	U	U	U	U	U	U	5	400
Acetone	20	U	140	U	U	30	**490**	U	19	5	200
Idomethane	U	U	U	U	U	U	U	U	U	5	--
Carbon Disulfide	U	U	U	U	U	U	U	U	U	5	2700
Methylene Chloride	2 J	U	8 J	U	69 J	22 B	95 J	U	2 J	5	100
trans-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	300
Methyl tert-butyl ether	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethane	U	U	U	U	U	U	U	U	U	5	200
Vinyl acetate	U	U	U	U	U	U	U	U	U	5	--
2-Butanone	U	U	14	U	290	U	**640**	U	U	5	300
cis-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	--
2,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Bromochloromethane	U	U	U	U	U	U	U	U	U	5	--
Chloroform	U	U	U	U	U	U	U	U	U	5	300
1,1,1-Trichloroethane	U	U	U	U	U	U	U	U	U	5	800
1,1-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
Carbon Tetrachloride	U	U	U	U	U	U	U	U	U	5	600
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	5	100
Benzene	4 J	**24,000 J**	13	**180,000 J**	**91 J**	U	U	U	4 J	5	60
Trichloroethene	U	U	U	U	U	U	U	U	U	5	700
1,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Dibromomethane	U	U	U	U	U	U	U	U	U	5	--
Bromodichloromethane	U	U	U	U	U	U	U	U	U	5	--
cis-1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
4-Methyl-2-pentanone	U	U	U	U	U	U	U	U	U	5	1000
Toluene	U	**31,000**	11	**340,000**	86 J	U	U	U	U	5	1500
trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	U	5	--

QUALIFIERS:
U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:
☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-17**	**SB-18**	**SB-18**	**SB-19**	**SB-19**	**SB-20**	**SB-20**	**SB-21**	**SB-21**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (IN)	21-23	9-13	23-25	20-24	24-26.2	12-16	16-20	12-16	36-38.9		
DATE OF COLLECTION	9/10/03	9/26/03	9/26/03	10/2/03	10/2/03	10/2/03	10/2/03	9/30/03	9/30/03		
DILUTION FACTOR	1.0	4500.0	1.0	4000.0	50.0	3.1	50.0	50.0	1.0		
PERCENT SOLIDS	94.0	78.0	56.0	63.0	86.0	73.0	64.0	78.0	75.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	300
Tetrachloroethene	U	U	U	U	U	U	U	U	U	5	1,400
2-Hexanone	U	U	U	U	U	U	U	U	U	5	--
Dibromochloromethane	U	U	U	U	U	U	U	U	U	5	--
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	5	--
Chlorobenzene	U	U	U	U	U	U	U	U	U	5	1,700
1,1,1,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	--
Ethylbenzene	2 J	**13,000 J**	U	**62,000 J**	82 J	U	780	63 J	7	5	5,500
m,p-Xylene	U	57,000	10	350,000	140 J	U	190 J	U	2 J	5	--
o-Xylene	U	20,000 J	4 J	120,000 J	54 J	U	360 J	U	3 J	5	--
Xylene (total)	U	**77,000**	14	**470,000**	194 J	U	550	U	5 J	5	1,200
Styrene	U	U	U	95,000 J	U	U	U	U	U	5	--
Bromoform	U	U	U	U	U	U	U	U	U	5	--
Isopropylbenzene	U	U	U	U	U	U	120 J	U	3 J	5	--
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	600
Bromobenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichloropropane	U	U	U	U	U	U	U	U	U	5	400
n-Propylbenzene	U	U	U	U	U	U	83 J	U	U	5	--
2-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
1,3,5-Trimethylbenzene	U	9,400 J	U	U	U	U	140 J	U	2 J	5	--
4-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
tert-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trimethylbenzene	U	23,000 J	3 J	120,000 J	62 J	U	420	U	5 J	5	--
sec-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
4-Isopropyltoluene	U	U	U	U	U	U	U	U	U	5	--
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	8,500
n-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	7,900
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	3,400
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	--
Total BTEX	6	145,000	38	1,052,000	453	0	1,330	63	16	--	--
Total VOCs	28	**177,400**	203	**1,267,000**	874	52	3,318	63	47	--	10,000

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:

▭ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-22**	**SB-22**	**SB-23**	**SB-23**	**SB-24**	**SB-24**	**SB-24**	**SB-25**	**SB-25**	**LABORATORY QUANTITATION LIMITS** (ug/Kg)	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives** (ug/Kg)
SAMPLE DEPTH (FT)	12-16	36-44	20-24	52-54.5	30-32	34-36	36-38	12-16	24-28		
DATE OF COLLECTION	9/29/03	9/29/03	9/30/03	9/30/03	10/3/03	10/3/03	10/3/03	10/1/03	10/1/03		
DILUTION FACTOR	1000.0	50.0	12500.0	50.0	100000.0	4000.0	100000.0	500.0	400.0		
PERCENT SOLIDS	75.0	79.0	64.0	76.0	69.0	70.0	62.0	75.0	63.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg		
Dichlorodifluoromethane	U	U	U	U	U	U	U	U	U	5	--
Chloromethane	U	U	U	U	U	U	U	U	U	5	--
Vinyl Chloride	U	U	U	U	U	U	U	U	U	5	200
Bromomethane	U	U	U	U	U	U	U	U	U	5	--
Chloroethane	U	U	U	U	U	U	U	U	U	5	1900
Trichlorofluoromethane	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethene	U	U	U	U	U	U	U	U	U	5	400
Acetone	U	**360**	U	**550**	U	U	U	U	**1,800 J**	5	200
Idomethane	U	U	U	U	U	U	U	U	U	5	--
Carbon Disulfide	U	U	U	U	U	U	U	U	U	5	2700
Methylene Chloride	U	81 J	U	69 J	**160,000 J**	U	**190,000 JB**	U	**580 J**	5	100
trans-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	300
Methyl tert-butyl ether	U	U	U	U	U	U	U	U	U	5	--
1,1-Dichloroethane	U	U	U	U	U	U	U	U	U	5	200
Vinyl acetate	U	U	U	U	U	U	U	U	U	5	--
2-Butanone	U	**490**	U	**680**	U	U	U	U	**780 J**	5	300
cis-1,2-Dichloroethene	U	U	U	U	U	U	U	U	U	5	--
2,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Bromochloromethane	U	U	U	U	U	U	U	U	U	5	--
Chloroform	U	U	U	U	U	U	U	U	U	5	300
1,1,1-Trichloroethane	U	U	U	U	U	U	U	U	U	5	800
1,1-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
Carbon Tetrachloride	U	U	U	U	U	U	U	U	U	5	600
1,2-Dichloroethane	U	U	U	U	U	U	U	U	U	5	100
Benzene	**2,400 J**	U	**50,000 J**	U	**320,000 J**	U	**490,000 J**	**610 J**	U	5	60
Trichloroethene	U	U	U	U	U	U	U	U	U	5	700
1,2-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
Dibromomethane	U	U	U	U	U	U	U	U	U	5	--
Bromodichloromethane	U	U	U	U	U	U	U	U	U	5	--
cis-1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	--
4-Methyl-2-pentanone	U	U	U	U	U	U	U	U	U	5	1000
Toluene	U	U	**130,000**	U	**750,000**	**12,000 J**	**1,200,000**	U	U	5	1500
trans-1,3-Dichloropropene	U	U	U	U	U	U	U	U	U	5	--
1,1,2-Trichloroethane	U	U	U	U	U	U	U	U	U	5	--

QUALIFIERS:
U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:
☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-22**	**SB-22**	**SB-23**	**SB-23**	**SB-24**	**SB-24**	**SB-24**	**SB-25**	**SB-25**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (IN)	12-16	36-44	20-24	52-54.5	30-32	34-36	36-38	12-16	24-28		
DATE OF COLLECTION	9/26/02	9/26/03	9/30/03	9/30/03	10/3/03	10/3/03	10/3/03	10/1/03	10/1/03		
DILUTION FACTOR	1000.0	50.0	12500.0	50.0	100000.0	4000.0	100000.0	500.0	400.0		
PERCENT SOLIDS	75.0	79.0	64.0	76.0	69.0	70.0	62.0	75.0	63.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
1,3-Dichloropropane	U	U	U	U	U	U	U	U	U	5	300
Tetrachloroethene	U	U	U	U	U	U	U	U	U	5	1,400
2-Hexanone	U	U	U	U	U	U	U	U	U	5	--
Dibromochloromethane	U	U	U	U	U	U	U	U	U	5	--
1,2-Dibromoethane	U	U	U	U	U	U	U	U	U	5	--
Chlorobenzene	U	U	U	U	U	U	U	U	U	5	1,700
1,1,1,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	--
Ethylbenzene	2,900 J	120 J	**81,000 J**	75 J	**540,000 J**	**11,000 J**	**790,000 J**	1,900 J	1,200 J	5	5,500
m,p-Xylene	4,600 J	87 J	160,000	U	1,100,000	24,000 J	1,600,000	2,400 J	1,400 J	5	--
o-Xylene	2,200 J	U	61,000 J	U	390,000 J	9,600 J	580,000 J	930 J	620 J	5	--
Xylene (total)	**6,800**	87 J	**221,000**	U	**1,490,000**	**33,600**	**2,180,000**	**3,330**	**2,020 J**	5	1,200
Styrene	U	U	U	U	U	U	U	U	U	5	--
Bromoform	U	U	U	U	U	U	U	U	U	5	--
Isopropylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U	U	U	5	600
Bromobenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichloropropane	U	U	U	U	U	U	U	U	U	5	400
n-Propylbenzene	U	U	U	U	U	U	U	U	U	5	--
2-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
1,3,5-Trimethylbenzene	2,100 J	U	29,000 J	U	230,000 J	5,800 J	320,000 J	U	U	5	--
4-Chlorotoluene	U	U	U	U	U	U	U	U	U	5	--
tert-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trimethylbenzene	4,400 J	84 J	68,000 J	62 J	530,000 J	14,000 J	760,000 J	1,300 J	880 J	5	--
sec-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
4-Isopropyltoluene	U	U	U	U	U	U	U	U	U	5	--
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	8,500
n-Butylbenzene	U	U	U	U	U	U	U	U	U	5	--
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	5	7,900
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U	U	U	5	--
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	3,400
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	5	--
1,2,3-Trichlorobenzene	U	U	U	U	U	U	U	U	U	5	--
Total BTEX	12,100	207	482,000	75	3,100,000	56,600	4,660,000	5,840	3,220	--	--
Total VOCs	**18,600**	1,222	**579,000**	1,436	**4,020,000**	**76,400**	**5,930,000**	7,140	7,260	--	10,000

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:

▭ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-26**	**SB-26**	**SB-27**	**SB-27**	**SB-28**	**SB-29**	**SB-29**			**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	9-13	16-19	18-20	29-31	11-13	19-23	39-41				
DATE OF COLLECTION	9/29/03	10/1/03	9/22/03	9/23/03	9/25/03	9/24/03	9/24/03				
DILUTION FACTOR	5000.0	2000.0	1000.0	100.0	1.0	20000.0	1.0				
PERCENT SOLIDS	80.0	79.0	82.0	77.0	71.0	67.0	97.0				
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg			(ug/Kg)	(ug/Kg)
Dichlorodifluoromethane	U	U	U	U	U	U	U			5	--
Chloromethane	U	U	U	U	U	U	U			5	--
Vinyl Chloride	U	U	U	U	U	U	U			5	200
Bromomethane	U	U	U	U	U	U	U			5	--
Chloroethane	U	U	U	U	U	U	U			5	1900
Trichlorofluoromethane	U	U	U	U	U	U	U			5	--
1,1-Dichloroethene	U	U	U	U	U	U	U			5	400
Acetone	U	U	U	U	U	U	29			5	200
Idomethane	U	U	U	U	U	U	U			5	--
Carbon Disulfide	U	U	U	U	U	U	U			5	2700
Methylene Chloride	U	U	**1,500 J**	**1,500 J**	5 J	U	2 J			5	100
trans-1,2-Dichloroethene	U	U	U	U	U	U	U			5	300
Methyl tert-butyl ether	U	U	U	U	U	U	U			5	--
1,1-Dichloroethane	U	U	U	U	U	U	U			5	200
Vinyl acetate	U	U	U	U	U	U	U			5	--
2-Butanone	U	U	U	U	U	U	U			5	300
cis-1,2-Dichloroethene	U	U	U	U	U	U	U			5	--
2,2-Dichloropropane	U	U	U	U	U	U	U			5	--
Bromochloromethane	U	U	U	U	U	U	U			5	--
Chloroform	U	U	U	U	U	U	U			5	300
1,1,1-Trichloroethane	U	U	U	U	U	U	U			5	800
1,1-Dichloropropene	U	U	U	U	U	U	U			5	--
Carbon Tetrachloride	U	U	U	U	U	U	U			5	600
1,2-Dichloroethane	U	U	U	U	U	U	U			5	100
Benzene	U	**1,500 J**	U	**4,300 J**	**140**	U	U			5	60
Trichloroethene	U	U	U	U	U	U	U			5	700
1,2-Dichloropropane	U	U	U	U	U	U	U			5	--
Dibromomethane	U	U	U	U	U	U	U			5	--
Bromodichloromethane	U	U	U	U	U	U	U			5	--
cis-1,3-Dichloropropane	U	U	U	U	U	U	U			5	--
4-Methyl-2-pentanone	U	U	U	U	U	U	U			5	1000
Toluene	U	**5,400 J**	1,300 J	U	2 J	**170,000**	U			5	1500
trans-1,3-Dichloropropene	U	U	U	U	U	U	U			5	--
1,1,2-Trichloroethane	U	U	U	U	U	U	U			5	--

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:

▭ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 4 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

SAMPLE ID	**SB-26**	**SB-26**	**SB-27**	**SB-27**	**SB-28**	**SB-29**	**SB-29**			**LABORATORY QUANTITATION LIMITS** (ug/Kg)	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives** (ug/Kg)
SAMPLE DEPTH (IN)	9-13	16-19	18-20	29-31	11-13	19-23	39-41				
DATE OF COLLECTION	9/29/03	10/1/03	9/22/03	9/23/03	9/25/03	9/24/03	9/24/03				
DILUTION FACTOR	5000.0	2000.0	1000.0	1000.0	1.0	20000.0	1.0				
PERCENT SOLIDS	80.0	71.0	82.0	77.0	71.0	67.0	97.0				
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg				
1,3-Dichloropropane	U	U	U	U	U	U	U			5	300
Tetrachloroethene	U	U	U	U	U	U	U			5	1,400
2-Hexanone	U	U	U	U	U	U	U			5	--
Dibromochloromethane	U	U	U	U	U	U	U			5	--
1,2-Dibromoethane	U	U	U	U	U	U	U			5	--
Chlorobenzene	U	U	U	U	U	U	U			5	1,700
1,1,1,2-Tetrachloroethane	U	U	U	U	U	U	U			5	--
Ethylbenzene	**14,000 J**	3,800 J	4,000 J	**7,000**	U	**140,000 J**	1 J			5	5,500
m,p-Xylene	27,000 J	11,000 J	5,200	11,000	U	240,000	U			5	--
o-Xylene	10,000 J	4,200 J	2,500 J	4,400 J	U	96,000 J	U			5	--
Xylene (total)	**37,000**	**15,200**	**7,700**	**15,400**	U	**336,000**	U			5	1,200
Styrene	U	U	U	U	U	U	U			5	--
Bromoform	U	U	U	U	U	U	U			5	--
Isopropylbenzene	U	U	U	U	U	U	U			5	--
1,1,2,2-Tetrachloroethane	U	U	U	U	U	U	U			5	600
Bromobenzene	U	U	U	U	U	U	U			5	--
1,2,3-Trichloropropane	U	U	U	U	U	U	U			5	400
n-Propylbenzene	U	U	1,200 J	U	U	U	U			5	--
2-Chlorotoluene	U	U	U	U	U	U	U			5	--
1,3,5-Trimethylbenzene	U	U	2,900 J	2,400 J	U	69,000 J	U			5	--
4-Chlorotoluene	U	U	U	U	U	U	U			5	--
tert-Butylbenzene	U	U	U	U	U	U	U			5	--
1,2,4-Trimethylbenzene	11,000 J	5,600 J	7,600	6,300	U	150,000	U			5	--
sec-Butylbenzene	U	U	U	U	U	U	U			5	--
4-Isopropyltoluene	U	U	U	U	U	U	U			5	--
1,3-Dichlorobenzene	U	U	U	U	U	U	U			5	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U			5	8,500
n-Butylbenzene	U	U	1,300 J	U	U	U	U			5	--
1,2-Dichlorobenzene	U	U	U	U	U	U	U			5	7,900
1,2-Dibromo-3-chloropropane	U	U	U	U	U	U	U			5	--
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U			5	3,400
Hexachlorobutadiene	U	U	U	U	U	U	U			5	--
1,2,3-Trichlorobenzene	U	U	U	U	U	U	U			5	--
Total BTEX	51,000	25,900	13,000	26,700	142	646,000	1			--	--
Total VOCs	**62,000**	**31,500**	**27,500**	**36,900**	147	**865,000**	32			--	10,000

QUALIFIERS:

U: Constituent analyzed for but not detected.
J: Compound found at a concentration below the detection limit.
D: Result taken for reanalysis at a secondary dilution
E: Compound detected at a concentration greater than the instrument calibration range, value estimated

NOTES:

☐ : Result exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
--: Not Available
N/A: Not Applicable

TABLE 5

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	**SB-01**	**SB-01**	**SB-02**	**SB-02**	**SB-03**	**SB-04**	**SB-05**	**SB-06**	**SB-07**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	22-26	26-32	17-19	29-31	17-19	10-16	18-19.5	9-11	27-29		
DATE OF COLLECTION	9/2/03	9/2/03	9/3/03	9/22/03	9/5/03	9/18/03	9/9/03	9/9/03	9/3/03		
DILUTION FACTOR	1.0	1.0	100.0	1.0	100.0	1.0	1200.0	1.0	1.0		
PERCENT SOLIDS	20.0	78.0	82.0	93.0	76.0	78.0	75.0	78.0	77.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
Phenol	U	U	U	U	U	U	U	U	U	330	30 OR MDL
bis(2-Chloroethyl)ether	U	U	U	U	U	U	U	U	U	330	----
2-Chlorophenol	U	U	U	U	U	U	U	U	U	330	800
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	8,500
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	7,900
2-Methylphenol	U	U	U	U	U	U	U	U	U	330	100 OR MDL
2,2-Oxybis (1-Chloropropane)	U	U	U	U	U	U	U	U	U	330	----
4-Methylphenol	U	U	U	U	U	44 J	U	U	U	330	900
N-Nitroso-di-n-propylamine	U	U	U	U	U	U	U	U	U	330	----
Hexachloroethane	U	U	U	U	U	U	U	U	U	330	----
Nitrobenzene	U	U	U	U	U	U	U	U	U	330	200 OR MDL
Isophorone	U	U	U	U	U	U	U	U	U	330	4,400
2-Nitrophenol	U	U	U	U	U	U	U	U	U	330	330 OR MDL
2,4-Dimethylphenol	U	U	U	U	U	U	U	U	U	330	----
2,4-Dichlorophenol	U	U	U	U	U	U	U	U	U	330	400
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	330	3,400
Naphthalene	**38,000 D**	5,400	**2,800,000 D**	U	**1,200,000 D**	370 J	**5,900,000**	390 J	1,500	330	13,000
4-Chloroaniline	U	U	U	U	U	U	U	U	U	330	220 OR MDL
bis (2-Chloroethoxy) methane	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	330	----
4-Chloro-3-methylphenol	U	U	U	U	U	U	U	U	U	330	240 OR MDL
2-Methylnaphthalene	620 J	1,100	**220,000**	U	**52,000**	78 J	**220,000 J**	U	250 J	330	36,400
Hexachlorocyclopentadiene	U	U	U	U	U	U	U	U	U	330	----
2,4,6-Trichlorophenol	U	U	U	U	U	U	U	U	U	800	----
2,4,5-Trichlorophenol	U	U	U	U	U	U	U	U	U	330	100
2-Chloronaphthalene	U	U	U	U	U	U	U	U	U	800	----
2-Nitroaniline	U	U	U	U	U	U	U	U	U	330	430 OR MDL
Dimethylphthalate	U	U	U	U	U	U	U	U	U	330	2,000
2,6-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	1,000
Acenaphthylene	U	280 J	12,000 J	U	6,300 J	310 J	**55,000 J**	U	U	330	41,000
3-Nitroaniline	U	U	U	U	U	U	U	U	U	800	500 OR MDL
Acenaphthene	2,400	480	7,200 J	U	6,900 J	U	U	U	71 J	330	50,000
2,4-Dinitrophenol	U	U	U	U	U	U	U	U	U	800	200 OR MDL
4-Nitrophenol	U	U	U	U	U	U	U	U	U	800	100 OR MDL
Dibenzofuran	2,700	1,000	**23,000 J**	U	**12,000 J**	130 J	**79,000 J**	U	170 J	330	6,200

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	**SB-01**	**SB-01**	**SB-02**	**SB-02**	**SB-03**	**SB-04**	**SB-05**	**SB-06**	**SB-07**	**LABORATORY QUANTITATION LIMITS** (ug/Kg)	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives** (ug/Kg)
SAMPLE DEPTH (FT)	22-26	26-32	17-19	29-31	17-19	10-16	18-19.5	9-11	27-29		
DATE OF COLLECTION	9/2/03	9/2/03	9/3/03	9/22/03	9/5/03	9/18/03	9/9/03	9/9/03	9/3/03		
DILUTION FACTOR	1.0	1.0	100.0	1.0	100.0	1.0	1200.0	1.0	5.0		
PERCENT SOLIDS	20.0	78.0	82.0	93.0	76.0	78.0	75.0	78.0	77.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg		
2,4-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	----
Diethylphthalate	U	U	U	91 JB	U	U	U	U	U	330	7,100
Fluorene	3,000	1,400	16,000 J	U	13,000 J	120 J	**79,000 J**	U	230 J	330	50,000
4-Chlorophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
4-Nitroaniline	U	U	U	U	U	U	U	U	U	800	----
4,6-Dinitro-2-methylphenol	U	U	U	U	U	U	U	U	U	800	----
N-Nitrosodiphenylamine	U	U	U	U	U	U	U	U	U	330	----
4-Bromophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobenzene	U	U	U	U	U	U	U	U	U	330	410
Pentachlorophenol	U	U	U	U	U	U	U	U	U	800	1,000 OR MDL
Phenanthrene	3,800	4,700	45,000	U	**69,000**	1,500	**340,000 J**	97 J	820	330	50,000
Anthracene	680 J	1,400	12,000 J	U	14,000 J	780	**95,000 J**	U	290 J	330	50,000
Carbazole	3,200	780	U	U	7,300 J	51 J	U	U	180 J	330	----
Di-n-butylphthalate	U	U	U	U	U	U	U	U	U	330	8,100
Fluoranthene	1,200 J	2,900	32,000 J	U	**56,000**	4,000	**220,000 J**	140 J	510	330	50,000
Pyrene	1,100 J	2,700	26,000 J	U	46,000	5,100	**190,000 J**	130 J	420 J	330	50,000
Butylbenzylphthalate	U	U	U	U	U	U	U	U	U	330	50,000
3,3'-Dichlorobenzidine	U	U	U	U	U	U	U	U	U	330	----
Benzo (a) anthracene	**620 J**	**1,500**	**12,000 J**	U	**23,000 J**	**3,300**	**81,000 J**	83 J	**240 J**	330	224 OR MDL
Chrysene	**500 J**	**1,200**	**11,000 J**	U	**19,000 J**	**2,900**	**69,000 J**	75 J	230 J	330	400
bis(2-Ethylhexyl)phthalate	800 J	640	U	250 J	U	2,400	U	630	810	330	50,000
Di-n-octylphthalate	U	U	U	U	U	U	U	U	U	330	50,000
Benzo(b)fluoranthene	500 J	**1,200**	**11,000 J**	U	**21,000 J**	**4,300**	**96,000 J**	89 J	190 J	330	1,100
Benzo(k)fluoranthene	240 J	510	**5,900 J**	U	**10,000 J**	**1,600**	U	U	95 J	330	1,100
Benzo(a)pyrene	**450 J**	**1,000**	**9,900 J**	U	**19,000 J**	**3,300**	**78,000 J**	**76 J**	**170 J**	330	61 OR MDL
Indeno(1,2,3-cd)pyrene	190 J	460	**6,200 J**	U	**11,000 J**	1,400	U	U	76 J	330	3,200
Dibenzo(a,h)anthracene	U	**150 J**	U	U	U	**360 J**	U	U	U	330	14 OR MDL
Benzo(g,h,i)perylene	170 J	390 J	6,700 J	U	12,000 J	1,400	U	U	66 J	330	50,000
Total PAHs	52,850	25,670	3,012,900	0	1,526,200	30,740	7,203,000	1,080	4,908		----
Total Carcinogen PAHs	2,500	6,020	56,000	0	103,000	17,160	324,000	323	1,001		----
Total SVOCs	60,170	29,190	**3,255,900**	341	**1,597,500**	33,443	**7,502,000**	1,710	6,318		500,000

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at dilution

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S), where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
---: not established
▭ Indicates value exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
NA: sample not analyzed for this analyte

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	**SB-07**	**SB-08**	**SB-08**	**SB-09**	**SB-09**	**SB-10**	**SB-10**	**SB-11**	**SB-12**	**LABORATORY QUANTITATION LIMITS** (ug/Kg)	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives** (ug/Kg)
SAMPLE DEPTH (FT)	33-35	12-16	28-30	11-15	31-33.5	20-24	26-28	10-12	21-23		
DATE OF COLLECTION	9/3/03	10/2/03	10/2/03	9/5/03	9/5/03	9/11/03	9/11/03	9/17/03	9/8/03		
DILUTION FACTOR	1.0	5.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
PERCENT SOLIDS	77.0	81.0	78.0	81.0	70.0	80.0	78.0	82.0	68.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg		
Phenol	U	U	U	U	U	U	U	U	U	330	30 OR MDL
bis(2-Chloroethyl)ether	U	U	U	U	U	U	U	U	U	330	----
2-Chlorophenol	U	U	U	U	U	U	U	U	U	330	800
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	8,500
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	7,900
2-Methylphenol	U	U	U	U	U	U	U	U	U	330	100 OR MDL
2,2-Oxybis (1-Chloropropane)	U	U	U	U	U	U	U	U	U	330	----
4-Methylphenol	U	U	U	U	U	U	U	U	U	330	900
N-Nitroso-di-n-propylamine	U	U	U	U	U	U	U	U	U	330	----
Hexachloroethane	U	U	U	U	U	U	U	U	U	330	----
Nitrobenzene	U	U	U	U	U	U	U	U	U	330	200 OR MDL
Isophorone	U	U	U	U	U	U	U	U	U	330	4,400
2-Nitrophenol	U	U	U	U	U	U	U	U	U	330	330 OR MDL
2,4-Dimethylphenol	U	U	U	U	U	U	U	U	71 J	330	----
2,4-Dichlorophenol	U	U	U	U	U	U	U	U	U	330	400
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	330	3,400
Naphthalene	11,000 D	**550,000 DB**	**16,000 DB**	990	4,400	400 J	46 J	U	**41,000 D**	330	13,000
4-Chloroaniline	U	U	U	U	U	U	U	U	U	330	220 OR MDL
bis (2-Chloroethoxy) methane	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	330	----
4-Chloro-3-methylphenol	U	U	U	U	U	U	U	U	U	330	240 OR MDL
2-Methylnaphthalene	3,100	**150,000 D**	1,100	89 J	200 J	U	U	U	1,100	330	36,400
Hexachlorocyclopentadiene	U	U	U	U	U	U	U	U	U	330	----
2,4,6-Trichlorophenol	U	U	U	U	U	U	U	U	U	800	----
2,4,5-Trichlorophenol	U	U	U	U	U	U	U	U	U	330	100
2-Chloronaphthalene	U	U	U	U	U	U	U	U	U	800	----
2-Nitroaniline	U	U	U	U	U	U	U	U	U	330	430 OR MDL
Dimethylphthalate	U	U	U	U	U	U	U	U	U	330	2,000
2,6-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	1,000
Acenaphthylene	510	25,000	73 J	U	U	U	U	U	U	330	41,000
3-Nitroaniline	U	U	U	U	U	U	U	U	U	800	500 OR MDL
Acenaphthene	1,200	28,000	230 J	86 J	U	U	U	U	340 J	330	50,000
2,4-Dinitrophenol	U	U	U	U	U	U	U	U	U	800	200 OR MDL
4-Nitrophenol	U	U	U	U	U	U	U	U	U	800	100 OR MDL
Dibenzofuran	3,000	**32,000**	160 J	60 J	U	U	U	U	420 J	330	6,200

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	SB-07	SB-08	SB-08	SB-09	SB-09	SB-10	SB-10	SB-11	SB-12	LABORATORY QUANTITATION LIMITS	NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives
SAMPLE DEPTH (FT)	33-35	12-16	28-30	11-15	31-33.5	20-24	26-28	10-12	21-23		
DATE OF COLLECTION	9/3/03	10/2/03	10/2/03	9/5/03	9/5/03	9/11/03	9/11/03	9/17/03	9/8/03		
DILUTION FACTOR	1.0	5.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
PERCENT SOLIDS	77.0	81.0	78.0	81.0	70.0	80.0	78.0	82.0	68.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
2,4-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	----
Diethylphthalate	U	U	U	U	U	U	U	U	U	330	7,100
Fluorene	4,100	**88,000 D**	200 J	77 J	U	U	U	U	500	330	50,000
4-Chlorophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
4-Nitroaniline	U	U	U	U	U	U	U	U	U	800	----
4,6-Dinitro-2-methylphenol	U	U	U	U	U	U	U	U	U	800	----
N-Nitrosodiphenylamine	U	U	U	U	U	U	U	U	U	330	----
4-Bromophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobenzene	U	U	U	U	U	U	U	U	U	330	410
Pentachlorophenol	U	U	U	U	U	U	U	U	U	800	1,000 OR MDL
Phenanthrene	16,000 D	**230,000 D**	590	610	U	U	U	U	410 J	330	50,000
Anthracene	4,700	**81,000 D**	170 J	160 J	U	U	U	U	56 J	330	50,000
Carbazole	2,200	22,000	86 J	91 J	U	U	U	U	840	330	----
Di-n-butylphthalate	U	U	U	U	U	U	U	U	U	330	8,100
Fluoranthene	10,000 D	**160,000 D**	390 J	760	U	U	U	U	U	330	50,000
Pyrene	7,500 D	**140,000 D**	310 J	750	U	U	U	U	U	330	50,000
Butylbenzylphthalate	U	U	U	44 J	U	U	U	U	U	330	50,000
3,3'-Dichlorobenzidine	U	U	U	U	U	U	U	U	U	330	----
Benzo (a) anthracene	**4,800**	**68,000 D**	150 J	**420**	U	U	U	U	U	330	224 OR MDL
Chrysene	**3,700**	**63,000 D**	140 J	**440**	U	U	U	U	U	330	400
bis(2-Ethylhexyl)phthalate	4,400	U	U	2,200	300 J	520	230 J	1,900	480 J	330	50,000
Di-n-octylphthalate	53 J	U	U	U	U	U	U	U	U	330	50,000
Benzo(b)fluoranthene	**4,000**	**68,000 D**	140 J	610	U	U	U	U	U	330	1,100
Benzo(k)fluoranthene	**1,600**	**21,000**	55 J	220 J	U	U	U	U	U	330	1,100
Benzo(a)pyrene	**2,900**	**61,000 D**	**120 J**	**520**	U	U	U	U	U	330	61 OR MDL
Indeno(1,2,3-cd)pyrene	1,100	**20,000**	58 J	340 J	U	U	U	U	U	330	3,200
Dibenzo(a,h)anthracene	**330 J**	**5,700**	U	**71 J**	U	U	U	U	U	330	14 OR MDL
Benzo(g,h,i)perylene	860	23,000	72 J	360 J	U	U	U	U	U	330	50,000
Total PAHs	74,300	1,631,700	18,698	6,414	4,400	400	46	0	42,306		----
Total Carcinogen PAHs	18,430	306,700	663	2,621	0	0	0	0	0		----
Total SVOCs	87,053	**1,835,700**	20,044	8,898	4,900	920	276	1,900	45,217		500,000

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at dilution

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S), where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
---: not established
☐ Indicates value exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
NA: sample not analyzed for this analyte

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	SB-12	SB-13	SB-14	SB-14	SB-15	SB-15	SB-16	SB-16	SB-17	LABORATORY QUANTITATION LIMITS	NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives
SAMPLE DEPTH (FT)	27-28.8	19-21.4	17-19	30-32	7-9	13-15	13-15	25-27	9-13		
DATE OF COLLECTION	9/8/03	9/16/03	9/12/03	9/15/03	9/12/03	9/12/03	9/16/03	9/16/03	9/9/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	60.0		
PERCENT SOLIDS	80.0	78.0	85.0	85.0	85.0	86.0	85.0	84.0	83.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
Phenol	U	U	U	U	U	U	U	U	U	330	30 OR MDL
bis(2-Chloroethyl)ether	U	U	U	U	U	U	U	U	U	330	----
2-Chlorophenol	U	U	U	U	U	U	U	U	U	330	800
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	8,500
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	7,900
2-Methylphenol	U	U	U	U	U	U	U	U	U	330	100 OR MDL
2,2-Oxybis (1-Chloropropane)	U	U	U	U	U	U	U	U	U	330	----
4-Methylphenol	U	U	U	U	U	U	U	U	U	330	900
N-Nitroso-di-n-propylamine	U	U	U	U	U	U	U	U	U	330	----
Hexachloroethane	U	U	U	U	U	U	U	U	U	330	----
Nitrobenzene	U	U	U	U	U	U	U	U	U	330	200 OR MDL
Isophorone	U	U	U	U	U	U	U	U	U	330	4,400
2-Nitrophenol	U	U	U	U	U	U	U	U	U	330	330 OR MDL
2,4-Dimethylphenol	U	U	U	U	U	U	U	U	U	330	----
2,4-Dichlorophenol	U	U	U	U	U	U	U	U	U	330	400
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	330	3,400
Naphthalene	690	**29,000 D**	**26,000 D**	U	1,300	U	**34,000 D**	1,600	**200,000**	330	13,000
4-Chloroaniline	U	U	U	U	U	U	U	U	U	330	220 OR MDL
bis (2-Chloroethoxy) methane	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	330	----
4-Chloro-3-methylphenol	U	U	U	U	U	U	U	U	U	330	240 OR MDL
2-Methylnaphthalene	U	2,000	2,300	U	1,200	U	4,600	87 J	5,500 J	330	36,400
Hexachlorocyclopentadiene	U	U	U	U	U	U	U	U	U	330	----
2,4,6-Trichlorophenol	U	U	U	U	U	U	U	U	U	800	----
2,4,5-Trichlorophenol	U	U	U	U	U	U	U	U	U	330	100
2-Chloronaphthalene	U	U	U	U	U	U	U	U	U	800	----
2-Nitroaniline	U	U	U	U	U	U	U	U	U	330	430 OR MDL
Dimethylphthalate	U	U	U	U	U	U	U	U	U	330	2,000
2,6-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	1,000
Acenaphthylene	U	86 J	98 J	U	U	U	U	U	3,300 J	330	41,000
3-Nitroaniline	U	U	U	U	U	U	U	U	U	800	500 OR MDL
Acenaphthene	U	59 J	76 J	U	64 J	U	820	U	5,800 J	330	50,000
2,4-Dinitrophenol	U	U	U	U	U	U	U	U	U	800	200 OR MDL
4-Nitrophenol	U	U	U	U	U	U	U	U	U	800	100 OR MDL
Dibenzofuran	U	160 J	240 J	U	51 J	U	1,500	U	**36,000**	330	6,200

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	SB-12	SB-13	SB-14	SB-14	SB-15	SB-15	SB-16	SB-16	SB-17	LABORATORY QUANTITATION LIMITS (ug/Kg)	NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives (ug/Kg)
SAMPLE DEPTH (FT)	27-28.8	19-21.4	17-19	30-32	7-9	13-15	13-15	25-27	9-13		
DATE OF COLLECTION	9/8/03	9/16/03	9/12/03	9/15/03	9/12/03	9/12/03	9/16/03	9/16/03	9/9/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	60.0		
PERCENT SOLIDS	80.0	78.0	85.0	85.0	85.0	86.0	85.0	84.0	83.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg		
2,4-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	----
Diethylphthalate	U	U	U	U	U	U	U	U	U	330	7,100
Fluorene	U	130 J	160 J	U	68 J	U	1,000	U	29,000	330	50,000
4-Chlorophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
4-Nitroaniline	U	U	U	U	U	U	U	U	U	800	----
4,6-Dinitro-2-methylphenol	U	U	U	U	U	U	U	U	U	800	----
N-Nitrosodiphenylamine	U	U	U	U	U	U	U	U	U	330	----
4-Bromophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobenzene	U	U	U	U	U	U	U	U	U	330	410
Pentachlorophenol	U	U	U	U	U	U	U	U	U	800	1,000 OR MDL
Phenanthrene	U	490 J	550	U	170 J	U	2,800	U	**69,000**	330	50,000
Anthracene	U	130 J	140 J	U	47 J	U	750	U	11,000 J	330	50,000
Carbazole	U	47 J	U	U	U	U	180 J	U	10,000 J	330	----
Di-n-butylphthalate	U	U	U	U	U	U	U	U	U	330	8,100
Fluoranthene	U	360 J	U	U	110 J	U	1,700	U	**51,000**	330	50,000
Pyrene	U	340 J	U	U	94 J	U	2,300	U	**63,000**	330	50,000
Butylbenzylphthalate	U	U	U	U	U	U	U	U	U	330	50,000
3,3'-Dichlorobenzidine	U	U	U	U	U	U	U	U	U	330	----
Benzo (a) anthracene	U	140 J	130 J	U	U	U	**710**	U	**21,000 J**	330	224 OR MDL
Chrysene	U	140 J	130 J	U	U	U	**600**	U	**18,000 J**	330	400
bis(2-Ethylhexyl)phthalate	320 J	840	1,200	130 J	550	1,100	280 J	610	U	330	50,000
Di-n-octylphthalate	U	U	U	U	U	U	U	U	U	330	50,000
Benzo(b)fluoranthene	U	130 J	130 J	U	43 J	U	680	U	**24,000**	330	1,100
Benzo(k)fluoranthene	U	56 J	62 J	U	U	U	280 J	U	**11,000 J**	330	1,100
Benzo(a)pyrene	U	**110 J**	**130 J**	U	U	U	**590**	U	**12,000 J**	330	61 OR MDL
Indeno(1,2,3-cd)pyrene	U	U	50 J	U	U	U	310 J	U	**14,000 J**	330	3,200
Dibenzo(a,h)anthracene	U	U	U	U	U	U	U	U	U	330	14 OR MDL
Benzo(g,h,i)perylene	U	44 J	56 J	U	U	U	350 J	U	U	330	50,000
Total PAHs	690	31,215	27,712	0	1,896	0	46,890	1,600	532,100		----
Total Carcinogen PAHs	0	576	632	0	43	0	3,170	0	100,000		----
Total SVOCs	1,010	34,262	31,452	130	3,697	1,100	53,450	2,297	**583,600**		500,000

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at dilution

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S), where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
---: not established
☐ Indicates value exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
NA: sample not analyzed for this analyte

