November 12, 2009

OPERABLE UNIT 6
REMEDIAL INVESTIGATION/
FEASIBILITY STUDY REPORT

Sunnyside Yard
Queens, New York

Prepared for:

NATIONAL RAILROAD PASSENGER CORPORATION
Washington, D.C. 20002

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1.0 INTRODUCTION

On behalf of the National Railroad Passenger Corporation (Amtrak) and New Jersey Transit Corporation (NJTC), Roux Associates, Inc. (Roux Associates) and Remedial Engineering, P.C. (Remedial Engineering) have prepared this Remedial Investigation/Feasibility Study (RI/FS) Report for Operable Unit 6 (OU-6) of Amtrak's Sunnyside Yard, located in Queens, New York (Yard). The location of the Yard is shown on Figure 1, and the location of each Operable Unit within the Yard is presented in Figure 2. Operable Unit 6 is defined as groundwater and saturated soils beneath the entire Yard. In addition, at the request of the New York State Department of Environmental Conservation (NYSDEC), OU-6 has been expanded to include subsurface vapor relating to off-site volatile organic compound (VOC) groundwater plumes migrating on-site. The purpose of this RI/FS Report is to present a summary of findings from previous groundwater and saturated soil investigations completed at the Yard, as well as summarize the findings of the most recent groundwater and soil vapor investigation activities completed at the Yard from April through June 2008, and March 2009. The groundwater and soil vapor investigation activities completed from April through June 2008, and March 2009 are hereafter referred to as the Supplemental OU-6 RI. As will be described in greater detail in the following sections, this Supplemental OU-6 RI also incorporated groundwater data generated from within the Yard in 2008 by the Metropolitan Transit Authority/Long Island Railroad (MTA/LIRR) as part of the East Side Access Project (ESA Project). Additionally, historical groundwater and saturated soil data generated as part of the ESA Project is included. This report provides a comprehensive understanding of the nature and extent of groundwater, saturated soil, and soil vapor impacts found in OU-6. Further, the FS portion of this report evaluates remedial alternatives to address the limited impacts remaining in OU-6.

The ESA Project is a very large, multi-year construction project to support MTA/LIRR ridership. A significant portion of the construction will occur in and beneath the Yard, including the construction of multiple train tunnels beneath the Yard. This activity will generate large quantities of soil cuttings and groundwater dewatering effluent. Much of this work will be located in the area of the VOC groundwater plumes migrating on-site. As such, multiple investigations have been performed at the Yard on behalf of MTA/LIRR and those data are included herein.

Supplemental OU-6 RI activities were completed in 2008 and 2009, in accordance with the document titled Work Plan for the Operable Unit 6 (OU-6) Remedial Investigation/Feasibility Study, prepared by Roux Associates, dated October 30, 2007 (Roux Associates, 2007). Specifically, the additional OU-6 investigation activities completed at the Yard in 2008 and 2009 were designed to achieve the following:

- Confirm the findings of previous groundwater investigations conducted by Roux Associates, and others;
- Develop current groundwater quality data and hydrogeologic data (i.e., water level elevations, groundwater flow direction, horizontal and vertical gradients, etc.); and
- Provide additional data to further characterize OU-6 with respect to groundwater quality and subsurface vapor quality.

This RI/FS report was prepared in accordance with the provisions of the Order on Consent (OOC), Index #W2-0081-87-06, as modified between the NYSDEC, Amtrak, and the NJTC. In accordance with the OOC, several previous investigations have been performed at the Yard in addition to the Supplemental OU-6 RI activities performed in 2008 and 2009. Previous investigations completed at the Yard that pertain to OU-6 have included, in part, the Phase I RI (Roux Associates, 1992a), Phase II RI/Phase II RI Addendum (Roux Associates, 1995), and OU-6 RI (Roux Associates, 1999a). Previous investigations at the Yard have included significant sitewide soil components and significant sitewide groundwater components. Relevant findings from these reports that are related to OU-6 are summarized below in the Previous Investigations Section (Section 3.0).

Based on the results of inspections, discussions with Amtrak personnel, and previous investigations, initially 16 Areas of Concern (Areas) were identified at the Yard. During the performance of the Phase I RI (early 1990's), one additional Area was identified, giving a total of 17 Areas within the Yard. As discussed below, in 1997, the Yard was divided into Operable Units. It is important to note that OU-6 is groundwater and saturated soil beneath all 17 Areas within the Yard. The Areas are described below and are shown on Figure 2.

Area		Description
Area 1:	Underground Storage Tank and Fueling Area	Nine abandoned underground storage tanks (USTs), former locomotive fueling station, former Engine House, former Metro Shop
Area 2:	Material Control Area (Yard receiving area)	Central receiving, temporary storage, and distribution point for materials and supplies received at the Yard
Area 3:	Gas Tank Area	Formerly three 750-gallon USTs and pump used for storing and dispensing gasoline
Area 4:	Fuel Oil Tank Area	20,000-gallon UST used to store fuel oil for the Boiler House
Area 5:	Transformer Area	Former polychlorinated biphenyl (PCB) transformer area. Two transformers containing PCBs were located in this area.
Area 6:	Drum Storage Area (Oil House)	Drum and equipment storage area; formerly the Yard receiving area
Area 7:	Storage Area	Reported to be a former empty drum storage area; currently no drums stored there.
Area 8:	Transformer Area	Former PCB transformer area. This area is comprised of three distinct areas referred to as Area 8A, 8B, and 8C.
Area 9:	Compressor Area (Substation 1-A)	Two-story brick structure which houses air compressors and transformers.
Area 10:	Transformer Area (Substation 44)	PCB transformers
Area 11:	Empty Drum Area	Former empty drum storage area
Area 12:	Car Washer Area	Used to wash railroad cars.
Area 13:	Former Storage Area	Former storage area for materials including non-PCB transformers; currently contains a Consolidated Edison transformer substation.
Area 14:	Empty Drum Area	Former empty drum storage area; currently no drums stored there.

Area	Description
Area 15: Empty Drum Area	Former empty drum storage area; currently no drums stored there.
Area 16: Underground Storage Tank Area	Twelve abandoned USTs are located in this area. These USTs were emptied in 1989.
Area 17: 68 Spur	Used to store maintenance equipment and to stage materials.

The NYSDEC requested that Area 16 be removed from the RI/FS program following the cleaning and abandonment activities associated with the fourteen USTs. Details and results of the work completed in Area 16 were summarized in a report prepared by OHM Remediation Services Corporation, dated September 21, 1992 (OHM, 1992). Therefore, Area 16 is not discussed further in this OU-6 RI/FS Report.

In 1997, to accommodate a rigid construction schedule for Amtrak's High Speed Trainset Facility (HSTF) Service and Inspection (S&I) Building, and still address sitewide remedial efforts in a timely and orderly manner, the Yard was subdivided into six operable units with the NYSDEC's concurrence, shown on Figure 2. The operable units are described as follows:

- <u>OU-1</u>: Soil above the water table within the footprint of the proposed HSTF Service and Inspection (S&I) Building.
- <u>OU-2</u>: Soil above the water table within the footprint of the HSTF S&I Building ancillary structures (i.e., the access road and utilities route, the parking area, the construction easement area which surrounds the building and the construction lay down area).
- <u>OU-3</u>: Originally the soil and separate-phase petroleum hydrocarbon (SPH) accumulation (herein referred to as SPH plume) above the water table in the area previously referred to as Area 1 of the Yard; however, it has expanded to include Areas 6 and 7 of the Yard, and saturated soil within these Areas.
- <u>OU-4</u>: Soil above the water table in the remainder of the Yard.
- <u>OU-5</u>: Sewer system (water and sediment) beneath the Yard.
- <u>OU-6</u>: Saturated soil and the groundwater beneath the Yard. Operable Unit 6 was modified to include soil vapor.

Previous soil investigations, including the sampling and analysis of both saturated and unsaturated soils at the Yard located beneath OU-4 were summarized in the OU-4 RI Report, dated October 2, 2008 (Roux Associates, 2008). The dataset current at the time for saturated soil was included as part of OU-4 for completeness. Including the datasets for both unsaturated and saturated soil allowed for a comprehensive evaluation of all Yard soils with respect to both characterization of contamination, as well as remediation as part of OU-4. The OU-4 RI Report, as well as the subsequent OU-4 FS (Roux Associates, 2009a) has been approved by the NYSDEC. An OU-4 Proposed Remedial Action Plan (PRAP) and formal Record of Decision (ROD) have issued by the NYSDEC. Roux Associates is currently preparing a Remedial Action Work Plan (RAWP) for OU-4, which will detail the remedy for unsaturated soil in OU-4. Additional saturated soil data was generated by ESA since the submittal of the OU-4 RI. All saturated soil data, including the recent ESA data and the saturated soil data included in the OU-4 RI, is presented in this OU-6 RI report. At the request of NYSDEC, saturated soil located beneath the footprint of OU-3 was summarized in the OU-3 Final RI Report (Roux Associates, 2005a), and OU-3 FS (Roux Associates, 2005b), which were both approved by NYSDEC. An OU-3 PRAP and formal OU-3 ROD were issued by NYSDEC. Therefore, this OU-6 RI/FS Report is inclusive of groundwater and soil vapor beneath the entire Yard and saturated soil beneath OU-1, OU-2, and OU-4.

The Yard-specific compounds of concern (COCs) for soil are polychlorinated biphenyls (PCBs), semivolatile organic compounds (SVOCs), carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and lead. The soil cleanup levels for the Yard were re-established in the OU-4 ROD and are as follows:

- Total PCBs – 25 mg/kg;
- Total SVOCs – 500 mg/kg; and
- Lead – 3,900 mg/kg.

This OU-6 RI/FS Report has been divided into the following 12 sections with a brief description of each provided below.

- Section 1.0: Introduction
  This section introduces the reader to what this report is about and provides an overview of what is contained in the report.

- Section 2.0: Environmental Setting and Physical Characteristics of the Yard
  This section provides a summary of the Yard operating history, a Yard description, including geology and hydrogeology, and other relevant information pertaining to the Yard and OU-6.

- Section 3.0: Summary of Previous OU-6 Investigations
  This section provides a summary of previous investigations completed at the Yard by Roux Associates and other parties with a focus on the results for work performed related to OU-6.

- Section 4.0: Supplemental OU-6 RI Methodology and Scope of Work (2008 and 2009)
  This section provides a detailed summary of the methods and scope of work completed as part of the most recent Supplemental RI conducted in OU-6.

- Section 5.0: Nature and Extent of Contamination
  This section presents a summary of the nature and extent of the contamination in OU-6, based on the Supplemental RI conducted in OU-6.

- Section 6.0: Contaminant Fate and Transport
  This section discusses the contaminant fate and transport of compounds detected in OU-6.

- Section 7.0: Exposure Assessment
  This section provides an analysis of potential health-based risks associated with contaminated groundwater, soil vapor and saturated soil in OU-6.

- Section 8.0: Remedial Goals and Remedial Action Objectives
  This section presents the remedial goals and remedial action objectives (RAOs) that apply to the media of concern.

- Section 9.0: Identification and Screening of Technologies
  This section develops the general response actions into potential remedial technologies by identifying, evaluating, and screening applicable remedial technologies that may be employed in OU-6 to achieve the RAOs.

- Section 10.0: Description and Evaluation of Remedial Alternatives
  This section assembles the retained remedial technologies into remedial action alternatives and compares the remedial alternatives against seven evaluation criteria.

- Section 11.0: OU-6 RI/FS Conclusions and Recommendations
  This section presents a comprehensive summary of the findings and conclusions of this OU-6 RI/FS based on contaminant distribution, source areas, and current regulations, and presents recommendations with respect to OU-6.

- Section 12.0: References

The remainder of this OU-6 RI/FS Report (with the exception of Section 3.0 – Summary of Previous OU-6 Investigations) focuses on the Supplemental OU-6 RI investigation activities, since all previous OU-6 RI groundwater investigation activities have been documented and submitted to the NYSDEC in the May 1999 RI Report. For completeness, however, all previous groundwater and saturated soil data are included in this RI/FS Report and/or its Appendices. Groundwater data generated as part of, and following the initial OU-6 RI activities (June 1997 and later) are provided in Tables 5 through 9. This report was organized in this fashion to allow for ease of comparison between the initial OU-6 RI data (generated in 1997) and the most recent, Supplemental OU-6 RI data (generated in 2008 and 2009). Also included in these tables are groundwater data generated by the MTA ESA Project from wells within and in the immediate vicinity of the Yard. All groundwater data generated preceding the initial OU-6 RI (prior to June 1997) are included in Appendix A.

2.0 ENVIRONMENTAL SETTING AND PHYSICAL CHARACTERISTICS OF THE YARD

This section includes a description of Yard operational history, including a more specific description of OU-6. Additionally, surface features (i.e., topography and drainage), and regional and site-specific geology and hydrogeology are included in this section. The description of the physical setting and history of OU-6 is based upon Roux Associates' review of available data and current conditions at the Site and the previous field investigations conducted by Roux Associates and others at the Yard.

2.1 Yard Operating History

The Pennsylvania Tunnel and Terminal Company, a subsidiary of the Pennsylvania Railroad (later known as the Penn Central Transportation Company), originally constructed the Yard in the early 1900s. The Yard officially opened on November 27, 1910. On April 1, 1976, the Consolidated Rail Corporation (Conrail) acquired the Yard and the same day conveyed it to Amtrak, which has continued to operate it as a storage and maintenance facility for railroad rolling stock. The Yard current functions primarily as a train maintenance and train layover storage facility for electric and diesel locomotives and railroad cars for Amtrak and NJTC.

2.2 General Yard Description

The Yard is located in an urban area in northwestern Queens County (Figure 1). The East River is located approximately one mile to the west and Newtown Creek, which defines the border between Queens and Kings Counties, is located less than 0.5 mile south of the western portion of the Yard. The Yard consists of a railroad maintenance and storage facility that currently encompasses approximately 133 acres. The land use surrounding the Yard is a combination of commercial, light industrial, and residential areas. The Long Island Rail Road (LIRR) owns a portion of the Yard along the northern boundary (including a portion of OU-3) and maintains rights of way through the Yard (within OU-4).

2.3 OU-6 Description

Operable Unit 6 is defined as groundwater, saturated soil, and soil vapor beneath OU-1, OU-2, OU-3 (excludes saturated soil), and OU-4. Operable Unit 6 encompasses an area of 133 acres (i.e., the area of the entire Yard). Unsaturated soils located within the physical footprint of OU-6 have either been previously addressed or are in the process of being addressed, as part of OU-1, OU-2, OU-3 (includes saturated soil) or OU-4. The portion of the sewer that lies within the extent of OU-6 will be addressed as part of OU-5.

Physical characteristics of the area encompassed by OU-6 (the entire Yard), including topography, geology, and hydrogeology have been investigated, and summaries of these characteristics are discussed in the following subsections.

2.4 Topography and Yard Drainage

The Yard lies in a topographically depressed area with ground elevations that range from approximately 10 to 25 feet below the surrounding land surface, thus forming a basin-like area. The Yard topography is generally flat and slopes gently to the west. The Yard topography and drainage patterns are strongly influenced by the large number of railroad tracks and bulkheaded areas. Surface runoff from the Yard does not appear to be a source of contamination to adjacent properties.

The Yard is underlain by a combined sanitary/storm sewer drainage system, consisting of two drainage subsystems that connect catch basins located throughout the Yard. By definition, this combined sewer system makes up OU-5. The primary subsystem serves approximately 90 percent of the Yard, and contains both sanitary and storm sewer drainage. Combined sewage from the primary subsystem leaves the Yard to the north, approximately 360 feet west of Honeywell Street. The secondary drainage subsystem is located in the southwest portion of the Yard and services approximately 10 percent of the Yard. This secondary system is limited to storm water (i.e., does not contain sanitary sewage). Storm water from the secondary subsystem exits the Yard to the south, approximately 360 feet west of the intersection of Skillman and Thompson Avenues.

Roux Associates has reviewed drawings prepared as part of the ESA Project to determine any additions or modifications that are proposed to the sewer system underlying the Yard to support the ESA Project. Based on our review, significant additions will be made to the Yard sewer system as part of this project. Details regarding modification to the sewer system, previous and proposed investigation, and remediation activities associated with the sewer system will be provided under separate cover, as part of the OU-5 RI.

2.5 Geology

Published geologic data, historical maps and documents, and geologic logs for borings drilled by Roux Associates and others during previous investigations at the Yard were evaluated to define the current geologic conditions underlying the Yard.

2.5.1 Regional Geology

The Yard is located within the Atlantic Coastal Plain Physiographic Province. The regional subsurface geology consists of unconsolidated sand, silt, clay, and gravel deposits that overlie crystalline bedrock. The unconsolidated strata in the area dip gently to the southeast, following the topography of the bedrock surface (Soren, 1978). Boreholes drilled within northwestern Queens County indicate that the unconsolidated deposits consist predominantly of Upper Pleistocene glacial deposits that range from approximately 30 to 150 feet in thickness. These borehole logs also indicate that Lower Pleistocene deposits, consisting of the Jameco Gravel overlain by the Gardiner's Clay unit, may be discontinuously present beneath the Yard. These Lower Pleistocene deposits unconformably overlie bedrock.

A thin veneer of recent and Holocene deposits covers the Upper Pleistocene deposits. Unconsolidated Upper Pleistocene glacial (ground moraine) deposits of unstratified, poorly sorted mixtures of sand and silt with some gravel and cobbles (Buxton, et al., 1981) overlie the Lower Pleistocene deposits (where present), which overlie crystalline bedrock. The saturated portion of the Upper Pleistocene deposit forms the Upper Glacial aquifer of Long Island.

2.5.2 Yard Geology

The geologic logs of soil borings drilled throughout the Yard during both investigations conducted by Roux Associates, and investigations conducted by others indicate that the Yard is underlain by the following units (in order by increasing depth): fill (including ballast, cinders/ash), recent and Holocene deposits (where present), Upper Pleistocene glacial deposits (including both till and channel deposits), and bedrock. Fill activities, which were part of major topographic changes engineered at the Yard, are summarized below.

2.5.2.1 Fill and Historical Topographic Changes

The fill is predominantly comprised of reworked glacial deposits (unstratified sand, silt, clay and gravel) and railroad ballast (including cinders/ash), with minor amounts of construction debris (i.e., brick, wood) and other materials. The railroad ballast is ubiquitously present throughout the Yard at land surface, with the exception of paved areas and land occupied by buildings. As discussed below, additional information has been obtained that indicates that, between 1906 and 1910, Upper Pleistocene glacial deposits were excavated from topographically high parts of the Yard and re-deposited as fill in lower lying parts of the Yard including wetlands. Reworked glacial deposits (made land) are often visually indistinguishable from the underlying unstratified glacial deposits. The factors discussed below indicate that large volumes of fill were used at the Yard (including early reports that the Yard was a reclaimed marshland) for the construction of the elevated LIRR right-of-way and several extensive bulkheaded areas throughout the Yard. Documentation describing the origin of the current topography is summarized below.

During evaluation of the geologic and hydrogeologic data for the Yard, two historical topographic maps were obtained for reference: the first covering western Queens dated 1890 (Julius Bien & Co., 1890) and the second covering the Yard and surrounding area dated December 1906 (Pennsylvania Tunnel and Terminal Railroad Company, 1906). In addition, a Chief Engineering Report (Pennsylvania Tunnel and Terminal Railroad Company, circa 1910) and associated cross-sections of the Yard (dated August 16, 1907) describe the topographic changes implemented at the Yard between December 1906 and August 1909. Utilizing the engineering report, topographic maps, Yard maps dated 1910 and 1917, and recent area maps, a comparison was made between the historical and current topographic features of the Yard. This comparison indicated that:

- The majority of topographic changes that occurred at the Yard took place between December 1906 and August 1909.
- Current land surface elevation throughout much of the eastern half of the Yard (i.e., east of Honeywell Street) is lower than original pre-development elevation.
- Current land surface elevation throughout much of the western half of the Yard (i.e., west of Honeywell Street) is actually higher than original pre-development elevation.
- Two former surface-water bodies (the wetland in the northeast corner of the Yard and Dutch Kills Creek) at the Yard have been filled.

- Current elevation of the LIRR mainline is higher than the original pre-development (1890) elevation.

The topography shown on the 1890 map for the land now occupied by the Yard is much different than present topographic conditions. As shown in Plate 1, a wetland existed along Northern Boulevard (formerly Jackson Avenue) near the northeast corner of the Yard. The 1890 map also indicates that Dutch Kills Creek flowed through the western portion of the Yard, flowing southwest to Newtown Creek. Approximately 750 feet east of Dutch Kills Creek, land surface begins a rapid increase from less than 10 to greater than 60 feet above mean sea level west of Honeywell Street. Although this topographic high is still present south of the Yard, the mound no longer exists across the Yard. West of Honeywell Street, land surface gradually sloped downward to the north from a high elevation of approximately 80 feet above mean sea level along Skillman Avenue to a low of about 30 feet above mean sea level at the wetland along Northern Boulevard (designated Jackson Avenue on the 1890 map). The natural topography of the Yard still plays an integral role in the groundwater flow patterns, hydraulic gradients, and saline conditions occurring at the Yard.

A Chief Engineering Report (Pennsylvania Tunnel and Terminal Railroad Company, 1910) describes the topography of the Yard prior to December 1906, when major Yard construction began. A 40-acre swamp was located west of Honeywell Street, with the remaining 93 acres of the Yard consisting of "rolling ground" with elevations from "10 to 70 feet above the swamp [wetland]." Existing data indicate that major topographic changes took place at the Yard between 1906 and 1910, bringing the Yard close to its present topographic condition. These changes are discussed below.

Cross-sections of the Yard dated August 1907 show both pre-construction and post-construction profiles of the Yard. The construction consisted of moving railroad tracks, grading the Yard, and constructing bridges, roads, and buildings. Natural Upper Pleistocene glacial deposits were excavated from parts of the Yard and deposited as fill in other parts of the Yard to create the current, generally flat topography. A part of the construction involved moving the LIRR passenger tracks to extend across the wetland (filling the wetland) and connect with the old passenger tracks west of Hunter’s Point Avenue. During Yard construction, the following areas were excavated:

- the loop track under and south of the LIRR mainline;
- the north portion of the Yard both east and west of 39th Street (formerly Harold Avenue);
- beneath the 39th Street bridge (approximately from the LIRR mainline to Skillman Avenue) to accommodate both the mainline and loop tracks;
- the north part of the Yard (east of Queens Boulevard) to create the Multiple Unit yard; and
- from the retaining wall between the north and south yards south to the LIRR main line, to accommodate the body tracks and buildings and to create the Pullman and Coach Yard.

The following areas were filled with the excavated Upper Pleistocene glacial deposits:

- the LIRR mainline east of the Yard to bridge 43rd Street (formerly Laurel Hill Avenue);
- 39th Street (formerly Harold Avenue) to create the 39th Street bridge between Northern Boulevard (formerly Jackson Avenue) and Skillman Avenue, and the 39th Street ramp into the Yard;
- the north part of the Yard (west of Queens Boulevard) to create Multiple Unit Yard;
- the wetland associated with Dutch Kills Creek to accommodate the Multiple Unit Yard, Pullman and Coach Yard, LIRR mainline; and
- Meadow Street to create the Thompson Street Bridge.

Holocene Deposits

In the southwestern portion of the Yard, a Holocene wetland deposit was encountered below the fill (recent deposits) and above the Upper Pleistocene formation. This deposit, which is the buried Dutch Kills Creek and swamp, consists of organic silty clay and meadow mat, and overlies the Upper Pleistocene deposits. As a result of filling Dutch Kills, the Dutch Kills drainage was culverted beneath the northwest corner of the Yard, through a 48-inch diameter sewer line. This sewer line is charted on the Amtrak-supplied 1910 Yard map.

Upper Pleistocene Deposits

As previously described, the Upper Pleistocene glacial deposits consist mainly of ground moraine deposits; unstratified, poorly sorted mixtures of sand, silt, clay and gravel. Based on geologic logs for seven deep boreholes drilled at the Yard, an approximately 4-foot thick cobble zone is located in the subsurface at locations MW-40D, MW-44 D, and MW-48D (See Plate 1). The cobble unit is encountered at an elevation of approximately 2.3 feet above mean sea level at MW-48D, and deepens to the west, where it is encountered at approximately 18 feet below mean sea level at MW-44D. This unit may be a relict stream channel deposit that was formed by glacial meltwaters. Based on 1997 ground-water quality data, a narrow band of saline groundwater occurring in the northern part of the Yard closely correlates with this cobble layer. These data suggest that the cobble layer is a narrow, yet continuous buried channel deposit beneath the Yard, extending from the former Dutch Kills Creek and wetland (near MW-44D) east to the buried wetland in the northeast corner of the Yard in the vicinity of MW-48D (See Plate 1).

2.5.2.2 Bedrock Geology

Based on published data, crystalline bedrock beneath the Site is Precambrian folded and faulted gneisses and schists that were eroded to a peneplain prior to deposition of the overlying glacial deposits (Soren, 1978). Based on information obtained from a file and well search at the NYSDEC, the bedrock surface appears to be highly irregular in this area. Boreholes drilled adjacent to the Yard indicate that the depth to bedrock ranges from approximately 30 to 150 feet below land surface (bls) (i.e., 10 to 130 feet below mean sea level [msl]).

As part of the New York City Department of Transportation (NYCDOT) reconstruction of Queens Boulevard Bridge over Sunnyside Yard, eight boreholes were drilled to the bedrock surface. The depth to bedrock ranged from 50 to 86 feet bls (Environmental Planning & Management, Inc., 1997). These depths are estimated to correspond to 40 to 70 feet below msl, with bedrock deepening to the south. As part of Roux Associates' work at the Yard, one borehole (P-3D), located in OU-1 (formerly a portion of Area 1), was drilled to the bedrock surface. Bedrock was encountered at a depth of 74 feet (53 feet below msl). The circa 1910 Chief Engineering Report (Pennsylvania Tunnel and Terminal Railroad Company, 1910) stated that bedrock was exposed in the stream bed of Dutch Kills Creek, near the south abutment of the Thompson Avenue Bridge and under the LIRR freight tracks on the north side of the Yard. This report also states that bedrock was generally located 30 to 50 feet beneath the wetland (approximately in 1907).

2.6 Hydrogeology

Published hydrogeologic data, (i.e., Buxton et al., 1981: McClymonds and Franke, 1972), historic data generated by the United States Geologic Survey (USGS), and Yard-specific water level elevation and aquifer test data collected during previous investigations conducted by Roux Associates were evaluated to define the historic and current hydrogeologic conditions observed at the Yard. These data were used to prepare water level elevation maps and hydrographs, calculate horizontal and vertical hydraulic gradients, estimate the hydraulic coefficients, and calculate groundwater flow rates. Discussion of these parameters is given below in the following sections.

2.6.1 Regional Hydrogeology

Groundwater in the area occurs under water-table (unconfined) conditions in the Upper Glacial aquifer. Regional groundwater flow in the area is to the northwest, eventually discharging to the East River approximately one mile northwest of the Yard (McClymonds and Franke, 1972). Vertical flow within the aquifer changes from a downward flow in central Queens to an upward flow nearing the East River, where groundwater discharges. The published horizontal hydraulic conductivity of the Upper Glacial aquifer in Queens County ranges from 214 feet per day (McClymonds and Franke, 1972) to 270 feet per day (Franke and Cohen, 1972).

2.6.1.1 Historic Pumping in the Upper Glacial Aquifer

Historic groundwater flow trends in Queens, as well as most of New York City, have been affected greatly by previous groundwater pumping activities. Groundwater pumping activities were conducted mainly for industrial and public water supply purposes beginning in the early twentieth century. Currently, Queens receives potable water from upstate New York. However, prior to receiving potable water from upstate New York, Queens depended almost entirely on groundwater pumped from underlying aquifers. The affects of these pumping activities are extremely evident when reviewing historic water-level data. Published water-level data for Long Island show that from the early 1930s to about 1960 the water table within Kings County and western Queens County was depressed to elevations below sea level due to over pumpage. The cone of depression (as much as 35 feet below sea level during the peak of pumping) caused significant salt-water intrusion into the Upper Glacial and confined aquifers beneath these areas, and as far inland as the center of Kings County (Smolensky, 1983). Historical data for wells near the Yard indicate that salt-water intrusion also affected the aquifers beneath the Yard. In documentation obtained from a public records (Freedom of Information Act – FOIA) search, two bedrock wells (Q-173 and Q-58) are noted as having brackish water conditions during 1925 and 1932, respectively. Both wells are located northeast of the Yard, with well Q-173 being the closest (within 500 feet of the Yard). However, published data indicate that by the late-1950s the cone of depression within Queens County had recovered (Smolensky, 1983). Current water level elevations at the Yard have returned to pre-pumping elevations, ranging from 8 to 23 feet above mean sea level. However, the effects of the historical salt-water intrusion can still be detected in groundwater quality, which exhibits elevated concentrations of sodium, chloride and total dissolved solids (Soren, 1971). The Supplemental OU-6 RI data presented in this report (collected in 2008) indicate that saline groundwater conditions still exist beneath much of the Yard.

The MTA ESA project has performed, and will continue to perform extensive dewatering activities proximate to the Yard. As a requirement of the NYCDEP discharge permit, ESA is routinely monitoring groundwater quality associated with these dewatering activities. These dewatering activities may be affecting groundwater flow directions and hydraulic gradients in the Yard.

2.6.1.2 Regional Groundwater Quality

Regional groundwater quality of the Upper Glacial aquifer is characterized as having a wide range of iron and manganese concentrations (Buxton, et al., 1981). Concentrations of iron and manganese increase as conditions become anoxic (i.e., as the dissolved oxygen content decreases). Anoxic conditions are typically associated with swamp or wetland deposits, such as those buried in the northeastern and western portions of the Yard.

2.6.2 Yard Hydrogeology

Groundwater beneath the Yard occurs under water table (unconfined) conditions. The water table lies between 1 and 25 feet below land surface and occurs in either fill deposits or the Upper Pleistocene glacial deposits. The saturated Upper Pleistocene deposits comprise the Upper Glacial aquifer. Beneath the Yard, the saturated fill deposits and the shallow Upper Glacial aquifer were not always distinguishable, and are, therefore, collectively referred to as shallow deposits (which contain the water table). Deeper wells (wells constructed with screen zones set entirely below the water table) at the Yard installed by Roux Associates (generally designated by a "D") are screened approximately 25 feet below the water table, but are still within the Upper Glacial aquifer. The MTA has also installed a significant number of wells at the Yard, most of which are constructed with screen zones set entirely below the water table, and are therefore considered deep wells. Similar to the deep wells installed by Roux Associates, these deep wells are also still within the Upper Glacial aquifer. The well construction for East Side Access deep wells varies. The shallowest of the deep wells are constructed with the top of screen set at approximately 18 feet bls, whereas the deepest ESA well at the Yard is constructed with the top of screen set at 89 feet bls. Most ESA wells are screened in the 40 to 50 feet bls range. Table 1 provides a complete summary of the construction of all wells at the Yard, including those installed by Roux Associates and those installed by others, and includes both current wells, and wells that have since been abandoned, destroyed, or unable to be located. Table 1 also provides a summary of which wells are water table wells, and which wells are deep wells at the Yard. Well construction elevation data, both relative to land surface, and relative to the North American Vertical Datum 1988 mean sea level (NAVD 88) are also provided in Table 1.

Over the course of the multiple environmental investigations completed at the Yard by Roux Associates, beginning with the Phase I RI (1991) through the implementation of the OU-6 RI (1997), multiple historic rounds of water level measurements were collected. Additionally, frequent water level measurements were collected in OU-3 as part of the various Interim Remedial Measures (IRMs) implemented. Tables providing a summary of the historic water level elevations and SPH thickness measurements (limited to OU-3) generated during these pervious water level rounds are provided in Appendix B. More current water level and SPH thickness measurements collected in OU-3 can be found in the Final OU-3 RI Report. During the implementation of the Supplemental OU-6 RI scope of work (2008), water level measurements were collected by Roux Associates from monitoring wells at the Yard on the following dates: May 21 and June 2 through 5, 2008. The MTA, as part of the ESA project, collected water level measurements on June 10, June 11, June 16, June 17, June 18, June 25, and July 7, 2008. Due to the close proximity in the timeframe of these gauging events, Roux Associates and ESA have collaborated and shared water level data. Table 2 presents a summary of the water level measurements collected during these rounds (May through July 2008).

Furthermore, water level elevations were then computed relative to the mean sea level (NAVD 88), and summarized in Table 2. Groundwater flow patterns for the water table and deeper Upper Glacial aquifer at the Yard during May, June, and July 2008 are shown in Plates 2 and 3, respectively.

As part of the previous OU-6 RI scope of work (implemented in 1997), multiple rounds of water level measurements were taken in the well clusters at the Yard to determine vertical hydraulic gradients, groundwater flow patterns within the Upper Glacial aquifer, and the hydraulic relationship between the water table and the deeper Upper Glacial aquifer. Prior to wells MW-40D, MW-47 and MW-57 being damaged and subsequently abandoned (April 1998), eight well clusters existed across the Yard: four clusters within Area 1 (MW-19/MW-39D, MW-16/MW-23D, MW-49/MW-38D and MW-57/MW-40D) and four clusters facility wide (MW-43/MW-44D, MW-47/MW-48D, MW-61/MW-62D and MW-68/MW-69D). Historic water level data for these wells are included in Appendix B. Measurements obtained from monitoring well MW-16 were not used because the well contained (SPH) and was part of the OU-3 IRM system. In 2008, only one of the original eight well clusters remained (MW-19/MW-39D). Additionally, as a result of replacing destroyed well MW-61 with new well MW-83, a new cluster (MW-83/MW-62D) was formed, and through the utilization of wells installed by Groundwater & Environmental Services, Inc. (GES) for the neighboring Standard Motors Products, Inc. (SMP) site, two additional shallow/deep well clusters were utilized (MW-9S/MW-9D, and MW-13S/MW-13D). Historic vertical hydraulic gradient calculations from February 8, 1993, June 14, 1994, and June 17-19, 1997 are included in Table 3. Further, the most recent vertical hydraulic gradient calculations from June 2-4, 2008 that were completed as part of the Supplemental OU-6 RI are also included in Table 3.

2.6.2.1 Groundwater Flow Patterns

Based on the Supplemental OU-6 RI data generated in 2008, groundwater within the shallow deposits flows predominantly west beneath the Yard (Plate 2). However, between Queens Boulevard and Honeywell Street, groundwater flows northerly and northwesterly toward the buried flow path of Dutch Kills Creek and/or the East River. This flow pattern is very similar to that exhibited in previous comprehensive water level rounds completed at the Yard (i.e., June 1997), as documented in the 1999 OU-6 RI (Roux Associates, 1999).

The groundwater flow lines shown in Plate 2 appear to mimic the topographic contours of the 1890 map, which depict a topographic high (presumably consisting of glacial till) in the area between Queens Boulevard and Honeywell Street, and Dutch Kills Creek flowing through the western portion of the Yard. Since in-situ glacial till is much less permeable than reworked glacial till (fill), horizontal flow gradients are expected to be much steeper within the in-situ deposits. The water level contours in the western portion of the Yard parallel the former flow path of Dutch Kills Creek (Plate 1), indicating that the buried Dutch Kills stream bed along the western edge of the Yard remains a groundwater discharge area. Water level elevations at the Yard may also be affected by a tidal influence associated with the relict stream channel of Dutch Kills, extensive bulkheaded areas, and parking lot drainage.

Water level elevations from the deep wells installed by Roux Associates (i.e., designated with "D"), and deep ESA wells were collected by Roux Associates in 2008 as part of the Supplemental OU-6 RI and by ESA, and were used to prepare a water level elevation map to determine groundwater flow patterns within the deeper Upper Glacial aquifer (Plate 3). Based on the data generated during the Supplemental OU-6 RI in the deeper deposits, groundwater predominantly flows west across the Yard. Similar to the water table groundwater flow, the deep groundwater flow has a northwest component between Queens Boulevard and Honeywell Street; however, this component is not as pronounced in the deep groundwater flow. Although a northwest flow component does exist in the deep groundwater flow map, it is not as well defined as it is on the water table groundwater flow map. This indicates that, similar to shallow water, deep groundwater flow is likely influenced by factors such as site topography and the buried Dutch Kills stream bed, however, this influence is not as apparent.

As shown in Plates 2 and 3, former monitoring wells TP-9, MW-30, MW-34, MW-47, and MW-61 and currently existing monitoring wells TP-10, MW-48D, MW-62D, MW-80, MW-83, MW-84, and TE-MW-QA-2 were installed at hydraulically upgradient portions of the Yard, near the Yard perimeter. Groundwater quality data from these wells, generated during the initial OU-6 RI and/or during the Supplemental OU-6 RI, were used to determine background ranges for metals in groundwater. Furthermore, data from these upgradient wells were used to determine background groundwater quality, and identify contaminants migrating onto the Yard from upgradient, off-site sources. Additional discussion regarding groundwater quality data is provided below in Section 5.0 Nature and Extent of Contamination.

2.6.2.2 Horizontal Gradients

Horizontal flow gradients within the shallow deposits range from approximately 0.001 feet per foot from the 17-foot contour west to MW-83, up to 0.011 feet per foot from the 11-foot contour to MW-27 (near Area 9, west of the and Honeywell Street). The average shallow horizontal flow gradient for the Yard, calculated between the 21-foot contour and MW-90 is 0.003 feet per foot. An average horizontal flow gradient for the Yard of 0.003 feet per foot was calculated for the deeper deposits between the 17-foot contour and well TE-MW-A-1. These values are indicative of a relatively flat water table surface.

When compared to the geologic features of the Yard, lower horizontal gradients (i.e., a flatter water table or potentiometric surface) appear to correspond with areas of the Yard known to have been filled. These filled areas are generally less compacted and, therefore, more permeable than the undisturbed glacial deposits. These areas include the western portion of the Yard north of the LIRR right-of-way, and the central portion of the Yard between 39th Street and Honeywell Street. Areas of the Yard showing steeper horizontal gradients (i.e., less permeable deposits) include the northeast portion of the Yard, and the western portion of OU-3, extending west beyond the Honeywell Street bridge.

2.6.2.3 Vertical Gradients

The vertical gradients at each well cluster were calculated according to the following formula.

$$\frac{[Water-Level\ Elevation\ (shallow\ well)]-[Water-Level\ Elevation\ (deep\ well)]}{[Elevation\ of\ Screen\ Center\ (shallow\ well)]-[Elevation\ of\ Screen\ Center\ (deep\ well)]}$$

Based on this formula, a negative number represents an upward gradient, and a positive number represents a downward gradient. Vertical gradients were calculated using available well clusters on February 8, 1993, June 14, 1994, June 17-19, 1997, and June 2-4, 2008. Vertical gradient calculations for these gauging events are provided in Table 3, and described below.

February 8, 1993

On February 8, 1993, vertical gradients were calculated from well clusters MW-47/MW-48D, and MW-43/MW-44D. Well cluster MW-16/MW-23D also existed at this time in OU-3, however, the vertical direction of groundwater could not be determined with any certainty due to the significant SPH thickness present in monitoring well MW-16. The results are described below:

- at upgradient cluster MW-47/MW-48D, groundwater is flowing downward at an approximate vertical gradient of 0.0801 feet per foot (ft/ft); and

- at downgradient cluster MW-43/MW-44D, groundwater is flowing slightly upward with an approximate vertical gradient of -0.0030 ft/ft.

June 14, 1994

An additional round of water levels was completed at the Yard on June 14, 1994. These data were utilized to determine vertical gradients for all newly-installed clusters and confirm the vertical gradients previously calculated for clusters MW-43/MW-44D and MW 47/MW 48D. As previously stated, vertical gradients were not calculated for cluster MW 16/MW-23D due to the significant SPH thickness within Monitoring Well MW-16. The June 1994 data indicate that:

- at upgradient cluster MW-47/MW-48D, groundwater is flowing downward at an approximate vertical gradient of 0.1212 ft/ft, confirming the previous flow direction calculated for this cluster;

- at upgradient cluster MW-61/MW-62D, groundwater is flowing slightly downward at an approximate vertical gradient of 0.0011 ft/ft;

- at OU-3 clusters MW-19/MW-39D and MW-49/MW-38D, groundwater is flowing upward with approximate vertical gradients of -0.0274 and -0.0270 ft/ft, respectively, while groundwater is flowing very slightly upward at -0.0008 ft/ft (nearly horizontal flow) at cluster MW-57/MW-40D; and

- at downgradient cluster MW-43/MW-44D, groundwater is flowing slightly upward with an approximate vertical gradient of -0.0015 ft/ft, confirming the previous upward flow direction calculated for this cluster.

June 17-19, 1997

An additional comprehensive round of water levels was measured on June 17-19, 1997. Vertical gradients calculated using the June 1997 data indicate similar findings to those listed above for clusters MW-47/MW-48D (0.1287 ft/ft, downward), MW-19/MW-39D (-0.0272 ft/ft, upward), MW-49/MW-38D (-0.0254 ft/ft, upward), and MW-57/MW-40D (-0.0016 ft/ft, slightly upward).

Data for MW-68/MW-69D indicate a slightly upward vertical gradient of -0.0007 ft/ft (nearly horizontal flow), and similarly, at nearby cluster MW-57/MW-40D a slight upward gradient of -0.0016 ft/ft was observed. However, the June 1997 data indicate vertical gradient changes as follows:

- at upgradient cluster MW-61/MW-62D, groundwater was calculated as flowing slightly upward at a vertical gradient of -0.0008 ft/ft (nearly horizontal flow), reversing the previous flow direction calculated for this cluster during 1994; and

- at downgradient cluster MW-43/MW-44D, groundwater was calculated as flowing slightly downward at a vertical gradient of 0.0035 ft/ft, reversing the previous flow direction calculated for this cluster during 1993 and 1994. This reversal was likely due to extensive dewatering for the New York City Transit Authority's 63rd Street Tunnel Project. The dewatering occurred along Northern Boulevard in close proximity to the Yard beginning in mid to late 1996.

<u>June 2-4, 2008</u>

Current vertical gradients were calculated using the June 2 through 4, 2008 measurements for the four clusters that currently exist at the Yard. Since the initial OU-6 RI measurements completed in 1997, all of the clusters used to calculate vertical gradient were destroyed except MW-19/MW-39D. In cluster MW-61/MW-62D, MW-61 was destroyed and MW-83 was installed as its replacement. Additionally, well clusters MW-9S/MW-9D and MW-13S/MW-13D have since been installed by GES as part of the RI efforts completed associated with the SMP site (located immediately north of the Yard, west of 39th Street. These calculations indicate the following:

- at upgradient cluster MW-9S/MW-9D, groundwater is flowing downward at 0.0051 ft/ft;

- at upgradient cluster MW-13S/MW-13D, groundwater is flowing upward at -0.0028 ft/ft;

- at cluster MW-19/MW-39D, groundwater is flowing upward at -0.0560 ft/ft; and

- at cluster MW-83/MW-62D, groundwater is flowing slightly upward at -0.0007 ft/ft.

In comparison to the 1997 data, cluster MW-19/MW-39D has increased its upward flow in 2008 (-0.0272 ft/ft to -0.0560ft/ft). The cluster of MW-83/MW-62D (formerly MW-61/MW-62D in 1997) has remained almost identical (very slightly upward flow direction).

Based on a collective review of all four rounds of vertical gradient data generated, the following conclusions can be reached regarding vertical groundwater flow at the Yard. Note that these conclusions are similar to those reached during the OU-6 RI submitted in 1999 (Roux Associates, 1999a). These data generated in 2008 supports these conclusions, where applicable.

The downward gradients at cluster MW-47/MW-48D observed in 1993, 1993, and 1997 indicate that the area near the northeastern corner of the Yard is a ground-water recharge area. Recharge is expected in this location based on historical information, which shows that a wetland was located in this area prior to being filled. In general, vertical gradients change from downward to upward with nearing proximity to the buried flow path of Dutch Kills Creek and the East River, the ground-water discharge areas. The upward flow measured beneath OU-3, and sometimes present along the downgradient property boundary, indicate that the northwest portion of the Yard is a discharge zone. Historical documentation confirms upward flow in the central portion of the Yard. Historic well search results have previously identified documents describing four wells (approximately 30 feet deep) located on-site west of Honeywell Street between Northern Boulevard and Skillman Avenue, as being "partly flowing". These wells were abandoned during 1926. A second group of four flowing wells was formerly located south of Skillman Avenue and west of Bridge Plaza (59th Street).

Stronger upward gradients are expected to occur with closer proximity to the buried flow path of Dutch Kills Creek and the East River. Strong upward gradients have historically been observed in OU-3 clusters MW-19/MW-39D and MW-49/MW-38D, when compared to the slight upward flow (nearly horizontal flow) seen at cluster MW-57/MW-40D. During the 1993 and 1994 water level rounds, downgradient cluster MW-43/MW-44D also showed a stronger upward gradient compared to cluster MW-57/MW-40D. The upward flow observed beneath OU-3 and the downgradient portion of the Yard (with the exception of June 1997) reduces or prevents the downward migration of contaminants within the aquifer, if present. In addition, the upward gradients beneath OU-3 assist in containment of the SPH accumulation by reducing or preventing the petroleum's impact on underlying groundwater quality. The upward vertical gradient in OU-3 was confirmed in 2008 with the water level elevations observed in cluster MW-19/MW-39D.

2.6.2.4 Hydraulic Coefficients

Hydraulic coefficients for the saturated fill deposits and Upper Glacial aquifer at the Yard were determined during the Phase I RI and a preliminary evaluation of the feasibility of dewatering was conducted related to the construction of the HSTF S&I Building. Initially, estimates of the horizontal hydraulic conductivity (K_H) were calculated from slug tests performed in shallow monitoring wells that were screened across the water table during the Phase I RI in 1991. These K_H values are representative of the varied geologic unit characteristics found at the water table at the Yard (i.e., tight clayey silt to coarse sands and gravel). The K_H values calculated during the Phase I RI are lower that the regional published K_H values cited in Section 2.6.1. The data generated during the Phase I suggest a horizontal K_H range of 0.59 to 60 feet per day (ft/d) at the Yard.

Several years later, during the dewatering feasibility work, a pumping test, and multiple slug tests were performed within OU-3 wells, and two slug tests were performed south of OU-3. Six piezometers were installed in the vicinity of Monitoring Well MW-40D (designated P-1D, P-2D, P-3D, P-4D, P-5S, and P-6S) prior to performing the pumping test on this well (Figure 3). Well construction and geologic logs for these piezometers are included in Appendices B.

Hydraulic coefficients derived from these additional slug tests suggest that K_H values beneath OU-3 are higher than those determined facility-wide during the Phase I RI, with calculated values ranging from 2.36 ft/d in the shallow deposits (MW-49) to approximately 127 ft/d in the deeper deposits (MW-40D). The higher values determined for OU-3 wells, particularly the deeper OU-3 wells, are attributed to the 4-foot thick cobble layer present in the subsurface from the vicinity of MW-44D in the west, through OU-3 and MW-40D, and continuing to MW-48D near the eastern boundary of the Yard. The following hydraulic coefficients for the water table aquifer were calculated from data derived during the pumping test performed on well MW-40D:

- an average K_H of 462 ft/d;
- an average transmissivity (T) of 33,135 square feet per day (ft^2/d);
- an elastic storage coefficient range of 0.00001 to 0.036;
- a specific yield or water table storage coefficient range of 0.02 to 0.280; and
- an average vertical hydraulic conductivity (K_V) of 48 ft/d.

Using the average values calculated for K_H and K_V, the anisotropy (K_V:K_H) of the water table aquifer was calculated to be 0.10. All calculations are based on a saturated thickness of 70.59 feet determined near MW-40D.

These hydraulic coefficients suggest that the aquifer is highly transmissive. In general, higher K_H and T values were obtained for wells screened within the deeper deposits. The average K_H and T values calculated for the shallow wells/piezometers near MW-40D are 410 ft/d and 28,950 ft^2/d, respectively. The average K_H and T values calculated for the deeper deposits screened by MW-40D and nearby piezometers are 500 ft/d and 35,300 ft^2/d, respectively. Since the pumping well (MW-40D) screens a cobble layer, the calculated hydraulic coefficients were compared to published values for gravels, sand and gravel, and coarse sands of the Upper Glacial aquifer. According to McClymonds and Franke (1972), the average K_H for these deposits is 270 to 400 ft/d, which approximates the K_H value calculated for the Yard within OU-3 during the pumping test completed at MW-40D. Since the hydraulic coefficients derived from pumping test data are considered more accurate than slug test data and agree with published values, these data are used in the groundwater flow rate calculations presented in the following section.

2.6.2.5 Groundwater Flow Rates

Based on previously derived hydraulic coefficients for the Yard (see Section 2.6.2.4), and horizontal flow gradients calculated from Supplemental OU-6 RI water level measurements collected in 2008, average groundwater flow velocities within both the shallow deposits and the deeper deposits at the Yard were calculated using the following equation:

$$v = K_H \frac{I_H}{n_e}$$

Where:

v = the velocity of groundwater along a segment of a flow line (ft/d);

K_H = the horizontal hydraulic conductivity of the aquifer (ft/d);

I_H = the horizontal hydraulic gradient along a segment of a flow line (ft/ft); and

n_e = the effective porosity of the aquifer (dimensionless).

Using an average K_H of 410 ft/d for the shallow deposits at the Yard, an average horizontal hydraulic gradient of 0.003 ft/ft for the water table, based on Supplemental OU-6 RI data collected in 2008, and an estimated effective porosity of 0.25 (Walton, 1991), the groundwater flow velocity through the shallow deposits was calculated to be 4.92 ft/d. Using an average K_H of 500 ft/d for the deeper deposits at the Yard, an average horizontal hydraulic gradient of 0.003 ft/ft for the deeper deposits, based on Supplemental OU-6 RI data collected in 2008, and an average effective porosity of 0.35 for coarser deposits (Walton, 1991), the groundwater flow velocity through the deeper deposits was calculated to be 4.29 ft/d.

3.0 SUMMARY OF PREVIOUS OU-6 INVESTIGATIONS

This section provides a summary of all previous investigations conducted at the Yard related to OU-6. The results of all groundwater investigations conducted prior to 1999 were provided to the NYSDEC in the OU-6 RI report (Roux Associates, 1999a), and are summarized below. Additional investigation activities with groundwater or vapor components (i.e., relevant to OU-6) were completed at the Yard in the interim time period between the submittal of the OU-6 RI (1999) and the implementation of the Supplemental OU-6 RI (2008 and 2009). These interim investigation activities are also summarized below. In addition, saturated soil samples have been collected by Roux Associates and by others for the MTA ESA project. All saturated soil data is presented in this OU-6 RI report. The methodology and scope of the Supplemental OU-6 RI, which was conducted in 2008 and 2009 is discussed in detail in Section 4.0 of this report, and the results are discussed in detail in Section 5.0. Data summary tables of all groundwater analytical results for samples collected prior to the implementation of the initial OU-6 RI scope of work in June 1997 are provided in Appendix A. Data summary tables of all OU-6 groundwater analytical data for samples collected subsequent to, and including the initial OU-6 RI (1997), are provided in Tables 5 through 9. Data summary tables of all saturated soil samples are provided in Tables 12 through 15. Plate 6 presents the locations of all soil borings completed at the Yard where saturated soil samples were collected.

Previous investigations performed at the Yard include investigation activities conducted by Roux Associates, Geraghty and Miller (G&M), AKRF, Inc. (AKRF), the triventure team of PB Americas, Inc., STV Incorporated, and Parsons Transportation Group (PB/STV/PTG), identified as Parsons, Brinckerhoff, Quade & Douglas, Inc./STV Incorporated (PB/STV) in earlier phases of the ESA project, Environmental Management and Compliance Group, Inc. (EMCG), GES, and the NYCTA. Investigations conducted by AKRF, PB/STV/PTG and EMCG were conducted as part of the MTA/LIRR ESA project. Investigations conducted by the NYCTA were conducted as part of the MTA 63rd Street Tunnel Project, and investigations conducted by GES were part of an RI/FS completed at the SMP Site. The SMP Site is located at 37-18 Northern Boulevard, between Northern Boulevard and the Yard, hydraulically upgradient/sidegradient of the Yard. An RI/FS was conducted at the SMP Site, as stipulated in the Order on Consent between the NYSDEC and SMP. To facilitate groundwater investigation activities, Roux Associates, AKRF, PB/STV/PTG, and GES have installed monitoring wells at or in the immediate vicinity of the Yard. The locations of all existing monitoring wells installed at or in the immediate vicinity of the Yard are presented in Plate 1. Abandoned or destroyed monitoring wells are also included in Plate 1. Table 1 summarizes all available well construction details for all wells at or in the immediate vicinity of the Yard (includes existing, abandoned or destroyed wells) installed by Roux Associates, AKRF, PB/STV/PTG, and GES. A comprehensive list of all groundwater samples previously collected at the Yard (including samples collected by Roux Associates, AKRF, PB/STV/PTG, GES, and EMCG) are presented in Table 4. A summary of all previous investigations conducted both by Roux Associates, and by others is provided below.

3.1 Previous Investigation Completed by Geraghty & Miller Related to OU-6 (1986)

Geraghty & Miller conducted an investigation of the former underground storage tank (UST) area, the Engine House, the former Oil House, and the former fuel transfer area in OU-3 to determine if leakage of hydrocarbon compounds had occurred and, if so, to determine the extent of contamination in both soil and groundwater. In their June 1986 report titled "Results of Hydrogeologic Investigation at Amtrak, Sunnyside Yard, Queens, New York Train Yard" (Geraghty & Miller, Inc., 1986), G&M concluded that a plume of SPH exists in the area east of the Engine House, and that this plume appears to have originated at the USTs of the former fuel storage area and has migrated beyond the Yard's northern property boundary. Polychlorinated biphenyls were detected in this SPH plume at concentrations ranging from 5 to 360 parts per million (ppm), with the highest concentrations being detected in samples located immediately east of the Engine House. PCBs were also detected in soil samples, with concentrations ranging from 0.19 to 24 ppm in the 0 to 2 ft bls interval, but no PCBs were detected in groundwater. (Geraghty & Miller, Inc., 1986).

3.2 Previous Investigations Conducted by Roux Associates Through 1999

Prior to the submittal of the OU-6 RI report in 1999 (Roux Associates, 1999a), Roux Associates, on behalf of Amtrak and NJTC, conducted numerous investigations throughout the Yard. Many of these investigations contained both soil and groundwater components. Major investigations that included a saturated soil and/or groundwater component, and are therefore relevant to OU–6, include the following:

- Phase I RI (Roux Associates, 1992a);

- Phase II RI/Phase II RI Addendum (Roux Associates, 1995);
- Limited Phase II Environmental Site Assessment (i.e., HSTF S&I/OU-1) (Roux Associates, 1996);
- Focused Remedial Investigation for OU-2 (Roux Associates, 1997a); and
- OU-6 RI (1999) (Roux Associates, 1999a).

A summary of each scope of work conducted prior to 1999, as it pertains to OU-6, is provided below. A cumulative summary of the results and findings of these investigations is provided below in Section 3.2.2.

3.2.1 Scopes of Work Completed Through 1999

A chronological summary of OU-6 related scopes of work performed by Roux Associates prior to 1999 is presented below.

3.2.1.1 Phase I RI

The Phase I RI work was conducted from October 1990 to March 1991 in accordance with the document titled "Work Plan for the Remedial Investigation and Feasibility Study, Sunnyside Yard, Queens, New York", dated March 14, 1989, revised February 27, 1990 (Roux Associates, 1990). The scope of this investigation included the collection of 28 soil samples from 24 soil or well borings and the collection of groundwater samples from 13 monitoring wells. The purpose of the Phase I Investigation was to accomplish the following: develop data necessary to evaluate the nature, extent and potential migration pathways of SPH containing concentrations of PCBs that had previously been identified; determine the nature and extent of hydrocarbon constituents and PCBs in soil; further define the extent of the SPH plume; determine groundwater quality; and determine hydrogeologic characteristics. The findings from this investigation are documented in the Phase I RI Report (Roux Associates, 1992a). Groundwater samples collected as part of the Phase I RI are summarized in Table 4, and groundwater quality data summary tables are presented in Appendix A. Both saturated soil and unsaturated soil samples were collected and analyzed during the Phase I RI. All but one of the saturated soil samples were analyzed for total petroleum hydrocarbons only. That data was deemed unusable by data validation and is not presented in this OU-6 RI report. The data from the saturated soil sample collected from soil boring S-35 is included in Tables 12 through 15.

3.2.1.2 Phase II RI/Phase II RI Addendum

The Phase II RI was conducted in accordance with the document titled "Work Plan for the Phase II Remedial Investigation, Sunnyside Yard, Queens, New York", dated August 5, 1992 (Roux Associates, 1992). The purpose of this RI was to fill in data gaps remaining from the Phase I RI and previous investigations at the Yard. The media that were investigated during the Phase II RI included unsaturated soil, SPH, groundwater (shallow and deep), sewer water and sewer sediment. Specifically, with respect to OU-6, the Phase II RI was designed to:

- further delineate the extent of contaminants detected in groundwater during the Phase I RI;
- determine if migration of contaminants in groundwater is occurring either on-site or off-site;
- develop additional information regarding the hydraulic relationship between the shallow deposits and the deeper Upper Glacial aquifer underlying the Yard; and
- confirm the analytical results presented in the Phase I RI report.

The Phase II RI activities included the installation of 19 additional monitoring wells and two temporary wellpoints, and the collection of 29 groundwater samples. Additionally, hydrogeologic investigations were conducted to:

- determine the relationship between the shallow deposits and the deeper Upper Glacial aquifer;
- determine vertical hydraulic gradients and deeper groundwater flow patterns; and
- characterize groundwater quality in the Upper Glacial aquifer.

The Phase II RI Addendum scope of work supplemented the Phase II RI scope of work. The objectives of the Phase II RI Addendum were to complete the previously postponed Phase II RI tasks and to adequately delineate (using permanent monitoring wells) the extent of the SPH accumulation recently detected to the east and southeast of the previously delineated accumulation. The scope of work for the Phase II RI Addendum was submitted to the NYSDEC on May 28, 1993, and revised on August 4, 1993 (Roux Associates, 1993a). The Phase II RI Addendum scope of work with respect to OU-6 included the following:

- completion of the field work (i.e., installation and sampling of one shallow and three deep monitoring wells) previously proposed for Area 1 (note that Area 1 was subsequently renamed OU-3) in the August 5, 1992 work plan for the Phase II RI;

- installation and sampling of 13 monitoring wells to delineate the nature and extent of the SPH accumulation in Area 1 including the recently detected area south of the Metro Shop;

- proper abandonment of Monitoring Wells MW-24 and MW-26 that were found during the Phase II RI to have been destroyed;

- installation and sampling of one shallow monitoring well to replace the destroyed Monitoring Wells MW-24 and MW-26;

- installation and sampling of one deep monitoring well in a cluster with the MW-24 and MW-26 replacement well to further characterize the hydraulic relationship between the shallow deposits and the deeper Upper Glacial aquifer;

- resampling of three monitoring locations to verify the absence of dissolved PCBs in groundwater; and

- installation and sampling of a temporary wellpoint (TW-3) in the vicinity of MW-26.

Complete findings from the Phase II RI/Phase II RI Addendum are documented in the Phase II RI Report (Roux Associates, 1995). Additionally, groundwater samples collected as part of the Phase II RI/Phase II RI Addendum are summarized in Table 4, and groundwater quality data summary tables are presented in Appendix A.

3.2.1.3 Limited Phase II Environmental Site Assessment (i.e., HSTF S&I/OU-1)

From April 9 to May 9, 1996, an investigation was performed at the then proposed HSTF S&I Building footprint (i.e., OU-1) and adjacent portions of the Yard. With respect to OU-6, monitoring wells, temporary piezometers, and wellpoints were installed, groundwater samples were collected and analyzed, and water levels were measured. The results of this investigation are documented in the Limited Phase II Environmental Assessment Report (Roux Associates, 1996). No saturated soil samples were collected as part of this investigation. Summaries of the scope of the investigation are provided below:

- To confirm that the location of the SHP accumulation had not changed in the vicinity of OU-1, five hand borings (TP-1 through TP-5) were completed to approximately two feet below the water table on April 9, 1996;

- To further evaluate hydrogeologic and groundwater quality conditions in and around OU-1, six monitoring wells (MW-64 through MW-68, and MW-69D) were installed, and two soil boring locations (TP-6 and TP-7) within the proposed HSTF S&I Building footprint were completed as 2-inch diameter temporary piezometers;

- On May 2, 1996, water level and SPH thickness measurements were performed to determine current groundwater elevations and groundwater flow patterns and to determine the location of the SPH accumulation in the vicinity of the proposed HSTF S&I Building; and

- On May 2, 1996, Roux Associates collected groundwater samples from five new monitoring wells (MW-64 through MW-68) and three previously-installed monitoring wells (MW-57, MW-59, and MW-63) surrounding the proposed HSTF S&I Building footprint.

Groundwater samples collected as part of the Limited Phase II Environmental Site Assessment are summarized in Table 4, and groundwater quality data summary tables are presented in Appendix A.

3.2.1.4 Focused Remedial Investigation for OU-2

As part of the field investigation performed in OU-2 on March 24 and 25, 1997, three 2-inch diameter monitoring wells (TP-8 through TP-10) were installed to evaluate groundwater elevations and flow directions. These wells were eventually incorporated into the OU-6 RI and used to develop groundwater quality data. Monitoring well construction details are summarized in Table 1. The results of this investigation were presented in the report titled "Focused Remedial Investigation for Operable Unit 2, Sunnyside Yard, Queens, New York" (Roux Associates, 1997a). Additionally, groundwater samples collected as part of this focused RI are summarized in Table 4, and groundwater quality data summary tables are presented in Appendix A. No saturated soil samples were collected as part of this investigation.

3.2.1.5 OU-6 RI (1999)

In June 1997, Roux Associates collected groundwater samples from 32 active permanent and three temporary monitoring wells at the Yard as part of the OU-6 baseline sampling program in accordance with a June 2, 1997 letter to the NYSDEC (Roux Associates, 1997b) and the sampling procedures detailed in the Phase II RI Addendum Work Plan (Roux Associates, 1993). All wells that did not contain SPH (including a sheen) were sampled for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), PCBs, and Target Analyte List (TAL) metals, total dissolved solids (TDS), and chloride. Temperature, pH, and conductivity measurements of the groundwater samples were collected and recorded in the field. The results of this investigation were documented in the OU-6 RI Report dated May 14, 1999 (Roux Associates, 1999a). Groundwater samples collected as part of the OU-6 RI are summarized in Table 4, and groundwater quality data summary tables are presented in Tables 5 through 9.

3.2.2 Summary of Previous Investigations Findings

A cumulative summary of the findings and conclusions related to OU-6 from all investigations prior to, and including the OU-6 RI activities were presented in detail in the OU-6 RI reports dated May 14, 1999 (Roux Associates, 1999a), and are summarized below.

- OU-6 consists of the groundwater and saturated soil beneath the Yard (the Upper Glacial Aquifer). The Upper Glacial Aquifer is present beneath the entire Yard, and occurs under water table (unconfined) conditions.

- Shallow groundwater beneath the Yard (i.e., the Upper Glacial aquifer) flows predominantly west at an average rate of 5.7 to 6.6 feet per day (ft/d), discharging to the buried flow path of Dutch Kills Creek in the western portion of the Yard and/or the East River, located approximately one mile west of the Yard. Although Dutch Kills is now buried in the western portion of the Yard, it emerges south of the Yard before joining Newtown Creek (See Plate 1). Deeper groundwater flow is predominantly west across the Yard.

- Upward vertical gradients (i.e., upward groundwater flow) exist beneath the west and northwest portions of the Yard, including OU-3, reducing or preventing the downward migration of petroleum-related contaminants from the OU-3 SPH accumulation into OU-6. This is supported by analytical data from monitoring wells screened either beneath or hydraulically downgradient of the SPH accumulation.