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	**SB-17**	**SB-18**	**SB-18**	**SB-19**	**SB-19**	**SB-20**	**SB-20**	**SB-21**	**SB-21**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	21-23	9-13	23-25	20-24	24-26.2	12-16	16-20	12-16	36-38.9		
DATE OF COLLECTION	9/10/03	9/26/03	9/26/03	10/2/03	10/2/03	10/2/03	10/2/03	9/30/03	9/30/03		
DILUTION FACTOR	1.0	5.0	1.0	50.0	1.0	1.0	1.0	5.0	1.0		
PERCENT SOLIDS	94.0	78.0	56.0	63.0	86.0	73.0	64.0	78.0	75.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
Phenol	U	U	U	U	U	U	U	U	U	330	30 OR MDL
bis(2-Chloroethyl)ether	U	U	U	U	U	U	U	U	U	330	----
2-Chlorophenol	U	U	U	U	U	U	U	U	U	330	800
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	8,500
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	7,900
2-Methylphenol	U	U	U	U	U	U	U	U	U	330	100 OR MDL
2,2-Oxybis (1-Chloropropane)	U	U	U	U	U	U	U	U	U	330	----
4-Methylphenol	U	U	U	U	U	U	U	U	U	330	900
N-Nitroso-di-n-propylamine	U	U	U	U	U	U	U	U	U	330	----
Hexachloroethane	U	U	U	U	U	U	U	U	U	330	----
Nitrobenzene	U	U	U	U	U	U	U	U	U	330	200 OR MDL
Isophorone	U	U	U	U	U	U	U	U	U	330	4,400
2-Nitrophenol	U	U	U	U	U	U	U	U	U	330	330 OR MDL
2,4-Dimethylphenol	U	U	U	7,800 J	U	U	U	U	U	330	----
2,4-Dichlorophenol	U	U	U	U	U	U	U	U	U	330	400
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	330	3,400
Naphthalene	400	**660,000 D**	910	**1,700,000 DB**	**19,000 DB**	110 JB	6,000 B	3,100 B	2,300 B	330	13,000
4-Chloroaniline	U	U	U	U	U	U	U	U	U	330	220 OR MDL
bis (2-Chloroethoxy) methane	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	330	----
4-Chloro-3-methylphenol	U	U	U	U	U	U	U	U	U	330	240 OR MDL
2-Methylnaphthalene	U	**130,000 D**	67 J	**380,000**	2,500	U	3,200	1,300 J	680	330	36,400
Hexachlorocyclopentadiene	U	U	U	U	U	U	U	U	U	330	----
2,4,6-Trichlorophenol	U	U	U	U	U	U	U	U	U	800	----
2,4,5-Trichlorophenol	U	U	U	U	U	U	U	U	U	330	100
2-Chloronaphthalene	U	U	U	U	U	U	U	U	U	800	----
2-Nitroaniline	U	U	U	U	U	U	U	U	U	330	430 OR MDL
Dimethylphthalate	U	U	U	U	U	U	U	U	U	330	2,000
2,6-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	1,000
Acenaphthylene	U	15,000	U	**220,000**	2,200	U	U	4,300	440	330	41,000
3-Nitroaniline	U	U	U	U	U	U	U	U	U	800	500 OR MDL
Acenaphthene	U	12,000	U	**65,000**	850	3,400	1,400	11,000	1,200	330	50,000
2,4-Dinitrophenol	U	U	U	U	U	U	U	U	U	800	200 OR MDL
4-Nitrophenol	U	U	U	U	U	U	U	U	U	800	100 OR MDL
Dibenzofuran	U	**73,000 D**	U	**180,000**	1,900	1,400	86 J	1,900 J	270 J	330	6,200

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	SB-17	SB-18	SB-18	SB-19	SB-19	SB-20	SB-20	SB-21	SB-21	LABORATORY QUANTITATION LIMITS	NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives
SAMPLE DEPTH (FT)	21-23	9-13	23-25	20-24	24-26.2	12-16	16-20	12-16	36-38.9		
DATE OF COLLECTION	9/10/03	9/26/03	9/26/03	10/2/03	10/2/03	10/2/03	10/2/03	9/30/03	9/30/03		
DILUTION FACTOR	1.0	5.0	1.0	50.0	1.0	1.0	1.0	5.0	1.0		
PERCENT SOLIDS	94.0	78.0	56.0	63.0	86.0	73.0	64.0	78.0	75.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
2,4-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	----
Diethylphthalate	U	U	U	U	U	U	U	U	U	330	7,100
Fluorene	U	**66,000 D**	U	**200,000**	2,200	U	1,100	7,700	1,900	330	50,000
4-Chlorophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
4-Nitroaniline	U	U	U	U	U	U	U	U	U	800	----
4,6-Dinitro-2-methylphenol	U	U	U	U	U	U	U	U	U	800	----
N-Nitrosodiphenylamine	U	U	U	U	U	U	U	U	U	330	----
4-Bromophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobenzene	U	U	U	U	U	U	U	U	U	330	410
Pentachlorophenol	U	U	U	U	U	U	U	U	U	800	1,000 OR MDL
Phenanthrene	54 J	**230,000 D**	110 J	**700,000 D**	5,300	U	1,400	11,000	5,200	330	50,000
Anthracene	U	**64,000 D**	U	**170,000**	2,000	1,800	260 J	9,500	1,400	330	50,000
Carbazole	U	23,000	U	93,000	1,200	U	U	U	83 J	330	----
Di-n-butylphthalate	U	U	U	U	U	U	U	U	U	330	8,100
Fluoranthene	42 J	**160,000 D**	78 J	**330,000**	3,900	6,100	300 J	22,000	3,200	330	50,000
Pyrene	50 J	**130,000 D**	U	**320,000**	3,700	18,000 D	590	**53,000 D**	6,200	330	50,000
Butylbenzylphthalate	U	U	U	U	U	U	U	U	U	330	50,000
3,3'-Dichlorobenzidine	U	U	U	U	U	U	U	U	U	330	----
Benzo (a) anthracene	U	**56,000 D**	U	**160,000**	**1,800**	**5,400**	170 J	**19,000**	**2,200**	330	224 OR MDL
Chrysene	U	**53,000 D**	U	**140,000**	**1,600**	**5,200**	170 J	**18,000**	**2,400**	330	400
bis(2-Ethylhexyl)phthalate	260 J	U	76 J	U	U	U	U	U	U	330	50,000
Di-n-octylphthalate	U	U	U	U	U	U	U	U	U	330	50,000
Benzo(b)fluoranthene	U	**57,000 D**	U	**150,000**	**1,700**	**3,800**	120 J	**15,000**	**1,800**	330	1,100
Benzo(k)fluoranthene	U	**22,000**	U	**65,000**	740	**1,200**	U	**5,300**	540	330	1,100
Benzo(a)pyrene	U	**42,000 DJ**	U	**140,000**	**1,500**	**5,400**	**170 J**	**18,000**	**1,700**	330	61 OR MDL
Indeno(1,2,3-cd)pyrene	U	**22,000**	U	**69,000**	680	1,500	U	**6,400**	590	330	3,200
Dibenzo(a,h)anthracene	U	**5,200**	U	**20,000 J**	**190 J**	**490 J**	U	**2,100**	**200 J**	330	14 OR MDL
Benzo(g,h,i)perylene	U	24,000	U	**80,000**	760	2,700	93 J	9,800	930	330	50,000
Total PAHs	546	1,618,200	1,098	4,529,000	48,120	55,100	11,773	215,200	32,200		----
Total Carcinogen PAHs	0	257,200	0	744,000	8,210	22,990	630	83,800	9,430		----
Total SVOCs	806	**1,844,200**	1,241	**5,189,800**	53,720	56,500	15,059	218,400	33,233		500,000

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at dilution

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S), where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
---: not established
☐ Indicates value exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
NA: sample not analyzed for this analyte

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	**SB-22**	**SB-22**	**SB-23**	**SB-23**	**SB-24**	**SB-24**	**SB-24**	**SB-25**	**SB-25**	**LABORATORY QUANTITATION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	12-16	36-44	20-24	52-54.5	30-32	34-36	36-38	12-16	24-28		
DATE OF COLLECTION	9/29/03	9/29/03	9/30/03	9/30/03	10/3/03	10/3/03	10/3/03	10/1/03	10/1/03		
DILUTION FACTOR	1.0	1.0	10.0	5.0	3000.0	1.0	3000.0	10.0	1.0		
PERCENT SOLIDS	75.0	79.0	64.0	76.0	69.0	70.0	62.0	75.0	63.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	(ug/Kg)	(ug/Kg)
Phenol	U	U	U	U	U	U	U	U	U	330	30 OR MDL
bis(2-Chloroethyl)ether	U	U	U	U	U	U	U	U	U	330	----
2-Chlorophenol	U	U	U	U	U	U	U	U	U	330	800
1,3-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	8,500
1,2-Dichlorobenzene	U	U	U	U	U	U	U	U	U	330	7,900
2-Methylphenol	66 J	U	**2,300 J**	**310 J**	U	U	U	U	U	330	100 OR MDL
2,2-Oxybis (1-Chloropropane)	U	U	U	U	U	U	U	U	U	330	----
4-Methylphenol	200 J	U	**8,100**	**1,000 J**	U	U	U	U	U	330	900
N-Nitroso-di-n-propylamine	U	U	U	U	U	U	U	U	U	330	----
Hexachloroethane	U	U	U	U	U	U	U	U	U	330	----
Nitrobenzene	U	U	U	U	U	U	U	U	U	330	200 OR MDL
Isophorone	U	U	U	U	U	U	U	U	U	330	4,400
2-Nitrophenol	U	U	U	U	U	U	U	U	U	330	330 OR MDL
2,4-Dimethylphenol	U	U	39,000	1,800 J	200,000 J	U	360,000 J	U	U	330	----
2,4-Dichlorophenol	U	U	U	U	U	U	U	U	U	330	400
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U	U	U	330	3,400
Naphthalene	**22,000 D**	2,500 B	**1,300,000 DB**	**110,000 DB**	**38,000,000 DB**	5,900 B	**56,000,000 DB**	**61,000 B**	1,500 B	330	13,000
4-Chloroaniline	U	U	U	U	U	U	U	U	U	330	220 OR MDL
bis (2-Chloroethoxy) methane	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobutadiene	U	U	U	U	U	U	U	U	U	330	----
4-Chloro-3-methylphenol	U	U	U	U	U	U	U	U	U	330	240 OR MDL
2-Methylnaphthalene	5,800	85 J	**460,000 D**	32,000	**12,000,000**	2,500	**19,000,000**	15,000	190 J	330	36,400
Hexachlorocyclopentadiene	U	U	U	U	U	U	U	U	U	330	----
2,4,6-Trichlorophenol	U	U	U	U	U	U	U	U	U	800	----
2,4,5-Trichlorophenol	U	U	U	U	U	U	U	U	U	330	100
2-Chloronaphthalene	U	U	U	U	U	U	U	U	U	800	----
2-Nitroaniline	U	U	U	U	U	U	U	U	U	330	430 OR MDL
Dimethylphthalate	U	U	U	U	U	U	U	U	U	330	2,000
2,6-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	1,000
Acenaphthylene	1,700	U	**250,000 D**	15,000	**7,900,000**	1,900	**12,000,000**	13,000	U	330	41,000
3-Nitroaniline	U	U	U	U	U	U	U	U	U	800	500 OR MDL
Acenaphthene	6,900	94 J	**220,000 D**	19,000	**4,400,000**	1,000	**7,000,000**	28,000	170 J	330	50,000
2,4-Dinitrophenol	U	U	U	U	U	U	U	U	U	800	200 OR MDL
4-Nitrophenol	U	U	U	U	U	U	U	U	U	800	100 OR MDL
Dibenzofuran	4,800	62 J	**280,000 D**	**20,000**	**7,500,000**	2,000	**12,000,000**	**31,000**	160 J	330	6,200

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	**SB-22**	**SB-22**	**SB-23**	**SB-23**	**SB-24**	**SB-24**	**SB-24**	**SB-25**	**SB-25**	**LABORATORY QUANTITATION LIMITS** (ug/Kg)	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives** (ug/Kg)
SAMPLE DEPTH (FT)	12-16	36-44	20-24	52-54.4	30-32	34-36	36-38	12-16	24-28		
DATE OF COLLECTION	9/29/03	9/29/03	9/30/03	9/30/03	10/3/03	10/3/03	10/3/03	10/1/03	10/1/03		
DILUTION FACTOR	1.0	1.0	10.0	5.0	3000.0	1.0	3000.0	10.0	1.0		
PERCENT SOLIDS	75.0	79.0	64.0	76.0	69.0	70.0	62.0	75.0	63.0		
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg		
2,4-Dinitrotoluene	U	U	U	U	U	U	U	U	U	330	----
Diethylphthalate	U	U	U	U	U	U	U	U	U	330	7,100
Fluorene	6,200	88 J	**360,000 D**	24,000	**9,200,000**	2,500	**14,000,000**	36,000	180 J	330	50,000
4-Chlorophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
4-Nitroaniline	U	U	U	U	U	U	U	U	U	800	----
4,6-Dinitro-2-methylphenol	U	U	U	U	U	U	U	U	U	800	----
N-Nitrosodiphenylamine	U	U	U	U	U	U	U	U	U	330	----
4-Bromophenyl-phenylether	U	U	U	U	U	U	U	U	U	330	----
Hexachlorobenzene	U	U	U	U	U	U	U	U	U	330	410
Pentachlorophenol	U	U	U	U	U	U	U	U	U	800	1,000 OR MDL
Phenanthrene	30,000 D	330 J	**820,000 D**	**85,000 D**	**20,000,000**	5,800	**35,000,000 D**	**110,000 D**	700	330	50,000
Anthracene	6,600	81 J	**330,000 D**	24,000	**7,600,000**	2,200	**11,000,000**	46,000	380 J	330	50,000
Carbazole	2,500	U	140,000 D	12,000	3,200,000	960	5,400,000	18,000	130 J	330	----
Di-n-butylphthalate	U	U	U	U	U	U	U	U	U	330	8,100
Fluoranthene	20,000 D	210 J	**600,000 D**	**58,000 D**	**13,000,000**	4,000	**20,000,000**	**92,000 D**	460 J	330	50,000
Pyrene	20,000 D	180 J	**520,000 D**	**54,000 D**	**13,000,000**	3,900	**21,000,000**	**88,000 D**	360 J	330	50,000
Butylbenzylphthalate	U	U	U	U	U	U	U	U	U	330	50,000
3,3'-Dichlorobenzidine	U	U	U	U	U	U	U	U	U	330	----
Benzo (a) anthracene	**9,100 D**	88 J	**280,000 D**	**24,000**	**6,900,000**	**2,100**	**12,000,000**	**45,000**	160 J	330	224 OR MDL
Chrysene	**7,700 D**	75 J	**260,000 D**	**22,000**	**5,700,000**	**1,700**	**9,200,000**	**42,000**	160 J	330	400
bis(2-Ethylhexyl)phthalate	U	U	U	450 J	U	U	U	U	U	330	50,000
Di-n-octylphthalate	U	U	U	U	U	U	U	U	U	330	50,000
Benzo(b)fluoranthene	**8,400 D**	74 J	**270,000 D**	**22,000**	**6,200,000**	**1,800**	**10,000,000**	**46,000**	150 J	330	1,100
Benzo(k)fluoranthene	**4,100**	U	**120,000 D**	**9,300**	**2,700,000**	810	**4,300,000**	**18,000**	65 J	330	1,100
Benzo(a)pyrene	**8,200 D**	**69 J**	**240,000 D**	**19,000**	**5,300,000**	**1,600**	**8,600,000**	**39,000**	**130 J**	330	61 OR MDL
Indeno(1,2,3-cd)pyrene	**3,500**	U	**64,000**	**7,700**	**2,100,000**	510	**3,400,000**	**17,000**	53 J	330	3,200
Dibenzo(a,h)anthracene	**1,100**	U	**21,000**	**2,400**	**700,000 J**	**160 J**	**1,000,000 J**	**5,100**	U	330	14 OR MDL
Benzo(g,h,i)perylene	4,300	46 J	**74,000**	8,000	**2,200,000**	500	**3,200,000**	19,000	U	330	50,000
Total PAHs	159,800	3,835	5,729,000	503,400	144,900,000	36,380	227,700,000	705,100	4,468		----
Total Carcinogen PAHs	42,100	306	1,255,000	106,400	29,600,000	8,680	48,500,000	212,100	718		----
Total SVOCs	173,166	3,982	**6,658,400**	**570,960**	**167,800,000**	41,840	**264,460,000**	**769,100**	4,948		500,000

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at dilution

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S), where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
---: not established
☐ Indicates value exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
NA: sample not analyzed for this analyte

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	**SB-26**	**SB-26**	**SB-27**	**SB-27**	**SB-28**	**SB-29**	**SB-29**			**LABORATORY QUANTITATION LIMITS** (ug/Kg)	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives** (ug/Kg)
SAMPLE DEPTH (FT)	9-13	16-19	18-20	29-31	11-13	19-23	39-41				
DATE OF COLLECTION	9/29/03	10/1/03	9/22/03	9/23/03	9/25/03	9/24/03	9/24/03				
DILUTION FACTOR	5.0	10.0	1.0	1.0	1.0	1.0	1.0				
PERCENT SOLIDS	80.0	71.0	82.0	77.0	71.0	67.0	97.0				
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg				
Phenol	U	U	U	**67 J**	U	U	U			330	30 OR MDL
bis(2-Chloroethyl)ether	U	U	U	U	U	U	U			330	----
2-Chlorophenol	U	U	U	U	U	U	U			330	800
1,3-Dichlorobenzene	U	U	U	U	U	U	U			330	1,600
1,4-Dichlorobenzene	U	U	U	U	U	U	U			330	8,500
1,2-Dichlorobenzene	U	U	U	U	U	U	U			330	7,900
2-Methylphenol	U	U	U	U	U	U	U			330	100 OR MDL
2,2-Oxybis (1-Chloropropane)	U	U	U	U	U	U	U			330	----
4-Methylphenol	U	U	U	U	U	U	U			330	900
N-Nitroso-di-n-propylamine	U	U	U	U	U	U	U			330	----
Hexachloroethane	U	U	U	U	U	U	U			330	----
Nitrobenzene	U	U	U	U	U	U	U			330	200 OR MDL
Isophorone	U	U	U	U	U	U	U			330	4,400
2-Nitrophenol	U	U	U	U	U	U	U			330	330 OR MDL
2,4-Dimethylphenol	910 J	29,000	U	110 J	U	U	U			330	----
2,4-Dichlorophenol	U	U	U	U	U	U	U			330	400
1,2,4-Trichlorobenzene	U	U	U	U	U	U	U			330	3,400
Naphthalene	**270,000 DB**	**3,700,000 D**	**770,000 D**	**69,000 D**	U	**230,000 D**	740			330	13,000
4-Chloroaniline	U	U	U	U	U	U	U			330	220 OR MDL
bis (2-Chloroethoxy) methane	U	U	U	U	U	U	U			330	----
Hexachlorobutadiene	U	U	U	U	U	U	U			330	----
4-Chloro-3-methylphenol	U	U	U	U	U	U	U			330	240 OR MDL
2-Methylnaphthalene	**71,000 D**	**660,000 D**	**57,000 D**	10,000	U	14,000 DJ	U			330	36,400
Hexachlorocyclopentadiene	U	U	U	U	U	U	U			330	----
2,4,6-Trichlorophenol	U	U	U	U	U	U	U			800	----
2,4,5-Trichlorophenol	U	U	U	U	U	U	U			330	100
2-Chloronaphthalene	U	2,000 J	U	U	U	U	U			800	----
2-Nitroaniline	U	U	U	U	U	U	U			330	430 OR MDL
Dimethylphthalate	U	U	U	U	U	U	U			330	2,000
2,6-Dinitrotoluene	U	U	U	U	U	U	U			330	1,000
Acenaphthylene	19,000	**430,000 D**	130 J	480	U	450 J	U			330	41,000
3-Nitroaniline	U	U	U	U	U	U	U			800	500 OR MDL
Acenaphthene	24,000	**160,000 DJ**	310 J	460	U	480 J	U			330	50,000
2,4-Dinitrophenol	U	U	U	U	U	U	U			800	200 OR MDL
4-Nitrophenol	U	U	U	U	U	U	U			800	100 OR MDL
Dibenzofuran	**32,000**	**350,000 D**	620	700	U	1,100	U			330	6,200

TABLE 5 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

SAMPLE ID	SB-26	SB-26	SB-27	SB-27	SB-28	SB-29	SB-29			LABORATORY QUANTITATION LIMITS	NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives
SAMPLE DEPTH (FT)	9-13	16-19	18-20	29-31	11-13	19-23	39-41				
DATE OF COLLECTION	9/29/03	10/1/03	9/22/03	9/23/03	9/25/03	9/24/03	9/24/03				
DILUTION FACTOR	5.0	10.0	1.0	1.0	1.0	1.0	1.0				
PERCENT SOLIDS	80.0	71.0	82.0	77.0	71.0	67.0	97.0				
UNITS	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg			(ug/Kg)	(ug/Kg)
2,4-Dinitrotoluene	U	U	U	U	U	U	U			330	----
Diethylphthalate	U	U	94 JB	110 JB	U	120 JB	U			330	7,100
Fluorene	**80,000 D**	**420,000 D**	480	750	U	1,000	U			330	50,000
4-Chlorophenyl-phenylether	U	U	U	U	U	U	U			330	----
4-Nitroaniline	U	U	U	U	U	U	U			800	----
4,6-Dinitro-2-methylphenol	U	U	U	U	U	U	U			800	----
N-Nitrosodiphenylamine	U	U	U	U	U	U	U			330	----
4-Bromophenyl-phenylether	U	U	U	U	U	U	U			330	----
Hexachlorobenzene	U	U	U	U	U	U	U			330	410
Pentachlorophenol	U	U	U	U	U	U	U			800	1,000 OR MDL
Phenanthrene	**200,000 D**	**1,300,000 D**	820	1,700	U	2,700	U			330	50,000
Anthracene	**81,000 D**	**380,000 D**	200 J	580	U	900	U			330	50,000
Carbazole	29,000	180,000 DJ	U	400 J	U	170 J	U			330	----
Di-n-butylphthalate	U	U	U	U	U	U	U			330	8,100
Fluoranthene	**190,000 D**	**790,000 D**	550	1,200	U	2,000	U			330	50,000
Pyrene	**180,000 D**	**580,000 D**	450	1,100	U	1,800	U			330	50,000
Butylbenzylphthalate	U	U	U	U	U	U	U			330	50,000
3,3'-Dichlorobenzidine	U	U	U	U	U	U	U			330	----
Benzo (a) anthracene	**100,000 D**	**320,000 D**	170 J	**480**	U	**780**	U			330	224 OR MDL
Chrysene	**92,000 D**	**240,000 DJ**	180 J	**460**	U	**770**	U			330	400
bis(2-Ethylhexyl)phthalate	U	U	590	190 J	56 J	510	390			330	50,000
Di-n-octylphthalate	U	U	U	U	U	U	U			330	50,000
Benzo(b)fluoranthene	**110,000 D**	**250,000 DJ**	180 J	530	U	840	U			330	1,100
Benzo(k)fluoranthene	**32,000**	**130,000 DJ**	68 J	240 J	U	350 J	U			330	1,100
Benzo(a)pyrene	**93,000**	**260,000 DJ**	**130 J**	**440**	U	**650**	U			330	61 OR MDL
Indeno(1,2,3-cd)pyrene	**31,000**	**44,000**	53 J	170 J	U	250 J	U			330	3,200
Dibenzo(a,h)anthracene	**9,000**	**13,000**	U	U	U	U	U			330	14 OR MDL
Benzo(g,h,i)perylene	41,000 D	48,000	56 J	160 J	U	220 J	U			330	50,000
Total PAHs	1,552,000	9,065,000	773,777	77,750	0	243,190	740				----
Total Carcinogen PAHs	467,000	1,257,000	781	2,320	0	3,640	0				----
Total SVOCs	**1,684,910**	**10,286,000**	**832,081**	89,327	56	259,090	1,130				500,000

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at dilution

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S), where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
---: not established
▭ Indicates value exceeds NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective
NA: sample not analyzed for this analyte

TABLE 6

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
TARGET ANALYTE LIST (TAL) METALS AND CYANIDE

SAMPLE ID	**SB-01**	**SB-01**	**SB-02**	**SB-02**	**SB-03**	**SB-04**	**SB-05**	**SB-06**	**SB-07**	**INSTRUMENT DETECTION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	22-26	26-32	17-19	29-31	17-19	10-16	18-19.5	9-11	27-29		
DATE OF COLLECTION	9/2/03	9/2/03	9/3/03	9/22/03	9/5/03	9/18/03	9/9/03	9/9/03	9/3/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
PERCENT SOLIDS	20.0	78.0	82.0	93.0	76.0	78.0	75.0	78.0	77.0		
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	mg/kg
Aluminum	26,300	6,720	5,560	4,490	13,500	4,780	7,370	12,500	7,880	17	SB
Antimony	15.9	3	5.7	1.6	4.8	U	5.2	4.5	4.3	3	SB
Arsenic	**15.3**	1.2 B	**7.6**	1.9	5.9	5.7	4.7	1.7	5.4	3	7.5 or SB
Barium	99.3	113	75.7	64.7	138	169	97	81.1	26.9	4	300 or SB
Beryllium	**1.8**	**0.75**	**0.39**	**0.43**	**1**	**0.32**	**0.53**	**0.86**	**0.57**	0.5	0.16 or SB
Cadmium	U	U	U	U	U	0.11 B	U	U	U	0.7	1 or SB
Calcium	9,040	782	9,460	603	5,520	48,400	32,700	1,620	3,420	240	SB
Chromium	**59.3**	**20.8**	**28.9**	**16.1**	**36.1**	9.8	**14.7**	**17.7**	**17.9**	0.6	10 or SB
Cobalt	14.1	3.5	3.2	5	10.7	4.6	6	6.2	4.5	0.9	30 or SB
Copper	**37**	11.8	**31.6**	**25.7**	**38.4**	**30.8**	**56.8**	25	10.6	4	25 or SB
Iron	**58,400**	**12,500**	**24,200**	**7,560**	**24,200**	**8,790**	**23,000**	**17,700**	**17,500**	26	2,000 or SB
Lead	282	7.9	90.3	6.8	92.4	390	246	62.9	17.6	4	400
Magnesium	8,990	3,270	3,090	1,700	8,040	2,410	3,610	3,790	3,720	8	SB
Manganese	736	124	137	75	202	631	264	234	461	0.8	SB
Mercury	**0.14 B**	U	**0.25**	U	**0.71**	**1.8**	**6.5**	**0.15**	U	0.1	0.1
Nickel	**43.4**	12.7	12.3	8.5	**34.4**	6.7	**23**	**18.2**	**15.6**	0.8	13 or SB
Potassium	5,110	2,550	1,140	1,530	4,840	961	835	1,980	1,460	78	SB
Selenium	U	U	U	1.3 B	U	1 B	U	U	U	9	2 or SB
Silver	U	U	U	U	U	0.96 B	1.8 B	1.3 B	U	2	SB
Sodium	2270	255	210	333	396	442	273	254	932	83	SB
Thallium	16.4	2.9	6.2	1.6	4.4	0.69 B	5.1	4.2	5	3	SB
Vanadium	76.1	24.9	14.3	15.8	34.2	15.8	**163**	20.4	22.2	0.7	150 or SB
Zinc	**129**	**31.5**	**64.6**	**22**	**100**	**92.4**	**185**	**56.1**	**45.5**	7	20 or SB
Total Cyanide	12.3	0.86 B	368	U	14.1	14	528	2.4	U	7	----

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound concentration is less than the CRDL but greater than the IDL.

NOTES:

To determine the detection limit for each sample, use the following equation: (CRDL)*(DF)*(100/%S) where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.

SB: Site background

----: not established

▭ Indicates value exceeds the NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective

TABLE 6 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
TARGET ANALYTE LIST (TAL) METALS AND CYANIDE

SAMPLE ID	**SB-07**	**SB-08**	**SB-08**	**SB-09**	**SB-09**	**SB-10**	**SB-10**	**SB-11**	**SB-12**	**INSTRUMENT DETECTION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	33-35	12-16	28-30	11-15	31-33.5	20-24	26-28	10-12	21-23		
DATE OF COLLECTION	9/3/03	10/2/03	10/2/03	9/5/03	9/5/03	9/11/03	9/11/03	9/17/03	9/8/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
PERCENT SOLIDS	77.0	81.0	78.0	81.0	70.0	80.0	78.0	82.0	68.0		
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	mg/kg
Aluminum	46,900	4,420	11,200	10,800	4,990	7,100	9,320	9,140	11,500	17	SB
Antimony	12.7	2.5	U	5.1	3	3.9	5.2	U	4.9	3	SB
Arsenic	**15.6**	**10.9**	3	2	2.6	4.8	6	1.9	3.4	3	7.5 or SB
Barium	205	82.2	40.6	153	44.9	16.7	20.9	81.2	69.2	4	300 or SB
Beryllium	U	**0.18 B**	**0.34**	**1.1**	**0.44**	**0.47**	**0.7**	**0.49**	**0.81**	0.5	0.16 or SB
Cadmium	U	**1.7**	0.53	U	U	U	U	0.057 B	U	0.7	1 or SB
Calcium	3,790	76,000	1,600	4,980	1,980	1,470	1,800	3,240	2,880	240	SB
Chromium	**79.1**	4.6	**22**	**26.1**	**14.6**	**14.2**	**19.7**	**16.9**	**30.4**	0.6	10 or SB
Cobalt	**32**	4.3	4.1	8.8	3.9	5.3	7	7.6	7.6	0.9	30 or SB
Copper	**77.1**	**28.5**	11	**34.9**	8.5	8.5	13.5	**28.7**	**25.4**	4	25 or SB
Iron	**81,300**	**30,500**	**12,500**	**23,400**	**12,600**	**16,200**	**22,600**	**17900**	**20,200**	26	2,000 or SB
Lead	27.1	**841**	6.9	46.4	6.4	11.5	11.9	17.4	48.7	4	400
Magnesium	19,800	2,310	3,030	5,050	2,540	3,070	4,210	3,530	4,660	8	SB
Manganese	449	427	227	243	196	185	302	231	337	0.8	SB
Mercury	U	**3.2**	0.03 B	**0.29**	0.026 B	0.036 B	0.028 B	**0.14**	**0.15**	0.1	0.1
Nickel	**52.9**	6.2	10.3	**25.6**	11	**15.8**	**19.5**	**13.3**	**23.3**	0.8	13 or SB
Potassium	27,600	593	1,070	4,280	908	1,330	1,720	3,260	2,080	78	SB
Selenium	U	**4.8**	**2.5**	U	U	U	U	0.66 B	U	9	2 or SB
Silver	0.15 B	2.3	1.4 B	U	0.96 B	1.2 B	1.6 B	1.2 B	1.5 B	2	SB
Sodium	690	392	714	194	584	207	743	130	341	83	SB
Thallium	1.6	1.7	1.2	4.2	2.9	4	5.4	3.3	5	3	SB
Vanadium	**197**	12.5	29.1	33.6	18.5	15	23.3	27.4	28.1	0.7	150 or SB
Zinc	**209**	**36.9**	**35.5**	**61.1**	**30.3**	**38.3**	**54.9**	**66.2**	**59.9**	7	20 or SB
Total Cyanide	1 B	126	U	1.2 B	U	0.37 B	U	0.71 B	1.1 B	7	----

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S) where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
SB: Site background
----: not established
☐ Indicates value exceeds the NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective

TABLE 6 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
TARGET ANALYTE LIST (TAL) METALS AND CYANIDE

SAMPLE ID	**SB-12**	**SB-13**	**SB-14**	**SB-14**	**SB-15**	**SB-15**	**SB-16**	**SB-16**	**SB-17**	**INSTRUMENT DETECTION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	27-28.8	19-21.4	17-19	30-32	7-9	13-15	13-15	25-27	9-13		
DATE OF COLLECTION	9/8/03	9/16/03	9/12/03	9/15/03	9/12/03	9/12/03	9/16/03	9/16/03	9/9/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
PERCENT SOLIDS	80.0	78.0	85.0	85.0	85.0	86.0	85.0	84.0	83.0		
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	mg/kg
Aluminum	8,190	9,880	7,200	5,590	8,330	5,470	7,220	7,600	4,430	17	SB
Antimony	3.7	U	0.23 B	U	U	U	U	U	13.7	3	SB
Arsenic	1.6	3.9	2.1	0.9 B	2.9	1.2	3.4	5.4	U	3	7.5 or SB
Barium	44.7	111	53	56.5	94	57.5	70.7	15.6	76.1	4	300 or SB
Beryllium	**0.72**	**0.46**	**0.37**	**0.41**	**0.47**	**0.23 B**	**0.33**	**0.37**	**0.41 B**	0.5	0.16 or SB
Cadmium	U	0.2 B	0.11 B	0.057 B	0.12 B	U	0.052 B	0.068 B	U	0.7	1 or SB
Calcium	539	9,620	28,400	501	3,070	1,640	7,710	1,180	24,500	240	SB
Chromium	**23.4**	**14.2**	**26.4**	**17.5**	**17.1**	**12**	**14.4**	**17**	**13.9**	0.6	10 or SB
Cobalt	7.4	6.6	5	4.9	14	6.5	5.2	4.9	0.99 B	0.9	30 or SB
Copper	11.5	19.9	14	13.1	24.2	18.5	20.2	10.4	24.9	4	25 or SB
Iron	**14,200**	**21,000**	**10,900**	**11,900**	**16,500**	**12,000**	**12,400**	**14,900**	**55,900**	26	2,000 or SB
Lead	8.5	128	39.8	4.7	14.1	7.1	86.2	5.9	78.2	4	400
Magnesium	2,690	5,430	7,370	2,180	5,190	3,340	2,550	2,890	8,230	8	SB
Manganese	94.3	552	358	84.7	240	144	316	259	541	0.8	SB
Mercury	U	**0.34**	**0.22**	U	0.034 B	U	**0.17**	0.026 B	**4.9**	0.1	0.1
Nickel	**14.4**	**13.1**	**25.9**	9.6	**37**	13	10.8	**16.3**	11.9 B	0.8	13 or SB
Potassium	1,850	1,680	1,230	1,060	5,820	3,190	1,360	1,320	1,180	78	SB
Selenium	U	U	0.76 B	0.91 B	U	U	U	0.61 B	U	9	2 or SB
Silver	1 B	1.6 B	0.86 B	1.2 B	1.5 B	1.2 B	1.2 B	1.4 B	4.4 B	2	SB
Sodium	285	421	230	241	178	152	132	537	160 B	83	SB
Thallium	3.2	U	0.26 B	0.2 B	2.5	1.8	0.57 B	U	13.3	3	SB
Vanadium	25.8	21.6	16.1	15.6	20.1	15	22.3	20.2	15.9	0.7	150 or SB
Zinc	**25.3**	**53.7**	**33.8**	**22.9**	**68.7**	**42.7**	**31.6**	**32**	**43.8**	7	20 or SB
Total Cyanide	U	6.2	19.7	U	U	35.8	0.85 B	U	1,580	7	----

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:

To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S) where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.

SB: Site background

----: not established

▭ Indicates value exceeds the NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective

TABLE 6 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
TARGET ANALYTE LIST (TAL) METALS AND CYANIDE

SAMPLE ID	**SB-17**	**SB-18**	**SB-18**	**SB-19**	**SB-19**	**SB-20**	**SB-20**	**SB-21**	**SB-21**	**INSTRUMENT DETECTION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	21-23	9-13	23-25	20-24	24-26.2	12-16	16-20	12-16	36-38.9		
DATE OF COLLECTION	9/10/03	9/26/03	9/26/03	10/2/03	10/2/03	10/2/03	10/2/03	9/30/03	9/30/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
PERCENT SOLIDS	94.0	78.0	56.0	63.0	86.0	73.0	64.0	78.0	75.0		
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	mg/kg
Aluminum	6,620	8,530	13,700	9,840	6,190	6,980	10,800	9,830	11,100	17	SB
Antimony	3.8	2.1	5.8	U	U	U	U	U	U	3	SB
Arsenic	3.9	4.6	**10.8**	5.8	2.1	**9.9**	**8.1**	6.8	7	3	7.5 or SB
Barium	17.4	95.9	29.4	106	53.7	232	38.2	168	60.9	4	300 or SB
Beryllium	**0.47**	**0.64**	**0.96**	**0.2 B**	**0.2 B**	**0.3 B**	**0.36**	**0.27**	**0.37**	0.5	0.16 or SB
Cadmium	U	U	U	0.7	0.23 B	0.47	**1.1**	0.69	0.87	0.7	1 or SB
Calcium	1,730	24,600	14,500	5,570	431	10,500	2,810	4,790	8,050	240	SB
Chromium	**13.7**	**17.2**	**30.5**	**16.5**	**13.5**	**13.7**	**20.9**	**15**	**17.8**	0.6	10 or SB
Cobalt	5	4.9	9.2	6.7	4.5	5.4	8.3	6.5	7.5	0.9	30 or SB
Copper	10	**26.5**	20.9	**28.7**	9.9	**26.8**	16.6	**39.8**	20.8	4	25 or SB
Iron	**14,900**	**13,700**	**34,800**	**14,800**	**6,560**	**10,400**	**22,600**	**14,300**	**19,300**	26	2,000 or SB
Lead	14.3	63	16.2	113	5	**467**	20.8	109	112	4	400
Magnesium	3,300	8,360	6,990	3,550	1,820	1,810	5,200	2,970	4,380	8	SB
Manganese	398	380	1,260	248	61.2	224	555	187	339	0.8	SB
Mercury	0.035	**0.34**	0.06	**0.45**	U	**0.22**	0.045 B	**0.27**	0.097	0.1	0.1
Nickel	**13.2**	**18.6**	**24.8**	**13.1**	11.2	**13.2**	**18.2**	**13.6**	**16**	0.8	13 or SB
Potassium	1,150	1,900	2,960	2,220	1,070	1,270	1,960	1,070	2,030	78	SB
Selenium	0.53 B	2	**4**	**5**	1.6	**2.9**	**4.3**	**3.3**	**3.4**	9	2 or SB
Silver	1.1 B	U	U	1.8 B	0.78 B	1.4 B	2.2	1.6	1.9	2	SB
Sodium	443	203	1,940	501	365	622	609	336	717	83	SB
Thallium	3.9	2.5	8.1	1.6	0.87 B	1.4	1.2 B	0.46 B	1.1 B	3	SB
Vanadium	16.3	20.3	33.8	23.9	14.5	20.9	26.4	24.1	24.1	0.7	150 or SB
Zinc	**38.7**	**54**	**77.2**	**58.2**	15.2	**44.8**	**56.2**	**61.6**	**67.8**	7	20 or SB
Total Cyanide	1.1	29.1	U	26.4	U	6.7	U	6.5	0.78 B	7	----

QUALIFIERS:

U: Compound analyzed for but not detected

B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:

To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S) where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.