- Saline groundwater is present throughout the southwest half of the Yard, and along the north side of the Yard where it correlates with a buried channel (i.e., cobble zone) that trends east-west through the Yard, connecting the buried Dutch Kills and saline groundwater lens with the buried northeast wetland. There are no chemical-specific standards for saline groundwater (i.e., Class GSA). Thirteen Yard wells (38 percent) contained saline groundwater (defined by the NYSDEC as groundwater containing chloride at concentrations >250 milligrams per liter (mg/L) and/or TDS at concentrations >1,000 mg/L).

- At least three plumes of chlorinated VOCs in groundwater had migrated onto the Yard from off-site sources and were not related to Yard activities. Two of these plumes were determined to exceed the New York State Class GA groundwater standards, presented in the Division of Water Technical and Operational Guidance Series (1.1.1) "Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations" (NYSDEC, 1998), as amended in April 2000 and June 2004 (AWQSGVs). One plume with chlorinated VOC exceedances originated south of the Yard (south of MW-34) and extended north through the Yard and former well MW-42: the source of this plume was unknown, but has since been confirmed to be at least partially attributed to the ACCO

Brands, Inc. (ACCO), formerly Swingline Staples site. The second plume with chlorinated VOC exceedances originates at the SMP site (i.e., the known source) and has migrated south to former locations MW-64 and MW-65.

- Two known plumes of benzene, toluene, ethylbenzene, and xylenes (BTEX) in groundwater had migrated onto the Yard from off-site sources, and were not related to Yard activities. Benzene within one plume was determined to exceed groundwater standards (i.e., MW-35 on June 18, 1997). This exceedance was confirmed by a NYCTA split sample collected November 14, 1997.

- Seven metals were detected above both background ranges and groundwater standards. All of these exceedances were attributable to an off-site, upgradient source (i.e., SMP), with salt-water intrusion of the aquifer contributing to the concentrations of magnesium, and anoxic conditions within the aquifer (e.g., the buried northeast wetland) contributing to the concentrations of iron and manganese.

- No SVOCs were detected in Yard groundwater above groundwater standards. In addition, the only SVOC detected above the practical quantitation limit occurred in Monitoring Well MW-35. MW-35 is located north of the sewer line that parallels the northern boundary of the Yard and is hydraulically downgradient of SMP.

- No PCBs were detected in Yard groundwater above groundwater standards. Low concentrations of PCBs were only detected in two monitoring wells: MW-23D and former MW-25A. Monitoring Well MW-23D was screened beneath the OU-3 SPH accumulation. The source of the low PCB concentrations was likely related to the well construction of MW-23D through the PCB-contaminated SPH accumulation. Former monitoring well MW-25A was located near the north property boundary and no clear source has been identified for the low-level PCB detection.

- Groundwater quality data confirm that there were no exceedances of groundwater standards by VOCs, SVOCs, PCBs and metals beneath or downgradient of the SPH accumulation in OU-3. The source of the low BTEX concentrations (i.e., below groundwater standards and below the practical quantitation limit) detected within MW-38D is something other than the OU-3 SPH accumulation because:

    1. The top of the screen zone in MW-38D is more than 26 feet below the water table (and therefore, more than 26 feet below the SPH accumulation).

    2. No VOCs were detected in groundwater directly beneath the SPH accumulation (i.e., MW-23D).

    3. There was an upward hydraulic gradient at location MW-38D (-0.0254 ft/ft).

    4. All VOCs, including BTEX, were non-detect in the shallow well clustered with MW-38D (i.e., MW-49, where the screen zone straddles the water table and is at the same elevation as the SPH accumulation). Subsequent to this sampling, SPH was noted in MW-49.

- Five wells contained TDS concentrations above the Class GA standard of 500 mg/L, but below 1,000 mg/L (the concentration that defines saline groundwater [i.e., Class GSA]). The proximity of these wells to the buried wetlands and/or buried channel (i.e., cobble zone) suggests that the TDS levels are attributable to historical salt-water intrusion of the aquifer.

- Yard-related impacts to groundwater were limited to a hydrocarbon sheen in one well, MW-68, a benzene detection in MW-27 and unregulated detections in two wells: former well MW-59 (4-Methyl-2-Pentanone [MIBK]) and well MW-27 (MIBK).

3.3 Post OU-6 RI Investigation Activities (1997 through 2007)

Additional investigation activities related to OU-6 conducted by Roux Associates and/or the NYCTA that Roux Associates has received records for since submittal of the OU-6 RI are summarized below:

- The NYCTA collected groundwater samples from MW-19 and MW-35 for SVOC and PCB analysis on August 13, 1998 and February 25, June 3 and September 9, 1999. Analytical results for these samples did not indicate exceedances of groundwater standards.

- On September 27, 1999, SPH was detected in MW-49 (Plate 1) for the first time. Shortly after this detection of SPH in MW-49, a soil boring and monitoring well gauging program was implemented in OU-3. As a result of this program, it was determined that a narrow finger of SHP migrated approximately 55 feet west, just north of the Engine House Track 6. Additionally, a new monitoring well (MW-70) was installed downgradient of MW-49 to monitor for possible further westward migration of the SPH accumulation. The results of this soil boring program were submitted to the NYSDEC in a letter report from Roux Associates dated October 14, 1999 (Roux Associates, 1999b). SPH has never been detected in MW-70, indicating that the horizontal extent of this narrow finger of SPH has not increased since first detected in 1999.

- Roux Associates collected groundwater samples in October 2000 at three boring locations: TSB-9, TSB-10 and TSB-16 (Plate 1), as part of the OU-3 RI. The groundwater samples were collected utilizing a tube passed through the Geoprobe™ rods and a peristaltic pump (no filter-packed screens were installed). The samples collected were analyzed for TCL VOCs, TCL SVOCs, PCBs, TAL metals, chloride, and TDS. Sampling results were provided in the Roux Associates report entitled, “Operable Unit 3 Remedial Investigation Report,” dated March 29, 2001 (Roux Associates, 2001). In summary, VOCs were detected above groundwater standards only at TSB-9. Ethylbenzene was detected as a concentration of 5.4 micrograms per liter (µg/L), which slightly exceeds the Class GA standard of 5 µg/L, and xylenes were detected at a concentration of 14.6 µg/L, exceeding the Class GA standard of 5 µg/L. Metals (arsenic, iron, manganese, and sodium) were also detected in groundwater above the Class GA standards in one or more of the samples. SVOCs and PCBs were not detected above groundwater standards. Since the groundwater samples were not collected from permanent monitoring wells, standard procedures for well development, waiting period between development and sample collection and purging procedures were not applicable. As a result, the groundwater data developed for these locations was considered for screening purposes only.

- Roux Associates installed seven monitoring wells (MW-71 through MW-77) in OU-3 in April 2004. The locations of these new monitoring wells are presented in Plate 1. The purpose of these monitoring wells was to further monitor and evaluate SPH characteristics in OU-3. Since their installation, these wells have been gauged regularly for SPH.

- In June 2005, Roux Associates installed two additional shallow monitoring wells (MW-78 and MW-79) located to the east of the existing Commissary Building (See Plate 1). These two additional monitoring wells were installed, in part, to further characterize shallow groundwater quality in this portion of the Yard to support proposed construction activities. On July 5, 2005, groundwater samples were collected from both wells and analyzed for TCL VOCs, TCL SVOCs, PCBs, TAL metals, chloride, and TDS. The analytical results did not indicate exceedances of any groundwater quality standards. It is not longer expected that these proposed construction activities will be performed.

- In June 2005, Roux Associates collected 13 soil gas samples from 12 locations (12 samples and one duplicate sample). The soil gas samples were designated PC-1 through PC-12, and the locations are shown on Figure 4. A summary of the soil gas samples collected in June 2005 is presented in Table 10. The soil gas samples were collected using SUMMA canisters and were submitted for analysis for VOCs using USEPA Method TO-15. Several VOCs (including BTEX) were detected at relatively low concentrations. It is not longer expected that these proposed construction activities will be performed.

- Roux Associates installed four additional monitoring wells in OU-3 in July 2005. The monitoring wells are designated CTB-1, CTB-19, CTB-20, and CTB-21 and the locations of these wells are presented in Plate 1. These monitoring wells were installed primarily to further characterize the areal extent and thickness of the SPH plume in OU-3. To date, groundwater samples were never collected from these wells.

3.4 Previous Investigations Completed by AKRF Related to OU-6

AKRF installed and sampled four monitoring wells at the Yard during their 1999 site investigation performed as part of the East Side Access Project. These wells, designated as SSY-23, SSY-46, SSY-49, and SSY-51, are shown as green symbols in Plate 1. Groundwater samples collected from these four wells were analyzed for VOCs, SVOCs, metals, and PCBs/Pesticides. Results of the monitoring well installation/groundwater sampling activities are provided in the AKRF report entitled, "Detailed Environmental Site Investigation – Sunnyside

Yard, Sunnyside, New York," dated December 1999 (AKRF, 1999), and can be summarized as follows:

- The chlorinated VOCs 1,2-dichloroethene (1,2-DCE), trichloroethene (TCE), and tetrachloroethene (PCE) were detected at SSY-23 at concentrations of 34 µg/L, 40 µg/L, and 400 µg/L, respectively, exceeding the Class GA groundwater standard of 5 µg/L for each compound. These detections coincide with the chlorinated VOC plume originating off-site previously identified by Roux Associates.

- Metals detected in groundwater and their concentrations were similar to those observed by Roux Associates.

- No SVOCs, PCBs, or pesticides were detected in the groundwater samples.

Since the four AKRF wells are screened in portions of the aquifer that are of interest, the data for these wells has been incorporated into Roux Associates' master database for the Yard, and were evaluated in conjunction with data developed during the RI/FS described herein.

3.5 Previous Investigations Completed by PB/STV/PTG Related to OU-6

Monitoring well installation and sampling activities were performed by PB/STV/PTG as part of the East Side Access Project. A description of monitoring well installation/sampling activities are provided in the document entitled, "Findings Report for the Environmental Site Investigation of the Sunnyside Yard and Harold Interlocking, Sunnyside, Queens County, New York – East Side Access Project Alignments and Replacement Yards Study," dated January 2001 (PB/STV/PTG, 2001), and are summarized as follows:

- Fifteen monitoring wells were installed by PB/STV/PTG in the Yard at the locations shown in Plate 1. According to the PB/STV/PTG report referenced above, the monitoring wells are screened significantly below the water table, with an average screened interval depth of 45 to 55 ft below land surface. Screened interval depths ranged from 25 ft to 35 ft below land surface (TE-IB/OB-1) to 89 ft to 99 ft below land surface (TE-MW-IB-2).

- Roux Associates has data from one comprehensive set of groundwater samples collected from the fifteen PB/STV/PTG wells and four existing Roux Associates wells: MW-28, MW-34, MW-42 and MW-45 (Plate 1). Groundwater samples were analyzed for VOCs, SVOCs and total and dissolved metals.

- Analytical results indicate detections of VOCs, primarily chlorinated VOCs, at concentrations similar to those documented by Roux Associates, and coinciding with the chlorinated VOC plumes identified migrating onto the Yard from off-site sources. Concentrations of metals and SVOCs detected at the Yard were also similar to those documented by Roux Associates.

In addition, based on the PB/STV/PTG report entitled "Supplemental Environmental Site Investigation Findings Report Summary", dated February 2007 (PB/STV/PTG, 2007), two additional groundwater samples were collected from wells located in Sunnyside Yard. Groundwater samples were collected from previously installed wells TE-MW-IB-3 and TE-MW-D-2 on November 14, 2006 and September 26, 2006, respectively. Both groundwater samples were analyzed for VOCs, SVOCs, and total and dissolved metals. VOCs were not detected in either of these samples and benzo(b)fluoranthene was the only SVOC detected slightly above the NYSDEC AWQSGV (detected at 1.2 µg/L in sample TE-MW-D-2). Several total and dissolved metals were detected in both samples at concentrations similar to those documented by Roux Associates.

The data developed by PB/STV/PTG for both the wells installed by PB/STV/PTG and for the above-referenced Roux Associates wells were incorporated into the master database for the Yard and will be evaluated in conjunction with data developed during the RI/FS described herein in order to provide more extensive characterization of groundwater quality from the deeper portions of the Upper Glacial aquifer beneath the Yard.

3.6 Previous Investigations Completed by EMCG Related to OU-6

Groundwater sampling activities were conducted from 2003 through 2005 by EMCG in response to the NYSDEC permit requirements for dewatering activities conducted at the Queens Open-Cut Excavation at the Existing Bellmouth. The groundwater monitoring events included the collection of groundwater samples from existing Roux Associates' monitoring wells MW-19 and MW-35 (Plate 1). According to data supplied to Roux Associates by ESA, groundwater samples were collected from MW-19 on April 15, April 22, April 30, May 14, June 3, August 25, and December 15, 2003, January 26, and August 31, 2004, and March 15, 2005. Groundwater samples were collected from MW-35 by EMCG on April 15, April 22, August 25, and December 12, 2003, February 4, and August 31, 2004, and March 15, 2005. Table 4 presents specific analysis performed for each of the groundwater samples collected by EMCG. The results for these groundwater samples can be summarized as follows:

- To date, groundwater samples were collected at MW-19 on 10 dates and at MW-35 on seven dates from April 2003 through May 2005.

- Concentrations of VOCs (primarily PCE and TCE) were detected in both MW-19 and MW-35.

- Low concentrations of SVOCs were detected at MW-19 and MW-35.

- No PCBs were detected in the groundwater samples collected at MW-19 and MW-35.

- Lead was detected at MW-19 and MW-35 at concentrations ranging from 3 to 240 μg/L. Relatively low concentrations of barium, chromium, and selenium were also detected at MW-19.

Analytical results developed by EMCG for MW-19 and MW-35 have been incorporated into Roux Associates master database for the Yard, and were evaluated in conjunction with data developed during the RI/FS described herein.

3.7 Previous Investigations Completed by GES Related to OU-6

- As part of the RI/FS conducted at the SMP Site, GES completed investigation activities that included soil and groundwater components. As part of these activities, GES installed two monitoring well clusters (each containing one monitoring well screened in the shallow zone and one monitoring well screened deeper in the aquifer) located on the MTA/LIRR owned property between Sunnyside Yard and SMP. The locations of these well clusters, designated MW-9 and MW-13, are presented on Plate 1 and well construction details are presented in Table 1. Based on the information Roux Associates obtained through a Freedom of Information Act (FOIA) document review conducted at the NYSDEC Long Island City office, groundwater samples were collected from all four wells associated with the two well clusters on July 28, 2003 and submitted for TCL VOC analysis. The results of these groundwater samples are summarized below:

- The chlorinated VOC vinyl chloride was found in shallow well MW-9S at a concentration exceeding the Class GA groundwater standard and the chlorinated VOCs cis 1,2 dichloroethene (cis 1,2-DCE) and vinyl chloride were detected in the shallow well MW-13S at concentrations exceeding the Class GA groundwater standards. In addition, methyl tert-butyl ether (MTBE) was detected at a concentration exceeding the groundwater standard in MW-13S.

- The chlorinated VOCs vinyl chloride and cis 1,2-DCE were detected at concentrations exceeding the Class GA groundwater standards in the deep well MW-9D. In addition, benzene and MTBE were detected at concentrations exceeding the Class GA groundwater standards in well MW-9D. The chlorinated VOC cis 1,2-DCE and the non-chlorinated VOC MTBE were detected at concentrations exceeding the Class GA groundwater standards in deep well MW-13D.

Analytical results developed by GES for MW-9S, MW-9D, MW-13S, and MW-13D have been incorporated into Roux Associates' master database for the Yard and were evaluated in conjunction with data developed during the OU-6 RI/FS described herein.

3.8 Previous Investigations Completed Related to OU-4

Although OU-4 is a separate Operable Unit, and by definition independent from OU-6, a brief discussion of previous investigation activities conducted in OU-4 is provided below. This discussion is relevant to OU-6 since OU-4 (unsaturated soil) and OU-6 (saturated soil, groundwater and soil vapor) exist in such close proximity to each other, and can interact with each other. As discussed above in Section 1.0, in order to have a comprehensive, holistic approach to evaluating OU-4, datasets generated both by Roux Associates and MTA ESA at the Yard, for both unsaturated and saturated soils (current at the time) were include in the OU-4 RI (Roux Associates, 2008). Below is a summary of investigation activities conducted in OU-4 (through the submittal of the RI Report in 2008). Furthermore, Section 5.3 provides a summary of all saturated soil data, including data already provided in the OU-4 RI, as well as more recent data generated since the submittal of the OU-4 RI. This summary of saturated soil data includes data generated both by Roux Associates, and by MTA ESA at the Yard.

Subsequent to the Phase I and Phase II RIs, numerous soil sampling investigations were associated with soil characterization to accommodate track maintenance, utility installation, and construction performed on behalf of Amtrak and NJTC. Independent investigations have also been performed by MTA ESA within OU-4.

In summary, 1560 soil samples were collected from 1105 sampling locations within OU-4. The field activities and findings of the numerous investigations were described in the OU-4 RI report (Roux Associates, 2008). Sampling and analysis was heavily biased towards the Yard-specific compounds of concern, PCBs, SVOCs, cPAHs, and lead. Several investigations completed in OU-4 were specifically performed to characterize soil for immediate maintenance or replacement of track and switches or in anticipation of new construction. The following provides a summary of the findings from remedial investigations performed in OU-4:

COC	Number of Samples Analyzed	Number of Samples Exceeding the Yard Soil Cleanup Level	Maximum Concentration Exceeding the Yard Soil Cleanup Level
Total PCB	1331	51	25,000 mg/kg (SB-68)
Total SVOC	872	0	–
Lead	882	1	7,020 mg/kg (LLS-15)

Of the 1,560 soil samples analyzed, 46 were saturated, and are included in Section 5.3 of this OU-6 RI Report. The data for these saturated soil samples are provided in Tables 12 through 15. As described in greater detail in Section 5.3, there were no exceedances of the Yard COCs detected in these saturated soil samples, and there were no exceedances of the NYSDEC Restricted Industrial Use soil cleanup objectives for the protection of public health as set forth in 6 NYCRR Part 375 (NYSDEC, 2006) for non-COCs in saturated soil. In addition to the OU-4 RI Report, Roux Associates has prepared an OU-4 FS (Roux Associates, 2009a). Both reports have been approved by NYSDEC, and a subsequent OU-4 PRAP (NYSDEC 2009a), and OU-4 ROD (NYSDEC, 2009b) have been issued to address contamination identified in unsaturated soil in OU-4.

4.0 SUPPLEMENTAL OU-6 RI METHODOLOGY AND SCOPE OF WORK (2008 and 2009)

A comprehensive, Yard-wide groundwater investigation has not been completed at Sunnyside Yard since the completion of the initial OU-6 RI activities in 1997 (over ten years ago). As described above in Section 3.0, this initial OU-6 RI did not identify any significant groundwater impacts attributed to Amtrak or NJTC, or their present or former operations at the Yard. All significant groundwater impacts identified were attributed to off-site contamination migrating on to the Yard. Following the completion of the OU-6 RI in 1997, as described in Section 3.0, only limited groundwater investigation activities related to OU-6 were conducted at the Yard. Most of these activities were conducted by Roux Associates, on behalf of Amtrak and NJTC, and some activities were conducted by other parties (i.e., as part of the ESA project). While these activities did include the installation of monitoring wells, groundwater sampling, and the collection of soil vapor samples (results described above in Section 3.0), these activities were limited in scope, focused on certain areas of the Yard, such as areas of proposed construction, or areas of the Yard that will be affected by the ESA project. Since groundwater is flowing and is therefore much more dynamic in nature than other media (i.e., soil), it would not be appropriate to rely on hydrogeologic data and groundwater quality data that is over ten years old. As such, this prompted the need for an additional, comprehensive Supplemental OU-6 RI to confirm the findings of previous OU-6 investigations, and prepare this final OU-6 RI/FS Report.

The Supplemental OU-6 RI was conducted in accordance with the document titled "Work Plan for the OU-6 Remedial Investigation/Feasibility Study", prepared by Roux Associates, dated October 30, 2007 (Roux Associates, 2007), and its associated plans (included as Appendices to the Work Plan), which include the following:

- Field Sampling Plan (FSP);
- Quality Assurance Project Plan (QAPP);
- Health and Safety Plan (HASP); and
- Citizen Participation Plan (CPP).

As described in the OU-6 RI/FS Work Plan, the major objectives of this Supplemental OU-6 RI scope of work were to achieve the following:

- confirm the findings of previous groundwater investigations conducted by Roux Associates and others at the Yard;
- develop up-to-date groundwater quality data and hydrogeologic data (i.e., water-level elevations, groundwater flow direction and rates, vertical gradients, etc.); and
- provide additional data to further characterize OU-6 with respect to the RI/FS through the installation of additional monitoring wells, and the completion of a comprehensive groundwater gauging and sampling round.

Part of the process in developing the Supplemental OU-6 RI scope of work presented in the Work Plan included an evaluation of each Area of Concern at the Yard (i.e., Area 1 through Area 17, as described in Section 1.0) with respect to OU-6 to ensure the objectives listed above were fully met for the Yard. A summary of this evaluation was provided in Table 4 of the Work Plan (Roux Associates, 2007). To summarize, additional investigation activities were proposed as part of the Supplemental OU-6 RI in Area 8, Area 12, and Area 14. These activities are described below.

As described in greater detail in the OU-4 RI (Roux Associates, 2008), Area 8 (previous PCB-containing transformer area) is a portion of the Yard that contains elevated concentrations of PCBs in unsaturated soil. The OU-6 RI/FS Work Plan proposed the installation on one well (MW-92) immediately downgradient of Area 8C to confirm PCBs have not impacted groundwater. As described below in Section 4.1.2, this well could not be installed due to constant train traffic in this portion of the Yard. The Area downgradient of Area 8C is located in the central portion of the body tracks, which is heavily used by Amtrak and NJTC for train storage and maintenance. Although this well could not be installed, there are other wells further downgradient of Area 8C. As will be discussed in detail in Section 5.0, these wells, TE-MW-A-1, TE-MW-D-1, SY-111Y, and MW-88 were all non-detect for PCBs in groundwater. This, coupled with the fact that PCBs have and extremely high affinity to remain bound to soil, and do not tend to leach into groundwater (as described in Section 6.0), indicate that PCBs in groundwater downgradient of Area 8C is not a concern.

Historic data generated during the Phase I and Phase II RIs identified low-levels of several SVOCs and metals downgradient of the car washer area (Area 12). To evaluate current groundwater conditions downgradient of Area 12, a new well (MW-82) was installed. Monitoring well MW-82 was installed west of its proposed location due to due to drilling refusal. As will be described in detail in Section 5.0, SVOCs were not detected, and there were no metals detected above Yard background concentrations in MW-82.

Monitoring well MW-68 (located downgradient of Area 14) contained a hydrocarbon sheen during the initial OU-6 RI (1997). This sheen, identified as diesel fuel (or similar), was an isolated occurrence, and was not connected to the SPH accumulation in OU-3. Since monitoring well MW-68 is located downgradient of a former heavy equipment fueling area, this sheen was attributed to localized occurrences of fuel spillage in this area. As part of the Supplemental OU-6 RI Work Plan (Roux Associates, 2007), additional investigation in the area surrounding MW-68 was proposed to evaluate to potential impacts due to this hydrocarbon sheen. As described in detail below, when the Supplemental OU-6 RI scope of work was implemented in 2008, there was no hydrocarbon sheen identified in well MW-68. Since there was no hydrocarbon sheen present in the well, a groundwater sample was collected. The only detection in this well was total xylenes, at t concentration 2.6 µg/L, well below the NYSDEC AWQSGV of 5 µg/L for total xylenes. No additional investigation activities were conducted surrounding MW-68 based on the following: there was no sheen present in MW-68; there were no exceedances detected in groundwater in MW-68; and fueling operation is no longer conducted in this area.

The Supplemental OU-6 RI/FS Work Plan was approved by the NYSDEC in their letter dated December 27, 2007 (NYSDEC, 2007e). Field activities associated with the Supplemental OU-6 RI were conducted from April through June 2008, and March 2009. A summary of the field methods and analytical methods followed during the implementation of the Supplemental OU-6 RI are provided below.

4.1 Field Methods

Field investigations pertaining to groundwater and soil vapor (i.e., OU-6) at the Yard included the following five tasks:

- Task 1: Monitoring Well Inventory/Inspection;
- Task 2: Monitoring Well Installation/Development/Survey;
- Task 3: Re-Development of Existing Monitoring Wells;
- Task 4: Monitoring Well Gauging/Groundwater Sampling; and
- Task 5: Limited Vapor Intrusion Survey.

4.1.1 Task 1: Monitoring Well Inventory/Inspection

Prior to the completion of the subsequent tasks, a comprehensive monitoring well inventory/inspection was completed at the Yard in late April 2008, before well installation was completed. The scope of these comprehensive inventory/inspections included not only wells installed by Roux Associates, but also wells that were proposed to be gauged and sampled as part of the OU-6 RI/FS scope of work that were installed by others (i.e., installed as part of the ESA Project or installed as part of the RI/FS at the SMP Site). These monitoring well inventory/inspections identified that a total of 26 wells had been abandoned, destroyed, or could not be located at the Yard since the submittal of the OU-6 RI/FS Work Plan. A summary of the wells that were found to be abandoned, destroyed or could not be located since the submittal of the OU-6 RI/FS Work Plan (Roux Associates, 2007) is provided in the table below. Additionally, Plate 1 depicts all wells currently remaining and intact at the Yard, and also depicts all wells that have been previously abandoned, destroyed, or could not be located.

Designation of Well(s)	Status of Well(s)	Comment
CTB-1, CTB-19, CTB-20, CTB-21, MW-16, MW-20, MW-23D, MW-49, MW-50, MW-52, MW-71, MW-72, MW-73, MW-74, MW-75, MW-77, RW-1, RW-2, TA-2	Properly Abandoned	1. OU-3 SPH Plume Delineation wells. 2. Abandoned by Roux in preparation for the implementation of OU-3 remedy.
MW-78	Could not be located	Construction materials/debris piled in area of well – well may still exist.
TE-MW-IB-1	Presumed Destroyed	Well possibly destroyed by construction.

Designation of Well(s)	Status of Well(s)	Comment
SSY-23	Buried	Well may still exist.
TE-MW-OB-2	Buried	Well may still exist.
SSY-46	Presumed Abandoned	Presumed to have been abandoned by MTA ESA.
SSY-49	Presumed Abandoned	Presumed to have been abandoned by MTA ESA.
SSY-51	Destroyed	Well destroyed by construction.

It is important to note that of the 26 wells listed above, a total of 19 wells were located within, or on the fringe of the OU-3 SPH plume. In accordance with the OU-3 Remedial Action Work Plan, Roux Associates properly abandoned all of these wells in as part of the site preparation associated with the remediation of OU-3. Most of these wells were located within the SPH plume, and therefore contained SPH and would not have been sampled as part of the Supplemental OU-6 RI. The other OU-3 wells mentioned above were intended solely for the delineation of SPH (addressed as part of OU-3), and not for the evaluation of groundwater quality, and therefore not essential to OU-6. Note that shallow groundwater was evaluated downgradient of the SPH plume as part of the Supplemental OU-6 RI through the sampling of still-existing wells MW-19, MW-35, and MW-70, and deep groundwater downgradient of the SPH plume was evaluated through the sampling of still-existing wells MW-38D and MW-39D.

It was not deemed necessary to replace any of the wells listed above as part of this OU-6 scope of work for the following reasons: 1) Well replacement and ongoing groundwater monitoring will be completed following the implementation of the remedy in OU-3. This ongoing groundwater monitoring will be completed as a component of the Yard-Wide Site Management Plan that is in currently being prepared for the Yard; and 2) The remaining seven wells listed above that were either abandoned, or could not be located were not critical to the OU-6 investigation (i.e., these well were not downgradient wells, or were not critical to delineating a plume or determining if soil vapor sampling would be required). As will be discussed in the following sections, Roux Associates collaborated with MTA ESA, and obtained groundwater quality data from PB/STV/PTG that was incorporated in to this RI/FS. This additional data was collected by MTA to support the ESA project, and supplements the groundwater data generated by Roux Associates. This additional data alleviates any potential data gaps that may have been caused due to the loss of the wells mentioned above.

4.1.2 Task 2: Monitoring Well Installation/Development/Survey

To further evaluate hydrogeologic and groundwater quality conditions at the Yard, twelve 2-inch diameter monitoring wells were installed during the implementation of the Supplemental OU-6 RI in April 2008. Monitoring wells were installed under the direction of Roux Associates. All monitoring wells were installed using a track-mounted Geoprobe direct push drill rig. Monitoring wells were installed in pilot boreholes drilled by driving dual tube casing. Monitoring wells were installed in accordance with the procedures outlined in the Field Sampling Plan (FSP), which was provided to the NYSDEC as Appendix A of the OU-6 RI Work Plan (Roux Associates, 2007).

The monitoring wells were installed with the top of the well screen set approximately two to three feet above the existing water table, when conditions permitted (i.e., in accordance with the 2007 OU-6 RI/FS Work Plan, all newly installed wells are shallow, water table wells). Details regarding specific well construction for these 12 monitoring wells are provided in Table 1. Table 1 also provides a summary of well construction for all monitoring wells previously installed at the Yard (including those wells that have since been abandoned or destroyed).

With the exception of slight changes due to auger refusals, only monitoring wells MW-81, MW-82, and MW-92 were not installed at their originally proposed locations. Monitoring well MW-81 was not installed due to its proximity to UT-9. Well UT-9 was installed by ESA in 2007, and discovered during the monitoring well inventory/inspection. Well MW-82 was relocated west of the proposed location due to refusal at approximately 5 feet bls at five different locations near the proposed area. The proposed location of monitoring well MW-92 was in an area of the Yard in constant traffic and was not accessible with a drill rig, and therefore not installed. The designation of proposed well MW-93 was changed to MW-92 to remain sequential. The actual locations of all new wells installed at the Yard are presented in Plate 1.

In accordance with the FSP, the twelve new monitoring wells were constructed of 2-inch diameter polyvinyl chloride (PVC) screen and 2-inch diameter PVC riser pipe. Each monitoring well has 10 feet of 20-slot (0.020 inch) PVC flush-threaded well screen. The wells were packed with No. 1 Morie sand. The gravel pack extended approximately 1 to 2 feet above the well screen, followed by a 1-foot thick layer of bentonite. The remaining annular space was then filled with a bentonite/cement grout to approximately 1 to 2 feet below land surface (bls). An outer locking, steel protective casing was then placed over the well casing and the remaining annular space filled with concrete. In areas where the water table was extremely shallow (i.e., less than 5 feet bls) the installation procedure was modified based on the actual conditions encountered. Monitoring well construction logs are included in Appendix C.

Following installation, each well was developed using submersible pumps and a surge block to ensure hydraulic connection with the surrounding saturated deposits. Each newly installed monitoring well was surveyed for horizontal and vertical coordinates by Angle of Attack Land Surveying, LLC. of Setauket, New York. All new wells were surveyed relative to msl using NAVD 88.

4.1.3 Task 3: Re-Development of Existing Monitoring Wells

To ensure that a good hydraulic connection exists between the well screen and the aquifer, existing monitoring wells previously installed at the Yard (when accessible) that were located during well inventory and were proposed for sampling, were re-developed using the same methods and techniques described above for the newly installed monitoring wells. All existing wells that were sampled were first re-developed with the exception of MW-13S, MW-13D, TE-MW-QA-2, and UT-9A, which were not redeveloped due to access issues. These, however are active wells that were recently sampled by either PB/STV/PTG or GES. Since these wells have not remained stagnant and inactive for a long period of time, redevelopment was not necessary.

4.1.4 Task 4: Monitoring Well Gauging/Groundwater Sampling

One round of water level measurements has been collected by Roux Associates during the Supplemental OU-6 RI, on June 2 through June 5, 2008 (Table 2). Roux Associates also collected water level measurements from monitoring wells MW-86 through MW-89 earlier on

May 21, 2008. The proximity of MW-86 through MW-89 to MTA ESA construction activities made these wells vulnerable to damage. Therefore, these wells were gauged soon after installation to avoid the risk of loss. Additional water level data for June and July 2008 was obtained from ESA and presented in Table 2, and was used in the construction of shallow and deep water level contour maps (Plate 2 and 3, respectively). All water level measurements were collected to the nearest 0.01 foot using an electronic oil/water interface probe. No wells gauged by either Roux Associates or MTA ESA as part of this Supplemental OU-6 RI scope of work contained SPH.

Roux Associates conducted groundwater sampling at the Yard on May 21, 1008 and June 2 through June 5, 2008. To ensure the groundwater samples collected were representative of the conditions in the surrounding aquifer, monitoring wells were purged prior to sample collection using low flow sampling procedures as outlined in the United States Environmental Protection Agency (USEPA) document titled “Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Groundwater Samples From Monitoring Wells” (USEPA, 1996). In accordance with this document, groundwater field parameters, including temperature, pH, dissolved oxygen (DO), turbidity, oxygen reduction potential (ORP), and conductivity were monitored during low flow purging activities. Groundwater samples were collected for laboratory analysis only after field parameters stabilized, as defined in this USEPA document. Field forms containing all sampling information, including field parameter measurements are included in Appendix D. After collection, groundwater samples were packed on ice and submitted to Hampton Clarke/Veritech of Fairfield, New Jersey (Veritech) for laboratory analysis. All groundwater samples were submitted for analysis for TCL VOCs, TCL SVOCs, PCBs, TAL metals, chloride, and TDS.

4.1.5 Task 5: Limited Vapor Intrusion Survey

In accordance with the OU-6 RI/FS Work Plan, a vapor intrusion study was conducted as part of the Supplemental OU-6 RI scope of work. Vapor sampling was conducted in accordance with the document titled “Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York”, prepared by NYSDOH, dated October 2006 (NYSDOH, 2006). This vapor intrusion survey is required, based on the fact that there are several chlorinated VOC and benzene, toluene, ethylbenzene and xylene (BTEX) plumes migrating on-site under portions of the Yard from off-site sources. Although these plumes are not attributed to Amtrak, or their current or previous operations at the Yard, NYSDEC and NYSDOH are requiring that Amtrak evaluate potential vapor intrusion at the Yard.

In accordance with the OU-6 RI/FS Work Plan, this limited vapor intrusion survey was focused on areas of the Yard where potential indoor air quality (IAQ) issues may exist due to vapor intrusion. Specifically, the OU-6 RI/FS Work Plan prescribed that subsurface vapor and indoor air were to be evaluated at or near occupied buildings located over or in the vicinity of the VOC plumes migrating on-site from off-site sources. In addition, representative outdoor air samples would be collected upwind of each building or group of buildings where subsurface vapor and indoor air samples were collected to determine ambient air quality it the area. This investigation did not include areas of the Yard with VOCs detected only in deep groundwater, and not at the water table (air/water interface) since there were no locations near occupied structures that only contained VOCs in deep groundwater and not in shallow groundwater.

Due to the fact that the location(s) of the vapor intrusion survey would be dependent on current groundwater quality data, it was necessary to await the Supplemental OU-6 RI groundwater results before developing and initiating the specific vapor intrusion scope of work. As such, following receipt of groundwater data, Roux Associates evaluated the distribution of groundwater impacts relative to occupied buildings at the Yard (this evaluation included both data generated by Roux Associates, and also data provided by MTA ESA). The results of groundwater quality data relative to occupied buildings at the Yard is presented in Plate 4 (groundwater quality data is discussed in detail in the following sections). Based on current groundwater quality, it was determined that the only location where groundwater quality exceeds NYSDEC AWQSGVs near an existing occupied building (hence requiring vapor intrusion investigation) is near the HSTF S&I Building, located in the northern portion of the Yard, west of the 39th Street Bridge.

Roux Associates provided this information to the NYSDEC is a letter titled “Plan for a Limited Soil Vapor Intrusion Survey”, dated March 4, 2009 (Roux Associates, 2009b). This letter provided a proposed scope of work, which included the installation and sampling of two temporary sub-slab vapor monitoring points concurrently with the collection of two corresponding indoor air samples, and one ambient outdoor air sample. This plan was approved by the NYSDEC prior to being implemented.

In accordance with the approved plan, on March 18, 2009 Roux Associates collected two sub-slab vapor samples beneath the floor of the HSTF S&I building, two indoor air samples within the building, and one outdoor ambient air sample. The locations of all sub-slab vapor, indoor air, and outdoor air samples collected proximate to the HSTF S&I building are presented in Figure 5. Specific Sampling methods (in accordance with the OU-6 RI/FS Work Plan and associated FSP) are described below.

Sub-Slab Vapor Sample Methods

Temporary sub-slab vapor samples were collected from the two-inch soil/aggregate interval located immediately below the slab on grade of the HSTF S&I building. These samples were not collected in close proximity to cracks or drains located in the floor slab, as to minimize potential ambient air infiltration. These temporary sample probes were constructed by first drilling a one-inch diameter borehole through the concrete slab using an electric rotary hammer drill. Teflon™ tubing was then inserted through the borehole, to a maximum of two inches into the sub-slab soil or aggregate. The borehole was then sealed to the surface with non-VOC emitting modeling clay. After installation, approximately three volumes of air was purged from the Teflon™ sampling tube using a low flow air pump at a rate of 100 milliliters per minute to ensure a representative soil sample is collected. During purging activities, a tracer gas (i.e., helium) was used to verify that the ambient air from above land surface did not dilute the sub-slab vapor sample that was collected. An enclosure (i.e., clean empty five-gallon bucket) was inverted over the sub-slab sampling point. Ultra-high purity (laboratory grade) helium was then introduced into the bucket, creating a helium-enriched environment immediately over the borehole. A tedlar sampling bag was attached to the low-flow air pump and filled with the purge vapor as the helium was added to the enclosure over the top of the borehole. The purge volume in the tedlar bag was then screened for the tracer gas (helium) using a direct read field meter. The atmosphere in the enclosure was also screened for helium using a direct read field meter. The helium concentration in the tedlar bag was compared to the concentration in the enclosure. If the helium concentration in the tedlar bag is greater than 20 percent of the helium concentration in the enclosure, the seals of the sampling equipment would need to be verified and the tubing would need to be purged again until the helium concentration in the tedlar bag is less than 20 percent of the concentration in the enclosure. Note that at both sampling locations, the seals passed the helium tracer test on the first attempt, assuring that a true, representative sub-slab vapor sample that has not been influenced by ambient air was collected.

Following purging activities, a laboratory cleaned and evacuated six-liter SUMMA canister was then be attached to the top of the Teflon™ tubing above land surface. The SUMMA canister was equipped with a laboratory provided flow regulator that was pre-calibrated to collect samples over a continuous 8-hour time period. The valve on the SUMMA canister was opened, allowing for the collection of a sub-slab vapor sample. Sub-slab vapor samples were submitted to Accutest Laboratories of Dayton, New Jersey (Accutest) under chain-of-custody procedures for analysis. Sub-slab vapor samples were submitted for analysis for VOCs using USEPA Method TO-15.

<u>Air Sample Methods</u>

Both indoor and outdoor (ambient) air samples were collected concurrently with the sub-slab vapor samples described above. Indoor air samples were collected in a location in close proximity to their respective sub-slab vapor samples, at a height approximately three feet above the floor (the height at which occupants are normally seated). The outdoor (ambient) air sample was collected from a representative, upwind location (north of the HSTF S&I building, as shown on Figure 5) at a height of approximately four feet above the ground (a height representing the approximate breathing zone). Both indoor air and outdoor air samples were collected using 6-liter SUMMA canisters equipped with a pre-calibrated flow regulator set to collect samples over an 8-hour period. Samples were submitted for VOC analysis using USEPA Method TO-15.

4.2 Analytical Methods

Laboratory analysis for all groundwater samples collected by Roux Associates as part of the Supplemental OU-6 RI was performed by Veritech, and all vapor samples (sub-slab, indoor air, and ambient air) were performed by Accutest. Both Veritech and Accutest are certified New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) laboratories. Furthermore, all groundwater analysis was completed in accordance with NYSDEC Analytical Services Protocol (ASP) procedures for organic and inorganic parameters using USEPA SW-846 methodology, and all vapor samples were analyzed in accordance with USEPA Method TO-15. All sample quality assurance and quality control (QA/QC) was completed in accordance with the QAPP (Appendix B of the OU-6 RI/FS Work Plan).

In cases where primary and duplicate sample results are not the same, the highest usable concentration detected for each constituent was (conservatively) considered the actual value. In cases where a sample was diluted and re-run, analytical results from the diluted sample were only used for those constituents that exceeded the instrument range in the first run (undiluted) sample.

Groundwater Samples

For groundwater sampling performed by Roux Associates during the course of this Supplemental OU-6 RI investigation, the following methods were performed in accordance with the specified ASP procedures using the USEPA SW-846.

- TCL VOCs – USEPA Method 8240;
- TCL SVOCs – USEPA Method 8270;
- PCBs – USEPA Method 8081; and
- TAL Metals – USEPA Method 6010 and 7471.

The OU-6 groundwater samples were additionally analyzed for the following wet chemistry parameters in accordance with the Methods of Chemical Analysis of Water and Wastes (USEPA, 1983).

- Chloride – Method 325.2; and
- Total dissolved solids (TDS) – Method 160.1.

Groundwater analytical results are presented in the format required by ASP (i.e., Category B deliverables package).

Vapor Samples

Vapor samples collected during this Supplemental OU-6 RI were analyzed for VOCs, using USEPA Method TO-15, and results were provided in a complete, full deliverable package, including all backup documentation (equivalent to Category B deliverable package).

5.0 NATURE AND EXTENT OF CONTAMINATION

The purpose of this section is to provide an evaluation of the nature and extent of contamination in OU-6 at the Yard. The nature and extent of OU-6 contamination was determined from data generated during the Supplemental OU-6 RI and related work at the Yard. Additionally, groundwater data generated by MTA ESA Project in 2008 (correlating to the approximate timeframe Roux Associates implemented the Supplemental OU-6 RI) has also been incorporated into this nature and extent of contamination evaluation. This dataset consists of the following:

- Water level and groundwater quality data generated by Roux Associates in May and June 2008 (Supplemental OU-6 RI);
- Water level and groundwater quality data generated by MTA ESA in March through September 2008 (MTA ESA Hydrogeologic Study – Spring 2008); and
- Vapor data (sub-slab, indoor air, and ambient air) generated by Roux Associates at the HSTF S&I Building in March 2009 (Supplemental OU-6 RI).

In addition to the data listed above, this section will provide a general comparison to the previous groundwater results generated by Roux Associates in 1997 during the initial OU-6 RI report. This comparison is important to illustrate that hydrogeologic conditions in OU-6 (including groundwater quality) have not changed substantially over the course of the approximately ten years that have elapsed since the initial OU-6 RI was performed.

Also included in this Nature and Extent section is an evaluation of saturated soil sample results collected at the Yard. This section contains saturated soil samples collected by Roux Associates, as well as saturated soil samples collected by MTA ESA (that have been provided to Roux Associates by MTA ESA) in OU-6. This section does not include saturated soil beneath the footprint of OU-3. As discussed above in Section 1.0, at the request of NYSDEC, saturated soil beneath OU-3 was addressed as part of the OU-3 RI/FS process. Therefore, this OU-6 RI/FS Report is inclusive of saturated soil beneath OU-1, OU-2, and OU-4. Saturated soil quality is discussed below in Section 5.3.

A summary of all groundwater, vapor, and saturated soil samples collected as part of this Supplemental OU-6 RI/FS, as well as previous investigations related to OU-6 is provided in Table 4.

Operable Unit 3 (including the SPH plume and saturated soil) has been extensively investigated and characterized as part of activities conducted at the Yard related specifically to OU-3. The findings of these OU-3 activities were provided in detail in the following major documents:

- Final OU-3 RI Report, dated May 27, 2005 (Roux Associates, 2005a);
- OU-3 Final Feasibility Study, dated December 6, 2005 (Roux Associates, 2005b);
- Proposed Remedial Action Plan (PRAP) for Sunnyside Yard, Operable Unit 3, dated February 2007 (NYSDEC, 2007a); and
- Record of Decision for Sunnyside Yard, Operable Unit 3, dated March 2007 (NYSDEC 2007b).

To summarize, the SPH plume has been fully delineated both horizontally and vertically, and is located entirely within the boundaries of OU-3. The outer boundary of the plume (historic zero-foot SPH contour), which is very conservatively defined by the absence of a visible sheen on the water table, occupies an area of approximately three acres in the central part of OU-3. The combined operation of the OU-3 SPH IRMs has resulted in the recovery of more than 11,500 gallons of SPH and has caused a significant reduction of the extent of the SPH plume horizontally and vertically (thickness). The horizontal migration of the SPH plume in all four directions is prevented by a variety of conditions in OU-3, including subsurface building foundations and structures, geologic conditions, and hydrogeologic conditions (vertical and horizontal groundwater flow). Furthermore, soils (unsaturated and saturated), and subsurface structures were fully characterized as part of the OU-3 RI efforts.

In the OU-3 Final FS (Roux Associates, 2005b), remedial alternatives were developed and evaluated to address the SPH plume (including residual SPH), as well as impacted soils (unsaturated and saturated) and remaining subsurface structures in OU-3. A remedy was subsequently selected by the NYSDEC (as documented in the OU-3 ROD) to address these environmental concerns. Therefore, the SPH plume, soils, and subsurface structures located in OU-3 are not included in this OU-6 RI/FS Report. Groundwater beneath the SPH plume in OU-3; however, is by definition part of OU-6, and as such, will be included in this RI/FS Report. As discussed below, only two of the six wells located downgradient of OU-3 have a single petroleum-related VOC detected and only two of these six wells have petroleum-related SVOCs detected. Furthermore, there are no exceedances of the NYSDEC AWQSGVs of any petroleum-related VOC or SVOC compound in the OU-3 monitoring wells (MW-19, MW-35, MW-37, MW-38D, MW-39D, and MW-70). Therefore, the SPH accumulation in OU-3 is not considered a source of groundwater contamination at the Yard.

5.1 Groundwater Quality

The following section will provide a detailed presentation of all groundwater quality data generated during Supplemental OU-6 RI, including data generated by MTA ESA in 2008. As part of this evaluation groundwater data is compared to the NYSDEC AWQSGVs. This is an extremely conservative approach to evaluating groundwater quality in OU-6 since the NYSDEC AWQSGVs are intended for groundwater that is considered suitable for drinking in its natural state. As previously stated, groundwater in western Queens County (including the Yard) is degraded, and not used as a source for drinking water. Additionally, as discussed in detail below in Section 5.1.5, a significant portion (19 percent) of the wells sampled during the Supplemental OU-6 RI throughout the Yard is classified as saline groundwater (i.e., Class GSA). There are no chemical-specific standards available for Class GSA (saline) groundwater; therefore, comparing saline groundwater to the NYSDEC AWQSGVs is an extremely conservative approach to evaluating groundwater quality in OU-6. Furthermore, as described below in Section 5.1.3, metals data is also compared to Yard background groundwater conditions, as determined from hydraulically upgradient wells located near the Yard perimeter.

A summary of all groundwater samples collected for laboratory analysis in OU-6 are presented in Table 4. Additionally, groundwater quality data for VOCs, SVOCs, metals, PCBs, and chloride and TDS are presented in Tables 5 through 9, respectively. A graphic summary of shallow (water table) groundwater quality and deep groundwater quality are presented in Plates 4 and 5, respectively.

5.1.1 Groundwater Quality – VOCs

During the Supplemental OU-6 RI (including groundwater samples collected by MTA ESA in 2008), a total of 62 groundwater samples were collected from 52 wells (24 shallow wells and 28 deep wells) and submitted for analysis for TCL VOCs. The following VOCs were detected in groundwater during the Supplemental OU-6 RI:

- Chlorinated VOCs;

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX); and
- Methyl tert-butyl ether (MTBE).

Acetone was detected in on-site monitoring well (SY-516W DUP) at a concentration of 3.3 µg/L, which is significantly below the AWQSGV of 50 µg/L. This compound was also detected in the associated laboratory QA/QC blank (as indicated with the "b" qualifier), indicating that this detection was a result of laboratory contamination, rather than representative of actual groundwater quality in this well. Acetone is commonly used in the laboratory, and is a common laboratory contaminant. This is further substantiated by the fact that acetone was only found in the field duplicate sample (not detected in the initial sample collected in this well). Based on these facts, this detection of acetone will not be discussed further. Additionally, MTA ESA analyzed VOC samples for the compounds cyclohexane, methyl cyclohexane, and isopropylbenzene. These compounds are not typically included in the TCL VOC list, and therefore are not included in tables and plates associated with this Supplemental OU-6 RI. These three compounds were only detected in one sample, and were detected at concentrations less than the AWQSGVs (where applicable). Specifically, these compounds were detected in sample UT-4W at the following concentrations: cyclohexane (25 µg/L), methyl cyclohexane (2.3 µg/L), and isopropylbenzene (2 µg/L).

The following sections discuss these detections of VOCs in relation to the known suspected source areas. The remainder of this section is divided into a discussion of chlorinated VOCs and a discussion of BTEX and MTBE.

5.1.1.1 Chlorinated VOCs

The following chlorinated VOCs were detected in one or more groundwater samples collected during the Supplemental OU-6 RI: 1,1,2-trichloroethane; 1,1-dichloroethane; 1,1-dichloroethene; 1,2-dichloroethane; chloroform; cis-1,2-dichloroethene; tetrachloroethene (PCE); trans-1,2-dichloroethene; trichloroethene (TCE); and vinyl chloride. The sum of the detections for all compounds listed above (i.e., Total CVOCs) is provided in Plates 4 (shallow groundwater quality) and Plate 5 (deep groundwater quality). Out of these 10 chlorinated VOCs listed above, eight were detected in one or more samples at a concentration in excess of the NYSDEC AWQSGVs. These exceedances are summarized below:

VOC	AWQSGV (µg/L)	Number of Samples Collected	Number of exceedances	Maximum Concentration (µg/L)	Well with Maximum Concentration
1,1,2-trichloroethane	1	62	2	17	RT-6W
1,1-dichloroethene	5	62	2	11	RT-6W
1,2-dichlroethane	0.6	62	2	8	RT-6W
Cis-1,2-dichlroethene	5	62	7	93	RT-6W
PCE	5	62	14	760	RT-6W
Trans-1,2-dichloroethene	5	62	2	61	RT-6W
TCE	5	62	9	24,000	RT-6W
Vinyl chloride	2	62	3	18	RT-6W

As evident in the table above, one single well (RT-6W) contained the highest concentrations of all chlorinated VOCs detected during this investigation. This well sits within the footprint of one of the three chlorinated plumes migrating on-site, from upgradient, off-site sources. This particular well is within the plume designated the West of Honeywell Plume, which is discussed in detail below.

The distribution of chlorinated VOCs at the Yard defines three distinct plumes:

1. **North Plume** – defined by shallow wells MW-19, MW-35, MW-85, MW-13S, and MW-9S and deep wells MW-13D and MW-9D.

2. **West of Honeywell Plume** – defined by shallow wells MW-82, MW-27, and deep wells UT-9AW, TE-MW-QA-2, RT-8W, UT-5W, RT-6W, TE-MW-OB-1, SY-111W, TE-MW-D-1, and TE-MW-A-1.

3. **Southeast Plume** – defined by shallow well MW-83 and deep well MW-62D.

Based on groundwater flow patterns at the Yard and knowledge of current and historic groundwater quality conditions at the Yard (developed based on over 20 years of groundwater investigation experience at the Yard), knowledge of material currently and formerly used at the Yard, and knowledge of Hazardous Waste sites surrounding the Yard, these three chlorinated VOC plumes are not attributed to Yard operations, but rather, are attributed to upgradient, off-site sources.

5.1.1.1.1 North Plume

As shown on Plate 4, a chlorinated VOC plume extends onto the Yard from the north, into OU-3. Standard Motor Products, Inc., which is located at 39th Street between Northern Boulevard and the Yard, lies hydraulically upgradient (east) of OU-3 (as show in Plate 2). As documented in the Remedial Investigation Report for Standard Motor Products, Inc. (Holzmacher, McLendon & Murrell, P.C., 1992), both soil and groundwater beneath the SMP site have been contaminated with chlorinated VOCs. The source of this contamination appears to be the SMP loading dock area, where drum washing took place and VOCs have been identified in soil greater than 20 feet bls.

Per the SMP RI report, total VOCs were detected in SMP soil at concentrations of up to 35,300 micrograms per kilogram (μg/kg). However, many of the SMP soil samples collected on the SMP site were collected below the water table (i.e., saturated soil samples). Known contamination reportedly extends to a depth of greater than 20 feet bls at the SMP site (Holzmacher, McLendon & Murrell, P.C., 1992). Historically, VOC distribution in groundwater was widespread at the SMP Site. A total of ten different VOCs (six chlorinated solvents and BTEX) were detected beneath the SMP site (Holzmacher, McLendon & Murrell, P.C., 1992). In addition, the 1992 RI report for SMP concluded that the contaminants detected at the site have migrated radially outward from the SMP loading dock in both stormwater runoff and groundwater. Water level data collected by Roux Associates indicate that groundwater is flowing west (parallel to the sewer line) from the SMP site toward the northern part of OU-3. However, the water table is nearly flat beneath the eastern part of OU-3, causing the VOC plume to spread radially outward from its source (Plate 2).

GES completed an RI at the SMP site in 2002 through 2003, which included, in part the collection of 18 groundwater samples from nine direct push, temporary borings and the collection of groundwater samples from eight newly installed monitoring wells and one existing monitoring well. The results of this investigation were documented in the January 30, 2004 RI Report prepared by GES (GES, 2004a). The 2004 RI Report identified a total of 14 VOCs detected above the NYSDEC AWQSGVs (nine of which are chlorinated VOCs) in direct push sample borings, and 12 VOCs detected above NYSDEC AWQSGVs (six of which were chlorinated VOCs) in permanent monitoring wells. The highest concentrations of VOCs were detected south of the loading dock area, at a depth of approximately 6 feet bls (approximately the same elevation as the water table). The specific chlorinated VOCs identified on the SMP site are similar to those identified in OU-3; however, the concentrations detected at the SMP site are generally significantly higher than those detected in OU-3. For example, in the 2004 RI, TCE was detected in groundwater at concentrations as high as 800 µg/L (just south of the SMP loading dock, at 6 feet bls), and PCE was detected at concentrations as high as 44 µg/L (also just south of the loading dock, at 6 feet bls). For comparison, during the Supplemental OU-6 RI, TCE was detected in groundwater in downgradient well MW-85 (in OU-3) at a concentration of 1.9 µg/L, and PCE was detected in MW-85 at a concentration of 5.5 µg/L. Based on the direction of groundwater flow, and the distribution of chlorinated VOCs, it is apparent that the low levels of chlorinated VOCs identified in OU-3 during this Supplemental OU-6 RI are attributed to SMP. It is important to note that with the exception of the shallow/deep well clusters MW-9S/MW-9D and MW-13S/MW-13D (installed on MTA property, very close to the Yard boundary between the Yard and the SMP site by GES), the only chlorinated VOC that exceeded the AWQSGVs identified in either a shallow or deep well associated with the North Plume is in MW-85 (PCE was detected at 5.5 µg/L, marginally exceeding the AWQSGV of 5 µg/L). As part of the 2008 sampling, wells MW-9S/MW-9D and MW-13S/MW-13D (located on the MTA property, immediately downgradient of the SMP site) were found to contain cis-1,2-dichloroethene at concentrations as high as 32 µg/L and vinyl chloride at concentrations as high as 13 µg/L, both in excess of the AWQSGVs.

5.1.1.1.2 West of Honeywell Plume

Data collected from shallow wells MW-82, MW-27, and deep wells UT-9AW, TE-MW-QA-2, RT-8W, UT-5W, RT-6W, TE-MW-OB-1, SY-111W, TE-MW-D-1, and TE-MW-A-1 as part of the Supplemental OU-6 RI confirm that the chlorinated VOC plume previously documented west of Honeywell Street is still present (designated the West of Honeywell Plume). Plate 4 depicts the extent of this plume in shallow groundwater, which includes only wells screened across the water table. Based on the direction of groundwater flow in this portion of the Yard, it is apparent that this chlorinated VOC plume has migrated on-site from an upgradient, off-site source.

The ACCO facility sits less than 500 feet south of the Yard, at 32-00 Skillman Avenue (see Plate 2). The ACCO site is currently in a Voluntary Cleanup Agreement (VCA) with the

NYSDEC for the investigation and cleanup of this Site. As documented in the Off-site RI Work Plan prepared by GES, dated May 2004 (GES, 2004b), ACCO (or its predecessor companies) have occupied this site since 1952, where they manufactured staples and stapler components. As part of these operations, ACCO utilized paints, thinners, solvents, and cleaners. Additionally, prior to ACCO's occupancy, this site was used by automotive service centers and gasoline stations (GES, 2004b). Based on a review of site documents, on-site (designated OU-1) investigation activities have been completed at the ACCO site that have revealed significant concentrations of chlorinated VOCs in shallow, intermediate, and deep groundwater. Additionally, off site (designated OU-2) investigation activities have identified that chlorinated VOCs in groundwater are migrating off site. As documented in the RI Work Plan for the ACCO site, groundwater flows in the north-northwest direction (i.e., towards the Yard). In addition to chlorinated VOCs, BTEX compounds were also found off-site. The detections of BTEX may be partially or completely attributed to a gasoline service station with known petroleum impacts, located immediately northwest of the ACCO site. This gasoline station, like the ACCO site, is also hydraulically upgradient of the Yard.

The West of Honeywell Plume at the Yard is comprised primarily of PCE, TCE, and their daughter products, cis-1,2-dichloroethene, and trans-1,2-dichloroethene. Based on data provided in the ACCO RI Work Plan (GES, 2004b), a similar suite of compounds was found widespread beneath the upgradient, ACCO site. These compounds are, however, found at much higher concentrations at the ACCO site. For example, TCE was detected in 2002 in a well located at the ACCO site at a concentration of 460,000 µg/L, and their daughter product, cis-1,2-dichloroethene, was found in an on-site well at 5,810 µg/L in 2003. As a basis for comparison, the highest detections of chlorinated VOCs found at the Yard during the Supplemental OU-6 RI were in well RT-6W. On September 3, 2008, TCE was found at 24,000 µg/L, and cis-1,2-dichloroethene was found at 93 µg/L (both concentrations are substantially lower than concentrations historically found at the ACCO site). Well RT-6W is located approximately 200 north of the Yard boundary, directly hydraulically downgradient from the ACCO site.

This plume appears to span approximately from Honeywell Street to Queens Boulevard in the southern portion of the Yard. As shown in Plate 4, based on shallow groundwater data, the shallow portion of the plume in the Yard extends north, approximately half way across the Yard (approximately to MW-45). Based on the total chlorinated VOC concentrations for deep wells (Plate 5), the deeper portion of the plume extends further north through the Yard, and likely off-site, toward the groundwater discharge area (i.e., the buried flow path of the Dutch Kills Creek).

The shallow extent of this plume is defined by wells MW-27 and MW-82. These wells do contain chlorinated VOCs; however, no compounds detected exceeded the AWQSGVs. The deep portion of this plume is defined at the Yard by wells UT-9AW, TE-MW-QA-2, RT-8W, UT-5W, RT-6W, TE-MW-OB-1, SY-111W, TE-MW-D-1, and TE-MW-A-1. All of these deep wells contain at least on chlorinated VOC detected at concentrations in excess of the AWQSGVs, with all of the highest detections being found in well RT-6W. Beneath the Yard, the most impacted groundwater associated with this plume is in the deep zone, supporting the fact that the source of this plume is not at the Yard, but rather further upgradient. Based on the direction of groundwater flow and the distribution of chlorinated VOCs, it is apparent that the chlorinated VOCs identified in the West of Honeywell Plume are attributed to an upgradient, off site source, which is most likely at least partially attributed to the ACCO Site.

5.1.1.1.3 Southeast Plume

As show in Plate 4, a chlorinated solvent plume extends on to the southern portion of the Yard, near 39th Street (designated the Southeast Plume). This plume is defined by the shallow/deep well cluster MW-83/MW-62D. The only VOC detected in shallow well MW-83 is PCE, at a concentration of 1.9 µg/L (below the AWQSGV of 5 µg/L for PCE). Total chlorinated VOCs were detected at a concentration of 58.3 µg/L in deep well MW-62D, with the majority of this total concentration attributed to PCE (54 µg/L), and with lesser concentrations of chloroform (1.3 µg/L), cis-1,2-dichloroethene (1.7 µg/L), and TCE (1.3 µg/L). PCE was the only compound to exceed the AWQSGVs in well MW-62D.

The direction of groundwater flow and vertical distribution of chlorinated VOCs in this plume indicate that this plume is originating from an unknown, upgradient off-site source located south to southeast of the Yard boundary.

5.1.1.2 BTEX and MTBE

Benzene, toluene, ethylbenzene, total xylenes (BTEX) and MTBE were detected in one or more groundwater samples collected during the Supplemental OU-6 RI. The sum of the BTEX detections (total BTEX) and MTBE concentrations are provided in Plates 4 (shallow groundwater quality) and Plate 5 (deep groundwater quality). Note that in accordance with the approved OU-6 RI/FS Work Plan (Roux associates, 2007), Roux Associates did not submit groundwater samples for MTBE analysis. The only samples that were analyzed for MTBE are those samples collected and submitted for analysis by MTA for the ESA project. Benzene, total xylenes, and MTBE were detected in one or more wells at a concentration in excess of the NYSDEC AWQSGVs. These exceedances are summarized below:

VOC	AWQSGV (µg/L)	Number of Samples Collected	Number of exceedances	Maximum Concentration (µg/L)	Well with Maximum Concentration
Benzene	1	62	2	73	RT-6W
Total xylenes	5	62	1	5.5	TE-MW-QA-2
MTBE	10	24	7	660	TE-MW-IB-2

In general, the occurrence of BTEX and MTBE detections in groundwater at the Yard can be categorized as follows:

- Associated with the North Plume;
- Associated with the West of Honeywell Plume; or
- Isolated occurrences.

5.1.1.2.1 BTEX Associated with the North Plume

- The top of the screen zone of MW-38D is approximately 25 feet below the water table (and therefore, approximately 25 feet below the SPH plume);
- there is an upward hydraulic gradient beneath OU-3, reducing or preventing the downward flow of contaminants;
- No VOCs were detected in MW-70, which is a shallow well, located only 40 feet downgradient of the SPH plume (located approximately 50 feet west of MW-38D); and
- SMP is a known source of BTEX and is located hydraulically upgradient of MW-38D.

5.1.1.2.2 BTEX and MTBE Associated with West of Honeywell Plume

BTEX and MTBE were detected in several deep wells located within the West of Honeywell Plume (see Plate 5). It is important to note that every detection of BTEX and MTBE that was identified at the Yard that exceeded the AWQSGVs was located within, or in close proximity to this plume. Within this plume, total BTEX was detected at a maximum concentration of 73 µg/L (well RT-6W). Benzene and total xylenes were the only two BTEX constituents to exceed their respective AWQSGVs. Benzene was detected in excess of its AWQSGV of 1 µg/L in wells RT-6W and UT-4W with concentrations of 73 µg/L and 8.9 µg/L, respectively. The only location to contain total xylenes in excess of its AWQSGV was well TE-MW-QA-2, at a concentration of 5.5 µg/L (marginally exceeds its AWQSGV of 5 µg/L). MTBE was also detected in deep wells associated with the West of Honeywell Plume. A total of 24 samples were collected throughout OU-6 for MTBE, and of those 24 samples, seven exceeded its AWQSGV of 10 µg/L, all located in the West of Honeywell Plume. The highest of these exceedances was found in well TE-MW-IB-2, with an MTBE concentration of 660 µg/L. With the exception of wells TE-MW-IB-2 and UT-4W, all MTBE detections were identified in between Honeywell Street and Queens Boulevard.

As documented in the RI Work Plan for the ACCO site (GES, 2004b), ACCO, as part of their off-site groundwater investigation activities installed monitoring wells at a former gasoline station, located at the intersection of Queens Boulevard and Van Dam Street, approximately 100 feet west of the ACCO site. This former gasoline service station is located hydraulically upgradient of the Yard. Based on data provided in the ACCO RI Work Plan (GES, 2004b), BTEX was detected at elevated concentrations in wells installed within this former gasoline station. Benzene was detected at concentrations as high as 311 µg/L, ethylbenzene was detected at concentrations as high as 2,380 µg/L, toluene was detected at concentrations as high as 29,900 µg/L, and total xylenes were detected at concentrations as high as 3,460 µg/L, all well above their respective AWQSGVs, and indicative of a previous release. In addition, an active service station is located on the corner of Skillman Avenue and Queens Boulevard (31-05 Queens Boulevard), also hydraulically upgradient from the Yard. This site has had previously documented release(s), and has open Spill Numbers with the NYSDEC.

Similar to the chlorinated VOCs found in this plume, the BTEX and MTBE found in this portion of the Yard has migrated on-site from an upgradient, off-site source. It is likely that the BTEX and MTBE fractions of this plume are the result of contamination from the former and/or existing gasoline service stations located upgradient of the Yard.

5.1.1.2.3 Isolated Occurrences of BTEX

In addition to the detections described above, there are two other locations where total BTEX concentrations were detected at the Yard. As shown in Plate 4, shallow monitoring well MW-37 contained toluene at a concentration of 1.1 μg/L (well below the AWQSGV of 5 μg/L). The source of this toluene detection is unknown. It is possible that this could be attributed to the North Plume, migrating on-site from SMP; however, this cannot be confirmed at this time based on the current data. Toluene was not detected in associated upgradient and downgradient wells, and therefore appears to be an isolated occurrence, limited to the area immediately around MW-37. This single detection was well below the conservative AWQSGVs (i.e., drinking water standards).

As presented in Plate 4, shallow monitoring well MW-68 contained total xylenes at a concentration of 2.6 μg/L (below the AWQSGV of 5 μg/L). Well MW-68 is located immediately downgradient of a former heavy equipment fueling area, and hence, this low-level detection may be attributed to past fueling operations. In 1997, SPH sheen was observed in this well. This SPH sheen was an isolated occurrence, and not associated with the OU-3 SPH plume. There was no SPH sheen observed during this Supplemental OU-6 RI, and fueling operations have since ceased in this area.

5.1.1.3 Comparison of Supplemental OU-6 RI VOC Results to 1997 RI VOC Results

The purpose of this section is to provide a general comparison of VOC results from this Supplemental OU-6 RI to the results found during this 1997 OU-6 RI. Groundwater data generated from 1997 through 2008 for VOCs is presented in Table 5. Overall, groundwater data generated in 2008 is consistent with that generated in 1997. The fundamental findings remain largely unchanged (i.e., three chlorinated VOC plumes have migrated onto the Yard from upgradient sources). There was, however some additional findings in 2008, such as two BTEX plumes identified at the Yard in 1997 are no longer present (one plume was in the northeast corner of the Yard, and one was north of OU-3). These findings are discussed below.

Groundwater data collected from wells MW-19 and MW-35 suggests that the leading edge of the North Plume appears to have migrated further west (downgradient) along the Yard's northern boundary. In 2008, low-levels of chlorinated VOCs were identified in MW-19 and MW-35 (below AWQSGVs), whereas in 1997 VOCs were not detected in these wells. Current data does not suggest the plume has migrated south (i.e., further in the Yard). In 2008, BTEX was also identified within this plume at low-levels (i.e., total BTEX was 1.1 µg/L in MW-85), whereas in 1997 BTEX was not found within this plume. The source of this BTEX is likely SMP. Conversely, the small BTEX plume identified migrating on-site north of the SPH plume in OU-3 in 1997 was not present in 2008. This plume was based on a detection of total BTEX at 6.8 µg/L in 1997. In 2008, total BTEX was not found in MW-35.

The West of Honeywell Plume is still present at the Yard. Shallow groundwater data suggests the plume has increased in width in the southern portion of the Yard (the eastern edge of the plume begins just east of Honeywell Street, and extends west nearly to Queens Boulevard). Based on 1997 data, the shallow portion of the plume was narrower in width. The expansion to the west is supported by detections of chlorinated VOCs in MW-27 in 2008 (4.3 µg/L), whereas chlorinated VOCs were not detected in this well in 1997. Furthermore, chlorinated VOCs were detected in MW-82 (located immediately east of Honeywell Street) in 2008 at a concentration of 2.1 µg/L. Well MW-82 was not present in 1997. The shallow portion of this plume, however does not appear to extend as far north in 2008 as it did in 1997. For example, in 1997 chlorinated VOCs were detected in shallow downgradient wells MW-42 (102 µg/L), MW-43 (4 µg/L), and MW-28 (11.5 µg/L), indicating that the shallow portion of this plume passed entirely through the Yard. In 2008, wells MW-86, MW-87, and MW-88 (replacement wells for MW-42, MW-43, and MW-28, respectively) were all non-detect for chlorinated VOCs. This indicates that the leading edge for the shallow portion of this plume ends within the Yard, as opposed to the plume passing entirely through the Yard.

MTA ESA has installed several additional deep wells in this portion of the Site as part of their pre-construction activities, which were initiated in 2000. The addition of these wells to the existing well network has resulted in better definition of the deep portion of the plume. These wells indicate the deep portion of this plume does extend further north into the Yard than the shallower portion of the plume (it is likely the deep portion of the plume passes entirely through the Yard). Based on data from RT-6W, it appears the deeper portion of this plume also extends further west than in 1997. This may, however be a function of having more deep monitoring wells and therefore, better definition of the deep portion of the plume in 2008. The portion of the plume with the highest concentration also appears to have shifted to the west. The maximum concentration of total VOCs found in this plume in 2008 was in well RT-6W (24,964.7 µg/L), which is significantly higher than the maximum concentration identified in 1997, which was 398 µg/L in well MW-34. Well RT-6W sits directly downgradient from the ACCO site (see Plate 5). Groundwater data generated in 2008 has also identified BTEX and MTBE within the deep portion of this plume (note that the BTEX and MTBE were only identified in deep wells associated with this plume). BTEX and MTBE were not detected in this plume in 1997. This BTEX and MTBE are likely attributed to the former and/or active service stations located upgradient of the Yard.

The Southeast Plume (located near 39th Street, in the southern portion of the Yard) is still present. This plume is defined by wells MW-83 and MW-62D. The total chlorinated VOC concentration in the shallow portion of this plume has decreased. Well MW-61 contained chlorinated VOCs at a concentration of 7 µg/L in 1997, and well MW-83 (replacement well for MW-61) contained chlorinated VOCs at a concentration of 1.9 µg/L in 2008. Conversely, the deep portion of this plume appears to have increased in concentration. In MW-62D, total chlorinated VOCs were detected at 5.9 µg/L in 1997, and detected 58.3 µg/L in 2008. Based on the limited monitoring points, the overall horizontal footprint of this plume appears to have remained consistent from 1997 to 2008.

In 2008, low levels of BTEX were found in wells MW-37 and MW-68 (below AWQSGVs). In 1997, BTEX was not present in MW-37. Well MW-68 contained a SPH sheen in 1997, and therefore a groundwater sample was not collected in 1997. There was no SPH sheen observed in MW-68 in 2008; however, a low-level detection of BTEX was identified (total xylenes at 2.6 µg/L, which is below the AWQSGV). In 1997 a small, low-level BTEX plume was identified migrating on-site in the northeast corner of the Yard. There was no BTEX found in groundwater sample MW-48D in 2008, suggesting that this BTEX plume is no longer present at the Yard.

In 1997, well MW-27 contained benzene (130 µg/L), carbon disulfide (110 µg/L), and MIBK (5,200 µg/L). In 2008, these compounds were all non-detect in MW-27. Well MW-41 also contained MIBK in 1997 (4 µg/L). Well MW-41 has since been destroyed; however, well MW-89 was installed as part of the Supplemental OU-6 RI, and is located approximately 80 feet downgradient of former MW-41. In 2008, MIBK was not detected in MW-89. Furthermore, in 2008 there was not a single detection of MIBK throughout the Yard.

5.1.2 Groundwater Quality – SVOCs

During the Supplemental OU-6 RI a total of 32 groundwater samples were collected from 30 wells (23 shallow wells and 7 deep wells) and submitted for analysis for TCL SVOCs. The following SVOCs were detected in groundwater during the Supplemental OU-6 RI:

- 3 PAHs (2-methylnaphthalene, acenaphthene, and fluorene); and
- Benzoic acid.

Supplemental OU-6 RI groundwater quality data identified detections of one or more of the compounds listed above in four of the 32 samples collected. None of the SVOCs detected exceeded their respective AWQSGVs. The wells with detections of SVOCs included: MW-35, MW-68, MW-70, and MW-87. The PAH 2-methylnaphthalene was detected in three samples (MW-70 at 2.6 µg/L, MW-35 at 6.1 µg/L, and MW-68 at 380 µg/L). The detection of 2-methylnaphthalene in MW-68 is most likely attributed to diesel fueling operations that have previously been conducted at the Yard, immediately upgradient of this well. Note that in 1997 a SPH sheen was present in this well, and in 2008 there was no SPH sheen present. Acenaphthene was detected in two wells (MW-35 at 2.9 µg/L and MW-70 at 2.2 µg/L). Fluorene was detected only in well MW-70 (1.6 µg/L), and benzoic acid was detected only in well MW-87 (2.5 µg/L). All of these detections are lower than the conservative AWQSGVs.

5.1.2.1 Comparison of Supplemental OU-6 RI SVOC Results to 1997 RI SVOC Results

The purpose of this section is to provide a general comparison of SVOC results from this Supplemental OU-6 RI to the results found during the 1997 OU-6 RI. Groundwater data generated from 1997 through 2008 for SVOCs is presented in Table 6. Similar to the 1997 RI, in 2008 there were no SVOCs detected above the AWQSGVs. Overall, groundwater quality data generated in 2008 for SVOCs confirms the findings of the previous RI – SVOCs in groundwater are not a concern at the Yard.

In June 1997, a total of five PAHs (2-methylnaphthalene, acenaphthene, anthracene, fluorene, and phenanthrene), 4-methylphenol, and dibenzofuran were detected in groundwater. In 2008, three PAHs (2-methylnaphthalene, acenaphthene, and fluorine), and benzoic acid were detected in groundwater at the Yard. Similar to the 1997 RI, in 2008 all detections were limited to shallow wells. Overall, the detections found in 2008 are at lower concentrations than those found in 1997. For example, in 1997 2-methylnaphthalene and acenaphthene were found in MW-35 at 20 µg/L and 5 µg/L, respectively. In 2008, the same SVOCs were detected in MW-35, but at lower concentrations (2-methylnaphthalene was at 6.1 µg/L, and acenaphthene was at 2.9 µg/L). In 1997, MW-19 contained 4-methylphenol (0.6 µg/L), acenaphthene (2 µg/L), dibenzofuran (1 µg/L), and phenanthrene (0.6 µg/L). In 2008, there were no SVOCs detected in MW-19. Similarly, in 1997 wells MW-27 and MW-37 had detections of SVOCs, and in 2008, SVOCs were not detected in these wells. In 2008 monitoring well MW-68 contained 2-methylnaphthalene at 380 µg/L. As described above, this well was not sampled in 1997 due to the presence of a SPH sheen. This sheen was no longer observed in 2008, and therefore a groundwater sample was collected. As stated above, there were no SVOCs detected in the Yard in 1997 or in 2008 that exceed the AWQSGVs.

5.1.3 Groundwater Quality – Metals

Since metals naturally occur in both soil and groundwater, background concentrations of metals in groundwater were determined for the Yard. As previously discussed, a combination of both shallow and deep monitoring wells, located along the hydraulically upgradient boundary of the Yard were utilized to determine Yard background concentrations for metals. Specifically, metals data from monitoring wells MW-30, MW-34, MW-47, MW-48D, MW-61, MW-62D, MW-80, MW-83, MW-84, TE-MW-QA-2, TP-9, and TP-10 was utilized. The locations of these wells relative to shallow and deep groundwater flow are presented in Plates 2 and 3, respectively. Analytical data generated both during this Supplemental OU-6 RI and/or during the initial OU-6 RI (1997) for these upgradient wells were used to determine background metals concentrations. Several of these upgradient wells no longer exist at the Yard, and in this situation, only data generated during the previous OU-6 RI were utilized to determine background metals concentrations in these wells. These wells include: MW-30, MW-34, MW-47, MW-61, and TP-9. The background concentrations for each metal are presented in Table 7. The background ranges were compared to concentrations of metals in on-site monitoring wells so that potential impacts from the Yard could be differentiated from indigenous concentrations of metals in groundwater. Analytical data in a bolded font on Table 7 indicates the results exceed only the NYSDEC AWQSGV, analytical data outlined in a box indicates the results exceed only the Yard background concentration, and analytical data both in a bolded font and outlined indicates this results exceed both the NYSDEC AWQSGV and the Yard background concentration. Only detections of metals that exceed the Yard background concentrations or that exceed Yard background and AWQSGVs will be discussed further in this RI Report.

During the Supplemental OU-6 RI, 34 samples were collected from 32 wells and submitted for analysis for TAL metals. Seven of these 32 wells were determined to be background wells (i.e., MW-48D, MW-62D, MW-80, MW-83, MW-84, TE-MW-QA-2, and TP-10), and therefore the data from those wells are not discussed further. Of the remaining 25 wells, eight contained at least one metal above background range. Six of the 23 TAL metals exceeded background ranges at least once. Exceedances of Yard background concentrations are tabulated below in order of frequency of exceedance.

Metal	**Background Concentration (μg/L)**	**No. of Wells Exceeding Background**	**Range of Concentrations Exceeding Background (μg/L)**	**Well Containing Highest Concentration**
Arsenic	3.6 B	3	8.2 - 11	MW-35
Barium	280	3	410 - 580	MW-39D
Manganese	2,650	2	3,400 – 5,200	MW-13S
Potassium	11,900	2	12,000 – 17,000	MW-90
Copper	65.0 JV	1	66	MW-87
Lead	48	1	78	MW-87

No metals were detected above background in the following seventeen wells: MW-9D, MW-9S, MW-13D, MW-19, MW-27, MW-37, MW-45, MW-68, MW-70, MW-82, MW-85, MW-86, MW-88, MW-89, MW-92, TE-MW-OB-1, and UT-9AW. In addition, the following four wells each contained only one metal above the background range: MW-13S, MW-38D, MW-79, and MW-90. The remaining wells (i.e., MW-35, MW-39D, MW-87, and MW-91) contained either two or three metals above the background ranges. Complete results are provided in Table 7.

Four of the six metals listed above that were detected above background levels, were not detected above the conservative, NYSDEC AWQSGVs. These metals include arsenic, barium, potassium, and copper. Although these metals were found above Yard background levels in several wells, the concentrations were all below the NYSDEC AWQSGVs, and therefore these metals will not be discussed further. The remaining two metals – manganese and lead are discussed below.

<u>Manganese</u>

Manganese was found in excess of both Yard background and AWQSGVs in well MW-13S (5,200 µg/L) and MW-91 (3,400 µg/L). According to published and Yard hydrogeologic data, the Upper Glacial aquifer is known to contain elevated concentrations of manganese and iron. Yard data confirm that elevated concentrations of manganese and iron are indicative of groundwater quality within the shallow deposits. According to published data for Queens County (Buxton, et al., 1981), manganese concentrations vary within the Upper Glacial aquifer from less than 100 µg/L to greater than 10,000 µg/L, increasing as conditions become anoxic. Anoxic conditions are found in wetlands, such as the buried wetlands located beneath the western portion of the Yard and the northeast corner of the Yard. Well MW-13S is located proximate to the buried wetland located in the northeast corner of the Yard, and MW-91 is located in the western portion of the Yard, within the buried wetland. Published data also indicate that high manganese concentrations are associated with high iron concentrations. Both MW-13S and MW-91 contain elevated iron concentrations (although lower than Yard background), which further supports that the manganese identified in these wells is indicative of natural aquifer conditions.

Lead

Lead was detected in excess of Yard background levels and the AWQSGV only in one well, MW-87, with a concentration of 78 µg/L. The groundwater sample collected at this location contained a high amount of suspended particles, as evident by the turbidity measurements recorded during sample collection (Appendix D). Although low-flow sampling methods were used to purge this well prior to sampling, the turbidity measured in the groundwater would not decrease to levels below 100 NTUs. Additional groundwater was purged from the well in an effort to reduce the turbidity; however, at the time of sample collection, the turbidity measured in the well was 129 NTUs. When this monitoring well was installed and sampled, the area around the wellhead was saturated with water from nearby ESA construction water discharge activities. This saturated soil made drilling and constructing the well difficult. Due to the muddy, saturated soil, there was initial difficulty setting the well casing, and the borehole had to be re-drilled. It is possible that this difficulty installing the well may have attributed to this turbid sample. Based on this turbid sample, it is likely that the lead identified in this well was caused by suspended particles in the sample, and this lead detection is not indicative of the dissolved-phase groundwater quality in the aquifer.

5.1.3.1 Comparison of Supplemental OU-6 RI Metals Results to 1997 RI Metals Results

In 1997, five monitoring wells at the Yard contained groundwater with one or more metals above both Yard background ranges and the AWQSGVs: MW-49 (iron), MW-59 (manganese), MW-64 (zinc), MW-65 (magnesium), and TP-8 (beryllium, chromium, iron, lead, manganese). A total of seven different metals were detected above both background ranges and the AWQSGVs: beryllium, chromium, iron, lead, manganese, magnesium, and zinc. With the exception of iron and manganese, each of these metals exceeded both background ranges and the AWQSGVs only once. All five wells that contained a metal exceedance in 1997 were located downgradient of, or in close proximity to SMP, a known source of metals-contaminated groundwater. These exceedances occurred in five wells located along the northern boundary of the Yard, with the known SMP metals contamination being the likely source. Furthermore, the elevated manganese and iron may have been attributed to the anoxic conditions found associated with the buried wetland, and the magnesium may have been attributed to salt-water intrusion.

During the Supplemental OU-6 RI in 2008, only two metals were found that exceeded both the Yard background concentrations and the AWQSGVs. These metals were manganese and lead. Manganese was found only in two wells at concentrations exceeding the Yard background and the AWQSGVs, and lead was found only in one well exceeding the Yard background and AWQSGVs. Elevated manganese was likely attributed to the anoxic conditions found associated with the buried wetlands, and the lead exceedance was like due to a turbid sample. This groundwater data demonstrates that metals concentrations in groundwater beneath the yard are showing a decreasing trend. This may be attributed to the attenuation of metals in groundwater at the upgradient sources (i.e., SMP). This Supplemental 2008 RI data also demonstrates that, consistent with the findings of the 1997 RI, there are no metals impacts to OU-6 attributed to past or current Yard operations.

5.1.4 Groundwater Quality – PCBs

During the Supplemental OU-6 RI a total of 34 groundwater samples were collected from 32 wells (23 shallow wells and 9 deep wells) and submitted for analysis for PCBs. As presented in Table 8, there were no detections of PCBs in groundwater found during the Supplemental OU-6 RI.

5.1.4.1 Comparison of Supplemental OU-6 RI PCB Results to 1997 RI PCB Results

In 1997, during the implementation of the initial OU-6 RI, PCBs were detected in two of the 34 monitoring wells sampled. PCBs were detected in well MW-23D at a concentration of 0.010 µg/L (Aroclor 1260), and PCBs were detected in sample MW-25A at a concentration of 0.019 µg/L (also Aroclor 1260). Both of these detections were below the NYSDEC AWQSGV for PCBs of 0.09 µg/L. As discussed earlier, in 1997 a petroleum sheen was identified in monitoring well MW-68. In June 1997 as part of the OU-6 RI, a sample of groundwater (with a sheen) was collected from well MW-68 and submitted for analysis for PCBs. PCBs were detected in this sample at a concentration of 0.077 µg/L (Aroclor 1260), which is also below the NYSDEC AWQSGV for PCBs. The PCB groundwater data generated in 2008 (i.e., non-detect) supports the initial OU-6 RI conclusions that PCBs in groundwater are not a concern at the Yard.

5.1.5 Groundwater Quality – Chloride and TDS

In addition to the groundwater quality parameters discussed above, groundwater samples collected in 2008 as part of the Supplemental OU-6 RI were analyzed for chloride and TDS. Groundwater was analyzed for these parameters to determine the salinity/potability of groundwater. The NYSDEC Water Quality Regulations define saline groundwaters as "groundwater that has a chloride concentration of more than 250 milligrams per liter (mg/L) or a total dissolved solids concentration of more than 1,000 mg/L."

In 2008 a total of 34 samples were collected from 32 wells and submitted for analysis for chloride and TDS. Chloride concentrations ranged from 10 to 750 mg/L, and TDS concentrations ranged from 160 to 1,600 mg/L. The results for chloride and TDS are presented in Table 9. Groundwater results for these analyses determined that saline groundwater exists at approximately 19 percent of the monitoring wells tested (i.e., 6 of 32 wells). Saline groundwater conditions were identified in both shallow and deep groundwater. Specifically, the following six wells were found to be classified as saline: MW-27, MW-45, MW-62D, MW-80, TE-MW-OB-1, and UT-9AW. In general, higher concentrations of chloride and TDS were detected in the southwest portion of the Yard, indicating that salt water intrusion affects are most prevalent in this portion of the Yard. The source of this salt water intrusion is likely both the Dutch Kills and Newtown Creek. Salt water intrusion likely occurred at the Yard from these sources due to historic overpumping of the aquifer (as described in Section 2.6.1.1).

5.1.5.1 Comparison of Supplemental OU-6 RI Chloride and TDS Results to 1997 RI Results

As part of the initial OU-6 RI in 1997, a total of 34 monitoring wells were sampled for chloride and TDS. Chloride concentrations ranged from 7 to 725 mg/L, and TDS concentrations ranged from 100 to 1,480 mg/L. A total of approximately 38 percent of the wells sampled (13 of 34 well), were found to contain saline groundwater conditions. Saline conditions were noted in the west to southwestern portion of the Yard, with almost the entire portion of the Yard west of Honeywell Street considered saline. The percentage of wells identified as saline in 1997 was higher than in 2008 (38 percent vs. 19 percent). In 2008, saline conditions were still noted in a substantial portion of the Yard (southwest portion); however, it appears that the northernmost extent of saline groundwater has receded slightly to the south since 1997. Furthermore, in 1997 wells MW-38D, MW-40D, MW-69D, and MW-66 were found to contain saline conditions, indicating that saline groundwater was present along the north side of the Yard. In 2008, saline groundwater was not found in wells MW-38D, MW-68, MW-9S/MW-9D, or wells MW-13S/MW-13D, indicating that saline groundwater is no longer found in the north side of the Yard.

5.2 Soil Vapor Results

As described above in Section 4.1.5, based on a review of current groundwater data generated during the Supplemental OU-6 RI, it was determined that the only location requiring vapor intrusion investigation is the HSTF S&I Building, located in the northern portion of the Yard, west of the 39th Street bridge. A graphic summary of the shallow groundwater plumes relative to Yard buildings is presented in Plate 4. As such, on March 18, 2009 a vapor intrusion investigation was conducted at the HSTF S&I Building (during the heating season, as defined by NYSDOH). This investigation involved the collection of two sub-slab vapor samples, two indoor air samples, and one outdoor (ambient) air sample for analysis for VOCs. The results of the vapor analysis are presented in Table 11, and the locations of these samples are presented in Figure 5.

As shown on Table 11, all of the samples collected (indoor air, sub-slab, and outdoor air) had very similar results. The five compounds detected at the highest concentrations in each of these samples are summarized below:

	Compound (Concentration in µg/m^3)				
	INDOOR-1	**INDOOR-2**	**SUBSLAB-1**	**SUBSLAB-2**	**OUTDOOR-1**
Highest Detection	Total xylenes (45.6)	Total xylenes (43.9)	Acetone (79.3)	Acetone (125)	t-butyl alcohol (105)
2nd Highest Detection	Ethanol (45.2)	Toluene (43.3)	Total xylenes (36)	Total xylenes (40)	Acetone (73.4)
3rd Highest Detection	Toluene (42.6)	Ethanol (31.7)	Toluene (33)	Toluene (38.1)	Total xylenes (45.2)
4th Highest Detection	Acetone (22)	n-Hexane (21)	Ethanol (31.7)	Ethanol (32.2)	Ethanol (43)
5th Highest Detection	n-Hexane (18)	Acetone (18)	n-Hexane (18)	n-Hexane (18)	Toluene (42.6)

5.2.1 General Evaluation of Sub-Slab, Indoor Air and Outdoor Vapor Data

As evident in the table above, with the exception of the outdoor air sample, the same five compounds comprise the five highest detections in all samples. The outdoor air sample is the only sample to contain t-butyl alcohol in the top five detections (n-hexane was not found in the top five highest detections in the outdoor air sample). Based on the concentrations detected, the VOCs found in indoor air are likely attributed to outdoor air sources, and not from subsurface vapor intrusion.

Based on the vapor data collected associated with the HSTF S&I building, it does not appear that the dissolved-phase North Plume is having a significant impact on sub-slab vapors beneath the building. This is supported by the fact that of the five compounds detected with the highest concentrations in sub-slab vapor, only one compound (toluene) was also found in groundwater associated with the dissolved-phase North Plume. Toluene was found in all vapor samples; however, the two sub-slab samples contained toluene at the lowest concentrations. The two indoor air samples contain toluene at concentrations of 42.6 micrograms per cubic meter ($\mu g/m^3$) and 43.3 $\mu g/m^3$ in samples INDOOR-1 and INDOOR-2, respectively. These concentrations are nearly identical to the outdoor air sample, which contained toluene at a concentration of 42.6 $\mu g/m^3$, and are at higher concentrations than the sub-slab samples. Based on this data, the source of toluene in indoor air is not from the subsurface (i.e., impacted groundwater), rather the source is likely from background levels found in the outdoor air. Note that the large doors on either side of the HSTF S&I building that allow trains to enter and exit the facility are often left open, allowing outdoor air to enter the interior of the building. The Yard is located in an active urban/industrial setting. Sources of VOCs (including toluene) in background outdoor air include local automobile and truck traffic, nearby gasoline service stations, emissions from nearby boilers and emissions from nearby industrial activities. Benzene, ethylbenzene, and total xylenes were also found in sub-slab vapor, indoor air, and outdoor air samples, and these VOCs were not present in groundwater associated with the dissolved-phase North Plume. In almost all cases, the highest concentrations of these VOCs were found in the outdoor air sample, further supporting that these detections are not from subsurface or indoor air sources. Similar to toluene, the source of these VOCs in background outdoor air is attributed to the urban setting surrounding the Yard (traffic, industrial operations, etc.).

The following chlorinated solvents present in the dissolved-phase North Plume were not detected in sub-slab vapor samples collected beneath the HSTF S&I Building, indoor air samples collected inside the HSTF S&I Building, or the outdoor air sample collected near the HSTF S&I Building: 1,1-dichloroethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroehene, TCE, and vinyl chloride. The only chlorinated VOC common to both the dissolved-phase North Plume and sub-slab vapor beneath the building was PCE. PCE was detected in sub-slab samples SUBSLAB-1 and SUBSLAB-2 at concentrations of 4.7 µg/m^3 and 5.2 µg/m^3, respectively. PCE was also detected in indoor air samples INDOOR-1 and INDOOR-2 at concentrations of 5.5 µg/m^3 and 5.4 µg/m^3, respectively, and in OUTDOOR-1 at 5.1 µg/m^3. PCE was detected at the lowest concentrations in both sub-slab samples. The fact that PCE was detected at higher concentrations in indoor air and outdoor air than in subsurface vapor, and the fact that the indoor air and outdoor air samples contained PCE at nearly identical concentrations, indicates that the source of the PCE is not from the subsurface (i.e., impacted groundwater), rather, the PCE detected is from background outdoor ambient air.

In both cases, a greater number of VOCs were detected in indoor air samples than in their corresponding sub-slab vapor samples, further supporting the fact that VOCs found in indoor air are not attributed to subsurface vapors. For instance, a total of 25 VOCs were detected in sample INDOOR-1 and only 19 VOCs were detected in corresponding sample SUBSLAB-1, and 26 VOCs were detected in sample INDOOR-2 and only 19 VOCs were detected in corresponding sample SUBSLAB-2. Additionally, 25 VOCs were detected in the outdoor air sample, which is more than in either sub-slab sample and nearly identical to the indoor air samples. In almost all cases, the concentrations for specific compounds found in all three sample types were comparable or lower in sub-slab sample than in indoor air or outdoor air samples.

The results of this vapor intrusion investigation did not identify a vapor intrusion concern in the HSTF S&I Building. Based on the concentrations of VOCs identified in sub-slab, indoor and outdoor air, the impacted groundwater (i.e., OU-6) is not acting as source of potential vapor intrusion.

Several VOCs were detected at low-level concentrations in indoor air samples. As mentioned above, almost every VOC detected in indoor air was also found in outdoor air at a higher concentration, indicating outdoor ambient air quality is the source of low-level VOCs found in the building. With respect to worker protection, concentrations of VOCs detected in indoor air were compared to their applicable (when present) Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs), as presented in 29 CFR 1910. The OSHA PELs provide limits for indoor air contaminants based on an 8-hour time weighted average. The concentrations detected in the HSTF S&I building are well below applicable OSHA PELs.

5.2.2 Evaluation of Vapor Data with Respect to NYSDOH Decision Matrices

In the document titled "Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (NYSDOH, 2006), the NYSDOH published decision matrices to provide guidance on evaluating what actions (if any) should be completed to address current and future exposures to vapor intrusion. These decision matrices take into account site-specific sub-slab vapor concentrations and corresponding indoor air concentrations for specific VOCs to provide guidance on what actions (if any) should be taken to mitigate vapor intrusion. Depending on the specific VOC identified, and the concentrations of indoor and sub-slab vapor, actions listed in the decision matrices could include no further action, identification and removal of indoor sources, monitoring, or mitigation. Based on the 2006 Guidance Document, the NYSDOH offers decision matrices for the following compounds: carbon tetrachloride, PCE, 1,1,1-trichloroethane, and TCE. In a NYSDOH letter dated June 25, 2007, the NYSDOH expanded their decision matrices to include the following VOCs in addition to those listed above: vinyl chloride, 1,1-dichloroethene, and cis-1,2-dichloroethene.

Roux Associates performed an evaluation of the vapor intrusion data generated in the HSTF S&I building using the NYSDOH decision matrices.

Of the seven specific VOCs with applicable decision matrices, five VOCs were not detected in any sample (sub-slab, indoor air, of ambient air), and therefore require no further evaluation. These five VOCs are 1,1,1-trichloroethane, 1,1-dichloroethene, cis-1,2-dichlroethene, TCE, and vinyl chloride. The two remaining compounds, PCE and carbon tetrachloride are discussed below.

PCE was detected in indoor air samples INDOOR-1 and INDOOR-2 at concentrations of 5.5 µg/m^3 and 5.4 µg/m^3, respectively, and in sub-slab samples SUBSLAB-1 and SUBSLAB-2 at concentrations of 4.7 µg/m^3 and 5.2 µg/m^3, respectively. When compared to the applicable decision matrix, the only action recommended is "take reasonable and practical actions to identify source(s) and reduce exposure". Essentially this means that based on the low concentration detected in the sub-slab (in both cases lower than their respective indoor air samples), the source is likely not from vapor intrusion, but rather background ambient air and/or indoor sources. PCE was found in the outdoor ambient air sample at a concentration of 5.1 µg/m^3, indicating that this source is likely from background ambient air. Additionally, although solvents are used in the HSTF S&I building (some possibly containing PCE) as part of railroad maintenance operations, it appears that good housekeeping practices are followed in this building. For example, when not in use, solvents and other flammable materials are stored in flammable material cabinets, which are vented to the outside of the building, and drums/containers were observed to be capped tightly.

Carbon tetrachloride was detected in indoor air samples INDOOR-1 and INDOOR-2 at concentrations of 0.69 µg/m^3 in both indoor air samples collected. Carbon tetrachloride was not detected in either sub-slab sample, indicating that the source of these very low indoor air detections is not from the subsurface. Similar to PCE, when compared to the applicable decision matrix, the only action recommended is "take reasonable and practical actions to identify source(s) and reduce exposure". These low-level detections are likely from indoor or outdoor sources.

5.3 Saturated Soil Quality

The following section provides a description of saturated soil quality beneath the Yard in OU-6. This discussion includes saturated soil samples collected both by Roux Associates, and by MTA ESA at the Yard. Many of these results were presented in the OU-4 RI Report prepared in 2008 (Roux Associates, 2008), however, MTA ESA has generated additional saturated soil samples since the submittal of the OU-4 RI report. This section contains all saturated soil samples that have been provided to Roux Associates by MTA ESA.

As part of this evaluation, saturated soil data for the Yard-specific COCs (i.e., PCBs, total SVOCs, cPAHs, and lead) were compared to the soil cleanup levels for the Yard that were re-established in the OU-4 ROD, as follows:

- Total PCBs – 25 mg/kg;
- Total SVOCs – 500 mg/kg; and
- Lead – 3,900 mg/kg.

Non-COCs for saturated soil samples were compared to the NYSDEC Restricted Industrial Use soil cleanup objectives for the protection of public health as set forth in 6 NYCRR Part 375 (NYSDEC, 2006). The results for saturated soil VOC, SVOCs (including total cPAHs), metal (including lead), and PCBs are presented in Tables 12 through 15, respectively. The locations of all soil borings where a saturated soil sample was collected are presented in Plate 6.

As part of previous investigations including a saturated soil component, a total of 159 analyses of saturated soil were performed from 29 boring locations. As presented in Tables 12 though 15, there was not a single exceedance of the Yard-Specific soil cleanup levels for COCs, or the NYSDEC Restricted Industrial Use soil cleanup objectives for non-COCs found anywhere in the Yard.

As presented in Plate 6, saturated soil samples were collected within the chlorinated VOC groundwater plumes in OU-6. Saturated soil results indicate that, while these samples were collected within the chlorinated VOC groundwater plumes, chlorinated VOCs are either non-detect, or detected at low concentrations in these saturated soil samples. For example, saturated soil sample TE-MW-QA-2 was collected immediately upgradient of the Yard – closest to the offsite plume source, centrally located within the West of Honeywell groundwater plume. The groundwater samples collected from well TE-MW-QA-2 on June 5, 2008 contained elevated detections of several chlorinated VOCs, including 1,1-dichloroethane, cis-1,2-dichloroethene, PCE, and TCE. As show in Table 12, the corresponding saturated soil samples collected from boring TE-MW-QA-2 contained only low level detections of few chlorinated VOCs. Specifically, cis-1,2-dichloroethene was detected at 26 µg/kg (the Part 375 Industrial standard is 1,000,000 µg/kg), PCE was detected at 44 µg/kg (the Part 375 Industrial standard is

300,000 µg/kg), and TCE was detected at 9 µg/kg (the Part 375 Industrial standard is 400,000 µg/kg). Similar trends were observed when evaluating other saturated soil samples collected from within groundwater plumes at the Yard. Additionally, the few low-level detections of VOCs (all below applicable standards) identified in saturated soil beneath OU-6 are attributed to groundwater impacted by VOCs. In all cases, the VOCs in groundwater are migrating onto the Yard from off-site sources. The saturated soil is not the source; rather it is being impacted by the groundwater plumes migrating onto the Yard.

6.0 CONTAMINANT FATE AND TRANSPORT

An evaluation of the environmental fate and transport of contaminants present in OU-6 at the Yard was performed to support the RI/FS. This evaluation consisted of the following two elements:

1) compilation of information regarding physicochemical properties that can influence the fate of contaminants; and

2) an evaluation of contaminant transport and degradation processes.

6.1 Physicochemical Properties of Contaminants

Physical and chemical properties that will affect the fate and transport of contaminants in groundwater, soil (including saturated soil), and soil vapor include:

- solubility;
- specific gravity;
- vapor pressure;
- Henry's Law constant;
- organic carbon partition coefficient (K_{oc}); and
- octanol-water partition coefficient (K_{ow}).

Solubility is the maximum concentration of a chemical that will dissolve in water at a given temperature without forming a separate phase.

Specific gravity is the ratio of the density of a pure chemical to the density of water. As a separate phase, a compound with a specific gravity less than 1.0, such as benzene, will float on top of the water table, while a chemical with a specific gravity greater than 1.0, like trichloroethene, will sink. Specific Gravity does not affect the dissolved-phase distribution of contaminants.

Vapor pressure is a property of a chemical in its pure state and is an indicator of the rate of volatilization of a chemical in an aqueous environment.

Henry's Law constant is the ratio of a chemical's concentration in the vapor phase above water to its concentration in the aqueous phase, at equilibrium. It indicates the tendency of the chemical to evaporate from a water solution, and essentially represents the water to air partitioning coefficient.

The organic carbon partition coefficient (K_{oc}) is the ratio of a chemical's concentration bound to soil organic carbon to its concentration in soil pore water, at equilibrium.

The octanol-water partition coefficient (K_{ow}) is the ratio of a chemical's concentration in the n-octanol phase to its concentration in the aqueous phase of an octanol-water mixture at equilibrium. The K_{ow} can give an indication of how the chemical will preferentially distribute into an aqueous solution, such as groundwater. Low K_{ow} values indicate that the contaminant is more hydrophilic; that is, a large fraction will be dissolved in the water phase, and this implies higher environmental mobility.

Table 16 lists values for these properties obtained from literature references for the organic contaminants detected in groundwater at concentrations above the NYSDEC AWQSGVs, and detected in subsurface vapor (no standards exist) during the Supplemental OU-6 RI. Note that only compounds detected in sub-slab vapor samples are discussed in this section. Compounds detected only in indoor and/or outdoor air samples are not discussed, since the source of these compounds is likely not from the subsurface (i.e., OU-6). Additionally, there were no compounds detected in saturated soil above applicable standards (i.e., Yard-specific soil cleanup levels for COCs, or NYSDEC Part 375 Restricted Industrial Standards for non-COCs, therefore, compounds detected only in saturated soil are not included in Table 16.

6.2 Processes Affecting Contaminant Migration

The processes by which chemicals in OU-6 can migrate include: 1) leaching from soil to groundwater; 2) transport in groundwater; 3) discharge from groundwater to surface water; 4) volatilization from soil, groundwater and surface water; and 5) transport in vadose zone soil vapor/vapor intrusion. The parameters controlling contaminant transport by these processes are described below.

6.2.1 Leaching From Soil to Groundwater

The leaching of contaminants from soil into groundwater depends on the degree of binding of the chemical to soil, the amount of water the soil-bound chemical comes in contact with, and the chemical characteristics of the soil and recharging water. The degree of soil binding is reflected in the K_{oc} values, with higher K_{oc} values indicating greater binding and lower leaching propensities. Since K_{oc} values are available for only a few chemicals, K_{oc} has been found to be correlated with K_{ow}, such that higher K_{ow} values would also indicate greater binding to soil. The actual distribution coefficient (the ratio of bound to dissolved concentration at equilibrium, K_d) for the binding of chemicals to soil must take into account the soil organic carbon content, and is discussed below. The amount of water available to leach chemicals from unsaturated soil is a function of annual rainfall and the fraction of rainfall that percolates downward. The key chemical characteristics of the soil and water that influence the ability to leach contaminants are Eh (redox potential), pH, and the presence of dissolved co-solvents. Eh influences the predominant oxidation state of metals, and therefore the aqueous solubilities of those metals. Water with low pH (acidic) is more efficient in leaching some metals from the soil. Co-solvents (i.e., of organic origin) act to increase the solubilities of organic chemicals in water.

6.2.2 Transport in Groundwater

The transport of contaminants in groundwater is affected by the hydrologic properties of the aquifer, chemical composition of the aquifer and chemical nature of the contaminants. The hydrologic properties of the aquifer are described in terms of advective and dispersive flow. The aquifer's organic carbon content and physical properties, along with the K_d of the chemical, are then used to calculate a retardation factor (R) for the chemical in the aquifer.

Advection and Dispersion

Advective flow is used to describe the transport of a non-reactive, water-soluble tracer at an average groundwater velocity (Freeze and Cherry, 1979). Darcian flow is assumed. Advective flow is usually the dominant transport mechanism in aquifer systems. The equation to describe advective flow is:

$$v = K_H \frac{I_H}{n_e}$$

Where:

v = the velocity of groundwater along a segment of a flow line (ft/d);

n_e = the effective porosity of the aquifer (dimensionless);

K_H = the horizontal hydraulic conductivity of the aquifer (ft/d); and

I_H = the horizontal hydraulic gradient along a segment of a flow line (ft/ft).

The advective flow equation describes the flow velocity in an ideal system (that is, a system where the seepage velocity depends only on the aquifer properties and the hydraulic gradient). The main application of the simple advective flow equation is to determine the average time it takes for water to reach a certain location.

Dispersion can result in a spreading of the arrival time of this idealized groundwater flow. The arrival time of the center of mass of the contaminant can be calculated by the advection equation, but some of the contaminant arrives earlier than the center of mass, and some contaminant arrives later. Dispersion is controlled by molecular diffusion and mechanical mixing within the aquifer.

Retardation

Advection determines the rate of flow of groundwater in a formation. However, because most contaminants have chemical properties different from those of groundwater, the contaminants can move at velocities slower than that of groundwater due to binding reactions with the solids in the aquifer matrix. This is termed retardation.

Sorption on naturally-occurring organic matter is the predominant mechanism by which organic compounds are retarded in groundwater systems. The rate of movement of these compounds relative to groundwater has been directly linked to the K_{ow} for the individual compounds (Lyman et al., 1982). The K_{ow} is a measurement of a compound's tendency to concentrate in an organic phase in preference to water. In groundwater systems, the compounds with lower K_{ow} values concentrate in the mobile water phase rather than in the immobile solid organic matter phase. Therefore, those compounds will migrate faster than other compounds with higher K_{ow} values.

The retardation of a specific compound is strongly influenced by the amount of organic matter in the aquifer matrix. The distribution coefficient, K_d, is calculated prior to determining retardation factors and provides another means of ranking organic compound mobilities in a specific geologic material. An equation of the form:

$$\log K_d = 1.00 \log K_{ow} + \log(f_{oc}) - 0.21$$

can be used to estimate K_d values (Lyman et al., 1982). The fraction organic carbon (f_{oc}) is obtained from the percentage of organic matter in the aquifer matrix. The equation to calculate K_ds assumes the organic carbon content has a uniform effect on all contaminants, although this is not always the case (Garbarini and Lion, 1986).

The K_ds calculated using the above equation incorporate the chemical characteristics of the organic contaminant and the aquifer material into one term. The overall retardation characteristics of the aquifer are included in the calculation of retardation factors (R) by the equation:

$$R = 1 + \left(\frac{\rho}{n}\right) K_d = \frac{v}{v_c}$$

where ρ is the bulk density of the soil, and n is the soil porosity (Freeze and Cherry, 1979). The retardation factor is the ratio of the velocity of the groundwater (v) compared to the velocity of the compound of interest (v_c). Compounds that have K_ds of zero would move at the same velocity as the groundwater, and hence have a retardation factor of 1.0.

Table 17 shows the results of calculating R-values for the organic contaminants detected above groundwater standards during Supplemental OU-6 RI at the Yard, and categorizes chemicals with regard to their relative mobility based upon R. Contaminants which have R values ranging from 1.0 to 2.0 (i.e., those chemicals which would travel at velocities greater than one-half of the groundwater velocity) are classified as having a high relative mobility; contaminants for which R ranges from 2.1 to 20 are classified as having medium relative mobility; contaminants for which R ranges from 21 through 50 are classified as having low relative mobility; and those compounds with R greater than 50 are considered relatively immobile. The classification scheme described above is useful for comparing the relative mobilities of the contaminants found at the Yard. The organic compounds detected above groundwater standards are aromatics and halogenated aliphatics, which are rated either medium or highly mobile.

The mobility of cationic metals depends upon the groundwater conditions and the nature of the aquifer matrix. For example, most metals are adsorbed more readily under alkaline pH conditions. The presence of clay minerals and iron hydroxides will also increase the extent of adsorption. Precipitation can also play a role in reducing contaminant concentrations for most metals. The metal can either form its own mineral phase or can be incorporated as a trace metal in another precipitating solid. The redox potential of the groundwater, Eh, can affect the redox state of metals dissolved in groundwater. Lower Eh values indicate the presence of reducing potential (for instance, Fe++), and can lead to the prevalence of the reduced forms of redox-active metals like chromium, iron, and manganese.

6.2.3 Discharge from Groundwater to Surface Water

Dissolved contaminants can be transferred from groundwater to surface water off-site by discharge of the groundwater to the East River and Dutch Kills. Discharge of groundwater to surface water will occur when the hydraulic head of groundwater is higher than the head of surface water to which it is hydraulically connected. This process can cause removal of some of the dissolved organics in the groundwater by adsorption to the river bottom sediments, because the latter often contains a higher organic content than the aquifer matrix. As groundwater discharges through the sediments, contaminants can be immobilized temporarily or permanently. The relative f_{oc}-values of sediment and aquifer matrix will determine the degree of binding during discharge. The higher the f_{oc} of the sediment, the greater will be the binding of dissolved organic contaminants from groundwater. Contaminants bound to sediments would then be subject to migration downstream if the sediment were carried with the surface water.

6.2.4 Volatilization from Soil, Groundwater, and Surface Water

Volatilization can be an important migration mechanism whereby contaminants are removed from surface water, soil, and groundwater, and transferred to air or vapors in the vadose zone. Chemicals with high vapor pressures and low aqueous solubilities are generally most affected by this process. Those compounds with large Henry's Law constants (Table 16) will readily volatilize into the atmosphere (Nyer et al., 1991) where they may be degraded by reaction with sunlight (photolysis, as described in Section 6.3). Although a Henry's Law constant was unavailable for many compounds in Table 16, it would be predicted from their vapor pressures and solubility that the aromatic compounds would have a Henry's Law constant large enough for significant removal from waters and soils by this process. The more soluble compounds, such as the phenols, and the less volatile compounds, such as the PCBs, are not readily volatilized from water or soil.

6.2.5 Transport in Vadose Zone Soil Vapor/Vapor Intrusion

The transport of contaminants in soil vapor is affected by the geologic properties of the vadose zone, chemical composition of the vadose zone, and chemical nature of the contaminants. Several different mechanisms of transport can occur, including diffusion of vapors from sources in the vadose zone (i.e., soil source), and diffusion of vapors from sources in shallow groundwater. Concentration gradients between the source (i.e., impacted soil in the vadose zone or impacted shallow groundwater) can result in upward, lateral or downward (in the case of impacted soil in the vadose zone) migration in unsaturated soil. Characteristics such as soil porosity, effective permeability, ground surface cover, ambient temperature, age of release, and fluctuation in water table elevations may influence soil vapor migration (NJDEP, 2005). Based on previous soil investigations conducted at the Yard, volatile contaminants are not a compound of concern in unsaturated or saturated soil. Therefore, diffusion of vapors from vadose zone soils it not a significant concern at the Yard. Impacted shallow groundwater would be more likely to act as a source of soil vapor in the vadose zone at the Yard.

Vapor Intrusion is defined as the migration of volatile chemicals from the subsurface into overlying buildings (USEPA, 2002). Mechanisms that affect soil vapor migration in the vadose zone in close proximity to buildings, and hence can have a direct affect on potential vapor intrusion can include advective/convective transport of vapors and preferential pathways.

Advective/convective transport of vapors refers to chemical vapors entering a building as a result of building interiors that exhibit a negative pressure relative to outdoor ambient air, and the subsurface vadose zone. This pressure differential can be caused by the operation of heating, ventilation, and air conditioning (HVAC) systems, venting of exhaust gases to the exterior (such as from a fire place of exhaust fan), temperature gradients between the interior and exterior of a building, or pressure exerted on walls caused by wind movement. These factors can cause a subsurface zone of influence, which affects the vertical and horizontal movement of subsurface vapors near building foundations, and can cause vapors to enter the building through cracks, seams, etc. (NJDEP, 2005). Subsurface vapors can also migrate along preferential pathways, such as fractured rock or subsurface utility lines. If located near a source area, preferential pathways can greatly influence vapor intrusion into a building.

6.3 Degradation Processes

Degradation processes include biologically mediated degradation and chemical, or abiotic, degradation. Various naturally-occurring processes can result in the transformation of organic compounds to other compounds of the same type, to products of a different type (such as conversion of alcohols to carboxylic acids), or to the ultimate degradation products of organics: carbon dioxide and water (Nyer et al., 1991). Several factors must be considered in the evaluation of these reactions. The biological and abiotic degradation pathways for a given contaminant may produce different products, and the proportion of these products may vary depending upon the various reaction rates. Typically, the biologically mediated reactions will be faster than the strictly abiotic reactions. However, the biological reaction rates are also much more variable than the abiotic rates because of the extreme dependence of biological degradations on the conditions around the microbial colonies in the soil and aquifer matrix. These conditions include pH, Eh, temperature, contaminant concentration, and the presence of other nutrients or biological toxins in the soil pore water or groundwater. It is therefore not possible to predict degradation rates with certainty.

Photolysis occurs when a compound is broken down to smaller compounds by the action of light. It is dependent upon non-chemical-specific factors such as the intensity of the sunlight and the depth and turbidity of the surface-water body.

6.4 Contaminant Fate and Transport at the Yard

For the groups of compounds identified in Table 16, the following processes are considered to be important in affecting their fate and transport and, therefore, concentrations over time:

- leaching from soil to groundwater;
- transport in groundwater;
- discharge from groundwater to surface water;
- volatilization from soil, groundwater and surface water; and
- transport in vadose zone soil vapor/vapor intrusion.

The migration of contaminants in each of the media at the Yard is discussed below.

Soil

Contaminated unsaturated soil at the Yard is generally not covered with impermeable surfaces, such as pavement or buildings, allowing precipitation to percolate into the subsurface. Moreover, the depth to groundwater is relatively shallow (i.e., varying from 1 to 15 ft across the Yard), thereby increasing the potential for contaminated soil to impact groundwater.

Soil contamination at the Yard is primarily characterized by PAHs and PCBs of low or zero mobility. These compounds tend to remain tightly bound to soil particles, and do not have as great a potential for leaching from soil into groundwater relative to lower molecular weight organics and more soluble compounds. It is possible, however that during precipitation runoff may result in the transport of contaminated sediment into the sewer system, and subsequently, off-site. Detection of PCBs in sediments from the Yard sewer system indicates that this transport pathway may be present. This will be discussed in detail as part of the OU-5 RI/FS.

The metals previously detected in soil at the Yard may be subject to migration via precipitation runoff to the sewer system, or leaching from soil to groundwater. Historically, metals detected in soil above background concentrations or recommended soil cleanup objectives or site-specific cleanup levels have included: antimony, barium, beryllium, chromium, copper, iron, lead, magnesium, manganese, sodium, and zinc. Of these metals, only two (manganese and lead) were detected in groundwater above both the groundwater standards and background concentration ranges during the Supplemental OU-6 RI. As previously discussed, the single detection of lead above the groundwater standard and background concentrations was likely a result of suspended sediment in the groundwater sample. Furthermore, the two instances where manganese was found in excess of the groundwater standards and background concentrations are likely attributed to the anoxic conditions found in buried wetlands. The fate and transport of the two mobile metals are discussed below. The other metals are presumably immobilized in soil at the Yard. Their mobilization and release from the soil could only occur as a result of a release of strong acid or alkali onto the soil at the Yard.

Overall, based on the chemical properties of the compounds detected in soil at the Yard (i.e., K_{oc}, K_{ow}, solubility), contaminants have a tendency to remain adsorbed to soil, therefore, leaching from Yard soils to groundwater is not considered significant transport process related to OU-6.

<u>Groundwater</u>

Groundwater contamination in the saturated fill and the Upper Glacial aquifer at the Yard is primarily characterized by the presence of chlorinated VOCs and petroleum-derived VOCs. The chlorinated VOCs and petroleum-derived VOCs detected in groundwater are relatively mobile in water, and in the dissolved state will migrate along with the groundwater flow, being partially retarded due to adsorption on the aquifer matrix.

Groundwater beneath the Yard also contains manganese and lead at concentrations above both ambient water quality standards and background concentration ranges. Lead and manganese can exist in different oxidation states. The oxidized form of lead [Pb(II)] forms insoluble hydroxides at mildly acidic to mildly alkaline pHs, therefore is not likely to be transported in groundwater. Manganese forms insoluble MnO_2 in the oxidized [Mn(IV)] form and exists as soluble Mn(II) species in the reduced form. Since groundwater at the Yard is generally neutral and probably tends toward anaerobic (reducing) conditions due to the buried wetland environment present in the western portion and northeastern corner of the Yard, some of the manganese would be expected to migrate as soluble species with very little retardation in groundwater.

Overall, transport in groundwater is a viable transport process related to OU-6. This is further supported by that fact that most of the groundwater impacts noted during this RI are directly caused by contaminants migrating on to the Yard from off-site sources via transport in groundwater.

Groundwater flow is controlled by natural and artificial (i.e., resulting from historic cut and fill activities) hydraulic gradients. As shown in Plates 2 and 3, horizontal flow in the saturated fill and Upper Glacial aquifer underlying the Yard is generally toward the west and northwest, toward the buried flow path of Dutch Kills Creek and/or the East River. Dutch Kills, which is buried in the western portion of the Yard, emerges south of the Yard and discharges into Newtown Creek. No surface-water sampling has been performed to confirm or eliminate this potential migration pathway.

Calculated vertical hydraulic gradients between the shallow deposits and the deeper Upper Glacial aquifer deposits indicate that groundwater flow is predominantly horizontal, but has both downward and upward components at different locations at the Yard. All Yard groundwater discharges upward as it moves west and northwest toward the buried flow path of Dutch Kills Creek and/or the East River.

Soil Vapor

Based on the extensive database of historic soil quality data generated at the Yard as part of investigations in OU-1, OU-2, OU-3, OU-4, as well as OU-6, VOCs were not found to be a compound of concern in soil, hence volatilization from soil sources are not considered a significant transport mechanism at the Yard. Based on the presence of three groundwater VOC plumes at the Yard that have migrated on-site from off-site sources, and the chemical characteristics of the VOCs present in these plumes (i.e., high vapor pressures and large Henry's Law constants), volatilization from groundwater to the vadose zone in these limited areas of the Yard near impacted groundwater could be a viable transport mechanism. Further, if occupied structures were located proximate to the VOC-impacted groundwater, subsequent vapor intrusion could present a viable concern.

7.0 EXPOSURE ASSESSMENT

This Exposure Assessment (EA) for OU-6 was conducted following the NYSDEC Spill Guidance Manual (NYSDEC, 1995), the NYSDEC Technical Guidance for Site Investigation and Remediation (NYSDEC, 2002), the NYSDEC Generic Template for Final Engineering Report (NYSDEC, 2007c), the NYSDEC Generic Template for Final Remedial Action Work Plan (NYSDEC, 2007d), and was conducted to evaluate the potential for exposure to chemicals currently present in groundwater, saturated soil, and soil vapor/indoor air within the area defined as OU-6.

EAs describe the type and magnitude of exposures to chemicals of potential concern (COPCs) present at a site. The NYSDEC describes the following four components of an EA (NYSDEC, 1995, 2002):

- Selection of COPCs
- Identification of exposure pathways
- Measurement of the chemical concentrations at each exposure point (Exposure Point Concentrations)
- Comparison of exposure point concentrations to available health-based or other criteria (Comparison to Relevant Criteria)

This EA is based on a data evaluation from groundwater, saturated soil, and soil vapor/indoor air samples collected within OU-6 (Tables 5 through 8, 11, and 12 through 15). Unsaturated soil and sewer data collected within the boundaries of OU-6 will be addressed as part of the OU-4 and OU-5 RI/FSs, respectively. The organization of this section is based on the four NYSDEC EA elements identified above and follows the same order: Selection of COPCs (Section 7.1); Identification of Exposure Pathways (Section 7.2); Exposure Point Concentrations (Section 7.3), and Comparison to Relevant Criteria (Section 7.4). In addition, Current and Future Site Conditions are discussed in Section 7.5, and the EA Summary is presented in Section 7.6. Subsections are included as appropriate.

7.1 Selection of COPCs

COPCs are chemicals that are present at a site and have data that are of sufficient quality for use in the EA. Characteristics of COPCs include the following:

- Positively detected in at least one sample in a given environmental medium.
- Detected at concentrations significantly elevated above concentrations reported in associated blank samples.
- Detected at concentrations significantly elevated above naturally occurring levels of the same chemicals.
- Are the transformation products of chemicals detected at the site.

All constituents that were identified (i.e., detected via laboratory analysis) in OU-6 were initially considered COPCs, with the exception of the established COCs, since they are already considered compounds of concern by the NYSDEC. Data tables summarizing the concentrations of each chemical grouping of COPCs (VOCs, SVOCs, Metals, and PCBs) are presented as follows: Table 5 for VOCs in groundwater; Table 6 for SVOCs in groundwater; Table 7 for Metals in groundwater; Table 8 for PCBs in groundwater; and Table 11 for VOCs in vapor associated with the HSTF S&I Building. Additionally, analytical results for saturated soil samples for VOCs, SVOCs, metals, and PCBs are presented as follows: Table 12 for VOCs in saturated soil; Table 13 for SVOCs in saturated soil; Table 14 for Metals in saturated soil; and Table 15 for PCBs in saturated soil.

7.2 Identification of Exposure Pathways

Exposure pathways describe the ways in which persons (receptors) come into contact with COPCs present in environmental media at a site. Relevant exposure pathways for a site are determined by reviewing site-specific characteristics such as the following:

- Locations of COPCs at the site.
- Environmental fate of the COPCs.
- Potential receptor locations at or near the site.

A complete exposure pathway is defined by the USEPA (1989) as having the following components:

- A source and mechanism of chemical release.
- A retention or transport medium.
- A point of potential human contact with the medium containing the chemical(s) of potential concern.
- An exposure route (e.g., ingestion) at the contact point.

7.2.1 Potential Receptors

OU-6 is one area of an active railroad maintenance facility. The principal receptors will be adult workers conducting occasional construction projects that could result in limited excavation and dewatering. Additional receptors could include adult workers in occupied structures located in close proximity to vapors in the vadose zone. Residential uses for that Yard are not possible in the foreseeable future, therefore, residential receptors are not considered in this EA. The occurrence of limited trespassing activities is possible at the Yard, but OU-6 would be considered relatively inaccessible to trespassers because it is fenced, and access points to the Yard are guarded. Therefore, trespassers are also not considered as potential receptors at the Yard.

7.2.2 Soil

Based on the criteria given above, saturated soil has the possibility to be a complete exposure pathway in OU-6. Saturated soils may be a retention and transport medium for chemicals. Receptors may come into direct contact with saturated soil within OU-6 while performing deep excavation work. During the course of contacting the soil on their skin, persons may, under some circumstances, accidentally ingest soil derived from the Site. However, construction personnel who may contact saturated soils will likely be wearing waterproof gloves, thus limiting any direct contact with saturated soil by the hands. Additionally, there were no COCs detected in saturated soil in OU-6 at concentrations exceeding the Yard-specific soil cleanup levels, and there were no non-COCs detected in saturated soil at concentrations exceeding the NYSDEC Part 375 Restricted Industrial Standards.

Inhalation of fugitive dust is not considered a viable exposure pathway because OU-6 only includes saturated soil at depth. Dry, unsaturated soil was addressed in the OU-4 RI/FS.

Inhalation of vapors from VOCs volatilizing from saturated soils into the ambient air during soil moving activities is not considered a viable exposure pathway because the number of VOCs detected in saturated soil are limited and concentrations are sufficiently low that ambient air levels could not rise to a level of concern.

7.2.3 Groundwater

Groundwater associated with OU-6, or anywhere nearby in Queens County is not used as a source of drinking water, therefore, it can be stated that ingestion of groundwater in OU-6 would never be considered a complete exposure pathway. Further, groundwater is generally not encountered during routine operations, which significantly limits any direct contact. There is, however, the possibility of groundwater becoming a complete exposure pathway in OU-6 since direct contact with groundwater could occur during intrusive activities such as deep excavations or the OU-3 remedy. However, any potential contact with groundwater would likely be limited by the dewatering that will be required to conduct the planned activities. Furthermore, construction personnel who may work in this area will likely be wearing waterproof gloves, thus limiting any direct contact with groundwater by the hands. The potential exposure to contaminants in groundwater from construction dewatering will be addressed in the Site Management Plan, and exposures associated with the OU-3 remedy are addressed in the OU-3 RAWP (Roux Associates, 2007).

7.2.4 Soil Vapor

Depending on the location of soil vapor contamination relative to occupied structures at the Yard, soil vapor has the possibility to be a complete exposure pathway in OU-6. Based on the presence of VOC impacted groundwater at the Yard (from off-site sources), soil vapors from the vadose zone could potentially enter occupied structures, if located in close proximity to VOC-impacted groundwater. Therefore, soil vapor has the potential to be a complete exposure pathway, and will be addressed in the Site Management Plan.

7.3 Exposure Point Concentrations

Tables 5 to 8, 11 and 12 to 15 present data for individual sampling locations for the COC and non-COC parameters in saturated soil, groundwater, and vapor as described in Section 7.1. A detailed discussion of saturated soil quality, groundwater quality soil vapor results related to OU-6 is provided in the Nature and Extent section of this RI/FS Report (Section 5.0).

7.4 Comparison to Relevant Criteria

As stated by the NYSDEC (1995), exposure point concentrations should be compared to available health-based and/or environmental standards or criteria to determine the need to conduct a cleanup at a site. The current, intended, and reasonably anticipated future use of the Yard is for railroad maintenance purposes. The most likely exposure mechanism is construction activities involving deep excavation and/or dewatering. As such, the relevant criteria for evaluating saturated soil exposure point concentrations were determined to be NYSDEC Restricted Industrial Use soil cleanup objectives for the protection of public health as set forth in 6 NYCRR Part 375 (NYSDEC, 2006). Tables 12 to 15 present the concentrations of COPCs detected in saturated soils of OU-6 and a comparison to Yard soil cleanup levels for COCs, and the NYSDEC Part 375 Restricted Industrial Use soil cleanup objectives for all other compounds. As shown in these tables the concentrations of OU-6 related chemicals were below their respective Yard soil cleanup levels and the NYSDEC Part 375 Restricted Industrial Use soil cleanup objectives, indicating that OU-6 saturated soils are protective of human health and suitable for industrial use.

The relevant criteria for evaluating groundwater exposure point concentrations were determined to be NYSDEC AWQSGVs. The NYSDEC AWQSGVs are intended for groundwater that is considered suitable for drinking in its natural state. As previously stated, groundwater in OU-6 and nearby Queens is not used as a source for drinking water, making these conservative criteria for evaluating groundwater quality. Tables 5 to 8 present the concentrations of COPCs detected in groundwater in OU-6 and the NYSDEC AWQSGVs.

As stated in the NYSDOH soil vapor intrusion guidance document (NYSDOH, 2006), there are currently no chemical-specific SCGs for VOCs in subsurface vapor (i.e., soil vapor and sub-slab vapor). Therefore, data evaluation consisted of a comparison of sub-slab vapor results to the indoor/outdoor samples results to determine the source of VOC concentrations.

7.5 Current and Future Site Conditions

As previously stated, OU-6 is part of a large and very active rail yard. Although specific plans for the future use of all portions of OU-6 are not finalized, it is anticipated that many of the currently routine activities will continue for the foreseeable future. Routine Yard activities do not result in exposures in OU-6. Possible exposures to soil and groundwater could result from ESA Project excavation and dewatering activities in the future. Additionally, vapor intrusion could occur if the off-site source VOC plumes migrate within close proximity to existing occupied structures, or if new structures are constructed in close proximity to the VOC plumes.

7.6 Summary

This EA addressed saturated soil, groundwater and soil vapor/indoor air conditions that currently exist in OU-6. No current complete exposure pathways exist in OU-6; however, several potential exposure pathways exist. As described above, exposure to saturated soil and groundwater in OU-6 is possible by workers engaged in deep excavation and dewatering activities. Soil vapor intrusion would only be a concern if plumes migrate close to existing occupied structures, or if new structures are constructed near VOC plumes. These potential exposures to contaminants will be addressed in the Site Management Plan, and exposures associated with the OU-3 remedy are addressed in the OU-3 RAWP (Roux Associates, 2007).