SB: Site background

----: not established

☐ Indicates value exceeds the NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective

TABLE 6 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
TARGET ANALYTE LIST (TAL) METALS AND CYANIDE

SAMPLE ID	SB-22	SB-22	SB-23	SB-23	SB-24	SB-24	SB-24	SB-25	SB-25	INSTRUMENT DETECTION LIMITS	NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives
SAMPLE DEPTH (FT)	12-16	36-44	20-24	52-54.4	30-32	34-36	36-38	12-16	24-28		
DATE OF COLLECTION	9/29/03	9/29/03	9/30/03	9/30/03	10/3/03	10/3/03	10/3/03	10/1/03	10/1/03		
DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
PERCENT SOLIDS	75.0	79.0	64.0	76.0	69.0	70.0	62.0	75.0	63.0		
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	ug/l	mg/kg
Aluminum	9,260	4,430	13,700	7,660	3,850	12,200	291	9,980	15,200	17	SB
Antimony	0.3 B	U	U	U	U	U	U	U	0.33 B	3	SB
Arsenic	**24.2**	2.9	**10.1**	2.4	**9.2**	**10.8**	5.2	3.5	**11.3**	3	7.5 or SB
Barium	160	12.8	60.8	60.3	11.2 B	24.7	1.7 B	82.1	34	4	300 or SB
Beryllium	**0.35**	0.084 B	**0.47**	0.1 B	0.037 B	**0.43**	U	0.098 B	**0.55**	0.5	0.16 or SB
Cadmium	**1.8**	0.33	**1.2**	0.59	**5.1**	**1.3**	0.068 B	0.78	**1.5**	0.7	1 or SB
Calcium	13,300	936	11,800	1,470	4,470	3,630	191	4,610	6,330	240	SB
Chromium	**15.7**	9.7	**21.8**	**18.4**	**65.8**	**20.6**	0.86 B	**14.4**	**25.2**	0.6	10 or SB
Cobalt	18	3.4	9	5.9	3.5	9.4	0.35 B	7	11	0.9	30 or SB
Copper	**99.1**	5.8	**33.2**	17	**59.5**	14	0.94 B	20.5	17.1	4	25 or SB
Iron	**37,400**	**8,320**	**24,900**	**13,900**	**92,900**	**27,600**	987	**18,300**	**33,200**	26	2,000 or SB
Lead	164	3.2	212	12	6	9.6	2.9	112	12.1	4	400
Magnesium	2,760	2,320	5,740	4,030	1,550	6,740	168	3,480	7,440	8	SB
Manganese	417	84.9	426	247	653	675	30	236	571	0.8	SB
Mercury	**0.57**	U	**0.94**	**0.16**	0.077	0.032 B	0.04 B	**0.96**	0.039 B	0.1	0.1
Nickel	**24.7**	9.1	**22.8**	**13.9**	**21.2**	**19.4**	0.79 B	**14**	**23.5**	0.8	13 or SB
Potassium	1,390	988	2,460	1,930	481	2,550	116	2,300	2,970	78	SB
Selenium	**6.8**	**2.2**	**4.9**	**3.1**	**6.2**	**4.8**	U	**4.4**	**5.4**	9	2 or SB
Silver	3.3	0.99 B	2.4	1.5 B	3.8	2.5	U	1.9	2.6	2	SB
Sodium	425	1,370	2,860	1,420	1,070	3,980	257	475	2,720	83	SB
Thallium	1.8	0.86 B	2	1.4	2.4	1.2 B	0.21 B	1.8	1.7	3	SB
Vanadium	26.4	14.5	30.2	22.8	7.3	26	7	19.2	31.8	0.7	150 or SB
Zinc	**136**	19.1	**74.8**	**33.1**	**77.8**	**62.1**	4.2	**46.7**	**74.1**	7	20 or SB
Total Cyanide	U	U	2	0.63 B	1.2 B	U	3.8	0.6 B	U	7	----

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S) where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
SB: Site background
----: not established
☐ Indicates value exceeds the NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective

TABLE 6 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

SOIL BORING SAMPLING RESULTS
TARGET ANALYTE LIST (TAL) METALS AND CYANIDE

SAMPLE ID	**SB-26**	**SB-26**	**SB-27**	**SB-27**	**SB-28**	**SB-29**	**SB-29**			**INSTRUMENT DETECTION LIMITS**	**NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objectives**
SAMPLE DEPTH (FT)	9-13	16-19	18-20	29-31	11-13	19-23	39-41				
DATE OF COLLECTION	9/29/03	10/1/03	9/22/03	9/23/03	9/25/03	9/24/03	9/24/03				
DILUTION FACTOR	1.0	1.0	1.0	1.0	1.0	1.0	1.0				
PERCENT SOLIDS	80.0	79.0	82.0	77.0	71.0	67.0	97.0				
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			ug/l	mg/kg
Aluminum	8,290	13,100	4,890	6,270	10,500	5,120	6,530			17	SB
Antimony	0.37 B	1.7 B	2.7	2.7	4.4	2.6	2.2			3	SB
Arsenic	4.3	6.7	2.9	3.3	7.4	3.1	1.1			3	7.5 or SB
Barium	81.8	103	78.5	23.4	32.2	88.8	216			4	300 or SB
Beryllium	U	0.095 B	**0.51**	**0.49**	**0.7**	**0.57**	**0.67**			0.5	0.16 or SB
Cadmium	**1.1**	0.91	U	U	U	U	U			0.7	1 or SB
Calcium	9,740	2,150	3,430	1,500	3,880	11,400	5,980			240	SB
Chromium	**16.6**	**24.8**	**12.9**	**15.8**	**22.5**	**16.8**	**18.1**			0.6	10 or SB
Cobalt	6.2	11.5	5.3	3.5	6.9	5.2	5.2			0.9	30 or SB
Copper	**34.3**	**40.2**	24.1	10.3	18.4	23.9	9.3			4	25 or SB
Iron	**23,200**	**24,200**	**11,400**	**12,300**	**25,600**	**12,000**	**12,500**			26	2,000 or SB
Lead	55.6	94.2	67.3	6.6	27.7	69.6	8.1			4	400
Magnesium	5,070	5,580	3,010	2,070	4,870	2,760	4,530			8	SB
Manganese	236	198	201	173	553	194	399			0.8	SB
Mercury	**0.33**	**0.3**	0.035 B	U	**0.23**	**0.24**	U			0.1	0.1
Nickel	**13.6**	**22.7**	12.1	9.6	**23.2**	**13.1**	**14.4**			0.8	13 or SB
Potassium	4,060	4,540	1,590	920	1,810	1,630	3,120			78	SB
Selenium	**5.1**	**5.5**	1.4 B	1.7 B	**2.7**	2 B	1.3 B			9	2 or SB
Silver	2.4	0.34 B	U	U	U	U	U			2	SB
Sodium	304	788	148	554	407	155	376			83	SB
Thallium	2.2	4.4	2.7	2.8	5.8	2.6	2.6			3	SB
Vanadium	19.9	25.4	14.2	22.5	24.6	13	21.1			0.7	150 or SB
Zinc	**53.4**	**69**	**119**	**27**	**55**	**109**	**25**			7	20 or SB
Total Cyanide	7.3	4.4	1.5	2.6	0.62 B	92.9	1.7			7	----

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:
To determine the detection limit for each sample, use the following equation:
(CRDL)*(DF)*(100/%S) where CRDL = contract required detection limit, DF = dilution factor and %S = percent solids.
SB: Site background
----: not established
☐ Indicates value exceeds the NYSDEC TAGM 4046 Appendix A Recommended Soil Cleanup Objective

TABLE 7
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

GROUNDWATER SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

Sample Identification	**LMW-01**	**LMW-02**	**LMW-03**	**LMW-04**	**MW-01**	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	10/10/03	10/08/03	10/10/03	10/10/03	10/07/03		
Dilution Factor	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	U	5	5 ST
Chloromethane	U	U	U	U	U	5	5 ST
Vinyl Chloride	U	U	U	U	U	5	2 ST
Bromomethane	U	U	U	U	U	5	5 ST
Chloroethane	U	U	U	U	U	5	5 ST
Trichlorofluoromethane	U	U	U	U	U	5	5 ST
1,1-Dichloroethene	U	U	U	U	U	5	5 ST
Acetone	20	U	U	U	U	5	50GV
Idomethane	U	U	U	U	U	5	5 ST
Carbon Disulfide	U	U	U	U	U	5	----
Methylene Chloride	U	U	U	U	U	5	5 ST
trans-1,2-dichloroethene	U	U	U	U	U	5	5 ST
Methyl tert-Butyl Ether	17	U	U	7	2 J	5	10GV
1,1-Dichloroethane	U	U	U	U	U	5	5 ST
Vinyl Acetate	U	U	U	U	U	5	----
cis-1,2-Dichloroethene	U	U	U	U	U	5	5 ST
2-Butanone	U	U	U	U	U	5	50GV
2,2-Dichloropropane	U	U	U	U	U	5	5 ST
Bromochloromethane	U	U	U	U	U	5	5 ST
Chloroform	U	U	U	U	U	5	7 ST
1,1,1-Trichloroethane	U	U	U	U	U	5	5 ST
1,1-Dichloropropene	U	U	U	U	U	5	5 ST
Carbon Tetrachloride	U	U	U	U	U	5	5 ST
Benzene	**37**	1 J	**870 DJ**	**10,000 D**	**39**	5	1 ST
1,2-Dichloroethane	U	U	U	**89**	U	5	0.6 ST
Trichloroethene	U	U	U	U	U	5	5 ST
1,2-Dichloropropane	U	U	U	U	U	5	1 ST
Dibromomethane	U	U	U	U	U	5	5 ST
Bromodichloromethane	U	U	U	U	U	5	50GV
cis-1,3-Dichloropropene	U	U	U	U	U	5	0.4 ST *
4-Methyl-2-Pentanone	U	U	U	U	U	5	----
Toluene	2 J	U	**470 DJ**	**53**	U	5	5 ST
Trans-1,3-Dichloropropene	U	U	U	U	U	5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	U	5	1 ST
1,3-Dichloropropane	U	U	U	U	U	5	5 ST
Tetrachloroethene	U	U	U	U	U	5	5 ST
2-Hexanone	U	U	U	U	U	5	50GV
Dibromochloromethane	U	U	U	U	U	5	50GV
1,2-Dibromoethane	U	U	U	U	U	5	----
Chlorobenzene	U	U	U	U	U	5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	U	5	5 ST
Ethylbenzene	**10**	4 J	**650 DJ**	**210 DJ**	U	5	5 ST
Total Xylenes	**12**	4 J	**4600 D**	**140**	U	5	5 ST
Styrene	U	U	**28**	4 J	U	5	5 ST
Bromoform	U	U	U	U	U	5	50GV
Isopropylbenzene	1 J	U	**420 DJ**	**31**	U	5	5 ST
1,1,2,2-Tetrachloroethane	U	U	U	U	U	5	5 ST
Bromobenzene	U	U	U	U	U	5	5 ST
1,2,3-Trichloropropane	U	U	U	U	U	5	0.04 ST
n-Propylbenzene	U	U	**100**	**7**	U	5	5 ST
2-Chlorotoluene	U	U	U	U	U	5	5 ST
1,3,5-Trimethylbenzene	1 J	U	**1400 D**	**9**	U	5	5 ST
4-Chlorotoluene	U	U	U	U	U	5	5 ST
tert-Butylbenzene	U	U	U	U	U	5	5 ST
1,2,4-Trimethylbenzene	4 J	2 J	**3400 D**	**27**	U	5	5 ST
sec-Butylbenzene	U	U	**6**	U	U	5	5 ST
4-Isopropyltoluene	U	U	**36**	U	U	5	5 ST
1,3-Dichlorobenzene	U	U	U	U	U	5	3 ST
1,4-Dichlorobenzene	U	U	U	U	U	5	3 ST
n-Butylbenzene	U	U	U	U	U	5	5 ST
1,2-Dichlorobenzene	U	U	U	U	U	5	3 ST
1,2-Dibromo-3-chloropropane	U	U	U	U	U	5	0.04 ST
1,2,4-Trichlorobenzene	U	U	U	U	U	5	5 ST
Hexachlorobutadiene	U	U	U	U	U	5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	U	5	5 ST
Total BTEX	61	9	6,590	10,403	39	----	----
Total VOCs	104	11	11,980	10,577	41	----	----

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at a secondary dilution

NOTES:
*: Value pertains to the sum of the isomers
GV: Guidance Value
ST: Standard
----: Not established
▭ Indicates value exceeds standard or guidance value.

TABLE 7 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

GROUNDWATER SAMPLE RESULTS
VOLATILE ORGANIC COMPOUNDS (VOCs)

Sample Identification	MW-02	MW-03	MW-04	MW-05	MW-06	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	10/10/03	10/08/03	10/08/03	10/09/03	10/10/03		
Dilution Factor	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	U	U	U	U	U	5	5 ST
Chloromethane	U	U	U	U	U	5	5 ST
Vinyl Chloride	U	U	U	U	U	5	2 ST
Bromomethane	U	U	U	U	U	5	5 ST
Chloroethane	U	U	U	U	U	5	5 ST
Trichlorofluoromethane	U	U	U	U	U	5	5 ST
1,1-Dichloroethene	U	U	U	U	U	5	5 ST
Acetone	U	U	U	12	10	5	50GV
Idomethane	U	U	U	U	U	5	5 ST
Carbon Disulfide	U	U	U	U	U	5	----
Methylene Chloride	U	U	U	U	U	5	5 ST
trans-1,2-dichloroethene	U	U	U	U	U	5	5 ST
Methyl tert-Butyl Ether	**13**	2 J	2 J	U	U	5	10GV
1,1-Dichloroethane	U	U	U	U	U	5	5 ST
Vinyl Acetate	U	U	U	U	U	5	----
cis-1,2-Dichloroethene	U	U	U	U	U	5	5 ST
2-Butanone	U	U	U	U	U	5	50GV
2,2-Dichloropropane	U	U	U	U	U	5	5 ST
Bromochloromethane	U	U	U	U	U	5	5 ST
Chloroform	U	U	U	U	U	5	7 ST
1,1,1-Trichloroethane	U	U	U	U	U	5	5 ST
1,1-Dichloropropene	U	U	U	U	U	5	5 ST
Carbon Tetrachloride	U	U	U	U	U	5	5 ST
Benzene	**1,600 D**	**220 D**	**620 D**	**120 D**	**1,600 D**	5	1 ST
1,2-Dichloroethane	U	U	U	U	U	5	0.6 ST
Trichloroethene	U	U	U	U	U	5	5 ST
1,2-Dichloropropane	U	U	U	U	U	5	1 ST
Dibromomethane	U	U	U	U	U	5	5 ST
Bromodichloromethane	U	U	U	U	U	5	50GV
cis-1,3-Dichloropropene	U	U	U	U	U	5	0.4 ST *
4-Methyl-2-Pentanone	U	U	U	U	U	5	----
Toluene	**12**	U	U	U	**28**	5	5 ST
Trans-1,3-Dichloropropene	U	U	U	U	U	5	0.4 ST *
1,1,2-Trichloroethane	U	U	U	U	U	5	1 ST
1,3-Dichloropropane	U	U	U	U	U	5	5 ST
Tetrachloroethene	U	U	U	U	U	5	5 ST
2-Hexanone	U	U	U	U	U	5	50GV
Dibromochloromethane	U	U	U	U	U	5	50GV
1,2-Dibromoethane	U	U	U	U	U	5	----
Chlorobenzene	U	U	U	U	U	5	5 ST
1,1,1,2-Tetrachloroethane	U	U	U	U	U	5	5 ST
Ethylbenzene	**120**	U	U	**8**	**1,700 D**	5	5 ST
Total Xylenes	**140**	U	5	3 J	**350**	5	5 ST
Styrene	2 J	U	U	U	2 J	5	5 ST
Bromoform	U	U	U	U	U	5	50GV
Isopropylbenzene	**10**	2 J	**7**	U	**120**	5	5 ST
1,1,2,2-Tetrachloroethane	U	U	U	U	U	5	5 ST
Bromobenzene	U	U	U	U	U	5	5 ST
1,2,3-Trichloropropane	U	U	U	U	U	5	0.04 ST
n-Propylbenzene	1 J	U	1 J	U	**24**	5	5 ST
2-Chlorotoluene	U	U	U	U	U	5	5 ST
1,3,5-Trimethylbenzene	**10**	U	U	U	**32**	5	5 ST
4-Chlorotoluene	U	U	U	U	U	5	5 ST
tert-Butylbenzene	U	U	U	U	U	5	5 ST
1,2,4-Trimethylbenzene	**35**	U	U	U	**200 DJ**	5	5 ST
sec-Butylbenzene	U	U	U	U	U	5	5 ST
4-Isopropyltoluene	U	U	U	U	2 J	5	5 ST
1,3-Dichlorobenzene	U	U	U	U	U	5	3 ST
1,4-Dichlorobenzene	U	U	U	U	U	5	3 ST
n-Butylbenzene	U	U	U	U	U	5	5 ST
1,2-Dichlorobenzene	U	U	U	U	U	5	3 ST
1,2-Dibromo-3-chloropropane	U	U	U	U	U	5	0.04 ST
1,2,4-Trichlorobenzene	U	U	U	U	U	5	5 ST
Hexachlorobutadiene	U	U	U	U	U	5	0.5 ST
1,2,3-Trichlorobenzene	U	U	U	U	U	5	5 ST
Total BTEX	1,872	220	625	131	3,678	----	----
Total VOCs	1,943	224	635	143	4,068		----

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at a secondary dilution

NOTES:
*: Value pertains to the sum of the isomers
GV: Guidance Value
ST: Standard
----: Not established

▭ Indicates value exceeds standard or guidance value.

TABLE 8

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

GROUNDWATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Sample Identification	**LMW-01**	**LMW-02**	**LMW-03**	**LMW-04**	**MW-01**	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	10/10/03	10/08/03	10/10/03	10/10/03	10/07/03		
Dilution Factor	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/L)	(ug/l)
Phenol	U	U	U	**40**	U	10	1 ST *
bis(2-Chloroethyl)ether	U	U	U	U	U	10	1 ST
2-Chlorophenol	U	U	U	U	U	10	1 ST *
1,3-Dichlorobenzene	U	U	U	U	U	10	3 ST
1,4-Dichlorobenzene	U	U	U	U	U	10	3 ST
1,2-Dichlorobenzene	U	U	U	U	U	10	3 ST
2-Methylphenol	U	U	U	U	U	10	1 ST *
2,2-Oxybis (1-Chloropropane)	U	U	U	U	U	10	----
4-Methylphenol	U	U	U	U	U	10	1 ST *
N-Nitroso-di-n-propylamine	U	U	U	U	U	10	----
Hexachloroethane	U	U	U	U	U	10	5 ST
Nitrobenzene	U	U	U	U	U	10	0.4 ST
Isophorone	U	U	U	U	U	10	50 GV
2-Nitrophenol	U	U	U	U	U	10	----
2,4-Dimethylphenol	U	U	U	U	U	10	1 ST *
bis(2-Chloroethoxy)methane	U	U	U	U	U	10	5 ST
2,4-Dichlorophenol	U	U	U	U	U	10	1 ST *
1,2,4-Trichlorobenzene	U	**16**	U	U	U	10	5 ST
Naphthalene	**31**	10	**3,800 D**	**620 D**	U	10	10 GV
4-Chloroaniline	U	U	U	U	U	10	5 ST
Hexachlorobutadiene	U	U	U	U	U	10	0.5 ST
4-Chloro-3-methylphenol	U	U	U	U	U	10	----
2-Methylnaphthalene	U	1 J	670 D	23	U	10	----
Hexachlorocyclopentadiene	U	U	U	U	U	10	5 ST
2,4,6-Trichlorophenol	U	U	U	U	U	10	----
2,4,5-Trichlorophenol	U	U	U	U	U	25	----
2-Chloronaphthalene	U	U	U	U	U	10	10 GV
2-Nitroaniline	U	U	U	U	U	25	5 ST
Dimethylphthalate	U	U	U	U	U	10	50 GV
2,6-Dinitrotoluene	U	U	U	U	U	10	5 ST
Acenaphthylene	U	U	29	U	U	10	----
3-Nitroaniline	U	U	U	U	U	25	5 ST
Acenaphthene	10	U	**35**	12	U	10	20 GV
2,4-Dinitrophenol	U	U	U	U	U	25	1 ST *
4-Nitrophenol	U	U	U	U	U	25	----
Dibenzofuran	U	U	61	6 J	U	10	----

TABLE 8 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

GROUNDWATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Sample Identification	**LMW-01**	**LMW-02**	**LMW-03**	**LMW-04**	**MW-01**	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	10/10/03	10/08/03	10/10/03	10/10/03	10/07/03		
Dilution Factor	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
2,4-Dinitrotoluene	U	U	U	U	U	10	5 ST
Diethylphthalate	U	U	U	U	U	10	50 GV
Fluorene	U	U	**54**	7 J	U	10	50 GV
4-Chlorophenyl-phenylether	U	U	U	U	U	10	----
4-Nitroaniline	U	U	U	U	U	25	5 ST
4,6-Dinitro-2-methylphenol	U	U	U	U	U	25	----
N-Nitrosodiphenylamine	U	U	U	U	U	10	50 GV
4-Bromophenyl-phenylether	U	U	U	U	U	10	----
Hexachlorobenzene	U	U	U	U	U	10	0.04 ST
Pentachlorophenol	U	U	U	U	U	25	1 ST *
Phenanthrene	U	U	**140**	10	U	10	50 GV
Anthracene	U	U	41	1 J	U	10	50 GV
Carbazole	U	U	U	21	U	10	----
Di-n-butylphthalate	U	U	U	U	U	10	50 ST
Fluoranthene	U	U	**97**	2 J	U	10	50 GV
Pyrene	U	U	**100**	1 J	U	10	50 GV
Butylbenzylphthalate	U	U	U	U	U	10	50 GV
3,3'-Dichlorobenzidine	U	U	U	U	U	10	5 ST
Benzo (a) anthracene	U	U	**44**	U	U	10	0.002 GV
Chrysene	U	U	**39**	U	U	10	0.002 GV
bis(2-Ethylhexyl)phthalate	U	**6 J**	**25**	U	U*	10	5 ST
Di-octylphthalate	U	U	U	U	U	10	50 GV
Benzo(b)fluoranthene	U	U	**45**	U	U	10	0.002 GV
Benzo(k)fluoranthene	U	U	**19**	U	U	10	0.002 GV
Benzo(a)pyrene	U	U	**40**	U	U	10	ND ST
Indeno(1,2,3-cd)pyrene	U	U	**17**	U	U	10	0.002 GV
Dibenzo(a,h)anthracene	U	U	5 J	U	U	10	----
Benzo(g,h,i)perylene	U	U	18	U	U	10	----
Total PAHs	41	10	4,523	653	0		
Total Carcinogen PAHs	0	0	209	0	0		
Total SVOCs	41	33	5,279	743	0		

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at a secondary dilution
U*: Result qualified as non-detect based on validation criteria

NOTES:
* : Applies to Total Phenols
** : Applies to the sum of Unchlorinated Phenols
**** : Applies to the sum of Chlorinated Phenols
☐ Indicates value exceeds standard or guidance valu

TABLE 8 (continued)
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

GROUNDWATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Sample Identification	**MW-02**	**MW-03**	**MW-04**	**MW-05**	**MW-06**	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	10/10/03	10/08/03	10/08/03	10/09/03	10/10/03		
Dilution Factor	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/L)	(ug/l)
Phenol	**22**	**11**	**8 J**	U	U	10	1 ST *
bis(2-Chloroethyl)ether	U	U	U	U	U	10	1 ST
2-Chlorophenol	U	U	U	U	U	10	1 ST *
1,3-Dichlorobenzene	U	U	U	U	U	10	3 ST
1,4-Dichlorobenzene	U	U	U	U	U	10	3 ST
1,2-Dichlorobenzene	U	U	U	U	U	10	3 ST
2-Methylphenol	U	U	U	U	U	10	1 ST *
2,2-Oxybis (1-Chloropropane)	U	U	U	U	U	10	----
4-Methylphenol	U	U	U	U	1 J	10	1 ST *
N-Nitroso-di-n-propylamine	U	U	U	U	U	10	----
Hexachloroethane	U	U	U	U	U	10	5 ST
Nitrobenzene	U	U	U	U	U	10	0.4 ST
Isophorone	U	U	U	U	U	10	50 GV
2-Nitrophenol	U	U	U	U	U	10	----
2,4-Dimethylphenol	U	U	U	U	**48**	10	1 ST *
bis(2-Chloroethoxy)methane	U	U	U	U	U	10	5 ST
2,4-Dichlorophenol	U	U	U	U	U	10	1 ST *
1,2,4-Trichlorobenzene	U	U	U	U	U	10	5 ST
Naphthalene	**220 D**	5 J	**23**	U	**2,800 D**	10	10 GV
4-Chloroaniline	U	U	U	U	U	10	5 ST
Hexachlorobutadiene	U	U	U	U	U	10	0.5 ST
4-Chloro-3-methylphenol	U	U	U	U	U	10	----
2-Methylnaphthalene	3 J	U	U	U	62	10	----
Hexachlorocyclopentadiene	U	U	U	U	U	10	5 ST
2,4,6-Trichlorophenol	U	U	U	U	U	10	----
2,4,5-Trichlorophenol	U	U	U	U	U	25	----
2-Chloronaphthalene	U	U	U	U	U	10	10 GV
2-Nitroaniline	U	U	U	U	U	25	5 ST
Dimethylphthalate	U	U	U	U	U	10	50 GV
2,6-Dinitrotoluene	U	U	U	U	U	10	5 ST
Acenaphthylene	U	U	U	U	U	10	----
3-Nitroaniline	U	U	U	U	U	25	5 ST
Acenaphthene	U	U	14	U	3 J	10	20 GV
2,4-Dinitrophenol	U	U	U	U	U	25	1 ST *
4-Nitrophenol	U	U	U	U	U	25	----
Dibenzofuran	U	U	U	U	2 J	10	----

TABLE 8 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

GROUNDWATER SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)

Sample Identification	**MW-02**	**MW-03**	**MW-04**	**MW-05**	**MW-06**	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	10/10/03	10/08/03	10/08/03	10/09/03	10/10/03		
Dilution Factor	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
2,4-Dinitrotoluene	U	U	U	U	U	10	5 ST
Diethylphthalate	U	U	U	U	U	10	50 GV
Fluorene	U	U	2 J	U	2 J	10	50 GV
4-Chlorophenyl-phenylether	U	U	U	U	U	10	----
4-Nitroaniline	U	U	U	U	U	25	5 ST
4,6-Dinitro-2-methylphenol	U	U	U	U	U	25	----
N-Nitrosodiphenylamine	U	U	U	U	U	10	50 GV
4-Bromophenyl-phenylether	U	U	U	U	U	10	----
Hexachlorobenzene	U	U	U	U	U	10	0.04 ST
Pentachlorophenol	U	U	U	U	U	25	1 ST *
Phenanthrene	U	U	U	U	U	10	50 GV
Anthracene	U	U	U	U	U	10	50 GV
Carbazole	U	U	4 J	U	3 J	10	----
Di-n-butylphthalate	U	U	U	1 J	U	10	50 ST
Fluoranthene	U	U	U	U	U	10	50 GV
Pyrene	U	U	U	U	U	10	50 GV
Butylbenzylphthalate	U	U	U	U	U	10	50 GV
3,3'-Dichlorobenzidine	U	U	U	U	U	10	5 ST
Benzo (a) anthracene	U	U	U	U	U	10	0.002 GV
Chrysene	U	U	U	U	U	10	0.002 GV
bis(2-Ethylhexyl)phthalate	2 J	U*	U*	2 J	U	10	5 ST
Di-octylphthalate	U	U	U	U	U	10	50 GV
Benzo(b)fluoranthene	U	U	U	U	U	10	0.002 GV
Benzo(k)fluoranthene	U	U	U	U	U	10	0.002 GV
Benzo(a)pyrene	U	U	U	U	U	10	ND ST
Indeno(1,2,3-cd)pyrene	U	U	U	U	U	10	0.002 GV
Dibenzo(a,h)anthracene	U	U	U	U	U	10	----
Benzo(g,h,i)perylene	U	U	U	U	U	10	----
Total PAHs	220	5	39	0	2,805		
Total Carcinogen PAHs	0	0	0	0	0		
Total SVOCs	247	16	51	3	2,921		

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound found in the method blank as well as the sample
J: Compound found at a concentration below the CRDL, value estimated
D: Result taken from reanalysis at a secondary dilution
U*: Result qualified as non-detect based on validation criteria

NOTES:
* : Applies to Total Phenols
** : Applies to the sum of Unchlorinated Phenols
**** : Applies to the sum of Chlorinated Phenols
☐ Indicates value exceeds standard or guidance valu

TABLE 9

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE
SITE CHARACTERIZATION STUDY

GROUNDWATER SAMPLE RESULTS
TARGET ANALYTE LIST (TAL) METALS

Sample Identification	**LMW-01**	**LMW-02**	**LMW-03**	**LMW-04**	**MW-01**	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	10/10/03	10/08/03	10/10/03	10/10/03	10/07/03		
Dilution Factor	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/L)	(ug/l)
Aluminum	50.3 B	449	284	556	1800	17	----
Antimony	U	U	U	U	U	3	3 ST
Arsenic	**651**	U	6.7 B	U	U	3	25 ST
Barium	**1,420**	46.8 B	148 B	120 B	72.2 B	4	1,000 ST
Beryllium	U	U	U	U	U	0.5	3 GV
Cadmium	0.7 B	U	U	U	U	0.7	5 ST
Calcium	76,800	25,900	95,500	90,900	85,800	240	----
Chromium	U	1.7 B	U	U	1.3 B	0.6	50 ST
Cobalt	U	2.1 B	3.4 B	2.9 B	2.2 B	0.9	----
Copper	U	15.8 B	U	U	7 B	4	200 ST
Iron	**22,500**	**2,230**	**3,410**	**4,620**	**2,880**	26	300 ST ^
Lead	U	**34.1**	U	5 B	11.3	4	25 ST
Magnesium	**58,000**	2,350	**38,100**	30,000	**41,100**	8	35,000 GV
Manganese	**2,750**	213	**936**	**880**	**873**	1	300 ST ^
Mercury	U	U	U	U	NR	0.1	0.7 ST
Nickel	7.9 B	8.3 B	U	U	1.4 B	0.8	100 ST
Potassium	40,500	2,790	21,100	39,300	23,700	78	----
Selenium	U	U	U	U	U	9	10 ST
Silver	U	U	U	U	U	2	50 ST
Sodium	**404,000**	5,030	**159,000**	**168,000**	**133,000**	83	20,000 ST
Thallium	U	U	U	U	U	3	0.5 GV
Vanadium	U	4.6 B	U	2.3 B	4.3 B	0.7	----
Zinc	U	153	12.9 B	U	53.2	7	2,000 GV
Total Cyanide	185	U	**207**	**275**	178	7	200 ST
Amenable Cyanide	107	U	148	240	118	7	----

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:
ST: Standard
NR: Not Reported
GV:Guidance Value
^: Standard for the sum of Iron and Manganese is 500 ug/l
☐ Indicates value exceeds standard or guidance value.

TABLE 9 (continued)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

WEST 42ND STREET FORMER MGP SITE

SITE CHARACTERIZATION STUDY

GROUNDWATER SAMPLE RESULTS
TARGET ANALYTE LIST (TAL) METALS

Sample Identification	MW-02	MW-03	MW-04	MW-05	MW-06	Contract Required Detection Limit	NYSDEC Class GA Groundwater Standard or Guidance Value
Date of Collection	10/10/03	10/08/03	10/08/03	10/09/03	10/10/03		
Dilution Factor	1.0	1.0	1.0	1.0	1.0		
Units	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/L)	(ug/l)
Aluminum	583	4,440	56.9 B	278	568	17	----
Antimony	U	U	U	U	U	3	3 ST
Arsenic	U	5.8 B	U	U	6.6 B	3	25 ST
Barium	94.8 B	299	143 B	99.1 B	141 B	4	1,000 ST
Beryllium	U	U	U	U	U	0.5	3 GV
Cadmium	U	U	U	U	U	0.7	5 ST
Calcium	91,700	128,000	129,000	143,000	234,000	240	----
Chromium	U	U	U	U	U	0.6	50 ST
Cobalt	3.5 B	6.1 B	U	U	U	0.9	----
Copper	16.3 B	9 B	U	U	U	4	200 ST
Iron	**4,190**	**11,900**	**827**	**2,900**	**5,350**	26	300 ST ^
Lead	14.7	**51.7**	U	11.6	14.9	4	25 ST
Magnesium	**62,600**	34,200	**39,100**	33,300	**67,300**	8	35,000 GV
Manganese	**1,050**	**2,100**	**644**	**630**	**1,980**	1	300 ST ^
Mercury	0.14 B	U	U	U	U	0.1	0.7 ST
Nickel	2.5 B	8.6 B	U	U	U	0.8	100 ST
Potassium	45,800	32,800	28,800	27,500	33,900	78	----
Selenium	U	U	U	U	U	9	10 ST
Silver	U	U	U	U	U	2	50 ST
Sodium	**179,000**	**104,000**	**153,000**	**122,000**	**140,000**	83	20,000 ST
Thallium	U	U	U	U	U	3	0.5 GV
Vanadium	3.4 B	12.4 B	1.2 B	1.9 B	3.3 B	0.7	----
Zinc	20.7 B	40.2 B	8.4 B	U	U	7	2,000 GV
Total Cyanide	**270**	163	**282**	77.9	123	7	200 ST
Amenable Cyanide	182	99.7	203	22	60.3	7	----

QUALIFIERS:
U: Compound analyzed for but not detected
B: Compound concentration is less than the CRDL
but greater than the IDL.

NOTES:
ST: Standard
NR: Not Reported
GV:Guidance Value
^: Standard for the sum of Iron and Manganese is 500 ug/l
☐ Indicates value exceeds standard or guidance value.

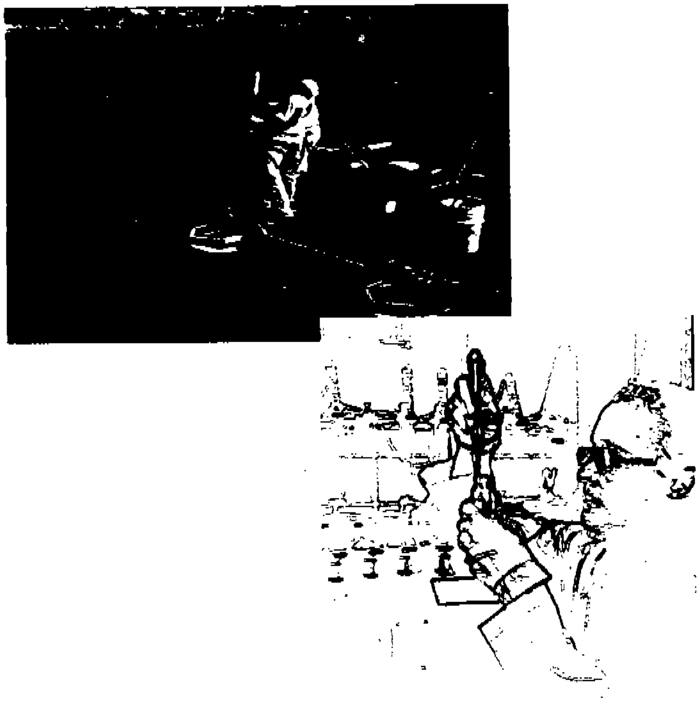
APPENDIX D

META ENVIRONMENTAL INC.,
ENVIRONMENTAL FORENSIC REPORT,
DATED NOVEMBER 12, 2003

Environmental Forensic Report

ConEd - W. 42nd

SDG: DB031007



Report To:

Dvirka and Bartilucci
330 Crossways Park Drive
Woodbury, NY 11797

Report By:

META Environmental, Inc.
49 Clarendon Street
Watertown, MA 02472

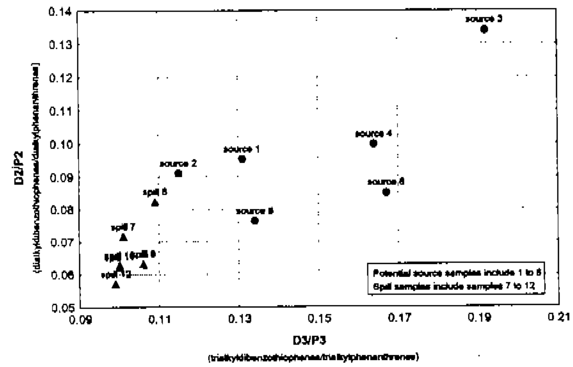


Figure 1. Double Ratio Plot

November 12, 2003

Identifying and allocating sources of pollutants in complex environments.

META Environmental, Inc.
ENGINEERING & CHEMISTRY

Final Laboratory Report

META Environmental, Inc.
49 Clarendon Street
Watertown, MA 02472

Phone: 617-923-4662
Fax: 617-923-4610
e-Mail: meta@metaenv.com

Certification

This certifies that this package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed herein. Release of the data contained in this hardcopy data package has been authorized by the Laboratory Director and Quality Assurance Officer, as verified by the following signatures.

11/12/03

David R. Craig
Laboratory Director, META Environmental, Inc.
Date

11/12/03

David M. Mauro
Quality Assurance Officer, META Environmental, Inc.
Date

Sample Delivery Group Narrative

Project:	ConEd – W. 42nd
Client:	Dvirka and Bartilucci 330 Crossways Park Drive Woodbury, NY 11797
Report Contact:	Ms. Kristen Panella
Date of Receipt:	10/7/03

Sample Summary:

The samples received for this project are summarized in the attached sample login forms.

META Project Number: D07003-60

Chain of Custody

Samples were received in good condition. The internal temperatures of the shipment containers were as follows:

Samples received 10/7/2003 5.0°C

Internal chain of custody procedures were followed after sample receipt. Samples were stored in a locked refrigerator. A sample custody logbook contains the record of sample removal from the secure sample storage area to the sample preparation laboratory. The custody record for the sample extracts is present on the sample extraction logbook page.

The disposal of samples and extracts will be authorized 1 month after the release of this data report. Sample disposal will be documented.

Methods

The samples were prepared by solvent extraction (EPA 3570) using dichloromethane (DCM). The extracts were spiked with internal standard and analyzed by GC/FID (EPA 8100 mod.) and GC/MS/SIM (EPA 8270 mod.).

Results

Sample results were presented in summary forms (CLP Form 1 equivalent) which follow this narrative.

Quality Control

Analyte Flags
The detection limits were determined as the sample equivalent of the lowest linear initial calibration standard. Analytes measured between 50% and 100% of the lowest standard were reported as "estimated" and flagged with the letter "J." No value was reported above the calibration range. Undetected analytes were flagged with the letter, "U." Analytes marked with a "B" were detected in the associated blank and should be reviewed for a possible positive bias. No deviations were thought significant enough to compromise the integrity of the reported values.

Holding Times
The samples were extracted within 14 days of collection. All samples and extracts were stored at 4°C ± 2°C prior to extraction and analysis. All extracts were analyzed within 40 days of sample preparation.

Blanks
No target analytes were present above the detection limit in the blanks.

Internal Standards
Internal standards were recovered within acceptable QC limits (50%-200%) relative to the continuing calibration standard.

Interpretation

Sample SB-08 12-16

This sample contained a pyrogenic substance. The pattern of PAHs, especially the ratios of fluoranthene to pyrene and dibenzofuran to fluorene indicate that the pyrogenic material in this sample is coal tar from a relatively high temperature process. The presence of MAHs and the high concentration of naphthalene relative to other PAHs indicate that this sample has not been subject to substantial weathering.

Sample SB-24 36-38

This sample also contained a pyrogenic substance consistent with relatively unweathered coal tar

Discussion

Both samples contained relatively unweathered coal tar. The statistical significance of any variability in the diagnostic ratios between the samples could not be evaluated with only two samples. Both samples appear to be from the same source, however sample SB-24 36-38 appears to be somewhat more weathered.

Definitions

Pyrogenic substances are complex mixtures of primarily hydrocarbons produced from organic matter subjected to high temperatures but with insufficient oxygen for complete combustion. Pyrogenic materials are produced by fires, internal combustion engines, and furnaces. They also are formed when coke or gas are produced from coal or oil. Coal-tar based products, such as roofing, pavement sealers, waterproofing, pesticides, and some shampoos contain pyrogenic materials.

Petrogenic substances include crude oil and crude oil derivatives such as gasoline, heating oil, and asphalt.

Pitch is the semi-solid or solid material consisting of high molecular weight hydrocarbons that remain following coal tar distillation.

References

1 "Chemical Source Attribution at Former MGP Sites," EPRI Report 1000728, December 2000.

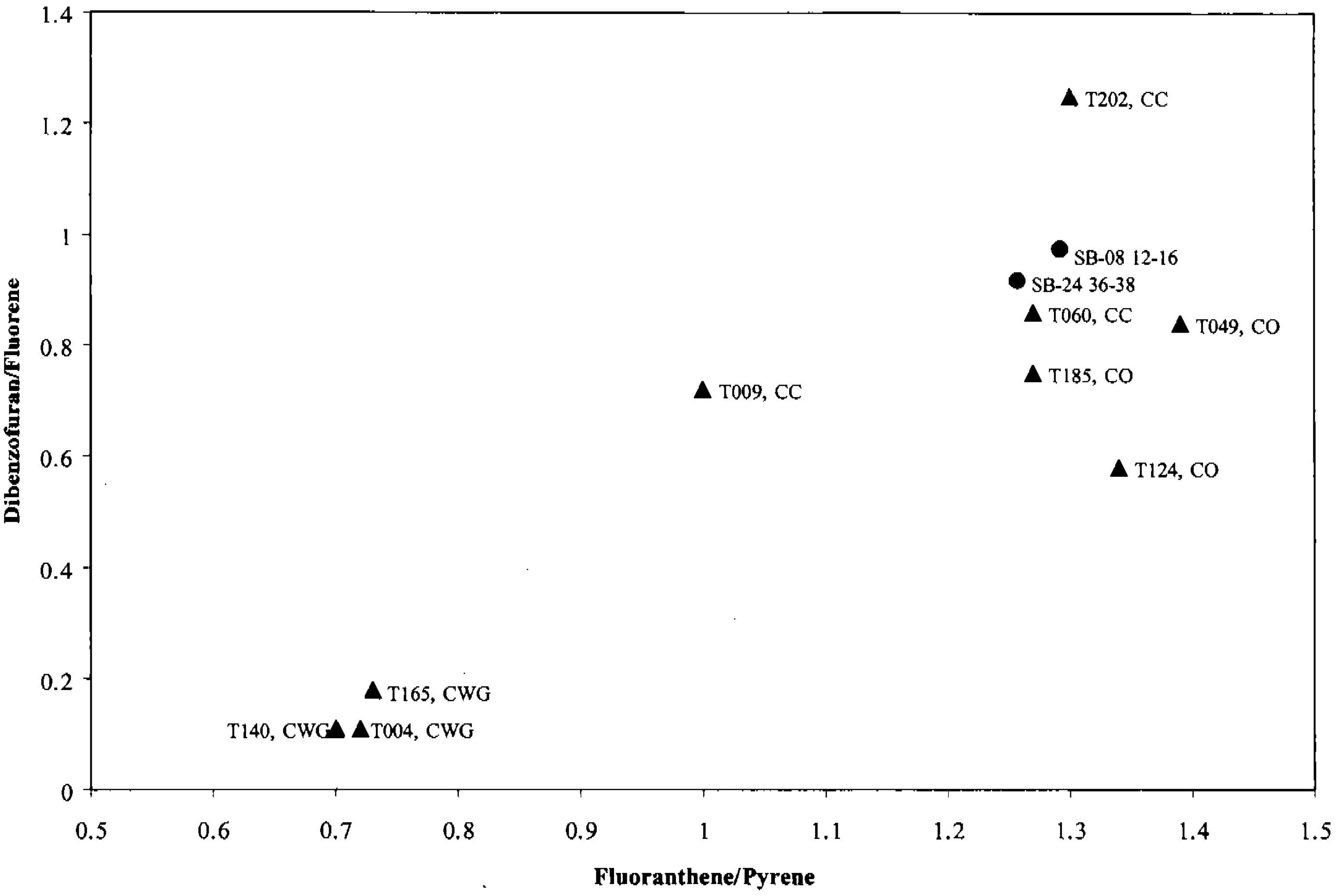
Table 1
Source and Weathering Ratios

Sample	Fl/Py	D/F	C17/Pris	C18/Phy	Pris/Phy	C3D/C3PA	C2D/C2PA
SB-08 12-16	1.29	0.98	0.91	2.76	4.19	0.72	0.19
SB-24 36-38	1.26	0.92	1.01	0.19	1.15	0.43	0.25

Ratios:

Fl/Py	fluoranthene/pyrene
D/F	dibenzofuran/fluorene
C17/Pris	septadecane/pristane
C18/Phy	octadecane/phytane
Pris/Phy	pristane/phytane
C3D/C3PA	trialkyldibenzothiophenes/trialkylphenanthrenes/anthracenes
C2D/C2PA	dialkyldibenzothiophenes/dialkylphenanthrenes/anthracenes
Chry/Pri	Phenanthrene/Phytane

Figure 1
Selected Source Ratios



TXXX	Tar Sample from META's in house source library
CC	Coal Carbonization Tar
CO	Coke Oven Tar
CWG	Carburetted Water Gas Tar

Appendix A

Chains of Custody

META ENVIRONMENTAL SAMPLE RECEIPT

Lab ID	Field ID	Matrix	Analysis	Date Sampled	Date Received	Client/ Project	Container/ Storage	Comments/Logger
DB031007-01 a,b	SB-08 12-16	Soil/Napl	2512/4007 4008	10/2/2003	10/7/2003		2X 16 oz. jar	
DB031007-02 ~~a,b~~	SB-24 36-38	NAPL	2512/4007 4008	10/3/2003	10/7/2003		4 oz. jar	

10/7/03

MITKEM CORPORATION

~~175 Metro Center Boulevard~~
~~Warwick, Rhode Island 02886-1755~~
~~(401) 732-3400 • Fax (401) 732-3499~~
~~email: mitkem@mitkem.com~~

49 Clarendon Street
Watertown, MA 02472

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

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REPORT TO		INVOICE TO		
COMPANY Dvirka & Bartilucci	PHONE 364 9890	COMPANY SAME	PHONE	LAB PROJECT #:
NAME Kristen Parella	FAX 364-9045	NAME	FAX	
ADDRESS 330 Crossways Park Drive		ADDRESS		TURNAROUND TIME:
CITY/ST/ZIP Woodbury, NY 11797		CITY/ST/ZIP *		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:
ConEd-W 42nd St	2085:-A02	

REQUESTED ANALYSES

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	Full Characterization												COMMENTS
SB-08 12-16	10/02/03 / 1200		X		X			2	X												DB031007-01 a,b
SB-24 36-38	10/03/03 / 1515		X			X		1	X												-02
	/																				
	/																				
	/																				
	/																				
	/																				
	/																				
	/																				
	/																				
	/																				

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME
1	Kristen Parella	10/06/03 / 1700	Brian Gezi	10/07/03 / 10:00
2		/		/
3		/		/

ADDITIONAL REMARKS:
*Full Characterization - class fractionation, SHC, extended PAH profiles, biomarkers

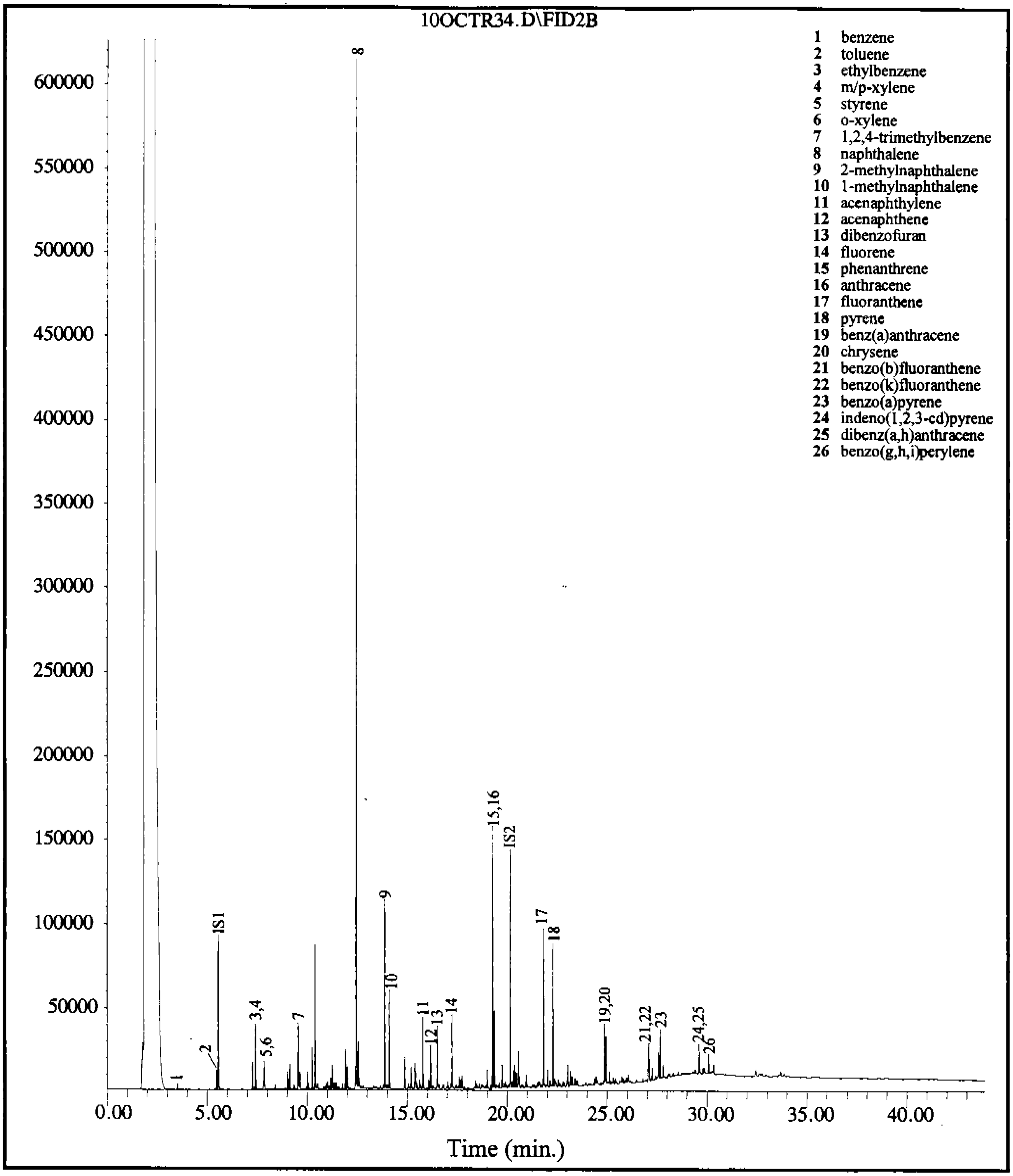
COOLER TEMP: 5.0°C

WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

Appendix B

GC/FID Fingerprints

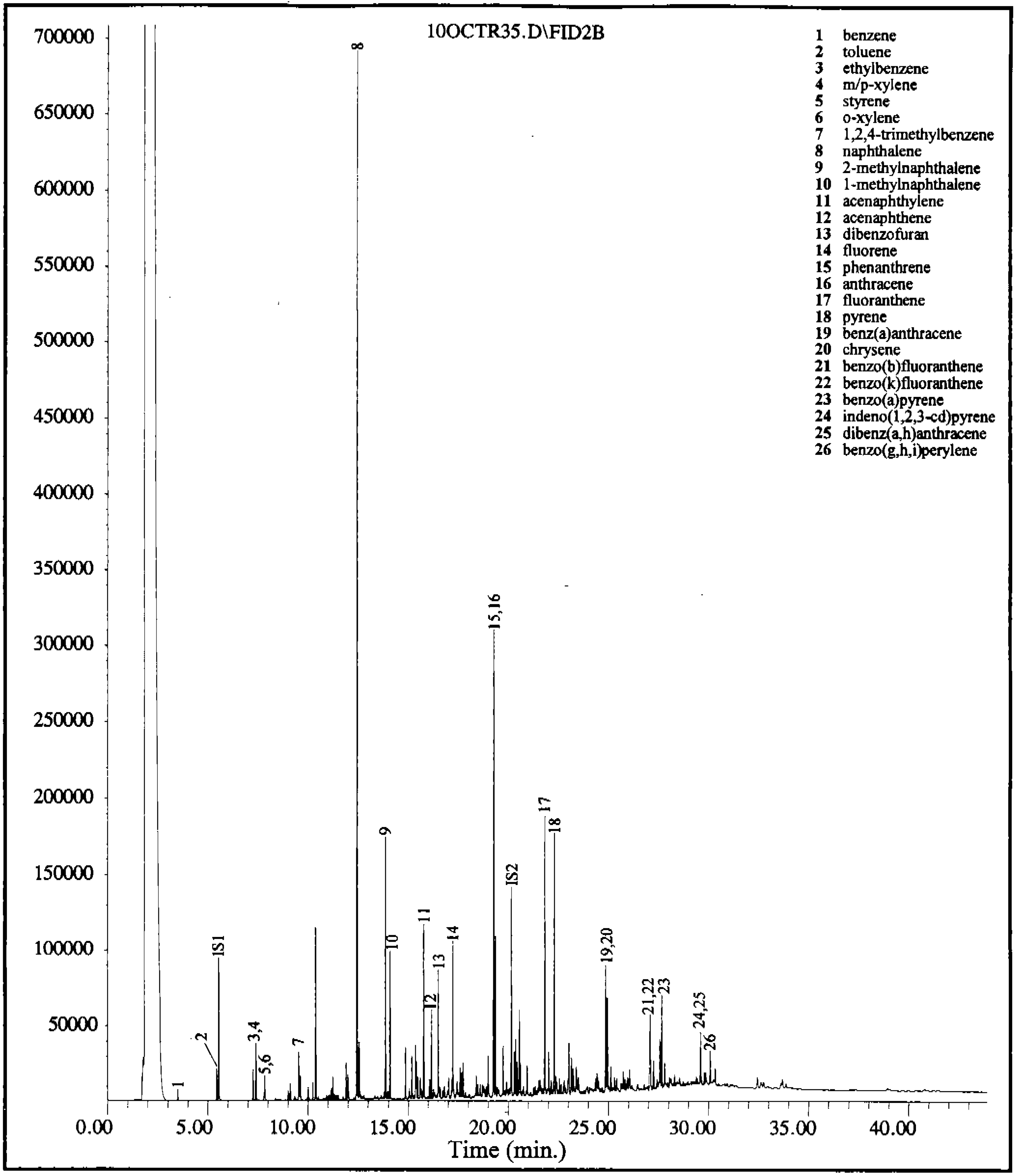
GC/FID Fingerprint



IS1 – 2,4-difluorotoluene
IS2 – o-terphenyl

Field ID: **SB-08 12-16**
Laboratory ID: DB031007-01
Method: METD7015

GC/FID Fingerprint



IS1 – 2,4-difluorotoluene
IS2 – o-terphenyl
SS1 – fluorobenzene
SS2 – 2-fluorobiphenyl
SS3 – 5α-androstane
SS4 – benzo(a)pyrene-d12

Field ID:	**SB-24 36-38**
Laboratory ID:	DB031007-02
Method:	METD7015

Appendix C

Chemical Concentrations

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **SB-08 12-16**

Client: Dvirka + Bartilucci
Project: Con Ed-W 42nd

Lab ID: DB031007-01
File ID: 31OCT16.D

Date Sampled: 10/2/2003
Date Received: 10/7/2003
Date Prepared: 10/10/2003
Date Cleanup: N/A
Date Analyzed: 1 Nov 2003 10:53 am
Instrument: GC4-MS_59
Operator: MP

Preparation Method: EPA 3580
Cleanup Method(s): N/A

Analysis Method: GC/MS (EPA 8270 Mod.)
Matrix: NAPL
Preservation: None
Decanted: No

Sample Size: 0.01 g
%Solid: 100%
Extract Volume: 2 mL
Prep DF: 1
Analysis DF: 1
Injection Volume: 0.001 mL

Batch QC: DB031010-MB

Analyte:	Concentration mg/kg	Q	RL mg/kg	EDL mg/kg	Comments
PAH COMPOUNDS:					
Benzene	271		20.0	10.0	
Toluene	956		20.0	10.0	
Ethylbenzene	1,480		20.0	10.0	
m/p-Xylenes	3,350		20.0	10.0	
Styrene	295		20.0	10.0	
o-Xylene	1,430		20.0	10.0	
1,2,4-Trimethylbenzene	1,400		20.0	10.0	
Naphthalene	66,300	D	20.0	10.0	
2-Methylnaphthalene	8,530		20.0	10.0	
1-Methylnaphthalene	4,450		20.0	10.0	
Acenaphthylene	2,570		20.0	10.0	
Acenaphthene	1,740		20.0	10.0	
Dibenzofuran	3,260		20.0	10.0	
Fluorene	3,340		20.0	10.0	
Phenanthrene	11,600		20.0	10.0	
Anthracene	3,130		20.0	10.0	
Fluoranthene	6,770		20.0	10.0	
Pyrene	5,240		20.0	10.0	
Benz[a]anthracene	2,450		20.0	10.0	
Chrysene	2,070		20.0	10.0	
Benzo[b]fluoranthene	1,530		20.0	10.0	
Benzo[k]fluoranthene	1,590		20.0	10.0	
Benzo(e)pyrene	1,150		20.0	10.0	
Benzo[a]pyrene	2,200		20.0	10.0	
Perylene	549		20.0	10.0	
Indeno[1,2,3-cd]pyrene	1,150		20.0	10.0	
Dibenz[a,h]anthracene	319		20.0	10.0	
Benzo[g,h,i]perylene	1,240		20.0	10.0	
ALKYLATED PAHs:					
C0-Benzene	271		20.0	10.0	
C1-Benzene	1,080		20.0	10.0	
C2-Benzene	6,730		20.0	10.0	
C3-Benzene	6,750		20.0	10.0	
C4-Benzene	2,370		20.0	10.0	
C5-Benzene	276		20.0	10.0	
C0-Naphthalene	66,300	D	20.0	10.0	
C1-Naphthalene	8,390		20.0	10.0	
C2-Naphthalene	2,810		20.0	10.0	
C3-Naphthalene	563		20.0	10.0	
C4-Naphthalene	144		20.0	10.0	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **SB-08 12-16**

Client: Dvirka + Bartilucci
Project: Con Ed-W 42nd

Lab ID: DB031007-01
File ID: 31OCT16.D

Date Sampled: 10/2/2003
Date Received: 10/7/2003
Date Prepared: 10/10/2003
Date Cleanup: N/A
Date Analyzed: 1 Nov 2003 10:53 am
Instrument: GC4-MS_59
Operator: MP

Preparation Method: EPA 3580
Cleanup Method(s): N/A

Analysis Method: GC/MS (EPA 8270 Mod.)
Matrix: NAPL
Preservation: None
Decanted: No

Sample Size: 0.01 g
%Solid: 100%
Extract Volume: 2 mL
Prep DF: 1
Analysis DF: 1
Injection Volume: 0.001 mL

Batch QC: DB031010-MB

Analyte:	Concentration mg/kg	Q	RL mg/kg	EDL mg/kg	Comments
C0-Fluorene	3,340		20.0	10.0	
C1-Fluorene	705		20.0	10.0	
C2-Fluorene	140		20.0	10.0	
C3-Fluorene	38.2		20.0	10.0	
C0-Phenanthrene/Anthracene	15,500		20.0	10.0	
C1-Phenanthrene/Anthracene	2,100		20.0	10.0	
C2-Phenanthrene/Anthracene	431		20.0	10.0	
C3-Phenanthrene/Anthracene	66.4		20.0	10.0	
C4-Phenanthrene/Anthracene	24.2		20.0	10.0	
C0-Dibenzothiophene	1,030		20.0	10.0	
C1-Dibenzothiophene	242		20.0	10.0	
C2-Dibenzothiophene	81.8		20.0	10.0	
C3-Dibenzothiophene	48.1		20.0	10.0	
C0-Fluoranthene/Pyrene	13,000		20.0	10.0	
C1-Fluoranthene/Pyrene	1,850		20.0	10.0	
C2-Fluoranthene/Pyrene	299		20.0	10.0	
C3-Fluoranthene/Pyrene	88.0		20.0	10.0	
C0-Benz(a)anthracene/Chrysene	4,660		20.0	10.0	
C1-Benz(a)anthracene/Chrysene	629		20.0	10.0	
C2-Benz(a)anthracene/Chrysene	179		20.0	10.0	
C3-Benz(a)anthracene/Chrysene	78.8		20.0	10.0	
C4-Benz(a)anthracene/Chrysene	55.8		20.0	10.0	

EXTRACTION SURROGATE COMPOUNDS:	%R	Min	Max
Fluorobenzene	Not Spiked	50%	150%
2-Fluorobiphenyl	Not Spiked	50%	120%
5a-Androstane	Not Spiked	50%	120%
Benzo(a)pyrene-d12	Not Spiked	50%	120%

Qualifiers:

B	Analyte detected in the blank
D	Analyte reported from a diluted extract
U	Undetected above the detection limit
J	Estimated value detected between the reporting and detection limits
E	Estimated value detected above calibration range
RL	Reporting limit is the sample equivalent of the lowest linear calibration concentration
EDL	Estimated detection limit is 50% of the RL

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **SB-24 36-38**

Client: Dvirka + Bartilucci
Project: Con Ed-W 42nd

Lab ID: DB031007-02
File ID: 31OCT20.D

Date Sampled: 10/3/2003
Date Received: 10/7/2003
Date Prepared: 10/10/2003
Date Cleanup: N/A
Date Analyzed: 1 Nov 2003 3:45 pm
Instrument: GC4-MS_59
Operator: MP

Preparation Method: EPA 3580
Cleanup Method(s): N/A

Analysis Method: GC/MS (EPA 8270 Mod.)
Matrix: NAPL
Preservation: None
Decanted: No

Sample Size: 0.0118 g
%Solid: 100%
Extract Volume: 2 mL
Prep DF: 1
Analysis DF: 1
Injection Volume: 0.001 mL

Batch QC: DB031010-MB

Analyte:	Concentration mg/kg	Q	RL mg/kg	EDL mg/kg	Comments
PAH COMPOUNDS:					
Benzene	539		16.9	8.47	
Toluene	1,580		16.9	8.47	
Ethylbenzene	1,570		16.9	8.47	
m/p-Xylenes	2,840		16.9	8.47	
Styrene	290		16.9	8.47	
o-Xylene	1,230		16.9	8.47	
1,2,4-Trimethylbenzene	889		16.9	8.47	
Naphthalene	68,300	D	16.9	8.47	
2-Methylnaphthalene	11,000		16.9	8.47	
1-Methylnaphthalene	6,100		16.9	8.47	
Acenaphthylene	5,730		16.9	8.47	
Acenaphthene	3,140		16.9	8.47	
Dibenzofuran	5,760		16.9	8.47	
Fluorene	6,270		16.9	8.47	
Phenanthrene	23,600	D	16.9	8.47	
Anthracene	5,460		16.9	8.47	
Fluoranthene	11,200		16.9	8.47	
Pyrene	8,910		16.9	8.47	
Benz[a]anthracene	4,620		16.9	8.47	
Chrysene	3,600		16.9	8.47	
Benzo[b]fluoranthene	2,470		16.9	8.47	
Benzo[k]fluoranthene	2,870		16.9	8.47	
Benzo(e)pyrene	2,000		16.9	8.47	
Benzo[a]pyrene	3,850		16.9	8.47	
Perylene	866		16.9	8.47	
Indeno[1,2,3-cd]pyrene	1,910		16.9	8.47	
Dibenz[a,h]anthracene	603		16.9	8.47	
Benzo[g,h,i]perylene	2,070		16.9	8.47	
ALKYLATED PAHs:					
C0-Benzene	539		16.9	8.47	
C1-Benzene	1,790		16.9	8.47	
C2-Benzene	6,070		16.9	8.47	
C3-Benzene	4,320		16.9	8.47	
C4-Benzene	1,640		16.9	8.47	
C5-Benzene	262		16.9	8.47	
C0-Naphthalene	68,300	D	16.9	8.47	
C1-Naphthalene	11,000		16.9	8.47	
C2-Naphthalene	5,380		16.9	8.47	
C3-Naphthalene	1,290		16.9	8.47	
C4-Naphthalene	421		16.9	8.47	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **SB-24 36-38**

Client: Dvirka + Bartilucci
Project: Con Ed-W 42nd

Lab ID: DB031007-02
File ID: 31OCT20.D

Date Sampled: 10/3/2003
Date Received: 10/7/2003
Date Prepared: 10/10/2003
Date Cleanup: N/A
Date Analyzed: 1 Nov 2003 3:45 pm
Instrument: GC4-MS_59
Operator: MP

Preparation Method: EPA 3580
Cleanup Method(s): N/A

Analysis Method: GC/MS (EPA 8270 Mod.)
Matrix: NAPL
Preservation: None
Decanted: No

Sample Size: 0.0118 g
%Solid: 100%
Extract Volume: 2 mL
Prep DF: 1
Analysis DF: 1
Injection Volume: 0.001 mL

Batch QC: DB031010-MB

Analyte:	Concentration mg/kg	Q	RL mg/kg	EDL mg/kg	Comments
C0-Fluorene	6,270		16.9	8.47	
C1-Fluorene	1,870		16.9	8.47	
C2-Fluorene	376		16.9	8.47	
C3-Fluorene	96.5		16.9	8.47	
C0-Phenanthrene/Anthracene	31,500	D	16.9	8.47	
C1-Phenanthrene/Anthracene	4,960		16.9	8.47	
C2-Phenanthrene/Anthracene	1,090		16.9	8.47	
C3-Phenanthrene/Anthracene	183		16.9	8.47	
C4-Phenanthrene/Anthracene	73.5		16.9	8.47	
C0-Dibenzothiophene	1,920		16.9	8.47	
C1-Dibenzothiophene	569		16.9	8.47	
C2-Dibenzothiophene	269		16.9	8.47	
C3-Dibenzothiophene	77.9		16.9	8.47	
C0-Fluoranthene/Pyrene	22,100		16.9	8.47	
C1-Fluoranthene/Pyrene	4,240		16.9	8.47	
C2-Fluoranthene/Pyrene	836		16.9	8.47	
C3-Fluoranthene/Pyrene	240		16.9	8.47	
C0-Benz(a)anthracene/Chrysene	8,460		16.9	8.47	
C1-Benz(a)anthracene/Chrysene	1,390		16.9	8.47	
C2-Benz(a)anthracene/Chrysene	521		16.9	8.47	
C3-Benz(a)anthracene/Chrysene	191		16.9	8.47	
C4-Benz(a)anthracene/Chrysene	132		16.9	8.47	

EXTRACTION SURROGATE COMPOUNDS:	%R	Min	Max
Fluorobenzene	Not Spiked	50%	150%
2-Fluorobiphenyl	Not Spiked	50%	120%
5a-Androstane	Not Spiked	50%	120%
Benzo(a)pyrene-d12	Not Spiked	50%	120%

Qualifiers:

B	Analyte detected in the blank
D	Analyte reported from a diluted extract
U	Undetected above the detection limit
J	Estimated value detected between the reporting and detection limits
E	Estimated value detected above calibration range
RL	Reporting limit is the sample equivalent of the lowest linear calibration concentration
EDL	Estimated detection limit is 50% of the RL

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **SB-24 36-38**

Client: Dvirka + Bartilucci
Project: Con Ed-W 42nd

Lab ID: DB031007-02 DUP X20
File ID: 31OCT25.D

Date Sampled: 10/3/2003
Date Received: 10/7/2003
Date Prepared: 10/10/2003
Date Cleanup: N/A
Date Analyzed: 1 Nov 2003 8:47 pm
Instrument: GC4-MS_59
Operator: MP

Preparation Method: EPA 3580
Cleanup Method(s): N/A

Analysis Method: GC/MS (EPA 8270 Mod.)
Matrix: NAPL
Preservation: None
Decanted: No

Sample Size: 0.0123 g
%Solid: 100%
Extract Volume: 2 mL
Prep DF: 20
Analysis DF: 1
Injection Volume: 0.001 mL

Batch QC: DB031010-MB

Analyte:	Concentration mg/kg	Q	RL mg/kg	EDL mg/kg	Comments
PAH COMPOUNDS:					
Benzene	659		325	163	44.5%
Toluene	2,110		325	163	67.1%
Ethylbenzene	1,660		325	163	11.5%
m/p-Xylenes	3,850		325	163	71.1%
Styrene	364		325	163	51.0%
o-Xylene	1,750		325	163	84.6%
1,2,4-Trimethylbenzene	1,280		325	163	88.0%
Naphthalene	84,500		325	163	47.4%
2-Methylnaphthalene	16,900		325	163	107.3%
1-Methylnaphthalene	9,000		325	163	95.1%
Acenaphthylene	8,270		325	163	88.7%
Acenaphthene	4,330		325	163	75.8%
Dibenzofuran	8,080		325	163	80.6%
Fluorene	9,300		325	163	96.7%
Phenanthrene	33,700		325	163	85.6%
Anthracene	9,460		325	163	146.5%
Fluoranthene	18,400		325	163	128.6%
Pyrene	14,500		325	163	125.5%
Benz[a]anthracene	6,830		325	163	95.7%
Chrysene	5,730		325	163	118.3%
Benzo[b]fluoranthene	4,040		325	163	127.1%
Benzo[k]fluoranthene	4,410		325	163	107.3%
Benzo(e)pyrene	3,010		325	163	101.0%
Benzo[a]pyrene	5,920		325	163	107.5%
Perylene	1,290		325	163	97.9%
Indeno[1,2,3-cd]pyrene	2,530		325	163	64.9%
Dibenz[a,h]anthracene	666		325	163	20.9%
Benzo[g,h,i]perylene	2,520		325	163	43.5%
ALKYLATED PAHs:					
C0-Benzene	659		325	163	44.5%
C1-Benzene	2,390		325	163	67.0%
C2-Benzene	8,070		325	163	65.9%
C3-Benzene	5,730		325	163	65.3%
C4-Benzene	2,760		325	163	136.6%
C5-Benzene	361		325	163	75.6%
C0-Naphthalene	84,500		325	163	47.4%
C1-Naphthalene	16,700		325	163	103.6%
C2-Naphthalene	7,380		325	163	74.3%
C3-Naphthalene	1,680		325	163	60.5%
C4-Naphthalene	566		325	163	68.9%

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **SB-24 36-38**

Client: Dvirka + Bartilucci
Project: Con Ed-W 42nd

Lab ID: DB031007-02 DUP X20
File ID: 31OCT25.D

Date Sampled: 10/3/2003
Date Received: 10/7/2003
Date Prepared: 10/10/2003
Date Cleanup: N/A
Date Analyzed: 1 Nov 2003 8:47 pm
Instrument: GC4-MS_59
Operator: MP

Preparation Method: EPA 3580
Cleanup Method(s): N/A

Analysis Method: GC/MS (EPA 8270 Mod.)
Matrix: NAPL
Preservation: None
Decanted: No

Sample Size: 0.0123 g
%Solid: 100%
Extract Volume: 2 mL
Prep DF: 20
Analysis DF: 1
Injection Volume: 0.001 mL

Batch QC: DB031010-MB

Analyte:	Concentration mg/kg	Q	RL mg/kg	EDL mg/kg	Comments
C0-Fluorene	9,300		325	163	96.7%
C1-Fluorene	2,680		325	163	86.6%
C2-Fluorene	438		325	163	33.0%
C3-Fluorene		U	325	163	
C0-Phenanthrene/Anthracene	44,300		325	163	81.3%
C1-Phenanthrene/Anthracene	7,190		325	163	89.9%
C2-Phenanthrene/Anthracene	1,510		325	163	77.1%
C3-Phenanthrene/Anthracene	242	J	325	163	64.5%
C4-Phenanthrene/Anthracene		U	325	163	
C0-Dibenzothiophene	2,640		325	163	75.0%
C1-Dibenzothiophene	986		325	163	146.6%
C2-Dibenzothiophene	281	J	325	163	8.9%
C3-Dibenzothiophene	262	J	325	163	472.7%
C0-Fluoranthene/Pyrene	36,200		325	163	127.6%
C1-Fluoranthene/Pyrene	6,540		325	163	108.5%
C2-Fluoranthene/Pyrene	1,190		325	163	84.7%
C3-Fluoranthene/Pyrene	365		325	163	104.2%
C0-Benz(a)anthracene/Chrysene	13,000		325	163	107.3%
C1-Benz(a)anthracene/Chrysene	2,210		325	163	118.0%
C2-Benz(a)anthracene/Chrysene	773		325	163	96.7%
C3-Benz(a)anthracene/Chrysene	333		325	163	148.7%
C4-Benz(a)anthracene/Chrysene	499		325	163	556.1%

EXTRACTION SURROGATE COMPOUNDS:	%R	Min	Max
Fluorobenzene	Not Spiked	50%	150%
2-Fluorobiphenyl	Not Spiked	50%	120%
5a-Androstane	Not Spiked	50%	120%
Benzo(a)pyrene-d12	Not Spiked	50%	120%

Qualifiers:

B	Analyte detected in the blank
D	Analyte reported from a diluted extract
U	Undetected above the detection limit
J	Estimated value detected between the reporting and detection limits
E	Estimated value detected above calibration range
RL	Reporting limit is the sample equivalent of the lowest linear calibration concentration
EDL	Estimated detection limit is 50% of the RL

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Method Blank**

Client: N/A
Project: N/A

Lab ID: DB031010-MB
File ID: 27OCT15.D

Date Sampled: N/A
Date Received: N/A
Date Prepared: 10/10/2003
Date Cleanup: N/A
Date Analyzed: 28 Oct 2003 1:28 am
Instrument: GC4-MS_59
Operator: MP

Preparation Method: EPA 3580
Cleanup Method(s): N/A

Analysis Method: GC/MS (EPA 8270 Mod.)
Matrix: NAPL
Preservation: None
Decanted: No

Sample Size: 0.01 g
%Solid: 100%
Extract Volume: 2 mL
Prep DF: 1
Analysis DF: 1
Injection Volume: 0.001 mL

Batch QC: DB031010-MB

Analyte:	Concentration mg/kg	Q	RL mg/kg	EDL mg/kg	Comments
PAH COMPOUNDS:					
Benzene		U	20.0	10.0	
Toluene		U	20.0	10.0	
Ethylbenzene		U	20.0	10.0	
m/p-Xylenes		U	20.0	10.0	
Styrene		U	20.0	10.0	
o-Xylene		U	20.0	10.0	
1,2,4-Trimethylbenzene		U	20.0	10.0	
Naphthalene		U	20.0	10.0	
2-Methylnaphthalene		U	20.0	10.0	
1-Methylnaphthalene		U	20.0	10.0	
Acenaphthylene		U	20.0	10.0	
Acenaphthene		U	20.0	10.0	
Dibenzofuran		U	20.0	10.0	
Fluorene		U	20.0	10.0	
Phenanthrene		U	20.0	10.0	
Anthracene		U	20.0	10.0	
Fluoranthene		U	20.0	10.0	
Pyrene		U	20.0	10.0	
Benz[a]anthracene		U	20.0	10.0	
Chrysene		U	20.0	10.0	
Benzo[b]fluoranthene		U	20.0	10.0	
Benzo[k]fluoranthene		U	20.0	10.0	
Benzo(e)pyrene		U	20.0	10.0	
Benzo[a]pyrene		U	20.0	10.0	
Perylene		U	20.0	10.0	
Indeno[1,2,3-cd]pyrene		U	20.0	10.0	
Dibenz[a,h]anthracene		U	20.0	10.0	
Benzo[g,h,i]perylene		U	20.0	10.0	
ALKYLATED PAHs:					
C0-Benzene		U	20.0	10.0	
C1-Benzene		U	20.0	10.0	
C2-Benzene		U	20.0	10.0	
C3-Benzene		U	20.0	10.0	
C4-Benzene		U	20.0	10.0	
C5-Benzene		U	20.0	10.0	
C0-Naphthalene		U	20.0	10.0	
C1-Naphthalene		U	20.0	10.0	
C2-Naphthalene		U	20.0	10.0	
C3-Naphthalene		U	20.0	10.0	
C4-Naphthalene		U	20.0	10.0	

Analytical Results for Volatile and Semivolatile Organics
META Environmental, Inc.

Field ID: **Method Blank**

Client: N/A
Project: N/A

Lab ID: DB031010-MB
File ID: 27OCT15.D

Date Sampled: N/A
Date Received: N/A
Date Prepared: 10/10/2003
Date Cleanup: N/A
Date Analyzed: 28 Oct 2003 1:28 am
Instrument: GC4-MS_59
Operator: MP

Preparation Method: EPA 3580
Cleanup Method(s): N/A

Analysis Method: GC/MS (EPA 8270 Mod.)
Matrix: NAPL
Preservation: None
Decanted: No

Sample Size: 0.01 g
%Solid: 100%
Extract Volume: 2 mL
Prep DF: 1
Analysis DF: 1
Injection Volume: 0.001 mL

Batch QC: DB031010-MB

Analyte:	Concentration mg/kg	Q	RL mg/kg	EDL mg/kg	Comments
C0-Fluorene		U	20.0	10.0	
C1-Fluorene		U	20.0	10.0	
C2-Fluorene		U	20.0	10.0	
C3-Fluorene		U	20.0	10.0	
C0-Phenanthrene/Anthracene		U	20.0	10.0	
C1-Phenanthrene/Anthracene		U	20.0	10.0	
C2-Phenanthrene/Anthracene		U	20.0	10.0	
C3-Phenanthrene/Anthracene		U	20.0	10.0	
C4-Phenanthrene/Anthracene		U	20.0	10.0	
C0-Dibenzothiophene		U	20.0	10.0	
C1-Dibenzothiophene		U	20.0	10.0	
C2-Dibenzothiophene		U	20.0	10.0	
C3-Dibenzothiophene		U	20.0	10.0	
C0-Fluoranthene/Pyrene		U	20.0	10.0	
C1-Fluoranthene/Pyrene		U	20.0	10.0	
C2-Fluoranthene/Pyrene		U	20.0	10.0	
C3-Fluoranthene/Pyrene		U	20.0	10.0	
C0-Benz(a)anthracene/Chrysene		U	20.0	10.0	
C1-Benz(a)anthracene/Chrysene		U	20.0	10.0	
C2-Benz(a)anthracene/Chrysene		U	20.0	10.0	
C3-Benz(a)anthracene/Chrysene		U	20.0	10.0	
C4-Benz(a)anthracene/Chrysene		U	20.0	10.0	

EXTRACTION SURROGATE COMPOUNDS:	%R	Min	Max
Fluorobenzene	Not Spiked	50%	150%
2-Fluorobiphenyl	Not Spiked	50%	120%
5a-Androstane	Not Spiked	50%	120%
Benzo(a)pyrene-d12	Not Spiked	50%	120%

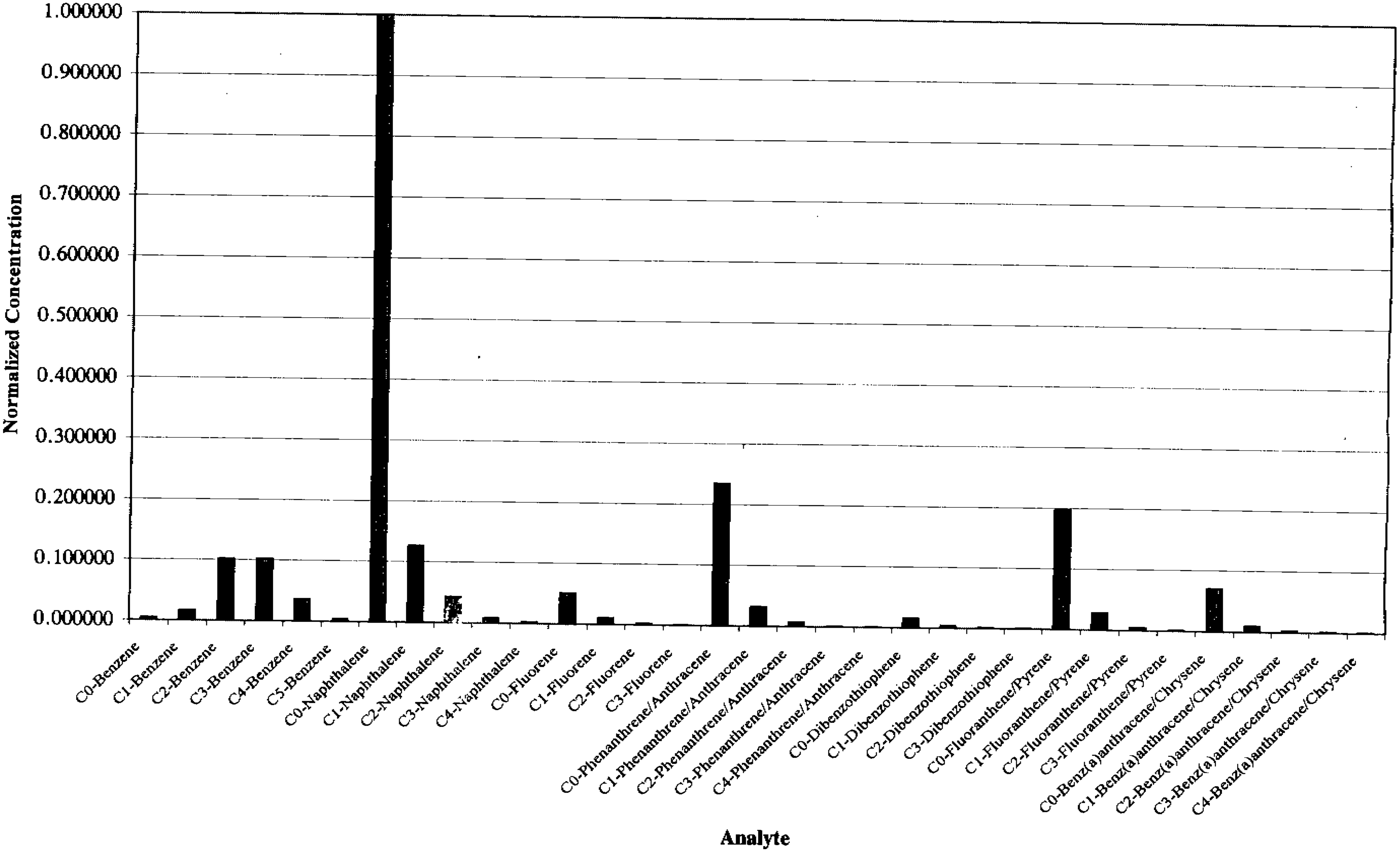
Qualifiers:

B	Analyte detected in the blank
D	Analyte reported from a diluted extract
U	Undetected above the detection limit
J	Estimated value detected between the reporting and detection limits
E	Estimated value detected above calibration range
RL	Reporting limit is the sample equivalent of the lowest linear calibration concentration
EDL	Estimated detection limit is 50% of the RL