8.0 REMEDIAL GOALS AND REMEDIAL ACTION OBJECTIVES

This section presents the remedial goals and RAOs that apply to groundwater, soil vapor, and saturated soil that comprise OU-6. The remedial goals are common for all registered inactive hazardous waste sites, as provided in 6 NYCRR Part 375 and NYSDEC guidance (NYSDEC, 2002).

- Restoration to pre-disposal/pre-release conditions, to the extent feasible and authorized by law; and
- Elimination or mitigation of all significant threats to public health and the environment presented by the contaminants caused by site-related activities through the proper application of scientific and engineering principles.

The remedial goals serve to establish the foundation for developing RAOs specific to the impacted media in OU-6. RAOs are medium-specific objectives developed for the protection of public health and the environment and are expressed with regard to the concentration of COCs and comparison to chemical-specific standards, criteria, and guidance (SCGs). The RAOs were established utilizing NYSDEC guidance provided in NYSDEC TAGM 4030 (NYSDEC, 1990) and the Draft DER-10, Technical Guidance for Site Investigation and Remediation (NYSDEC, 2002).

General response actions (GRAs) are media-specific measures that can be performed to achieve the RAOs. GRAs include treatment, containment, extraction, excavation and disposal, institutional controls or a combination of these actions. The following sections describe the types of SCGs, present the RAOs and SCGs for each media of concern, and identify media-specific GRAs.

8.1 Identification of SCGs

SCGs are promulgated requirements and non-promulgated guidance that govern activities that may affect the environment. Specifically, the standards and criteria are cleanup standards, standards of control and other substantive environmental protection requirements, criteria, or limitations that are generally applicable, consistently applied, and officially promulgated under federal or state law. Guidance are not legal requirements, however should be considered based on professional judgment when applicable (NYSDEC, 2002).

The three general SCG categories specified in TAGM #4030 and United States Environmental Protection Agency (USEPA) guidance documents are: location-specific SCGs; action-specific SCGs; and chemical-specific SCGs. The SCGs, specific to the media of concern, will be discussed in the following sections.

8.1.1 Location-Specific SCGs

Location-specific SCGs are restrictions placed on the concentration of COCs or performance of remedial activities solely because they are in specific locations such as floodplains, wetlands, historic places, or sensitive ecosystems. The areas to be addressed in OU-6 are not located in the aforementioned locations. Therefore, no applicable location-specific SCGs were identified.

8.1.2 Action-Specific SCGs

Action-specific SCGs are technology or activity-based requirements or limitations on actions taken with respect to hazardous wastes and inactive hazardous waste sites. A listing of action-specific SCGs applicable to inactive hazardous waste sites and the remediation of groundwater, soil, and soil vapor is provided in Table 18.

8.1.3 Chemical-Specific SCGs

The following presents the chemical-specific SCGs identified for OU-6 media of concern.

Groundwater

The applicable NYSDEC chemical-specific SCGs for groundwater are the following:

- Water Quality Standards for Surface Waters and Groundwater (6 NYCRR 703.5)
- Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (NYSDEC TOGS 1.1.1)

As shown on Tables 5 through 9, the Class GA standards and guidance values were used for comparison to the OU-6 groundwater dataset.

Soil Vapor

As stated in the NYSDOH soil vapor intrusion guidance document (NYSDOH, 2006), there are currently no chemical-specific SCGs for VOCs in subsurface vapor (i.e., soil vapor and sub-slab vapor). Therefore, data evaluation consisted of a comparison of sub-slab vapor results to the indoor/outdoor sample results to determine if a source of VOC concentrations exists or if vapor concentrations are a representation of background conditions.

Saturated Soil
The applicable chemical-specific SCGs for saturated soil are the Yard soil cleanup levels for the soil COCs (i.e., total PCBs, total SVOCs, and lead), Toxic Substance Control Act (TSCA) standards for PCBs (40 CFR 761), and the 6 NYCRR Part 375 Restricted Industrial soil cleanup objectives for VOCs.

Recognizing that restoration to predisposal conditions is not always feasible, the NYSDEC provided recommended soil cleanup levels for the Yard in February 1997 and modified the soil cleanup levels in the OU-4 ROD, dated March 2009. The Yard soil cleanup levels are:

- Total PCBs – 25 mg/kg
- Total SVOCs – 500 mg/kg
- Lead - 3,900 mg/kg

The cleanup requirements for PCB remediation waste are provided in 40 CFR 761.61 (a)(4) and are dependent on PCB concentrations and potential exposure relevant to occupancy usage (i.e., high and low occupancy). The Yard soil cleanup level for PCBs (25 mg/kg) is consistent with the cleanup level for PCB remediation waste in low occupancy areas. Low occupancy use is defined as exposure for less than 335 hours annually, or an average of 6.75 hours per week for any one person.

The applicable chemical-specific SCG for evaluating VOCs in saturated soil in the offsite source plume areas are the Restricted Industrial Protection of Public Health soil cleanup objectives, provided in 6 NYCRR Subpart 375-6.8. As stated in 6 NYCRR Subpart 375-6.5, "*the protection of groundwater soil cleanup objectives are not applicable if the contravention of groundwater standards at the site is determined to be the result of an off-site source*." For this reason, the Restricted Industrial Protection of Public Health soil cleanup objectives are used for data comparison purposes.

8.2 Remedial Action Objectives for OU-6

The RAOs were developed based on the SCGs discussed above, the identification of offsite sources of groundwater contamination discussed in Section 5.0, and the exposure assessment (Section 7.0). The following are the RAOs for the media of concern in OU-6:

- Prevent contact with VOCs in groundwater that exceed applicable groundwater SCGs;
- Prevent the migration of COCs to groundwater;
- Mitigate the potential for exposure risks of soil vapor intrusion in existing and future Yard buildings; and
- Prevent ingestion, direct contact, and/or inhalation of soil that exceeds the applicable saturated soil SCGs.

8.3 Remedial Requirements

The nature and extent of contamination for groundwater, soil vapor, and saturated soil was discussed extensively in Section 5.0. Based on the above SCGs evaluation and established RAOs, the following summarizes the extent of contamination that requires remediation:

Groundwater:

- Eight CVOCs exceed the applicable groundwater SCGs in locations known to be associated with three offsite chlorinated plumes migrating into the Yard.
- Benzene, xylenes, and MTBE exceed the applicable groundwater SCGs in locations known to be associated with two offsite plumes migrating into the Yard.
- Manganese exceeds the applicable groundwater SCGs in two monitoring wells, which is attributed to anoxic conditions associated with the nearby buried wetland and is characteristic of the Upper Glacier aquifer.
- Lead exceeds the applicable groundwater SCGs in one monitoring well, which is attributed to the turbidity of the groundwater sample and not characteristic of the aquifer.

Based on the above summary, groundwater impacts of concern are from offsite sources. Therefore, active groundwater remediation of the CVOCs, BTEX, and MTBE impacts attributed to upgradient offsite sources will not be evaluated in this FS. However, groundwater monitoring and mitigative action items (e.g., soil vapor sampling and construction of sub-slab vapor barriers in the event of construction in the offsite source plume areas) will be evaluated, in accordance with 6 NYCRR 375.1-8 (d)(2).

Soil Vapor:

- Analytical results for the outdoor and indoor air samples exceeded the sub-slab vapor samples results indicating that the source of VOC detections in outdoor and indoor air was not from the subsurface, but rather an outdoor source.

- As discussed in the Exposure Assessment, the presence of the offsite source plumes presents the potential for soil vapor intrusion in existing and future buildings located in proximity to these plumes.

Saturated Soil:

- Saturated soil does not exceed any of the applicable SCGs. Therefore, the RAO for saturated soil is satisfied. Saturated soil remediation will not be evaluated further in this FS.

8.4 General Response Actions

General response actions (GRAs) are non-technology specific measures that can be performed to achieve the RAOs. GRAs include treatment, containment, extraction, excavation and disposal, institutional controls or a combination of these actions.

As discussed above, the CVOC and BTEX impacts to groundwater are attributed to three offsite sources. For this reason, active GRAs have not been selected for OU-6 groundwater and resultant soil vapor impacts. Similarly, saturated soil remediation was determined to not be a remedial requirement and GRAs have not been selected for saturated soil. The applicable GRAs for groundwater and soil vapor include:

- No Action
- Institutional and Engineering Controls
- Groundwater Monitoring
- Monitored Natural Attenuation

9.0 IDENTIFICATION AND SCREENING OF TECHNOLOGIES

This section develops the GRAs discussed in the previous section into potential remedial technologies by identifying, evaluating, and screening applicable remedial technologies that may be employed in OU-6 to achieve the RAOs. For the purpose of this screening, the remedial technologies are grouped by media of concern to which they would be applied.

The objective of screening the technologies is to narrow the field of available technologies, eliminating those with implementability concerns, those that are not deemed sufficiently protective of human health and the environment, or those associated with a high cost accompanied by no substantial increase in performance relative to the other technologies.

The technology screening process considers whether technologies and process options can by themselves or in combination, address the impacted media in OU-6, and meet the RAOs. During the screening of the technologies, the demonstrated ability of the technology to prevent potential impacts to human health and the environment and proven reliability of the technology under similar site conditions is evaluated.

The technology types and associated process options in this section have been identified through a review of NYSDEC and USEPA information and guidance, relevant literature, experience with similar types of environmental conditions, and engineering judgment. The selected remedial technologies will be evaluated on the basis of:

- *Effectiveness* – The effectiveness criterion evaluates the extent to which the technology meets the established RAOs and considers the short-term effectiveness, long-term effectiveness, and potential impacts to human health and the environment. Short-term effectiveness refers to the effects during construction and/or implementation of the technology. Long-term effectiveness refers to the period after the remedial action is in place.

- *Implementability* – The implementability criterion focuses on both technical and administrative feasibility of constructing and operating a remedial action. Institutional aspects of the remedial technologies with factors such as institutional constraints, time schedules, and the availability of services, equipment, and trained personnel, compliance with applicable rules and regulations being considered as part of the evaluation.

The evaluation of technology effectiveness and implementability for technology screening purposes incorporates elements from TAGM 4030 (NYSDEC, 1990), 6 NYCRR Part 375 –

Environmental Remediation Programs, the draft DER-10 (NYSDEC, 2002) and the USEPA document, "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA" (USEPA, 1988b).

After screening, the remaining technologies will be combined in Section 10.0 to evaluate remedial alternatives and ultimately develop a recommended remedial alternative for OU-6.

9.1 Technology Screening for Groundwater

Four technologies have been identified to be potentially applicable in addressing groundwater. The technologies selected for screening include:

- Access/Use Restriction
- Groundwater Use Restriction
- Groundwater Monitoring
- Monitored Natural Attenuation

The following sections provide a brief description of the above technologies and present the evaluation of the technology's effectiveness and implementability. Based on this preliminary screening, the technology will either be carried forward and considered in the remedial alternative analysis or will be eliminated from further evaluation.

9.1.1 Access/Use Restrictions

Access/use restrictions would prevent untrained site workers (e.g., Amtrak workers, ESA workers, Amtrak's subcontractors) from working in known offsite source plume areas at depths that groundwater would be encountered. Institutional controls implemented to enforce the use restrictions include restriction of work within the approximated extent of the offsite source plumes shown on Plate 4 and filing a deed restriction to notify all parties that VOCs are present. Engineering controls including fencing or surface covers are typically used in conjunction with access/use restrictions.

EVALUATION

Effectiveness	Implementability
• Access/use restrictions would limit site worker exposure to impacted groundwater. Internal communication would notify site workers of health and safety requirements for working in these areas. • Access/use restrictions will be established based on the approximated extent of onsite impacts due to the offsite sources, but holds no mechanism for identifying migration of the plumes.	• Implementation of the access/use restriction would rely on thorough communication to site workers of access limited areas and health and safety concerns. This effort would be fairly implementable given that all pertinent information regarding these areas would be included in a Site Management Plan • Engineering controls such as fencing within track areas is not implementable. Surface covers would not effectively deter workers or alert workers of the presence of VOCs in groundwater.

The access/use restriction technology is typically teamed with the engineering controls discussed above. However, utilization of these engineering controls in the active railyard carries a low level of implementability.

Access/use restrictions would achieve the RAO associated with the prevention of contact with VOCs in groundwater at concentrations in excess of the applicable SCGs. This technology alone would not satisfy the RAO of preventing the potential for migration of contaminants in groundwater. Teamed with other technologies, access/use restrictions would meet the RAOs for impacted groundwater. Access/use restrictions will be retained for remedial alternative development.

9.1.2 Groundwater Use Restriction

Groundwater use restrictions would prohibit the use of onsite groundwater without treatment and place limitations on well drilling. This type of restriction would be filed with both the NYSDEC and the NYCDEP. Although the site is listed as an Inactive Hazardous Waste Site and groundwater in Queens County is not used for drinking water purposes, instituting a groundwater use restriction is an administrative measure that notifies the public of the presence of VOCs in groundwater at the Yard and health and safety concerns. Existing groundwater monitoring wells in the offsite source plume areas would be protected to prevent access to impacted groundwater by unauthorized people.

EVALUATION

Effectiveness	Implementability
• Groundwater use restrictions would be highly effective in informing non-Amtrak workers performing work in the area and limiting worker exposure to impacted groundwater. • Groundwater use restrictions hold no mechanism for identifying migration of the plume.	• Groundwater is not used in Queens County for drinking water purposes. Therefore, enforcement of the restriction is highly implementable. • Obtaining the groundwater use restriction carries a low to moderate level of administrative effort.

This technology is typically teamed with engineering controls or active forms of groundwater remediation. In conjunction with groundwater monitoring, this technology would meet the RAO of preventing contact with VOCs in groundwater that exceed the applicable groundwater SCGs and identify the potential for migration of contaminants in groundwater. Therefore, this technology will be retained for remedial alternative development.

9.1.3 Groundwater Monitoring

Groundwater monitoring would consist of groundwater sampling of onsite wells located in the offsite source plume areas, performed at a routine frequency. Groundwater samples would be submitted for analytical analysis and the results would be reported and mapped to identify any migration or changes to the known plume conditions.

EVALUATION

Effectiveness	Implementability
• Groundwater monitoring would not be effective in preventing contact with VOCs in groundwater. • Routine sampling of onsite monitoring wells would identify any migration or changes in the offsite source plumes.	• Groundwater monitoring is highly implementable. The existing monitoring well network provides adequate coverage in these areas for monitoring plume conditions. A subset of the existing monitoring wells located within the plumes and downgradient would be monitored (Plate 4).

This technology, teamed with institutional and engineering controls, would meet the RAOs for impacted groundwater. This technology will be retained for remedial alternative development.

9.1.4 Monitored Natural Attenuation

Monitored Natural Attenuation (MNA) is the process of relying on natural attenuation processes within a controlled and monitored cleanup approach to reduce contaminants in the subsurface and achieve remedial objectives. The natural attenuation processes that may occur in the subsurface include biodegradation, volatilization, dilution, and adsorption (USEPA, 2004).

The key component of MNA is contaminant modeling for demonstrating that degradation would result in contaminant reduction within a reasonable timeframe and prohibiting migration via potential exposure pathways. Regular monitoring is performed to verify that contaminant reduction is occurring consistent with the RAOs. Monitoring would not only measure contaminant reduction, but also detect any changes in the subsurface (e.g., microbial and geochemical changes) and identify any potential migration caused by the breakdown of contaminants. Monitoring typically continues for 1 to 2 years after the RAOs are achieved for performance monitoring purposes.

EVALUATION

Effectiveness	**Implementability**
• This technology is best suited for addressing contamination where the source has been removed. At present, two of the offsite source plumes have not initiated active remediation. The source of the third plume is unknown. • MNA is contingent on the existing microbial population in the subsurface and available nutrients, which may result in slowed or limited success. • Very few short-term effects are associated with MNA. This process would not pose exposure risks to workers, thus satisfying the RAO of preventing direct contact.	• The existing monitoring well network can be utilized for routine monitoring. • A reasonable level of effort and time is required for preparation of monitoring and sampling plans, and NYSDEC approval. • MNA success within a reasonable timeframe is unpredictable. This process may take years to reach the RAOs.

Although this technology would meet the RAOs for groundwater, the effectiveness of this technology is uncertain given that the offsite sources have not been addressed. In turn, the duration of MNA remediation would be highly unpredictable and there is no guarantee that contaminant reduction would occur. Based on this information, MNA will not be carried forward for remedial alternative development.

9.2 Technology Screening for Soil Vapor

Three technologies have been identified to be potentially applicable in addressing impacted soil vapor. The technologies selected for screening include:

- Access/Use Restriction
- Active Sub-Slab Venting System
- Passive Venting System with Vapor Barrier

The following sections provide a brief description of the above technologies and present the evaluation of the technology's effectiveness, implementability, and ability to fulfill the RAOs. Based on this preliminary screening, the technology will either be carried forward for further evaluation and development of remedial alternatives or the technology will be eliminated.

9.2.1 Access/Use Restriction

Access/use restriction is an institutional control that limits usage of a designated portion of a site in an effort to limit exposure. This technology would restrict untrained site workers from working in known offsite source plume areas. Institutional controls implemented to enforce the use restrictions include restriction of work within the approximated extent of the offsite source plumes shown on Plate 4 and filing a deed restriction to notify all parties that VOCs are present. Engineering controls including vapor barriers are typically used in conjunction with access/use restrictions.

EVALUATION

Effectiveness	Implementability
• Access/use restrictions would limit site worker exposure and prevent inhalation of impacted soil vapor. Internal communication would notify site workers of health and safety requirements for working in these areas. • Access/use restrictions will be established based on the approximated extent of onsite impacts due to the offsite plume sources.	• Implementation of the access/use restriction would rely on thorough communication to site workers of the access limited areas and health and safety concerns. This effort would be fairly implementable given that all pertinent information regarding these areas would be included in a Site Management Plan. • Engineering controls such as installation of vapor barriers would be highly implementable and easily incorporated into new construction design plans.

Access/use restriction would meet the RAO for preventing inhalation of soil vapor in undeveloped portions of the Yard. In conjunction with soil vapor barrier construction, this technology would prevent any inhalation concerns associated with new construction in the offsite source plume areas. Therefore, this technology will be carried forward for remedial alternative development.

9.2.2 Active Sub-Slab Venting System

An active sub-slab venting system or depressurization system creates a negative pressure field directly under a building and on the outside of the building foundation (MDEP, 2005). The negative pressure field collects gases, preventing VOC impacted gases from permeating into the building. The gases are then piped to an ambient air discharge point. The sub-slab venting system does not remediate the soil gas, soil, or groundwater; however, it does remove VOC-impacted soil gas from the subsurface acting as a form of mass removal.

EVALUATION

Effectiveness	Implementability
• Sub-slab venting systems are effective means of removing soil vapor from the subsurface under buildings and preventing soil vapor intrusion. This technology would meet the RAO for mitigating exposure risks of soil vapor intrusion.	• Sub-slab venting systems are easily constructed when part of new building construction. Installation for retro-fitting existing buildings is more difficult. Materials and trained contractors are readily available. • Long-term operation, maintenance, and monitoring (OM&M) would be required.

The HSTF building is the only occupied onsite building that is located proximate to one of the offsite source plumes. For this reason, the soil vapor investigation was performed in this area. Based on the soil vapor concentrations observed under the HSTF building, in indoor air, and outdoor air, there does not appear to be evidence of soil vapor intrusion. For this reason, it does not appear that an active sub-slab venting system, entailing long-term costs associated with long-term OM&M would be required but rather a more passive approach would suffice. Based on this information, this technology has not been retained for remedial alternative development.

9.2.3 Passive Venting System and Vapor Barrier

A passive venting system is similar to the active sub-slab venting system in that it collects gases from below and around the building and prevents gases from permeating into the building;

however, a passive venting system does not create negative pressure through the use of a fan. Collected gases are piped away from the building to an ambient air discharge point. Similarly, a passive venting system does not remediate the soil gas, soil, or groundwater. In conjunction with the passive venting system, a vapor barrier consisting typically of polyethylene sheeting is installed during foundation construction.

EVALUATION

Effectiveness	Implementability
• Passive venting systems are less effective than active sub-slab venting systems in removing soil vapor from the subsurface under buildings and preventing soil vapor intrusion. A passive venting system can be converted to an active system through the installation of a vent fan. • Teamed with the vapor barrier, this technology would meet the RAO for mitigating exposure risk of soil vapor intrusion.	• Passive venting systems are easily constructed when part of new building construction. Materials and trained contractors are readily available. • Long-term monitoring would be required.

Based upon monitoring sampling results, the passive venting system could easily be converted to an active system by installing a vent fan. This technology will be retained for remedial alternative development.

9.3 Summary of Applicable Technologies

The screened technologies are proven technologies that will fulfill the RAOs for groundwater and soil vapor. The following are the technologies that will be carried forward for remedial alternative development.

Groundwater

- Access Controls/Deed Restriction
- Groundwater Use Restriction
- Groundwater Monitoring

Soil Vapor

- Access/Use Restriction
- Passive Venting System with Vapor Barrier

10.0 DESCRIPTION AND EVALUATION OF REMEDIAL ALTERNATIVES

This section assembles the remedial technologies retained after the screening evaluation in Section 9.0 into remedial action alternatives that will address groundwater and soil vapor. The retained technologies each fulfill one or more of the RAOs identified in Section 8.0. The remedial alternative evaluation combines the retained technologies in an effort to expand the potential of meeting all of the RAOs. The following technologies were retained:

Groundwater

- Access Controls/Deed Restriction
- Groundwater Use Restriction
- Groundwater Monitoring

Soil Vapor

- Access/Use Restriction
- Passive Venting System with Vapor Barrier

Based on the RI data for groundwater, the exceedances of the applicable SCGs that have been identified are associated with offsite source plumes. In accordance with 6 NYCRR Subpart 375-1.8, onsite groundwater contamination can be attributed to offsite sources as demonstrated by the following:

- No onsite act has contributed to the upgradient contamination or caused the contamination to become worse.
- Based on review of onsite data and investigative reports obtained from the upgradient offsite sources (i.e., SMP and ACCO), there are known offsite sources of contamination located at one or more upgradient locations that has impacted onsite groundwater as a result of migration of contaminants in groundwater.
- There are no onsite sources in the Yard that may be causing or contributing more than inconsequential amounts to the groundwater contamination.

As a result of demonstrating that the source of groundwater contamination in OU-6 is from upgradient offsite sources, Amtrak has no remedial responsibility with respect to such groundwater contamination migrating to the Yard, continues to satisfy the above conditions that demonstrate groundwater contamination is attributed to offsite sources, and will identify a remedy for OU-6 that eliminates or mitigates, to the extent feasible, the impact of any offsite contamination entering the Yard, as given in 6 NYCRR Subpart 375-1.8.

NYSDEC's Draft DER-10 specifies that remedial alternatives that must be evaluated in the FS include a No Action alternative and an alternative which would restore the site to pre-disposal conditions. However, as demonstrated above, remedial responsibility for the offsite source contamination remains with the upgradient sources. For this reason, evaluation of a pre-disposal remedial alternative where Amtrak would remediate the offsite source plume areas to pre-disposal conditions is not applicable. The remedial alternatives that have been developed for evaluation includes the No Action alternative and an alternative utilizing the screened technologies that will mitigate the impacts of groundwater and soil vapor.

The remedial action alternatives for groundwater and soil vapor include:

Remedial Alternative I: No Action

Remedial Alternative II: Groundwater Monitoring, Institutional and Engineering Controls

Each of the above alternatives is evaluated based on seven specific criteria. The results of this assessment are used to comparatively evaluate the alternatives to determine which is most appropriate for implementation. The seven criteria are provided in NYSDEC TAGM 4030 (NYSDEC, 1990), the NCP (40 CFR Part 300.430), Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (USEPA, 1988b), and NYSDEC's Draft DER-10 (NYSDEC, 2002). The seven evaluation criteria are the following:

- Overall protection of public health and the environment
- Compliance with SCGs
- Long-term effectiveness and permanence
- Reduction of Toxicity, Mobility or Volume
- Short-term effectiveness
- Implementability
- Cost

Overall protection of public health and the environment and compliance with SCGs are termed threshold criteria, whereas the remedial alternative must meet these requirements in order to be eligible for selection. The next five criteria are termed primary balancing criteria and are used as the primary basis of comparison in selecting the recommended remedial alternative.

The following sections provide a description of the two remedial alternatives that were developed to address groundwater and soil vapor and evaluate the alternatives based on the above seven evaluation criteria.

10.1 Remedial Alternative I: No Further Action

In accordance with the NCP and the draft DER-10, a no action alternative is evaluated to provide a baseline for comparison of potential risks posed if no remedial action were performed. For this remedial alternative, no measures to mitigate exposure to impacted groundwater and soil vapor would be implemented.

10.1.1 Overall Protection of Human Health and the Environment

Remedial Alternative I would not be protective to human health and the environment. Risks posed through potential pathways of exposure would not be eliminated, reduced, or controlled through the use of institutional and engineering controls. The No Action alternative would not meet the RAOs.

10.1.2 Compliance with SCGs

A summary of the applicable SCGs is presented on Table 18. Since no remedial actions would be conducted under this alternative, many of the action-specific SCGs would not be relevant to this alternative. With the exception of groundwater contamination migrating onsite from the three offsite source plumes, the onsite groundwater meets the applicable chemical-specific SCGs. Therefore, this alternative complies with the applicable chemical-specific SCGs. The No Action alternative would not comply with the following action-specific alternatives:

- The 6 NYCRR 375 goals to restore the site to pre-disposal conditions to the extent feasible and authorized by law and to eliminate or mitigate all significant threats to public health and the environment; and
- NYSDEC and NYSDOH guidance provided for mitigation of vapor intrusion.

10.1.3 Long-Term Effectiveness and Permanence

Alternative I provides neither long-term effectiveness nor permanence of remedy. For wastes that will remain onsite, this evaluation criterion evaluates the magnitude of remaining risks, the adequacy and reliability of institutional and engineering controls in limiting risk, and the ability to meet the RAOs in the future. The No Action alternative would not reduce the magnitude of exposure risk and would never meet the RAOs. No institutional and engineering controls would be implemented to limit risk. If Alternative I is implemented, the current level of risk to workers would remain.

10.1.4 Reduction of Toxicity, Mobility, or Volume

This alternative would not be effective in reducing the toxicity, mobility, or volume of impacted groundwater or soil vapor. Minimal effects from biodegradation that would reduce the volume of contaminants could be expected given that the offsite source areas have not been actively remediated to date and contaminants continue to migrate onsite.

10.1.5 Short-Term Effectiveness

Since there are no actions proposed for this alternative, there is no associated construction and implementation period, and therefore no associated short-term effects to human health and the environment.

10.1.6 Implementability

Implementability concerns posed by this alternative do not exist since there would not be any actions performed. Therefore, this alternative would be readily implementable.

10.1.7 Cost

Since there are no remedial actions for this alternative, there are no capital costs associated with Remedial Alternative I.

10.2 Remedial Alternative II: Groundwater Monitoring, Institutional and Engineering Controls

Remedial Alternative II consists of the performance of groundwater sampling at monitoring wells located within the three offsite source plume areas and implementation of institutional and engineering controls to mitigate risks of exposure to impacted groundwater and soil vapor.

Groundwater Monitoring

Groundwater monitoring in offsite source plume areas would be performed to determine if continued migration is occurring and monitor the exposure risks to site workers. A subset of the existing shallow monitoring wells within the offsite source plume areas and downgradient of these areas would be gauged and sampled. Based on minimal changes to the offsite source plumes observed during the RI, sampling would be performed every other year until 2016 (one year after the anticipated ESA construction completion date). The monitoring wells to be included in the monitoring plan are shown on Plate 4.

Groundwater samples would be submitted for analysis for TCL VOCs. Groundwater sampling data would be reported within three months of sampling and would include any monitoring data obtained from ESA and the SMP and ACCO sites.

The Groundwater Monitoring Plan would be incorporated into the Site Management Plan.

Institutional and Engineering Controls

Access/use restrictions would be implemented to prevent untrained site workers from working in the offsite source plume areas in an effort to prevent exposure to impacted groundwater and soil vapor in these areas. Groundwater use restrictions would also be implemented to prohibit the use of onsite groundwater and notify the public of the presence of VOCs in groundwater at the Yard.

For future construction of buildings that will be occupied, soil vapor sampling would be performed to determine the potential for soil vapor intrusion and a passive venting system and vapor barrier would be incorporated into the building construction design, if necessary. Due to time constraints during future construction, a passive venting system and vapor barrier may be incorporated into the building design without prior soil vapor sampling. The venting system would be routinely monitored. The monitoring schedule would be incorporated into the Monitoring Plan portion of the comprehensive Site Management Plan.

Site Management Plan

The Site Management Plan will include details of the groundwater monitoring to be performed, the access/use restrictions, and soil vapor engineering controls. Operations personnel at the Yard would retain a copy of the Site Management Plan for reference by site workers. The Site Management Plan will be a comprehensive plan that includes institutional and engineering controls, O&M activities, and monitoring requirements for each OU (i.e., OU-1, OU-2, OU-3, OU-4, and OU-6).

Environmental Easements

An environmental easement is a form of institutional control that acts as an enforcement mechanism to ensure required institutional and engineering controls remain in place (NYSDEC, 2002). The environmental easement would:

- require compliance with the Site Management Plan;
- restrict the use of groundwater as a source of potable water, without necessary water quality treatment; and
- require an annual certification that certifies the institutional and engineering controls are unchanged from the previous annual certification and nothing has occurred to impair the ability of the controls to protect human health and the environment.

10.2.1 Overall Protection of Human Health and the Environment

This alternative would meet the RAOs for providing protection to human health. Future risk of exposure to impacted groundwater and soil vapor is prevented through implementation of the institutional and engineering controls.

10.2.2 Compliance with SCGs

A summary of the applicable SCGs is presented in Table 18. With the exception of groundwater contamination migrating onsite from the three offsite source plumes, the onsite groundwater meets the applicable chemical-specific SCGs. Remedial Alternative II would not comply with the 6 NYCRR 375 goals to restore the site to pre-disposal conditions to the extent feasible and authorized by law and to eliminate or mitigate all significant threats to public health and the environment. However, remediation to predisposal, unrestricted use standards is neither applicable nor appropriate given the current and intended future use as a railyard. Remedial Alternative II does comply with the criteria in 6 NYCRR Subpart 375-1.8 for remedial parties where an offsite source of groundwater contamination with no onsite contribution has been demonstrated.

10.2.3 Long-term Effectiveness and Permanence

The proposed institutional and engineering controls would provide long-term protection to site workers by restricting work in the offsite source plume areas and minimizing the exposure pathway. Groundwater monitoring would identify any continued onsite migration and increase in exposure risk.

Remedial Alternative II would not offer permanence in the remedy since active remediation of the offsite source plumes would not be performed by Amtrak. Implementation of an SVE/AS system to address the VOC plume at the SMP site is planned. Effective remediation of this plume would address the source of the North Plume. The source of the West of Honeywell Street Plume appears to be the ACCO Site, which is still performing a remedial investigation. Future remediation at the ACCO Site would address the source of the West of Honeywell Street Plume. Not until these plumes are remediated would the potential for removing the ongoing source of contamination migrating onsite be addressed and permanence in remedy for the onsite contamination from these plumes be achieved.

10.2.4 Reduction of Toxicity, Mobility, or Volume

Remedial Alternative II would not reduce the toxicity, mobility, or volume of groundwater contaminants in the offsite source plume areas. Minimal effects from biodegradation that would reduce the volume of contaminants could be expected given that the offsite source areas have not been actively remediated to date and contaminants continue to migrate onsite.

10.2.5 Short-Term Effectiveness

With the institutional and engineering controls in place, Alternative II only poses moderate short-term effects for site workers that may be exposed to impacted groundwater and soil vapor during future construction. There is also a potential for short term exposure to ESA workers performing extensive dewatering efforts. The short-term risk of exposure would be minimized through the use of proper personal protective equipment and health and safety monitoring during construction.

10.2.6 Implementability

The institutional and engineering controls associated with Remedial Alternative II are easily obtainable and implementable, with moderate administrative effort. Groundwater monitoring is also easily implementable, utilizing a subset of the existing onsite monitoring well network. A moderate level of effort will be required for remaining updated on activities performed at the upgradient offsite sources and obtaining monitoring data for these sites.

10.2.7 Cost

The estimated capital cost to implement Remedial Alternative II is $46,200. The capital costs include administrative efforts in establishing the access/use restrictions, filing the groundwater use restriction with the NYCDEP, and preparation of a Monitoring Plan. The capital costs for installing a venting system and vapor barrier for future building construction have not been included in the estimate due to the uncertainty of future building design.

The estimated present worth cost for tasks associated with groundwater monitoring is $36,414. It is anticipated that groundwater monitoring would be performed until 2016; one year after the ESA construction is completed. Therefore, the total net present value of Remedial Alternative II is $82,614. The detailed cost estimate for Remedial Alternative II is provided on Table 19.

10.3 Comparison of Remedial Alternatives

This section provides a comparison of the remedial action alternatives that were developed to address the media of concern in OU-6. The NCP and the NYSDEC regulation and guidance on the selection of remedial alternatives for inactive hazardous waste disposal sites require that the seven evaluation criteria be used to individually evaluate the remedial action alternatives and also evaluate comparatively to identify advantages and disadvantages of each alternative relative to one another (NYSDEC, 1990 and NYSDEC, 2002).

The NCP and the NYSDEC guidance also require that alternatives be evaluated based on community acceptance. In accordance with NYSDEC guidance, alternatives are evaluated for community acceptance after the public comment period.

10.3.1 Overall Protection of Human Health and the Environment

Overall protection of human health and the environment and compliance with SCGs are threshold criteria. Therefore, the remedial action alternatives must adequately protect the human health and the environment and successfully comply with SCGs to be considered for selection as a recommended alternative. The protection of human health and the environment can be measured by the alternative’s ability to satisfy the RAOs.

Alternative I – No Action would not reduce or control the potential for exposure to impacted groundwater and soil vapor and would not satisfy the associated RAOs. Alternative II would meet the RAOs for providing protection to human health through implementation of institutional and engineering controls that restrict working in the offsite source plume areas, prohibit the use of groundwater without treatment, and plan for construction of passive venting systems in any new construction in the offsite source plume areas. Under both remedial alternatives, protection to the environmental will not be provided until the offsite sources are remediated.

10.3.2 Compliance with SCGs

Compliance with SCGs, also a threshold criterion, determines whether an alternative satisfies regulatory requirements. A listing of applicable SCGs is provided on Table 18.

With the exception of groundwater contamination migrating onsite from the three upgradient offsite sources, the onsite groundwater meets the applicable chemical-specific SCGs. Chemical SCGs would only be attainable in the offsite source plume areas when the offsite sources are remediated and the continuing source to onsite groundwater is removed. The groundwater monitoring component of Remedial Alternative II would identify any changes in the offsite source plume areas and includes review of remedial efforts performed at the upgradient offsite source sites.

Both alternatives would not satisfy the remedial goal provided in 6 NYCRR Part 375 to restore the site to pre-disposal/pre-release conditions. However, as discussed earlier, remediation to predisposal, unrestricted use standards is neither applicable nor appropriate given the current and intended future use as a railyard. Remedial Alternative II complies with the criteria in 6 NYCRR Subpart 375-1.8 for remedial parties where an offsite source of groundwater contamination with no onsite contribution has been demonstrated.

10.3.3 Long-Term Effectiveness and Permanence

Long-term effectiveness examines the effectiveness of the alternative in providing protection to human health and the environment and is measured by the magnitude of residual risk remaining after the remedial actions, the adequacy and reliability of controls, and the ability to meet the RAOs in the future.

Remedial Alternative I provides neither long-term effectiveness nor permanence. No institutional and engineering controls would be implemented under this remedial alternative, resulting in an uncontrolled exposure risk associated with contaminants remaining onsite. Remedial Alternative II includes the implementation of institutional and engineering controls that restrict work in the offsite source plume areas and prevents the use of groundwater for drinking water purposes, which minimizes the magnitude of exposure risk. Therefore, Remedial Alternative II provides long-term effectiveness in providing protection to human health.

Neither of the proposed remedial alternatives provides long-term protection to the environment or permanence in remedy since active remediation of the offsite source plumes would not be performed. The sources of the contamination migrating onsite will need to be addressed before long-term protection and permanence in remedy can be achieved.

10.3.4 Reduction of Toxicity, Mobility, or Volume

This criterion evaluates the anticipated performance of the remedial action alternative in terms of the treatment used to reduce the toxicity, mobility, or volume, the type and quantity of residuals remaining after treatment, and the degree to which the treatment is irreversible.

Both of the proposed remedial alternatives would not reduce the toxicity, mobility, or volume of contaminants in groundwater. As discussed earlier, the extent of impacts from contaminants migrating onsite from the upgradient offsite sources will not be reduced until the source areas are remediated. In the interim, minimal effects from biodegradation could be expected due to the ongoing sources.

10.3.5 Short-Term Effectiveness

Short-term effectiveness refers to the potential effects and related risks associated with the implementation of the remedial action alternative. There are no short-term impacts to human health associated with both remedial alternatives because no active remediation is proposed.

Potential short-term effects would occur during any future construction in the offsite source plume areas. The short-term risk of exposure would be minimized through the use of proper personal protective equipment and health and safety monitoring during construction.

10.3.6 Implementability

The implementability criterion evaluates the feasibility of an alternative based on the ability to construct and operate the technology, reliability of the technology, ease of undertaking additional remedial actions, if necessary, ability to monitor effectiveness, the administrative feasibility, and the availability of services and materials.

Remedial Alternative I can be implemented with relative ease. No active construction or remedial actions would be performed. Remedial Alternative II would be technically and administratively feasible. Moderate administrative effort would be required to implement the proposed institutional and engineering controls. Groundwater monitoring is easily implementable utilizing a subset of the existing onsite monitoring well network. Future construction of passive venting systems and vapor barriers is equally easily implementable, with trained workers and materials widely available. A moderate level of effort will be required for obtaining data from the upgradient sources and incorporating the data into the proposed Groundwater Monitoring report.

10.3.7 Cost

The following is a summary of the estimated costs for each of the remedial action alternatives. The detailed cost estimate for Remedial Alternative II is provided on Table 19.

	Capital Cost	Indirect Costs	Monitoring NPV	Total NPV
Alternative I	$0	$0	$0	$0
Alternative II	$42,000	$4,200	$36,414	$82,614

11.0 OU-6 RI/FS CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations generated as part of the OU-6 RI/FS are summarized in the following sections.

11.1 Conclusions

Based on all data presented in this report, the following conclusions have been reached regarding OU-6.

- OU-6 consists of the saturated soil and groundwater beneath the Yard which comprise the Upper Glacial aquifer. The Upper Glacial aquifer is present beneath the entire Yard. Groundwater within the Upper Glacial aquifer flows predominantly west at an average rate of 4.29 to 4.92 ft/d, discharging to the buried flow path of Dutch Kills Creek in the western portion of the Yard and/or the East River, located approximately one mile from the Yard. Although Dutch Kills is now buried in the western portion of the Yard, it emerges south of the Yard before joining Newtown Creek.

- Upward vertical gradients (i.e., upward groundwater flow) exist beneath the west and northwest portions of the Yard, including OU-3, reducing or preventing the downward migration of petroleum-related contaminants from the OU-3 SPH plume. This is supported by analytical data from monitoring wells screened either beneath or hydraulically downgradient of the SPH accumulation.

- Saline groundwater is present throughout the southwest portion of the Yard. The occurrence of saline groundwater correlates with the buried Dutch Kills wetland. The sources of these saline conditions are likely salt water intrusion from the Dutch Kills and Newtown Creek. There are no chemical-specific standards for saline groundwater (i.e., Class GSA). Six of 32 Yard wells sampled (19 percent) contain saline groundwater (i.e., chloride >250 mg/L and/or TDS >1,000 mg/L). To be conservative, as part of the groundwater quality data evaluation, even saline groundwater samples were compared to the Class GA NYSDEC AWQSGVs.

- Three plumes of chlorinated VOCs in shallow and deep groundwater have migrated onto the Yard from upgradient, off-site sources, and are not related to Yard activities. All three plumes contain groundwater that exceeds the NYSDEC AWQSGVs for select chlorinated VOCs. Only one of the three plumes (West of Honeywell Plume) contained BTEX and MTBE that exceeded the NYSDEC AWQSGVs.

- In general, deep groundwater at the Yard is more impacted than shallow groundwater at the Yard.

- Two metals were detected above both background ranges and NYSDEC AWQSGVs (manganese and lead). Manganese was found in wells MW-13S and MW-91 above background ranges and the AWQSGVs, and lead was found only in MW-87 above both background ranges and the AWQSGVs. The manganese is likely attributed to anoxic conditions within the aquifer (e.g., the buried western and northeast wetlands), and is indicative of natural aquifer conditions. The detection of lead is likely the result of a turbid groundwater sample that contained a large amount of suspended particles.

- No SVOCs were detected in Yard groundwater above NYSDEC AWQSGVs.

- No PCBs were detected in Yard groundwater above NYSDEC AWQSGVs.

- An isolated detection of toluene was found in MW-37, and an isolated detection of total xylene was found in well MW-68, however, both detections were significantly below the NYSDEC AWQSGVs.

- There were no Yard-related NYSDEC AWQSGV exceedances in groundwater identified during this Supplemental OU-6 RI.

- Overall, the fundamental findings of the Supplemental OU-6 RI remain largely consistent with findings of the 1997 OU-6 RI. A comparison of the results, including the similarities and the subtle differences is provided below.

  - <u>VOCs</u> – Three dissolved-phase chlorinated VOC groundwater plumes have migrated onto the Yard from off-site sources. The leading edge of the North Plume appears to have migrated further west (downgradient) since the 1997 RI was implemented. Additionally, minor detections of toluene (below AWQSGV) were found in this plume in 2008. The West of Honeywell Plume is still present at the Yard. This plume appears to have increased in width (east to west) in the southern portion of the Yard, however, the shallow portion of this plume does not appear to extend as far north as in 1997. BTEX and MTBE were also identified in the deep groundwater associated with this plume. The Southeast plume is still present at the Yard, and appears to be similar in size and configuration to that observed in 1997.

    In 1997, well MW-27 contained elevated concentrations of benzene, carbon disulfide and MIBK. In 2008, these compounds were all non-detect in MW-27. Furthermore, in 2008 there was not a single detection of MIBK in groundwater throughout the Yard.

    In 1997, two dissolved-phase BTEX groundwater plumes were found at the Yard. These BTEX plumes migrated onto the Yard from off-site sources. In 2008, these BTEX plumes were no longer present at the Yard.

    In 1997, a hydrocarbon sheen was observed in well MW-68. In 2008, this hydrocarbon sheen was not present in MW-68, but a detection of total xylenes in groundwater below the NYSDEC AWQSGV was present.

  - <u>SVOCs</u> – With respect to SVOCs, the results of the Supplemental OU-6 RI are similar to the 1997 RI, there was not a single detection of SVOCs that exceed the NYSDEC AWQSGVs.

  - <u>Metals</u> – In 1997, a total of seven metals were detected in five wells above both the Yard background concentrations and the NYSDEC AWQSGVs. In 2008, only two metals were detected in three wells above both the Yard background concentrations and the NYSDEC AWQSGVs. This decrease is likely due to the attenuation of metals in the upgradient, off-site source (i.e., SMP).

  - PCBs – In 1997, PCBs were detected in two wells at low concentrations (both below the NYSDEC AWQSGV). In 2008, there was not a single detection of PCBs in groundwater.

  - Chloride and TDS – In 1997, 13 of 34 wells (38 percent) were found to be saline based on chloride and/or TDS data. In 2008, 6 of 32 wells (19 percent) were found to be saline based on chloride and/or TDS data.

- Based on current OU-6 data, the only occupied building that could potentially be subject to vapor intrusion from subsurface (OU-6) sources is the HSTF S&I building. Based on sub-slab vapor, indoor air, and outdoor ambient air samples collected in 2009, vapor intrusion from the subsurface is not occurring in this building.

- Saturated soil samples were collected from a number of locations throughout OU-6, many of which coincide with the presence of dissolved-phase groundwater plumes that have migrated onto the Yard from off-site sources. There were no exceedances of the Yard-specific soil cleanup levels for Yard COCs in saturated soil, or of the NYSDEC Part 375 Restricted Industrial Use soil cleanup objectives for non-COCs in saturated soil found anywhere in the Yard. A few low-level detections of VOCs were identified in saturated soil resulting from impacted groundwater migrating onto the Yard from off-site sources.

- No current complete exposure pathways exist in OU-6; however, several potential exposure pathways exist. These potential exposure pathways will be addressed in the Site Management Plan, or have been addressed as part of the OU-3 RAWP.

11.2 Recommendations

The recommended remedial action alternative for impacted groundwater and soil vapor is Remedial Alternative II – Groundwater Monitoring, Institutional and Engineering Controls. Remedial Alternative II would provide adequate protection from potential exposure risks to workers, meet the groundwater and soil vapor RAOs, comply with the majority of the applicable SCGs, and comply with the responsibilities outlined for remedial parties that have demonstrated that the source of onsite contamination is an upgradient source.

Respectfully submitted,

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Table 1. Summary of Construction Details for Monitoring Wells, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Well Number	Date(s) Installed	Land Surface Elevation (ft relative to 1988 NAVD mean sea level)	Measuring point Elevation (ft relative to 1988 NAVD mean sea level)	Screen Type	Diameter (inches)	Screen Slot Size	Depth of Boring (ft below land surface)	Screened Interval (ft below land surface)	Interval Gravel Packed (ft below land surface)	Interval Sealed with Bentonite (ft below land surface)	Interval Sealed with Grout (ft below land surface)	Screen Setting (ft relative to mean sea level)	Screen Interval
CTB-1 (m)	7/14/2005	17.64	21.73	PVC	4	0.020	15	1.5 - 11.5	1 - 15	0.5 - 1	0 - 0.5	16 - 6	Water Table
CTB-19 (m)	7/15/2005	18.73	22.64	PVC	4	0.020	12	2 - 12	1 - 12	0.5 - 1	0 - 0.5	17 - 7	Water Table
CTB-20 (m)	7/14/2005	18.52	22.59	PVC	4	0.020	12.5	2.5 - 12.5	1.5 - 12.5	0.5 - 1.5	0 - 0.5	16 - 6	Water Table
CTB-21 (m)	7/14/2005	17.60	21.42	PVC	4	0.020	10.5	2 - 10.5	1 - 10.5	0.5 - 1	0 - 0.5	16 - 7	Water Table
CV-2 (j)	6/7/2006	29.7	29	PVC	1.25	NA	40	30 - 40	28 - 40	26 - 28	NA	-1 - -11	Deep
MW-13(a) (g)	11/6/1990	16.83	17.27	SS	4	0.020	14	2 - 12	1 - 14	0.5 - 1	0 - 0.5	15 - 5	Water Table
MW-16 (m)	11/7/1990	17.2	19.52	SS	4	0.020	14	2.5 - 12.5	2 - 14	1 - 2	0 - 1	15 - 5	Water Table
MW-17 (b)	11/8/1990	18.02	19.51	SS	4	0.020	13	2 - 12	1.3 - 13	0.5 - 1.3	0 - 0.5	16 - 6	Water Table
MW-19	12/20/1990	17.81	20.11	SS	4	0.020	15	4 - 14	2 - 15	0.5 - 2	0 - 0.5	14 - 4	Water Table
MW-20 (m)	12/11/1990	17.18	19.09	SS	4	0.020	14	2.5 - 12.5	1.5 - 14	0.5 - 1.5	0 - 0.5	15 - 5	Water Table
MW-21	12/6/1990	17.86	19.06	SS	4	0.020	14	2 - 12	1 - 14	0.3 - 1	0 - 0.3	16 - 6	Water Table
MW-22 (b)	10/20/1990	17.02	18.20	SS	4	0.020	12	1 - 11	0.5 - 12	0 - 0.5	+0.5 - 0	16 - 6	Water Table
MW-23D (m)	12/10/1990	17.19	19.17	PVC	4	0.020	37.5	26.5 - 36.5	22 - 37.5	18 - 22 (c)	0 - 18	-9 - -19	Deep
MW-24(d)	11/28/1990	NS	NS	PVC	4	0.020	27	14 - 24	11 - 27	4 - 11	0 - 4	NS	Water Table
MW-25(d)	11/17/1990	NS	NS	PVC	4	0.020	16.5	5.5 - 15.5	3.5 - 16.5	1.5 - 3.5	0 - 1.5	NS	Water Table
MW-25A (b)	1/6/1993	22.14	25.28	PVC	4	0.010	15.5	4 - 14	2.5 - 15.5	1.5 - 2.5	0 - 1.5	18 - 8	Water Table
MW-26(d)	12/5/1990	NS	NS	PVC	4	0.020	22.5	11 - 21	8 - 22.5	1.5 - 8	0 - 1.5	NS	Water Table
MW-27	12/1/1990	20.09	21.34	PVC	4	0.020	19	8 - 18	6 - 19	2 - 6	0 - 2	12 - 2	Water Table
MW-28 (g)	11/9/1990	18.92	18.22	PVC	4	0.020	17	6 - 16	4 - 17	2 - 4	0 - 2	13 - 3	Water Table
MW-29 (e)	11/17/1990	9.11	12.29	PVC	4	0.020	12	1 - 11	0.5 - 12	0 - 0.5	0 (f)	8 - -2	Water Table
MW-30 (e)	11/30/1990	13.88	16.39	PVC	4	0.020	16	4 - 14	2.5 - 16	1 - 2.5	0 - 1	10 - 0	Water Table
MW-31(b)	11/8/1990	14.34	14.35	PVC	4	0.020	13	2.5 - 12.5	1.5 - 13	0.5 - 1.5	0 - 0.5	12 - 2	Water Table
MW-32(g)	10/4/1990	NS	NS	PVC	4	0.020	17	2.6 - 12.6	1.5 - 17	0.5 - 1.5	0 - 0.5	NS	Water Table
MW-33(g)	11/15/1990	NS	NS	PVC	4	0.020	18.5	8 - 18	6 - 18.5	3 - 6	0 - 3	NS	Water Table
MW-34 (g)	11/29/1990	26.71	28.96	PVC	4	0.020	19	7.3 - 17.3	5 - 19	1.5 - 5	0 - 1.5	19 - 9	Water Table
MW-35	1/15/1991	16.73	18.98	PVC	4	0.020	14	3 - 13	2 - 14	1 - 2	0 - 1	14 - 4	Water Table
MW-36 (e)	1/15/1991	17.31	20.01	PVC	4	0.020	15	3 - 13	1.5 - 15	0.5 - 1.5	0 - 0.5	14 - 4	Water Table
MW-37	12/14/1993	15.30	17.27	PVC	4	0.010	14	1.5 - 11.5	0.6 - 14	0.1 - 0.6	0 - 0.1	14 - 4	Water Table
MW-38D	12/10-11/93	17.57	20.27	PVC	4	0.010	44	29.5 - 39.5	25 - 44	23 - 25	0 - 23	-12 - -22	Deep
MW-39D	12/15-16/93	18.71	20.67	PVC	4	0.010	43.5	30.5 - 40.5	27 - 43.5	23 - 27	0 - 23	-12 - -22	Deep
MW-40D (b)	11/9/1993	19.61	21.59	PVC	4	0.010	42	29 - 39	26 - 42	22 - 26	0 - 22	-9 - -19	Deep
MW-41 (e)	10/30/1991	15.58	14.98	SS	4	0.010	14	3.4 - 13.4	2 - 14	1 - 2	0 - 1	12 - 2	Water Table

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MW-42 (g)	1/18/1993	14.71	15.71	PVC	4	0.010	13.5	2 - 12	0.8 - 13.5	0.2 - 0.8	0 - 0.2	13 - 3	Water Table
MW-43 (g)	1/29/1993	14.11	15.14	PVC	4	0.010	14	2.5 - 12.5	1.5 - 14	0.5 - 1.5	0 - 0.5	12 - 2	Water Table
MW-44D (g)	1/19-20/93	13.92	14.27	PVC	4	0.010	41	29.7 - 39.7	27.8 - 41	26 - 27.8	0 - 26	-16 - -26	Deep
MW-45	1/11/1993	20.94	20.54	PVC	4	0.010	20	7 - 17	5 - 20	3.5 - 5	0 - 3.5	14 - 4	Water Table
MW-46 (e)	1/11/1993	24.55	26.51	PVC	4	0.010	19	6.7 - 16.7	4.5 - 19	3.0 - 4.5	0 - 3.0	18 - 8	Water Table
MW-47 (b)	1/5/1993	26.06	28.78	PVC	4	0.010	14.5	3 - 13	2 - 14.5	1 - 2	0 - 1	23 - 13	Water Table
MW-48D	2/1/1993	25.76	25.30	PVC	4	0.010	42	30 - 40	27 - 42	25 - 27	0 - 25	-4 - -14	Deep
MW-49 (m)	12/13/1993	17.76	19.18	PVC	4	0.010	14	1.7 - 11.7	0.8 - 14	0.3 - 0.8	0 - 0.3	16 - 6	Water Table
MW-50 (m)	12/17/1993	17.37	18.58	SS	4	0.020	15	2 - 12	1 - 15	0.3 - 1	0 - 0.3	15 - 5	Water Table
MW-51 (b)	12/15/1993	17.58	19.23	SS	4	0.020	14	1.5 - 11.5	0.7 - 14	0.2 - 0.7	0 - 0.2	16 - 6	Water Table
MW-52 (m)	12/9/1993	16.51	16.87	SS	4	0.020	14	1.7 - 11.7	1 - 14	0.6 - 1	0 - 0.6	15 - 5	Water Table
MW-53 (e)	12/7/1993	17.70	20.16	SS	4	0.020	14	1.5 - 11.5	0.8 - 14	0.2 - 0.8	0 - 0.2	16 - 6	Water Table
MW-54 (b)	11/29/1993	17.07	19.35	SS	4	0.020	14	1.3 - 11.3	0.7 - 14	0.2 - 0.7	0 - 0.2	16 - 6	Water Table
MW-55 (b)	11/17/1993	17.73	19.27	SS	4	0.020	14	1.5 - 11.5	1 - 14	0.5 - 1	0 - 0.5	16 - 6	Water Table
MW-56 (b)	11/17/1993	18.60	21.62	SS	4	0.020	13	2 - 12	1 - 13	0.5 - 1	0 - 0.5	17 - 7	Water Table
MW-57 (b)	11/10/1993	19.62	21.98	PVC	4	0.010	14.5	3 - 13	1 - 14.5	0.5 - 1	0 - 0.5	17 - 7	Water Table
MW-58 (b)	12/8/1993	16.92	18.37	SS	4	0.020	14	1.3 - 11.3	0.8 - 14	0.2 - 0.8	0 - 0.2	16 - 6	Water Table
MW-59 (b)	12/3/1993	17.85	21.36	PVC	4	0.010	12.5	1.5 - 11.5	0.5 - 12.5	0 - 0.5	0	16 - 6	Water Table
MW-60 (b)	12/28/1993	21.57	23.31	SS	4	0.020	18	4.5 - 14.5	3 - 18	1.5 - 3	0 - 1.5	17 - 7	Water Table
MW-61 (e)	11/12-13/93	29.32	30.95	PVC	4	0.010	24	12 - 22	10 - 24	9 - 10	0 - 9	17 - 7	Water Table
MW-62D	12/1/1993	29.54	30.46	PVC	4	0.010	52	39 - 49	35 - 52	31 - 35	0 - 31	-9 - -19	Deep
MW-63 (b)	12/14/1993	19.34	20.92	PVC	4	0.010	14	2.5 - 12.5	1.5 - 14	0.5 - 1.5	0 - 0.5	17 - 7	Water Table
MW-64 (b)	4/22/1996	20.43	21.55	PVC	4	0.010	15	4 - 14	2.5 - 15	0.5 - 2.5	0 - 0.5	16 - 6	Water Table
MW-65 (b)	4/22/1996	20.68	21.02	PVC	4	0.010	14.5	4 - 14	2 - 14.5	0.5 - 2	0 - 0.5	17 - 7	Water Table
MW-66 (e)	4/23/1996	21.43	22.80	PVC	4	0.010	15	4 - 14	2 - 15.5	0.5 - 2.5	0 - 0.5	17 - 7	Water Table
MW-67 (b)	4/19/1996	20.90	22.46	PVC	4	0.020	15	4 - 14	2 - 15	1 - 2	0 - 1	17 - 7	Water Table
MW-68	4/24/1996	25.03	25.43	PVC	4	0.010	17	6 - 16	4 - 17	2 - 4	0 - 2	19 - 9	Water Table
MW-69D (e)	4/24/1996	24.92	25.46	PVC	4	0.010	35	23 - 33	21 - 35	19 - 21	0 - 19	2 - 8	Deep
MW-70	10/18/1999	17.40	19.08	PVC	4	0.010	13.5	2.5 - 12.5	1.5 - 12.5	0.5 - 1.5	0 - 0.5	15 - 5	Water Table
MW-71 (m)	4/9/2004	16.66	17.25	PVC	4	0.020	10.5	0.25 - 10.5	0.08 - 10.5	0	0 - 0.08	16 - 6	Water Table
MW-72 (m)	4/12/2004	16.42	16.83	PVC	4	0.020	11	1 - 11	0.25 - 11	0 - 0.25	0	15 - 5	Water Table
MW-73 (m)	4/8/2004	17.43	18.63	PVC	4	0.020	10.5	1 - 10.5	0.5 - 10.5	0.2 - 0.5	0 - 0.2	16 - 7	Water Table

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MW-74 (m)	4/9/2004	17.07	17.98	PVC	4	0.020	10	1 - 10	0.5 - 10	0 - 0.5	0	16 - 7	Water Table
MW-75 (m)	4/8/2004	19.17	22.01	PVC	4	0.020	13	2 - 12	1 - 13	0.5 - 1	0 - 0.5	17 - 7	Water Table
MW-76 (g)	4/8/2004	18.42	21.10	PVC	4	0.020	13	2 - 12	1 - 13	0.5 - 1	0 - 0.5	16 - 6	Water Table
MW-77 (m)	4/8/2004	19.31	22.29	PVC	4	0.020	12	2 - 12	0.5 - 12	0 - 0.5	0	17 - 7	Water Table
MW-78 (5)	6/20/2005	23.23	23.01	PVC	2	0.010	17.5	5 - 15	3 - 15	2 - 3	0 - 2	18 - 8	Water Table
MW-79	6/21/2005	24.06	23.81	PVC	2	0.010	20	4.4 - 14.4	3 - 14.4	1.5 - 3	0 - 1.5	20 - 10	Water Table
MW-80	4/28/2008	16.37	19.20	PVC	2	0.020	16	6 - 16	4 - 16	1 - 4	0 - 1	10 0	Water Table
MW-82	4/30/2008	29.75	33.17	PVC	2	0.020	23.5	13.5 - 23.5	10 - 23.5	7 - 10	0 - 3	16 6	Water Table
MW-83	4/23/2008	29.23	30.33	PVC	2	0.020	20.5	10.5 - 20.5	8 - 20.5	5 - 8	0 - 5	19 9	Water Table
MW-84	4/23/2008	32.09	34.77	PVC	2	0.020	20	9.7 - 19.7	8 - 20	5 - 8	0 - 5	22 12	Water Table
MW-85	4/28/2008	20.19	23.19	PVC	2	0.020	13	3 - 13	2 - 13	0 - 2	0	17 7	Water Table
MW-86	4/29/2008	13.64	16.68	PVC	2	0.020	15	5 - 15	3 - 15	1 - 3	0 - 1	9 -1	Water Table
MW-87	4/29/2008	12.46	14.50	PVC	2	0.020	14	4 - 14	3 - 14	1 - 3	0 - 1	8 -2	Water Table
MW-88	4/30/2008	12.74	15.26	PVC	2	0.020	12	2 - 12	1 - 12	0 - 1	0	11 1	Water Table
MW-89	4/30/2007	12.07	14.63	PVC	2	0.020	11	1 - 11	0.5 - 11	0 - 0.5	0	11 1	Water Table
MW-90	4/30/2007	10.21	12.87	PVC	2	0.020	11	1 - 11	0.5 - 11	0 - 0.5	0	9 -1	Water Table
MW-91	4/30/2008	10.41	12.88	PVC	2	0.020	12	2 - 12	1 - 12	0 - 1	0	8 -2	Water Table
MW-92	4/23/2008	22.78	22.61	PVC	2	0.020	13.5	3.5 - 13.5	1 - 13.5	0 - 1	0	19 9	Water Table
MW-9S (l)	7/8/2003	20.49	20.42	PVC	4	0.010	20	3.45 - 18.45	2 - 18.45	0.5 - 2	0 - 0.5	17 - 2	Water Table
MW-9D (l)	7/8/2003	20.47	20.47	PVC	4	0.010	40	27.7 - 37.7	26 - 37.7	2 - 26	0 - 2	-7 - -17	Deep
MW-13S (l)	7/9/2003	20.31	20.00	PVC	4	0.010	20	4.45 - 18.95	3 - 19.45	0.5 - 3	0 - 0.5	16 - 1	Water Table
MW-13D (l)	7/9/2003	20.22	19.69	PVC	4	0.010	40	28.4 - 38.40	27 - 38.40	2 - 27	0 - 2	-8 - -18	Deep
RT-3AW (j)	10/9/2006	14.08	13.88	NA	1.25	NA	40	30 - 40	28 - 40	26 - 28	0 - 26	-16 - -26	Deep
RT-6W (j)	10/2/2006	14.71	14.96	NA	1.25	NA	40	30 - 40	25 - 40	23 - 25	0 - 23	-15 - -25	Deep
RT-8W (j)	8/30/2006	15.45	15.70	NA	1.25	NA	69	30 - 40	25 - 40	23 - 25	0 - 23	-15 - -25	Deep
RW-1 (k)(m)	12/14/1990	16.66	19.55	SS	4	0.020	11	0 - 10	0.5 - 11	0	0 - 0.5	17 - 7	Water Table
SSY-23 (5)(i)	NA	NA	NA	PVC	2	0.020	NA	NA	NA	NA	NA	NA	NA
SSY-46 (5)(i)	NA	NA	NA	PVC	2	0.020	NA	NA	NA	NA	NA	NA	NA
SSY-49 (5)(i)	NA	NA	NA	PVC	2	0.020	NA	NA	NA	NA	NA	NA	NA
SSY-51 (3)(i)	NA	NA	NA	PVC	2	0.020	NA	NA	NA	NA	NA	NA	NA
SY-5W (2)(j)	5/11/1999	20.90	13.88	NA	2	NA	16	6 - 16	4 - 16	2 - 4	0 - 2	15 - 5	Deep
SY-104W (4)(j)	1/10/2000	19.40	14.96	NA	2	NA	51	41 - 51	40 - 51	38 - 40	0 - 38	-22 - -32	Deep