Appendix D

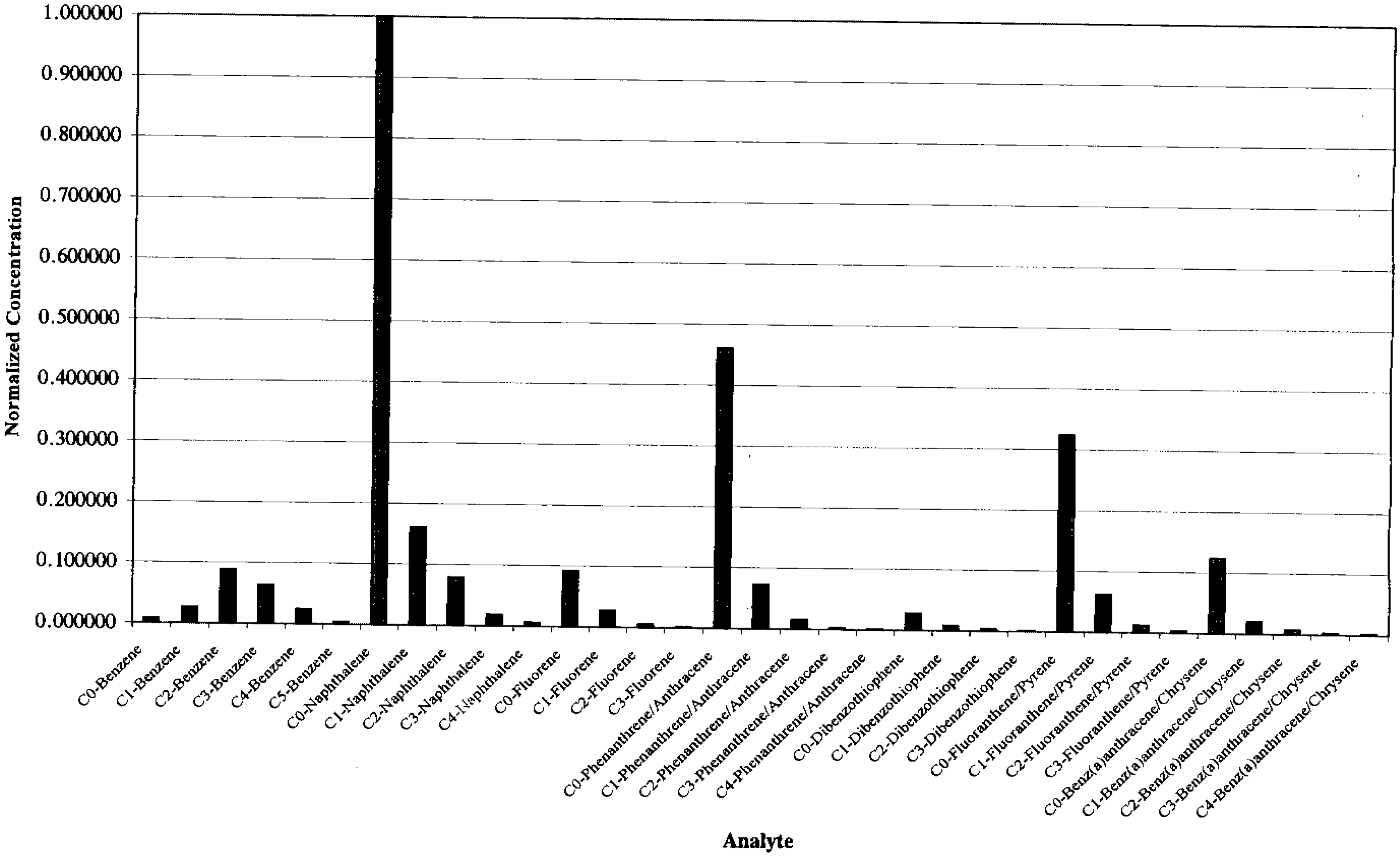
Extended PAH Profiles – Bar Graphs

SB-08 12-16



Normalized Concentration
1.000000
0.900000
0.800000
0.700000
0.600000
0.500000
0.400000
0.300000
0.200000
0.100000
0.000000
C0-Benzene
C1-Benzene
C2-Benzene
C3-Benzene
C4-Benzene
C5-Benzene
C0-Naphthalene
C1-Naphthalene
C2-Naphthalene
C3-Naphthalene
C4-Naphthalene
C0-Fluorene
C1-Fluorene
C2-Fluorene
C3-Fluorene
C0-Phenanthrene/Anthracene
C1-Phenanthrene/Anthracene
C2-Phenanthrene/Anthracene
C3-Phenanthrene/Anthracene
C4-Phenanthrene/Anthracene
C0-Dibenzothiophene
C1-Dibenzothiophene
C2-Dibenzothiophene
C3-Dibenzothiophene
C0-Fluoranthene/Pyrene
C1-Fluoranthene/Pyrene
C2-Fluoranthene/Pyrene
C3-Fluoranthene/Pyrene
C0-Benz(a)anthracene/Chrysene
C1-Benz(a)anthracene/Chrysene
C2-Benz(a)anthracene/Chrysene
C3-Benz(a)anthracene/Chrysene
C4-Benz(a)anthracene/Chrysene
Analyte

SB-24 36-38


Normalized Concentration
1.000000
0.900000
0.800000
0.700000
0.600000
0.500000
0.400000
0.300000
0.200000
0.100000
0.000000
C0-Benzene
C1-Benzene
C2-Benzene
C3-Benzene
C4-Benzene
C5-Benzene
C0-Naphthalene
C1-Naphthalene
C2-Naphthalene
C3-Naphthalene
C4-Naphthalene
C0-Fluorene
C1-Fluorene
C2-Fluorene
C3-Fluorene
C0-Phenanthrene/Anthracene
C1-Phenanthrene/Anthracene
C2-Phenanthrene/Anthracene
C3-Phenanthrene/Anthracene
C4-Phenanthrene/Anthracene
C0-Dibenzothiophene
C1-Dibenzothiophene
C2-Dibenzothiophene
C3-Dibenzothiophene
C0-Fluoranthene/Pyrene
C1-Fluoranthene/Pyrene
C2-Fluoranthene/Pyrene
C3-Fluoranthene/Pyrene
C0-Benz(a)anthracene/Chrysene
C1-Benz(a)anthracene/Chrysene
C2-Benz(a)anthracene/Chrysene
C3-Benz(a)anthracene/Chrysene
C4-Benz(a)anthracene/Chrysene
Analyte

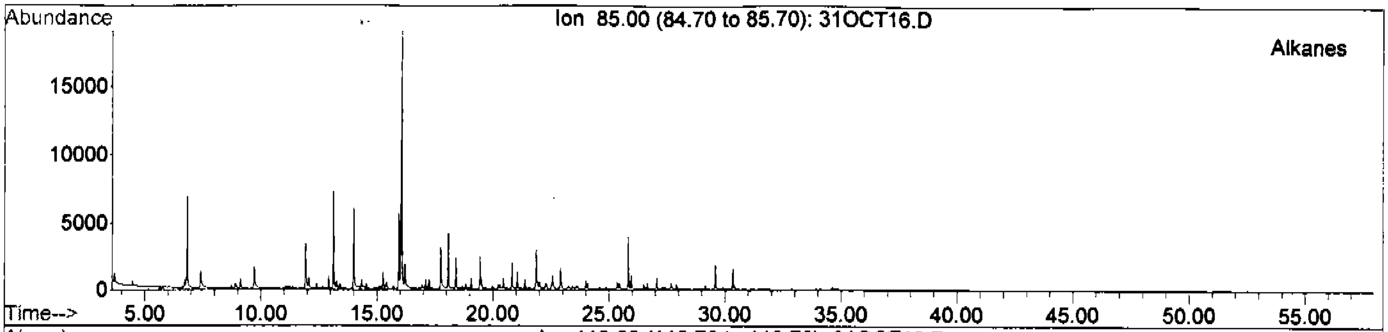
Appendix E

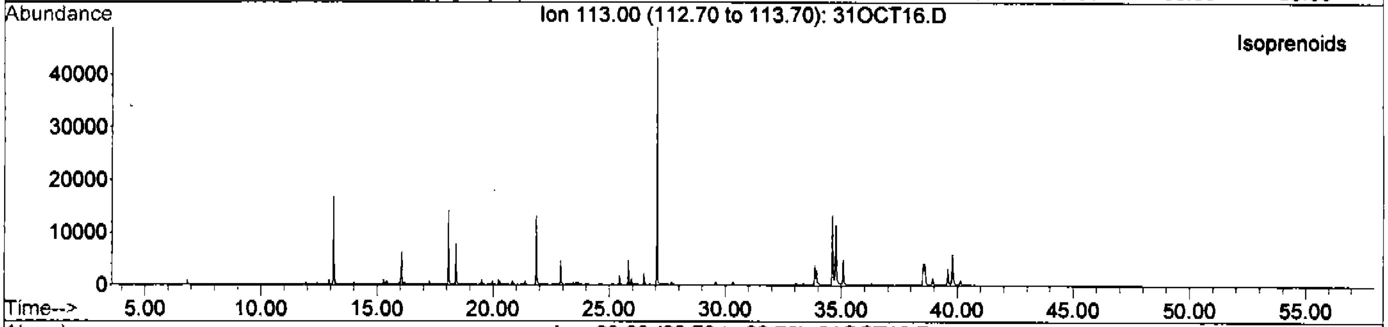
Extracted Ion Current Profiles (EICs)

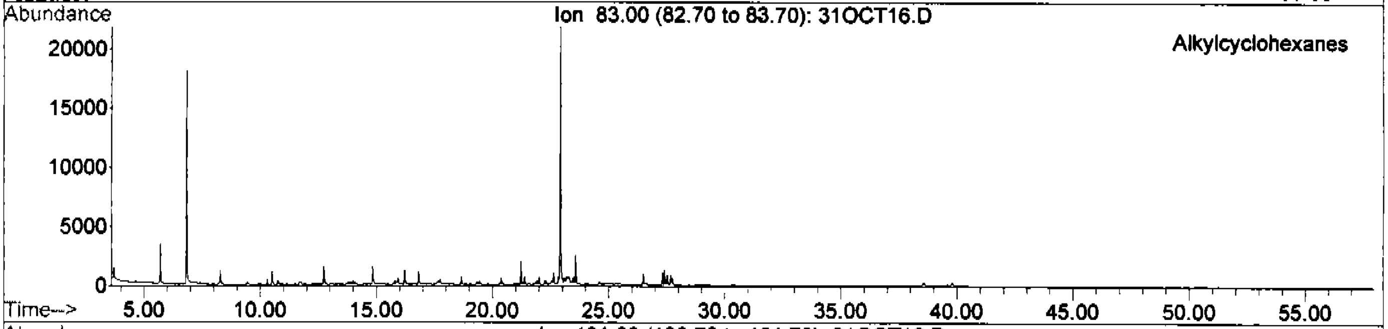
Primary Ions for Target Compounds and Compound Groups

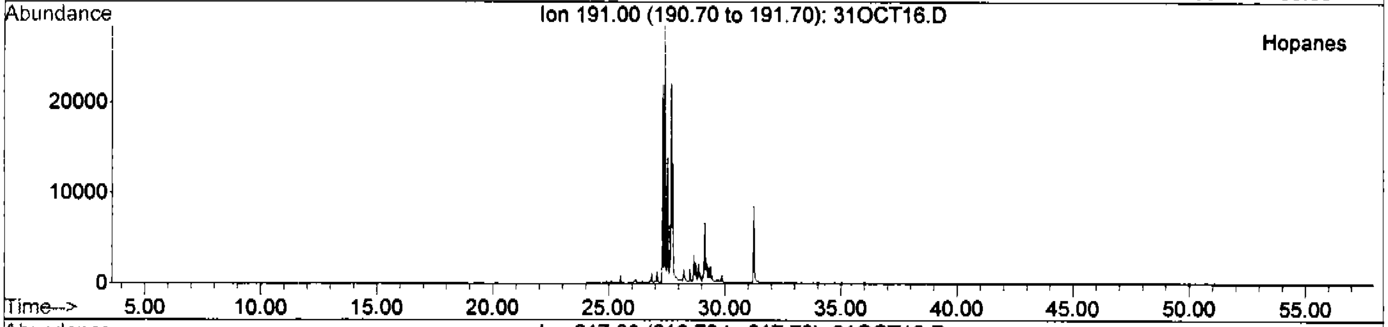
Target Compound or Group	Abbreviation	Ion
Alkylated cyclohexanes		83
Normal alkanes, pristane, phytane		85
Isoprenoid hydrocarbons, pristane, phytane		113
Olefins		115
Hopanes		191
Steranes		217
Benzene	B	78
Monoalkylbenzenes	C1B	91
Dialkylbenzenes	C2B	91
Trialkylbenzenes	C3B	105
Tetraalkylbenzenes	C4B	119
Pentaalkylbenzenes	C5B	133
Naphthalene	N	128
Monoalkylnaphthalenes	C1N	142
Dialkylnaphthalenes	C2N	156
Trialkylnaphthalenes	C3N	170
Tetraalkylnaphthalenes	C4N	184
Fluorene	F	166
Monoalkylfluorenes	C1F	180
Dialkylfluorenes	C2F	194
Trialkylfluorenes	C3F	208
Phenanthrene, anthracene	PA	178
Monoalkylphenanthrenes and anthracenes	C1PA	192
Dialkylphenanthrenes and anthracenes	C2PA	206
Trialkylphenanthrenes and anthracenes	C3PA	220
Tetraalkylphenanthrenes and anthracenes	C4PA	234
Dibenzothiophene	D	184
Monoalkyldibenzothiophenes	C1D	198
Dialkyldibenzothiophenes	C2D	212
Trialkyldibenzothiophenes	C3D	226
Fluoranthene, pyrene	FP	202
Monoalkylfluoranthenes and pyrenes	C1FP	216
Dialkylfluoranthenes and pyrenes	C2FP	230
Trialkyfluoranthenes and pyrenes	C3FP	244
Benz(a)anthracene, chrysene	BC	228
Monoalkylbenz(a)anthracenes and chrysenes	C1BC	242
Dialkylbenz(a)anthracenes and chrysenes	C2BC	256
Trialkylbenz(a)anthracenes and chrysenes	C3BC	270
Tetraalkylbenz(a)anthrancenes and chrysenes	C4BC	284

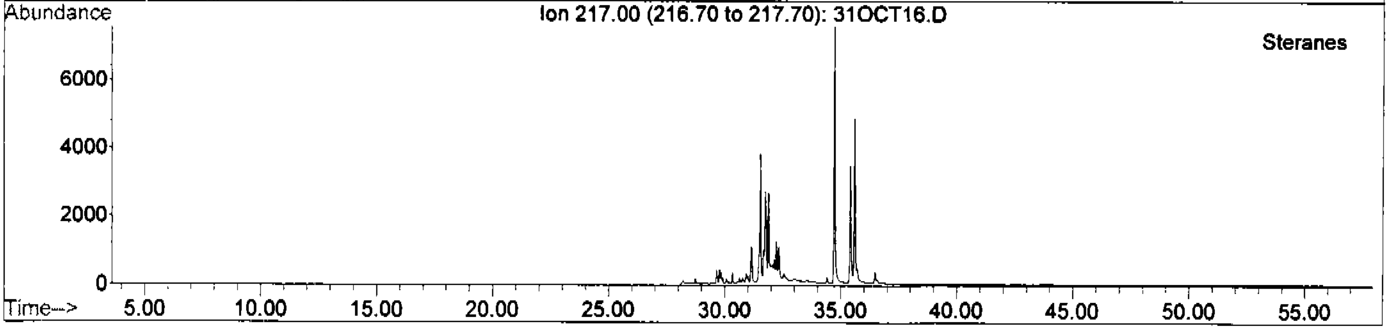
Field ID: SB-08 12-16
Lab ID: DB031007-01
File: I:\4\DATA\031031\31OCT16.D
Acquired: 1 Nov 2003 10:53 am using AcqMethod MET4008Z
Instrument: GC4-MS_59 Operator: MP











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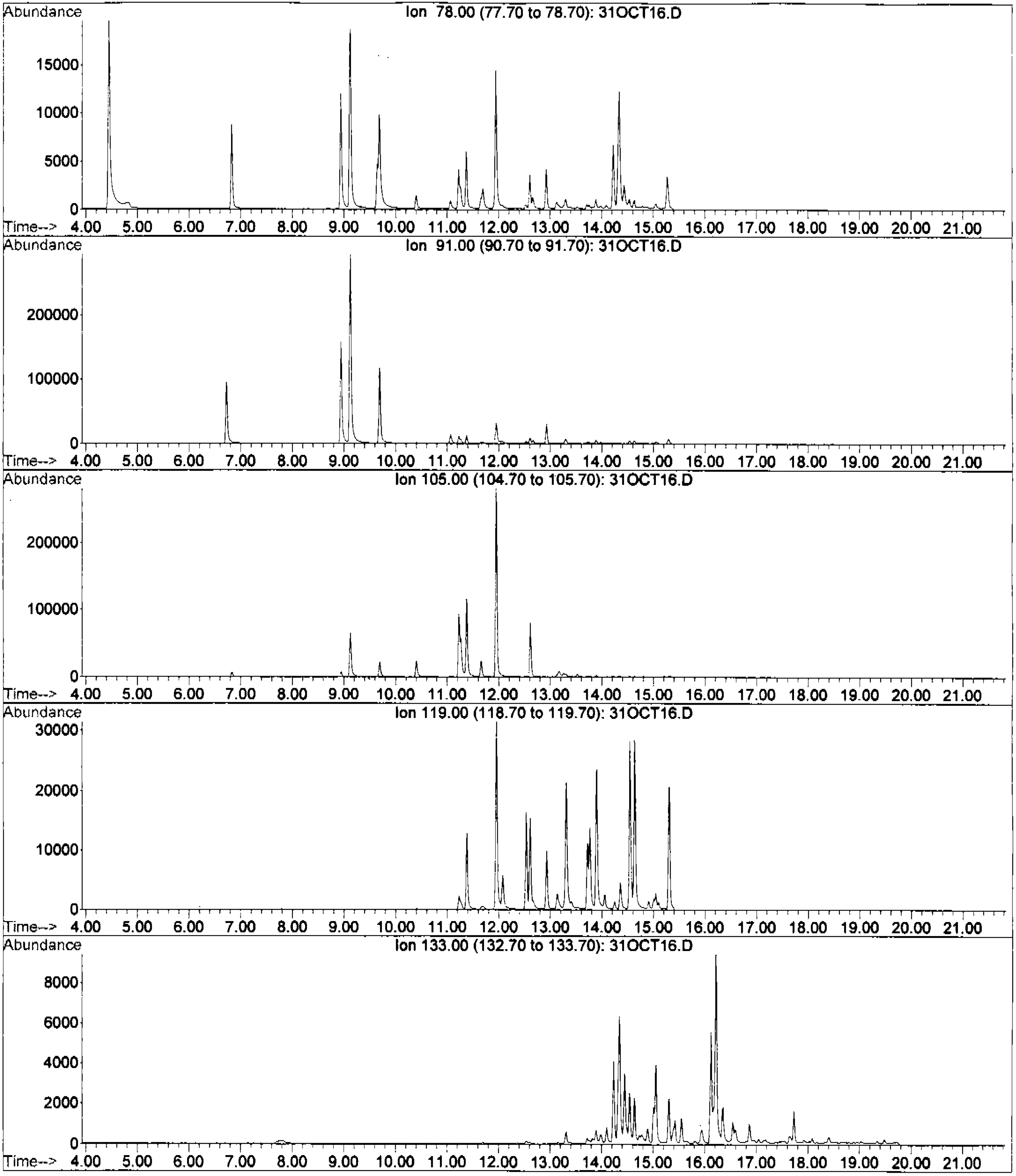
Lab ID: DB031007-01
File: I:\4\DATA\031031\31OCT16.D
Acquired: 1 Nov 2003 10:53 am using AcqMethod MET4008Z
Instrument: GC4-MS_59 Operator: MP