Table 1. Summary of Construction Details for Monitoring Wells, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Well Number	Date(s) Installed	Land Surface Elevation (ft relative to 1988 NAVD mean sea level)	Measuring point Elevation (ft relative to 1988 NAVD mean sea level)	Screen Type	Diameter (inches)	Screen Slot Size	Depth of Boring (ft below land surface)	Screened Interval (ft below land surface)	Interval Gravel Packed (ft below land surface)	Interval Sealed with Bentonite (ft below land surface)	Interval Sealed with Grout (ft below land surface)	Screen Setting (ft relative to mean sea level)	Screen Interval
SY-105W (4)(j)	2/15/2000	19.50	15.70	NA	2	NA	59	49 - 59	47 - 59	44 - 47	0 - 44	-30 - -40	Deep
SY-107W (4)(j)	1/31/2000	19.40	15.70	NA	2	NA	42	32 - 42	30 - 42	28 - 30	0 - 28	-13 - -23	Deep
SY-111W (j)	11/8/1999	20.20	20.12	NA	2	NA	69	59 - 69	58 - 69	55 - 58	0 - 55	-39 - -49	Deep
SY-131AW (j)	2/17/2000	44.40	44.28	NA	2	NA	60	50 - 60	48 - 60	45 - 48	0 - 45	-6 - -16	Deep
SY-153 (j)	6/24/1999	52.1	51.98	NA	2	NA	60	50 - 60	48 - 60	45 - 48	NA	2 - -8	Deep
SY-163W (5)(j)	6/28/1999	53.10	53.02	NA	2	NA	49	39 - 49	36 - 49	33 - 36	0 - 33	14 - 4	Deep
SY-174W (j)	11/4/1999	55.70	55.45	NA	2	NA	40	30 - 40	28 - 40	25 - 28	0 - 25	26 - 16	Deep
SY-178W (j)	6/28/1999	56.00	55.92	NA	2	NA	40	30 - 40	28 - 40	25 - 28	0 - 25	26 - 16	Deep
SY-189W (j)	11/16/1999	61.20	60.70	NA	2	NA	40	30 - 40	28 - 40	25 - 28	0 - 25	31 - 21	Deep
SY-433W (j)	12/5/2001	51.70	51.50	NA	2	NA	40	30 - 40	29 - 40	27.5 - 29	0 - 27.5	22 - 12	Deep
SY-436W (j)	4/30/2002	55.01	54.76	NA	2	NA	95	85 - 95	83 - 95	81 - 83	0 - 81	-30 - -40	Deep
SY-438W (j)	5/21/2002	50.62	50.37	NA	2	NA	63	45 - 60	43 - 60	41 - 43	0 - 41	6 - -9	Deep
SY-452W (j)	11/23/2001	44.90	44.70	NA	2	NA	35	21 - 31	21 - 31	20 - 21	0 - 20	24 - 14	Water Table
SY-516W (j)	10/24/2006	23.06	22.86	NA	1.25	NA	50	40 - 50	38 - 50	36 - 38	0 - 36	-17 - -27	Deep
SY-532W (j)	3/22/2005	45.50	45.00	NA	2	NA	28	18 - 28	16 - 28	13 - 16	0 - 13	28 - 18	Deep
SY-534W (j)	4/9/2005	34.50	34.00	NA	2	NA	28	18 - 28	16 - 28	13 - 16	0 - 13	17 - 7	Deep
TA-2 (m)	NA	NA	NA	PVC	2	NA	NA	NA	NA	NA	NA	NA	Water Table
TE-MW-A-3 (j)	2/24/2000	45.11	44.91	PVC	2	0.020	60	50 - 60	48 - 60	45 - 48	0 - 45	-5 - -15	Deep
TE-MW-A-4 (j)	6/24/1999	51.01	50.89	PVC	2	0.020	60	50 - 60	48 - 60	45 - 48	0 - 45	1 - -9	Deep
TE-B/C-4 (j)	10/19/1999	50.11	49.99	PVC	2	0.020	60	50 - 60	48 - 60	46 - 48	0 - 46	0 - -10	Deep
TE-MW-D-2 (j)	3/28/2000	38.91	38.83	PVC	2	0.020	55	40 - 50	39 - 55	36 - 39	0 - 36	-1 - -11	Deep
TE-MW-IB/OB-1 (j)	9/11/2000	29.49	29.14	PVC	2	0.020	35	25 - 35	NA	NA	NA	4 - -6	Deep
TE-IB-1 (j)	2/25/2000	18.61	18.44	PVC	2	0.020	39	29 - 39	28 - 39	25 - 28	0 - 28	-10 - -20	Deep
TE-IB-3 (j)	9/12/2000	29.09	28.59	PVC	2	0.020	55	45 - 55	NA	NA	NA	-16 - -26	Deep
TE-MW-A-1 (j)	9/26/2000	19.83	20.57	PVC	2	0.020	36	26 - 36	22.5 - 36	12 - 22.5	0 - 12	-6 - -16	Deep
TE-MW-A-4 (j)	6/24/1999	51.71	51.71	PVC	2	0.020	60	50 - 60	48 - 60	45 - 48	0 - 45	2 -8	Deep
TE-MW-B/C-2 (j)	9/7/2000	44.36	44.16	PVC	2	0.020	85	75 - 85	NA	NA	NA	-31 - -41	Deep
TE-MW-B/C-4 (j)	10/19/1999	51.20	51.08	NA	2	NA	60	50 - 60	48 - 60	46 - 48	0 - 46	1 - -9	Deep
TE-MW-D-1 (j)	9/25/2000	19.46	19.63	PVC	2	0.020	41	31 - 41	27 - 41	22 - 27	0 - 22	-12 - -22	Deep
TE-MW-D-2 (3)(j)	3/28/2000	40.00	39.92	NA	2	NA	55	40 - 50	39 - 50	36 - 39	0 - 36	0 - -10	Deep
TE-MW-D-4 (5)(j)	7/6/1999	48.61	48.36	PVC	2	0.020	70	60 - 70	57 - 70	54 - 57	0 - 54	-11 - -21	Deep
TE-MW-IB-1 (4)(j)	2/25/2000	19.70	19.53	NA	2	NA	39	29 - 39	28 - 39	25 - 28	0 - 25	-9 - -19	Deep

Table 1. Summary of Construction Details for Monitoring Wells, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Well Number	Date(s) Installed	Land Surface Elevation (ft relative to 1988 NAVD mean sea level)	Measuring point Elevation (ft relative to 1988 NAVD mean sea level)	Screen Type	Diameter (inches)	Screen Slot Size	Depth of Boring (ft below land surface)	Screened Interval (ft below land surface)	Interval Gravel Packed (ft below land surface)	Interval Sealed with Bentonite (ft below land surface)	Interval Sealed with Grout (ft below land surface)	Screen Setting (ft relative to mean sea level)	Screen Interval
TE-MW-IB-2 (j)	10/2/2000	21.63	22.27	PVC	2	0.020	99	89 - 99	NA	NA	NA	-67 - -77	Deep
TE-MW-IB/OB-1 (j)	9/11/2000	30.58	30.23	NA	2	NA	35	25 - 35	NA	NA	NA	6 - -4	Deep
TE-MW-OB-1 (j)	10/12/2000	20.87	20.68	PVC	2	0.020	45	35 - 45	20 - 45	13 - 20	0 - 13	-14 - -24	Deep
TE-MW-OB-2 (5)(j)	9/18/2000	21.88	21.63	PVC	2	0.020	62	52 - 62	NA	NA	NA	-30 - -40	Deep
TE-MW-QA-2 (j)	10/23/2000	40.80	40.46	PVC	2	0.020	55	45 - 55	30 - 55	12 - 30	0 - 12	-4 - -14	Deep
TP-6 (g)	4/18/1996	18.57	18.92	PVC	2	0.010	10	3.7 - 8.7	2 - 10	1 - 2	0 - 1	15 - 10	Water Table
TP-7 (g)	4/23/1996	20.15	20.96	PVC	2	0.010	8	3 - 8	2 - 8	1 - 2	0 - 1	17 - 12	Water Table
TP-8 (b)	3/25/1997	23.22	25.60	PVC	2	0.010	15	3 - 13	2 - 15	1 - 2	0 - 1	20 - 10	Water Table
TP-9 (e)	3/24/1997	27.28	29.71	PVC	2	0.010	16	4 - 14	2.5 - 16	1.5 - 2.5	0 - 1.5	23 - 13	Water Table
TP-10	3/24/1997	34.56	36.64	PVC	2	0.010	19	8 - 18	6.5 - 19	4 - 6.5	0 - 4	26 - 16	Water Table
UT-1W (j)	8/21/2006	13.09	13.34	NA	1.25	NA	40	30 - 40	25 - 40	23 - 25	0 - 23	-17 - -27	Deep
UT-2W (6)(j)	8/7/2006	16.52	19.52	NA	1.25	NA	40	30 - 40	30 - 40	28 - 30	0 - 28	-13 - -23	Deep
UT-4W (7)(j)	12/14/2006	21.17	23.67	NA	2	NA	40	30 - 40	28 - 40	26 - 28	0 - 26	-9 - -19	Deep
UT-5W (j)	8/11/2006	26.48	26.08	NA	1.25	NA	29	19 - 29	2 - 29	0 - 2	NA	7 - -3	Deep
UT-9	2/7/2007	26.86	29.28	PVC	2	0.020	40	30 - 40		20 - 30	NA	-3 - -13	Deep
UT-9AW (j)	2/7/2007	26.72	24.22	NA	2	NA	40	30 - 40	30 - 40	20 - 30	0 - 20	-3 - -13	Deep
UT-11AW (j)	9/29/2006	23.76	23.36	NA	1.25	NA	30	20 - 30	4 - 30	1 - 4	0 - 1	4 - -6	Deep

NAVD - North American Vertical Datum
SS - Stainless steel continuous slot.
PVC - Polyvinyl chloride schedule 40.
NS - Well destroyed prior to elevation being surveyed relative to 1988 NAVD mean sea level.
NA - Not available
(1) - Abandoned
(2) - Unable to locate - Possibly paved over
(3) - Unable to locate - Possibly destroyed
(4) - Destroyed by construction work
(5) - Unable to locate - Buried
(6) - Screen interval obstructed by silt
(7) - All but top 1 foot of screen interval obstructed by silt
(a) - MW-13 replaced Geraghty & Miller Well No. 13 that had been destroyed.
(b) - Abandoned during 4/98
(c) - Bentonite and formation collapse.
(d) - Abandoned on 11/11/93
(e) - Destroyed during yard construction activities; currently unable to locate for proper abandonment.
(f) - Cement grout around protective steel casing.
(g) - Destroyed during Yard construction activities
(h) - Damaged during yard construction activities; currently being evaluated for repair or replacement.
(i) - Monitoring well installed by AKRF as part of the East Side Access Project. Not all well constructions data was available.

Table 1. Summary of Construction Details for Monitoring Wells, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Well Number	Date(s) Installed	Land Surface Elevation (ft relative to 1988 NAVD mean sea level)	Measuring point Elevation (ft relative to 1988 NAVD mean sea level)	Screen Type	Diameter (inches)	Screen Slot Size	Depth of Boring (ft below land surface)	Screened Interval (ft below land surface)	Interval Gravel Packed (ft below land surface)	Interval Sealed with Bentonite (ft below land surface)	Interval Sealed with Grout (ft below land surface)	Screen Setting (ft relative to mean sea level)	Screen Interval

(j) - Monitoring well installed by PB/STV/PTG as part of the East Side Access Project. Well construction details were provided by MTA/East Side Access.

(k) - Former separate phase hydrocarbon (SPH) recovery well.

(l) - Monitoring well installed by GES as part of the RI/FS activities conducted at the Standard Motors Site. Well construction details were provided by GES.

(m) - Monitoring well abandoned as part of OU-3 Remedial Action.

Table 2. Summary of Gauging Data, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Well Number	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Water (ft below measuring point)	Water-Level Elevation NAVD88 (ft relative to mean sea level)	Measurement Date	Monitoring Well Screen Interval
MW-13D	19.69	3.79	15.9	6/3/2008	deep
MW-38D	20.27	5.66	14.61	6/2/2008	deep
MW-39D	20.67	6.30	14.37	6/2/2008	deep
MW-48D	25.30	7.03	18.27	6/3/2008	deep
MW-62D	30.46	14.27	16.19	6/4/2008	deep
MW-9D	20.47	4.22	16.25	6/3/2008	deep
RT-3AW	13.88	5.10	8.78	4/22/2008	deep
RT-6W	14.96	4.24	10.72	3/25/2008	deep
RT-8W	15.70	4.77	10.93	3/25/2008	deep
SY-111W	20.12	10.80	9.32	6/17/2008	deep
SY-131Aw	44.28	20.71	23.57	6/25/2008	deep
SY-174W	55.45	38.80	16.65	7/7/2008	deep
SY-178W	55.92	38.94	16.98	7/7/2008	deep
SY-433W	51.50	35.10	16.40	6/10/2008	deep
SY-436W	54.76	38.21	16.55	6/10/2008	deep
SY-438W	50.37	32.91	17.46	6/10/2008	deep
SY-516W	22.86	8.55	14.31	6/16/2008	deep
TE-MW-A-1	20.57	11.00	9.57	6/17/2008	deep
TE-MW-A-4	51.71	35.45	16.26	6/5/2008	deep
TE-MW-D-1	19.63	10.05	9.58	6/18/2008	deep
TE-MW-IB-2	22.27	7.15	15.12	6/16/2008	deep
TE-MW-OB-1	20.68	10.35	10.33	6/4/2008	deep
TE-MW-QA-2	40.46	28.79	11.67	6/5/2008	deep
UT-11Aw	23.36*	7.19	16.17	6/25/2008	deep
UT-5W	26.08*	14.80	11.28	4/22/2008	deep
UT-9W	29.28	17.43	11.85	6/4/2008	deep
SY-189W	60.70	40.07	20.63	7/7/2008	deep
SY-532W	45.00	21.57	23.43	6/11/2008	deep

Table 2. Summary of Gauging Data, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Well Number	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Water (ft below measuring point)	Water-Level Elevation NAVD88 (ft relative to mean sea level)	Measurement Date	Monitoring Well Screen Interval
MW-13S	20.00	4.16	15.84	6/2/2008	water table
MW-19	20.11	7.18	12.93	6/2/2008	water table
MW-27	21.34	10.91	10.43	6/4/2008	water table
MW-35	18.98	5.89	13.09	6/2/2008	water table
MW-37	17.27	5.57	11.7	6/2/2008	water table
MW-45	20.54	10.30	10.24	6/4/2008	water table
MW-68	25.43	9.49	15.94	6/4/2008	water table
MW-70	19.08	5.50	13.58	6/2/2008	water table
MW-79	23.81	7.94	15.87	6/3/2008	water table
MW-80	19.20	10.52	8.68	6/4/2008	water table
MW-82	33.17	18.13	15.04	6/5/2008	water table
MW-83	30.33	14.10	16.23	6/4/2008	water table
MW-84	34.77	17.76	17.01	6/5/2008	water table
MW-85	23.19	7.36	15.83	6/2/2008	water table
MW-86	16.68	7.54	9.14	5/21/2008	water table
MW-87	14.50	5.90	8.6	5/21/2008	water table
MW-88	15.26	5.05	10.21	5/21/2008	water table
MW-89	14.63	3.89	10.74	5/21/2008	water table
MW-90	12.87	4.74	8.13	6/3/2008	water table
MW-91	12.88	5.80	7.08	6/3/2008	water table
MW-92	22.61	7.50	15.11	6/3/2008	water table
MW-9S	20.42	4.06	16.36	6/3/2008	water table
SY-452W	44.70	22.95	21.75	6/11/2008	water table
TP-10	36.64	13.87	22.77	6/3/2008	water table

Notes:
ft - Feet
Deep - Indicates screened interval is completely below water table
Water Table - Indicates screened interval straddles the water table
NAVD 1988 - North American Vertical Datum of 1988
* - Measuring Point elevations obtained from Observation Well Installation Log prepared by PB/STV

Table 3. Vertical Hydraulic Gradient Calculations, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Vertical Hydraulic Gradients Between Water Table and Deeper Upper Glacial Aquifer Wells June 2-4, 2008

Monitoring Well Pair Designations		Ground-Water Elevation (ft above MSL)		Top of Screen Zone (ft above MSL)		Bottom of Screen Zone (ft above MSL)		Midpoint of Screen Zone (ft above MSL)		Midpoint of Water Column (ft above MSL)	Vertical Distance Between Midpoints of Screens or Screen and Water Column (ft)	Vertical Hydraulic Gradient (ft/ft)
MW-9S &	MW-9D	16.36	16.25	17.04	-7.23	2.04	-17.23	9.54	-12.23	9.20	21.43	0.0051
MW-13S &	MW-13D	15.84	15.9	15.86	-8.18	1.36	-18.18	8.61	-13.18	8.60	21.78	-0.0028
MW-19 &	MW-39D	12.93	14.37	14.96	-11.79	4.96	-21.79	9.96	-16.79	8.95	25.74	-0.0560
MW-83 &	MW-62D	16.23	16.25	18.73	-9.46	8.73	-19.46	13.73	-14.46	12.48	26.94	-0.0007

Vertical Hydraulic Gradients Between Water Table and Deeper Upper Glacial Aquifer Wells June 17-19, 1997

Monitoring Well Pair Designations		Ground-Water Elevation (ft above MSL)		Top of Screen Zone (ft above MSL)		Bottom of Screen Zone (ft above MSL)		Midpoint of Screen Zone (ft above MSL)		Midpoint of Water Column (ft above MSL)	Vertical Distance Between Midpoints of Screens or Screen and Water Column (ft)	Vertical Hydraulic Gradient (ft/ft)
MW-47 &	MW-48D	21.38	18.09	24.37	-2.69	14.37	-12.69	19.37	-7.69	17.88	25.57	0.1287
MW-61 &	MW-62D	16.03	16.05	18.59	-8.24	8.59	-18.24	13.59	-13.24	12.31	25.55	-0.0008
MW-68 &	MW-69D	15.48	15.49	18.80	1.92	8.80	-8.08	13.80	-3.08	12.14	15.22	-0.0007
MW-19 &	MW-39D	12.25	12.93	14.96	-11.35	4.96	-21.35	9.96	-16.35	8.61	24.96	-0.0272
MW-49 &	MW-38D	13.42	14.08	17.04	-10.80	7.04	-20.80	12.04	-15.80	10.23	26.03	-0.0254
MW-57 &	MW-40D	15.1	15.14	17.24	-8.75	7.24	-18.75	12.24	-13.75	11.17	24.92	-0.0016
MW-43 &	MW-44D	8.85	8.76	12.65	-14.64	2.65	-24.64	7.65	-19.64	5.75	25.39	0.0035

Table 3. Vertical Hydraulic Gradient Calculations, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Vertical Hydraulic Gradients Between Water Table and Deeper Upper Glacial Aquifer Wells June 14, 1994

Monitoring Well Pair Designations		Ground-Water Elevation (ft above MSL)		Top of Screen Zone (ft above MSL)		Bottom of Screen Zone (ft above MSL)		Midpoint of Screen Zone (ft above MSL)		Midpoint of Water Column (ft above MSL)	Vertical Distance Between Midpoints of Screens or Screen and Water Column (ft)	Vertical Hydraulic Gradient (ft/ft)
MW-47 &	MW-48D	22.55	19.38	24.37	-2.69	14.37	-12.69	19.37	-7.69	18.46	26.15	0.1212
MW-61 &	MW-62D	17.34	17.31	18.59	-8.24	8.59	-18.24	13.59	-13.24	12.97	26.21	0.0011
MW-19 &	MW-39D	14.1	14.81	14.96	-11.35	4.96	-21.35	9.96	-16.35	9.53	25.88	-0.0274
MW-49 &	MW-38D	14.76	15.48	17.04	-10.8	7.04	-20.8	12.04	-15.8	10.90	26.70	-0.0270
MW-57 &	MW-40D	16.43	16.45	17.24	-8.75	7.24	-18.75	12.24	-13.75	11.84	25.59	-0.0008
MW-43 &	MW-44D	10.99	11.03	12.65	-14.64	2.65	-24.64	7.65	-19.64	6.82	26.46	-0.0015

Vertical Hydraulic Gradients Between Water Table and Deeper Upper Glacial Aquifer Wells February 8, 1993

Monitoring Well Pair Designations		Ground-Water Elevation (ft above MSL)		Top of Screen Zone (ft above MSL)		Bottom of Screen Zone (ft above MSL)		Midpoint of Screen Zone (ft above MSL)		Midpoint of Water Column (ft above MSL)	Vertical Distance Between Midpoints of Screens or Screen and Water Column (ft)	Vertical Hydraulic Gradient (ft/ft)
MW-47 &	MW-48D	20.7	18.68	24.37	-2.69	14.37	-12.69	19.37	-7.69	17.54	25.23	0.0801
MW-43 &	MW-44D	11.02	11.1	12.65	-14.64	2.65	-24.64	7.65	-19.64	6.84	26.48	-0.0030

Notes: A negative vertical hydraulic gradient indicates that the potential for ground water to flow upward (i.e., flow from the underlying to the overlying unit).
A positive vertical hydraulic gradient indicates that the potential for ground water to flow downward (i.e., flow from the overlying to the underlying unit).

ft = feet
MSL = North American Vertical Datum 1988 mean sea level
ft/ft = foot per foot

Table 4. Summary of Groundwater, Saturated Soil and Soil Vapor Quality Sampling, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Monitoring Well/Sample Designation	Sample Media	Soil Depth	Sample Date	Analyte(s)	Sampled By	Location of Data
CV-2W	Groundwater	--	09/26/06	VOCs	PB/STV/PTG	Data Summary Tables
CV-2W	Groundwater	--	11/14/06	Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
CV-2W	Groundwater	--	11/16/06	SVOCs	PB/STV/PTG	Data Summary Tables
MW-13D	Groundwater	--	07/28/03	VOCs	GES	Data Summary Tables
MW-13D	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-13D DUP	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-13S	Groundwater	--	07/28/03	VOCs	GES	Data Summary Tables
MW-13S	***Groundwater***	***--***	***06/02/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-19	Groundwater	--	01/04/91	TCL VOCs, TCL SVOCs, PCBs	ROUX	Appendix A
MW-19	Groundwater	--	01/05/91	TAL Metals	ROUX	Appendix A
MW-19	Groundwater	--	02/06/97	SVOCs, PCBs	ROUX*	Data Summary Tables
MW-19	Groundwater	--	02/21/97	SVOCs, PCBs	ROUX*	Data Summary Tables
MW-19	Groundwater	--	03/27/97	SVOCs, PCBs	ROUX*	Data Summary Tables
MW-19	Groundwater	--	06/18/97	TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-19	Groundwater	--	06/19/97	VOCs	ROUX	Data Summary Tables
MW-19	Groundwater	--	09/18/97	SVOCs, PCBs	NYCTA	Data Summary Tables
MW-19	Groundwater	--	11/14/97	VOCs, SVOCs, PCBs	ROUX*	Data Summary Tables
MW-19	Groundwater	--	04/09/98	SVOCs	ROUX*	Data Summary Tables
MW-19	Groundwater	--	08/13/98	SVOCs, PCBs	NYCTA	Data Summary Tables
MW-19	Groundwater	--	02/25/99	SVOCs, PCBs	NYCTA	Data Summary Tables
MW-19	Groundwater	--	06/03/99	SVOCs, PCBs	NYCTA	Data Summary Tables
MW-19	Groundwater	--	09/09/99	SVOCs, PCBs	NYCTA	Data Summary Tables
MW-19	Groundwater	--	04/15/03	VOCs, SVOCs, PCBs, Metals (Total and Dissolved)	EMCG	Data Summary Tables
MW-19	Groundwater	--	04/22/03	VOCs, SVOCs, PCBs, Lead (Total and Dissolved)	EMCG	Data Summary Tables
MW-19	Groundwater	--	04/30/03	VOCs, SVOCs, PCBs, Metals	EMCG	Data Summary Tables
MW-19	Groundwater	--	05/14/03	VOCs, SVOCs, PCBs, Lead	EMCG	Data Summary Tables
MW-19	Groundwater	--	08/25/03	VOCs, SVOCs, PCBs	EMCG	Data Summary Tables
MW-19	***Groundwater***	***--***	***06/02/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-23D	Groundwater	--	01/07/91	TCL VOCs, TCL SVOCs, PCBs	ROUX	Appendix A
MW-23D	Groundwater	--	01/08/91	TAL Metals	ROUX	Appendix A
MW-23D	Groundwater	--	02/09/93	TCL VOCs, TCL SVOCs, PCBs	ROUX	Appendix A
MW-23D	Groundwater	--	06/20/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-25	Groundwater	--	01/15/93	TAL Metals	ROUX	Appendix A
MW-25A	Groundwater	--	01/22/93	PCBs	ROUX	Appendix A
MW-25A	Groundwater	--	06/18/97	TDS, Chloride	ROUX	Data Summary Tables
MW-25A	Groundwater	--	06/19/97	VOCs, SVOCs, Metals, PCBs	ROUX	Data Summary Tables
MW-27	Groundwater	--	02/08/93	PCBs	ROUX	Appendix A
MW-27	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-27	***Groundwater***	***--***	***06/04/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-27 DUP	***Groundwater***	***--***	***06/04/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-28	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-28	Groundwater	--	08/25/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
MW-29	Groundwater	--	02/09/93	TAL Metals	ROUX	Appendix A
MW-29	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-30	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-34	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-34	Groundwater	--	08/25/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
MW-35	Groundwater	--	02/09/93	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-35	Groundwater	--	02/17/94	PCBs	ROUX	Appendix A
MW-35	Groundwater	--	02/06/97	PCBs	ROUX*	Data Summary Tables
MW-35	Groundwater	--	02/21/97	SVOCs, PCBs	ROUX*	Data Summary Tables
MW-35	Groundwater	--	03/27/97	PCBs	ROUX*	Data Summary Tables
MW-35	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-35	Groundwater	--	09/18/97	SVOCs, PCBs	NYCTA	Data Summary Tables
MW-35	Groundwater	--	11/14/97	VOCs, PCBs	ROUX*	Data Summary Tables
MW-35	Groundwater	--	04/09/98	SVOCs, PCBs	ROUX*	Data Summary Tables
MW-35	Groundwater	--	08/13/98	SVOCs, PCBs	NYCTA	Data Summary Tables

Table 4. Summary of Groundwater, Saturated Soil and Soil Vapor Quality Sampling, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Monitoring Well/Sample Designation	Sample Media	Soil Depth	Sample Date	Analyte(s)	Sampled By	Location of Data
MW-35	Groundwater	--	02/25/99	SVOCs, PCBs	NYCTA	Data Summary Tables
MW-35	Groundwater	--	06/03/99	SVOCs, PCBs	NYCTA	Data Summary Tables
MW-35	Groundwater	--	09/09/99	SVOCs, PCBs	NYCTA	Data Summary Tables
MW-35	Groundwater	--	04/15/03	VOCs, SVOCs, PCBs, Metals (Total and Dissolved)	EMCG	Data Summary Tables
MW-35	Groundwater	--	04/22/03	VOCs, SVOCs, PCBs, Lead (Total and Dissolved)	EMCG	Data Summary Tables
MW-35	Groundwater	--	08/25/03	VOCs, SVOCs, PCBs	EMCG	Data Summary Tables
MW-35	***Groundwater***	***--***	***06/02/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-37	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-37	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-37	***Groundwater***	***--***	***06/02/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-38D	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs	ROUX	Appendix A
MW-38D	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-38D	***Groundwater***	***--***	***06/02/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-39D	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs	ROUX	Appendix A
MW-39D	Groundwater	--	06/18/97	PCBs	ROUX	Data Summary Tables
MW-39D	Groundwater	--	07/17/97	TDS, Chloride	ROUX	Data Summary Tables
MW-39D	***Groundwater***	***--***	***06/02/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-40D	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs	ROUX	Appendix A
MW-40D	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-41	Groundwater	--	11/06/91	TCL VOCs	ROUX	Appendix A
MW-41	Groundwater	--	02/09/93	TCL VOCs	ROUX	Appendix A
MW-41	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-42	Groundwater	--	02/09/93	TCL VOCs, TCL SVOCs	ROUX	Appendix A
MW-42	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-42	Groundwater	--	08/25/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
MW-43	Groundwater	--	02/09/93	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-43	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-44D	Groundwater	--	02/09/93	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Appendix A
MW-44D	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-45	Groundwater	--	02/09/93	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-45	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-45	Groundwater	--	08/25/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
MW-45	***Groundwater***	***--***	***06/04/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-46	Groundwater	--	02/09/93	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-46	Groundwater	--	02/17/94	PCBs	ROUX	Appendix A
MW-46	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-47	Groundwater	--	01/22/93	PCBs	ROUX	Appendix A
MW-47	Groundwater	--	02/09/93	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-47	Groundwater	--	06/20/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-48D	Groundwater	--	02/09/93	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-48D	Groundwater	--	06/20/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-48D	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-49	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-49	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-57	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-57	Groundwater	--	05/02/96	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-57	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-59	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-59	Groundwater	--	05/03/96	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-59	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-61	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-61	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-62D	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-62D	Groundwater	--	06/18/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-62D	***Groundwater***	***--***	***06/04/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-63	Groundwater	--	02/17/94	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-63	Groundwater	--	05/02/96	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A

Table 4. Summary of Groundwater, Saturated Soil and Soil Vapor Quality Sampling, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Monitoring Well/Sample Designation	Sample Media	Soil Depth	Sample Date	Analyte(s)	Sampled By	Location of Data
MW-64	Groundwater	--	05/03/96	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-64	Groundwater	--	06/19/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-65	Groundwater	--	05/03/96	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-65	Groundwater	--	06/18/97	TDS, Chloride	ROUX	Data Summary Tables
MW-65	Groundwater	--	06/19/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Data Summary Tables
MW-65R	Groundwater	--	06/19/97	VOCs, SVOCs, Metals, PCBs	ROUX	Data Summary Tables
MW-66	Groundwater	--	06/19/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-67	Groundwater	--	05/03/96	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-67	Groundwater	--	06/18/97	TDS, Chloride	ROUX	Data Summary Tables
MW-67	Groundwater	--	06/19/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Data Summary Tables
MW-68	Groundwater	--	05/03/96	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-68	Groundwater	--	06/19/97	PCBs	ROUX	Data Summary Tables
MW-68	***Groundwater***	***--***	***06/04/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-69D	Groundwater	--	05/09/96	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Appendix A
MW-69D	Groundwater	--	06/20/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-70	***Groundwater***	***--***	***06/02/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-78	Groundwater	--	07/05/05	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-79	Groundwater	--	07/05/05	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
MW-79	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-80	***Groundwater***	***--***	***06/04/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-82	***Groundwater***	***--***	***06/05/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-83	***Groundwater***	***--***	***06/04/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-84	***Groundwater***	***--***	***06/05/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-85	***Groundwater***	***--***	***06/02/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-86	***Groundwater***	***--***	***05/21/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-87	***Groundwater***	***--***	***05/21/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-88	***Groundwater***	***--***	***05/21/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-89	***Groundwater***	***--***	***05/21/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-90	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-91	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-92	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-9S	Groundwater	--	07/28/03	TCL VOCs	GES	Data Summary Tables
MW-9S	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
MW-9D	Groundwater	--	07/28/03	TCL VOCs	GES	Data Summary Tables
MW-9D	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
RT-3AW	***Groundwater***	***--***	***03/25/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
RT-6W	***Groundwater***	***--***	***03/25/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
RT-6W	***Groundwater***	***--***	***09/03/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
RT-8W	***Groundwater***	***--***	***03/25/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SSY-23	Groundwater	--	08/20/99	TCL VOCs, TCL SVOCs, TAL Metals, PCBs/Pesticides	AKRF	Data Summary Tables
SSY-46	Groundwater	--	08/20/99	TCL VOCs, TCL SVOCs, TAL Metals, PCBs/Pesticides	AKRF	Data Summary Tables
SSY-49	Groundwater	--	08/20/99	TCL VOCs, TCL SVOCs, TAL Metals, PCBs/Pesticides	AKRF	Data Summary Tables
SSY-51	Groundwater	--	08/20/99	TCL VOCs, TCL SVOCs, TAL Metals, PCBs/Pesticides	AKRF	Data Summary Tables
SY-111W	***Groundwater***	***--***	***06/17/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-131AW	Groundwater	--	09/26/06	VOCs	PB/STV/PTG	Data Summary Tables
SY-131AW	***Groundwater***	***--***	***06/26/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-131W	Groundwater	--	09/26/06	SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
SY-153	Groundwater	--	09/26/06	VOCs	PB/STV/PTG	Data Summary Tables
SY-153W	Groundwater	--	09/26/06	Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
SY-174W	***Groundwater***	***--***	***07/07/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-174W DUP	***Groundwater***	***--***	***07/07/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-178W	Groundwater	--	08/16/06	VOCs, SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
SY-178W	***Groundwater***	***--***	***07/07/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-433W	***Groundwater***	***--***	***06/10/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-436W	***Groundwater***	***--***	***06/10/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-436W DUP	***Groundwater***	***--***	***06/10/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-438W	***Groundwater***	***--***	***06/10/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***

Table 4. Summary of Groundwater, Saturated Soil and Soil Vapor Quality Sampling, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Monitoring Well/Sample Designation	Sample Media	Soil Depth	Sample Date	Analyte(s)	Sampled By	Location of Data
SY-452W	***Groundwater***	***--***	***06/11/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-516W	***Groundwater***	***--***	***06/16/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
SY-516W DUP	***Groundwater***	***--***	***06/16/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
TE-A-3	Groundwater	--	10/20/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-A-4	Groundwater	--	08/16/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-B/C-4	Groundwater	--	08/16/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-D-2	Groundwater	--	10/20/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-D-2	Groundwater	--	09/26/06	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-IB/OB-1	Groundwater	--	10/20/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-IB-1	Groundwater	--	10/19/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-IB-3	Groundwater	--	10/20/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-IB-3	Groundwater	--	11/14/06	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-A-1	Groundwater	--	10/19/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-A-1	***Groundwater***	***--***	***06/17/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
TE-MW-A-3(SY-135)	Groundwater	--	10/20/00	VOCs	PB/STV/PTG	Data Summary Tables
TE-MW-A-3(SY-135)	Groundwater	--	10/20/00	SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-A-3(SY-135W)	Groundwater	--	10/16/03	VOCs, SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-A-4	Groundwater	--	08/16/00	VOCs, SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-A-4(SY-153W	Groundwater	--	09/26/06	SVOCs	PB/STV/PTG	Data Summary Tables
TE-MW-A-4/SY-153W	***Groundwater***	***--***	***06/25/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
TE-MW-B/C-2	Groundwater	--	10/20/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-B/C-2	Groundwater	--	09/26/06	VOCs, SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-B/C-4	Groundwater	--	08/16/00	VOCs, SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-B/C-4/SY-154V	***Groundwater***	***--***	***04/15/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
TE-MW-D-1	Groundwater	--	10/19/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-D-1	***Groundwater***	***--***	***06/18/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
TE-MW-D-2	Groundwater	--	11/14/06	VOCs, SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-D-2(SY-8W)	Groundwater	--	10/20/00	VOCs, SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-D-4	Groundwater	--	08/16/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-IB/OB-1	Groundwater	--	10/20/00	VOCs, SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-IB-1(SY-103)	Groundwater	--	10/19/00	VOCs, SVOCs, Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-IB-2	Groundwater	--	10/19/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-IB-2	***Groundwater***	***--***	***06/16/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
TE-MW-OB-1	Groundwater	--	10/19/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-OB-1	***Groundwater***	***--***	***06/18/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
TE-MW-OB-1	***Groundwater***	***--***	***06/04/08***	***VOCs, Metals, PCBs, Choride and TDS***	***ROUX***	***Data Summary Tables***
TE-MW-OB-2	Groundwater	--	10/20/00	TCL VOCs, TCL SVOCs, TAL Metals (Total and Dissolved)	PB/STV/PTG	Data Summary Tables
TE-MW-QA-2	Groundwater	--	10/31/00	TCL VOCs	PB/STV/PTG	Data Summary Tables
TE-MW-QA-2	Groundwater	--	11/08/00	TCL SVOCs	PB/STV/PTG	Data Summary Tables
TE-MW-QA-2	Groundwater	--	11/03/00	TAL Metals	PB/STV/PTG	Data Summary Tables
TE-MW-QA-2	***Groundwater***	***--***	***04/08/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
TE-MW-QA-2	***Groundwater***	***--***	***06/05/08***	***VOCs, Metals, PCBs, Choride and TDS***	***ROUX***	***Data Summary Tables***
TP-8	Groundwater	--	06/18/97	TDS, Chloride	ROUX	Data Summary Tables
TP-8	Groundwater	--	06/19/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Data Summary Tables
TP-9	Groundwater	--	06/18/97	TDS, Chloride	ROUX	Data Summary Tables
TP-9	Groundwater	--	06/19/97	TCL VOCs, PCBs, TAL Metals	ROUX	Data Summary Tables
TP-10	Groundwater	--	06/18/97	TDS, Chloride	ROUX	Data Summary Tables
TP-10	Groundwater	--	06/19/97	TCL VOCs, TCL SVOCs, PCBs, TAL Metals	ROUX	Data Summary Tables
TP-10	***Groundwater***	***--***	***06/03/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
TSB-9	Groundwater	--	10/24/00	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
TSB-10	Groundwater	--	10/23/00	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
TSB-16	Groundwater	--	10/24/00	TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride	ROUX	Data Summary Tables
TW-1	Groundwater	--	01/26/93	TCL VOCs	ROUX	Appendix A
TW-2	Groundwater	--	01/26/93	TCL VOCs	ROUX	Appendix A
TW-3	Groundwater	--	12/06/93	TCL SVOCs, PCBs	ROUX	Appendix A
UT-11AW	***Groundwater***	***--***	***06/25/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
UT-1W	***Groundwater***	***--***	***04/01/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***

Table 4. Summary of Groundwater, Saturated Soil and Soil Vapor Quality Sampling, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Monitoring Well/Sample Designation	Sample Media	Soil Depth	Sample Date	Analyte(s)	Sampled By	Location of Data
UT-4W	***Groundwater***	***--***	***04/01/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
UT-5W	***Groundwater***	***--***	***04/22/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
UT-9AW	***Groundwater***	***--***	***06/04/08***	***TCL VOCs, TCL SVOCs, PCBs, TAL Metals, TDS, Chloride***	***ROUX***	***Data Summary Tables***
UT-9AWRE	***Groundwater***	***--***	***04/08/08***	***VOCs***	***PB/STV/PTG***	***Data Summary Tables***
GE-31-5	Saturated Soil	25 - 25	08/16/06	VOCs, SVOCs, Metals	PB/STV/PTG	Data Summary Tables
GE-31-5DL	Saturated Soil	25 - 27	08/16/06	SVOCs	PB/STV/PTG	Data Summary Tables
GE-31-5	Saturated Soil	36 - 38	08/16/06	VOCs, SVOCs, Metals	PB/STV/PTG	Data Summary Tables
GE-53-3	Saturated Soil	12	07/27/06	VOCs, SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
GE-53-3	Saturated Soil	25 - 25	07/27/06	VOCs, SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
GE-53-5	Saturated Soil	18	07/27/06	VOCs, SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
GE-59-3	Saturated Soil	12 - 15	07/10/06	VOCs, SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
GE-59-3	Saturated Soil	23 - 25	07/10/06	VOCs, SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
GE-59-11	Saturated Soil	20 - 22	10/19/06	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
GE-59-12	Saturated Soil	28 - 30	10/18/06	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
MW-26	Saturated Soil	9 - 11	12/05/90	VOCs, SVOCs, Metals, PCBs	ROUX	Data Summary Tables
RT-7	Saturated Soil	25 - 27	10/03/06	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
RT-9	Saturated Soil	20	08/30/06	VOCs	PB/STV/PTG	Data Summary Tables
RT-9	Saturated Soil	20 - 22	08/30/06	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
S-35	Saturated Soil	8 - 10	11/30/90	VOCs, SVOCs, Metals, PCBs	ROUX	Data Summary Tables
SY-515	Saturated Soil	20 - 22	11/17/06	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
SY-515	Saturated Soil	22	11/17/06	VOCs	PB/STV/PTG	Data Summary Tables
SY-516	Saturated Soil	43 - 45	10/19/06	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
SY-516	Saturated Soil	45 - 45	10/19/06	VOCs	PB/STV/PTG	Data Summary Tables
SY-516	Saturated Soil	88 - 90	10/19/06	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
SY-516	Saturated Soil	90	10/19/06	VOCs	PB/STV/PTG	Data Summary Tables
TE-B/C-2	Saturated Soil	48 - 50	09/07/00	VOCs, SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-B/C-2	Saturated Soil	85 - 86	09/08/00	VOCs, SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-IB/OB-1	Saturated Soil	15 - 17	09/11/00	VOCs, SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-IB/OB-1	Saturated Soil	33 - 35	09/11/00	VOCs, SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-IB-3	Saturated Soil	23 - 25	09/11/00	SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-IB-3	Saturated Soil	23 - 25	09/12/00	VOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-IB-3	Saturated Soil	38 - 40	09/11/00	SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-IB-3	Saturated Soil	38 - 40	09/12/00	VOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-IB-3	Saturated Soil	53 - 55	09/11/00	SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-IB-3	Saturated Soil	53 - 55	09/12/00	VOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-A-1	Saturated Soil	14 - 16	09/19/00	SVOCs	PB/STV/PTG	Data Summary Tables
TE-MW-A-1	Saturated Soil	14 - 16	09/26/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-A-1	Saturated Soil	37	09/19/00	SVOCs	PB/STV/PTG	Data Summary Tables
TE-MW-A-1	Saturated Soil	37	09/26/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-A-2	Saturated Soil	14 - 16	10/09/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-A-2	Saturated Soil	20 - 22	10/09/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-D-1	Saturated Soil	10 - 12	09/19/00	SVOCs	PB/STV/PTG	Data Summary Tables
TE-MW-D-1	Saturated Soil	10 - 12	09/25/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-D-1	Saturated Soil	25	09/19/00	SVOCs	PB/STV/PTG	Data Summary Tables
TE-MW-D-1	Saturated Soil	25	09/25/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-D-1	Saturated Soil	40 - 41	09/19/00	SVOCs	PB/STV/PTG	Data Summary Tables
TE-MW-D-1	Saturated Soil	40 - 41	09/25/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-IB-2	Saturated Soil	14 - 16	10/03/00	VOCs, SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-IB-2	Saturated Soil	62 - 64	10/03/00	VOCs, SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-IB-2	Saturated Soil	93 - 95	10/04/00	VOCs, SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-OB-1	Saturated Soil	14 - 16	10/11/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-OB-1	Saturated Soil	45	10/11/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-OB-2	Saturated Soil	29 - 31	09/19/00	SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-OB-2	Saturated Soil	60 - 62	09/19/00	SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-MW-QA-2	Saturated Soil	18 - 20	10/23/00	VOCs, SVOCs, PCBs	PB/STV/PTG	Data Summary Tables

Table 4. Summary of Groundwater, Saturated Soil and Soil Vapor Quality Sampling, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Monitoring Well/Sample Designation	Sample Media	Soil Depth	Sample Date	Analyte(s)	Sampled By	Location of Data
TE-MW-QA-2	Saturated Soil	40 - 42	10/23/00	VOCs, SVOCs, PCBs	PB/STV/PTG	Data Summary Tables
TE-OB-4	Saturated Soil	24 - 26	07/12/00	PCBs	PB/STV/PTG	Data Summary Tables
TE-OB-4	Saturated Soil	24 - 26	07/14/00	VOCs, SVOCs	PB/STV/PTG	Data Summary Tables
UT-4	Saturated Soil	30 - 32	01/02/07	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
UT-4	Saturated Soil	32	01/02/07	VOCs	PB/STV/PTG	Data Summary Tables
UT-4 RE	Saturated Soil	32	01/02/07	VOCs	PB/STV/PTG	Data Summary Tables
UT-6	Saturated Soil	20 - 22	01/04/07	VOCs, SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
UT-9	Saturated Soil	20 - 22	01/05/07	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
UT-9	Saturated Soil	22	01/05/07	VOCs	PB/STV/PTG	Data Summary Tables
WB-4	Saturated Soil	10 - 12	06/15/06	SVOCs, Metals, PCBs	PB/STV/PTG	Data Summary Tables
WB-4	Saturated Soil	12	06/15/06	VOCs	PB/STV/PTG	Data Summary Tables
PC-1	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-10	Soil Vapor New Construction		06/23/05	VOCs	ROUX	Data Summary Tables
PC-11	Soil Vapor New Construction		06/23/05	VOCs	ROUX	Data Summary Tables
PC-12	Soil Vapor New Construction		06/23/05	VOCs	ROUX	Data Summary Tables
PC-2	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-2 DL	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-3	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-3 DL	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-4	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-5	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-6	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-7	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-7 DUP	Soil Vapor New Construction		06/22/05	VOCs	ROUX	Data Summary Tables
PC-8	Soil Vapor New Construction		06/23/05	VOCs	ROUX	Data Summary Tables
PC-9	Soil Vapor New Construction		06/23/05	VOCs	ROUX	Data Summary Tables
INDOOR-1	Soil Vapor HSTF S Building		03/18/09	VOCs	ROUX	Data Summary Tables
INDOOR-2	Soil Vapor HSTF S Building		03/18/09	VOCs	ROUX	Data Summary Tables
OUTDOOR-1	Soil Vapor HSTF S Building		03/18/09	VOCs	ROUX	Data Summary Tables
SUBSLAB-1	Soil Vapor HSTF S Building		03/18/09	VOCs	ROUX	Data Summary Tables
SUBSLAB-2	Soil Vapor HSTF S Building		03/18/09	VOCs	ROUX	Data Summary Tables

Notes:

Bold and italicized samples above indicate samples were collected as part of the Supplemental OU-6 RI and related activities in 2008.

TCL - Target Compound List
TAL - Target Analyte List
VOCs - Volatile Organic Compounds
SVOCs - Semivolatile Organic Compounds
PCBs - Polychlorinated Biphenyls
TDS - Total Dissolved Solids

PB/STV/PTG - PB Americas, Inc./STV, Inc./Parsons Transportation Group
NYCTA - New York City Transit Authority
EMCG - Environmental Management and Compliance Group, Inc.
GES - Groundwater & Environmental Services, Inc.

ROUX* - Indicated Roux Associates collected a split sample with NYCTA.

Samples collected by AKRF, PB/STV/PTG, NYCTA 63rd Street Tunnel Project, or EMCG were collected to support the East Side Access Project.

Samples collected by GES were collected as part of the RI/FS conducted at the Standard Motors Products, Inc. Site.

Samples TSB-9, TSB-10, and TSB-16 were collected using a Geoprobe groundwater sampler, set at a discrete depth. These samples were not collected from a monitoring well.

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample DesigNRtion: / Sample Date: / Sampled By: / Screen Interval:	CV-2W 09/26/06 ESA Deep	MW-9D 07/28/03 GES Deep	MW-9D 06/03/08 Roux Deep	MW-9S 07/28/03 GES WT	MW-9S 06/03/08 Roux WT	MW-13D 07/28/03 GES Deep	MW-13D 06/03/08 Roux Deep	MW-13D DUP 06/03/08 Roux Deep	MW-13S 07/28/03 GES WT
Benzene	1		ND	10 U	0.5 U	10 U	0.5 U	100 U	0.5 U	0.5 U	20 U
Toluene	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Ethylbenzene	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Xylenes (total)	5		ND	10 U	2 U	10 U	2 U	100 U	2 U	2 U	20 U
Total BTEX:			0	0	0	0	0	0	0	0	0
1,1,1-Trichloroethane	5		ND	10 U	1 U	1 J	1 U	1000 U	1 U	1 U	20 U
1,1,2,2-Tetrachloroethane	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
1,1,2-Trichloroethane	1		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
1,1-Dichloroethane	5		ND	3 J	1.7	.8 J	1 U	100 U	1 U	1 U	2 J
1,1-Dichloroethene	5		ND	10 U	1.1	10 U	1 U	100 U	1.3	1.4	20 U
1,2-Dichlorobenzene	3		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
1,2-Dichloroethane	0.6		ND	10 U	0.5 U	10 U	0.5 U	100 U	0.5 U	0.5 U	20 U
1,2-Dichloroethene (total)	5		ND	NR	NR	NR	NR	NR	NR	NR	NR
1,2-Dichloropropane	1		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
1,3-Dichlorobenzene	3		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
1,4-Dichlorobenzene	3		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
2-Butanone	50		ND	10 UJ	1 U	10 UJ	1 U	100 UJ	1 U	1 U	20 UJ
2-Hexanone	50		ND	10 UJ	1 U	10 UJ	1 U	100 UJ	1 U	1 U	20 UJ
4-Methyl-2-Pentanone	--		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Acetone	50		ND	8 J	5 U	10 U	5 U	100 U	5 U	5 U	20 U
Bromodichloromethane	50		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Bromoform	50		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Bromomethane	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Carbon disulfide	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Carbon tetrachloride	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Chlorobenzene	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Chloroethane	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Chloroform	7		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Chloromethane	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
cis-1,2-Dichloroethene	5		ND	**48**	**32**	.9 J	4.6	**34 J**	**28**	**28**	**44**
cis-1,3-Dichloropropene	--		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Dibromochloromethane	50		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Methylene chloride	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	CV-2W	MW-9D	MW-9D	MW-9S	MW-9S	MW-13D	MW-13D	MW-13D DUP	MW-13S
		Sample Date:	09/26/06	07/28/03	06/03/08	07/28/03	06/03/08	07/28/03	06/03/08	06/03/08	07/28/03
		Sampled By:	ESA	GES	Roux	GES	Roux	GES	Roux	Roux	GES
		Screen Interval:	Deep	Deep	Deep	WT	WT	Deep	Deep	Deep	WT
Tetrachloroethene	5		**9.5**	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
trans-1,2-Dichloroethene	5		ND	2 J	1 U	10 U	1 U	100 U	1.5	1.4	20 U
trans-1,3-Dichloropropene	--		ND	10 U	1 U	10 U	1 U	100 U	1 U	1 U	20 U
Trichloroethene	5		ND	3 J	1.3	10 U	1 U	100 U	1.9	1.8	1 J
Vinyl acetate	--		ND	NR	1 U	NR	1 U	NR	1 U	1 U	NR
Vinyl chloride	2		ND	**4 J**	**13**	**11**	1.4	100 U	1 U	1 U	**3 J**

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water table

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample DesigNRtion:	MW-13S	MW-19	MW-19	MW-19	MW-19	MW-19	MW-19	MW-19	MW-23D
		Sample Date:	06/02/08	06/19/97	04/15/03	04/22/03	04/30/03	05/14/03	08/25/03	06/02/08	06/20/97
		Sampled By:	Roux	Roux	EMCG	EMCG	EMCG	EMCG	EMCG	Roux	Roux
		Screen Interval:	WT	WT	WT	WT	WT	WT	WT	WT	Deep
Benzene	1		0.5 U	5 U	1 U	1 U	1 U	0.6 U	0.1 U	0.5 U	5 U
Toluene	5		1 U	5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	0.4 JB
Ethylbenzene	5		1 U	5 U	1 U	1 U	1 U	1.2 U	0.8 U	1 U	5 U
Xylenes (total)	5		2 U	5 U	3 U	3 U	3 U	3.4 U	2.3 U	2 U	5 U
Total BTEX:			0	0	0	0	0	0	0	0	0.4
1,1,1-Trichloroethane	5		1 U	5 U	1 U	1 U	1 U	0.8 U	0.5 U	1 U	5 U
1,1,2,2-Tetrachloroethane	5		1 U	5 U	1 U	1 U	1 U	0.8 U	1.9 U	1 U	5 U
1,1,2-Trichloroethane	1		1 U	5 U	1 U	1 U	1 U	1.5 U	1 U	1 U	5 U
1,1-Dichloroethane	5		1 U	5 U	1 U	1 U	1 U	1 U	1.3 U	1 U	5 U
1,1-Dichloroethene	5		1 U	5 U	1 U	1 U	1 U	1 U	0.1 U	1 U	5 U
1,2-Dichlorobenzene	3		1 U	NR	1 U	1 U	1 U	0.4 U	0.4 U	1 U	5 U
1,2-Dichloroethane	0.6		0.5 U	5 U	1 U	1 U	1 U	0.6 U	0.2 U	0.5 U	10 U
1,2-Dichloroethene (total)	5		NR	5 U	1 U	1 U	1 U	NR	NR	NR	5 U
1,2-Dichloropropane	1		1 U	5 U	1 U	1 U	1 U	0.8 U	0.2 U	1 U	5 U
1,3-Dichlorobenzene	3		1 U	NR	1 U	1 U	1 U	0.4 U	0.4 U	1 U	10 U
1,4-Dichlorobenzene	3		1 U	NR	1 U	1 U	1 U	0.2 U	0.3 U	1 U	10 U
2-Butanone	50		1 U	10 U	10 U	10 U	10 U	9.9 U	10 U	1 U	10 U
2-Hexanone	50		1 U	10 U	10 U	10 U	10 U	4.4 U	13 U	1 U	10 U
4-Methyl-2-Pentanone	--		1 U	10 U	10 U	10 U	10 U	5.9 U	9.7 U	1 U	10 U
Acetone	50		5 U	10 U	10 U	10 U	10 U	8.7 U	7 U	5 U	10 U
Bromodichloromethane	50		1 U	5 U	1 U	1 U	1 U	0.9 U	0.1 U	1 U	5 U
Bromoform	50		1 U	5 U	1 U	1 U	1 U	1.5 U	1.3 U	1 U	5 U
Bromomethane	5		1 U	10 U	1 U	1 U	1 U	1.7 U	2.9 U	1 U	10 U
Carbon disulfide	5		1 U	5 UJV	1 U	1 U	1 U	0.9 U	0.7 U	1 U	5 UJV
Carbon tetrachloride	5		1 U	5 U	1 U	1 U	1 U	0.5 U	0.1 U	1 U	5 U
Chlorobenzene	5		1 U	5 U	1 U	1 U	1 U	1 U	0.5 U	1 U	5 U
Chloroethane	5		1 U	10 UJV	1 U	1 U	1 U	1.8 U	2 U	1 U	10 UJV
Chloroform	7		1 U	5 U	1 U	1 U	1 U	0.8 U	1.5 U	1 U	5 U
Chloromethane	5		1 U	10 U	1 U	1 U	1 U	1.4 U	2.2 U	1 U	10 U
cis-1,2-Dichloroethene	5		3.4	NR	NR	NR	NR	1.5 U	0.9 U	1.8	NR
cis-1,3-Dichloropropene	--		1 U	5 U	1 U	1 U	1 U	1.5 U	0.7 U	1 U	5 U
Dibromochloromethane	50		1 U	5 U	1 U	1 U	NR	1.4 U	1.2 U	1 U	5 U
Methylene chloride	5		1 U	5 UV	1 U	1 U	1 U	1.2 U	1.2 U	1 U	5 UV
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5		1 U	5 U	1 U	1 U	1 U	NR	1.3 U	1 U	5 U

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-13S	MW-19	MW-19	MW-19	MW-19	MW-19	MW-19	MW-19	MW-23D
		Sample Date:	06/02/08	06/19/97	04/15/03	04/22/03	04/30/03	05/14/03	08/25/03	06/02/08	06/20/97
		Sampled By:	Roux	Roux	EMCG	EMCG	EMCG	EMCG	EMCG	Roux	Roux
		Screen Interval:	WT	WT	WT	WT	WT	WT	WT	WT	Deep
Tetrachloroethene	5		1 U	5 U	5	3	2	2.3 J	3.3 J	4	5 U
trans-1,2-Dichloroethene	5		1 U	NR	NR	NR	NR	1 U	1.3 U	1 U	NR
trans-1,3-Dichloropropene	--		1 U	5 U	1 U	1 U	1 U	1.5 U	0.7 U	1 U	5 U
Trichloroethene	5		1 U	5 U	4	3	2	2.2 J	2.3 J	2.9	5 U
Vinyl acetate	--		1 U	10 U	NR	NR	NR	NR	NR	1 U	10 U
Vinyl chloride	2		1 U	10 U	1 U	1 U	1 U	1.2 U	0.8 U	1 U	10 U

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-25A	MW-27	MW-27	MW-27 DUP	MW-28	MW-28	MW-29	MW-30	MW-34
		Sample Date:	06/19/97	06/18/97	06/04/08	06/04/08	06/18/97	08/25/00	06/18/97	06/18/97	06/18/97
		Sampled By:	Roux	Roux	Roux	Roux	Roux	'B/STV/PT(	Roux	Roux	Roux
		Screen Interval:	WT	WT	WT	WT	WT	WT	WT	WT	WT
Benzene	1		5 U	**130 J**	0.5 U	0.5 U	5 U	ND	5 U	5 U	25 U
Toluene	5		5 U	500 U	1 U	1 U	5 U	ND	5 U	2 JB	25 U
Ethylbenzene	5		5 U	500 U	1 U	1 U	5 U	ND	5 U	5 U	25 U
Xylenes (total)	5		5 U	500 U	2 U	2 U	5 U	NR	5 U	5 U	25 U
Total BTEX:			0	130	0	0	0	0	0	2	0
1,1,1-Trichloroethane	5		5 U	500 U	1 U	1 U	5 U	ND	5 U	5 U	25 U
1,1,2,2-Tetrachloroethane	5		5 U	500 U	1 U	1 U	5 U	0.4J	5 U	5 U	25 U
1,1,2-Trichloroethane	1		5 U	500 U	1 U	1 U	5 U	NR	5 U	5 U	25 U
1,1-Dichloroethane	5		5 U	500 U	1 U	1 U	5 U	ND	5 U	5 U	25 U
1,1-Dichloroethene	5		5 U	500 U	1 U	1 U	5 U	ND	5 U	5 U	25 U
1,2-Dichlorobenzene	3		5 U	500 U	1 U	1 U	5 U	ND	5 U	5 U	25 U
1,2-Dichloroethane	0.6		10 U	10 U	0.5 U	0.5 U	10 U	NR	10 U	10 U	10 U
1,2-Dichloroethene (total)	5		5 U	500 U	NR	NR	0.9 J	NR	5 U	5 U	**22 J**
1,2-Dichloropropane	1		5 U	500 U	1 U	1 U	5 U	NR	5 U	5 U	25 U
1,3-Dichlorobenzene	3		10 U	10 U	1 U	1 U	10 U	NR	10 U	10 U	10 U
1,4-Dichlorobenzene	3		10 U	10 U	1 U	1 U	10 U	NR	10 U	10 U	10 U
2-Butanone	50		10 U	1000 U	1 U	1 U	10 U	ND	10 U	10 U	50 U
2-Hexanone	50		10 U	1000 U	1 U	1 U	10 U	NR	10 U	10 U	50 U
4-Methyl-2-Pentanone	--		10 U	5200	1 U	1 U	10 U	NR	10 U	10 U	50 U
Acetone	50		10 U	**850 JB**	5 U	5 U	10 U	ND	10 U	10 U	**49 JB**
Bromodichloromethane	50		5 U	500 U	1 U	1 U	5 U	NR	5 U	5 U	25 U
Bromoform	50		5 U	500 U	1 U	1 U	5 U	NR	5 U	5 U	25 U
Bromomethane	5		10 U	1000 U	1 U	1 U	10 U	NR	10 U	10 U	50 U
Carbon disulfide	5		5 UJV	**110 J**	1 U	1 U	5 UJV	NR	5 UJV	5 UJV	25 UJV
Carbon tetrachloride	5		5 U	500 U	1 U	1 U	5 U	NR	5 U	5 U	25 U
Chlorobenzene	5		5 U	500 U	1 U	1 U	5 U	ND	5 U	5 U	25 U
Chloroethane	5		10 UJV	1000 UJV	1 U	1 U	10 UJV	NR	10 UJV	10 UJV	50 UJV
Chloroform	7		5 U	500 U	1 U	1 U	5 U	ND	5 U	5 U	25 U
Chloromethane	5		10 U	1000 U	1 U	1 U	10 U	ND	10 U	10 U	50 U
cis-1,2-Dichloroethene	5		NR	NR	1 U	1 U	NR	0.4J	NR	NR	NR
cis-1,3-Dichloropropene	--		5 U	500 U	1 U	1 U	5 U	NR	5 U	5 U	25 U
Dibromochloromethane	50		5 U	500 U	1 U	1 U	5 U	NR	5 U	5 U	25 U
Methylene chloride	5		5 U	**270 JB**	1 U	1 U	5 U	0.3J	5 U	5 U	**12 JB**
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5		5 U	500 U	1 U	1 U	5 U	ND	5 U	5 U	25 U

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-25A	MW-27	MW-27	MW-27 DUP	MW-28	MW-28	MW-29	MW-30	MW-34
		Sample Date:	06/19/97	06/18/97	06/04/08	06/04/08	06/18/97	08/25/00	06/18/97	06/18/97	06/18/97
		Sampled By:	Roux	Roux	Roux	Roux	Roux	'B/STV/PT(	Roux	Roux	Roux
		Screen Interval:	WT	WT	WT	WT	WT	WT	WT	WT	WT
Tetrachloroethene	5		5 U	500 U	4.3	4.1	0.6 J	0.6J	5 U	5 U	**360**
trans-1,2-Dichloroethene	5		NR	NR	1 U	1 U	NR	NR	NR	NR	NR
trans-1,3-Dichloropropene	--		5 U	500 U	1 U	1 U	5 U	NR	5 U	5 U	25 U
Trichloroethene	5		5 U	500 U	1 U	1.5	**10**	0.7J	5 U	5 U	**16 J**
Vinyl acetate	--		10 U	1000 U	1 U	1 U	10 U	ND	10 U	10 U	50 U
Vinyl chloride	2		10 U	1000 U	1 U	1 U	10 U	NR	10 U	10 U	50 U

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
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Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-34	MW-35	MW-35	MW-35	MW-35	MW-35	MW-35	MW-37	MW-37	MW-38D
		Sample Date:	08/25/00	06/18/97	11/14/97	04/15/03	04/22/03	08/25/03	06/02/08	06/18/97	06/02/08	06/18/97
		Sampled By:	B/STV/PT	Roux	Roux	EMCG	EMCG	EMCG	Roux	Roux	Roux	Roux
		Screen Interval:	WT	WT	WT	WT	WT	WT	WT	WT	WT	Deep
Benzene	1		ND	**3 J**	**2 J**	1	1 U	0.1 U	0.5 U	5 U	0.5 U	5 U
Toluene	5		ND	0.8 J	5 U	1 U	1 U	0.5 U	1 U	5 U	1.1	0.9 J
Ethylbenzene	5		ND	5 U	3 J	1 U	1 U	0.8 U	1 U	5 U	1 U	0.7 J
Xylenes (total)	5		NR	3 J	4 J	3 U	3 U	2.3 U	2 U	5 U	2 U	3 J
Total BTEX:			0	6.8	9	1	0	0	0	0	1.1	4.6
1,1,1-Trichloroethane	5		4J	5 U	5 U	1 U	1 U	0.5 U	1 U	5 U	1 U	5 U
1,1,2,2-Tetrachloroethane	5		ND	5 U	5 U	1 U	1 U	1.9 U	1 U	5 U	1 U	5 U
1,1,2-Trichloroethane	1		NR	5 U	5 U	1 U	1 U	1 U	1 U	5 U	1 U	5 U
1,1-Dichloroethane	5		1J	5 U	5 U	1 U	1 U	1.3 U	1 U	5 U	1 U	5 U
1,1-Dichloroethene	5		ND	5 U	5 U	1 U	1 U	0.1 U	1 U	5 U	1 U	5 U
1,2-Dichlorobenzene	3		ND	5 U	NA	1 U	1 U	0.4 U	1 U	5 U	1 U	5 U
1,2-Dichloroethane	0.6		NR	10 U	5 U	1 U	1 U	0.2 U	0.5 U	10 U	0.5 U	10 U
1,2-Dichloroethene (total)	5		NR	5 U	5 U	1 U	1 U	NR	NR	5 U	NR	5 U
1,2-Dichloropropane	1		NR	5 U	5 U	1 U	1 U	0.2 U	1 U	5 U	1 U	5 U
1,3-Dichlorobenzene	3		NR	10 U	NA	1 U	1 U	0.4 U	1 U	10 U	1 U	10 U
1,4-Dichlorobenzene	3		NR	10 U	NA	1 U	1 U	0.2 U	1 U	10 U	1 U	10 U
2-Butanone	50		ND	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U	10 U
2-Hexanone	50		NR	10 U	10 U	10 U	10 U	13 U	1 U	10 U	1 U	10 U
4-Methyl-2-Pentanone	--		NR	10 U	10 U	10 U	10 U	9.7 U	1 U	10 U	1 U	10 U
Acetone	50		2J	10 U	8 JB	10 U	10 U	7 U	5 U	10 U	5 U	10 U
Bromodichloromethane	50		NR	5 U	3 J	1 U	1 U	0.1 U	1 U	5 U	1 U	5 U
Bromoform	50		NR	5 U	5 U	1 U	1 U	1.3 U	1 U	5 U	1 U	5 U
Bromomethane	5		NR	10 U	10 U	1 U	1 U	2.9 U	1 U	10 U	1 U	10 U
Carbon disulfide	5		NR	0.7 J	5 U	1 U	1 U	0.7 U	1 U	5 UJV	1 U	5 UJV
Carbon tetrachloride	5		NR	5 U	5 U	1 U	1 U	0.1 U	1 U	5 U	1 U	5 U
Chlorobenzene	5		ND	5 U	5 U	1 U	1 U	0.5 U	1 U	5 U	1 U	5 U
Chloroethane	5		NR	10 UJV	10 U	1 U	1 U	2 U	1 U	10 UJV	1 U	10 UJV
Chloroform	7		0.8J	5 U	5 U	1 U	1 U	1.5 U	1 U	5 U	1 U	5 U
Chloromethane	5		ND	10 U	10 U	1 U	1 U	2.2 U	1 U	10 U	1 U	10 U
cis-1,2-Dichloroethene	5		**8**	NR	5 U	NR	NR	0.9 U	1 U	NR	1 U	NR
cis-1,3-Dichloropropene	--		NR	5 U	NA	1 U	1 U	0.7 U	1 U	5 U	1 U	5 U
Dibromochloromethane	50		NR	5 U	5 U	NR	NR	1.2 U	1 U	5 U	1 U	5 U
Methylene chloride	5		ND	5 U	5 U	1 U	1 U	1.2 U	1 U	5 U	1 U	5 UV
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5		ND	5 U	5 U	1 U	1 U	1.3 U	1 U	5 U	1 U	0.8 J