Benzenes



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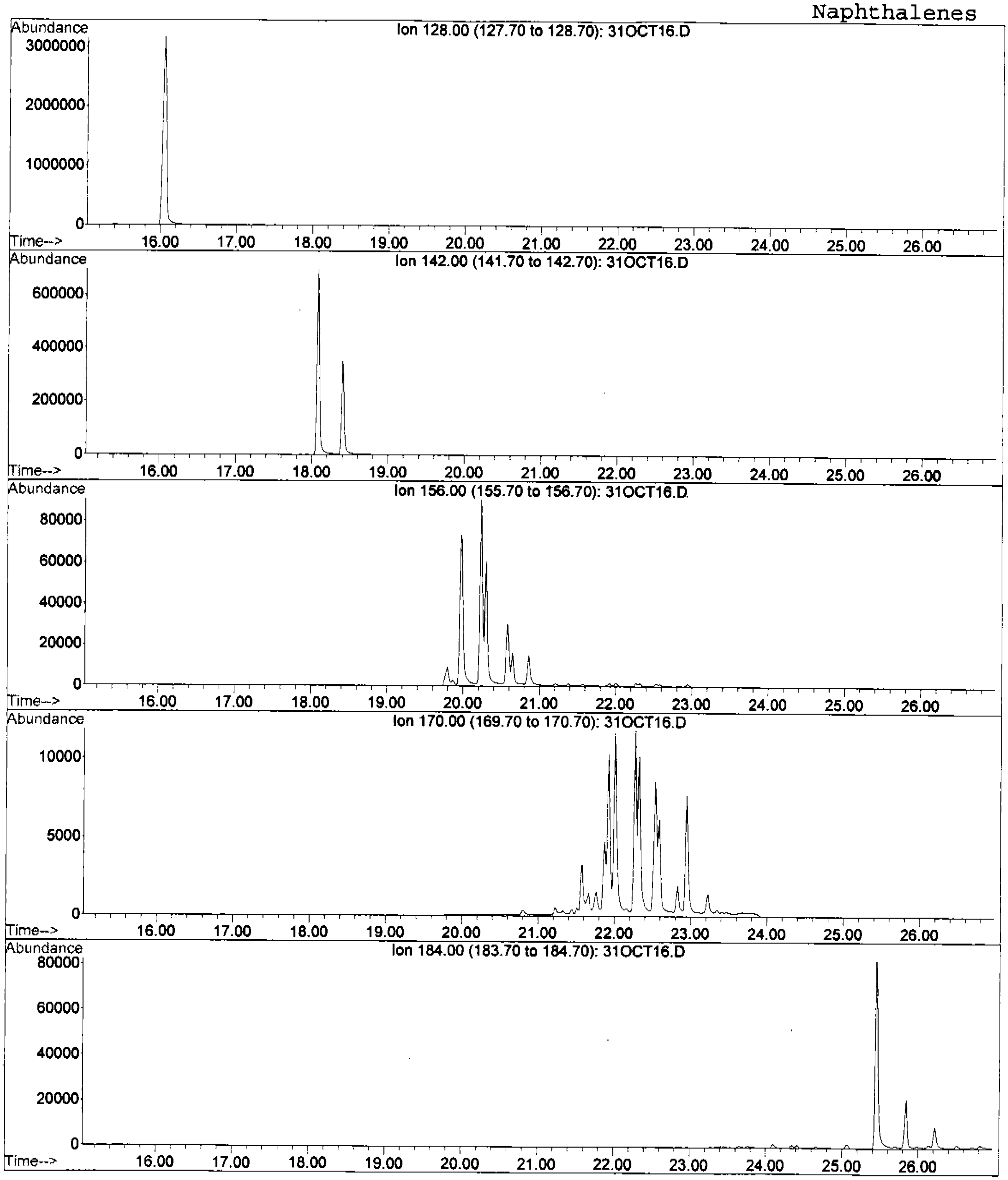
Lab ID:       DB031007-01
File:         I:\4\DATA\031031\31OCT16.D
Acquired:      1 Nov 2003  10:53 am using AcqMethod MET4008Z
Instrument: GC4-MS_59          Operator: MP
```

Naphthalenes



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Lab ID:       DB031007-01
File:         I:\4\DATA\031031\31OCT16.D
Acquired:      1 Nov 2003  10:53 am using AcqMethod MET4008Z
Instrument: GC4-MS_59          Operator: MP
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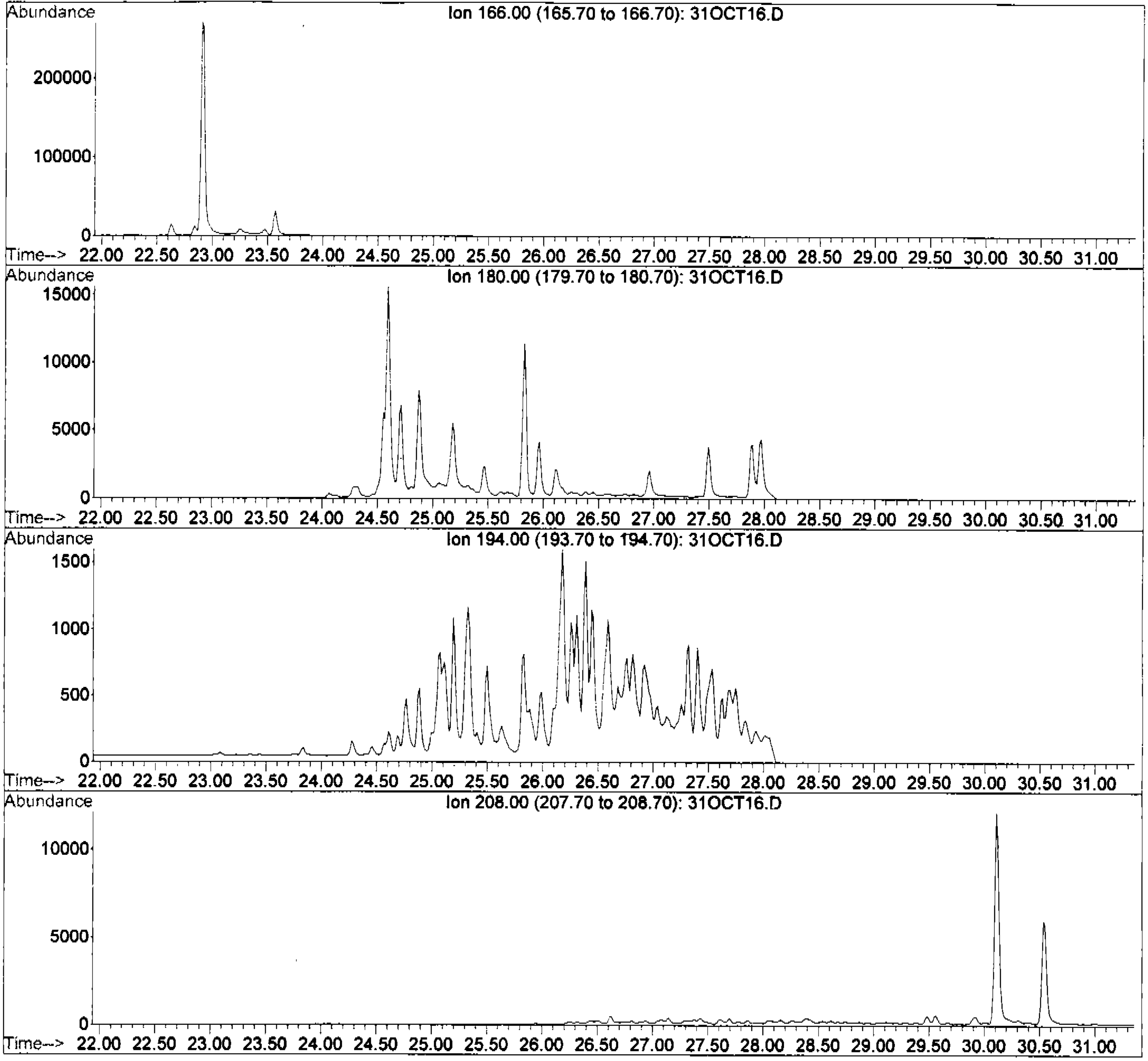
Fluorenes



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Lab ID: DB031007-01
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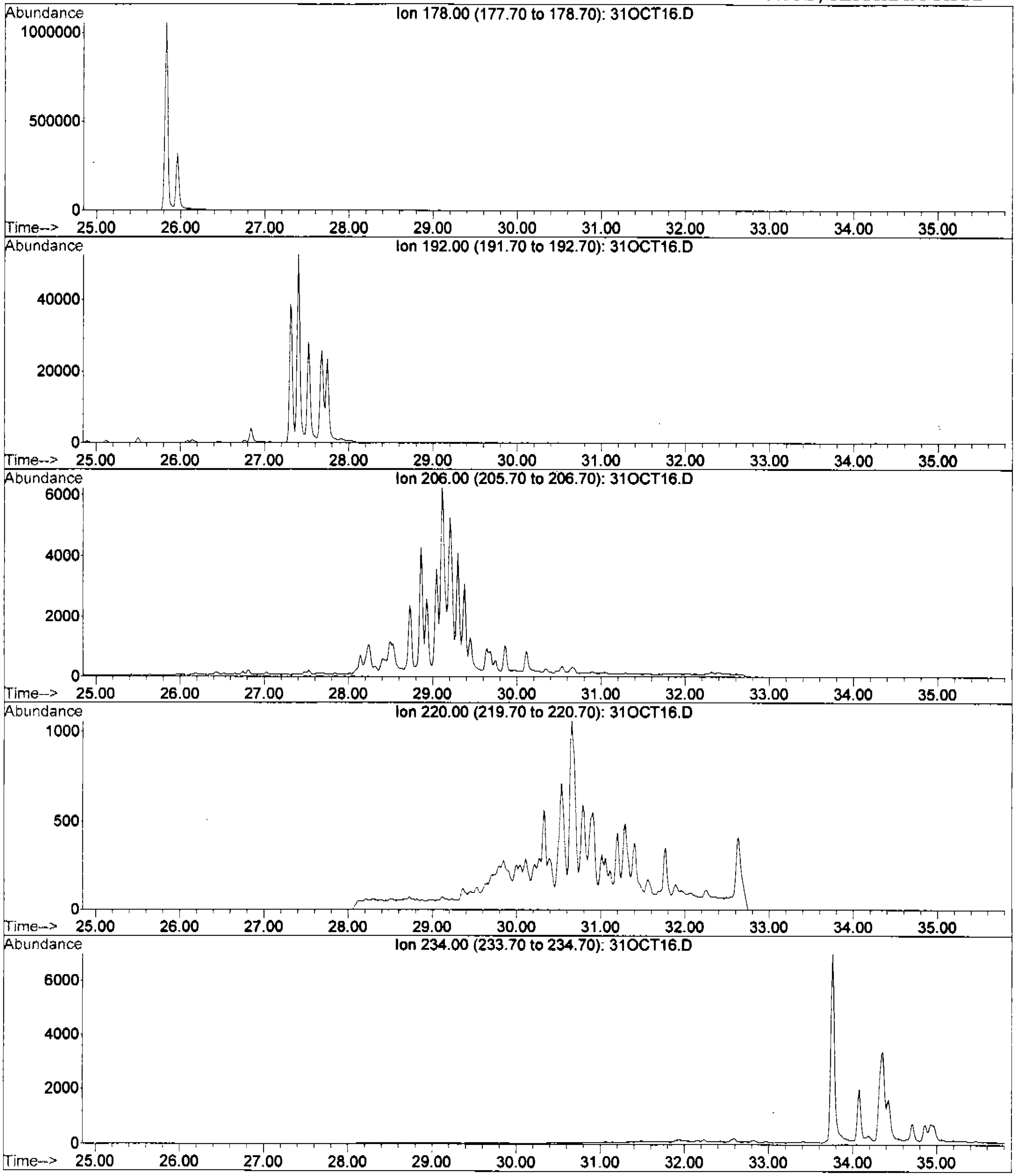
Acquired: 1 Nov 2003 10:53 am using AcqMethod MET4008Z
Instrument: GC4-MS_59 Operator: MP

Phenanthrenes/Anthracenes



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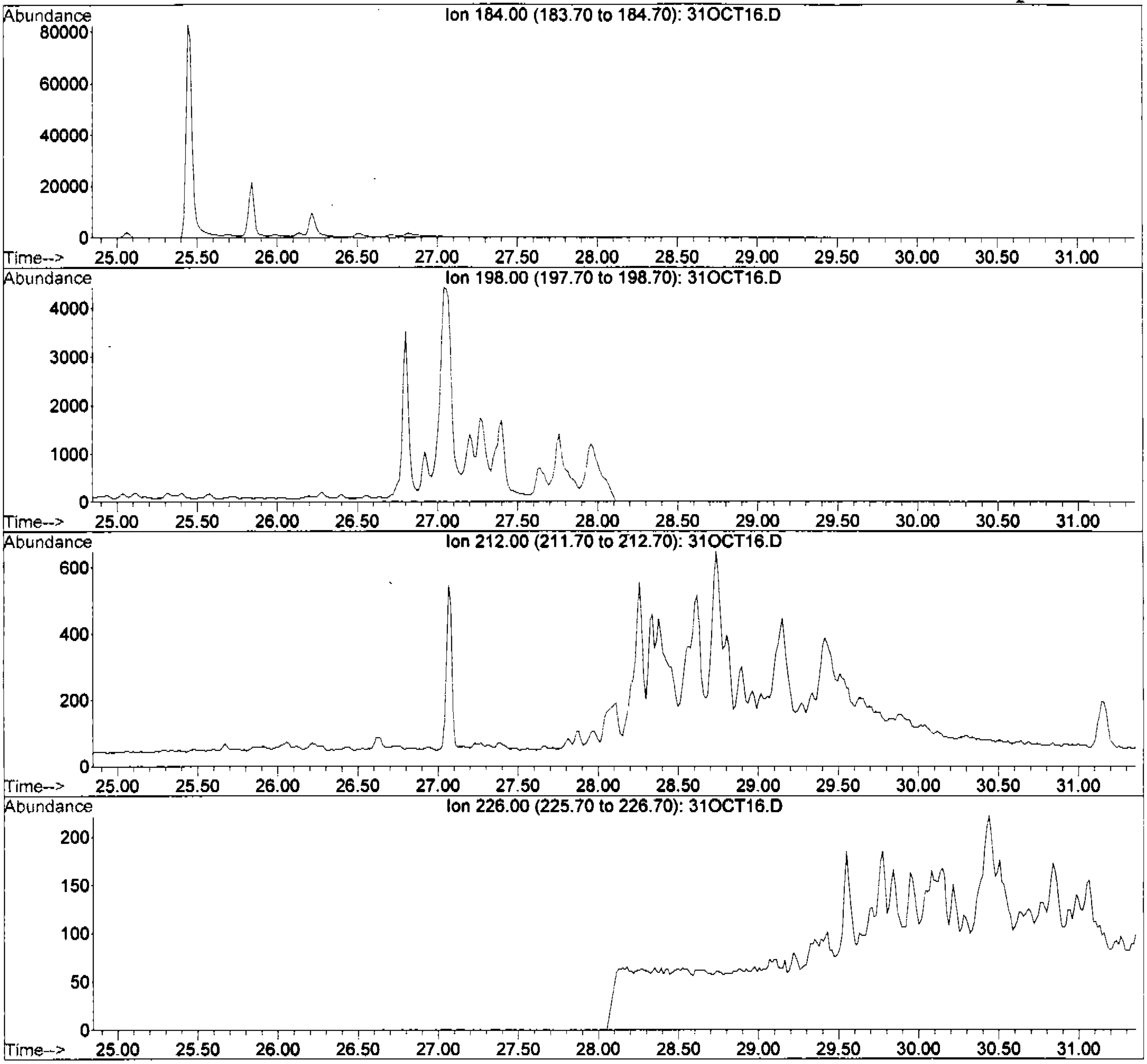
Lab ID: DB031007-01
File: I:\4\DATA\031031\31OCT16.D
Acquired: 1 Nov 2003 10:53 am using AcqMethod MET4008Z
Instrument: GC4-MS_59   Operator: MP

Dibenzothiophenes



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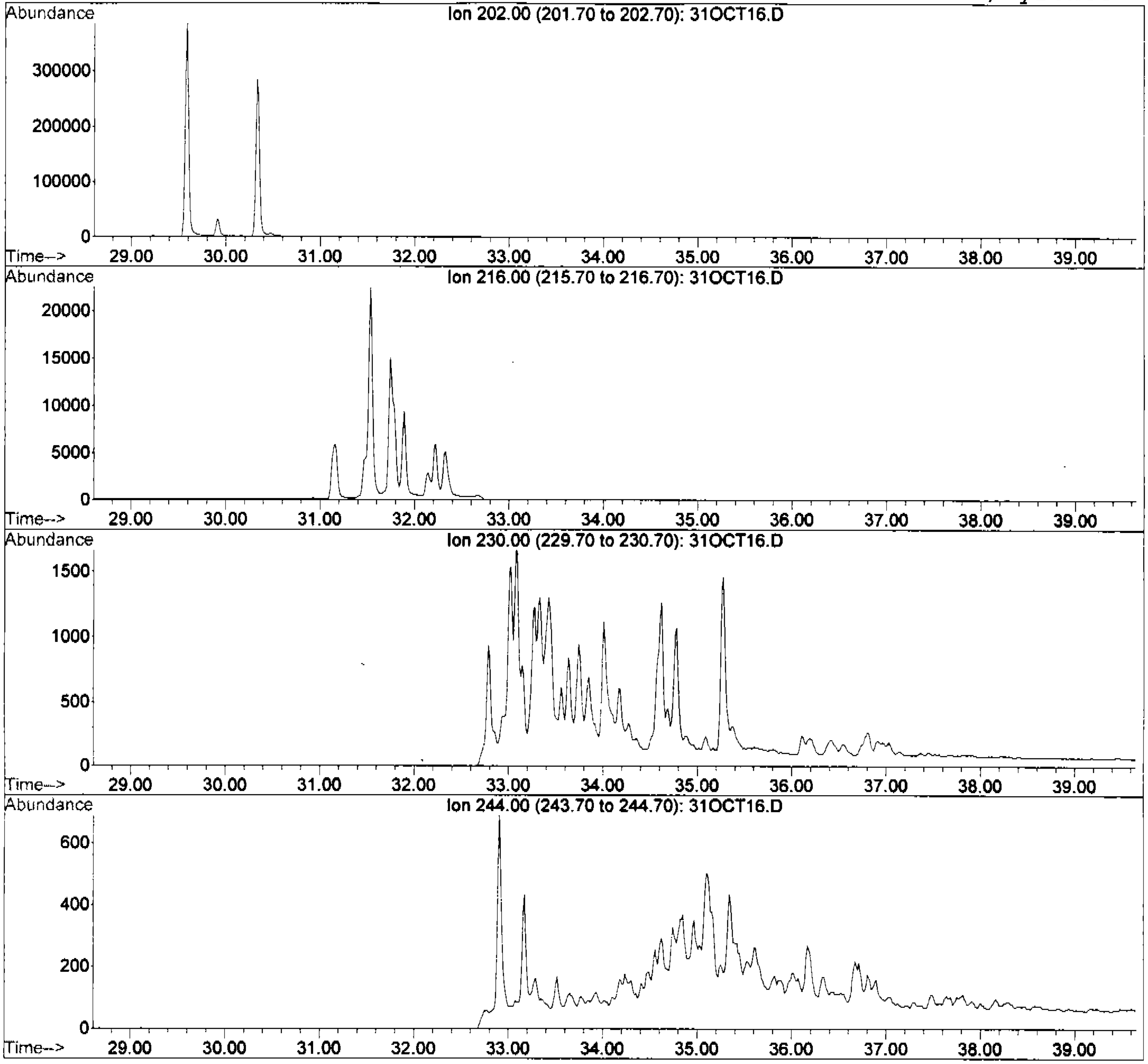
Lab ID: DB031007-01
File: I:\4\DATA\031031\31OCT16.D
Acquired: 1 Nov 2003 10:53 am using AcqMethod MET4008Z
Instrument: GC4-MS_59 Operator: MP

Fluoranthenes/Pyrenes



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Lab ID: DB031007-01
File: I:\4\DATA\031031\31OCT16.D
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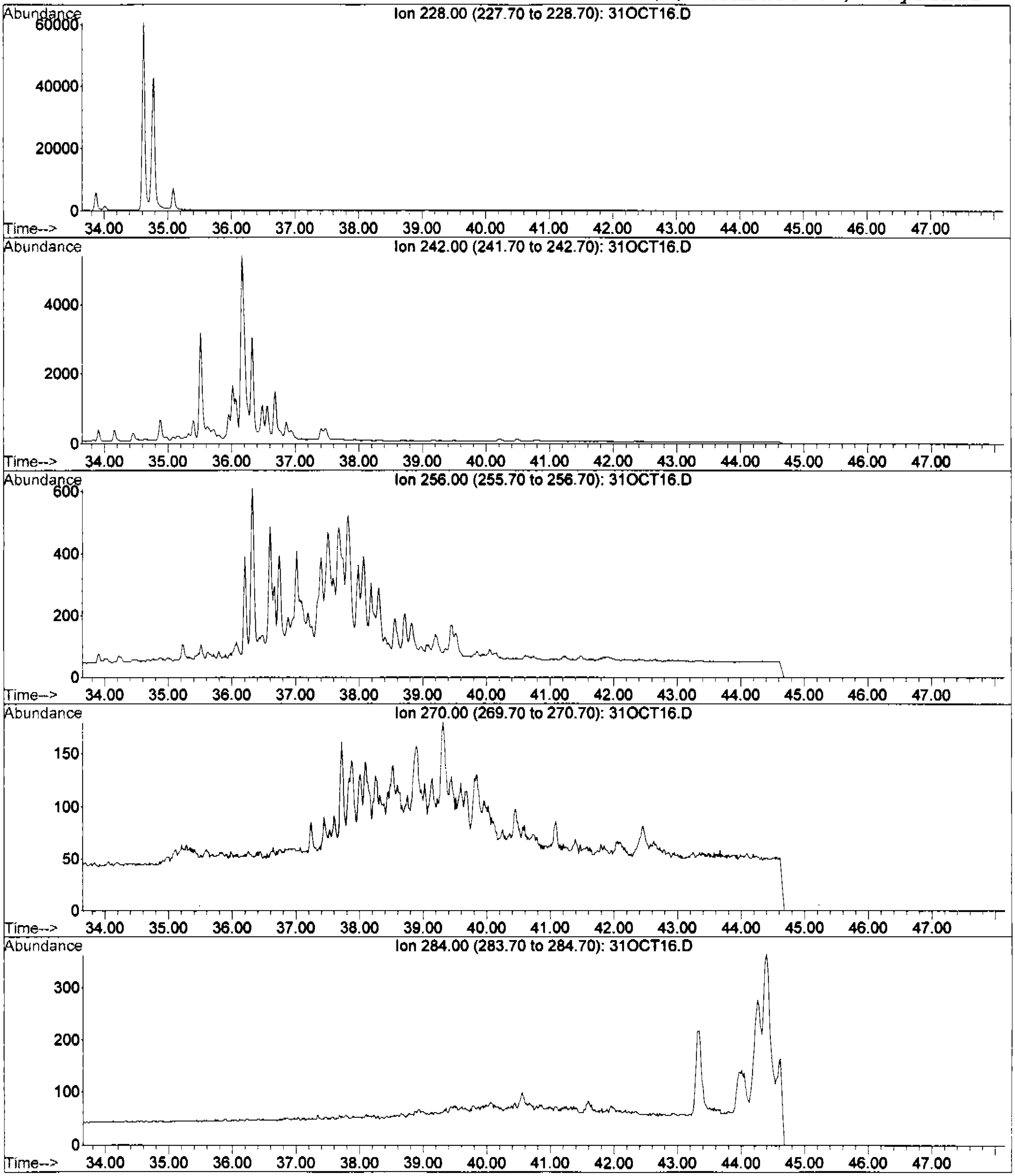
Instrument: GC4-MS_59 Operator: MP

Benz(a)anthracenes/Chrysenes



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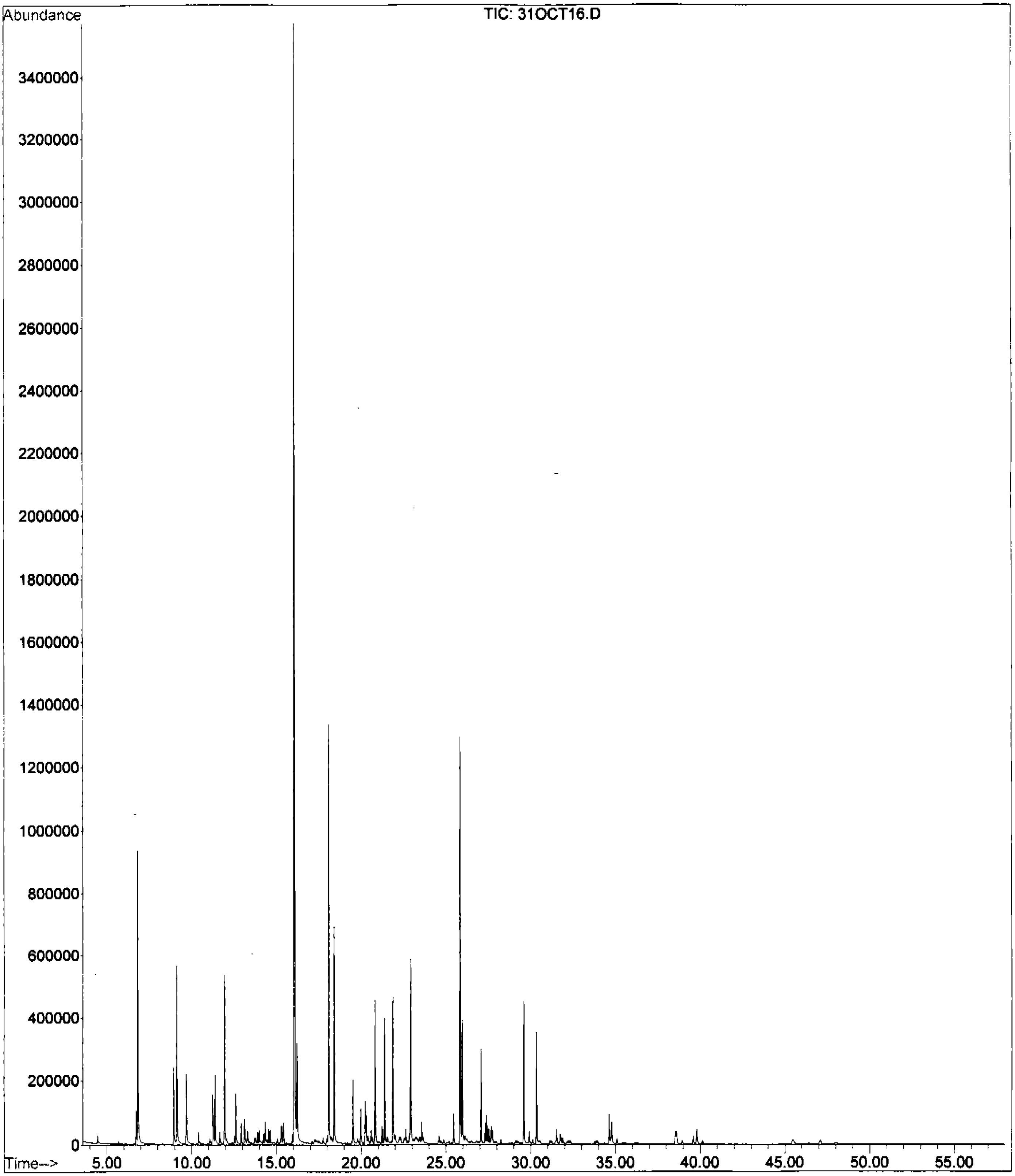
Instrument: GC4-MS_59 Operator: MP



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Lab ID: DB031007-02
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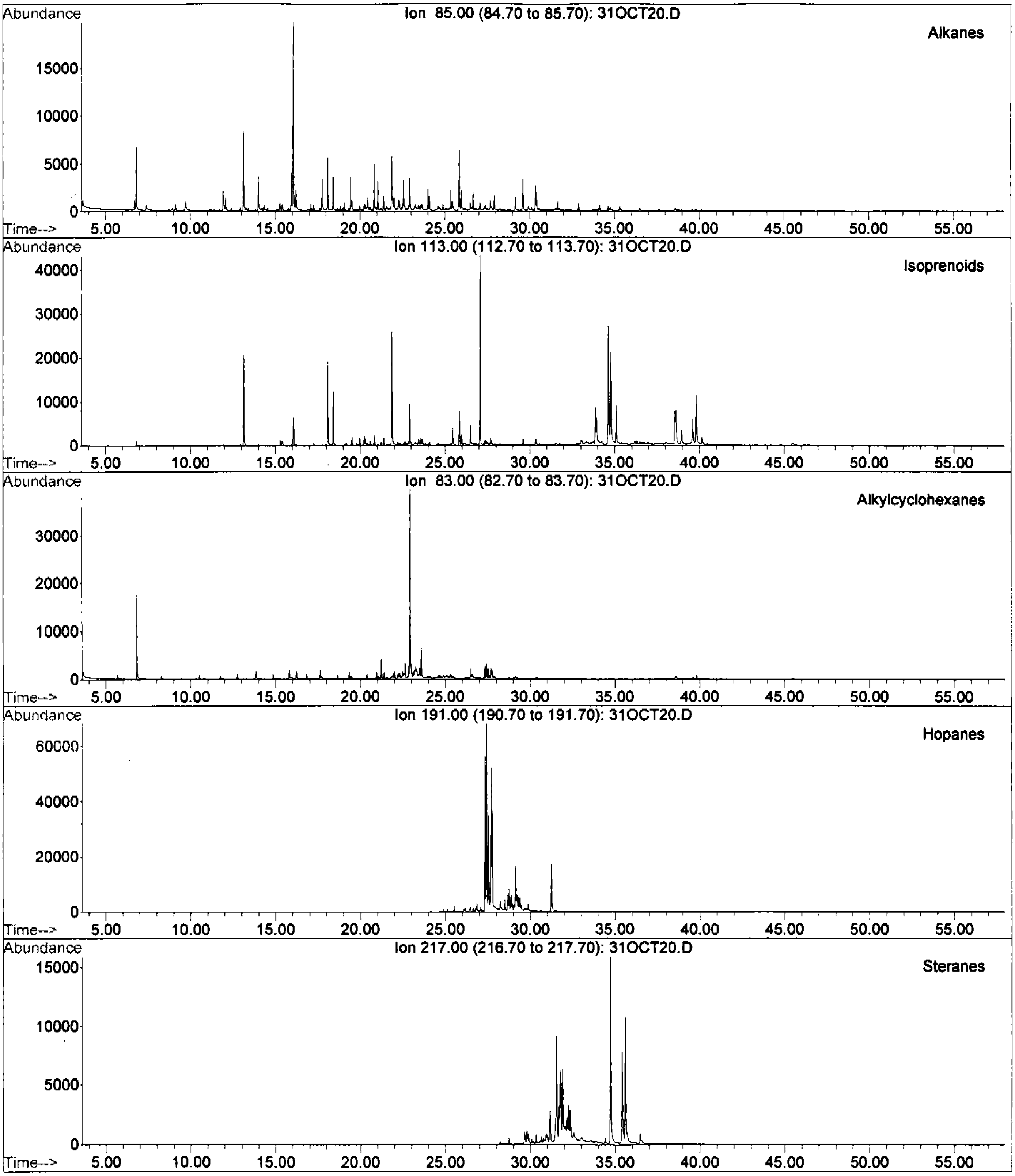
Instrument: GC4-MS_59   Operator: MP



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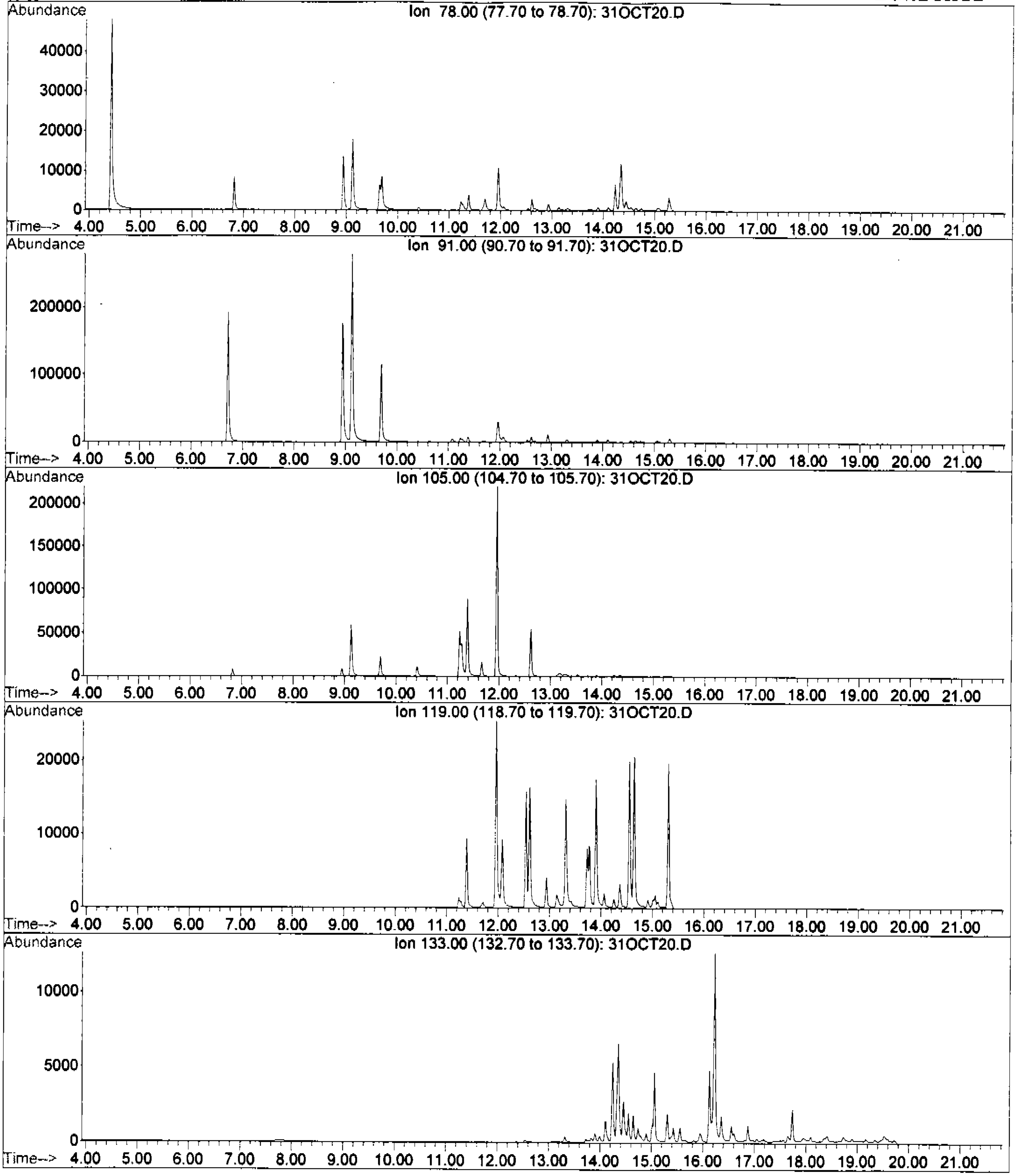
Lab ID: DB031007-02
File: I:\4\DATA\031031\31OCT20.D
Acquired: 1 Nov 2003 3:45 pm using AcqMethod MET4008Z
Instrument: GC4-MS_59 Operator: MP

Benzenes



Field ID: SB-24 36-38
Lab ID: DB031007-02
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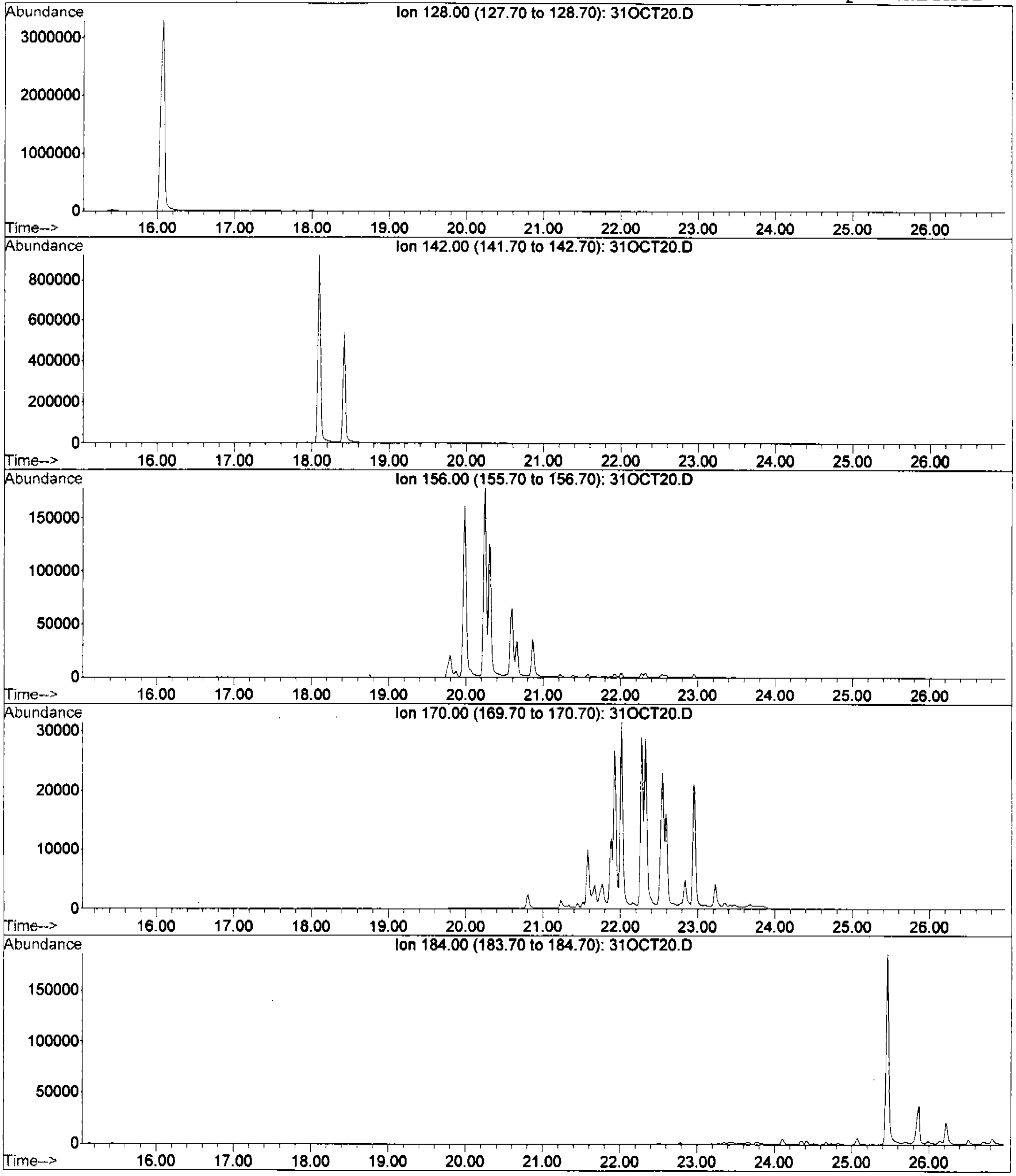
Instrument: GC4-MS_59 Operator: MP

Naphthalenes



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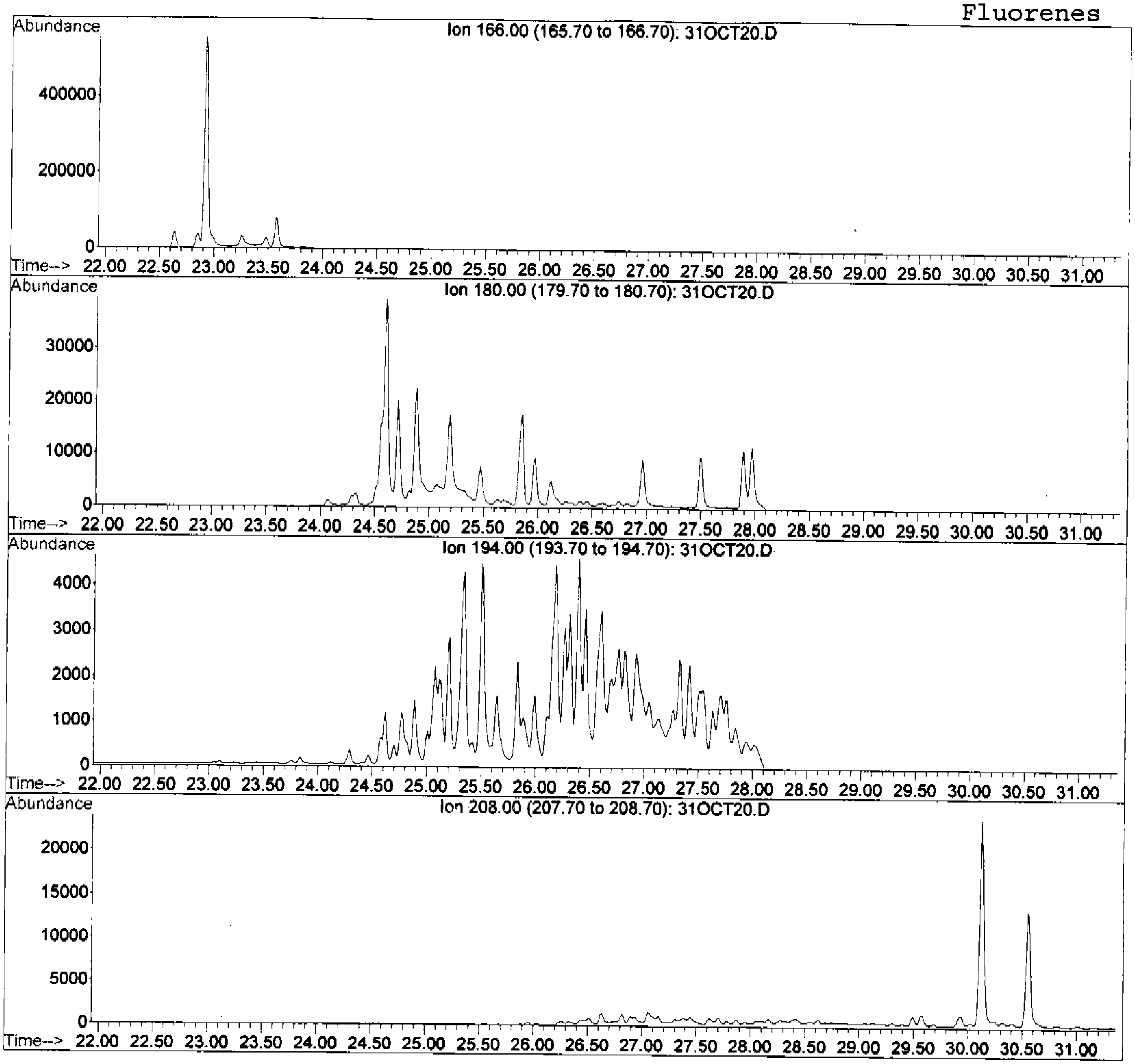
Acquired: 1 Nov 2003 3:45 pm using AcqMethod MET4008Z
Instrument: GC4-MS_59 Operator: MP

Fluorenes



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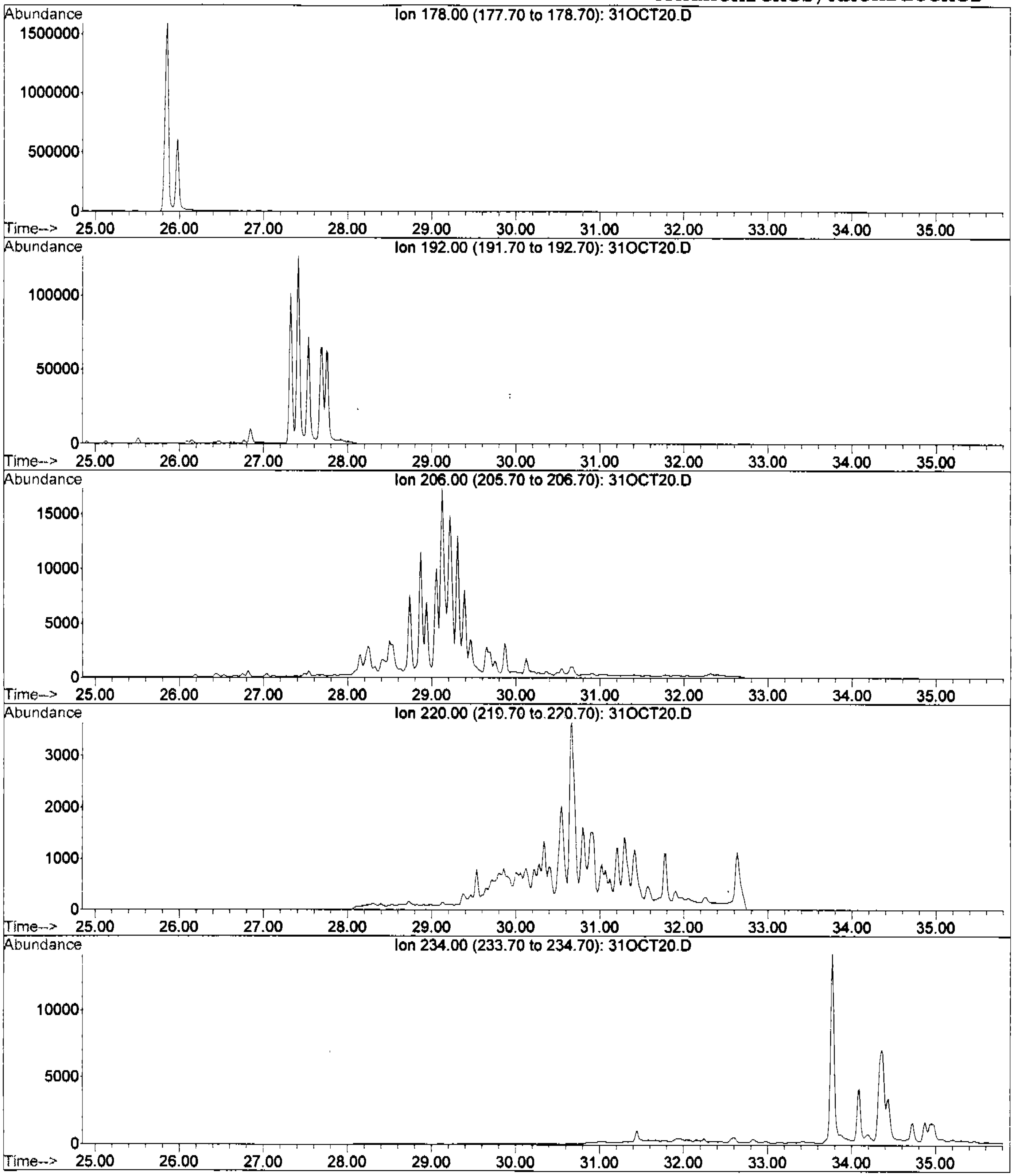
Instrument: GC4-MS_59   Operator: MP

Phenanthrenes/Anthracenes



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Lab ID: DB031007-02
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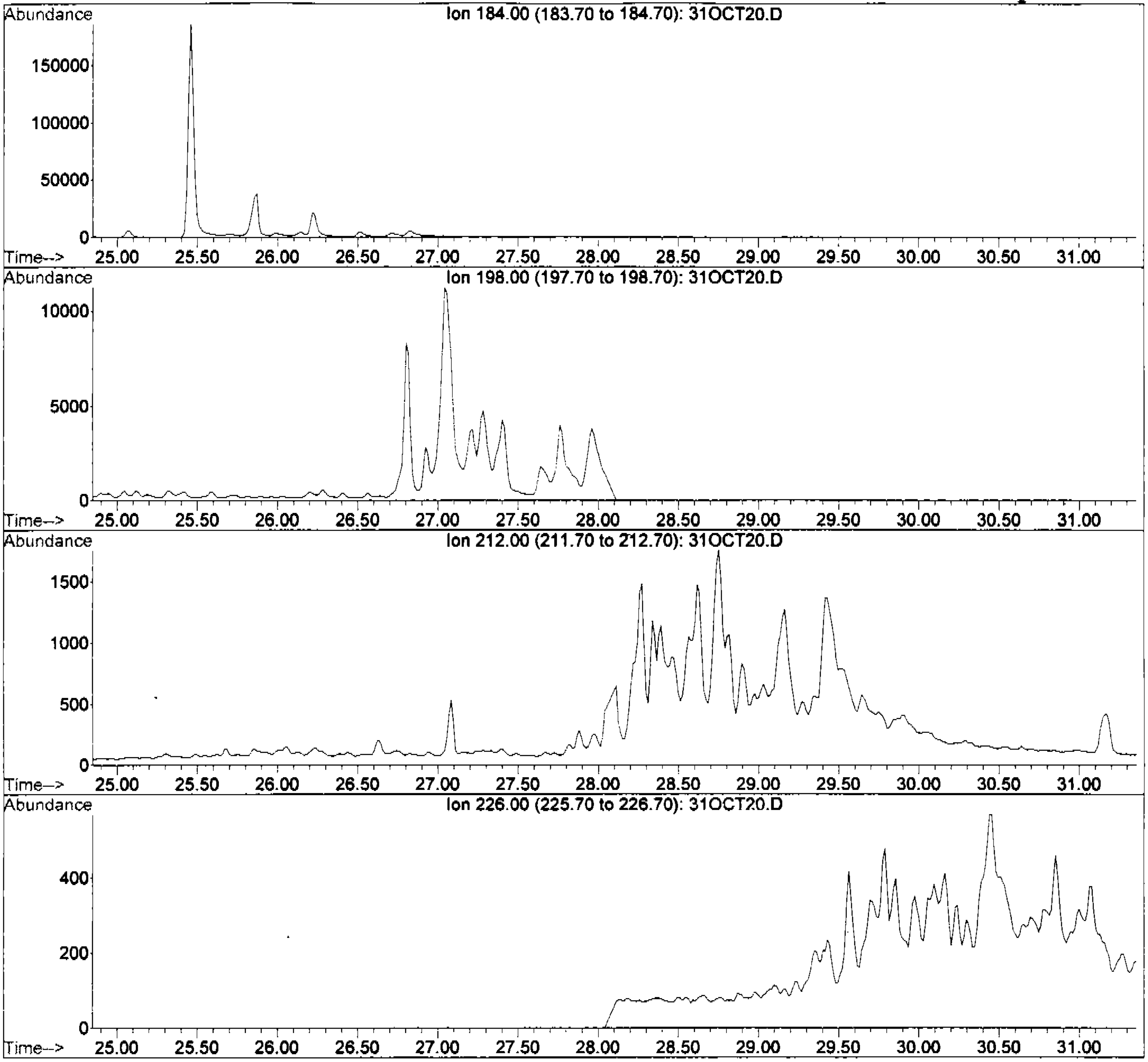
Instrument: GC4-MS_59 Operator: MP

Dibenzothiophenes



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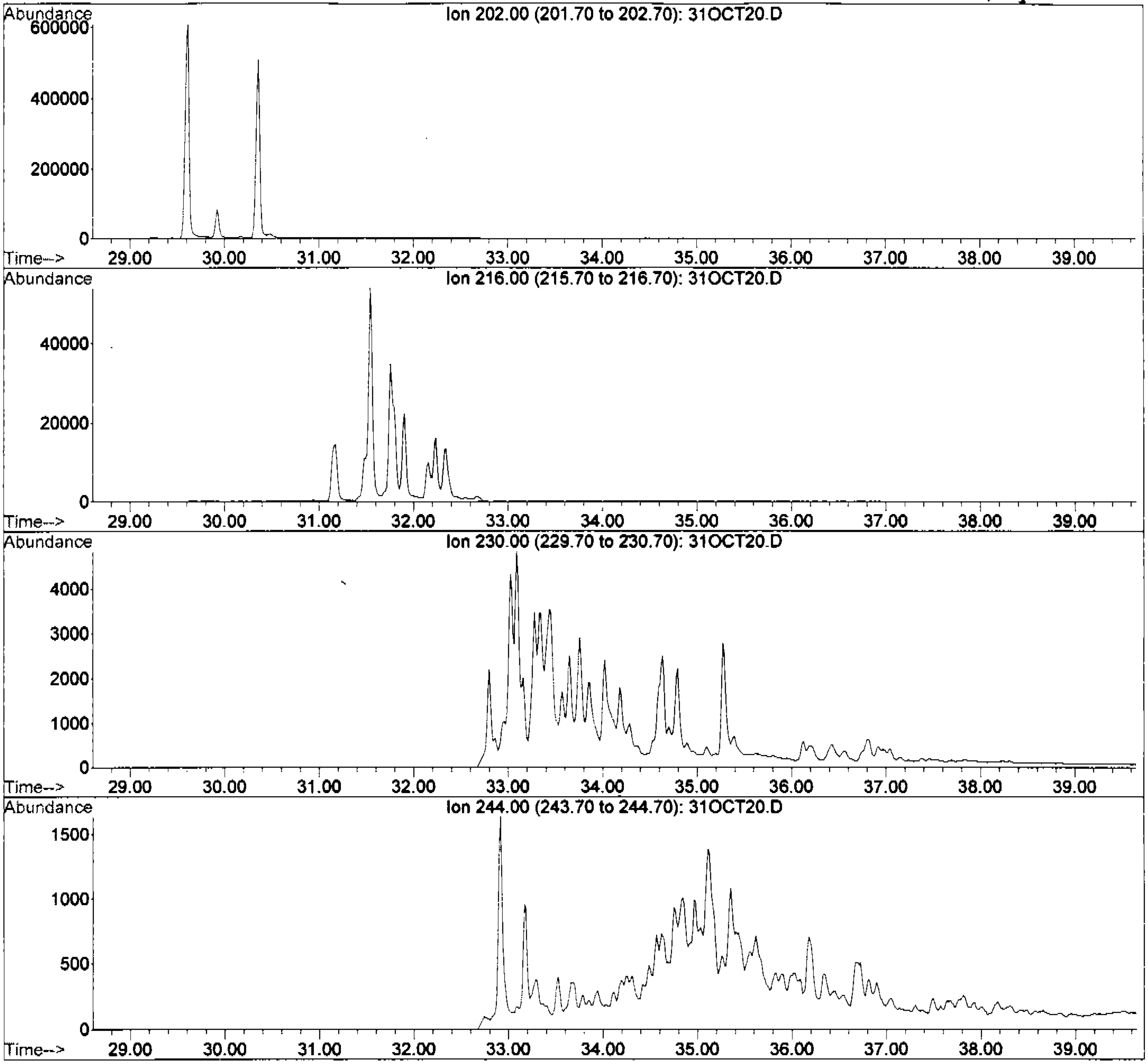
Lab ID: DB031007-02
File: I:\4\DATA\031031\31OCT20.D
Acquired: 1 Nov 2003   3:45 pm using AcqMethod MET4008Z
Instrument: GC4-MS_59   Operator: MP

Fluoranthenes/Pyrenes



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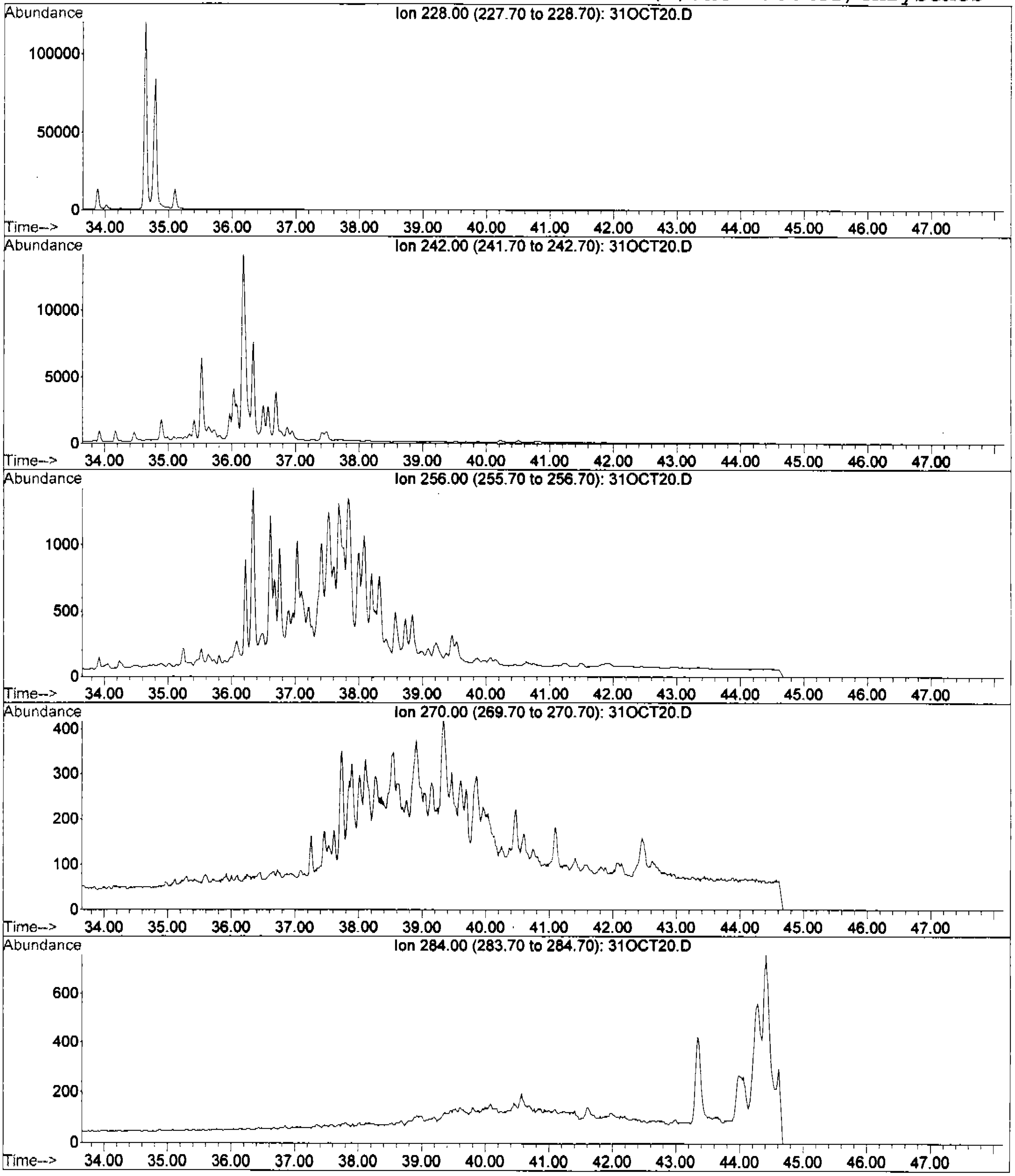
Lab ID: DB031007-02
File: I:\4\DATA\031031\31OCT20.D
Acquired: 1 Nov 2003 3:45 pm using AcqMethod MET4008Z
Instrument: GC4-MS_59 Operator: MP

Benz(a)anthracenes/Chrysenes



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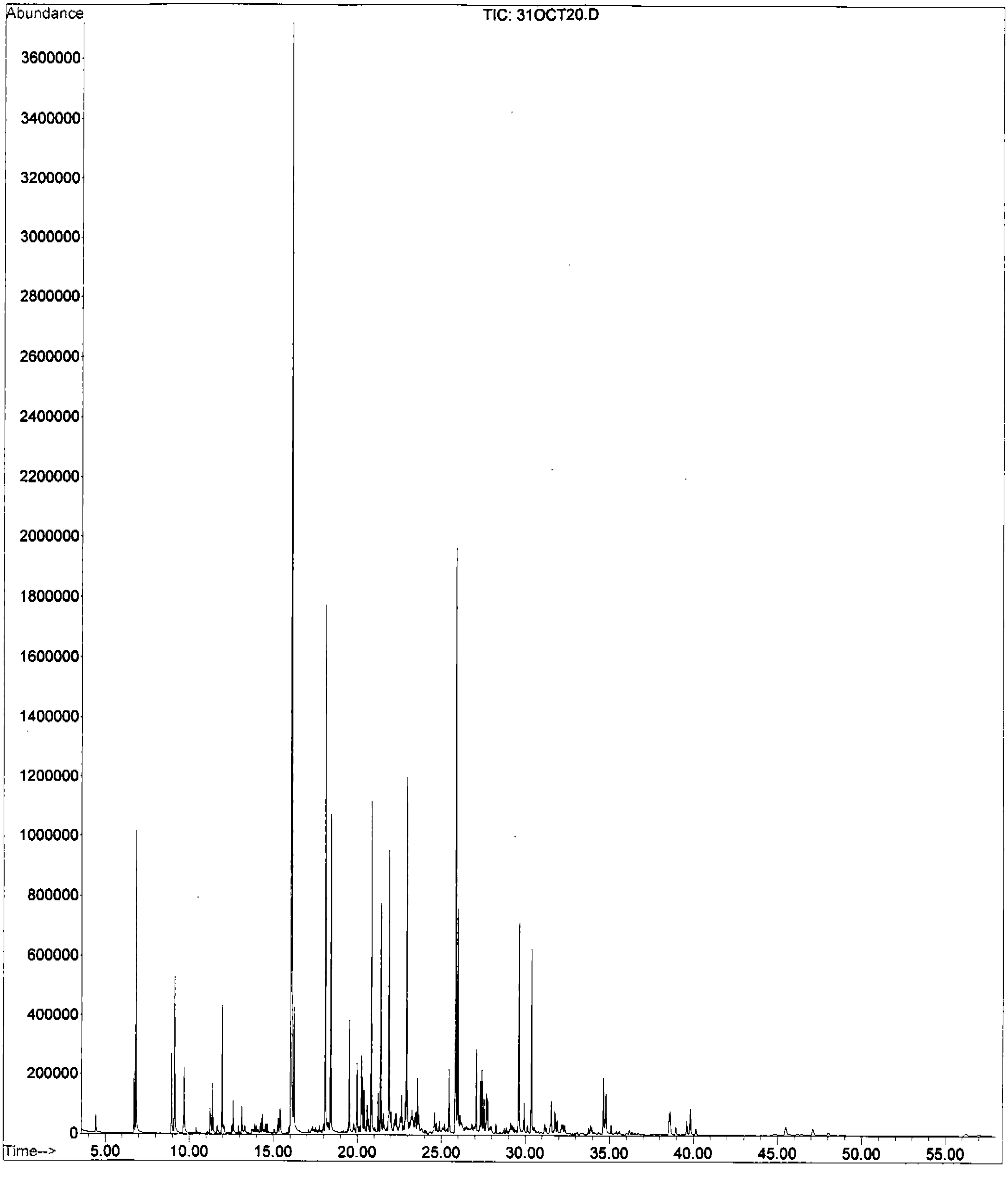
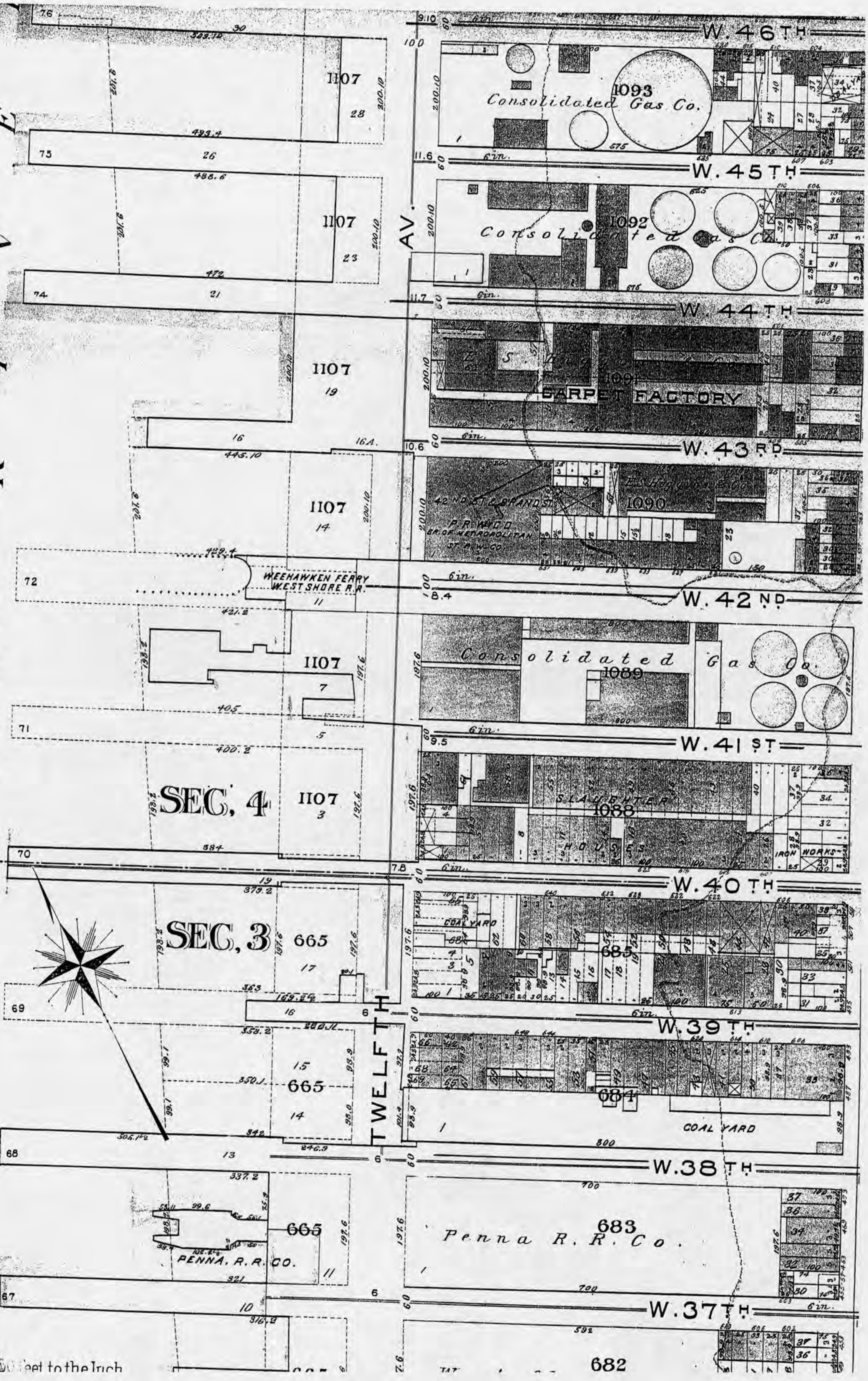
Instrument: GC4-MS_59 Operator: MP



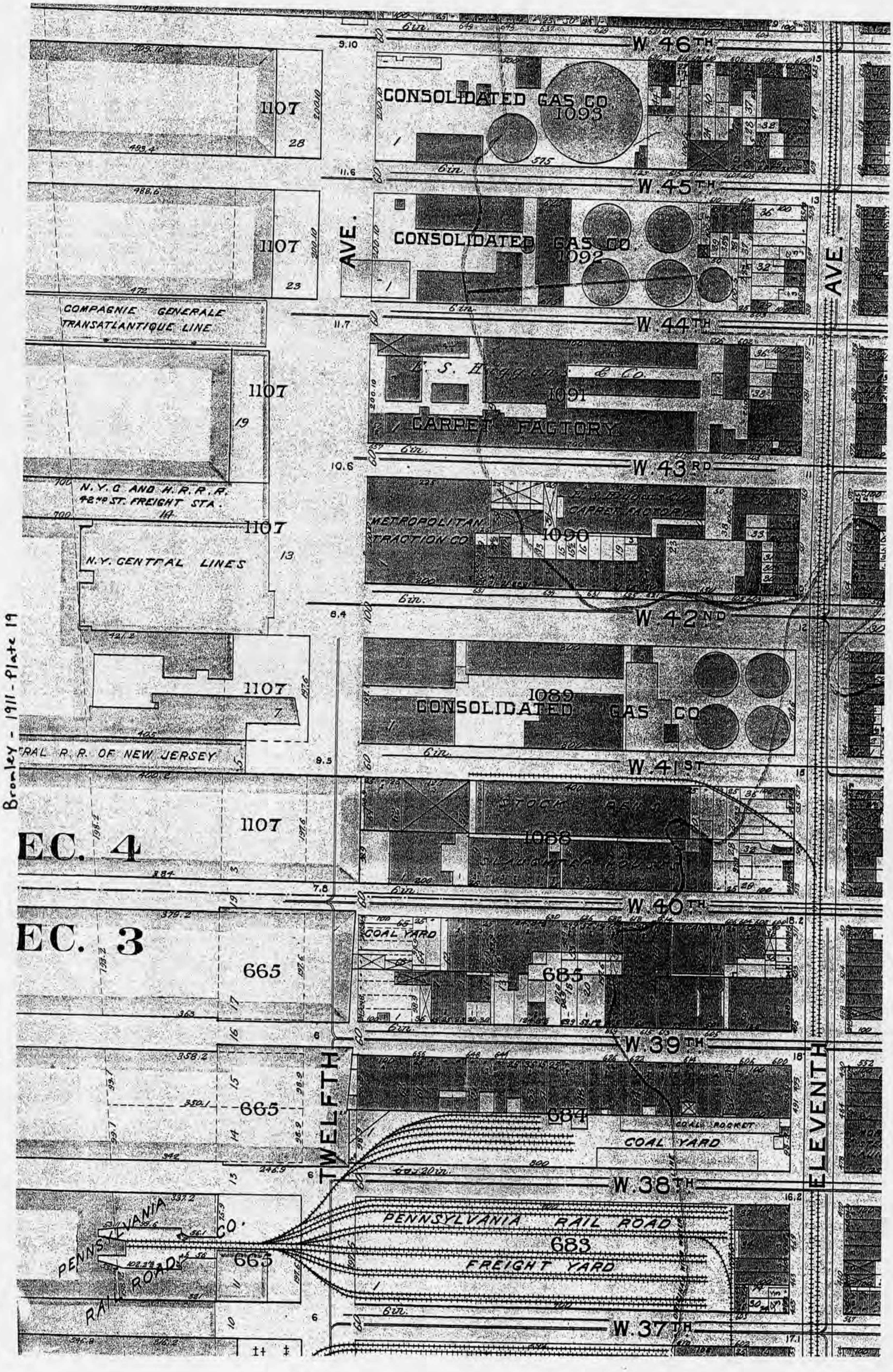
APPENDIX E

HISTORICAL MAPS

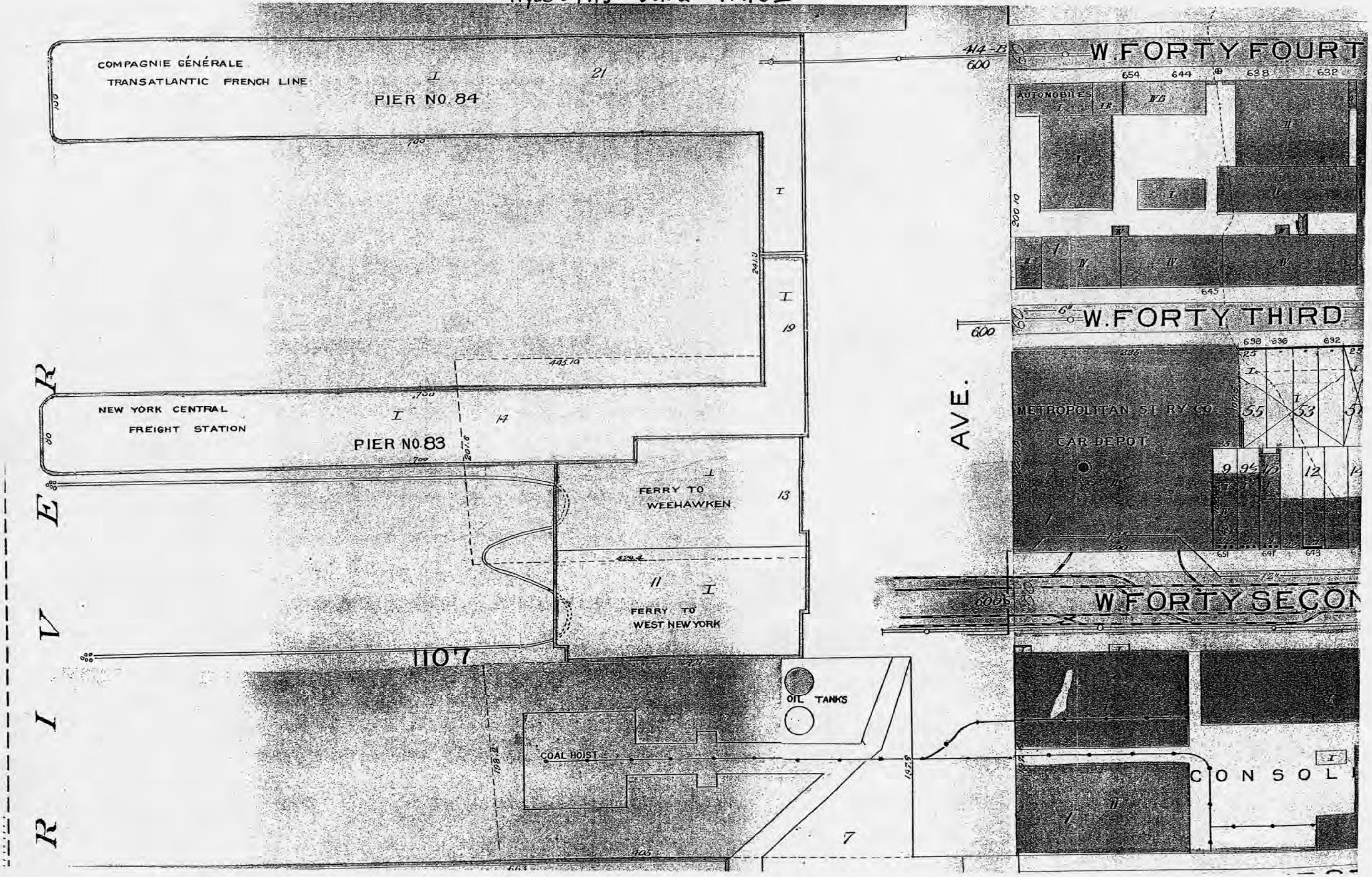
Bromley – 1897 – Plate 19



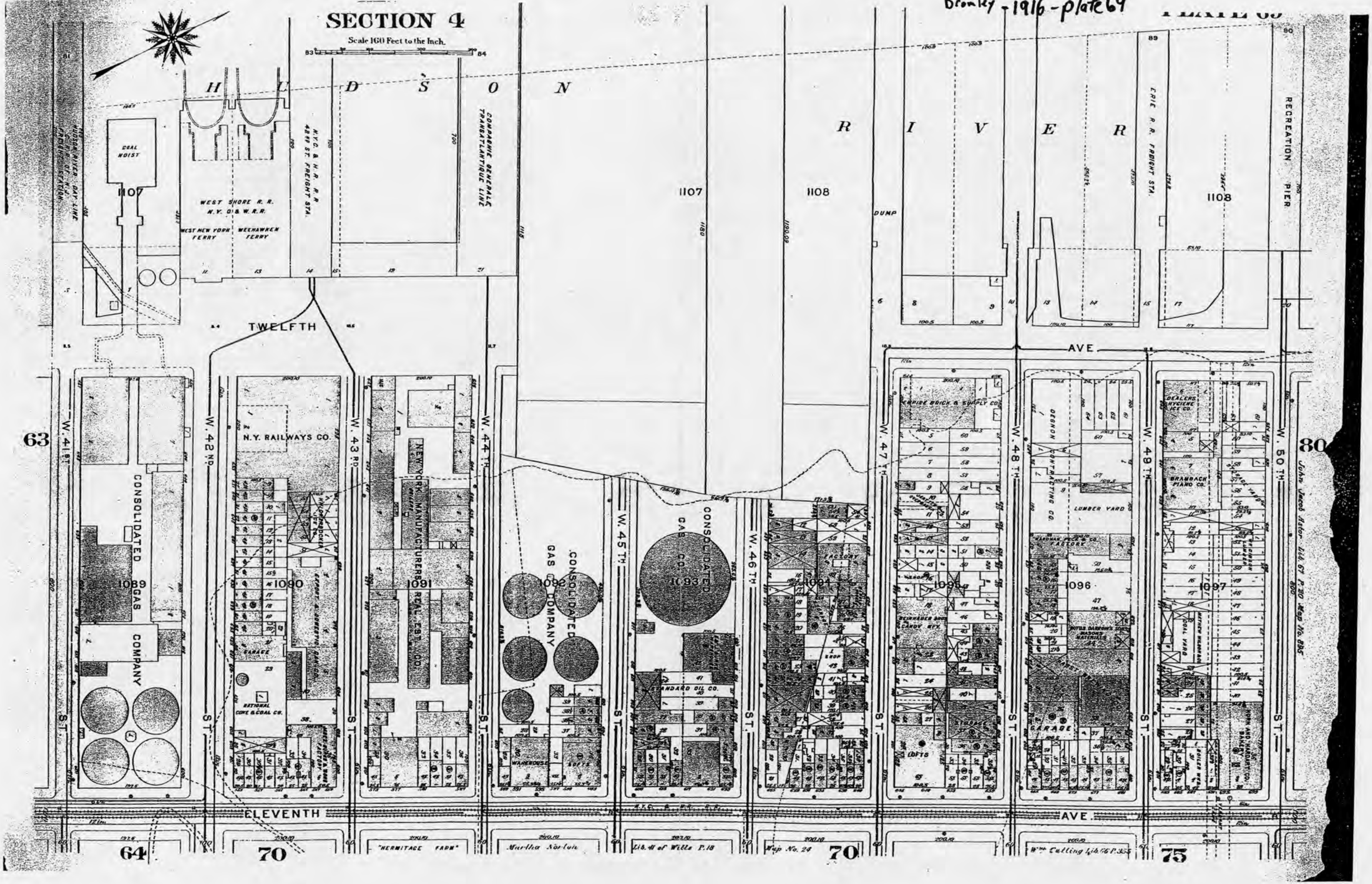
Bromley - 1911 - Plate 19



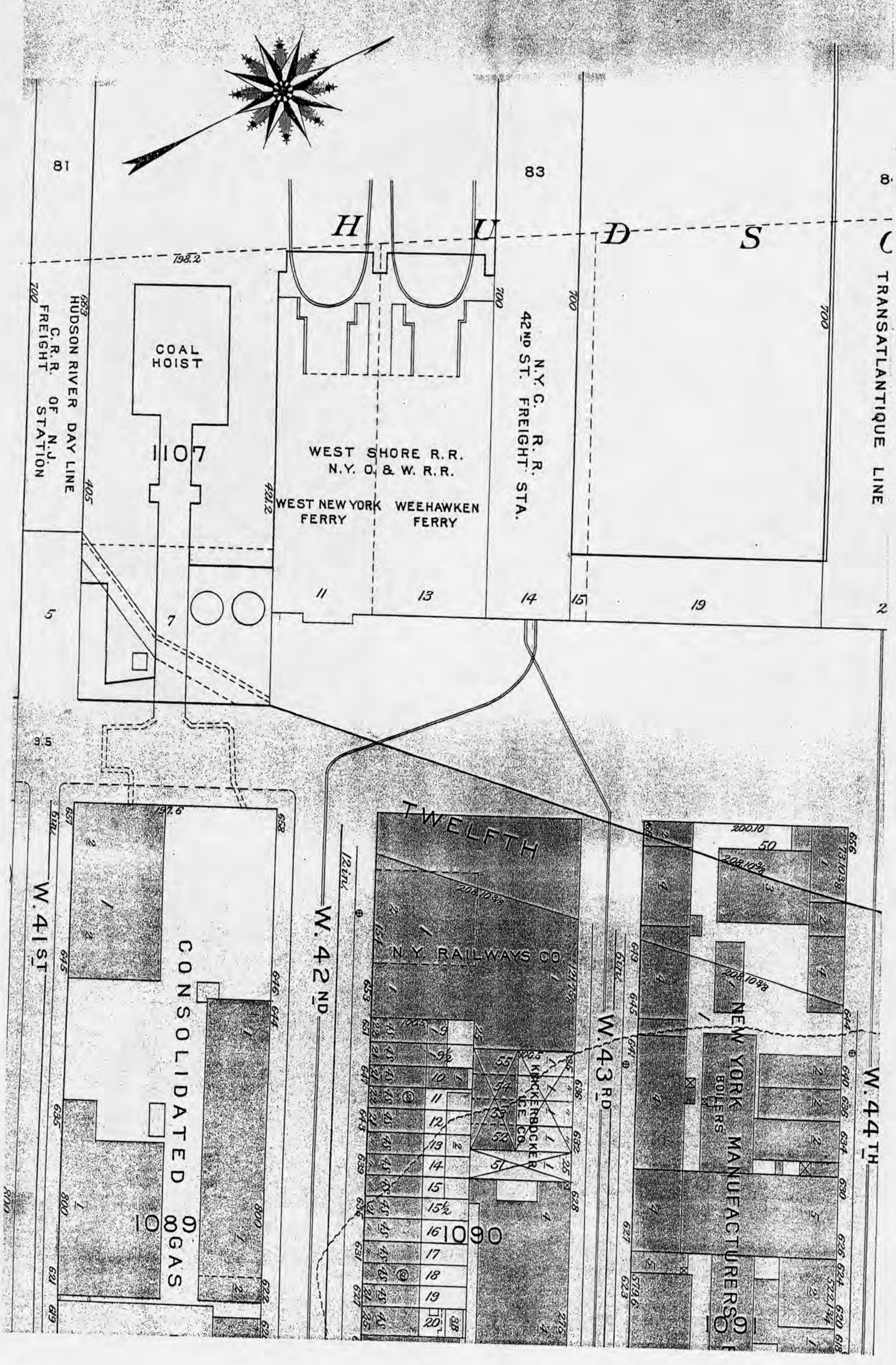
Hyde - 1913 - Vol. 2 - Plate II



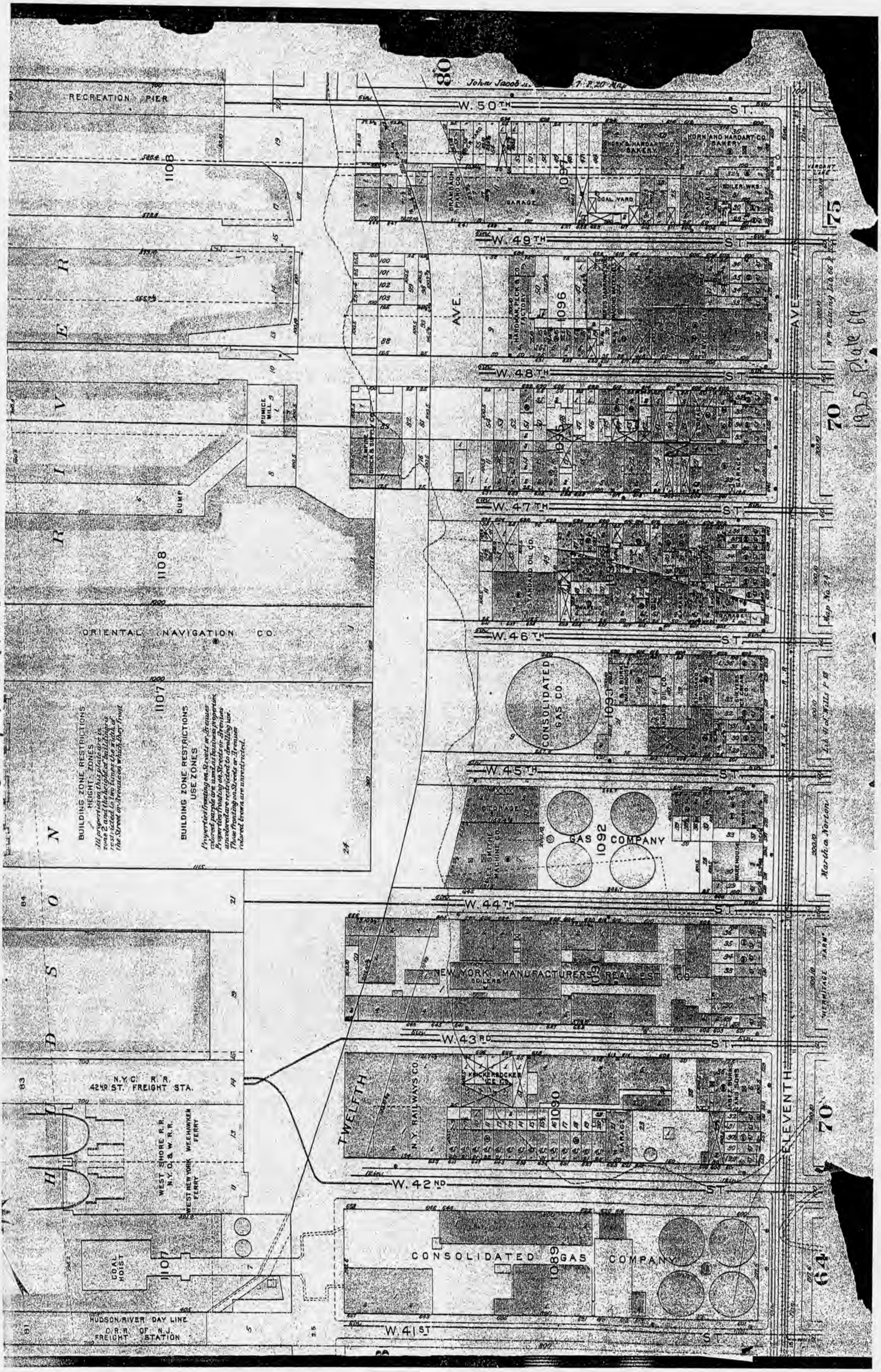
Bromley - 1916 - plate 69



Bromley - 1920-1922 Volume II plate



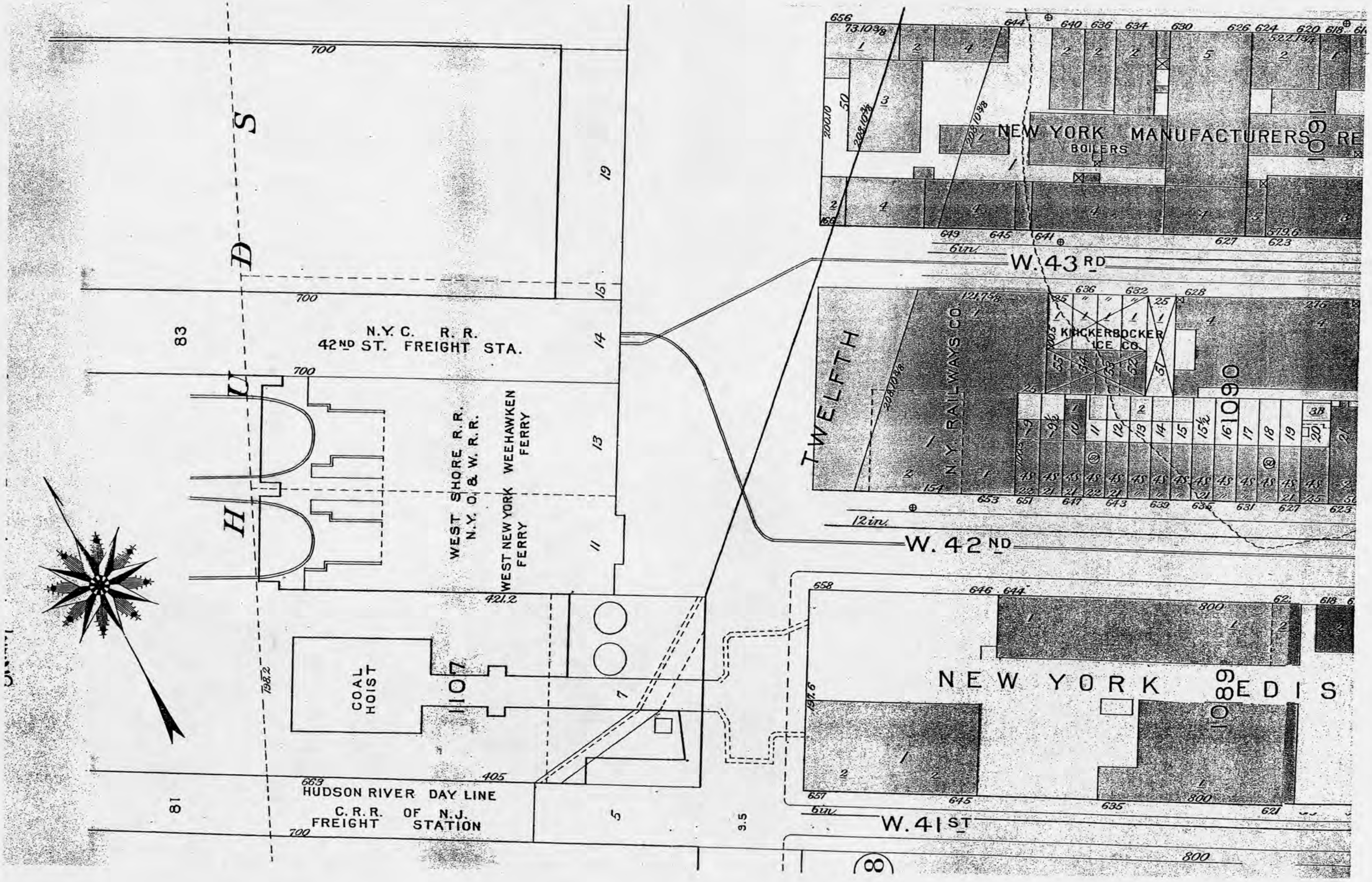
Bromley - 1925 - Plate 69



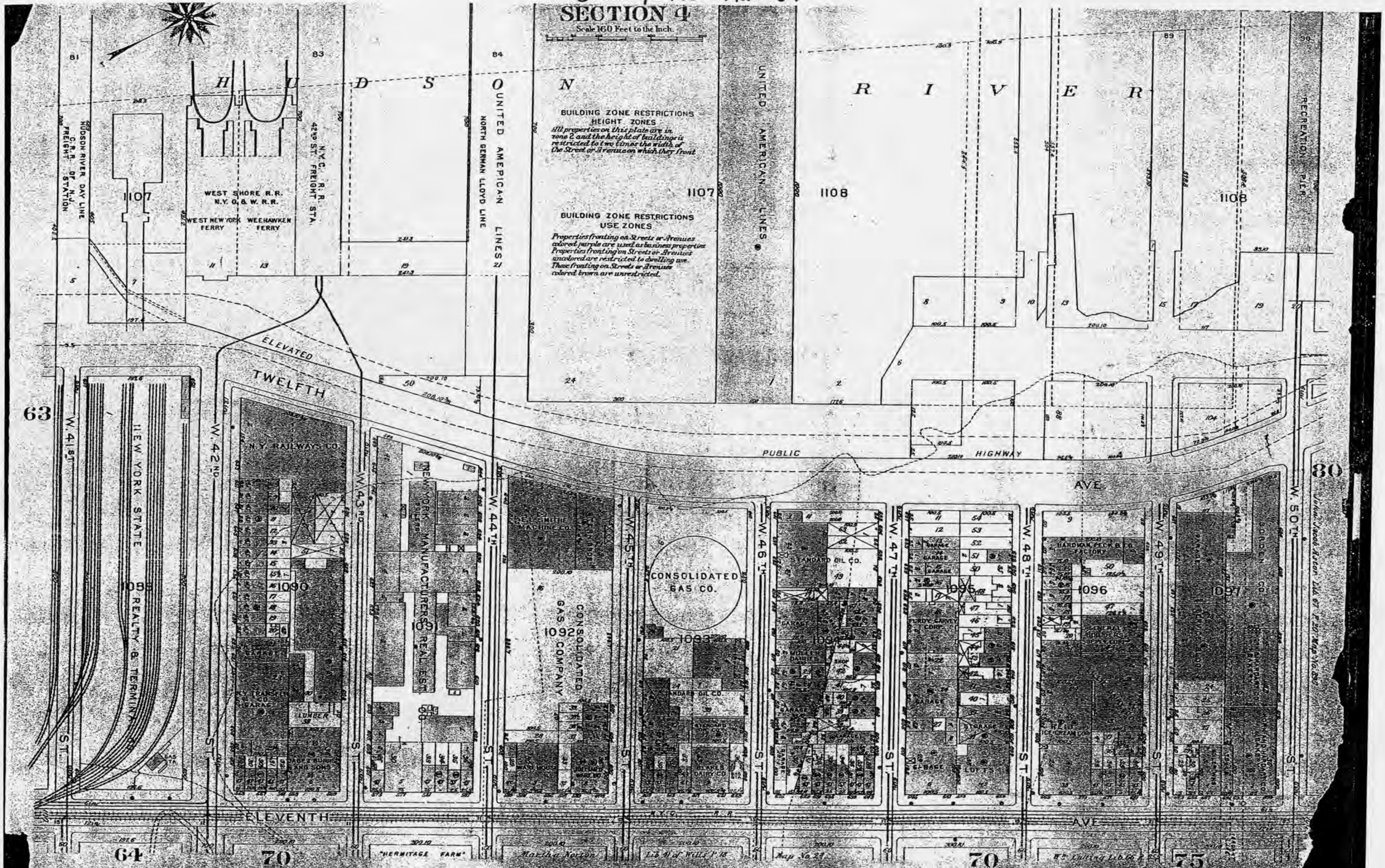
BUILDING ZONE RESTRICTIONS
HEIGHT ZONES
All properties on this plate are in zone 2 and the height of buildings is restricted to two times the width of the Street or Avenue on which they front.

BUILDING ZONE RESTRICTIONS
USE ZONES
Properties fronting on Streets or Avenues colored purple are used as business properties. Properties fronting on Streets or Avenues uncolored are restricted to dwelling use. Those fronting on Streets or Avenues colored brown are unrestricted.

1925 Plate 69


HUDSON
NEW YORK MANUFACTURERS
BOILERS
1091
W. 43RD
KNICKERBOCKER ICE CO.
N.Y. RAILWAYS CO.
TWELFTH
1090
W. 42ND
NEW YORK EDIS
1089
W. 41ST
N.Y.C. R.R. 42ND ST. FREIGHT STA.
WEST SHORE R.R.
N.Y. O. & W. R.R.
WEEHAWKEN FERRY
WEST NEW YORK FERRY
COAL HOIST
1107
HUDSON RIVER DAY LINE
C.R.R. OF N.J. FREIGHT STATION
19
15
14
13
11
7
5
83
81
8
700
421.2
405
663
198.2
9.5
6in.
12in.
208.10 3/8
200.10
73.10 3/8
121.7 5/8
197.6
800

Bromley - 1930 - Plate 69



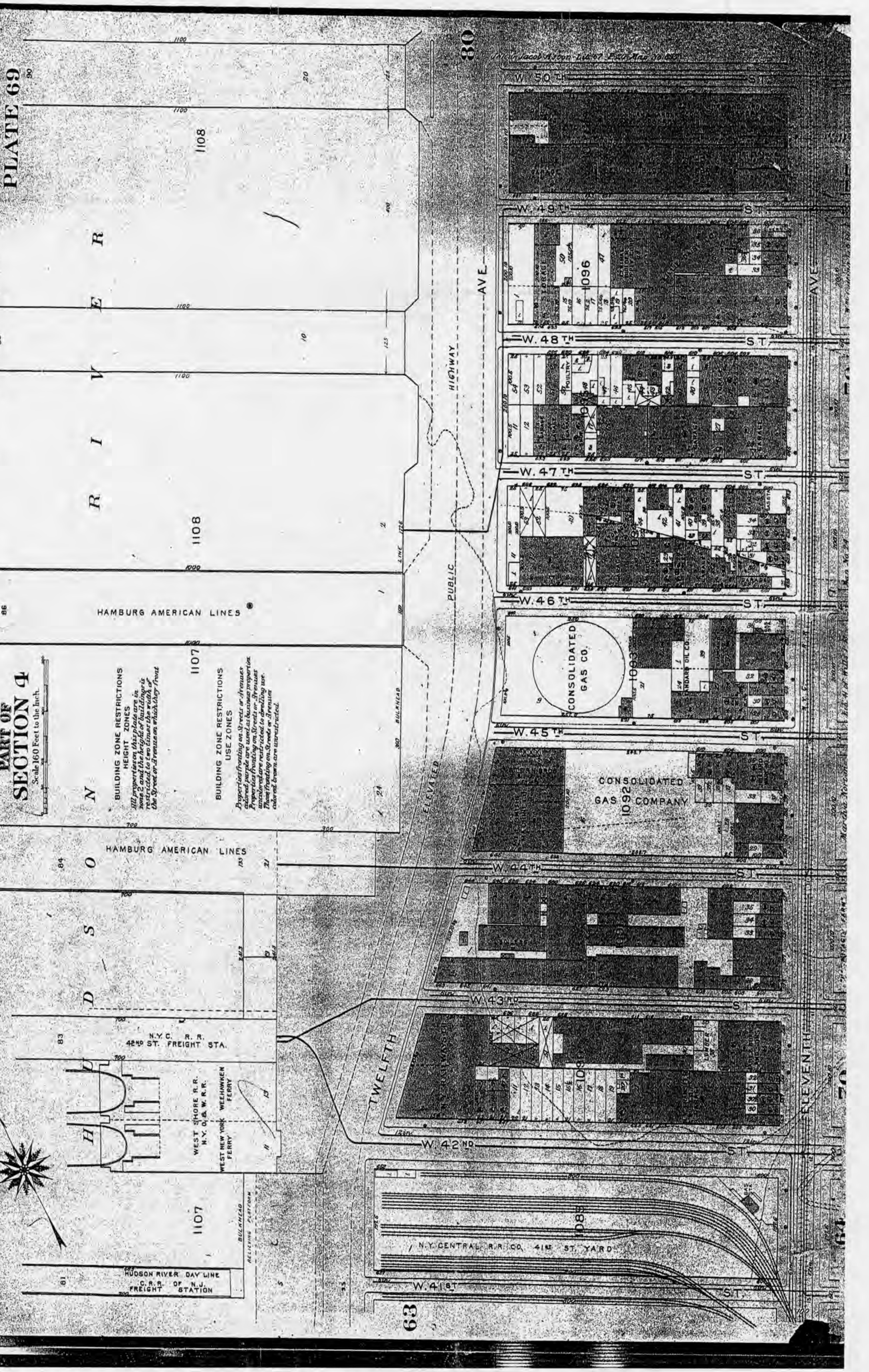
1930 Plate 69

Bromley - 1934 plate 69

PLATE 69

PART OF SECTION 4

Scale 160 Feet to the Inch.



BUILDING ZONE RESTRICTIONS
HEIGHT ZONES

All properties on this plate are in zone 2, and the height of buildings is restricted to two times the width of the Street or Avenue on which they front.

BUILDING ZONE RESTRICTIONS
USE ZONES

Properties fronting on Streets or Avenues colored purple are used as business properties. Properties fronting on Streets or Avenues uncolored are restricted to dwelling use. Those fronting on Streets or Avenues colored brown are unrestricted.

Bromley - 1955-plate69

PLATE 69

PART OF SECTION 4

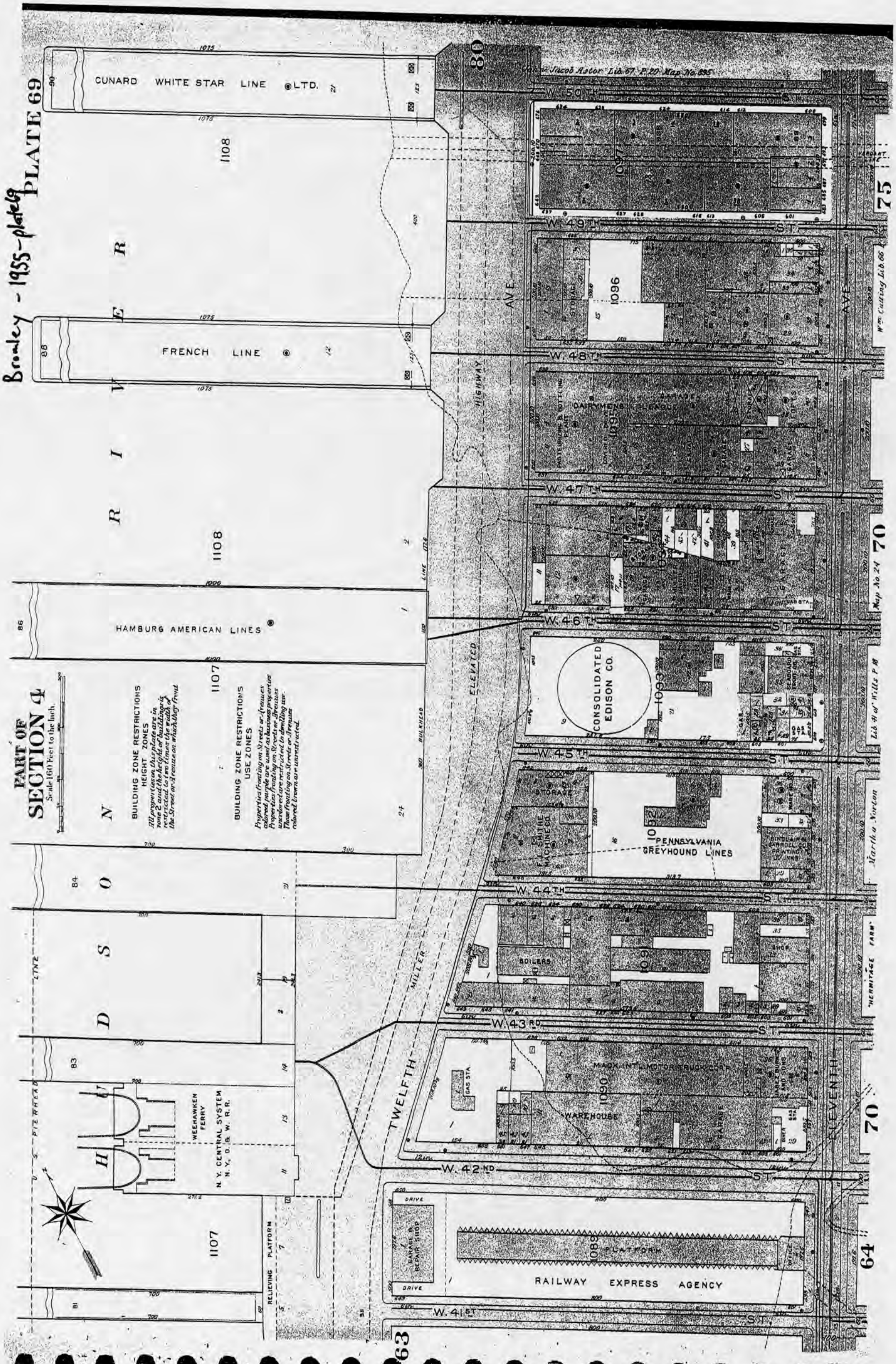
Scale 160 Feet to the Inch.

BUILDING ZONE RESTRICTIONS
HEIGHT ZONES

All properties on this plate are in zone 2 and the height of buildings is restricted to two times the width of the Street or Avenue on which they front

BUILDING ZONE RESTRICTIONS
USE ZONES

Properties fronting on Streets or Avenues colored purple are used as business properties. Properties fronting on Streets or Avenues uncolored are restricted to dwelling use. Those fronting on Streets or Avenues colored brown are unrestricted.

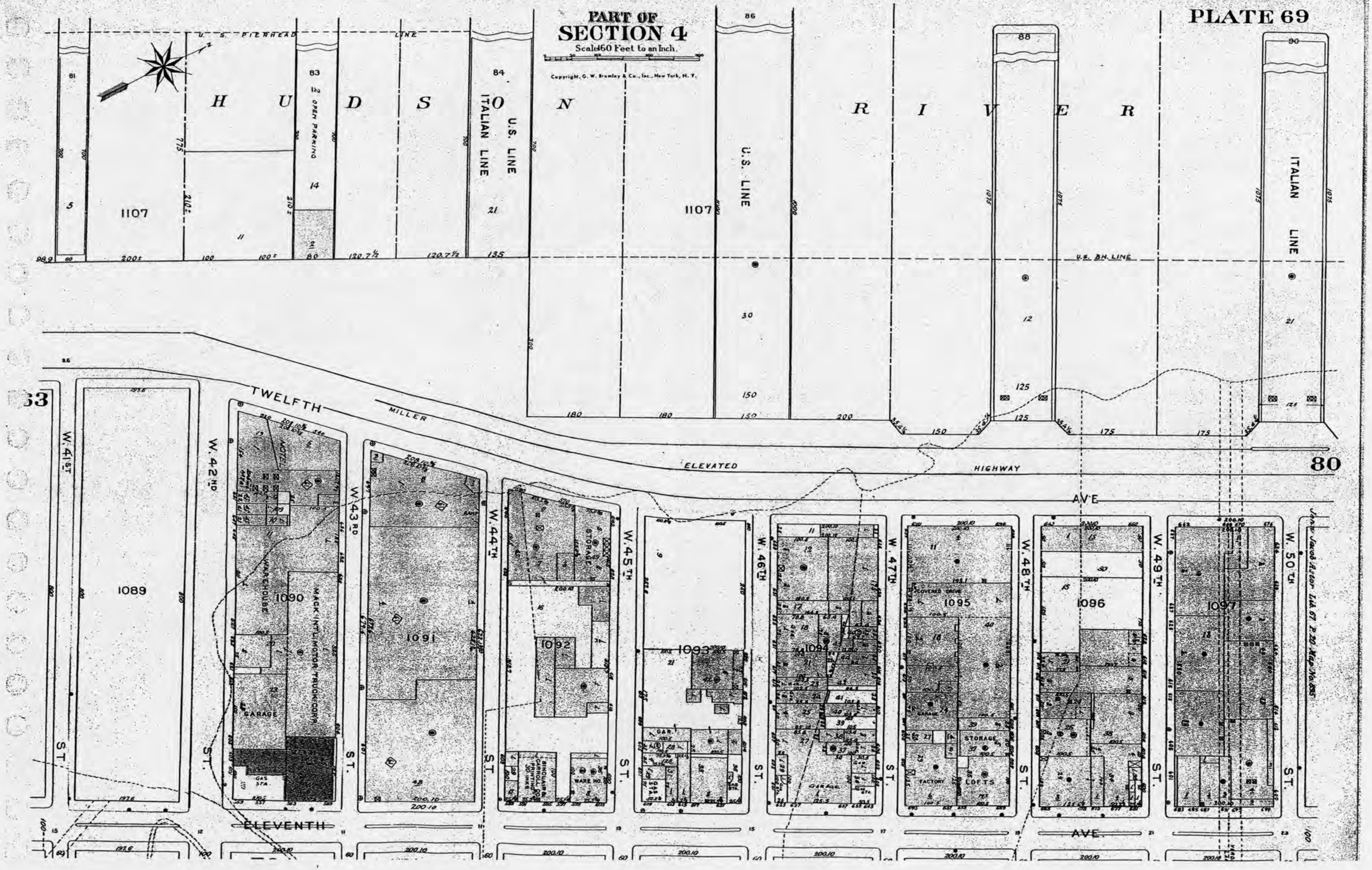


Bromley - 1974

PLATE 69

PART OF SECTION 4

Scale 60 Feet to an Inch.



APPENDIX F

REPORT OF EVALUATION OF INDOOR AIR SAMPLING CONDUCTED AT RIVER PLACE I, BY THE RETEC GROUP, INC.

West 42ND Street Works Site Report of Evaluation of Indoor Air Sampling

Conducted at
River Place I
650 West 42nd Street
Manhattan, New York

Prepared by:

The RETEC Group, Inc.
1000 West Seneca Street, Suite 204
Ithaca, NY 14850-3342

RETEC Project Number: CECN3-16197-121

Prepared for:

Consolidated Edison Company of New York, Inc.
31-01 20th Avenue, Building No. 138
Long Island City, NY 11105

Prepared by:

____
Susan Welt, Project Engineer

Reviewed by:

____
John T. Finn, P.E., Senior Engineer

August 26, 2003

Executive Summary

An evaluation of the potential for sub-surface vapor intrusion at River Place I in west Manhattan, New York was conducted in April of 2003. The overall goal of the work was to ascertain whether air quality within the apartment buildings was being adversely affected by residual sub-surface impacts that might remain from the former Manufactured Gas Plant (MGP) operations which had historically occurred on the property.

After an initial inspection of the building, a total of four indoor air samples (3 indoor air samples, and 1 field duplicate for quality assurance/quality control purposes) were collected from the ground floor of the building. Four air samples were collected from outside of the building for comparison purposes. The samples were submitted to a commercial laboratory for chemical analyses.

Results indicate that the air quality is not impacted by sub-surface intrusion of vapors emanating from any MGP-related material that may be present at the site. Compounds detected in the indoor air samples were present in concentrations within the range of typical background levels for indoor air quality, or were comparable to the results of the outdoor air samples, indicating outdoor sources, as noted below.

Two compounds were detected at concentrations above the typical range for background residential indoor air (above the 95th percentile): acetone and bromomethane. These compounds were also detected in the outdoor (ambient) samples at similar concentrations, indicating outdoor sources. The concentrations of these compounds were at low levels – at least two orders of magnitude below the Worker Guidance Values.

The results indicate that the quality of the air sampled within the apartment building is generally within the range expected for indoor air. The indoor air quality does not appear to be impacted by sub-surface intrusion of vapors emanating from any MGP-related material that may be present at the site.

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1 Introduction

This report has been prepared for Consolidated Edison Company of New York, Inc. (Con Edison) to present the evaluation of sub-surface vapor intrusion at the River Place I property.

The investigation activities were conducted in general accordance with the Work Plan for Evaluation of Sub-Surface Vapor Intrusion (Work Plan) [RETEC, 2002], and in cooperation with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH). The Work Plan was prepared for general use in the program that Con Edison has initiated to evaluate sub-surface vapor intrusion that may be associated with its former Manufactured Gas Plant sites.

NYSDOH has commented on the results of this indoor air investigation at the River Place I apartment complex (Appendix E).

1.1 Purpose of Report

The overall goal of the work was to ascertain whether air quality within the River Place I apartment building was being adversely affected by residual sub-surface impacts that might remain from the former MGP operations which had historically occurred on the property. The purpose of this report is to describe the investigation activities, present the results, and interpret their meaning.

1.2 Scope of Work

The specific scope of work for the evaluation at the River Place I Property was determined during an initial site visit on January 3, 2003 at which Mr. Joseph Moloughney, the NYSDEC Project Manager, was present.

The scope of work consisted of the following two field tasks:

- Initial site visit and building inspection; and
- Indoor and ambient air sampling.

1.3 Report Organization

The remainder of this is organized as follows:

- Section 2 describes the site and provides a summary of its history.

- Section 3 describes investigation activities, including the sampling locations and procedures.

- Section 4 provides a summary of the onsite observations and field measurements.

- Section 5 presents the analytical laboratory results.

- Section 6 presents an evaluation of the findings and provides recommendations.

- Section 7 lists the references cited in this report.

- Documentation of results and data quality information is provided in the appendices.

2 Site Description and History

The site description and historical information provided in this section has been summarized from recent site history reports [Parsons, 2002].

The site is located in Manhattan, New York City, New York. The property encompassed approximately five acres extending from West 41st to West 42nd Street and 11th Avenue to 12th Avenue. The site is currently occupied by a high rise apartment/retail building (River Place I), a landscaped park-like area, and a paved parking lot.

The site was formerly used as a gas manufacturing and storage facility, the West 42nd Street Works, from 1863 to the early 1920s. Gas was produced by the coal carbonization gas processes and stored in gas holders until the property was sold in 1924.

The former MGP property switched ownership many times before it was sold to the Silverstein 42nd Associates in 1996. The River Place I building was constructed on part of the site in 2000. This building does not have any subsurface space; it is constructed at of above the previous site grade. A historical use map which shows the locations of the former MGP structures in approximate relationship to the existing building is shown in Figure 2-1.

3 Investigation Activities

This section describes the activities undertaken to collect data and information for the purposes of the indoor air quality screening evaluation. The building inspection and collection of indoor and ambient air samples are described.