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-34	MW-35	MW-35	MW-35	MW-35	MW-35	MW-35	MW-37	MW-37	MW-38D
		Sample Date:	08/25/00	06/18/97	11/14/97	04/15/03	04/22/03	08/25/03	06/02/08	06/18/97	06/02/08	06/18/97
		Sampled By:	B/STV/PT	Roux	Roux	EMCG	EMCG	EMCG	Roux	Roux	Roux	Roux
		Screen Interval:	WT	WT	WT	WT	WT	WT	WT	WT	WT	Deep
Tetrachloroethene	5		**190**	5 U	5 U	1 U	1 U	0.1 U	1 U	5 U	1 U	1 J
trans-1,2-Dichloroethene	5		NR	NR	NA	NR	NR	1.3 U	1 U	NR	1 U	NR
trans-1,3-Dichloropropene	--		NR	5 U	5 U	1 U	1 U	0.7 U	1 U	5 U	1 U	5 U
Trichloroethene	5		**17**	5 U	5 U	1 U	1 U	0.1 U	1 U	5 U	1 U	5 U
Vinyl acetate	--		ND	10 U	10 U	NR	NR	NR	1 U	10 U	1 U	10 U
Vinyl chloride	2		NR	10 U	10 U	1 U	1 U	0.8 U	1.7	10 U	1 U	10 U

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

	NYSDEC	**Sample DesigNRtion:**	MW-38D	MW-39D	MW-40D	MW-41	MW-42	MW-42	MW-43	MW-44D	MW-45
Parameter	AWQSGVs	**Sample Date:**	06/02/08	06/02/08	06/18/97	06/18/97	06/18/97	08/25/00	06/18/97	06/18/97	06/18/97
(Concentrations in µg/L)	(µg/L)	**Sampled By:**	Roux	Roux	Roux	Roux	Roux	'B/STV/PT(	Roux	Roux	Roux
		Screen Interval:	Deep	Deep	Deep	WT	WT	WT	WT	Deep	WT
Benzene	1		0.5 U	0.5 U	5 U	5 U	5 U	ND	5 U	5 U	5 U
Toluene	5		1.9	1 U	5 U	5 U	5 U	.2J	5 U	5 U	5 U
Ethylbenzene	5		1 U	1 U	5 U	5 U	5 U	ND	5 U	5 U	5 U
Xylenes (total)	5		2 U	2 U	5 U	5 U	5 U	NR	5 U	5 U	5 U
Total BTEX:			1.9	0	0	0	0	0.2	0	0	0
1,1,1-Trichloroethane	5		1 U	1 U	5 U	5 U	5 U	ND	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5		1 U	1 U	5 U	5 U	5 U	ND	5 U	5 U	5 U
1,1,2-Trichloroethane	1		1 U	1 U	5 U	5 U	5 U	NR	5 U	5 U	5 U
1,1-Dichloroethane	5		1 U	1 U	5 U	5 U	5 U	ND	5 U	5 U	5 U
1,1-Dichloroethene	5		1 U	1 U	5 U	5 U	5 U	ND	5 U	5 U	5 U
1,2-Dichlorobenzene	3		1 U	1 U	5 U	5 U	5 U	ND	5 U	5 U	5 U
1,2-Dichloroethane	0.6		0.5 U	0.5 U	10 U	10 U	10 U	NR	10 U	10 U	10 U
1,2-Dichloroethene (total)	5		NR	NR	5 U	5 U	**15**	NR	5 U	**33**	5 U
1,2-Dichloropropane	1		1 U	1 U	5 U	5 U	5 U	NR	5 U	5 U	5 U
1,3-Dichlorobenzene	3		1 U	1 U	10 U	10 U	10 U	NR	10 U	10 U	10 U
1,4-Dichlorobenzene	3		1 U	1 U	10 U	10 U	10 U	NR	10 U	10 U	10 U
2-Butanone	50		1 U	1 U	10 U	10 U	10 U	ND	10 U	10 U	10 U
2-Hexanone	50		1 U	1 U	10 U	10 U	10 U	NR	10 U	10 U	10 U
4-Methyl-2-Pentanone	--		1 U	1 U	10 U	4 J	10 U	NR	10 U	10 U	10 U
Acetone	50		5 U	5 U	10 U	10 U	10 U	ND	10 U	10 U	10 U
Bromodichloromethane	50		1 U	1 U	5 U	5 U	5 U	NR	5 U	5 U	5 U
Bromoform	50		1 U	1 U	5 U	5 U	5 U	NR	5 U	5 U	5 U
Bromomethane	5		1 U	1 U	10 U	10 U	10 U	NR	10 U	10 U	10 U
Carbon disulfide	5		1 U	1 U	5 UJV	5 UJV	5 UJV	NR	5 UJV	5 UJV	5 UJV
Carbon tetrachloride	5		1 U	1 U	5 U	5 U	5 U	NR	5 U	5 U	5 U
Chlorobenzene	5		1 U	1 U	5 U	5 U	5 U	ND	5 U	5 U	5 U
Chloroethane	5		1 U	1 U	10 UJV	10 UJV	10 UJV	NR	10 UJV	10 UJV	10 UJV
Chloroform	7		1 U	1 U	5 U	5 U	5 U	ND	5 U	5 U	5 U
Chloromethane	5		1 U	1 U	10 U	10 U	10 U	ND	10 U	10 U	10 U
cis-1,2-Dichloroethene	5		1 U	1 U	NR	NR	NR	ND	NR	NR	NR
cis-1,3-Dichloropropene	--		1 U	1 U	5 U	5 U	5 U	NR	5 U	5 U	5 U
Dibromochloromethane	50		1 U	1 U	5 U	5 U	5 U	NR	5 U	5 U	5 U
Methylene chloride	5		1 U	1 U	5 U	5 U	5 UV	ND	5 U	5 U	5 U
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5		1 U	1 U	5 U	5 U	5 U	ND	5 U	5 U	5 U

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-38D	MW-39D	MW-40D	MW-41	MW-42	MW-42	MW-43	MW-44D	MW-45
		Sample Date:	06/02/08	06/02/08	06/18/97	06/18/97	06/18/97	08/25/00	06/18/97	06/18/97	06/18/97
		Sampled By:	Roux	Roux	Roux	Roux	Roux	'B/STV/PT(	Roux	Roux	Roux
		Screen Interval:	Deep	Deep	Deep	WT	WT	WT	WT	Deep	WT
Tetrachloroethene	5		1 U	1 U	1 J	5 U	**75**	ND	4 J	2 J	5 U
trans-1,2-Dichloroethene	5		1 U	1 U	NR	NR	NR	NR	NR	NR	NR
trans-1,3-Dichloropropene	--		1 U	1 U	5 U	5 U	5 U	NR	5 U	5 U	5 U
Trichloroethene	5		1 U	1 U	5 U	5 U	**12**	ND	5 U	**34**	5 U
Vinyl acetate	--		1 U	1 U	10 U	10 U	10 U	ND	10 U	10 U	10 U
Vinyl chloride	2		1 U	1 U	10 U	10 U	10 U	NR	10 U	10 U	10 U

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-45	MW-45	MW-46	MW-47	MW-48D	MW-48D	MW-49	MW-57	MW-59	MW-61
		Sample Date:	08/25/00	06/04/08	06/18/97	06/20/97	06/20/97	06/03/08	06/18/97	06/18/97	06/18/97	06/18/97
		Sampled By:	B/STV/PT	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux
		Screen Interval:	WT	WT	WT	WT	Deep	Deep	WT	WT	WT	WT
Benzene	1		ND	0.5 U	5 U	5 U	5 U	0.5 U	5 U	5 U	50 U	5 U
Toluene	5		ND	1 U	5 U	0.2 JB	0.6 J	1 U	5 U	5 U	50 U	5 U
Ethylbenzene	5		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Xylenes (total)	5		NR	2 U	5 U	0.8 J	5 U	2 U	5 U	5 U	50 U	5 U
Total BTEX:			0	0	0	1	0.6	0	0	0	0	0
1,1,1-Trichloroethane	5		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
1,1,2,2-Tetrachloroethane	5		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
1,1,2-Trichloroethane	1		NR	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	1 J
1,1-Dichloroethane	5		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
1,1-Dichloroethene	5		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
1,2-Dichlorobenzene	3		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	2 J
1,2-Dichloroethane	0.6		NR	0.5 U	10 U	10 U	10 U	0.5 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	5		NR	NR	5 U	5 U	5 U	NR	5 U	5 U	50 U	5 U
1,2-Dichloropropane	1		NR	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
1,3-Dichlorobenzene	3		NR	1 U	10 U	10 U	10 U	1 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	3		NR	1 U	10 U	10 U	10 U	1 U	10 U	10 U	10 U	10 U
2-Butanone	50		ND	1 U	10 U	10 U	10 U	1 U	10 U	10 U	100 U	10 U
2-Hexanone	50		NR	1 U	10 U	10 U	10 U	1 U	10 U	10 U	100 U	10 U
4-Methyl-2-Pentanone	--		NR	1 U	10 U	10 U	10 U	1 U	10 U	10 U	1300	10 U
Acetone	50		ND	5 U	10 U	10 U	10 U	5 U	10 U	10 U	100 U	10 U
Bromodichloromethane	50		NR	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Bromoform	50		NR	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Bromomethane	5		NR	1 U	10 U	10 U	10 U	1 U	10 U	10 U	100 U	10 U
Carbon disulfide	5		NR	1 U	5 UJV	5 UJV	5 UJV	1 U	5 UJV	5 UJV	50 UJV	5 UJV
Carbon tetrachloride	5		NR	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Chlorobenzene	5		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Chloroethane	5		NR	1 U	10 UJV	10 UJV	10 UJV	1 U	10 UJV	10 UJV	100 UJV	10 UJV
Chloroform	7		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Chloromethane	5		ND	1 U	10 U	10 U	10 U	1 U	10 U	10 U	100 U	10 U
cis-1,2-Dichloroethene	5		ND	1 U	NR	NR	NR	1 U	NR	NR	NR	NR
cis-1,3-Dichloropropene	--		NR	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Dibromochloromethane	50		NR	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Methylene chloride	5		0.9JB	1 U	5 U	5 U	5 UV	1 U	5 U	5 U	50 U	5 UV
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-45	MW-45	MW-46	MW-47	MW-48D	MW-48D	MW-49	MW-57	MW-59	MW-61
		Sample Date:	08/25/00	06/04/08	06/18/97	06/20/97	06/20/97	06/03/08	06/18/97	06/18/97	06/18/97	06/18/97
		Sampled By:	B/STV/PT	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux
		Screen Interval:	WT	WT	WT	WT	Deep	Deep	WT	WT	WT	WT
Tetrachloroethene	5		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	4 J
trans-1,2-Dichloroethene	5		NR	1 U	NR	NR	NR	1 U	NR	NR	NR	NR
trans-1,3-Dichloropropene	--		NR	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Trichloroethene	5		ND	1 U	5 U	5 U	5 U	1 U	5 U	5 U	50 U	5 U
Vinyl acetate	--		ND	1 U	10 U	10 U	10 U	1 U	10 U	10 U	100 U	10 U
Vinyl chloride	2		NR	1 U	10 U	10 U	10 U	1 U	10 U	10 U	100 U	10 U

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	MW-62D 06/18/97 Roux Deep	MW-62D 06/04/08 Roux Deep	MW-64 06/19/97 Roux WT	MW-65 06/19/97 Roux WT	MW-65R 06/19/97 Roux WT	MW-66 06/19/97 Roux WT	MW-67 06/19/97 Roux WT	MW-68 06/04/08 Roux WT	MW-69D 06/20/97 Roux Deep	MW-70 06/02/08 Roux WT
Benzene	1		5 U	0.5 U	5 U	5 U	5 U	5 U	5 U	0.5 U	5 U	0.5 U
Toluene	5		5 U	1 U	5 U	5 U	5 U	0.6 JB	0.4 JB	1 U	5 U	1 U
Ethylbenzene	5		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
Xylenes (total)	5		5 U	2 U	5 U	5 U	5 U	5 U	5 U	2.6	5 U	2 U
Total BTEX:			0	0	0	0	0	0.6	0.4	2.6	0	0
1,1,1-Trichloroethane	5		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
1,1,2,2-Tetrachloroethane	5		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
1,1,2-Trichloroethane	1		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
1,1-Dichloroethane	5		5 U	1 U	5 U	2 J	2 J	5 U	5 U	1 U	5 U	1 U
1,1-Dichloroethene	5		5 U	1 U	5 U	2 J	2 J	5 U	5 U	1 U	5 U	1 U
1,2-Dichlorobenzene	3		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
1,2-Dichloroethane	0.6		10 U	0.5 U	10 U	10 U	10 U	10 U	10 U	0.5 U	10 U	0.5 U
1,2-Dichloroethene (total)	5		5 U	NR	5 U	**9**	**9**	5 U	5 U	NR	5 U	NR
1,2-Dichloropropane	1		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
1,3-Dichlorobenzene	3		10 U	1 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U
1,4-Dichlorobenzene	3		10 U	1 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U
2-Butanone	50		10 U	1 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U
2-Hexanone	50		10 U	1 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U
4-Methyl-2-Pentanone	--		10 U	1 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U
Acetone	50		10 U	5 U	10 U	10 U	10 U	10 U	10 U	5 U	10 U	5 U
Bromodichloromethane	50		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
Bromoform	50		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
Bromomethane	5		10 U	1 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U
Carbon disulfide	5		2 J	1 U	5 UJV	5 UJV	5 UJV	5 UJV	5 UJV	1 U	5 UJV	1 U
Carbon tetrachloride	5		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
Chlorobenzene	5		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
Chloroethane	5		10 UJV	1 U	10 UJV	10 UJV	10 UJV	10 UJV	10 UJV	1 U	10 UJV	1 U
Chloroform	7		5 U	1.3	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
Chloromethane	5		10 U	1 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U
cis-1,2-Dichloroethene	5		NR	1.7	NR	NR	NR	NR	NR	1 U	NR	1 U
cis-1,3-Dichloropropene	--		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
Dibromochloromethane	50		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
Methylene chloride	5		5 UV	1 U	5 U	5 U	5 UV	5 U	5 UV	1 U	5 U	1 U
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample DesigNRtion:	MW-62D	MW-62D	MW-64	MW-65	MW-65R	MW-66	MW-67	MW-68	MW-69D	MW-70
		Sample Date:	06/18/97	06/04/08	06/19/97	06/19/97	06/19/97	06/19/97	06/19/97	06/04/08	06/20/97	06/02/08
		Sampled By:	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux
		Screen Interval:	Deep	Deep	WT	WT	WT	WT	WT	WT	Deep	WT
Tetrachloroethene	5		5	**54**	**6**	5 U	5 U	5 U	5 U	1 U	5 U	1 U
trans-1,2-Dichloroethene	5		NR	1 U	NR	NR	NR	NR	NR	1 U	NR	1 U
trans-1,3-Dichloropropene	--		5 U	1 U	5 U	5 U	5 U	5 U	5 U	1 U	5 U	1 U
Trichloroethene	5		0.9 J	1.3	2 J	0.8 J	0.9 J	5 U	5 U	1 U	5 U	1 U
Vinyl acetate	--		10 U	1 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U
Vinyl chloride	2		10 U	1 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	1 U

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
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Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample DesigNRtion: / Sample Date: / Sampled By: / Screen Interval:	MW-78 07/05/05 Roux WT	MW-79 07/05/05 Roux WT	MW-79 06/03/08 Roux WT	MW-80 06/04/08 Roux WT	MW-82 06/05/08 Roux WT	MW-83 06/04/08 Roux WT	MW-84 06/05/08 Roux WT	MW-85 06/02/08 Roux WT	MW-86 05/21/08 Roux WT	MW-87 05/21/08 Roux WT
Benzene	1		0.43 U	0.43 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Toluene	5		0.31 U	0.31 U	1 U	1 U	1 U	1 U	1 U	1.1	1 U	1 U
Ethylbenzene	5		0.49 U	0.49 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5		0.86 U	0.86 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total BTEX:			0	0	0	0	0	0	0	1.1	0	0
1,1,1-Trichloroethane	5		0.45 U	0.45 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5		0.28 U	0.28 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1		0.4 U	0.4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5		0.29 U	0.29 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5		0.48 U	0.48 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	3		0.4 U	0.42 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6		0.22 U	0.22 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)	5		NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-Dichloropropane	1		0.37 U	0.37 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3		0.28 U	0.3 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3		0.18 U	0.18 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone	50		3.3 U	3.3 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	50		0.39 U	0.39 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-Pentanone	--		0.53 U	0.53 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	50		4 U	4 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	50		0.46 U	0.46 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50		0.47 U	0.47 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane	5		0.76 U	0.76 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	5		0.51 U	0.51 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride	5		0.54 U	0.54 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5		0.2 U	0.2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5		0.53 U	0.53 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	7		0.38 U	0.38 U	1 U	1 U	2.1	1 U	1 U	1 U	1 U	1 U
Chloromethane	5		0.32 U	0.32 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5		0.5 U	0.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene	--		0.18 U	0.18 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane	50		0.56 U	0.56 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	5		0.87 U	0.87 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	5		0.29 U	0.29 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Table 5. **Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York**

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-78	MW-79	MW-79	MW-80	MW-82	MW-83	MW-84	MW-85	MW-86	MW-87
		Sample Date:	07/05/05	07/05/05	06/03/08	06/04/08	06/05/08	06/04/08	06/05/08	06/02/08	05/21/08	05/21/08
		Sampled By:	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux	Roux
		Screen Interval:	WT	WT	WT	WT	WT	WT	WT	WT	WT	WT
Tetrachloroethene	5		0.31 U	0.31 U	1 U	1 U	1 U	1.9	1 U	**5.5**	1 U	1 U
trans-1,2-Dichloroethene	5		0.5 U	0.5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	--		0.4 U	0.4 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	5		0.36 U	0.36 U	1 U	1 U	1 U	1 U	1 U	1.9	1 U	1 U
Vinyl acetate	--		NR	NR	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride	2		0.54 U	0.54 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	MW-88	MW-89	MW-90	MW-91	MW-92	RT-3AW	RT-6W	RT-6W	RT-8W
		Sample Date:	05/21/08	05/21/08	06/03/08	06/03/08	06/03/08	03/25/08	03/25/08	09/03/08	03/25/08
		Sampled By:	Roux	Roux	Roux	Roux	Roux	ESA	ESA	ESA	ESA
		Screen Interval:	WT	WT	WT	WT	WT	Deep	Deep	Deep	Deep
Benzene	1		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	ND	73	ND	ND
Toluene	5		1 U	1 U	1 U	1 U	1 U	ND	ND	ND	ND
Ethylbenzene	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Xylenes (total)	5		2 U	2 U	2 U	2 U	2 U	ND	ND	ND	ND
Total BTEX:			0	0	0	0	0	0	73	0	0
1,1,1-Trichloroethane	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
1,1,2,2-Tetrachloroethane	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
1,1,2-Trichloroethane	1		1 U	1 U	1 U	1 U	1 U	ND	**12 JD**	**17**	ND
1,1-Dichloroethane	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
1,1-Dichloroethene	5		1 U	1 U	1 U	1 U	1 U	ND	**11**	**9.2**	ND
1,2-Dichlorobenzene	3		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
1,2-Dichloroethane	0.6		0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	ND	ND	**8**	ND
1,2-Dichloroethene (total)	5		NR	NR	NR	NR	NR	NR	NR	NR	NR
1,2-Dichloropropane	1		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
1,3-Dichlorobenzene	3		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
1,4-Dichlorobenzene	3		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
2-Butanone	50		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
2-Hexanone	50		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
4-Methyl-2-Pentanone	--		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Acetone	50		5 U	5 U	5 U	5 U	5 U	ND	ND	ND	ND
Bromodichloromethane	50		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Bromoform	50		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Bromomethane	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Carbon disulfide	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Carbon tetrachloride	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Chlorobenzene	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Chloroethane	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Chloroform	7		1 U	1 U	1 U	1 U	1 U	ND	2.8 J	3.5 J	2.4 J
Chloromethane	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
cis-1,2-Dichloroethene	5		1 U	1 U	1 U	1 U	1 U	ND	**82**	**93**	**14**
cis-1,3-Dichloropropene	--		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Dibromochloromethane	50		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Methylene chloride	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA	ND	**120**	**110 D**	5.1
Styrene	5		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	MW-88 05/21/08 Roux WT	MW-89 05/21/08 Roux WT	MW-90 06/03/08 Roux WT	MW-91 06/03/08 Roux WT	MW-92 06/03/08 Roux WT	RT-3AW 03/25/08 ESA Deep	RT-6W 03/25/08 ESA Deep	RT-6W 09/03/08 ESA Deep	RT-8W 03/25/08 ESA Deep
Tetrachloroethene	5		1 U	1 U	1 U	1 U	1 U	ND	**280 D**	**760 D**	**140**
trans-1,2-Dichloroethene	5		1 U	1 U	1 U	1 U	1 U	ND	**61**	**58**	ND
trans-1,3-Dichloropropene	--		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Trichloroethene	5		1 U	1 U	1 U	1 U	1 U	ND	**19000 D**	**24000 D**	**65**
Vinyl acetate	--		1 U	1 U	1 U	1 U	1 U	NR	NR	NR	NR
Vinyl chloride	2		1 U	1 U	1 U	1 U	1 U	ND	**18**	**16**	ND

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
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WT - Monitoring wells with screen zones that bridge the water table
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Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:**	SSY-23	SSY-46	SSY-49	SSY-51	SY-111W	SY-131AW	SY-131AW	SY-153
		Sample Date:	08/20/99	08/20/99	08/20/99	08/20/99	06/17/08	09/26/06	06/26/08	09/26/06
		Sampled By:	AKRF	AKRF	AKRF	AKRF	ESA	ESA	ESA	ESA
		Screen Interval:	Unk	Unk	Unk	Unk	Deep	Deep	Deep	Deep
Benzene	1		10 U	10 U	10 U	10 U	ND	ND	ND	ND
Toluene	5		10 U	10 U	10 U	10 U	ND	ND	ND	ND
Ethylbenzene	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Xylenes (total)	5		10 U	10 U	10 U	10 U	ND	ND	ND	ND
Total BTEX:			0	0	0	0	0	0	0	0
1,1,1-Trichloroethane	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
1,1,2,2-Tetrachloroethane	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
1,1,2-Trichloroethane	1		10 U	10 U	10 U	10 U	ND	ND	ND	ND
1,1-Dichloroethane	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
1,1-Dichloroethene	5		10 U	10 U	10 U	10 U	ND	ND	ND	ND
1,2-Dichlorobenzene	3		10 U	10 U	10 U	10 U	NR	ND	NR	ND
1,2-Dichloroethane	0.6		10 U	10 U	10 U	10 U	ND	ND	ND	ND
1,2-Dichloroethene (total)	5		**34**	10 U	10 U	10 U	NR	ND	NR	ND
1,2-Dichloropropane	1		10 U	10 U	10 U	10 U	NR	ND	NR	ND
1,3-Dichlorobenzene	3		10 U	10 U	10 U	10 U	NR	ND	NR	ND
1,4-Dichlorobenzene	3		10 U	10 U	10 U	10 U	NR	ND	NR	ND
2-Butanone	50		10 U	10 U	10 U	10 U	NR	ND	NR	ND
2-Hexanone	50		10 U	10 U	10 U	10 U	NR	ND	NR	ND
4-Methyl-2-Pentanone	--		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Acetone	50		5 J	2 J	**62**	4 J	ND	ND	ND	ND
Bromodichloromethane	50		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Bromoform	50		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Bromomethane	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Carbon disulfide	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Carbon tetrachloride	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Chlorobenzene	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Chloroethane	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Chloroform	7		10 U	10 U	10 U	10 U	ND	ND	ND	ND
Chloromethane	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
cis-1,2-Dichloroethene	5		NR	NR	NR	NR	3.9 J	ND	ND	ND
cis-1,3-Dichloropropene	--		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Dibromochloromethane	50		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Methylene chloride	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Methyl tert-butyl ether	10		NA	NA	NA	NA	ND	NA	ND	NA
Styrene	5		10 U	10 U	10 U	10 U	NR	ND	NR	ND

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample DesigNRtion: / Sample Date: / Sampled By: / Screen Interval:	SSY-23	SSY-46	SSY-49	SSY-51	SY-111W	SY-131AW	SY-131AW	SY-153
		Sample Date:	08/20/99	08/20/99	08/20/99	08/20/99	06/17/08	09/26/06	06/26/08	09/26/06
		Sampled By:	AKRF	AKRF	AKRF	AKRF	ESA	ESA	ESA	ESA
		Screen Interval:	Unk	Unk	Unk	Unk	Deep	Deep	Deep	Deep
Tetrachloroethene	5		**340 D**	10 U	10 U	10 U	**42**	ND	ND	ND
trans-1,2-Dichloroethene	5		NR	NR	NR	NR	ND	ND	ND	ND
trans-1,3-Dichloropropene	--		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Trichloroethene	5		40	10 U	10 U	10 U	**21 J**	ND	ND	ND
Vinyl acetate	--		10 U	10 U	10 U	10 U	NR	ND	NR	ND
Vinyl chloride	2		10 U	10 U	10 U	10 U	ND	ND	ND	ND

Notes:
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BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
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Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	SY-174W 07/07/08 ESA Deep	SY-174W DUP 07/07/08 ESA Deep	SY-178W 08/16/06 ESA Deep	SY-178W 07/07/08 ESA Deep	SY-433W 06/10/08 ESA Deep	SY-436W 06/10/08 ESA Deep
Benzene	1		ND	ND	ND	ND	ND	ND
Toluene	5		ND	ND	ND	ND	ND	ND
Ethylbenzene	5		NR	NR	ND	NR	NR	NR
Xylenes (total)	5		ND	ND	ND	ND	ND	ND
Total BTEX:			0	0	0	0	0	0
1,1,1-Trichloroethane	5		NR	NR	ND	NR	NR	NR
1,1,2,2-Tetrachloroethane	5		NR	NR	ND	NR	NR	NR
1,1,2-Trichloroethane	1		ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5		NR	NR	ND	NR	NR	NR
1,1-Dichloroethene	5		ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3		NR	NR	ND	NR	NR	NR
1,2-Dichloroethane	0.6		ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	5		NR	NR	ND	NR	NR	NR
1,2-Dichloropropane	1		NR	NR	ND	NR	NR	NR
1,3-Dichlorobenzene	3		NR	NR	ND	NR	NR	NR
1,4-Dichlorobenzene	3		NR	NR	ND	NR	NR	NR
2-Butanone	50		NR	NR	ND	NR	NR	NR
2-Hexanone	50		NR	NR	ND	NR	NR	NR
4-Methyl-2-Pentanone	--		NR	NR	ND	NR	NR	NR
Acetone	50		ND	ND	ND	ND	ND	ND
Bromodichloromethane	50		NR	NR	ND	NR	NR	NR
Bromoform	50		NR	NR	ND	NR	NR	NR
Bromomethane	5		NR	NR	ND	NR	NR	NR
Carbon disulfide	5		NR	NR	ND	NR	NR	NR
Carbon tetrachloride	5		NR	NR	ND	NR	NR	NR
Chlorobenzene	5		NR	NR	ND	NR	NR	NR
Chloroethane	5		NR	NR	ND	NR	NR	NR
Chloroform	7		ND	ND	ND	ND	ND	ND
Chloromethane	5		NR	NR	ND	NR	NR	NR
cis-1,2-Dichloroethene	5		ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	--		NR	NR	ND	NR	NR	NR
Dibromochloromethane	50		NR	NR	ND	NR	NR	NR
Methylene chloride	5		NR	NR	ND	NR	NR	NR
Methyl tert-butyl ether	10		ND	ND	NA	ND	ND	ND
Styrene	5		NR	NR	ND	NR	NR	NR

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample DesigNRtion:	SY-174W	SY-174W DUP	SY-178W	SY-178W	SY-433W	SY-436W
		Sample Date:	07/07/08	07/07/08	08/16/06	07/07/08	06/10/08	06/10/08
		Sampled By:	ESA	ESA	ESA	ESA	ESA	ESA
		Screen Interval:	Deep	Deep	Deep	Deep	Deep	Deep
Tetrachloroethene	5		ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5		ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	--		NR	NR	ND	NR	NR	NR
Trichloroethene	5		ND	ND	ND	ND	ND	ND
Vinyl acetate	--		NR	NR	ND	NR	NR	NR
Vinyl chloride	2		ND	ND	ND	ND	ND	ND

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DUP - Duplicate
J - Estimated value
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Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	SY-436W DUP 06/10/08 ESA Deep	SY-438W 06/10/08 ESA Deep	SY-452W 06/11/08 ESA WT	SY-516W 06/16/08 ESA Deep	SY-516W DUP 06/16/08 ESA Deep	TE-MW-D-2 11/14/06 PB/STV/PTG Deep
Benzene	1		ND	ND	ND	ND	ND	ND
Toluene	5		ND	ND	ND	ND	ND	ND
Ethylbenzene	5		NR	NR	NR	NR	NR	ND
Xylenes (total)	5		ND	ND	ND	ND	ND	ND
Total BTEX:			0	0	0	0	0	0
1,1,1-Trichloroethane	5		NR	NR	NR	NR	NR	ND
1,1,2,2-Tetrachloroethane	5		NR	NR	NR	NR	NR	ND
1,1,2-Trichloroethane	1		ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	5		NR	NR	NR	NR	NR	ND
1,1-Dichloroethene	5		ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3		NR	NR	NR	NR	NR	ND
1,2-Dichloroethane	0.6		ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	5		NR	NR	NR	NR	NR	ND
1,2-Dichloropropane	1		NR	NR	NR	NR	NR	ND
1,3-Dichlorobenzene	3		NR	NR	NR	NR	NR	ND
1,4-Dichlorobenzene	3		NR	NR	NR	NR	NR	ND
2-Butanone	50		NR	NR	NR	NR	NR	ND
2-Hexanone	50		NR	NR	NR	NR	NR	ND
4-Methyl-2-Pentanone	--		NR	NR	NR	NR	NR	ND
Acetone	50		ND	ND	ND	ND	3.3 JB	ND
Bromodichloromethane	50		NR	NR	NR	NR	NR	ND
Bromoform	50		NR	NR	NR	NR	NR	ND
Bromomethane	5		NR	NR	NR	NR	NR	ND
Carbon disulfide	5		NR	NR	NR	NR	NR	ND
Carbon tetrachloride	5		NR	NR	NR	NR	NR	ND
Chlorobenzene	5		NR	NR	NR	NR	NR	ND
Chloroethane	5		NR	NR	NR	NR	NR	ND
Chloroform	7		ND	ND	ND	ND	ND	ND
Chloromethane	5		NR	NR	NR	NR	NR	ND
cis-1,2-Dichloroethene	5		ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	--		NR	NR	NR	NR	NR	ND
Dibromochloromethane	50		NR	NR	NR	NR	NR	ND
Methylene chloride	5		NR	NR	NR	NR	NR	ND
Methyl tert-butyl ether	10		ND	ND	ND	ND	0.99 J	NA
Styrene	5		NR	NR	NR	NR	NR	ND

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** / **Sample Date:** / **Sampled By:** / **Screen Interval:**	SY-436W DUP 06/10/08 ESA Deep	SY-438W 06/10/08 ESA Deep	SY-452W 06/11/08 ESA WT	SY-516W 06/16/08 ESA Deep	SY-516W DUP 06/16/08 ESA Deep	TE-MW-D-2 11/14/06 PB/STV/PTG Deep
Tetrachloroethene	5		ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	5		ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	--		NR	NR	NR	NR	NR	ND
Trichloroethene	5		ND	ND	ND	ND	ND	ND
Vinyl acetate	--		NR	NR	NR	NR	NR	ND
Vinyl chloride	2		ND	ND	ND	ND	ND	ND

Notes:
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BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
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Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	TE-MW-D-2(SY-8W) 10/20/00 PB/STV/PTG Deep	TE-MW-IB/OB-1 10/20/00 PB/STV/PTG Deep	TE-IB-3 10/20/00 PB/STV/PTG Deep	TE-IB-3 11/14/06 PB/STV/PTG Deep	TE-MW-A-1 10/19/00 PB/STV/PTG Deep
Benzene	1		ND	ND	ND	ND	ND
Toluene	5		ND	ND	ND	ND	ND
Ethylbenzene	5		ND	ND	ND	ND	ND
Xylenes (total)	5		ND	ND	ND	ND	ND
Total BTEX:			0	0	0	0	0
1,1,1-Trichloroethane	5		ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5		ND	ND	ND	ND	ND
1,1,2-Trichloroethane	1		NR	NR	NR	ND	NR
1,1-Dichloroethane	5		ND	ND	ND	ND	ND
1,1-Dichloroethene	5		ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3		ND	ND	ND	ND	ND
1,2-Dichloroethane	0.6		NR	NR	NR	ND	NR
1,2-Dichloroethene (total)	5		NR	NR	NR	ND	NR
1,2-Dichloropropane	1		NR	NR	NR	ND	NR
1,3-Dichlorobenzene	3		NR	NR	NR	ND	NR
1,4-Dichlorobenzene	3		NR	NR	NR	ND	NR
2-Butanone	50		ND	ND	ND	ND	ND
2-Hexanone	50		NR	NR	NR	ND	NR
4-Methyl-2-Pentanone	--		NR	NR	NR	ND	NR
Acetone	50		ND	ND	ND	ND	ND
Bromodichloromethane	50		NR	NR	NR	ND	NR
Bromoform	50		NR	NR	NR	ND	NR
Bromomethane	5		NR	NR	NR	ND	NR
Carbon disulfide	5		NR	NR	NR	ND	NR
Carbon tetrachloride	5		NR	NR	NR	ND	NR
Chlorobenzene	5		ND	ND	ND	ND	ND
Chloroethane	5		NR	NR	NR	ND	NR
Chloroform	7		ND	ND	ND	ND	ND
Chloromethane	5		ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	5		ND	ND	ND	ND	**12**
cis-1,3-Dichloropropene	--		NR	NR	NR	ND	NR
Dibromochloromethane	50		NR	NR	NR	ND	NR
Methylene chloride	5		ND	ND	ND	ND	ND
Methyl tert-butyl ether	10		NA	NA	NA	NA	NA
Styrene	5		ND	ND	ND	ND	ND

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)		TE-MW-D-2(SY-8W)	TE-MW-IB/OB-1	TE-IB-3	TE-IB-3	TE-MW-A-1
		Sample DesigNRtion:	TE-MW-D-2(SY-8W	TE-MW-IB/OB-1	TE-IB-3	TE-IB-3	TE-MW-A-1
		Sample Date:	10/20/00	10/20/00	10/20/00	11/14/06	10/19/00
		Sampled By:	PB/STV/PTG	PB/STV/PTG	PB/STV/PTG	PB/STV/PTG	PB/STV/PTG
		Screen Interval:	Deep	Deep	Deep	Deep	Deep
Tetrachloroethene	5		**6**	ND	5	ND	**190**
trans-1,2-Dichloroethene	5		NR	NR	NR	ND	NR
trans-1,3-Dichloropropene	--		NR	NR	NR	ND	NR
Trichloroethene	5		4J	ND	ND	ND	**57**
Vinyl acetate	--		ND	ND	ND	ND	ND
Vinyl chloride	2		NR	NR	NR	ND	NR

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)						
		Sample DesigNRtion:	TE-MW-A-1	TE-MW-A-3(SY-135	TE-MW-A-3(SY-135W	TE-MW-A-4	TE-MW-A-4/SY-153W
		Sample Date:	06/17/08	10/20/00	10/16/03	08/16/00	06/25/08
		Sampled By:	ESA	PB/STV/PTG	PB/STV/PTG	PB/STV/PTG	ESA
		Screen Interval:	Deep	Deep	Deep	Deep	Deep
Benzene	1		ND	ND	ND	ND	ND
Toluene	5		1.1 J	ND	ND	.3J	ND
Ethylbenzene	5		NR	ND	ND	.3J	NR
Xylenes (total)	5		1 J	ND	ND	1J	ND
Total BTEX:			2.1	0	0	1.6	0
1,1,1-Trichloroethane	5		NR	ND	ND	ND	NR
1,1,2,2-Tetrachloroethane	5		NR	ND	ND	ND	NR
1,1,2-Trichloroethane	1		ND	NR	ND	NR	ND
1,1-Dichloroethane	5		NR	ND	ND	ND	NR
1,1-Dichloroethene	5		ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3		NR	ND	ND	ND	NR
1,2-Dichloroethane	0.6		ND	NR	ND	NR	ND
1,2-Dichloroethene (total)	5		NR	NR	ND	NR	NR
1,2-Dichloropropane	1		NR	NR	ND	NR	NR
1,3-Dichlorobenzene	3		NR	NR	ND	NR	NR
1,4-Dichlorobenzene	3		NR	NR	ND	NR	NR
2-Butanone	50		NR	ND	ND	ND	NR
2-Hexanone	50		NR	NR	ND	NR	NR
4-Methyl-2-Pentanone	--		NR	NR	ND	NR	NR
Acetone	50		ND	ND	ND	3J	ND
Bromodichloromethane	50		NR	NR	ND	NR	NR
Bromoform	50		NR	NR	ND	NR	NR
Bromomethane	5		NR	NR	ND	NR	NR
Carbon disulfide	5		NR	NR	ND	NR	NR
Carbon tetrachloride	5		NR	NR	ND	NR	NR
Chlorobenzene	5		NR	ND	ND	.4J	NR
Chloroethane	5		NR	NR	ND	NR	NR
Chloroform	7		ND	ND	ND	ND	ND
Chloromethane	5		NR	ND	ND	ND	NR
cis-1,2-Dichloroethene	5		2.8 J	ND	ND	ND	ND
cis-1,3-Dichloropropene	--		NR	NR	ND	NR	NR
Dibromochloromethane	50		NR	NR	ND	NR	NR
Methylene chloride	5		NR	ND	ND	1J	NR
Methyl tert-butyl ether	10		**110**	NA	NA	NA	ND
Styrene	5		NR	ND	ND	.4J	NR

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** / **Sample Date:** / **Sampled By:** / **Screen Interval:**	TE-MW-A-1 / 06/17/08 / ESA / Deep	TE-MW-A-3(SY-135 / 10/20/00 / PB/STV/PTG / Deep	TE-MW-A-3(SY-135W / 10/16/03 / PB/STV/PTG / Deep	TE-MW-A-4 / 08/16/00 / PB/STV/PTG / Deep	TE-MW-A-4/SY-153W / 06/25/08 / ESA / Deep
Tetrachloroethene	5		**66**	4J	ND	**18**	ND
trans-1,2-Dichloroethene	5		ND	NR	ND	NR	ND
trans-1,3-Dichloropropene	--		NR	NR	ND	NR	NR
Trichloroethene	5		**18**	ND	ND	.5J	ND
Vinyl acetate	--		NR	ND	ND	ND	NR
Vinyl chloride	2		ND	NR	ND	NR	ND

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe^{TM} sample collected from 17.5 feet below land surface
(2) - Geoprobe^{TM} sample collected from 13.5 feet below land surface
(3) - Geoprobe^{TM} sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample DesigNRtion: / Sample Date: / Sampled By: / Screen Interval:	TE-MW-B/C-2 10/20/00 PB/STV/PTG Deep	TE-MW-B/C-2 09/26/06 PB/STV/PTG Deep	TE-MW-B/C-4 08/16/00 PB/STV/PTG Deep	ΓE-MW-B/C-4/SY-154W 04/15/08 ESA Deep	TE-MW-D-1 10/19/00 PB/STV/PTG Deep
Benzene	1		ND	ND	ND	ND	ND
Toluene	5		ND	ND	.3J	ND	ND
Ethylbenzene	5		ND	ND	ND	NR	ND
Xylenes (total)	5		ND	ND	1J	ND	ND
Total BTEX:			0	0	1.3	0	0
1,1,1-Trichloroethane	5		ND	ND	ND	NR	ND
1,1,2,2-Tetrachloroethane	5		ND	ND	.4J	NR	ND
1,1,2-Trichloroethane	1		NR	ND	NR	ND	NR
1,1-Dichloroethane	5		ND	ND	ND	NR	ND
1,1-Dichloroethene	5		ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3		ND	ND	ND	NR	ND
1,2-Dichloroethane	0.6		NR	ND	NR	ND	NR
1,2-Dichloroethene (total)	5		NR	ND	NR	NR	NR
1,2-Dichloropropane	1		NR	ND	NR	NR	NR
1,3-Dichlorobenzene	3		NR	ND	NR	NR	NR
1,4-Dichlorobenzene	3		NR	ND	NR	NR	NR
2-Butanone	50		ND	ND	ND	NR	ND
2-Hexanone	50		NR	ND	NR	NR	NR
4-Methyl-2-Pentanone	--		NR	ND	NR	NR	NR
Acetone	50		ND	ND	ND	ND	ND
Bromodichloromethane	50		NR	ND	NR	NR	NR
Bromoform	50		NR	ND	NR	NR	NR
Bromomethane	5		NR	ND	NR	NR	NR
Carbon disulfide	5		NR	ND	NR	NR	NR
Carbon tetrachloride	5		NR	ND	NR	NR	NR
Chlorobenzene	5		ND	ND	ND	NR	ND
Chloroethane	5		NR	ND	NR	NR	NR
Chloroform	7		ND	ND	ND	ND	ND
Chloromethane	5		ND	ND	ND	NR	ND
cis-1,2-Dichloroethene	5		**17**	ND	.6J	ND	2J
cis-1,3-Dichloropropene	--		NR	ND	NR	NR	NR
Dibromochloromethane	50		NR	ND	NR	NR	NR
Methylene chloride	5		ND	ND	1J	NR	ND
Methyl tert-butyl ether	10		NA	NA	NA	ND	NA
Styrene	5		ND	ND	.5J	NR	ND

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample DesigNRtion: Sample Date: Sampled By: Screen Interval:	TE-MW-B/C-2 10/20/00 PB/STV/PTG Deep	TE-MW-B/C-2 09/26/06 PB/STV/PTG Deep	TE-MW-B/C-4 08/16/00 PB/STV/PTG Deep	ΓE-MW-B/C-4/SY-154W 04/15/08 ESA Deep	TE-MW-D-1 10/19/00 PB/STV/PTG Deep
Tetrachloroethene	5		**10**	ND	**49**	ND	**18**
trans-1,2-Dichloroethene	5		NR	ND	NR	ND	NR
trans-1,3-Dichloropropene	--		NR	ND	NR	NR	NR
Trichloroethene	5		3J	ND	2J	ND	**27**
Vinyl acetate	--		ND	ND	ND	NR	ND
Vinyl chloride	2		NR	ND	NR	ND	NR

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
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Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)		TE-MW-D-1	TE-MW-D-4	TE-MW-IB-1(SY-103)	TE-MW-IB-2	TE-MW-IB-2
		Sample DesigNRtion:	TE-MW-D-1	TE-MW-D-4	ΓE-MW-IB-1(SY-103)	TE-MW-IB-2	TE-MW-IB-2
		Sample Date:	06/18/08	08/16/00	10/19/00	10/19/00	06/16/08
		Sampled By:	ESA	PB/STV/PTG	PB/STV/PTG	PB/STV/PTG	ESA
		Screen Interval:	Deep	Deep	Deep	Deep	Deep
Benzene	1		ND	ND	ND	ND	ND
Toluene	5		ND	ND	ND	ND	ND
Ethylbenzene	5		NR	ND	ND	ND	NR
Xylenes (total)	5		ND	NR	ND	ND	ND
Total BTEX:			0	0	0	0	0
1,1,1-Trichloroethane	5		NR	ND	ND	ND	NR
1,1,2,2-Tetrachloroethane	5		NR	ND	ND	ND	NR
1,1,2-Trichloroethane	1		ND	NR	NR	NR	ND
1,1-Dichloroethane	5		NR	ND	ND	ND	NR
1,1-Dichloroethene	5		ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3		NR	ND	ND	ND	NR
1,2-Dichloroethane	0.6		ND	NR	NR	NR	ND
1,2-Dichloroethene (total)	5		NR	NR	NR	NR	NR
1,2-Dichloropropane	1		NR	NR	NR	NR	NR
1,3-Dichlorobenzene	3		NR	NR	NR	NR	NR
1,4-Dichlorobenzene	3		NR	NR	NR	NR	NR
2-Butanone	50		NR	ND	ND	2JB	NR
2-Hexanone	50		NR	NR	NR	NR	NR
4-Methyl-2-Pentanone	--		NR	NR	NR	NR	NR
Acetone	50		ND	ND	ND	3J	ND
Bromodichloromethane	50		NR	NR	NR	NR	NR
Bromoform	50		NR	NR	NR	NR	NR
Bromomethane	5		NR	NR	NR	NR	NR
Carbon disulfide	5		NR	NR	NR	NR	NR
Carbon tetrachloride	5		NR	NR	NR	NR	NR
Chlorobenzene	5		NR	ND	ND	ND	NR
Chloroethane	5		NR	NR	NR	NR	NR
Chloroform	7		ND	3J	ND	ND	ND
Chloromethane	5		NR	ND	ND	ND	NR
cis-1,2-Dichloroethene	5		ND	ND	4J	ND	ND
cis-1,3-Dichloropropene	--		NR	NR	NR	NR	NR
Dibromochloromethane	50		NR	NR	NR	NR	NR
Methylene chloride	5		NR	1J	ND	1JB	NR
Methyl tert-butyl ether	10		ND	NA	NA	NA	**660 D**
Styrene	5		NR	ND	ND	ND	NR

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	TE-MW-D-1 06/18/08 ESA Deep	TE-MW-D-4 08/16/00 PB/STV/PTG Deep	ΓE-MW-IB-1(SY-103) 10/19/00 PB/STV/PTG Deep	TE-MW-IB-2 10/19/00 PB/STV/PTG Deep	TE-MW-IB-2 06/16/08 ESA Deep
Tetrachloroethene	5		**12**	2J	**52**	2J	ND
trans-1,2-Dichloroethene	5		ND	NR	NR	NR	ND
trans-1,3-Dichloropropene	--		NR	NR	NR	NR	NR
Trichloroethene	5		3.4 J	ND	**54**	ND	ND
Vinyl acetate	--		NR	ND	ND	ND	NR
Vinyl chloride	2		ND	NR	NR	NR	ND

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
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Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	TE-MW-OB-1 10/19/00 PB/STV/PTG Deep	TE-MW-OB-1 06/18/08 ESA Deep	TE-MW-OB-1 06/04/08 Roux Deep	TE-MW-OB-2 10/20/00 PB/STV/PTG Deep	TE-MW-QA-2 10/31/00 PB/STV/PTG Deep
Benzene	1		ND	ND	0.5 U	ND	1J
Toluene	5		ND	ND	1 U	ND	.5J
Ethylbenzene	5		ND	NR	1 U	ND	ND
Xylenes (total)	5		ND	ND	2 U	ND	ND
Total BTEX:			0	0	0	0	1.5
1,1,1-Trichloroethane	5		ND	NR	1 U	ND	ND
1,1,2,2-Tetrachloroethane	5		ND	NR	1 U	ND	ND
1,1,2-Trichloroethane	1		NR	ND	1 U	NR	NR
1,1-Dichloroethane	5		ND	NR	1 U	ND	ND
1,1-Dichloroethene	5		ND	ND	1 U	ND	ND
1,2-Dichlorobenzene	3		ND	NR	1 U	ND	3J
1,2-Dichloroethane	0.6		NR	ND	0.5 U	NR	NR
1,2-Dichloroethene (total)	5		NR	NR	NR	NR	NR
1,2-Dichloropropane	1		NR	NR	1 U	NR	NR
1,3-Dichlorobenzene	3		NR	NR	1 U	NR	NR
1,4-Dichlorobenzene	3		NR	NR	1 U	NR	NR
2-Butanone	50		ND	NR	1 U	ND	7J
2-Hexanone	50		NR	NR	1 U	NR	NR
4-Methyl-2-Pentanone	--		NR	NR	1 U	NR	NR
Acetone	50		ND	ND	5 U	ND	9JB
Bromodichloromethane	50		NR	NR	1 U	NR	NR
Bromoform	50		NR	NR	1 U	NR	NR
Bromomethane	5		NR	NR	1 U	NR	NR
Carbon disulfide	5		NR	NR	1 U	NR	NR
Carbon tetrachloride	5		NR	NR	1 U	NR	NR
Chlorobenzene	5		ND	NR	1 U	ND	ND
Chloroethane	5		NR	NR	1 U	NR	NR
Chloroform	7		ND	ND	1 U	ND	4J
Chloromethane	5		ND	NR	1 U	ND	3J
cis-1,2-Dichloroethene	5		3J	ND	1 U	2J	**8**
cis-1,3-Dichloropropene	--		NR	NR	1 U	NR	NR
Dibromochloromethane	50		NR	NR	1 U	NR	NR
Methylene chloride	5		ND	NR	1 U	ND	2JB
Methyl tert-butyl ether	10		NA	**310 D**	NA	NA	NA
Styrene	5		ND	NR	1 U	ND	ND

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	TE-MW-OB-1 10/19/00 PB/STV/PTG Deep	TE-MW-OB-1 06/18/08 ESA Deep	TE-MW-OB-1 06/04/08 Roux Deep	TE-MW-OB-2 10/20/00 PB/STV/PTG Deep	TE-MW-QA-2 10/31/00 PB/STV/PTG Deep
Tetrachloroethene	5		**76**	**18**	**17**	**31**	**22**
trans-1,2-Dichloroethene	5		NR	ND	1 U	NR	NR
trans-1,3-Dichloropropene	--		NR	NR	1 U	NR	NR
Trichloroethene	5		**16**	5 J	4.3	9	**10**
Vinyl acetate	--		ND	NR	1 U	ND	.7J
Vinyl chloride	2		NR	ND	1 U	NR	NR

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
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µg/L - Micrograms per liter
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(3) - Geoprobe™ sample collected from 19.5 feet below land surface
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Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)		TE-MW-QA-2	TE-MW-QA-2	TP-10	TP-10	TP-8
		Sample DesigNRtion:	TE-MW-QA-2	TE-MW-QA-2	TP-10	TP-10	TP-8
		Sample Date:	04/08/08	06/05/08	06/19/97	06/03/08	06/19/97
		Sampled By:	ESA	Roux	Roux	Roux	Roux
		Screen Interval:	Deep	Deep	WT	WT	WT
Benzene	1		ND	0.5 U	5 U	0.5 U	5 U
Toluene	5		ND	4.7	0.6 JB	1 U	1 JB
Ethylbenzene	5		NR	1.1	5 U	1 U	5 U
Xylenes (total)	5		ND	5.5	5 U	2 U	5 U
Total BTEX:			0	11.3	0.6	0	1
1,1,1-Trichloroethane	5		NR	1 U	5 U	1 U	5 U
1,1,2,2-Tetrachloroethane	5		NR	1 U	5 U	1 U	5 U
1,1,2-Trichloroethane	1		ND	1 U	5 U	1 U	5 U
1,1-Dichloroethane	5		NR	1 U	5 U	1 U	5 U
1,1-Dichloroethene	5		ND	1 U	5 U	1 U	5 U
1,2-Dichlorobenzene	3		NR	1 U	5 U	1 U	5 U
1,2-Dichloroethane	0.6		ND	**3.7**	10 U	0.5 U	10 U
1,2-Dichloroethene (total)	5		NR	**NR**	5 U	NR	5 U
1,2-Dichloropropane	1		NR	1 U	5 U	1 U	5 U
1,3-Dichlorobenzene	3		NR	1 U	10 U	1 U	10 U
1,4-Dichlorobenzene	3		NR	1 U	10 U	1 U	10 U
2-Butanone	50		NR	1 U	10 U	1 U	10 U
2-Hexanone	50		NR	1 U	10 U	1 U	10 U
4-Methyl-2-Pentanone	--		NR	1 U	10 U	1 U	10 U
Acetone	50		ND	5 U	10 U	5 U	10 U
Bromodichloromethane	50		NR	1 U	5 U	1 U	5 U
Bromoform	50		NR	1 U	5 U	1 U	5 U
Bromomethane	5		NR	1 U	10 U	1 U	10 U
Carbon disulfide	5		NR	1 U	5 UJV	1 U	5 UJV
Carbon tetrachloride	5		NR	1 U	5 U	1 U	5 U
Chlorobenzene	5		NR	1 U	5 U	1 U	5 U
Chloroethane	5		NR	1 U	10 UJV	1 U	10 UJV
Chloroform	7		ND	1 U	5 U	1 U	5 U
Chloromethane	5		NR	1 U	10 U	1 U	10 U
cis-1,2-Dichloroethene	5		ND	1.6	NR	1 U	NR
cis-1,3-Dichloropropene	--		NR	1 U	5 U	1 U	5 U
Dibromochloromethane	50		NR	1 U	5 U	1 U	5 U
Methylene chloride	5		NR	1 U	5 U	1 U	5 U
Methyl tert-butyl ether	10		**110**	NA	NA	NA	NA
Styrene	5		NR	1 U	5 U	1 U	5 U

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)		TE-MW-QA-2	TE-MW-QA-2	TP-10	TP-10	TP-8
		Sample DesigNRtion:	TE-MW-QA-2	TE-MW-QA-2	TP-10	TP-10	TP-8
		Sample Date:	04/08/08	06/05/08	06/19/97	06/03/08	06/19/97
		Sampled By:	ESA	Roux	Roux	Roux	Roux
		Screen Interval:	Deep	Deep	WT	WT	WT
Tetrachloroethene	5		**27**	**85**	5 U	1 U	5 U
trans-1,2-Dichloroethene	5		ND	1 U	NR	1 U	NR
trans-1,3-Dichloropropene	--		NR	1 U	5 U	1 U	5 U
Trichloroethene	5		4.4	**28**	5 U	1 U	5 U
Vinyl acetate	--		NR	1 U	10 U	1 U	10 U
Vinyl chloride	2		ND	1 U	10 U	1 U	10 U

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	TP-9 06/19/97 Roux WT	TSB-10[(2)] 10/23/00 Roux	TSB-16[(3)] 10/24/00 Roux	TSB-9[(1)] 10/24/00 Roux	UT-11AW 06/25/08 ESA Deep
Benzene	1		5 U	10 U	10 U	10 U	ND
Toluene	5		0.8 JB	10 U	10 U	10 U	ND
Ethylbenzene	5		5 U	10 U	10 U	**5.4 J**	NR
Xylenes (total)	5		1 J	10 U	10 U	**14.6 J**	ND
Total BTEX:			1.8	0	0	20	0
1,1,1-Trichloroethane	5		5 U	10 U	10 U	10 U	NR
1,1,2,2-Tetrachloroethane	5		5 U	10 U	10 U	10 U	NR
1,1,2-Trichloroethane	1		5 U	10 U	10 U	10 U	ND
1,1-Dichloroethane	5		5 U	10 U	10 U	10 U	NR
1,1-Dichloroethene	5		5 U	10 U	10 U	10 U	ND
1,2-Dichlorobenzene	3		5 U	10 U	10 U	10 U	NR
1,2-Dichloroethane	0.6		10 U	10 U	10 U	10 U	ND
1,2-Dichloroethene (total)	5		5 U	NR	NR	NR	NR
1,2-Dichloropropane	1		5 U	10 U	10 U	10 U	NR
1,3-Dichlorobenzene	3		10 U	10 U	10 U	10 U	NR
1,4-Dichlorobenzene	3		10 U	10 U	10 U	10 U	NR
2-Butanone	50		10 U	10 U	10 U	10 U	NR
2-Hexanone	50		10 U	4.8 J	10 U	10 U	NR
4-Methyl-2-Pentanone	--		10 U	10 U	10 U	10 U	NR
Acetone	50		10 U	14	10 U	10 U	ND
Bromodichloromethane	50		5 U	10 U	10 U	10 U	NR
Bromoform	50		5 U	10 U	10 U	10 U	NR
Bromomethane	5		10 U	10 U	10 U	10 U	NR
Carbon disulfide	5		5 UJV	10 U	10 U	10 U	NR
Carbon tetrachloride	5		5 U	10 U	10 U	10 U	NR
Chlorobenzene	5		5 U	10 U	10 U	10 U	NR
Chloroethane	5		10 UJV	10 U	10 U	10 U	NR
Chloroform	7		5 U	10 U	10 U	10 U	ND
Chloromethane	5		10 U	10 U	10 U	10 U	NR
cis-1,2-Dichloroethene	5		NR	NR	NR	NR	ND
cis-1,3-Dichloropropene	--		5 U	10 U	10 U	10 U	NR
Dibromochloromethane	50		5 U	10 U	10 U	10 U	NR
Methylene chloride	5		5 U	10 U	10 U	10 U	NR
Methyl tert-butyl ether	10		NA	NA	NA	NA	ND
Styrene	5		5 U	10 U	10 U	10 U	NR

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample DesigNRtion: Sample Date: Sampled By: Screen Interval:	TP-9 06/19/97 Roux WT	TSB-10(2) 10/23/00 Roux	TSB-16(3) 10/24/00 Roux	TSB-9(1) 10/24/00 Roux	UT-11AW 06/25/08 ESA Deep
Tetrachloroethene	5		5 U	10 U	10 U	10 U	ND
trans-1,2-Dichloroethene	5		NR	NR	NR	NR	ND
trans-1,3-Dichloropropene	--		5 U	10 U	10 U	10 U	NR
Trichloroethene	5		5 U	10 U	10 U	10 U	ND
Vinyl acetate	--		10 U	10 U	10 U	10 U	NR
Vinyl chloride	2		10 U	10 U	10 U	10 U	ND

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
ND - Not detected; reporting limit not available
R(following Sample Designation) - Replicate sample
RE - Reanalysis
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
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WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	UT-1W 04/01/08 ESA Deep	UT-4W 04/01/08 ESA Deep	UT-5W 04/22/08 ESA Deep	UT-9AW 04/08/08 ESA Deep	UT-9AWRE 04/08/08 ESA Deep
Benzene	1		ND	**8.9**	ND	ND	ND
Toluene	5		ND	ND	ND	ND	ND
Ethylbenzene	5		NR	NR	NR	NR	NR
Xylenes (total)	5		ND	ND	ND	ND	ND
Total BTEX:			0	8.9	0	0	0
1,1,1-Trichloroethane	5		NR	NR	NR	NR	NR
1,1,2,2-Tetrachloroethane	5		NR	NR	NR	NR	NR
1,1,2-Trichloroethane	1		ND	ND	ND	ND	ND
1,1-Dichloroethane	5		NR	NR	NR	NR	NR
1,1-Dichloroethene	5		ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3		NR	NR	NR	NR	NR
1,2-Dichloroethane	0.6		ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	5		NR	NR	NR	NR	NR
1,2-Dichloropropane	1		NR	NR	NR	NR	NR
1,3-Dichlorobenzene	3		NR	NR	NR	NR	NR
1,4-Dichlorobenzene	3		NR	NR	NR	NR	NR
2-Butanone	50		NR	NR	NR	NR	NR
2-Hexanone	50		NR	NR	NR	NR	NR
4-Methyl-2-Pentanone	--		NR	NR	NR	NR	NR
Acetone	50		ND	ND	ND	ND	ND
Bromodichloromethane	50		NR	NR	NR	NR	NR
Bromoform	50		NR	NR	NR	NR	NR
Bromomethane	5		NR	NR	NR	NR	NR
Carbon disulfide	5		NR	NR	NR	NR	NR
Carbon tetrachloride	5		NR	NR	NR	NR	NR
Chlorobenzene	5		NR	NR	NR	NR	NR
Chloroethane	5		NR	NR	NR	NR	NR
Chloroform	7		ND	ND	ND	ND	ND
Chloromethane	5		NR	NR	NR	NR	NR
cis-1,2-Dichloroethene	5		ND	ND	ND	**5.4**	**5.4**
cis-1,3-Dichloropropene	--		NR	NR	NR	NR	NR
Dibromochloromethane	50		NR	NR	NR	NR	NR
Methylene chloride	5		NR	NR	NR	NR	NR
Methyl tert-butyl ether	10		ND	3.1 J	ND	**130**	**130**
Styrene	5		NR	NR	NR	NR	NR

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	UT-1W 04/01/08 ESA Deep	UT-4W 04/01/08 ESA Deep	UT-5W 04/22/08 ESA Deep	UT-9AW 04/08/08 ESA Deep	UT-9AWRE 04/08/08 ESA Deep
Tetrachloroethene	5		ND	ND	ND	**21**	**96**
trans-1,2-Dichloroethene	5		ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	--		NR	NR	NR	NR	NR
Trichloroethene	5		ND	ND	**14**	**9**	**22**
Vinyl acetate	--		NR	NR	NR	NR	NR
Vinyl chloride	2		ND	ND	ND	ND	ND

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
NA - Not analyzed
NR - Not reported
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Deep - Monitoring wells with screen zones located entirley beneath the water

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	UT-9AW 06/04/08 Roux Deep
Benzene	1		0.5 U
Toluene	5		1.4
Ethylbenzene	5		1 U
Xylenes (total)	5		2.4
Total BTEX:			3.8
1,1,1-Trichloroethane	5		1 U
1,1,2,2-Tetrachloroethane	5		1 U
1,1,2-Trichloroethane	1		1 U
1,1-Dichloroethane	5		1 U
1,1-Dichloroethene	5		1 U
1,2-Dichlorobenzene	3		1 U
1,2-Dichloroethane	0.6		0.5 U
1,2-Dichloroethene (total)	5		NR
1,2-Dichloropropane	1		1 U
1,3-Dichlorobenzene	3		1 U
1,4-Dichlorobenzene	3		1 U
2-Butanone	50		1 U
2-Hexanone	50		1 U
4-Methyl-2-Pentanone	--		1 U
Acetone	50		5 U
Bromodichloromethane	50		1 U
Bromoform	50		1 U
Bromomethane	5		1 U
Carbon disulfide	5		1 U
Carbon tetrachloride	5		1 U
Chlorobenzene	5		1 U
Chloroethane	5		1 U
Chloroform	7		1 U
Chloromethane	5		1 U
cis-1,2-Dichloroethene	5		1 U
cis-1,3-Dichloropropene	--		1 U
Dibromochloromethane	50		1 U
Methylene chloride	5		1 U
Methyl tert-butyl ether	10		NA
Styrene	5		1 U