3.1 Building Inspection

The building inspection was conducted on December 5, 2002. A tour of the building and grounds was conducted. Representatives of Con Edison, River Place I Property, Clayton Group Services, Inc., and the RETEC Group, Inc. participated. The inspection included a walk-through of the ground floor of the building and the surrounding grounds. The information obtained during the site walk is summarized in the NYSDOH Indoor Air Quality Questionnaire and Building Inventory, provided in Appendix A.

The chemical inventory was conducted by the Clayton Group on April 16, the day of sampling. It focused on the Ramp Area in the storage room at 625 E. 14th St. The inventory is provided in Appendix A.

Observations were made regarding potential indoor sources of hydrocarbon vapors, as further described in Section 4.

3.2 Indoor and Ambient Air Sampling

Sampling locations inside and outside of the building were established and marked during the initial building inspection. The locations were determined with reference to the historical overlay map (Figure 2-1), and the building floorplan.

The rationale for selecting the locations of the ambient samples was to "bracket" the building by collecting air from the prevailing upwind direction and the prevailing downwind direction.

The rationale for selection of sample locations in the apartment buildings was to obtain samples from areas nearest to the former locations of MGP structures such as gas holders. The sampling locations are shown in Figure 3-1. Table 3-1 lists the full sample numbers, locations and rationale for selection of each location.

Two initial ambient air samples, four indoor air samples, and two final ambient air samples were collected on April 16, 2003 by The Clayton Group Services, Inc (Clayton). The building had been closed for approximately 12 hours prior to the start of sampling. Six-liter Summa canisters with flow regulators were used to collect each sample over a one-hour period. Samples were submitted for laboratory analysis as described in Section 5. A photographic record of the sampling locations is provided in Appendix B.

Collection of meteorological data, VOC emissions using a photoionization detector (PID) from vapor intrusion points, and volatile cyanide was also conducted by Clayton at the apartment complex on April 16, 2003. Results are described in Section 4.

4 On-site Observations

This section documents the observations and field measurements made during the on-site building inspection and during the sample collection events.

4.1 Building Observations

Observations of the HVAC system, odors, and potential hydrocarbon sources, were made during the indoor air sampling event. These observations are important for the correct interpretation of the results.

4.1.1 HVAC

The heating, ventilation and air conditioning (HVAC) of the building was described by the building staff as having a central heating and central air conditioning system. The HVAC system was not running in the retail space or the café during the time of sampling.

4.1.2 Odors

Distinct hydrocarbon odors (paint) were observed in the café during the time of sampling; the café had been painted the week before.

4.1.3 Potential Hydrocarbon Sources

The retail space and café contained a wide variety of commercial products that are potential hydrocarbon sources, including gasoline, paint, and paint thinners. During the sampling event, the brass doorway and window molding in the lobby were also being polished. Cigarette smoke, and newly painted walls could also be potential sources of hydrocarbons in the apartment building.

4.2 Observations and Measurements During Sampling

Observations made during air sampling included meteorological data, PID measurements, and volatile cyanide measurements using Draeger tubes. Clayton’s records of these observations are provided in Appendix C. Meteorological data show a relatively constant barometric pressure throughout the sampling event inside and outside of the building (29.95 – 29.97 inches Hg). Wind speed was mostly out of the west at 0 – 6 miles per hour. Field measurements of VOCs by PID did not indicate vapor intrusion. The presence of cyanide in air was not detected throughout the entire apartment building.

5 Analytical Laboratory Results

This section presents summaries of the laboratory results for analysis performed on ambient air and indoor air collected at the site during the April 2003 sampling event. The results are discussed and evaluated with regard to potential intrusion of MGP vapors.

The laboratory analytical methods and data quality is also discussed in this section. It is concluded that the data quality is adequate.

5.1 Summary of Results

A total of a total of four ambient air samples, three indoor air samples, and one field duplicate collected for quality assurance/quality control were submitted for laboratory analysis. Volatile organic compounds were analyzed (EPA Method TO-15) by Air Toxics Laboratory, Inc. The results of this analysis are summarized in Table 5-1. Analytical laboratory reports are provided in Appendix D.

Table 5-1 lists the detected analytes in two categories:

1) Compounds including BTEX and naphthalene, that could possibly be related to MGP sources, but may just as likely be related to non-MGP sources; and

2) Compounds including chlorinated hydrocarbons and MTBE (the gasoline additive) that are certainly not related to MGP sources.

Table 5-1 lists the ambient (outdoor) samples in the left-most columns, followed by indoor air samples. The three right-most columns present background indoor air values obtained from National (EPA) and New York State analyses of air samples from within typical (non-contaminated) residences. The background values are expressed as the 75th and 95th percentile values derived statistically from the datasets [NYSDOH, 2003, EPA, 1992]. The indoor air and ambient values that exceed the 75th percentile of background are highlighted in Table 5-1 for screening purposes. However, values within the 95th percentile are considered to be within the range of typical background, especially considering that the background data were obtained primarily from residences. Apartment buildings and large buildings may contain higher VOC concentrations than residences because of the use of products such as industrial-strength floor tile cleaners, floor polishes, more frequent use of paints, etc.

5.2 Evaluation of Ambient and Indoor Air Results

The evaluation of the results focuses on the VOCs that are possibly related to MGP operations or other sources and is based on comparisons to the following three values:

1. Worker guidance values (the lowest of the OSHA-PEL, NIOSH-REL, or ACGIH-TLV). The intent of this comparison was to identify immediate health considerations that might warrant immediate corrective action. It is recognized that worker guidance values are not appropriate for evaluation of long-term considerations for this school building.

2. NYSDOH/EPA Background Indoor Air Concentration. The intent of this comparison was to determine whether the measured indoor air concentrations fell within the ranges that are typical of air inside of buildings. The statistical data was provided for use in the project by NYSDOH.

3. Maximum Ambient Air Concentration. If indoor air concentrations were above the typical background range, then the intent of this comparison would be to determine whether compounds detected in the outdoor air samples might be sources for those compounds found in indoor air. Ambient air is drawn into the building through air intakes.

Overall, the results indicate that the air quality is not impacted by sub-surface intrusion of vapors related to the former MGP on the site. As anticipated, hydrocarbons were detected in most of the samples at low concentrations. None of the results exceeded the Worker Guidance Values.

Although several compounds were detected in indoor air at concentrations above the typical ranges for background indoor air, these compounds had concentrations comparable to those detected in the ambient air samples.

Many of these compounds, such as Freon 12, are not attributable to MGP operations. The occurrence of these compounds at similar concentrations throughout the building and also in ambient air indicates that these VOCs are attributable to other sources such as fuel emissions, cigarette smoke, floor waxes, paints, or the chemical cleaning products routinely used in the building.

Indoor air samples collected from three locations contained VOC concentrations exceeding the 95th percentile and were thus slightly above the typical range of VOCs in residences:

The concentration of o-xylene, m,p-xylene, and ethlybenzene in the center of the retail space (RP-1-IA-1) exceeded the NYSDOH 95th percentile background concentrations. However, these compounds, which are components of gasoline, were also detected at similar concentrations in one of the ambient (outdoor) samples, RP-1-AMB-3. Gasoline vapors are present in ambient and indoor air in this urban setting, as indicated by the modern gasoline additive MTBE, which was present in this ambient and indoor sample at concentrations of 21 and 51 $\mu g/M^3$, respectively. These facts indicate an outdoor source not related to the former MGP.

Acetone was detected in all of the samples collected, including the ambient air samples. Two of the samples collected, RP1-IA-1 and RP1-IA-3, located in the retail space and management office respectively, had a concentration of acetone greater than the NYSDOH 95th percentile. In all of the samples, the concentration detected was similar, indicating outdoor sources.

Bromomethane was detected in the café and management office in concentrations greater than the NYSDOH 95th percentile for indoor air. Bromomethane was also detected in ambient air samples at similar concentrations, indicating outdoor sources.

5.3 Analytical Laboratory Methods and Quality Control

To meet the data quality objectives for this project, NYSDEC Analytical Service Protocols (ASP) were used with Category B deliverables [NYSDEC, 2000]. This analysis was completed by Air Toxics Laboratory, Inc. Air Toxics is currently listed with the New York State Department of Health Environmental Accreditation Program and has current CLP certification for all analyte categories.

The data packages were reviewed by a RETEC chemist who prepared a Data Usability Summary Report (DUSR), included as Appendix D of this report. As part of the data review process analytical results and data qualifiers were corrected where necessary to reflect quality control issues. The data summary reports in this report have been modified to reflect the findings of the DUSR.

All data reported by the laboratory was usable with qualification of some samples for calibration nonconformance, laboratory and/or method performance, and professional judgment.

- The concentration of naphthalene is now reported as an estimated concentration.

Field quality control samples, which included field duplicates, laboratory blanks, a laboratory duplicate, and laboratory control samples, were collected and analyzed during the investigation. All laboratory blank and field duplicate detections were within that expected and therefore are not a significant quality control concern.

The laboratory control samples had a percent recovery of 1,2-dichloroethane, 1,2,4-trichlorobenzene, hexachlorobutadiene, 1,2,4-trichlorobenzene, and hexachlorobutadiene less than the lower quality control limits; the concentrations of these compounds are now estimated. The percent recovery for bromomethane and styrene were greater than the upper quality control limits. The positive results reported for bromomethane in the affected samples were qualified as estimated, "J," due to high bias. The results reported for styrene in the affected samples were non-detect. Therefore, validation action for styrene was not required.

These data validation modifications are not a significant quality control concern and do not impact the investigation results.

6 Conclusions and Recommendations

Results indicate that the air quality is not impacted by sub-surface intrusion of vapors related to the previous MGP operations at the site. Compounds detected in the indoor air samples, with the exception of acetone and bromomethane, were present in concentrations within the range of typical background levels for indoor air quality, or were comparable to the results of the outdoor air samples, indicating outdoor sources. These two compounds are not associated with the former MGP operations.

Based on these results, intrusion of vapors emanating from any MGP-related material that may be present at the site is not evident and neither additional indoor air sampling nor soil gas sampling for MGP constituents appear to be warranted.