Table 5. Summary of Volatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample DesigNRtion:** **Sample Date:** **Sampled By:** **Screen Interval:**	UT-9AW 06/04/08 Roux Deep
Tetrachloroethene	5		**39**
trans-1,2-Dichloroethene	5		1 U
trans-1,3-Dichloropropene	--		1 U
Trichloroethene	5		**7**
Vinyl acetate	--		1 U
Vinyl chloride	2		1 U

Notes:
B - Compound was detected in blank sample
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
D - Dilution
DUP - Duplicate
J - Estimated value
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(1) - Geoprobe™ sample collected from 17.5 feet below land surface
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(3) - Geoprobe™ sample collected from 19.5 feet below land surface
WT - Monitoring wells with screen zones that bridge the water table
Deep - Monitoring wells with screen zones located entirley beneath the water

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:**	CV-2W	MW-9D	MW-9S	MW-13D	MW-13D DUP	MW-13S	MW-19	MW-19	MW-19	MW-19	MW-19	MW-19
		Sample Date:	11/16/06	06/03/08	06/03/08	06/03/08	06/03/08	06/02/08	02/06/97	02/21/97	03/27/97	06/18/97	11/14/97	04/09/98
1,2,4-Trichlorobenzene	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
2,2-oxybis (1-chloropropane)	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
2,4,5-Trichlorophenol	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	50 U	NA	50 U	NA	NA
2,4,6-Trichlorophenol	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	10 U	NA	10 U	NA	NA
2,4-Dichlorophenol	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	10 U	NA	10 U	NA	NA
2,4-Dimethylphenol	50		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	10 U	NA	10 U	NA	NA
2,4-Dinitrophenol	10		NA	11 U	11 U	11 U	11 U	11 U	NA	50 U	NA	50 U	NA	NA
2,4-Dinitrotoluene	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
2,6-Dinitrotoluene	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
2-Chloronaphthalene	10		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
2-Chlorophenol	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	10 U	NA	10 U	NA	NA
2-Methylnaphthalene	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	NA
2-Methylphenol	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	10 U	NA	10 U	NA	NA
2-Nitroaniline	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	50 U	50 U	59 U	50 U	50 U	NA
2-Nitrophenol	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	10 U	NA	10 U	NA	NA
3,3-Dichlorobenzidine	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	20 U	20 U	24 U	20 U	20 U	5 U
3-Nitroaniline	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	50 U	50 U	59 U	50 U	50 U	NA
4,6-Dinitro-2-methylphenol	--		NA	11 U	11 U	11 U	11 U	11 U	NA	50 U	NA	50 U	NA	NA
4-Bromophenyl phenyl ether	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
4-Chloro-3-methylphenol	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	10 U	NA	10 U	NA	NA
4-Chloroaniline	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	NA
4-Chlorophenyl phenyl ether	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
4-Methylphenol	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	0.4 J	NA	0.6 J	NA	NA
4-Nitroaniline	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	20 U	20 U	24 U	20 U	20 U	NA
4-Nitrophenol	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	50 U	NA	50 U	NA	NA
Acenaphthene	20		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	0.2 J	0.7 J	2 J	10 U	5 U
Acenaphthylene	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Anthracene	50		ND	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	0.4 J	10 U	10 U	5 U
Benzo(a)anthracene	0.002		ND	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Benzo(a)pyrene	ND		ND	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Benzo(b)fluoranthene	0.002		ND	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Benzo(g,h,i)perylene	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Benzo(k)fluoranthene	0.002		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Benzoic acid	--		NA	11 U	11 U	11 U	11 U	11 U	NA	50 U	NA	50 URV	NA	NA
Benzyl alcohol	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	NA
Bis(2-chloroethoxy)methane	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Bis(2-chloroethyl)ether	1		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Bis(2-ethylhexyl)phthalate	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	0.4 JB	12 U	10 U	10 U	5 U
Butylbenzylphthalate	50		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Carbazole	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	10 U	NA	10 U	NA	NA
Chrysene	0.002		ND	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	CV-2W 11/16/06	MW-9D 06/03/08	MW-9S 06/03/08	MW-13D 06/03/08	MW-13D DUP 06/03/08	MW-13S 06/02/08	MW-19 02/06/97	MW-19 02/21/97	MW-19 03/27/97	MW-19 06/18/97	MW-19 11/14/97	MW-19 04/09/98
Di-n-butyl phthalate	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 UV	10 U	5 U
Di-n-octyl phthalate	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Dibenzo(a h)anthracene	50		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Dibenzofuran	50		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	1 J	10 U	NA
Diethyl phthalate	50		ND	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	0.3 JB	12 U	10 U	0.6 J	5 U
Dimethyl phthalate	50		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Fluoranthene	50		ND	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Fluorene	50		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	0.4 J	2 J	10 U	10 U	5 U
Hexachlorobenzene	0.04		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Hexachlorobutadiene	0.5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Hexachlorocyclopentadiene	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 UJV	10 U	5 U
Hexachloroethane	5		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Indeno(1,2,3-cd)pyrene	0.002		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Isophorone	50		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
n-Nitroso-di-n-propylamine	--		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	NA	NA	5 U
n-Nitrosodiphenylamine	50		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	NA
Naphthalene	10		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Nitrobenzene	0.4		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Pentachlorophenol	1		NA	11 U	11 U	11 U	11 U	11 U	NA	50 U	NA	50 U	NA	NA
Phenanthrene	50		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	0.5 J	0.6 J	10 U	5 U
Phenol	1		NA	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	NA	10 U	NA	10 U	NA	NA
Pyrene	50		ND	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U	10 U	10 U	12 U	10 U	10 U	5 U
Total SVOCs:			0	0	0	0	0	0	0	1.7	3.6	4.2	0.6	0

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
* - Data analyzed but detection limit unknown
(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: Sample Date:	MW-19 04/15/03	MW-19 04/22/03	MW-19 04/30/03	MW-19 05/14/03	MW-19 08/25/03	MW-19 06/02/08	MW-19(1) 09/18/97	MW-19(1) 08/13/98	MW-19(1) 02/25/99	MW-19(1) 06/03/99	MW-19(1) 09/09/99
1,2,4-Trichlorobenzene	5		1 U	1 U	1 U	0.4 U	0.4 U	1.1 U	*	*	*	*	*
2,2-oxybis (1-chloropropane)	5		1 U	1 U	1 U	0.6 U	0.6 U	1.1 U	*	*	*	*	*
2,4,5-Trichlorophenol	--		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
2,4,6-Trichlorophenol	--		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
2,4-Dichlorophenol	5		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
2,4-Dimethylphenol	50		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
2,4-Dinitrophenol	10		NA	NA	NA	NA	NA	5.7 U	*	*	*	*	*
2,4-Dinitrotoluene	5		1 U	1 U	1 U	0.6 U	0.6 U	1.1 U	*	*	*	*	*
2,6-Dinitrotoluene	5		1 U	1 U	1 U	0.4 U	0.4 U	1.1 U	*	*	*	*	*
2-Chloronaphthalene	10		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
2-Chlorophenol	--		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
2-Methylnaphthalene	--		1 U	1 U	1 U	0.7 U	0.7 U	1.1 U	2 J	ND	ND	ND	ND
2-Methylphenol	--		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
2-Nitroaniline	5		1 U	1 U	1 U	0.6 U	0.6 U	1.1 U	*	*	*	*	*
2-Nitrophenol	--		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
3,3-Dichlorobenzidine	5		10 U	10 U	10 U	0.3 U	0.3 U	1.1 U	*	*	*	*	*
3-Nitroaniline	5		1 U	1 U	1 U	0.8 U	0.8 U	1.1 U	*	*	*	*	*
4,6-Dinitro-2-methylphenol	--		NA	NA	NA	NA	NA	5.7 U	*	*	*	*	*
4-Bromophenyl phenyl ether	--		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
4-Chloro-3-methylphenol	--		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
4-Chloroaniline	5		1 U	1 U	1 U	NA	0.3 U	1.1 U	*	*	*	*	*
4-Chlorophenyl phenyl ether	--		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
4-Methylphenol	--		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
4-Nitroaniline	5		1 U	1 U	1 U	0.7 U	0.7 U	1.1 U	*	*	*	*	*
4-Nitrophenol	--		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
Acenaphthene	20		1 U	1 U	1 U	0.6 U	0.6 U	1.1 U	ND	ND	ND	ND	ND
Acenaphthylene	--		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
Anthracene	50		1 U	1 U	1 U	0.6 U	0.6 U	1.1 U	ND	ND	*	*	*
Benzo(a)anthracene	0.002		1 U	1 U	1 U	0.3 U	0.3 U	1.1 U	*	*	*	*	*
Benzo(a)pyrene	ND		1 U	1 U	1 U	0.7 U	0.7 U	1.1 U	*	*	*	*	*
Benzo(b)fluoranthene	0.002		1 U	1 U	1 U	1.3 U	1.3 U	1.1 U	*	*	*	*	*
Benzo(g,h,i)perylene	--		1 U	1 U	1 U	1 U	1 U	1.1 U	*	*	*	*	*
Benzo(k)fluoranthene	0.002		1 U	1 U	1 U	0.1 U	0.2 U	1.1 U	*	*	*	*	*
Benzoic acid	--		NA	NA	NA	NA	NA	5.7 U	*	*	*	*	*
Benzyl alcohol	--		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
Bis(2-chloroethoxy)methane	5		1 U	1 U	1 U	0.6 U	0.6 U	1.1 U	*	*	*	*	*
Bis(2-chloroethyl)ether	1		1 U	1 U	1 U	0.3 U	0.3 U	1.1 U	*	*	*	*	*
Bis(2-ethylhexyl)phthalate	5		1 U	**6 B**	1 U	**7.3 J**	3.8 J	1.1 U	*	*	*	ND	*
Butylbenzylphthalate	50		1 U	1 U	1 U	0.3 U	0.3 U	1.1 U	*	*	*	*	*
Carbazole	--		1 U	1 U	1 U	0.4 U	0.4 U	1.1 U	*	*	*	*	*
Chrysene	0.002		1 U	1 U	1 U	0.6 U	0.6 U	1.1 U	*	*	*	*	*

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: Sample Date:	MW-19 04/15/03	MW-19 04/22/03	MW-19 04/30/03	MW-19 05/14/03	MW-19 08/25/03	MW-19 06/02/08	MW-19(1) 09/18/97	MW-19(1) 08/13/98	MW-19(1) 02/25/99	MW-19(1) 06/03/99	MW-19(1) 09/09/99
Di-n-butyl phthalate	--		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
Di-n-octyl phthalate	--		1 U	1 U	1 U	0.3 U	0.3 U	1.1 U	*	*	ND	*	*
Dibenzo(a h)anthracene	50		1 U	1 U	1 U	0.8 U	0.8 U	1.1 U	*	*	*	*	*
Dibenzofuran	50		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	ND	ND	*	ND	*
Diethyl phthalate	50		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
Dimethyl phthalate	50		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
Fluoranthene	50		1 U	1 U	1 U	0.7 U	0.7 U	1.1 U	*	*	*	*	*
Fluorene	50		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	2 J	ND	ND	ND	ND
Hexachlorobenzene	0.04		1 U	1 U	1 U	0.7 U	0.7 U	1.1 U	*	*	*	*	*
Hexachlorobutadiene	0.5		1 U	1 U	1 U	0.3 U	0.3 U	1.1 U	*	*	*	*	*
Hexachlorocyclopentadiene	5		10 U	10 U	10 U	0.1 U	0.1 U	5.7 U	*	*	*	*	*
Hexachloroethane	5		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
Indeno(1,2,3-cd)pyrene	0.002		1 U	1 U	1 U	0.6 U	0.6 U	1.1 U	*	*	*	*	*
Isophorone	50		1 U	1 U	1 U	0.6 U	0.6 U	1.1 U	*	*	*	*	*
n-Nitroso-di-n-propylamine	--		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
n-Nitrosodiphenylamine	50		1 U	1 U	1 U	0.4 U	0.4 U	1.1 U	*	*	*	*	*
Naphthalene	10		1 U	1 U	1 U	0.3 U	0.3 U	1.1 U	*	*	*	*	*
Nitrobenzene	0.4		1 U	1 U	1 U	0.5 U	0.5 U	1.1 U	*	*	*	*	*
Pentachlorophenol	1		NA	NA	NA	NA	NA	5.7 U	*	*	*	*	*
Phenanthrene	50		1 U	1 U	1 U	0.7 U	0.7 U	1.1 U	ND	ND	*	*	ND
Phenol	1		NA	NA	NA	NA	NA	1.1 U	*	*	*	*	*
Pyrene	50		1 U	1 U	1 U	0.4 U	0.4 U	1.1 U	*	*	*	*	*
Total SVOCs:			0	6	0	7.3	3.8	0	4	0	0	0	0

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
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ND - Not detected; reporting limit not available
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Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: / Sample Date:	MW-23D 06/20/97	MW-25A 06/19/97	MW-27 06/18/97	MW-27 06/04/08	MW-27 DUP 06/04/08	MW-28 06/18/97	MW-28 08/25/00	MW-29 06/18/97	MW-30 06/18/97	MW-34 06/18/97	MW-34 08/25/00
1,2,4-Trichlorobenzene	5		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2,2-oxybis (1-chloropropane)	5		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2,4,5-Trichlorophenol	--		50 U	50 U	50 U	2.2 U	2.2 U	50 U	NA	50 U	50 U	50 U	NA
2,4,6-Trichlorophenol	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2,4-Dichlorophenol	5		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2,4-Dimethylphenol	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2,4-Dinitrophenol	10		50 U	50 U	50 U	11 U	11 U	50 U	NA	50 U	50 U	50 U	NA
2,4-Dinitrotoluene	5		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2,6-Dinitrotoluene	5		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2-Chloronaphthalene	10		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2-Chlorophenol	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2-Methylnaphthalene	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2-Methylphenol	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
2-Nitroaniline	5		50 U	50 U	50 U	2.2 U	2.2 U	50 U	NA	50 U	50 U	50 U	NA
2-Nitrophenol	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
3,3-Dichlorobenzidine	5		20 U	20 UJV	20 U	2.2 U	2.2 U	20 U	NA	20 U	20 U	20 U	NA
3-Nitroaniline	5		50 U	50 UJV	50 U	2.2 U	2.2 U	50 U	NA	50 U	50 U	50 U	NA
4,6-Dinitro-2-methylphenol	--		50 U	50 U	50 U	11 U	11 U	50 U	NA	50 U	50 U	50 U	NA
4-Bromophenyl phenyl ether	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
4-Chloro-3-methylphenol	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
4-Chloroaniline	5		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
4-Chlorophenyl phenyl ether	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
4-Methylphenol	--		10 U	10 U	0.8 J	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
4-Nitroaniline	5		20 U	20 U	20 U	2.2 U	2.2 U	20 U	NA	20 U	20 U	20 U	NA
4-Nitrophenol	--		50 U	50 U	50 U	2.2 U	2.2 U	50 U	NA	50 U	50 U	50 U	NA
Acenaphthene	20		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	0.8 J	10 U	10 U	NA
Acenaphthylene	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Anthracene	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Benzo(a)anthracene	0.002		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Benzo(a)pyrene	ND		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Benzo(b)fluoranthene	0.002		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Benzo(g,h,i)perylene	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Benzo(k)fluoranthene	0.002		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Benzoic acid	--		50 URV	50 URV	50 URV	2.2 U	2.2 U	50 URV	NA	50 URV	50 URV	50 URV	NA
Benzyl alcohol	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Bis(2-chloroethoxy)methane	5		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Bis(2-chloroethyl)ether	1		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Bis(2-ethylhexyl)phthalate	5		10 U	10 U	10 UV	2.2 U	2.2 U	10 UV	0.7J	10 U	10 U	10 U	2J
Butylbenzylphthalate	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Carbazole	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Chrysene	0.002		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND

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Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: Sample Date:	MW-23D 06/20/97	MW-25A 06/19/97	MW-27 06/18/97	MW-27 06/04/08	MW-27 DUP 06/04/08	MW-28 06/18/97	MW-28 08/25/00	MW-29 06/18/97	MW-30 06/18/97	MW-34 06/18/97	MW-34 08/25/00
Di-n-butyl phthalate	--		10 UV	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 UV	10 U	NA
Di-n-octyl phthalate	--		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Dibenzo(a h)anthracene	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	.1J	10 U	10 U	10 U	.2J
Dibenzofuran	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Diethyl phthalate	50		10 UV	10 U	10 UV	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Dimethyl phthalate	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Fluoranthene	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Fluorene	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Hexachlorobenzene	0.04		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Hexachlorobutadiene	0.5		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Hexachlorocyclopentadiene	5		10 UJV	10 UJV	10 UJV	11 U	11 U	10 UJV	NA	10 UJV	10 UJV	10 UJV	NA
Hexachloroethane	5		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Indeno(1,2,3-cd)pyrene	0.002		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Isophorone	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
n-Nitroso-di-n-propylamine	--		NA	NA	NA	2.2 U	2.2 U	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Naphthalene	10		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Nitrobenzene	0.4		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Pentachlorophenol	1		50 U	50 U	50 U	11 U	11 U	50 U	ND	50 U	50 U	50 U	ND
Phenanthrene	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Phenol	1		10 U	10 U	10 U	2.2 U	2.2 U	10 U	NA	10 U	10 U	10 U	NA
Pyrene	50		10 U	10 U	10 U	2.2 U	2.2 U	10 U	ND	10 U	10 U	10 U	ND
Total SVOCs:			0	0	0.8	0	0	0	0.8	0.8	0	0	2.2

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
* - Data analyzed but detection limit unknown
(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-35 02/21/97	MW-35 06/18/97	MW-35 04/15/03	MW-35 04/22/03	MW-35 08/25/03	MW-35 06/02/08	MW-35(1) 09/18/97	MW-35(1) 08/13/98	MW-35(1) 02/25/99	MW-35(1) 06/03/99	MW-35(1) 09/09/99
1,2,4-Trichlorobenzene	5		10 U	10 U	1 U	1 U	0.4 U	2.2 U	*	*	*	*	*
2,2-oxybis (1-chloropropane)	5		10 U	10 U	1 U	1 U	0.6 U	2.2 U	*	*	*	*	*
2,4,5-Trichlorophenol	--		50 U	50 U	NA	NA	NA	2.2 U	*	*	*	*	*
2,4,6-Trichlorophenol	--		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
2,4-Dichlorophenol	5		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
2,4-Dimethylphenol	50		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
2,4-Dinitrophenol	10		50 U	50 U	NA	NA	NA	11 U	*	*	*	*	*
2,4-Dinitrotoluene	5		10 U	10 U	1 U	1 U	0.6 U	2.2 U	*	*	*	*	*
2,6-Dinitrotoluene	5		10 U	10 U	1 U	1 U	0.4 U	2.2 U	*	*	*	*	*
2-Chloronaphthalene	10		10 U	10 U	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
2-Chlorophenol	--		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
2-Methylnaphthalene	--		7 J	20	1	2	17	6.1	33	ND	3 J	4 J	ND
2-Methylphenol	--		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
2-Nitroaniline	5		50 U	50 U	1 U	1 U	0.6 U	2.2 U	*	*	*	*	*
2-Nitrophenol	--		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
3,3-Dichlorobenzidine	5		20 U	20 U	10 U	10 U	0.3 U	2.2 U	*	*	*	*	*
3-Nitroaniline	5		50 U	50 U	1 U	1 U	0.8 U	2.2 U	*	*	*	*	*
4,6-Dinitro-2-methylphenol	--		50 U	50 U	NA	NA	NA	11 U	*	*	*	*	*
4-Bromophenyl phenyl ether	--		10 U	10 U	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
4-Chloro-3-methylphenol	--		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
4-Chloroaniline	5		10 U	10 U	1 U	1 U	0.3 U	2.2 U	*	*	*	*	*
4-Chlorophenyl phenyl ether	--		10 U	10 U	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
4-Methylphenol	--		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
4-Nitroaniline	5		20 U	20 U	1 U	1 U	0.7 U	2.2 U	*	*	*	*	*
4-Nitrophenol	--		50 U	50 U	NA	NA	NA	2.2 U	*	*	*	*	*
Acenaphthene	20		3 J	5 J	1 U	1	2.3 J	2.9	4 J	6 J	2 J	2 J	2 J
Acenaphthylene	--		10 U	10 U	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
Anthracene	50		0.8 J	10 U	1 U	1 U	0.6 U	2.2 U	1 J	2 J	*	*	*
Benzo(a)anthracene	0.002		10 U	10 U	1 U	1 U	0.3 U	2.2 U	*	*	*	*	*
Benzo(a)pyrene	ND		10 U	10 U	1 U	1 U	0.7 U	2.2 U	*	*	*	*	*
Benzo(b)fluoranthene	0.002		10 U	10 U	1 U	1 U	1.3 U	2.2 U	*	*	*	*	*
Benzo(g,h,i)perylene	--		10 U	10 U	1 U	1 U	1 U	2.2 U	*	*	*	*	*
Benzo(k)fluoranthene	0.002		10 U	10 U	1 U	1 U	0.1 U	2.2 U	*	*	*	*	*
Benzoic acid	--		50 U	50 URV	NA	NA	NA	11 U	*	*	*	*	*
Benzyl alcohol	--		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
Bis(2-chloroethoxy)methane	5		10 U	10 U	1 U	1 U	0.6 U	2.2 U	*	*	*	*	*
Bis(2-chloroethyl)ether	1		10 U	10 U	1 U	1 U	0.3 U	2.2 U	*	*	*	*	*
Bis(2-ethylhexyl)phthalate	5		0.2 JB	10 U	1 U	1 U	3.6 J	2.2 U	*	*	*	ND	*
Butylbenzylphthalate	50		10 U	10 U	1 U	1 U	0.3 U	2.2 U	*	*	*	*	*
Carbazole	--		10 U	10 U	1 U	1 U	0.4 U	2.2 U	*	*	*	*	*
Chrysene	0.002		10 U	10 U	1 U	1 U	0.6 U	2.2 U	*	*	*	*	*

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: Sample Date:	MW-35 02/21/97	MW-35 06/18/97	MW-35 04/15/03	MW-35 04/22/03	MW-35 08/25/03	MW-35 06/02/08	MW-35(1) 09/18/97	MW-35(1) 08/13/98	MW-35(1) 02/25/99	MW-35(1) 06/03/99	MW-35(1) 09/09/99
Di-n-butyl phthalate	--		10 U	10 U	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
Di-n-octyl phthalate	--		10 U	10 U	1 U	1 U	0.3 U	2.2 U	*	*	ND	*	*
Dibenzo(a h)anthracene	50		10 U	10 U	1 U	1 U	0.8 U	2.2 U	*	*	*	*	*
Dibenzofuran	50		2 J	3 J	1 U	1 U	0.5 U	2.2 U	3 J	ND	*	1 J	*
Diethyl phthalate	50		10 U	10 U	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
Dimethyl phthalate	50		10 U	10 U	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
Fluoranthene	50		0.2 J	10 U	1 U	1 U	0.7 U	2.2 U	*	*	*	*	*
Fluorene	50		4 J	10 U	1 U	1 U	2.1 J	2.2	6 J	9 J	2 J	3 J	4 J
Hexachlorobenzene	0.04		10 U	10 U	1 U	**1**	0.7 U	2.2 U	*	*	*	*	*
Hexachlorobutadiene	0.5		10 U	10 U	1 U	1 U	0.3 U	2.2 U	*	*	*	*	*
Hexachlorocyclopentadiene	5		10 U	10 UJV	10 U	10 U	0.1 U	11 U	*	*	*	*	*
Hexachloroethane	5		10 U	10 U	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
Indeno(1,2,3-cd)pyrene	0.002		10 U	10 U	1 U	1 U	0.6 U	2.2 U	*	*	*	*	*
Isophorone	50		10 U	10 U	1 U	1 U	0.6 U	2.2 U	*	*	*	*	*
n-Nitroso-di-n-propylamine	--		10 U	NA	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
n-Nitrosodiphenylamine	50		10 U	10 U	1 U	1 U	0.4 U	2.2 U	*	*	*	*	*
Naphthalene	10		10 U	10 U	1 U	1 U	0.3 U	2.2 U	*	*	*	*	*
Nitrobenzene	0.4		10 U	10 U	1 U	1 U	0.5 U	2.2 U	*	*	*	*	*
Pentachlorophenol	1		50 U	50 U	NA	NA	NA	11 U	*	*	*	*	*
Phenanthrene	50		1 J	3 J	1 U	1 U	0.7 U	2.2 U	3 J	4 J	*	*	1 J
Phenol	1		10 U	10 U	NA	NA	NA	2.2 U	*	*	*	*	*
Pyrene	50		0.2 J	10 U	1 U	1 U	0.4 U	2.2 U	*	*	*	*	*
Total SVOCs:			18.4	31	1	4	25	11.2	50	21	7	10	7

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
* - Data analyzed but detection limit unknown
(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-37 06/18/97	MW-37 06/02/08	MW-38D 06/18/97	MW-38D 06/02/08	MW-39D 06/02/08	MW-40D 06/18/97	MW-41 06/18/97	MW-42 06/18/97	MW-42 08/25/00	MW-43 06/18/97	MW-44D 06/18/97
1,2,4-Trichlorobenzene	5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2,2-oxybis (1-chloropropane)	5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2,4,5-Trichlorophenol	--		50 U	2.1 U	50 U	2.1 U	2.2 U	50 U	50 U	50 U	NA	50 U	50 U
2,4,6-Trichlorophenol	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2,4-Dichlorophenol	5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2,4-Dimethylphenol	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2,4-Dinitrophenol	10		50 U	11 U	50 U	11 U	11 U	50 U	50 U	50 U	NA	50 U	50 U
2,4-Dinitrotoluene	5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2,6-Dinitrotoluene	5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2-Chloronaphthalene	10		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2-Chlorophenol	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2-Methylnaphthalene	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2-Methylphenol	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
2-Nitroaniline	5		50 U	2.1 U	50 U	2.1 U	2.2 U	50 U	50 U	50 U	NA	50 U	50 U
2-Nitrophenol	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
3,3-Dichlorobenzidine	5		20 U	2.1 U	20 U	2.1 U	2.2 U	20 U	20 U	20 U	NA	20 U	20 U
3-Nitroaniline	5		50 U	2.1 U	50 U	2.1 U	2.2 U	50 U	50 U	50 U	NA	50 U	50 U
4,6-Dinitro-2-methylphenol	--		50 U	11 U	50 U	11 U	11 U	50 U	50 U	50 U	NA	50 U	50 U
4-Bromophenyl phenyl ether	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
4-Chloro-3-methylphenol	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
4-Chloroaniline	5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
4-Chlorophenyl phenyl ether	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
4-Methylphenol	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
4-Nitroaniline	5		20 U	2.1 U	20 U	2.1 U	2.2 U	20 U	20 U	20 U	NA	20 U	20 U
4-Nitrophenol	--		50 U	2.1 U	50 U	2.1 U	2.2 U	50 U	50 U	50 U	NA	50 U	50 U
Acenaphthene	20		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	0.5 J	10 U	NA	10 U	10 U
Acenaphthylene	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U
Anthracene	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U
Benzo(a)anthracene	0.002		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U
Benzo(a)pyrene	ND		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Benzo(b)fluoranthene	0.002		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U
Benzo(g,h,i)perylene	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U
Benzo(k)fluoranthene	0.002		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U
Benzoic acid	--		50 URV	11 U	50 URV	11 U	11 U	50 URV	50 URV	50 URV	NA	50 URV	50 URV
Benzyl alcohol	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Bis(2-chloroethoxy)methane	5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Bis(2-chloroethyl)ether	1		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Bis(2-ethylhexyl)phthalate	5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 UV	1J	10 U	10 U
Butylbenzylphthalate	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Carbazole	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Chrysene	0.002		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-37 06/18/97	MW-37 06/02/08	MW-38D 06/18/97	MW-38D 06/02/08	MW-39D 06/02/08	MW-40D 06/18/97	MW-41 06/18/97	MW-42 06/18/97	MW-42 08/25/00	MW-43 06/18/97	MW-44D 06/18/97
Di-n-butyl phthalate	--		10 UV	2.1 U	10 UV	2.1 U	2.2 U	10 UV	10 UV	10 UV	NA	10 UV	10 UV
Di-n-octyl phthalate	--		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U
Dibenzo(a h)anthracene	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	.3J	10 U	10 U
Dibenzofuran	50		0.4 J	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Diethyl phthalate	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 UV	10 U	10 UV	NA	10 U	10 U
Dimethyl phthalate	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Fluoranthene	50		0.4 J	2.1 U	10 U	2.1 U	2.2 U	10 U	0.3 J	10 U	NA	10 U	10 U
Fluorene	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U
Hexachlorobenzene	0.04		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Hexachlorobutadiene	0.5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Hexachlorocyclopentadiene	5		10 UJV	11 U	10 UJV	11 U	11 U	10 UJV	10 UJV	10 UJV	NA	10 UJV	10 UJV
Hexachloroethane	5		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Indeno(1,2,3-cd)pyrene	0.002		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Isophorone	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
n-Nitroso-di-n-propylamine	--		NA	2.1 U	NA	2.1 U	2.2 U	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Naphthalene	10		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Nitrobenzene	0.4		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Pentachlorophenol	1		50 U	11 U	50 U	11 U	11 U	50 U	50 U	50 U	ND	50 U	50 U
Phenanthrene	50		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	ND	10 U	10 U
Phenol	1		10 U	2.1 U	10 U	2.1 U	2.2 U	10 U	10 U	10 U	NA	10 U	10 U
Pyrene	50		0.2 J	2.1 U	10 U	2.1 U	2.2 U	10 U	0.6 J	10 U	ND	10 U	10 U
Total SVOCs:			1	0	0	0	0	0	1.4	0	1.3	0	0

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
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ND - Not detected; reporting limit not available
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(1) - Sampled and analyzed by New York City Transit
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(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: / Sample Date:	MW-45 06/18/97	MW-45 08/25/00	MW-45 06/04/08	MW-46 06/18/97	MW-47 06/20/97	MW-48D 06/20/97	MW-48D 06/03/08	MW-49 06/18/97	MW-57 06/18/97	MW-59 06/18/97	MW-61 06/18/97
1,2,4-Trichlorobenzene	5		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2,2-oxybis (1-chloropropane)	5		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	--		50 U	NA	2.2 U	50 U	50 U	50 U	1.3 U	50 U	50 U	50 U	50 U
2,4,6-Trichlorophenol	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	5		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	50		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	10		50 U	NA	11 U	50 U	50 U	50 U	6.7 U	50 U	50 U	50 U	50 U
2,4-Dinitrotoluene	5		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	5		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2-Chlorophenol	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2-Methylphenol	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
2-Nitroaniline	5		50 U	NA	2.2 U	50 U	50 U	50 U	1.3 U	50 U	50 U	50 U	50 U
2-Nitrophenol	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
3,3-Dichlorobenzidine	5		20 U	NA	2.2 U	20 U	20 U	20 U	1.3 U	20 U	20 U	20 U	20 U
3-Nitroaniline	5		50 U	NA	2.2 U	50 U	50 U	50 U	1.3 U	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	--		50 U	NA	11 U	50 U	50 U	50 U	6.7 U	50 U	50 U	50 U	50 U
4-Bromophenyl phenyl ether	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
4-Chloroaniline	5		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
4-Methylphenol	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	0.7 J	10 U
4-Nitroaniline	5		20 U	NA	2.2 U	20 U	20 U	20 U	1.3 U	20 U	20 U	20 U	20 U
4-Nitrophenol	--		50 U	NA	2.2 U	50 U	50 U	50 U	1.3 U	50 U	50 U	50 U	50 U
Acenaphthene	20		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	4 J	10 U	10 U	10 U
Acenaphthylene	--		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Anthracene	50		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	0.002		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	ND		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	0.002		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	--		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	0.002		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Benzoic acid	--		50 URV	NA	2.2 U	2 JRV	50 URV	50 URV	6.7 U	50 URV	50 URV	50 URV	50 URV
Benzyl alcohol	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Bis(2-chloroethoxy)methane	5		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Bis(2-chloroethyl)ether	1		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Bis(2-ethylhexyl)phthalate	5		10 U	**8J**	2.2 U	10 U	10 UV	10 UV	1.3 U	10 U	10 U	10 U	10 U
Butylbenzylphthalate	50		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Carbazole	--		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Chrysene	0.002		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: Sample Date:	MW-45 06/18/97	MW-45 08/25/00	MW-45 06/04/08	MW-46 06/18/97	MW-47 06/20/97	MW-48D 06/20/97	MW-48D 06/03/08	MW-49 06/18/97	MW-57 06/18/97	MW-59 06/18/97	MW-61 06/18/97
Di-n-butyl phthalate	--		10 U	NA	2.2 U	10 UV	10 UV	UV JB	1.3 U	10 UV	10 UV	10 U	10 U
Di-n-octyl phthalate	--		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Dibenzo(a h)anthracene	50		10 U	.5J	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Dibenzofuran	50		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	1 J	10 U	10 U	10 U
Diethyl phthalate	50		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 UV	10 UV	10 U	10 U
Dimethyl phthalate	50		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Fluoranthene	50		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	0.3 J	10 U	10 U	10 U
Fluorene	50		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	0.04		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	0.5		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	5		10 UJV	NA	11 U	10 UJV	10 UJV	10 UJV	1.3 U	10 UJV	10 UJV	10 UJV	10 UJV
Hexachloroethane	5		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	0.002		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Isophorone	50		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
n-Nitroso-di-n-propylamine	--		NA	NA	2.2 U	NA	NA	NA	1.3 U	NA	NA	NA	NA
n-Nitrosodiphenylamine	50		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Naphthalene	10		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Nitrobenzene	0.4		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Pentachlorophenol	1		50 U	ND	11 U	50 U	50 U	50 U	6.7 U	50 U	50 U	50 U	50 U
Phenanthrene	50		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	0.6 J	10 U	10 U	10 U
Phenol	1		10 U	NA	2.2 U	10 U	10 U	10 U	1.3 U	10 U	10 U	10 U	10 U
Pyrene	50		10 U	ND	2.2 U	10 U	10 U	10 U	1.3 U	0.3 J	10 U	10 U	10 U
Total SVOCs:			0	8.5	0	2	0	0	0	6.2	0	0.7	0

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
* - Data analyzed but detection limit unknown
(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-62D 06/18/97	MW-62D 06/04/08	MW-64 06/19/97	MW-65 06/19/97	MW-65R 06/19/97	MW-66 06/19/97	MW-67 06/19/97	MW-68 06/04/08	MW-69D 06/20/97	MW-70 06/02/08	MW-78 07/05/05
1,2,4-Trichlorobenzene	5		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.17 U
2,2-oxybis (1-chloropropane)	5		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.21 U
2,4,5-Trichlorophenol	--		50 U	2 U	50 U	50 U	50 U	50 U	50 U	2 U	50 U	1.3 U	1.6 U
2,4,6-Trichlorophenol	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.75 U
2,4-Dichlorophenol	5		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	1.3 U
2,4-Dimethylphenol	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.85 U
2,4-Dinitrophenol	10		50 U	10 U	50 U	50 U	50 U	50 U	50 U	10 U	50 U	6.3 U	1.8 U
2,4-Dinitrotoluene	5		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.36 U
2,6-Dinitrotoluene	5		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.45 U
2-Chloronaphthalene	10		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.11 U
2-Chlorophenol	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	1.8 U
2-Methylnaphthalene	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	380 D	10 U	2.6	1.7 U
2-Methylphenol	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	3.7 U
2-Nitroaniline	5		50 U	2 U	50 U	50 U	50 U	50 U	50 U	2 U	50 U	1.3 U	1.3 U
2-Nitrophenol	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	1.2 U
3,3-Dichlorobenzidine	5		20 U	2 U	20 UJV	20 U	20 UJV	20 U	20 UJV	2 U	20 U	1.3 U	1.8 U
3-Nitroaniline	5		50 U	2 U	50 UJV	50 U	50 UJV	50 U	50 UJV	2 U	50 U	1.3 U	2.5 U
4,6-Dinitro-2-methylphenol	--		50 U	10 U	50 U	50 U	50 U	50 U	50 U	10 U	50 U	6.3 U	1.9 U
4-Bromophenyl phenyl ether	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.41 U
4-Chloro-3-methylphenol	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	2 U
4-Chloroaniline	5		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	6.8 U
4-Chlorophenyl phenyl ether	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.28 U
4-Methylphenol	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	3.7 U
4-Nitroaniline	5		20 U	2 U	20 U	20 U	20 U	20 U	20 U	2 U	20 U	1.3 U	1.5 U
4-Nitrophenol	--		50 U	2 U	50 U	50 U	50 U	50 U	50 U	2 U	50 U	1.3 U	1.4 U
Acenaphthene	20		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	2.2	0.16 U
Acenaphthylene	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.15 U
Anthracene	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.2 U
Benzo(a)anthracene	0.002		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.14 U
Benzo(a)pyrene	ND		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.17 U
Benzo(b)fluoranthene	0.002		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.28 U
Benzo(g,h,i)perylene	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.14 U
Benzo(k)fluoranthene	0.002		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.35 U
Benzoic acid	--		50 URV	2 U	50 URV	50 URV	50 URV	50 URV	50 URV	2 U	50 URV	6.3 U	NA
Benzyl alcohol	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	NA
Bis(2-chloroethoxy)methane	5		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.23 U
Bis(2-chloroethyl)ether	1		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.44 U
Bis(2-ethylhexyl)phthalate	5		10 UV	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 UV	1.3 U	0.63 U
Butylbenzylphthalate	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.27 U
Carbazole	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.19 U
Chrysene	0.002		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.28 U

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: / Sample Date:	MW-62D 06/18/97	MW-62D 06/04/08	MW-64 06/19/97	MW-65 06/19/97	MW-65R 06/19/97	MW-66 06/19/97	MW-67 06/19/97	MW-68 06/04/08	MW-69D 06/20/97	MW-70 06/02/08	MW-78 07/05/05
Di-n-butyl phthalate	--		10 U	2 U	10 U	10 U	10 U	10 UV	10 U	2 U	10 UV	1.3 U	0.2 U
Di-n-octyl phthalate	--		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.34 U
Dibenzo(a h)anthracene	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.18 U
Dibenzofuran	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	1.3 U
Diethyl phthalate	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.24 U
Dimethyl phthalate	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.17 U
Fluoranthene	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.16 U
Fluorene	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.6	0.24 U
Hexachlorobenzene	0.04		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.41 U
Hexachlorobutadiene	0.5		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.25 U
Hexachlorocyclopentadiene	5		10 UJV	10 U	10 UJV	10 UJV	10 UJV	10 UJV	10 UJV	10 U	10 UJV	6.3 U	2.7 U
Hexachloroethane	5		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.35 U
Indeno(1,2,3-cd)pyrene	0.002		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.17 U
Isophorone	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	5.3 U
n-Nitroso-di-n-propylamine	--		NA	2 U	NA	NA	NA	NA	NA	2 U	NA	1.3 U	0.32 U
n-Nitrosodiphenylamine	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.27 U
Naphthalene	10		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.097 U
Nitrobenzene	0.4		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.28 U
Pentachlorophenol	1		50 U	10 U	50 U	50 U	50 U	50 U	50 U	10 U	50 U	6.3 U	0.97 U
Phenanthrene	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.22 U
Phenol	1		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	1.7 U
Pyrene	50		10 U	2 U	10 U	10 U	10 U	10 U	10 U	2 U	10 U	1.3 U	0.23 U
Total SVOCs:			0	0	0	0	0	0	0	380	0	6.4	0

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
* - Data analyzed but detection limit unknown
(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	MW-79 07/05/05	MW-79 06/03/08	MW-80 06/04/08	MW-82 06/05/08	MW-83 06/04/08	MW-84 06/05/08	MW-85 06/02/08	MW-86 05/21/08	MW-87 05/21/08	MW-88 05/21/08	MW-89 05/21/08
1,2,4-Trichlorobenzene	5		0.18 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2,2-oxybis (1-chloropropane)	5		0.22 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2,4,5-Trichlorophenol	--		1.6 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2,4,6-Trichlorophenol	--		0.79 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2,4-Dichlorophenol	5		1.4 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2,4-Dimethylphenol	50		0.89 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2,4-Dinitrophenol	10		1.9 U	10 U	10 U	11 U	11 U	10 U	12 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	5		0.38 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2,6-Dinitrotoluene	5		0.47 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2-Chloronaphthalene	10		0.12 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2-Chlorophenol	--		1.9 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2-Methylnaphthalene	--		1.8 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2-Methylphenol	--		3.9 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2-Nitroaniline	5		1.4 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
2-Nitrophenol	--		1.3 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
3,3-Dichlorobenzidine	5		1.8 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
3-Nitroaniline	5		2.7 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
4,6-Dinitro-2-methylphenol	--		2 U	10 U	10 U	11 U	11 U	10 U	12 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	--		0.43 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
4-Chloro-3-methylphenol	--		2.1 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
4-Chloroaniline	5		7.1 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
4-Chlorophenyl phenyl ether	--		0.3 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
4-Methylphenol	--		3.9 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
4-Nitroaniline	5		1.6 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
4-Nitrophenol	--		1.5 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Acenaphthene	20		0.17 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Acenaphthylene	--		0.16 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Anthracene	50		0.21 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Benzo(a)anthracene	0.002		0.15 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Benzo(a)pyrene	ND		0.17 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Benzo(b)fluoranthene	0.002		0.29 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Benzo(g,h,i)perylene	--		0.15 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Benzo(k)fluoranthene	0.002		0.37 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Benzoic acid	--		NA	10 U	2 U	2.2 U	2.2 U	2 U	12 U	2 U	2.5	2 U	2 U
Benzyl alcohol	--		NA	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Bis(2-chloroethoxy)methane	5		0.25 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Bis(2-chloroethyl)ether	1		0.47 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Bis(2-ethylhexyl)phthalate	5		1.3	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Butylbenzylphthalate	50		0.29 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Carbazole	--		0.2 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Chrysene	0.002		0.3 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:**	MW-79	MW-79	MW-80	MW-82	MW-83	MW-84	MW-85	MW-86	MW-87	MW-88	MW-89
		Sample Date:	07/05/05	06/03/08	06/04/08	06/05/08	06/04/08	06/05/08	06/02/08	05/21/08	05/21/08	05/21/08	05/21/08
Di-n-butyl phthalate	--		0.21 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Di-n-octyl phthalate	--		0.36 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Dibenzo(a h)anthracene	50		0.19 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Dibenzofuran	50		1.4 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Diethyl phthalate	50		0.25 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Dimethyl phthalate	50		0.18 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Fluoranthene	50		0.17 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Fluorene	50		0.25 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Hexachlorobenzene	0.04		0.43 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Hexachlorobutadiene	0.5		0.26 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Hexachlorocyclopentadiene	5		2.8 U	2.1 U	10 U	11 U	11 U	10 U	2.5 U	2 U	2 U	2 U	2 U
Hexachloroethane	5		0.37 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Indeno(1,2,3-cd)pyrene	0.002		0.18 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Isophorone	50		5.6 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
n-Nitroso-di-n-propylamine	--		0.34 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
n-Nitrosodiphenylamine	50		0.29 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Naphthalene	10		0.1 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Nitrobenzene	0.4		0.3 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Pentachlorophenol	1		1 U	10 U	10 U	11 U	11 U	10 U	12 U	2 U	2 U	2 U	2 U
Phenanthrene	50		0.23 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Phenol	1		1.7 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Pyrene	50		0.24 U	2.1 U	2 U	2.2 U	2.2 U	2 U	2.5 U	2 U	2 U	2 U	2 U
Total SVOCs:			1.3	0	0	0	0	0	0	0	2.5	0	0

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
* - Data analyzed but detection limit unknown
(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-90 06/03/08	MW-91 06/03/08	MW-92 06/03/08	SSY-23 08/20/99	SSY-46 08/20/99	SSY-49 08/20/99	SSY-51 08/20/99	SY-131W 09/26/06	SY-178W 08/16/06	TE-MW-D-2 11/14/06
1,2,4-Trichlorobenzene	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2,2-oxybis (1-chloropropane)	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2,4,5-Trichlorophenol	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2,4,6-Trichlorophenol	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2,4-Dichlorophenol	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2,4-Dimethylphenol	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2,4-Dinitrophenol	10		6.2 U	11 U	11 U	26 U	26 U	26 U	25 U	NA	NA	ND
2,4-Dinitrotoluene	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2,6-Dinitrotoluene	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2-Chloronaphthalene	10		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2-Chlorophenol	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2-Methylnaphthalene	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2-Methylphenol	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
2-Nitroaniline	5		1.2 U	2.2 U	2.2 U	26 U	26 U	26 U	25 U	NA	NA	ND
2-Nitrophenol	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
3,3-Dichlorobenzidine	5		1.2 U	2.2 U	2.2 U	21 U	21 U	21 U	20 U	NA	NA	ND
3-Nitroaniline	5		1.2 U	2.2 U	2.2 U	26 U	26 U	26 U	25 U	NA	NA	ND
4,6-Dinitro-2-methylphenol	--		6.2 U	11 U	11 U	26 U	26 U	26 U	25 U	NA	NA	ND
4-Bromophenyl phenyl ether	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
4-Chloro-3-methylphenol	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
4-Chloroaniline	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
4-Chlorophenyl phenyl ether	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
4-Methylphenol	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
4-Nitroaniline	5		1.2 U	2.2 U	2.2 U	26 U	26 U	26 U	25 U	NA	NA	ND
4-Nitrophenol	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Acenaphthene	20		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Acenaphthylene	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Anthracene	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	ND	ND	ND
Benzo(a)anthracene	0.002		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	ND	ND	ND
Benzo(a)pyrene	ND		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	ND	ND	ND
Benzo(b)fluoranthene	0.002		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	ND	ND	**1.2**
Benzo(g,h,i)perylene	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Benzo(k)fluoranthene	0.002		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Benzoic acid	--		6.2 U	11 U	11 U	10 U	10 U	11 U	10 U	NA	NA	ND
Benzyl alcohol	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Bis(2-chloroethoxy)methane	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Bis(2-chloroethyl)ether	1		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Bis(2-ethylhexyl)phthalate	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Butylbenzylphthalate	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Carbazole	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Chrysene	0.002		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	ND	ND	ND

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-90 06/03/08	MW-91 06/03/08	MW-92 06/03/08	SSY-23 08/20/99	SSY-46 08/20/99	SSY-49 08/20/99	SSY-51 08/20/99	SY-131W 09/26/06	SY-178W 08/16/06	TE-MW-D-2 11/14/06
Di-n-butyl phthalate	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Di-n-octyl phthalate	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Dibenzo(a h)anthracene	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Dibenzofuran	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Diethyl phthalate	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	ND	ND	ND
Dimethyl phthalate	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Fluoranthene	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	ND	ND	ND
Fluorene	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Hexachlorobenzene	0.04		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Hexachlorobutadiene	0.5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Hexachlorocyclopentadiene	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Hexachloroethane	5		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Indeno(1,2,3-cd)pyrene	0.002		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Isophorone	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
n-Nitroso-di-n-propylamine	--		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
n-Nitrosodiphenylamine	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Naphthalene	10		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Nitrobenzene	0.4		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Pentachlorophenol	1		6.2 U	11 U	11 U	26 U	26 U	26 U	25 U	NA	NA	ND
Phenanthrene	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Phenol	1		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	NA	NA	ND
Pyrene	50		1.2 U	2.2 U	2.2 U	10 U	10 U	11 U	10 U	ND	ND	ND
Total SVOCs:			0	0	0	0	0	0	0	0	0	1.2

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
* - Data analyzed but detection limit unknown
(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	TE-MW-D-2(SY-8W) 10/20/00	TE-MW-IB/OB-1 10/20/00	TE-IB-3 10/20/00	TE-IB-3 11/14/06	TE-MW-A-1 10/19/00	TE-MW-A-3(SY-135) 10/20/00	TE-MW-A-3(SY-135W) 10/16/03	TE-MW-A-4 08/16/00
1,2,4-Trichlorobenzene	5		NA	NA	NA	ND	NA	NA	NA	NA
2,2-oxybis (1-chloropropane)	5		NA	NA	NA	ND	NA	NA	NA	NA
2,4,5-Trichlorophenol	--		NA	NA	NA	ND	NA	NA	NA	NA
2,4,6-Trichlorophenol	--		NA	NA	NA	ND	NA	NA	NA	NA
2,4-Dichlorophenol	5		NA	NA	NA	ND	NA	NA	NA	NA
2,4-Dimethylphenol	50		NA	NA	NA	ND	NA	NA	NA	NA
2,4-Dinitrophenol	10		NA	NA	NA	ND	NA	NA	NA	NA
2,4-Dinitrotoluene	5		NA	NA	NA	ND	NA	NA	NA	NA
2,6-Dinitrotoluene	5		NA	NA	NA	ND	NA	NA	NA	NA
2-Chloronaphthalene	10		NA	NA	NA	ND	NA	NA	NA	NA
2-Chlorophenol	--		NA	NA	NA	ND	NA	NA	NA	NA
2-Methylnaphthalene	--		NA	NA	NA	ND	NA	NA	NA	NA
2-Methylphenol	--		NA	NA	NA	ND	NA	NA	NA	NA
2-Nitroaniline	5		NA	NA	NA	ND	NA	NA	NA	NA
2-Nitrophenol	--		NA	NA	NA	ND	NA	NA	NA	NA
3,3-Dichlorobenzidine	5		NA	NA	NA	ND	NA	NA	NA	NA
3-Nitroaniline	5		NA	NA	NA	ND	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	--		NA	NA	NA	ND	NA	NA	NA	NA
4-Bromophenyl phenyl ether	--		NA	NA	NA	ND	NA	NA	NA	NA
4-Chloro-3-methylphenol	--		NA	NA	NA	ND	NA	NA	NA	NA
4-Chloroaniline	5		NA	NA	NA	ND	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	--		NA	NA	NA	ND	NA	NA	NA	NA
4-Methylphenol	--		NA	NA	NA	ND	NA	NA	NA	NA
4-Nitroaniline	5		NA	NA	NA	ND	NA	NA	NA	NA
4-Nitrophenol	--		NA	NA	NA	ND	NA	NA	NA	NA
Acenaphthene	20		NA	NA	NA	ND	NA	NA	NA	NA
Acenaphthylene	--		ND	ND	ND	ND	ND	ND	NA	.1J
Anthracene	50		ND	ND	ND	ND	ND	ND	ND	.2J
Benzo(a)anthracene	0.002		ND	ND	ND	ND	ND	ND	ND	**.2J**
Benzo(a)pyrene	ND		NA	NA	NA	ND	NA	NA	ND	NA
Benzo(b)fluoranthene	0.002		ND	ND	ND	ND	ND	ND	ND	**.4J**
Benzo(g,h,i)perylene	--		ND	ND	ND	ND	ND	ND	NA	.3J
Benzo(k)fluoranthene	0.002		ND	ND	ND	ND	ND	ND	NA	**.3J**
Benzoic acid	--		NA	NA	NA	ND	NA	NA	NA	NA
Benzyl alcohol	--		NA	NA	NA	ND	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	5		NA	NA	NA	ND	NA	NA	NA	NA
Bis(2-chloroethyl)ether	1		NA	NA	NA	ND	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	5		ND	ND	0.6JB	ND	ND	0.2JB	NA	.6J
Butylbenzylphthalate	50		NA	NA	NA	ND	NA	NA	NA	NA
Carbazole	--		NA	NA	NA	ND	NA	NA	NA	NA
Chrysene	0.002		ND	ND	ND	ND	ND	ND	ND	**.3J**

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	TE-MW-D-2(SY-8W) 10/20/00	TE-MW-IB/OB-1 10/20/00	TE-IB-3 10/20/00	TE-IB-3 11/14/06	TE-MW-A-1 10/19/00	TE-MW-A-3(SY-135) 10/20/00	TE-MW-A-3(SY-135W) 10/16/03	TE-MW-A-4 08/16/00
Di-n-butyl phthalate	--		NA	NA	NA	ND	NA	NA	NA	NA
Di-n-octyl phthalate	--		ND	ND	0.1J	ND	ND	ND	NA	ND
Dibenzo(a h)anthracene	50		ND	ND	0.3J	ND	ND	ND	NA	ND
Dibenzofuran	50		NA	NA	NA	ND	NA	NA	NA	NA
Diethyl phthalate	50		NA	NA	NA	ND	NA	NA	ND	NA
Dimethyl phthalate	50		NA	NA	NA	ND	NA	NA	NA	NA
Fluoranthene	50		NA	NA	NA	ND	NA	NA	21	NA
Fluorene	50		ND	ND	ND	ND	ND	ND	NA	.4J
Hexachlorobenzene	0.04		NA	NA	NA	ND	NA	NA	NA	NA
Hexachlorobutadiene	0.5		NA	NA	NA	ND	NA	NA	NA	NA
Hexachlorocyclopentadiene	5		NA	NA	NA	ND	NA	NA	NA	NA
Hexachloroethane	5		NA	NA	NA	ND	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.002		NA	NA	NA	ND	NA	NA	NA	NA
Isophorone	50		NA	NA	NA	ND	NA	NA	NA	NA
n-Nitroso-di-n-propylamine	--		NA	NA	NA	ND	NA	NA	NA	NA
n-Nitrosodiphenylamine	50		NA	NA	NA	ND	NA	NA	NA	NA
Naphthalene	10		NA	NA	NA	ND	NA	NA	NA	NA
Nitrobenzene	0.4		NA	NA	NA	ND	NA	NA	NA	NA
Pentachlorophenol	1		ND	ND	ND	ND	ND	ND	NA	.8J
Phenanthrene	50		ND	ND	ND	ND	ND	ND	NA	.1J
Phenol	1		NA	NA	NA	ND	NA	NA	NA	NA
Pyrene	50		ND	ND	ND	ND	ND	ND	ND	.4J
Total SVOCs:			0	0	1	0	0	0.2	21	4.1

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
* - Data analyzed but detection limit unknown
(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	TE-MW-A-4(SY-153W) 09/26/06	TE-MW-B/C-2 10/20/00	TE-MW-B/C-2 09/26/06	TE-MW-B/C-4 08/16/00	TE-MW-D-1 10/19/00	TE-MW-D-4 08/16/00	TE-MW-IB-1(SY-103) 10/19/00	TE-MW-IB-2 10/19/00
1,2,4-Trichlorobenzene	5		NA	NA	NA	NA	NA	NA	NA	NA
2,2-oxybis (1-chloropropane)	5		NA	NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol	--		NA	NA	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol	--		NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dichlorophenol	5		NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dimethylphenol	50		NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrophenol	10		NA	NA	NA	NA	NA	NA	NA	NA
2,4-Dinitrotoluene	5		NA	NA	NA	NA	NA	NA	NA	NA
2,6-Dinitrotoluene	5		NA	NA	NA	NA	NA	NA	NA	NA
2-Chloronaphthalene	10		NA	NA	NA	NA	NA	NA	NA	NA
2-Chlorophenol	--		NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	--		NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	--		NA	NA	NA	NA	NA	NA	NA	NA
2-Nitroaniline	5		NA	NA	NA	NA	NA	NA	NA	NA
2-Nitrophenol	--		NA	NA	NA	NA	NA	NA	NA	NA
3,3-Dichlorobenzidine	5		NA	NA	NA	NA	NA	NA	NA	NA
3-Nitroaniline	5		NA	NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol	--		NA	NA	NA	NA	NA	NA	NA	NA
4-Bromophenyl phenyl ether	--		NA	NA	NA	NA	NA	NA	NA	NA
4-Chloro-3-methylphenol	--		NA	NA	NA	NA	NA	NA	NA	NA
4-Chloroaniline	5		NA	NA	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether	--		NA	NA	NA	NA	NA	NA	NA	NA
4-Methylphenol	--		NA	NA	NA	NA	NA	NA	NA	NA
4-Nitroaniline	5		NA	NA	NA	NA	NA	NA	NA	NA
4-Nitrophenol	--		NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	20		NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	--		NA	ND	NA	ND	ND	ND	ND	ND
Anthracene	50		1.9 J	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	0.002		**1.6 J**	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ND		ND	NA	ND	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	0.002		**3.2 J**	ND	**1.5 J**	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	--		NA	ND	NA	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	0.002		NA	ND	NA	ND	ND	ND	ND	ND
Benzoic acid	--		NA	NA	NA	NA	NA	NA	NA	NA
Benzyl alcohol	--		NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane	5		NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethyl)ether	1		NA	NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	5		NA	0.2JB	NA	ND	ND	ND	ND	ND
Butylbenzylphthalate	50		NA	NA	NA	NA	NA	NA	NA	NA
Carbazole	--		NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	0.002		**2 J**	ND	ND	ND	ND	ND	ND	ND

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: / Sample Date:	TE-MW-A-4(SY-153W) 09/26/06	TE-MW-B/C-2 10/20/00	TE-MW-B/C-2 09/26/06	TE-MW-B/C-4 08/16/00	TE-MW-D-1 10/19/00	TE-MW-D-4 08/16/00	TE-MW-IB-1(SY-103) 10/19/00	TE-MW-IB-2 10/19/00
Di-n-butyl phthalate	--		NA	NA	NA	NA	NA	NA	NA	NA
Di-n-octyl phthalate	--		NA	ND	NA	ND	ND	ND	ND	ND
Dibenzo(a h)anthracene	50		NA	0.6J	NA	ND	ND	ND	ND	0.6J
Dibenzofuran	50		NA	NA	NA	NA	NA	NA	NA	NA
Diethyl phthalate	50		ND	NA	ND	NA	NA	NA	NA	NA
Dimethyl phthalate	50		NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	50		2.8 J	NA	1.4 J	NA	NA	NA	NA	NA
Fluorene	50		NA	ND	NA	ND	ND	ND	ND	ND
Hexachlorobenzene	0.04		NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorobutadiene	0.5		NA	NA	NA	NA	NA	NA	NA	NA
Hexachlorocyclopentadiene	5		NA	NA	NA	NA	NA	NA	NA	NA
Hexachloroethane	5		NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	0.002		NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	50		NA	NA	NA	NA	NA	NA	NA	NA
n-Nitroso-di-n-propylamine	--		NA	NA	NA	NA	NA	NA	NA	NA
n-Nitrosodiphenylamine	50		NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	10		NA	NA	NA	NA	NA	NA	NA	NA
Nitrobenzene	0.4		NA	NA	NA	NA	NA	NA	NA	NA
Pentachlorophenol	1		NA	ND	NA	ND	ND	ND	ND	ND
Phenanthrene	50		NA	ND	NA	ND	ND	ND	ND	ND
Phenol	1		NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	50		2.3 J	ND	ND	ND	ND	ND	ND	ND
Total SVOCs:			15.2	0.8	2.9	0	0	0	0	0.6

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
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(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	TE-MW-OB-1 10/19/00	TE-MW-OB-2 10/20/00	TE-MW-QA-2 11/08/00	TP-8 06/19/97	TP-9 06/19/97	TP-10 06/03/08	TSB-9(2) 10/24/00	TSB-10(3) 10/23/00	TSB-16(4) 10/24/00	UT-9AW 06/04/08
1,2,4-Trichlorobenzene	5		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2,2-oxybis (1-chloropropane)	5		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2,4,5-Trichlorophenol	--		NA	NA	NA	50 U	50 U	2.2 U	25 U	25 U	25 U	2.1 U
2,4,6-Trichlorophenol	--		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2,4-Dichlorophenol	5		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2,4-Dimethylphenol	50		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2,4-Dinitrophenol	10		NA	NA	NA	50 U	50 U	11 U	25 U	25 U	25 U	11 U
2,4-Dinitrotoluene	5		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2,6-Dinitrotoluene	5		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2-Chloronaphthalene	10		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2-Chlorophenol	--		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2-Methylnaphthalene	--		NA	NA	NA	10 U	10 U	2.2 U	210 D	10 U	28	2.1 U
2-Methylphenol	--		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
2-Nitroaniline	5		NA	NA	NA	50 U	50 U	2.2 U	25 U	25 U	25 U	2.1 U
2-Nitrophenol	--		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
3,3-Dichlorobenzidine	5		NA	NA	NA	20 U	20 U	2.2 U	10 U	10 U	10 U	2.1 U
3-Nitroaniline	5		NA	NA	NA	50 U	50 U	2.2 U	25 U	25 U	25 U	2.1 U
4,6-Dinitro-2-methylphenol	--		NA	NA	NA	50 U	50 U	11 U	25 U	25 U	25 U	11 U
4-Bromophenyl phenyl ether	--		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
4-Chloro-3-methylphenol	--		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
4-Chloroaniline	5		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
4-Chlorophenyl phenyl ether	--		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
4-Methylphenol	--		NA	NA	NA	10 U	10 U	2.2 U	*	*	*	2.1 U
4-Nitroaniline	5		NA	NA	NA	20 U	20 U	2.2 U	25 U	25 U	25 U	2.1 U
4-Nitrophenol	--		NA	NA	NA	50 U	50 U	2.2 U	25 U	25 U	25 U	2.1 U
Acenaphthene	20		NA	NA	NA	10 U	10 U	2.2 U	5.9 J	2.9 J	3.4 J	2.1 U
Acenaphthylene	--		ND	ND	ND	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Anthracene	50		ND	ND	ND	10 U	10 U	2.2 U	1.8 J	10 U	1.1 J	2.1 U
Benzo(a)anthracene	0.002		ND	ND	ND	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Benzo(a)pyrene	ND		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Benzo(b)fluoranthene	0.002		ND	ND	ND	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Benzo(g,h,i)perylene	--		ND	ND	ND	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Benzo(k)fluoranthene	0.002		ND	ND	ND	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Benzoic acid	--		NA	NA	NA	50 U	50 URV	11 U	*	*	*	2.1 U
Benzyl alcohol	--		NA	NA	NA	10 U	10 U	2.2 U	*	*	*	2.1 U
Bis(2-chloroethoxy)methane	5		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Bis(2-chloroethyl)ether	1		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Bis(2-ethylhexyl)phthalate	5		ND	ND	4J	10 U	10 UV	2.2 U	10 U	10 U	10 U	2.1 U
Butylbenzylphthalate	50		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Carbazole	--		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Chrysene	0.002		ND	ND	ND	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U

Table 6. Summary of Semivolatile Organic Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	TE-MW-OB-1 10/19/00	TE-MW-OB-2 10/20/00	TE-MW-QA-2 11/08/00	TP-8 06/19/97	TP-9 06/19/97	TP-10 06/03/08	TSB-9[(2)] 10/24/00	TSB-10[(3)] 10/23/00	TSB-16[(4)] 10/24/00	UT-9AW 06/04/08
Di-n-butyl phthalate	--		NA	NA	NA	0.2 JB	10 UV	2.2 U	10 U	10 U	10 U	2.1 U
Di-n-octyl phthalate	--		ND	ND	.7J	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Dibenzo(a h)anthracene	50		ND	ND	.7J	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Dibenzofuran	50		NA	NA	NA	10 U	10 U	2.2 U	4.7 J	10 U	2.6 J	2.1 U
Diethyl phthalate	50		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Dimethyl phthalate	50		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Fluoranthene	50		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Fluorene	50		ND	ND	ND	10 U	10 U	2.2 U	8.5 J	3.7 J	5.8 J	2.1 U
Hexachlorobenzene	0.04		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Hexachlorobutadiene	0.5		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Hexachlorocyclopentadiene	5		NA	NA	NA	10 U	10 UJV	2.2 U	10 U	10 U	10 U	11 U
Hexachloroethane	5		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Indeno(1,2,3-cd)pyrene	0.002		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Isophorone	50		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
n-Nitroso-di-n-propylamine	--		NA	NA	NA	10 U	NA	2.2 U	10 U	10 U	10 U	2.1 U
n-Nitrosodiphenylamine	50		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Naphthalene	10		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Nitrobenzene	0.4		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Pentachlorophenol	1		ND	ND	ND	50 U	50 U	11 U	25 U	25 U	25 U	11 U
Phenanthrene	50		0.5J	ND	ND	10 U	10 U	2.2 U	8.4 J	10 U	6.3 J	2.1 U
Phenol	1		NA	NA	NA	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Pyrene	50		ND	ND	ND	10 U	10 U	2.2 U	10 U	10 U	10 U	2.1 U
Total SVOCs:			0.5	0	5.4	0.2	0	0	239.3	6.6	19.2	0