7 References

NYSDEC, 2000. NYSDEC Analytical Services Protocol, 1995, revised June, 2000.

NYSDOH, 2003. Background Indoor/Outdoor Air Levels of Volatile Organic Compounds in Homes Sampled by the New York State Department of Health, 1989-1996, New York State Department of Health, Bureau of Toxic Substance Assessment, Interim Draft, January 2003.

Parsons, 2002. West 42nd Street Manufactured Gas Plant Site History Report. August 2002.

RETEC, 2002. Work Plan for Evaluation of Sub-Surface Vapor Intrusion at Con Edison MGP Sites, June 26, 2002.

U.S. EPA, 1992. Assessing Potential Indoor Air Impacts for Superfund Sites. United States Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. September, 1992.

Table 5-1
Summary of Outdoor and Indoor Air Results
River Place I - West 42nd Street Works Site - 04/16/03
New York, New York

		Sample Number, Location and Results in ug/m3									Background Residential Indoor Air Values		
Compound	**CAS number**	**RP1-AMB-1**	**RP1-AMB-2**	**RP1-AMB-3**	**RP1-AMB-4**	**RP1-IA-1**	**RP1-IA-2**	**RP1-IA-2FD**	**RP1-IA-3**	**RP1-IA-3 Duplicate**	**DOH 75th ug/m3**	**EPA 75th ug/m3**	**DOH 95th ug/m3**
		Outdoor, SW Corner 42nd St & 11th Ave	**Outdoor, NE Corner 12th Ave & 41st St**	**Outdoor, 11th Ave Near Fire Hydrant by Parking Lot**	**Outdoor, NE Corner 12th Ave & 41st St**	**Ground Floor Center of Retail Space**	**Café**	**Café Field Duplicate**	**Ground Floor, Mgmt Office, in Conf Room**	**Laboratory Duplicate**			
Possibly MGP Related or Other Sources [1]													
1,2,4-trimethylbenzene	95-63-6	1.7	-	7.3	2.2	4.5	-	1.2	-	-	7	4	20
1,3,5-trimethylbenzene	108-67-8	-	-	2	-	1.2	-	-	-	-	<10	5.4	<10
2,3-Dimethylpentane	565-59-3	-	-	-	-	6	-	-	-	-	NA	NA	NA
2-Methylpentane	107-83-5	3.4	-	11	4.5	18	-	-	-	-	NA	NA	NA
4-Ethyltoluene	622-96-8	-	-	5.9	-	-	-	-	-	-	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	-	-	-	-	9.4	-	-	-	-	NA	NA	NA
benzene	71-43-2	2.4	1.7	7.1	4.5	4.8	1.8	1.7	2.1	1.8	5	21	14
ethylbenzene	100-41-4	2.2	0.99	6.4	2.2	7.9	0.81	1.4	0.89	-	4.8	9.6	6.5
hexane	110-54-3	-	-	4	-	3.9	-	-	-	-	3.6	4	14
2,2,4-trimethylpentane	540-84-1	-	-	7.5	-	11	-	-	-	-	NA	NA	NA
Isopentane	78-784	19	14	29	13	73	130	130	12	11	NA	NA	NA
styrene	100-42-5	0.9	-	0.9	-	-	-	-	-	-	<10	2.8	<10
toluene	108-88-3	12	5.5	41	12	39	17	22	7.6	6.8	25	0	49
m/p-xylenes	136777-61-2	8.1	3.1	24	8.1	33	1.5	3.6	2.3	2.1	9.5	NA	21
o-xylene	95-47-6	2.2	0.93	8.2	2.4	8.9	-	0.97	-	-	5	9.3	7.9
Not MGP Related [2]													
2-butanone (MEK)	78-93-3	-	-	-	3.4	14	5.5	5.5	7.4	6.3	NA	42	NA
acetone	67-64-1	8.1	7.4	8.7	12	28	15	17	33	29	NA	27	NA
benzyl chloride	100-44-7	1	-	-	-	-	-	-	-	-	<1	NA	<1
bromomethane	74-83-9	1.2	1	-	1.1	0.85	1.3	1.2	1.2	1	<1	NA	<1
chloromethane	74-87-3	1.1	0.98	0.94	0.97	1.1	1.2	1.1	1.1	0.94	<2	NA	2.6
Ethanol	64-17-5	8.5	7.4	12	11	71	57	53	45	41	NA	NA	NA
trichlorofluoromethane (Freon 11)	75-69-4	1.5	1.4	1.4	1.4	1.6	2	2	2	1.8	3.8	NA	5.9
dichlorodifluoromethane (Freon 12)	75-71-8	2.8	2.5	2.9	2.9	2.8	4.1	4.1	3.4	3.1	<1	NA	<5
Methyl tert-Butyl Ether	1634-04-4	8	5.3	21	5	51	5.1	4.1	4	-	NA	NA	NA
methylene chloride (dichloromethane)	75-09-2	0.71	0.73	0.99	1.1	4.8	0.81	1.1	2.8	2.7	5.6	NA	45
2-Propanol	67-63-0	-	-	2.7	-	5.7	3	3.7	6.5	6.1	NA	NA	NA
tetrachloroethene	127-18-4	-	-	1.5	1.2	1.3	-	-	-	-	<10	11	7.3

Notes:

Shaded values are greater than the 75th percentile value of background indoor air as provided by the NYSDOH. Where no NYSDOH value was available, the shaded values are greater than the 75th percentile value provided by the EPA. The 95th percentile NYSDOH values are presented to indicate the range of typical background values.

[1] These compounds may be related to either MGP sources or non-MGP sources, or both. MGP sources include MGP tars and petroleum feedstocks used in MGP processes, such as the carburetted water gas process. Non-MGP sources include cleaning products, floor wax and polish, vehicle exhaust, construction materials, and cigarette smoke.

[2] These compounds are not related to MGP sources and are present due to non-MGP sources, such as vehicle exhaust, heating and air conditioning systems, cleaning agents, art supplies, paints, etc.

NA - Not Available. No data available for background concentrations of these compounds.

- Not Detected

Compounds that were not detected in any of the samples are not shown. Of the 68 compounds analyzed, 17 were detected.

Table D-1
Summary Table of Outdoor and Indoor Air Results
River Place I - West 42nd Street Works Site - 04/16/03
New York, New York

		Sample Number, Location and Results in ug/m3									Background Residential Indoor Air Values		
Compound	**CAS number**	**RP1-AMB-1**	**RP1-AMB-2**	**RP1-AMB-3**	**RP1-AMB-4**	**RP1-IA-1**	**RP1-IA-2**	**RP1-IA-2FD**	**RP1-IA-3**	**RP1-IA-3 Duplicate**	**DOH 75th ug/m3**	**EPA 75th ug/m3**	**DOH 95th ug/m3**
		Outdoor, SW Corner 42nd St & 11th Ave	**Outdoor, NE Corner 12th Ave & 41st St**	**Outdoor, 11th Ave Near Fire Hydrant by Parking Lot**	**Outdoor, NE Corner 12th Ave & 41st St**	**Ground Floor Center of Retail Space**	**Café**	**Café Field Duplicate**	**Ground Floor, Mgmt Office, in Conf Room**	**Laboratory Duplicate**			
Possibly MGP Related or Other Sources [1]													
1,2,4-trimethylbenzene	95-63-6	**1.7**	0.91 U	**7.3**	**2.2**	**4.5**	0.91 U	**1.2**	0.95 U	0.95 U	7	4	20
1,3,5-trimethylbenzene	108-67-8	0.91 U	0.91 U	**2**	0.93 U	**1.2**	0.91 U	0.89 U	0.95 U	0.95 U	<10	5.4	<10
2,3-Dimethylpentane	565-59-3	3.8 U	3.8 U	4 U	3.9 U	**6**	3.8 U	3.7 U	4 U	4 U	NA	NA	NA
2-Hexanone	591-78-6	3.8 U	3.8 U	4 U	3.9 U	3.6 U	3.8 U	3.7 U	4 U	4 U	NA	NA	NA
2-Methylpentane	107-83-5	**3.4**	3.3 U	**11**	**4.5**	**18**	3.3 U	3.2 U	3.4 U	3.4 U	NA	NA	NA
4-Ethyltoluene	622-96-8	4.6 U	4.6 U	**5.9**	4.7 U	4.4 U	4.6 U	4.5 U	4.8 U	4.8 U	NA	NA	NA
4-Methyl-2-pentanone	108-10-1	3.8 U	3.8 U	4 U	3.9 U	**9.4**	3.8 U	3.7 U	4 U	4 U	NA	NA	NA
benzene	71-43-2	**2.4**	**1.7**	**7.1**	**4.5**	**4.8**	**1.8**	**1.7**	**2.1**	**1.8**	5	21	14
carbon disulfide	75-15-0	2.9 U	2.9 U	3 U	3 U	2.8 U	2.9 U	2.8 U	3 U	3 U	NA	NA	NA
Cyclohexane	110-82-7	3.2 U	3.2 U	3.3 U	3.3 U	3.1 U	3.2 U	3.1 U	3.3 U	3.3 U	NA	NA	NA
ethylbenzene	100-41-4	**2.2**	**0.99**	**6.4**	**2.2**	**7.9**	**0.81**	**1.4**	**0.89**	0.84 U	4.8	9.6	6.5
heptane	142-82-5	3.8 U	3.8 U	4 U	3.9 U	3.6 U	3.8 U	3.7 U	4 U	4 U	NA	6	NA
hexane	110-54-3	3.3 U	3.3 U	**4**	3.3 U	**3.9**	3.3 U	3.2 U	3.4 U	3.4 U	3.6	4	14
2,2,4-trimethylpentane	540-84-1	4.3 U	4.3 U	**7.5**	4.4 U	**11**	4.3 U	4.2 U	4.5 U	4.5 U	NA	NA	NA
Indene	95-13-6	4.4 U	4.4 U	4.6 U	4.5 U	4.2 U	4.4 U	4.3 U	4.6 U	4.6 U	NA	NA	NA
Indan	496-11-7	4.5 U	4.5 U	4.7 U	4.6 U	4.3 U	4.5 U	4.4 U	4.7 U	4.7 U	NA	NA	NA
Isopentane	78-784	**19**	**14**	**29**	**13**	**73**	**130**	**130**	**12**	**11**	NA	NA	NA
naphthalene	91-20-3	4.9 UJ	4.9 UJ	5.1 UJ	5 UJ	4.7 UJ	4.9 UJ	4.8 UJ	5.1 UJ	5.1 U	<10	NA	<10
styrene	100-42-5	**0.9**	0.79 U	**0.9**	0.81 U	0.76 U	0.79 U	0.77 U	0.83 U	0.83 U	<10	2.8	<10
Tetrahydrofuran	109-99-9	2.7 U	2.7 U	2.9 U	2.8 U	2.6 U	2.7 U	2.7 U	2.9 U	2.9 U	NA	NA	NA
Thiophene	110-02-1	3.2 U	3.2 U	3.3 U	3.3 U	3.1 U	3.2 U	3.1 U	3.3 U	3.3 U	NA	NA	NA
toluene	108-88-3	**12**	**5.5**	**41**	**12**	**39**	**17**	**22**	**7.6**	**6.8**	25	0	49
m/p-xylenes	136777-61-2	**8.1**	**3.1**	**24**	**8.1**	**33**	**1.5**	**3.6**	**2.3**	**2.1**	9.5	NA	21
o-xylene	95-47-6	**2.2**	**0.93**	**8.2**	**2.4**	**8.9**	0.81 U	**0.97**	0.84 U	0.84 U	5	9.3	7.9
Not MGP Related [2]													
1,1,1-trichloroethane	71-55-6	1 U	1 U	1 U	1 U	0.97 U	1 U	0.99 U	1 U	1 U	6.7	30	28
1,1,2,2-tetrachloroethane	79-34-5	1.3 U	1.3 U	1.3 U	1.3 U	1.2 U	1.3 U	1.2 U	1.3 U	1.3 U	<9	0	<10
1,1,2-trichloroethane	79-00-5	1 U	1 U	1 U	1 U	0.97 U	1 U	0.99 U	1 U	1 U	<9	NA	<10
1,1-dichloroethane	75-34-3	0.75 U	0.75 U	0.78 U	0.77 U	0.72 U	0.75 U	0.74 U	0.78 U	0.78 U	<1	NA	<10
1,1-dichloroethene	75-35-4	0.74 U	0.74 U	0.77 U	0.75 U	0.7 U	0.74 U	0.72 U	0.77 U	0.77 U	<1	0	<8
1,2,4-trichlorobenzene	120-82-1	6.9 U	6.9 U	7.2 U	7 U	6.6 U	6.9 U	6.8 U	7.2 U	7.2 U	<10	NA	<10
1,2-dibromoethane (EDB)	106-93-4	1.4 U	1.4 U	1.5 U	1.5 U	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U	<1.5	0	<1.5
1,2-dichlorobenzene	95-50-1	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	<6	0	<10
1,2-dichloroethane	107-06-2	0.75 UJ	0.75 UJ	0.78 UJ	0.77 UJ	0.72 UJ	0.75 U	0.74 U	0.78 U	0.78 U	<1	0	<10
1,2-dichloropropane	78-87-5	0.86 U	0.86 U	0.9 U	0.88 U	0.82 U	0.86 U	0.84 U	0.9 U	0.9 U	<10	NA	<10
1,3-Butadiene	106-99-0	2 U	2 U	2.1 U	2.1 U	2 U	2 U	2 U	2.1 U	2.1 U	NA	NA	NA
1.3-dichlorobenzene	541-73-1	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	<8	5.6	<10
1,4-dichlorobenzene	106-46-7	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.2 U	1.2 U	<5	5.6	5.1
1,4-Dioxane	123-91-1	3.4 U	3.4 U	3.5 U	3.4 U	3.2 U	3.4 U	3.3 U	3.5 U	3.5 U	NA	NA	NA
2-butanone (MEK)	78-93-3	2.7 U	2.7 U	2.9 U	**3.4**	**14**	**5.5**	**5.5**	**7.4**	**6.3**	NA	42	NA
acetone	67-64-1	**8.1**	**7.4**	**8.7**	**12**	**28**	**15**	**17**	**33**	**29**	NA	27	NA
benzyl chloride	100-44-7	**1**	0.96 U	1 U	0.98 U	0.92 U	0.96 U	0.94 U	1 U	1 U	<1	NA	<1
bromodichloromethane	75-27-4	6.2 U	6.2 U	6.5 U	6.4 U	6 U	6.2 U	6.1 U	6.5 U	6.5 U	<10	0	<10
bromoform	75-25-2	9.6 U	9.6 U	10 U	9.8 U	9.2 U	9.6 U	9.4 U	10 U	10 U	<10	0	<10
bromomethane	74-83-9	**1.2**	**1**	0.75 U	**1.1**	**0.85**	**1.3 J**	**1.2 J**	**1.2 J**	**1**	<1	NA	<1
carbon tetrachloride	56-23-5	1.2 U	1.2 U	1.2 U	1.2 U	1.1 U	1.2 U	1.1 U	1.2 U	1.2 U	<6.2	0.83	<10
chlorobenzene	108-90-7	0.86 U	0.86 U	0.89 U	0.88 U	0.82 U	0.86 U	0.84 U	0.89 U	0.89 U	<10	0	<10
chloroethane	75-00-3	0.49 U	0.49 U	0.51 U	0.5 U	0.47 U	0.49 U	0.48 U	0.51 U	0.51 U	<1	NA	<1
chloroform	67-66-3	0.91 U	0.91 U	0.95 U	0.93 U	0.87 U	0.91 U	0.89 U	0.95 U	0.95 U	4.3	3.4	<10
chloromethane	74-87-3	**1.1**	**0.98**	**0.94**	**0.97**	**1.1**	**1.2**	**1.1**	**1.1**	**0.94**	<2	NA	2.6
cis-1,2-dichloroethene	156-59-2	0.74 U	0.74 U	0.77 U	0.75 U	0.7 U	0.74 U	0.72 U	0.77 U	0.77 U	<10	NA	<10
cis-1,3-dichloropropene	10061-01-5	0.84 U	0.84 U	0.88 U	0.86 U	0.81 U	0.84 U	0.82 U	0.88 U	0.88 U	<9	NA	<10
dibromochloromethane	124-48-1	7.9 U	7.9 U	8.3 U	8.1 U	7.6 U	7.9 U	7.7 U	8.3 U	8.3 U	<10	0	<10
Ethanol	64-17-5	**8.5 J**	**7.4 J**	**12 J**	**11 J**	**71 J**	**57 J**	**53 J**	**45 J**	**41**	NA	NA	NA
trichlorofluoromethane (Freon 11)	75-69-4	**1.5**	**1.4**	**1.4**	**1.4**	**1.6**	**2**	**2**	**2**	**1.8**	3.8	NA	5.9
1,1,2-trichlorotrifluoroethane (Freon 113)	76-13-1	1.4 U	1.4 U	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.5 U	1.5 U	<1	NA	<1
1,2-dichlorotetrafluoroethane	76-14-2	1.3 U	1.3 U	1.4 U	1.3 U	1.2 U	1.3 U	1.3 U	1.4 U	1.4 U	<1.5	NA	<1.5
dichlorodifluoromethane (Freon 12)	75-71-8	**2.8**	**2.5**	**2.9**	**2.9**	**2.8**	**4.1**	**4.1**	**3.4**	**3.1**	<1	NA	<5
hexachlorobutadiene (C-46)	87-68-3	9.9 U	9.9 U	10 U	10 U	9.5 U	9.9 U	9.7 U	10 U	10 U	<2	NA	<6
Methyl tert-Butyl Ether	1634-04-4	**8**	**5.3**	**21**	**5**	**51**	**5.1**	**4.1**	**4**	3.5 U	NA	NA	NA
methylene chloride (dichloromethane)	75-09-2	**0.71**	**0.73**	**0.99**	**1.1**	**4.8**	**0.81**	**1.1**	**2.8**	**2.7**	5.6	NA	45
2-Propanol	67-63-0	2.3 U	2.3 U	**2.7**	2.3 U	**5.7**	**3**	**3.7**	**6.5**	**6.1**	NA	NA	NA
Propene	115-07-1	1.6 U	1.6 U	1.7 U	1.6 U	1.5 U	1.6 U	1.6 U	1.7 U	1.7 U	NA	NA	NA
tetrachloroethene	127-18-4	1.3 U	1.3 U	**1.5**	**1.2**	**1.3**	1.3 U	1.2 U	1.3 U	1.3 U	<10	11	7.3
trans-1,2-dichloroethene	156-60-5	3.7 U	3.7 U	3.8 U	3.8 U	3.5 U	3.7 U	3.6 U	3.8 U	3.8 U	<10	NA	<10
trans-1,3-dichloropropene	10061-02-6	0.84 U	0.84 U	0.88 U	0.86 U	0.81 U	0.84 U	0.82 U	0.88 U	0.88 U	<9	NA	<10
trichloroethene	79-01-6	1 U	1 U	1 U	1 U	0.96 U	1 U	0.98 U	1 U	1 U	<5.3	4.5	<10
Vinyl Acetate	108-05-4	3.3 U	3.3 U	3.4 U	3.3 U	3.1 U	3.3 U	3.2 U	3.4 U	3.4 U	NA	NA	NA
vinyl chloride	75-01-4	0.48 U	0.48 U	0.5 U	0.48 U	0.45 U	0.48 U	0.46 U	0.5 U	0.5 U	<1	NA	<5

Notes:

Shaded values are greater than the 75th percentile value of background indoor air as provided by the NYSDOH. Where no NYSDOH value was available, the shaded values are greater than the 75th percentile value provided by the EPA. The 95th percentile NYSDOH values are presented to indicate the range of typical background values.

[1] These compounds may be related to either MGP sources or non-MGP sources, or both. MGP sources include MGP tars and petroleum feedstocks used in MGP processes, such as the carburetted water gas process. Non-MGP sources include cleaning products, floor wax and polish, vehicle exhaust, construction materials, and cigarette smoke.

[2] These compounds are not related to MGP sources and are present due to non-MGP sources, such as vehicle exhaust, heating and air conditioning systems, cleaning agents, art supplies, paints, etc.

NA - Not Available. No data available for background concentrations of these compounds.

U - Not detected at the detection limit indicated.