Notes:
J - Estimated value
B - Compound was detected in blank sample
D - Dilution
U - Not Detected
V - Data was qualified by validator
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
ND - Not detected; reporting limit not available
DUP - Duplicate
SVOCs - Semivolatile Organic Compounds
R - Rejected
NA - Not analyzed
* - Data analyzed but detection limit unknown
(1) - Sampled and analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface

Table 7. Summary of Metals in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	Sample Designation:	CV-2W	MW-9D	MW-9S	MW-13D	MW-13D DUP	MW-13S	MW-19	MW-19	MW-19
			Sample Date:	11/14/06	06/03/08	06/03/08	06/03/08	06/03/08	06/02/08	06/18/97	04/15/03	04/22/03
Aluminum	28400 JV	--		ND	180 U	180 U	180 U	180 U	1200	575 JV	NA	NA
Antimony	46.9 B	3		ND	12 U	12 U	12 U	12 U	12 U	3 U	NA	NA
Arsenic	3.6 B	25		ND	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	5.4 B	NA	NA
Barium	280	1,000		129 J	180	74	87	86	170	150 B	NA	NA
Beryllium	1.8 B	(3)		ND	4 U	4 U	4 U	4 U	4 U	1 U	NA	NA
Cadmium	2.2 B	5		2.8 J	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3 UJV	NA	NA
Calcium	150000	--		83300	100000	87000	99000	99000	77000	67500	NA	NA
Chromium	70.9 JV	50		8.53 J	50 U	50 U	50 U	50 U	50 U	3.8 BJV	NA	NA
Cobalt	23.3 B	--		ND	20 U	20 U	20 U	20 U	20 U	3.5 B	NA	NA
Copper	65.0 JV	200		ND	50 U	50 U	50 U	50 U	50 U	4.3 BJV	NA	NA
Iron	46500 JV	300		195	**2200**	280 U	280 U	280 U	**2800**	**15900 JV**	NA	NA
Lead	48	25		ND	4 U	4 U	4 U	4 U	4 U	2.2 BJV	0.023	0.19
Magnesium	53000	(35,000)		34100	**40000**	32000	**37000**	**37000**	30000	10200	NA	NA
Manganese	2650	300		**363**	**700**	**2300**	**800**	**810**	**5200**	**2210**	NA	NA
Mercury	0.33	0.7		**0.9 J**	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.2 U	NA	NA
Nickel	48.1	100		ND	50 U	50 U	50 U	50 U	50 U	15.6 B	NA	NA
Potassium	11900	--		3090 J	5000 U	6300	5000 U	5000 U	5100	4820 B	NA	NA
Selenium	10.1	10		ND	40 U	40 U	40 U	40 U	40 U	4.5 B	NA	NA
Silver	20 U	50		ND	20 U	20 U	20 U	20 U	20 U	1 U	NA	NA
Sodium	280000	20,000		**137000**	**68000**	**78000**	**110000**	**110000**	**150000**	**31700**	NA	NA
Thallium	10 U	(0.5)		**9.27**	10 U	10 U	10 U	10 U	10 U	3 UJV	NA	NA
Vanadium	72.9	--		ND	50 U	50 U	50 U	50 U	50 U	2.3 B	NA	NA
Zinc	160 JV	(2,000)		41.5	50 U	55	50 U	50 U	84	27.3 JV	NA	NA

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Table 7. Summary of Metals in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	**Sample Designation:** / **Sample Date:**	MW-19 04/30/03	MW-19 05/14/03	MW-19 06/02/08	MW-23D 06/20/97	MW-25A 06/19/97	MW-27 06/18/97	MW-27 06/04/08	MW-27 DUP 06/04/08	MW-28 06/18/97	MW-28 08/25/00	MW-28 08/25/00 (Dissolved)
Aluminum	28400 JV	--		NA	NA	180 U	420 JV	2800 JV	160 BJV	180 U	180 U	438 JV	28600	23.3B
Antimony	46.9 B	3		NA	NA	12 U	42 U	3 U	3 U	12 U	12 U	3 U	**8.9B**	**3.5B**
Arsenic	3.6 B	25		0.005 U	NA	7.5 U	3 U	3 U	3.6 B	7.5 U	7.5 U	3 U	**70.7**	2.0U
Barium	280	1,000		0.11	NA	61	202	32.3 B	601	120	120	202	**1690**	460
Beryllium	1.8 B	(3)		NA	NA	4 U	1 U	1 U	1 B	4 U	4 U	1 U	2.3B	0.20U
Cadmium	2.2 B	5		0.005 U	NA	3.5 U	3 U	3 UJV	3 U	3.5 U	3.5 U	3 U	**79.4**	**8**
Calcium	150000	--		NA	NA	66000	46800	16300	102000	100000	100000	69600	159000	143000
Chromium	70.9 JV	50		0.029	NA	50 U	6 UJV	8.8 BJV	42.7 JV	50 U	50 U	1.7 BJV	**65.9**	1.0U
Cobalt	23.3 B	--		NA	NA	20 U	9 U	2 B	33.3 B	20 U	20 U	4 B	69.5	5.9B
Copper	65.0 JV	200		NA	NA	50 U	4.9 BJV	11 BJV	4.7 BJV	50 U	50 U	2 BJV	**220**	3.3B
Iron	46500 JV	300		NA	NA	**310**	**2490 JV**	**6520 JV**	**91300 JV**	280 U	280 U	**2960 JV**	**261000**	**4180**
Lead	48	25		0.006	**31**	4 U	2.6 BJV	21.6 JV	2 UJV	4 U	4 U	9.2 JV	**309**	1.3U
Magnesium	53000	(35,000)		NA	NA	9100	10500	3640 B	32800	32000	32000	8780	31100	16400
Manganese	2650	300		NA	NA	270	**917**	132	**4980**	120	110	**3280**	**22400**	**4830**
Mercury	0.33	0.7		0.001 U	NA	0.7 U	0.35	0.2 U	0.2 U	0.7 U	0.7 U	0.2 U	0.38	0.10U
Nickel	48.1	100		NA	NA	50 U	0.2 U	6.7 B	52.8	50 U	50 U	3.4 B	91.6	6.2B
Potassium	11900	--		NA	NA	5000 U	4040 B	1310 B	3410 B	5000 U	5000 U	7260	36,900E	32,200E
Selenium	10.1	10		0.009	NA	40 U	3 U	3 U	3 U	40 U	40 U	3 U	3.4U	3.4U
Silver	20 U	50		0.005 U	NA	20 U	2.4 B	1 U	1 U	20 U	20 U	1 U	1.0U	1.0U
Sodium	280000	20,000		NA	NA	11000	**112000**	11300	**126000**	**100000**	**100000**	**207000**	**98,800E**	10,600E
Thallium	10 U	(0.5)		NA	NA	10 U	3 UJV	3 UJV	3 UJV	10 U	10 U	3 UJV	3.8U	3.8U
Vanadium	72.9	--		NA	NA	50 U	9 U	9.2 B	6.4 B	50 U	50 U	1.6 B	88.4	1.0U
Zinc	160 JV	(2,000)		NA	NA	50 U	11.7 BJV	51.2 JV	103 JV	50 U	50 U	28.8 JV	835	56.5

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	**Sample Designation:** / **Sample Date:**	MW-29 06/18/97	MW-30 06/18/97 Background Well	MW-34 06/18/97 Background Well	MW-34 08/25/00	MW-34 08/25/00 (Dissolved)	MW-35 06/18/97	MW-35 04/15/03	MW-35 04/22/03	MW-35 06/02/08	MW-37 06/18/97
Aluminum	28400 JV	--		168 BJV	227 JV	274 JV	2510	31.6B	58.4 BJV	NA	NA	180 U	404 JV
Antimony	46.9 B	3		**3.7 B**	42 U	3 U	2.1U	2.1U	**3.5 B**	NA	NA	12 U	**3.7 B**
Arsenic	3.6 B	25		3 U	3 U	3 U	2.0U	2.0U	20.9	NA	NA	11	3 U
Barium	280	1,000		150 B	189 B	169 B	124B	106B	319	NA	NA	550	118 B
Beryllium	1.8 B	(3)		1 U	1 U	1 B	0.20U	0.20U	1 U	NA	NA	4 U	1 U
Cadmium	2.2 B	5		3 U	3 U	3 U	0.40U	0.40U	3 UJV	NA	NA	3.5 U	3 UJV
Calcium	150000	--		67400	108000	132000	102000	105000	36700	NA	NA	75000	14200
Chromium	70.9 JV	50		1 UJV	6 U	4.2 BJV	8.6B	4.6B	1.3 BJV	NA	NA	50 U	1.4 BJV
Cobalt	23.3 B	--		1 U	9 U	1 U	1.9B	0.50U	1 U	NA	NA	20 U	1 U
Copper	65.0 JV	200		1 UJV	19.4 B	1 UJV	8.2B	2.1B	3.3 BJV	NA	NA	50 U	4.3 BJV
Iron	46500 JV	300		**24800 JV**	**11100**	**579 JV**	**3990**	45.3B	**30600 JV**	NA	NA	**29000**	**774 JV**
Lead	48	25		2 UJV	2 U	2 UJV	2.2B	1.3U	2 UJV	0.005 U	0.019	4 U	2.6 BJV
Magnesium	53000	(35,000)		22800	**42100**	**47600**	**41000**	**40700**	6670	NA	NA	16000	2350 B
Manganese	2650	300		**2170**	**2650**	12.3 B	114	3.2B	**856**	NA	NA	**980**	**1210**
Mercury	0.33	0.7		0.2 U	0.33	0.2 U	0.10U	0.10U	0.2 U	NA	NA	0.7 U	0.2 U
Nickel	48.1	100		1.6 B	0.2 U	2.2 B	5.8B	1.9B	2.3 B	NA	NA	50 U	3.8 B
Potassium	11900	--		7110	7680	3070 B	6290E	5,480E	3830 B	NA	NA	5000 U	1030 B
Selenium	10.1	10		3 U	3 U	3 U	3.4U	3.4U	3 U	NA	NA	40 U	3 B
Silver	20 U	50		1 U	2 U	1 U	1.0U	1.0U	1 U	NA	NA	20 U	1 U
Sodium	280000	20,000		**113000**	**216000**	**164000**	**204,000E**	**225,000E**	**30900**	NA	NA	**57000**	**123000**
Thallium	10 U	(0.5)		3 UJV	3 UJV	3 UJV	**7.0B**	**4.2B**	3 UJV	NA	NA	10 U	3 UJV
Vanadium	72.9	--		1 U	9 U	1 U	6.7B	1.7B	2.1 B	NA	NA	50 U	2.9 B
Zinc	160 JV	(2,000)		16 BJV	12.9 B	48 JV	22.7	23	22.1 JV	NA	NA	50 U	22.6 JV

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	Sample Designation: / Sample Date:	MW-37 06/02/08	MW-38D 06/18/97	MW-38D 06/02/08	MW-39D 06/02/08	MW-40D 06/18/97	MW-41 06/18/97	MW-42 06/18/97	MW-42 08/25/00	MW-42 08/25/00 (Dissolved)	MW-43 06/18/97	MW-44D 06/18/97
Aluminum	28400 JV	--		180 U	717 JV	180 U	180 U	92.8 BJV	207 JV	438 JV	12500	21.7B	58.9 BJV	153 BJV
Antimony	46.9 B	3		12 U	42 U	12 U	12 U	3 U	3 U	**3.8 B**	2.1U	2.1U	3 U	3 U
Arsenic	3.6 B	25		7.5 U	3 U	7.5 U	8.2	3 U	3.1 B	3 U	2.0U	2.0U	3 U	3 U
Barium	280	1,000		190	362	410	580	176 B	108 B	55.6 B	214	70.9B	87.2 B	166 B
Beryllium	1.8 B	(3)		4 U	1 U	4 U	4 U	1 U	1 U	1 U	1.2B	0.20U	1 U	1 U
Cadmium	2.2 B	5		3.5 U	3 U	3.5 U	3.5 U	3 U	3 U	3 U	0.40U	0.40U	3 U	3 U
Calcium	150000	--		47000	95800	110000	110000	123000	54900	52000	69100	65900	55200	137000
Chromium	70.9 JV	50		50 U	6 UJV	50 U	50 U	1 UJV	1.1 BJV	4.3 BJV	25.9	4.4B	1 UJV	2.1 BJV
Cobalt	23.3 B	--		20 U	9 U	20 U	20 U	1 U	1 U	1 U	13.0B	0.50U	1 U	2.6 B
Copper	65.0 JV	200		50 U	16.8 BJV	50 U	50 U	1 UJV	1 UJV	35.3 JV	**615**	14.5B	1 UJV	1 UJV
Iron	46500 JV	300		280 U	**4460 JV**	**13000**	**9300**	137 JV	**2580 JV**	**641 JV**	**18200**	37.7B	158 JV	**583 JV**
Lead	48	25		4 U	4.5 JV	4 U	4 U	2 UJV	2.3 BJV	2.6 BJV	**27.3**	1.3U	2.7 BJV	3.4 JV
Magnesium	53000	(35,000)		12000	31600	30000	34000	**50000**	9410	9340	15400	10600	21800	**46200**
Manganese	2650	300		**1600**	**599**	**820**	**1200**	**515**	**648**	33.4	**979**	22	66.2	**455**
Mercury	0.33	0.7		0.7 U	0.2 U	0.7 U	0.7 U	0.2 U	0.2 U	0.2 U	0.10U	0.10U	0.2 U	0.2 U
Nickel	48.1	100		50 U	0.2 U	50 U	50 U	1.5 B	4.4 B	3.4 B	34.6B	1.7B	3.5 B	7 B
Potassium	11900	--		5000 U	3510 B	5000 U	5000 U	3320 B	4820 B	2720 B	7,680E	3,940BE	4220 B	6820
Selenium	10.1	10		40 U	3 U	40 U	40 U	3 U	3 U	3.4 B	3.4U	3.4U	3 B	3 U
Silver	20 U	50		20 U	2 U	20 U	20 U	1 U	1 U	1 U	1.0U	1.0U	1 U	1 U
Sodium	280000	20,000		**120000**	**94100**	**79000**	**83000**	**97100**	**144000**	17200	18,800E	19,800E	**72900**	**70100**
Thallium	10 U	(0.5)		10 U	3 UJV	10 U	10 U	3 UJV	3 UJV	3 UJV	3.8U	3.8U	3 UJV	3 UJV
Vanadium	72.9	--		50 U	9 U	50 U	50 U	1 U	1 U	1.6 B	24.2B	1.0U	1 U	1 U
Zinc	160 JV	(2,000)		50 U	12.9 BJV	50 U	50 U	28.1 JV	37.8 JV	30.1 JV	163	20.8	67.5 JV	18.4 BJV

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	Sample Designation: / Sample Date:	MW-45 06/18/97	MW-45 08/25/00	MW-45 08/25/00 (Dissolved)	MW-45 06/04/08	MW-46 06/18/97	MW-47 06/20/97 Background Well	MW-48D 06/20/97 Background Well	MW-48D 06/03/08	MW-49 06/18/97
Aluminum	28400 JV	--		39.4 BJV	64.8B	15.2B	180 U	2300 JV	68.6 BJV	483 JV	180 U	159 BJV
Antimony	46.9 B	3		**4.1 B**	2.1U	2.2B	12 U	42 U	42 U	42 U	12 U	3 U
Arsenic	3.6 B	25		3 U	2.2B	3.0B	7.5 U	3 U	3 U	3 U	7.5 U	22.3
Barium	280	1,000		110 B	85.9B	93.8B	130	158 B	114 B	43.1 B	50 U	187 B
Beryllium	1.8 B	(3)		1 U	0.20U	0.20U	4 U	1 U	1 U	1 U	4 U	1 U
Cadmium	2.2 B	5		3 U	0.4U	0.4U	3.5 U	3 U	3 U	3 U	3.5 U	3 UJV
Calcium	150000	--		59100	44900	49300	63000	61000	75600	81900	16000	15000
Chromium	70.9 JV	50		2.1 BJV	2.7B	2.7B	50 U	7.5 BJV	6 UJV	6 UJV	50 U	1.2 BJV
Cobalt	23.3 B	--		1 U	0.50U	0.50U	20 U	9 U	9 U	9 U	20 U	9.4 B
Copper	65.0 JV	200		1 UJV	4.8B	2.7B	50 U	26.3 JV	5.6 BJV	10 BJV	50 U	86.8 JV
Iron	46500 JV	300		67.9 BJV	191	12.8B	280 U	**4060 JV**	102 JV	**996 JV**	**880**	**73300 JV**
Lead	48	25		2 UJV	1.3U	1.3U	4 U	5.5 JV	2 UJV	2 UJV	4 U	2.4 BJV
Magnesium	53000	(35,000)		14500	10000	10800	17000	16200	11400	27800	2200	4020 B
Manganese	2650	300		1 U	5.6B	1.0B	40 U	163	11.4 B	203	**1100**	**1550**
Mercury	0.33	0.7		0.2 U	0.10U	0.10U	0.7 U	0.2 U	0.25	0.2 U	0.7 U	0.2 U
Nickel	48.1	100		1 U	1.4B	1.2B	50 U	0.2 U	0.2 U	0.2 U	50 U	9.2 B
Potassium	11900	--		3490 B	4,950BE	5,300E	5000 U	5490	5640	4120 B	5000 U	3000 B
Selenium	10.1	10		3.9 B	3.4U	3.4U	40 U	3 U	3 U	3 U	40 U	5.5
Silver	20 U	50		1 U	1.0U	1.0U	20 U	2.3 B	2 U	2.2 B	20 U	1 U
Sodium	280000	20,000		**101000**	**174,000E**	19,500E	**210000**	**69100**	**98900**	**74700**	19000	7960
Thallium	10 U	(0.5)		3 UJV	**1.0B**	3.8U	10 U	3 UJV	3 UJV	3 UJV	10 U	3 UJV
Vanadium	72.9	--		1 U	1.0U	1.0U	50 U	9 U	9 U	9 U	50 U	2.1 B
Zinc	160 JV	(2,000)		38.7 JV	18.7B	9.6B	50 U	53.2 JV	20.2 JV	26.4 JV	73	157 JV

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	Sample Designation: / Sample Date:	MW-57 06/18/97	MW-59 06/18/97	MW-61 06/18/97 Background Well	MW-62D 06/18/97 Background Well	MW-62D 06/04/08 Background Well	MW-64 06/19/97	MW-65 06/19/97	MW-65R 06/19/97	MW-66 05/03/96
Aluminum	28400 JV	--		246 JV	151 BJV	2140 JV	253 JV	180 U	208 JV	12700 JV	5900 JV	16300
Antimony	46.9 B	3		**8.6 B**	3 U	**4 B**	3 U	12 U	42 U	42 U	42 U	6 U
Arsenic	3.6 B	25		3 U	7.7 B	3 U	3 U	7.5 U	3 U	3 U	3 U	5.2 B
Barium	280	1,000		16 B	42.9 B	72.8 B	89.9 B	110	44.6 B	177 B	114 B	282
Beryllium	1.8 B	(3)		1 U	1 U	1.1 B	1 U	4 U	1 U	2.5 B	1.5 B	1 U
Cadmium	2.2 B	5		3 U	3 U	3 U	3 U	3.5 U	3 U	3 U	3 U	1 U
Calcium	150000	--		7200	62300	80100	110000	110000	28500	112000	105000	95200
Chromium	70.9 JV	50		1.2 BJV	1.1 BJV	9 BJV	2.1 BJV	50 U	6 UJV	37.8 JV	16.7 JV	31
Cobalt	23.3 B	--		1 U	1 U	3.7 B	1 U	20 U	9 U	13.1 B	9 U	10.9 B
Copper	65.0 JV	200		2.4 BJV	1 UJV	7.6 BJV	1 UJV	50 U	4 UJV	69.2 JV	34.3 JV	42.1
Iron	46500 JV	300		**454 JV**	**3550 JV**	**3800**	**373 JV**	300	**853 JV**	**42000 JV**	**19000 JV**	**23100**
Lead	48	25		2.6 BJV	2.9 BJV	4.7 JV	2.1 BJV	4 U	2.5 BJV	16.8 JV	7.4 JV	17.5
Magnesium	53000	(35,000)		1130 B	5470	21000	**43200**	**42000**	7400	**48200**	**42900**	**40700**
Manganese	2650	300		123	**6310**	213	37.6	40 U	71.2	**2360**	**1720**	**1570**
Mercury	0.33	0.7		0.2 U	0.2 U	0.2 U	0.2 U	0.7 U	0.42	0.3	0.29	0.2 U
Nickel	48.1	100		3.1 B	2 B	10 B	1.8 B	50 U	0.2 U	21.3 B	9.9 B	19.5 B
Potassium	11900	--		1320 B	5790	2490 B	2010 B	5000 U	2280 B	8940	7750	14900
Selenium	10.1	10		3.1 B	3 U	**10.1**	3.8 B	40 U	3 U	3 U	3 U	**11.4**
Silver	20 U	50		1 U	1 U	1 U	1 U	20 U	2 U	2 U	2 U	1 U
Sodium	280000	20,000		**70100**	11900	**23400**	**89300**	**130000**	**28600**	**105000**	**99200**	**95400**
Thallium	10 U	(0.5)		3 UJV	3 UJV	3 UJV	3 UJV	10 U	3 UJV	3 UJV	3 UJV	6 U
Vanadium	72.9	--		2.7 B	1 U	5.1 B	1 U	50 U	9 U	51.8	23.4 B	43.7 B
Zinc	160 JV	(2,000)		21.9 JV	46.9 JV	48.4 JV	35.9 JV	50 U	763 JV	91.7 JV	45.5 JV	42.9

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	**Sample Designation:** **Sample Date:**	MW-66 06/19/97	MW-67 06/19/97	MW-68 06/04/08	MW-69D 06/20/97	MW-70 06/02/08	MW-78 07/05/05	MW-79 07/05/05	MW-79 06/03/08	MW-80 06/04/08 Background Well	MW-82 06/05/08
Aluminum	28400 JV	--		2860 JV	3860 JV	180 U	524 JV	180 U	13000	2900	180 U	180 U	180 U
Antimony	46.9 B	3		42 U	42 U	12 U	42 U	12 U	7.5 U	7.5 U	12 U	12 U	12 U
Arsenic	3.6 B	25		3 U	3 U	7.5 U	3 U	7.5 U	4 U	4.6	7.5 U	7.5 U	7.5 U
Barium	280	1,000		210	81 B	50 U	100 B	130	310	160	120	280	68
Beryllium	1.8 B	(3)		1 U	1 U	4 U	1 U	4 U	4 U	4 U	4 U	4 U	4 U
Cadmium	2.2 B	5		3 U	3 U	3.5 U	3 U	3.5 U	2 U	2 U	3.5 U	3.5 U	3.5 U
Calcium	150000	--		112000	74900	13000	105000	26000	76000	80000	75000	150000	36000
Chromium	70.9 JV	50		9.7 BJV	10.4 JV	50 U	6 UJV	50 U	28	25 U	50 U	50 U	50 U
Cobalt	23.3 B	--		9 U	9 U	20 U	9 U	20 U	15	10 U	20 U	20 U	20 U
Copper	65.0 JV	200		17.9 BJV	18.2 BJV	50 U	4.4 BJV	50 U	80	28	50 U	50 U	50 U
Iron	46500 JV	300		**7220 JV**	**9050 JV**	**7100**	**2830 JV**	**18000**	**21000**	**4900**	280 U	**6700**	300
Lead	48	25		5.4 JV	5.7 JV	4 U	2 UJV	4 U	20	5 U	4 U	4 U	4 U
Magnesium	53000	(35,000)		**43100**	27400	4100	**35700**	4700	21000	15000	12000	**42000**	11000
Manganese	2650	300		**1770**	**789**	**1300**	**4810**	**580**	**1000**	**480**	40 U	**2400**	280
Mercury	0.33	0.7		0.31	0.36	0.7 U	0.34	0.7 U	0.2 U	0.2 U	0.7 U	0.7 U	0.7 U
Nickel	48.1	100		2.4 B	6.3 B	50 U	0.2 U	50 U	28	14	50 U	50 U	50 U
Potassium	11900	--		8090	3730 B	5000 U	3350 B	5000 U	9400	12000	12000	5000 U	5000 U
Selenium	10.1	10		3 U	3 U	40 U	3 U	40 U	25 U	25 U	40 U	40 U	40 U
Silver	20 U	50		2 B	2.2 B	20 U	2 U	20 U	5 U	5 U	20 U	20 U	20 U
Sodium	280000	20,000		**168000**	**54400**	**56000**	**72500**	18000	**47000**	**45000**	16000	**280000**	**45000**
Thallium	10 U	(0.5)		3 UJV	3 UJV	10 U	3 UJV	10 U	5 U	5 U	10 U	10 U	10 U
Vanadium	72.9	--		9 U	9 U	50 U	9 U	50 U	35	25 U	50 U	50 U	50 U
Zinc	160 JV	(2,000)		36 JV	64.4 JV	50 U	44.6 JV	50 U	120	45	50 U	110	50 U

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	Sample Designation: / Sample Date:	MW-83 06/04/08 Background Well	MW-84 06/05/08 Background Well	MW-85 06/02/08	MW-86 05/21/08	MW-87 05/21/08	MW-88 05/21/08	MW-89 05/21/08	MW-90 06/03/08	MW-91 06/03/08	MW-92 06/03/08
Aluminum	28400 JV	--		180 U	180 U	180 U	180 U	8400	180 U	180 U	180 U	180 U	180 U
Antimony	46.9 B	3		12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U	12 U
Arsenic	3.6 B	25		7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	8.5	7.5 U
Barium	280	1,000		74	50 U	50 U	130	51	50 U	65	130	110	110
Beryllium	1.8 B	(3)		4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
Cadmium	2.2 B	5		3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
Calcium	150000	--		78000	35000	27000	55000	3600	50000	22000	76000	31000	84000
Chromium	70.9 JV	50		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Cobalt	23.3 B	--		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Copper	65.0 JV	200		50 U	50 U	50 U	50 U	66	50 U	50 U	50 U	50 U	50 U
Iron	46500 JV	300		280 U	280 U	280 U	280 U	**15000**	**9900**	280 U	280 U	**27000**	280 U
Lead	48	25		4 U	4 U	4 U	4 U	**78**	4 U	4 U	4 U	4 U	4 U
Magnesium	53000	(35,000)		26000	15000	8400	15000	2000 U	5200	4400	15000	9700	9400
Manganese	2650	300		40 U	40 U	170	40 U	180	**720**	270	**1200**	**3400**	150
Mercury	0.33	0.7		0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Nickel	48.1	100		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Potassium	11900	--		5000 U	5000 U	5000 U	5000 U	5200	5000 U	5000 U	17000	5000 U	6600
Selenium	10.1	10		40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U	40 U
Silver	20 U	50		20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Sodium	280000	20,000		**56000**	8200	**34000**	10000	**110000**	**57000**	**85000**	**110000**	**28000**	**110000**
Thallium	10 U	(0.5)		10 U	10 U	10 U	8 U	8 U	8 U	8 U	10 U	10 U	10 U
Vanadium	72.9	--		50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Zinc	160 JV	(2,000)		50 U	50 U	110	160	90	50 U	50 U	51	50 U	50 U

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	Sample Designation:	SSY-23	SSY-46	SSY-49	SSY-51	SY-131W	SY-131W (Dissolved)	SY-153W	SY-153W (Dissolved)	SY-178W
			Sample Date:	08/20/99	08/20/99	08/20/99	08/20/99	09/26/06	09/26/06	09/26/06	09/26/06	08/16/06
Aluminum	28400 JV	--		3920	105600	12100	56500	3030	268	4670	231	14600 E
Antimony	46.9 B	3		**46.9 B**	**147 U**	**43.2 B**	**73.3 U**	**14 J**	**7.3 J**	**19.7 J**	ND	ND
Arsenic	3.6 B	25		3.1 U	**46.8**	9.1 B	**27.5**	3.76 J	ND	17 J	ND	ND
Barium	280	1,000		179 B	**1150**	120 B	447	117 JE	**2376 JE**	67.9 JE	ND	**1120 E**
Beryllium	1.8 B	(3)		0.5 U	**4.6 B**	2.3 B	2.9 B	0.63 J	0.38 J	0.7 J	0.31 J	2.1 J
Cadmium	2.2 B	5		4.3 B	15.6 U	39. U	7.8 U	0.92 J	ND	2.53 J	ND	ND
Calcium	150000	--		131000	47600	67200	63000	10100	6870	5670	4320 J	56400
Chromium	70.9 JV	50		**117**	**524**	21	**192**	18.7	ND	38.4	0.35 J	**67.5**
Cobalt	23.3 B	--		7.1 U	173 B	14.8 B	58 B	6190 J	ND	9500 J	ND	45.1 J
Copper	65.0 JV	200		22.6 B	**613**	70.4	**248**	77.4 N	5 JN	**405 N**	26 N	**299**
Iron	46500 JV	300		**5190**	**212000**	**39500**	**132000**	**38300**	**360**	**44100**	**540**	**5590**
Lead	48	25		5.4	**221**	10.9	**76.8**	**88.2**	ND	**456**	**7690**	17.4
Magnesium	53000	(35,000)		**48400**	**51700**	22900	29700	2840 J	1220 J	2250 J	731 J	18300
Manganese	2650	300		150 E	**9510 E**	**6930 E**	**2980 E**	**415**	27.1	**434**	38.6	**4740**
Mercury	0.33	0.7		0.2 U	0.3	0.2 U	0.2 U	0.12 J	ND	0.56	ND	0.45 N
Nickel	48.1	100		13.6 B	**593**	56.4	**138**	30.5 J	1.68 J	35.4 J	**2130 J**	**238**
Potassium	11900	--		3370 BE	59600 E	7150 E	14800 E	19100	15700	2260 J	1490 J	4030 JE
Selenium	10.1	10		2.4 U	2.4 UW	2.4 UW	2.4 UW	8.17 J	3.63 J	**12.5 J**	7.68 J	7.6 J
Silver	20 U	50		3.7 U	14.8 U	3.7 U	7.4 U	ND	ND	**2550 J**	ND	3.2 J
Sodium	280000	20,000		**133000**	17400	**49000**	**96600**	**35900**	**31200**	1470 J	1450 J	7470 E
Thallium	10 U	(0.5)		3.9 U	**22.3 B**	**11.4**	**10.2 B**	ND	ND	ND	ND	**3.9 J**
Vanadium	72.9	--		30.6 B	347	50.2	261	19.5 J	4.78 J	49 J	4570 J	1.3 J
Zinc	160 JV	(2,000)		50.1 *	539 *	45.4 *	341 *	582 N	70.4	217 N	41 N	173 E

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	**Sample Designation:** **Sample Date:**	SY-178W 08/16/06 (Dissolved)	TE-MW-D-2 11/14/06	TE-MW-D-2 11/14/06 (Dissolved)	TE-MW-D-2(SY-8W) 10/20/00	TE-MW-D-2(SY-8W) 10/20/00 (Dissolved)	TE-MW-IB/OB-1 10/20/00
Aluminum	28400 JV	--		ND	2100	254	212	ND	ND
Antimony	46.9 B	3		ND	**5.490 J**	**15.1 J**	ND	ND	ND
Arsenic	3.6 B	25		ND	3.370 J	ND	ND	ND	ND
Barium	280	1,000		ND	117 JE	ND	90.2B	85.5B	84.7B
Beryllium	1.8 B	(3)		ND	0.660 J	0.410 J	ND	ND	ND
Cadmium	2.2 B	5		ND	ND	ND	ND	ND	ND
Calcium	150000	--		20000	11500	8880	103000	99700	95000
Chromium	70.9 JV	50		ND	7.720 J	13.6	3.6B	2.0B	17.4
Cobalt	23.3 B	--		ND	2.580 J	0.770 J	ND	ND	ND
Copper	65.0 JV	200		30	$\boxed{\text{77.4 N}}$	ND	3.0B	ND	ND
Iron	46500 JV	300		ND	**11500**	**391**	**386**	ND	ND
Lead	48	25		ND	$\boxed{\textbf{75.4}}$	ND	ND	ND	ND
Magnesium	53000	(35,000)		6500	4440 J	3350 J	**40300**	**38700**	30500
Manganese	2650	300		17	229	$\boxed{\textbf{6980 J}}$	26.4	12.4B	6.4B
Mercury	0.33	0.7		ND	ND	ND	ND	ND	ND
Nickel	48.1	100		ND	8.020 J	2.260 J	1.4B	1.4B	1.5B
Potassium	11900	--		6700	2500 J	1380 J	4950B	4,710B	6870
Selenium	10.1	10		ND	5.560 J	$\boxed{\textbf{8980 J}}$	5.1	ND	ND
Silver	20 U	50		ND	ND	ND	ND	ND	ND
Sodium	280000	20,000		14000	2540 J	2910 J	**80500**	**79100**	**97000**
Thallium	10 U	(0.5)		ND	ND	ND	ND	ND	ND
Vanadium	72.9	--		ND	17.2 J	4.160 J	ND	ND	ND
Zinc	160 JV	(2,000)		62	84.8 N	25.4 N	29.2	15.4B	8.1B

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			Sample Date:	10/20/00 (Dissolved)	10/20/00	10/20/00 (Dissolved)	11/14/06	11/14/06 (Dissolved)	10/19/00	10/19/00 (Dissolved)	10/20/00
Aluminum	28400 JV	--		ND	296	ND	99.1 J	ND	54200	18.8B	4010
Antimony	46.9 B	3		ND	ND	ND	ND	ND	ND	ND	ND
Arsenic	3.6 B	25		ND	ND	ND	ND	ND	11.2	ND	ND
Barium	280	1,000		81.1B	67.5B	70.0B	115 J	95.6 J	**1650**	148B	66.6B
Beryllium	1.8 B	(3)		ND	ND	ND	0.110 J	0.110 J	**4.2B**	ND	ND
Cadmium	2.2 B	5		ND	ND	ND	3.020 J	2.920 J	ND	ND	ND
Calcium	150000	--		92600	112000	121000	119000	101000	150000	120000	33700
Chromium	70.9 JV	50		17.1	1.0B	ND	17.3	18.4	**341**	**140**	9.7B
Cobalt	23.3 B	--		ND	ND	ND	ND	ND	115	ND	2.8B
Copper	65.0 JV	200		ND	1.6B	ND	ND	ND	**231**	ND	17.3B
Iron	46500 JV	300		ND	**350**	ND	249 J	70.8 J	**137000**	ND	**4710**
Lead	48	25		ND	2.5B	ND	ND	ND	**63.7**	ND	3
Magnesium	53000	(35,000)		29400	33400	**36200**	**44500**	**37800**	**74100**	**44700**	9500
Manganese	2650	300		7.5B	101	82.7	**5050 J**	8.250 J	**19600**	239	**1000**
Mercury	0.33	0.7		ND	ND	ND	0.0900 J	0.0800 J	ND	ND	ND
Nickel	48.1	100		1.7B	2.2B	2.0B	4.3 J	4.840 J	**158**	1.9B	9.8B
Potassium	11900	--		6750	5780	6350	4.350 J	3580 J	28300	6610	2,800B
Selenium	10.1	10		ND	ND	ND	ND	ND	**11.9**	ND	ND
Silver	20 U	50		ND	ND	ND	4.740 J	4.110 J	ND	ND	ND
Sodium	280000	20,000		**94700**	**106000**	**114000**	**175000**	**145000**	**97900**	**93500**	**27200**
Thallium	10 U	(0.5)		ND	ND	ND	**6.930 J**	**5.240 J**	**22.4**	ND	ND
Vanadium	72.9	--		ND	2.2B	1.3B	1.890 J	ND	148	ND	6.7B
Zinc	160 JV	(2,000)		13.2B	8.0B	11.2B	57	49.2	303	7.0B	18.2B

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upgradient Yard boundary wells MW-30, MW-34, MW-47, MW-48D, MW-61, MW-62D,
MW-80, MW-83, MW-84, TE-MW-QA-2, TP-9, and TP-10. Analytical data generated
as part of both the initial OU-6 RI and the Supplemental OU-6 RI were used in determining
the Background Concentrations.
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Table 7. Summary of Metals in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	**Sample Designation:** / **Sample Date:**	TE-MW-A-3(SY-135) 10/20/00 (Dissolved)	TE-MW-A-3(SY-135W) 10/16/03	TE-MW-A-3(SY-135W) 10/16/03 (Dissolved)	TE-MW-A-4 08/16/00	TE-MW-A-4 08/16/00 (Dissolved)	TE-MW-B/C-2 10/20/00
Aluminum	28400 JV	--		ND	1400	ND	1860	20	20.6B
Antimony	46.9 B	3		ND	ND	ND	**8.3B**	**3.1**	ND
Arsenic	3.6 B	25		ND	ND	ND	ND	ND	ND
Barium	280	1,000		40.5B	ND	ND	48.6B	29.2	56.4B
Beryllium	1.8 B	(3)		ND	ND	ND	ND	ND	ND
Cadmium	2.2 B	5		ND	ND	ND	0.45B	ND	ND
Calcium	150000	--		31200	21000	20000	18100	18600	136000
Chromium	70.9 JV	50		ND	ND	ND	11.7	0.61	ND
Cobalt	23.3 B	--		1.1B	ND	ND	3.7B	0.62	ND
Copper	65.0 JV	200		4.1B	45	30	127	8.4	ND
Iron	46500 JV	300		120	**4100**	ND	**14800**	ND	ND
Lead	48	25		ND	15	ND	**116**	ND	ND
Magnesium	53000	(35,000)		8260	7200	6500	6510	6190	**58400**
Manganese	2650	300		**868**	**2700**	17	187	7	18.1
Mercury	0.33	0.7		ND	ND	ND	ND	ND	ND
Nickel	48.1	100		2.5B	ND	ND	11.5B	1.3	1.2B
Potassium	11900	--		1,780B	6800	6700	1,830B	1660	5700
Selenium	10.1	10		ND	ND	ND	1.5B	2.8	5
Silver	20 U	50		ND	ND	ND	0.62B	ND	ND
Sodium	280000	20,000		**26800**	14000	14000	**25600**	**26800**	**78700**
Thallium	10 U	(0.5)		ND	ND	ND	ND	ND	ND
Vanadium	72.9	--		ND	ND	ND	13.2B	ND	ND
Zinc	160 JV	(2,000)		6.3B	140	62	89.6	16.7	6.6B

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	Sample Designation: / Sample Date:	TE-MW-B/C-2 10/20/00 (Dissolved)	TE-MW-B/C-2 09/26/06	TE-MW-B/C-2 09/26/06 (Dissolved)	TE-MW-B/C-4 08/16/00	TE-MW-B/C-4 08/16/00 (Dissolved)	TE-MW-D-1 10/19/00	TE-MW-D-1 10/19/00 (Dissolved)	TE-MW-D-4 08/16/00
Aluminum	28400 JV	--		ND	3920	403	624	14.5	3250	ND	168B
Antimony	46.9 B	3		ND	**9570 J**	**7.12 J**	**4.4B**	**4.3**	ND	ND	2.2B
Arsenic	3.6 B	25		ND	**7730 J**	ND	ND	ND	ND	ND	ND
Barium	280	1,000		54.8B	87.9 JE	26.5 J	22.7B	19	233	182B	70.8B
Beryllium	1.8 B	(3)		ND	0.72 J	0.39 J	ND	ND	ND	ND	ND
Cadmium	2.2 B	5		ND	0.84 J	ND	ND	ND	ND	ND	0.29B
Calcium	150000	--		132000	19200	17400	14000	14700	106000	103000	119000
Chromium	70.9 JV	50		ND	13.6	1.42 J	2.6B	0.82	8.7B	ND	2.4B
Cobalt	23.3 B	--		ND	5.67 J	ND	1.3B	0.37	4.6B	1.0B	0.35B
Copper	65.0 JV	200		ND	105 N	**9800 JN**	6.0B	1.7	7.6B	ND	3.3B
Iron	46500 JV	300		ND	**12800**	**596**	**1110**	ND	**21400**	ND	224
Lead	48	25		ND	**102**	7.58	ND	ND	2.6B	ND	ND
Magnesium	53000	(35,000)		**57000**	4670 J	2430 J	5100	5210	**35800**	33900	**43600**
Manganese	2650	300		15.7	**363**	39.2	85.4	60.8	**19800**	**1620**	74.9
Mercury	0.33	0.7		ND	0.07 J	ND	ND	ND	ND	ND	ND
Nickel	48.1	100		1.3B	15 J	ND	2.3B	1.8	8.3B	1.4B	3.2B
Potassium	11900	--		5360	7420	7150	1,470B	1300	12800	11000	3,550B
Selenium	10.1	10		ND	**11.5 J**	6.39 J	ND	ND	ND	ND	3.1B
Silver	20 U	50		ND	1.64 J	ND	0.32B	0.46	ND	ND	ND
Sodium	280000	20,000		**76200**	10800	11700	**29700**	**31700**	**94100**	**92100**	**60300**
Thallium	10 U	(0.5)		ND	ND	ND	ND	ND	ND	ND	ND
Vanadium	72.9	--		ND	27.3 J	8.07 J	1.9B	0.37	11.5B	ND	ND
Zinc	160 JV	(2,000)		14.0B	108 N	33.7 N	21.8	10.2	24.7	11.8B	25.5

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	**Sample Designation:** **Sample Date:**	TE-MW-D-4 08/16/00 (Dissolved)	TE-MW-IB-1(SY-103) 10/19/00	TE-MW-IB-1(SY-103) 10/19/00 (Dissolved)	TE-MW-IB-2 10/19/00	TE-MW-IB-2 10/19/00 (Dissolved)	TE-MW-OB-1 10/19/00	TE-MW-OB-1 10/19/00 (Dissolved)
Aluminum	28400 JV	--		16.3	ND	16.6B	4480	ND	568	ND
Antimony	46.9 B	3		**7.7**	ND	ND	ND	ND	ND	ND
Arsenic	3.6 B	25		ND	ND	ND	ND	ND	ND	ND
Barium	280	1,000		74.1	152B	153B	113B	67.4B	194B	183B
Beryllium	1.8 B	(3)		ND	ND	ND	ND	ND	ND	ND
Cadmium	2.2 B	5		ND	ND	ND	ND	ND	ND	ND
Calcium	150000	--		126000	108000	109000	51000	49100	129000	126000
Chromium	70.9 JV	50		2	**173**	**173**	18.6	ND	10.4	9.0B
Cobalt	23.3 B	--		0.48	ND	ND	8.2B	1.8B	3.4B	3.4B
Copper	65.0 JV	200		2.4	ND	ND	22.9B	ND	2.1B	ND
Iron	46500 JV	300		ND	ND	ND	**28900**	20.5B	**137000**	ND
Lead	48	25		ND	ND	ND	15	ND	ND	ND
Magnesium	53000	(35,000)		**46000**	28600	28600	17300	15900	**52000**	**50700**
Manganese	2650	300		75.8	43.9	47.6	**3180**	**2560**	**2330**	**2220**
Mercury	0.33	0.7		ND	ND	ND	ND	ND	ND	ND
Nickel	48.1	100		2.7	2.6B	2.5B	16.7B	5.3B	5.2B	5.2B
Potassium	11900	--		3800	11100	11300	8010	6810	9200	8730
Selenium	10.1	10		2.8	ND	ND	ND	ND	ND	ND
Silver	20 U	50		ND	ND	ND	ND	ND	ND	ND
Sodium	280000	20,000		**63300**	**97500**	**98000**	**27700**	**28300**	**75000**	**74000**
Thallium	10 U	(0.5)		ND	ND	ND	ND	ND	ND	ND
Vanadium	72.9	--		ND	ND	ND	23.5B	ND	ND	ND
Zinc	160 JV	(2,000)		26.5	26.3	23.6	61.5	11.2B	15.6B	8.8B

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Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	Sample Designation: / Sample Date:	TE-MW-OB-1 06/04/08	TE-MW-OB-2 10/20/00	TE-MW-OB-2 10/20/00 (Dissolved)	TE-MW-QA-2 11/03/00	TE-MW-QA-2 11/03/00 (Dissolved)	TE-MW-QA-2 06/05/08 Background Well	TP-10 06/19/97 Background Well
Aluminum	28400 JV	--		520	13500	ND	15700	28.5B	1300	3740 JV
Antimony	46.9 B	3		12 U	ND	ND	ND	**5.8B**	12 U	42 U
Arsenic	3.6 B	25		7.5 U	ND	ND	ND	ND	7.5 U	3 U
Barium	280	1,000		130	340	171B	195B	35.2B	120	64.6 B
Beryllium	1.8 B	(3)		4 U	1.2B	ND	0.61B	ND	4 U	1 U
Cadmium	2.2 B	5		3.5 U	ND	ND	ND	ND	3.5 U	3 U
Calcium	150000	--		150000	149000	137000	67000	54700	140000	38400
Chromium	70.9 JV	50		50 U	**53.5**	ND	**66.2**	2.1B	50 U	11.4 JV
Cobalt	23.3 B	--		20 U	17.3B	1.7B	15.0B	ND	20 U	9 U
Copper	65.0 JV	200		50 U	39.3	ND	46.5	1.6B	50 U	27 JV
Iron	46500 JV	300		880	**103000**	283	**44100**	ND	**6800**	**3900 JV**
Lead	48	25		4 U	14.8	ND	17.9	ND	**48**	6.6 JV
Magnesium	53000	(35,000)		**52000**	**62800**	**56300**	27700	18700	**53000**	6630
Manganese	2650	300		170	**5090**	**2790**	**1960**	**573**	**880**	23
Mercury	0.33	0.7		0.7 U	ND	ND	ND	ND	0.7 U	0.2 U
Nickel	48.1	100		50 U	35.2B	3.1B	33.5B	2.6B	50 U	3.4 B
Potassium	11900	--		5000 U	4950B	10300	17100	9720	5000 U	4870 B
Selenium	10.1	10		40 U	6.8N	ND	ND	ND	40 U	3 U
Silver	20 U	50		20 U	ND	ND	ND	ND	20 U	2.7 B
Sodium	280000	20,000		**140000**	**79400**	**78100**	**65000**	**60600**	**81000**	**67400**
Thallium	10 U	(0.5)		10 U	**12.2**	7.9B	ND	ND	10 U	3 UJV
Vanadium	72.9	--		50 U	47.8B	ND	45.0B	ND	50 U	9 U
Zinc	160 JV	(2,000)		50 U	69.3	7.2B	111	5.2B	50 U	28.6 JV

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Parameter	Background Concentrations	NYSDEC AWQSGVs	**Sample Designation:**	TP-10	TP-8	TP-9	TSB-9[(1)]	TSB-9[(1)] F	TSB-10[(2)]	TSB-10[(2)] F	TSB-16[(3)]	TSB-16[(3)] F
(Concentrations in µg/L)	(µg/L)*	(µg/L)**	**Sample Date:**	06/03/08	06/19/97	06/19/97	10/24/00	10/24/00	10/23/00	10/23/00	10/24/00	10/24/00
				Background Well		Background Well						
Aluminum	28400 JV	--		180 U	38000 JV	28400 JV	213	27.2	73.2	187	3670	19.8
Antimony	46.9 B	3		12 U	42 U	42 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U	5.3 U
Arsenic	3.6 B	25		7.5 U	9 B	3 U	22.7	3.7 U	**27.5**	20.8	3.7 U	3.7 U
Barium	280	1,000		52	291	275	682	391	266	242	192	108
Beryllium	1.8 B	(3)		4 U	**7.1**	1.8 B	0.1 U	0.1 U	0.1 U	0.1	0.27	0.1 U
Cadmium	2.2 B	5		3.5 U	3 U	3 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
Calcium	150000	--		65000	22200	35800	42600	33800	22900	22500	47400	36500
Chromium	70.9 JV	50		50 U	**161 JV**	**70.9 JV**	3.7	0.55	0.5 U	2.2	32.9	0.5 U
Cobalt	23.3 B	--		20 U	38.8 B	23.3 B	3.2	2.5	0.5 U	0.86	4.7	0.5 U
Copper	65.0 JV	200		50 U	119 JV	65 JV	11.1	0.7 U	0.92	6.1	36.1	0.7 U
Iron	46500 JV	300		280 U	**104000 JV**	**46500 JV**	**59600**	**10700**	**22100**	**21400**	**15900**	242
Lead	48	25		4 U	**60.5 JV**	21.9 JV	4	1.4 U	1.4 U	2.9	11.1	1.4 U
Magnesium	53000	(35,000)		5200	15900	24300	9490	7710	5340	5200	11600	7600
Manganese	2650	300		40 U	**2980**	**685**	**2960 J**	**2290**	**734 J**	**721**	**1630 J**	**1160**
Mercury	0.33	0.7		0.7 U	0.36	0.27	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	48.1	100		50 U	69.4	48.1	7.2	4.4	4.3	4.5	16.2	2.3
Potassium	11900	--		5000 U	6980	9750	5170	4300	5060	5070	4220	2560
Selenium	10.1	10		40 U	3 U	3 U	4	3.8 U	3.8 U	3.8 U	3.8 U	4.2 J
Silver	20 U	50		20 U	2 U	2 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.86
Sodium	280000	20,000		**76000**	14900	10200	14100	11700	18964	11964	13928	49464
Thallium	10 U	(0.5)		10 U	3 UJV	3 UJV	4.8 U	4.8 U	6.3	4.8 U	4.8 U	4.8 U
Vanadium	72.9	--		50 U	181	72.9	2.9	0.62	1.8	3	11.5	0.9
Zinc	160 JV	(2,000)		50 U	269 JV	160 JV	41.1	21.5	31.4	30.4	59	16.2

Notes:
R(following Sample Designation) - Replicate sample
B - Analyte concentration was between method detection limit
and practical quantitation limit
E - Reported valude is estimated because of the presence of interference
J - Estimated value
U - Indicates that the compound was analyzed for but not detected
V - Data was qualified by validator
ND - Not detected; reporting limit not available
µg/L - Micrograms per liter
NA - Not analyzed
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV
Outlined - Exceeds Yard Background Conentration
(1) - Geoprobe™ sample collected from 17.5 feet below land surface
(2) - Geoprobe™ sample collected from 13.5 feet below land surface
(3) - Geoprobe™ sample collected from 19.5 feet below land surface
F - Filtered sample
* - Background concentrations for metals were determined based on analytical results for upgradient Yard boundary wells MW-30, MW-34, MW-47, MW-48D, MW-61, MW-62D, MW-80, MW-83, MW-84, TE-MW-QA-2, TP-9, and TP-10. Analytical data generated as part of both the initial OU-6 RI and the Supplemental OU-6 RI were used in determining the Background Concentrations.
** - NYSDEC Standards and Guidance Values taken from October 22, 1993 (Reissued June, 1998) NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standatds and Guidance Values. Guidance Values are shown (in parentheses).

Table 7. Summary of Metals in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	NYSDEC AWQSGVs (µg/L)**	**Sample Designation:** UT-9AW **Sample Date:** 06/04/08
Aluminum	28400 JV	--	330
Antimony	46.9 B	3	12 U
Arsenic	3.6 B	25	7.5 U
Barium	280	1,000	170
Beryllium	1.8 B	(3)	4 U
Cadmium	2.2 B	5	3.5 U
Calcium	150000	--	120000
Chromium	70.9 JV	50	50 U
Cobalt	23.3 B	--	20 U
Copper	65.0 JV	200	50 U
Iron	46500 JV	300	**800**
Lead	48	25	4 U
Magnesium	53000	(35,000)	**42000**
Manganese	2650	300	40 U
Mercury	0.33	0.7	0.7 U
Nickel	48.1	100	50 U
Potassium	11900	--	5000 U
Selenium	10.1	10	40 U
Silver	20 U	50	20 U
Sodium	280000	20,000	**230000**
Thallium	10 U	(0.5)	10 U
Vanadium	72.9	--	50 U
Zinc	160 JV	(2,000)	50 U

Notes:
R(following Sample Designation) - Replicate sample
B - Analyte concentration was between method detection limit and practical quantitation limit
E - Reported valude is estimated because of the presence of interference
J - Estimated value
U - Indicates that the compound was analyzed for but not detected
V - Data was qualified by validator
ND - Not detected; reporting limit not available
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NYSDEC - New York State Department of Environmental Conservation
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(3) - Geoprobe™ sample collected from 19.5 feet below land surface
F - Filtered sample
* - Background concentrations for metals were determined based on analytical results for upgradient Yard boundary wells MW-30, MW-34, MW-47, MW-48D, MW-61, MW-62D, MW-80, MW-83, MW-84, TE-MW-QA-2, TP-9, and TP-10. Analytical data generated as part of both the initial OU-6 RI and the Supplemental OU-6 RI were used in determining the Background Concentrations.
** - NYSDEC Standards and Guidance Values taken from October 22, 1993 (Reissued June, 1998) NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standatds and Guidance Values. Guidance Values are shown (in parentheses).

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-9D 06/03/08	MW-9S 06/03/08	MW-13D 06/03/08	MW-13D DUP 06/03/08	MW-13S 06/02/08
Aroclor-1016			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1221			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1232			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1242			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1248			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1254			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1260			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1262			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1268			0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
* A petroleum sheen was present
(1) - Split sample analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-19 02/06/97	MW-19 02/21/97	MW-19 03/27/97	MW-19 06/18/97	MW-19[1] 09/18/97
Aroclor-1016			1 U	1.0 U	1 U	0.07 U	ND
Aroclor-1221			2 U	2.0 U	2.1 U	0.14 U	ND
Aroclor-1232			1 U	1.0 U	1 U	0.07 U	ND
Aroclor-1242			1 U	1.0 U	1 U	0.07 U	ND
Aroclor-1248			1 U	1.0 U	1 U	0.07 U	ND
Aroclor-1254			1 U	1.0 U	1 U	0.07 U	ND
Aroclor-1260			1 U	1.0 U	1 U	0.07 U	ND
Aroclor-1262			NA	NA	NA	NA	NA
Aroclor-1268			NA	NA	NA	NA	NA
Total PCBs:	0.09		0	0	0	0	ND

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-19 11/14/97	MW-19(1) 08/13/98	MW-19(1) 02/25/99	MW-19(1) 06/03/99	MW-19(1) 09/09/99
Aroclor-1016			1 U	ND	ND	ND	ND
Aroclor-1221			2 U	ND	ND	ND	ND
Aroclor-1232			1 U	ND	ND	ND	ND
Aroclor-1242			1 U	ND	ND	ND	ND
Aroclor-1248			0.22 J	ND	ND	ND	ND
Aroclor-1254			1 U	ND	ND	ND	ND
Aroclor-1260			1 U	ND	ND	ND	ND
Aroclor-1262			NA	NA	NA	NA	NA
Aroclor-1268			NA	NA	NA	NA	NA
Total PCBs:	0.09		0.22	ND	ND	ND	ND

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-19 04/15/03	MW-19 04/22/03	MW-19 04/30/03	MW-19 05/14/03	MW-19 08/25/03
Aroclor-1016			1 U	1 U	1 U	0.25 U	0.025 U
Aroclor-1221			1 U	1 U	1 U	0.083 U	0.0082 U
Aroclor-1232			1 U	1 U	1 U	0.094 U	0.0093 U
Aroclor-1242			1 U	1 U	1 U	0.083 U	0.0082 U
Aroclor-1248			1 U	1 U	1 U	0.12 U	0.012 U
Aroclor-1254			1 U	1 U	1 U	0.052 U	0.0052 U
Aroclor-1260			1 U	1 U	1 U	0.01 U	0.001 U
Aroclor-1262			NA	NA	NA	NA	NA
Aroclor-1268			NA	NA	NA	NA	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-19 06/02/08	MW-23D 06/20/97	MW-25A 06/19/97	MW-27 06/18/97	MW-27 06/04/08
Aroclor-1016			0.25 U	0.06 U	0.07 U	0.06 U	0.31 U
Aroclor-1221			0.25 U	0.13 U	0.14 U	0.13 U	0.31 U
Aroclor-1232			0.25 U	0.06 U	0.07 U	0.06 U	0.31 U
Aroclor-1242			0.25 U	0.06 U	0.07 U	0.06 U	0.31 U
Aroclor-1248			0.25 U	0.06 U	0.07 U	0.06 U	0.31 U
Aroclor-1254			0.25 U	0.06 U	0.07 U	0.06 U	0.31 U
Aroclor-1260			0.25 U	0.01 J	0.019 J	0.06 U	0.31 U
Aroclor-1262			0.25 U	NA	NA	NA	0.31 U
Aroclor-1268			0.25 U	NA	NA	NA	0.31 U
Total PCBs:	0.09		0	0.01	0.019	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
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Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-27 DUP 06/04/08	MW-28 06/18/97	MW-29 06/18/97	MW-30 06/18/97	MW-34 06/18/97
Aroclor-1016			0.31 U	0.06 U	0.06 U	0.06 U	0.06 U
Aroclor-1221			0.31 U	0.13 U	0.13 U	0.13 U	0.13 U
Aroclor-1232			0.31 U	0.06 U	0.06 U	0.06 U	0.06 U
Aroclor-1242			0.31 U	0.06 U	0.06 U	0.06 U	0.06 U
Aroclor-1248			0.31 U	0.06 U	0.06 U	0.06 U	0.06 U
Aroclor-1254			0.31 U	0.06 U	0.06 U	0.06 U	0.06 U
Aroclor-1260			0.31 U	0.06 U	0.06 U	0.06 U	0.06 U
Aroclor-1262			0.31 U	NA	NA	NA	NA
Aroclor-1268			0.31 U	NA	NA	NA	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
* A petroleum sheen was present
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-35 02/06/97	MW-35 02/21/97	MW-35 03/27/97	MW-35 06/18/97	MW-35(1) 09/18/97
Aroclor-1016			1 U	1 U	1 U	0.06 U	ND
Aroclor-1221			2 U	2 U	2 U	0.13 U	ND
Aroclor-1232			1 U	1 U	1 U	0.06 U	ND
Aroclor-1242			1 U	1 U	1 U	0.06 U	ND
Aroclor-1248			1 U	1 U	1 U	0.06 U	ND
Aroclor-1254			1 U	1 U	1 U	0.06 U	ND
Aroclor-1260			1 U	1 U	1 U	0.06 U	ND
Aroclor-1262			NA	NA	NA	NA	NA
Aroclor-1268			NA	NA	NA	NA	NA
Total PCBs:	0.09		0	0	0	0	ND

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
* A petroleum sheen was present
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-35 11/14/97	MW-35[1] 08/13/98	MW-35 DUP[1] 08/13/98	MW-35[1] 02/25/99	MW-35[1] 06/03/99
Aroclor-1016			1 U	ND	ND	ND	ND
Aroclor-1221			2 U	ND	ND	ND	ND
Aroclor-1232			1 U	ND	ND	ND	ND
Aroclor-1242			1 U	ND	ND	ND	ND
Aroclor-1248			0.3 J	ND	ND	ND	ND
Aroclor-1254			1 U	ND	ND	ND	ND
Aroclor-1260			1 U	ND	ND	ND	ND
Aroclor-1262			NA	NA	NA	NA	NA
Aroclor-1268			NA	NA	NA	NA	NA
Total PCBs:	0.09		0.3	ND	ND	ND	ND

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-35[1] 09/09/99	MW-35 04/15/03	MW-35 04/22/03	MW-35 08/25/03	MW-35 06/02/08
Aroclor-1016			ND	1 U	1 U	0.024 U	0.25 U
Aroclor-1221			ND	1 U	1 U	0.0082 U	0.25 U
Aroclor-1232			ND	1 U	1 U	0.0092 U	0.25 U
Aroclor-1242			ND	1 U	1 U	0.0082 U	0.25 U
Aroclor-1248			ND	1 U	1 U	0.012 U	0.25 U
Aroclor-1254			ND	1 U	1 U	0.0051 U	0.25 U
Aroclor-1260			ND	1 U	1 U	0.001 U	0.25 U
Aroclor-1262			NA	NA	NA	NA	0.25 U
Aroclor-1268			NA	NA	NA	NA	0.25 U
Total PCBs:	0.09		ND	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
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PCBs - Polychlorinated Biphenyl Compounds
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-37 06/18/97	MW-37 06/02/08	MW-38D 06/18/97	MW-38D 06/02/08	MW-39D 06/18/97
Aroclor-1016			0.06 U	0.25 U	0.07 U	0.25 U	0.06 U
Aroclor-1221			0.13 U	0.25 U	0.14 U	0.25 U	0.13 U
Aroclor-1232			0.06 U	0.25 U	0.07 U	0.25 U	0.06 U
Aroclor-1242			0.06 U	0.25 U	0.07 U	0.25 U	0.06 U
Aroclor-1248			0.06 U	0.25 U	0.07 U	0.25 U	0.06 U
Aroclor-1254			0.06 U	0.25 U	0.07 U	0.25 U	0.06 U
Aroclor-1260			0.06 U	0.25 U	0.07 U	0.25 U	0.06 U
Aroclor-1262			NA	0.25 U	NA	0.25 U	NA
Aroclor-1268			NA	0.25 U	NA	0.25 U	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-39D 06/02/08	MW-40D 06/18/97	MW-41 06/18/97	MW-42 06/18/97	MW-43 06/18/97
Aroclor-1016			0.25 U	0.06 U	0.07 U	0.07 U	0.06 U
Aroclor-1221			0.25 U	0.13 U	0.14 U	0.14 U	0.13 U
Aroclor-1232			0.25 U	0.06 U	0.07 U	0.07 U	0.06 U
Aroclor-1242			0.25 U	0.06 U	0.07 U	0.07 U	0.06 U
Aroclor-1248			0.25 U	0.06 U	0.07 U	0.07 U	0.06 U
Aroclor-1254			0.25 U	0.06 U	0.07 U	0.07 U	0.06 U
Aroclor-1260			0.25 U	0.06 U	0.07 U	0.07 U	0.06 U
Aroclor-1262			0.25 U	NA	NA	NA	NA
Aroclor-1268			0.25 U	NA	NA	NA	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
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F - Filtered sample

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-44D 06/18/97	MW-45 06/18/97	MW-45 06/04/08	MW-46 06/18/97	MW-47 06/20/97
Aroclor-1016			0.07 U	0.06 U	0.5 U	0.06 U	0.06 U
Aroclor-1221			0.14 U	0.13 U	0.5 U	0.13 U	0.13 U
Aroclor-1232			0.07 U	0.06 U	0.5 U	0.06 U	0.06 U
Aroclor-1242			0.07 U	0.06 U	0.5 U	0.06 U	0.06 U
Aroclor-1248			0.07 U	0.06 U	0.5 U	0.06 U	0.06 U
Aroclor-1254			0.07 U	0.06 U	0.5 U	0.06 U	0.06 U
Aroclor-1260			0.07 U	0.06 U	0.5 U	0.06 U	0.06 U
Aroclor-1262			NA	NA	0.5 U	NA	NA
Aroclor-1268			NA	NA	0.5 U	NA	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
* A petroleum sheen was present
(1) - Split sample analyzed by New York City Transit
(2) - Geoprobe™ sample collected from 17.5 feet below land surface
(3) - Geoprobe™ sample collected from 13.5 feet below land surface
(4) - Geoprobe™ sample collected from 19.5 feet below land surface
F - Filtered sample

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-48D 06/20/97	MW-48D 06/03/08	MW-49 06/18/97	MW-57 06/18/97	MW-59 06/18/97
Aroclor-1016			0.06 U	0.28 U	0.06 U	0.06 U	0.06 U
Aroclor-1221			0.13 U	0.28 U	0.13 U	0.13 U	0.13 U
Aroclor-1232			0.06 U	0.28 U	0.06 U	0.06 U	0.06 U
Aroclor-1242			0.06 U	0.28 U	0.06 U	0.06 U	0.06 U
Aroclor-1248			0.06 U	0.28 U	0.06 U	0.06 U	0.06 U
Aroclor-1254			0.06 U	0.28 U	0.06 U	0.06 U	0.06 U
Aroclor-1260			0.06 U	0.28 U	0.06 U	0.06 U	0.06 U
Aroclor-1262			NA	0.28 U	NA	NA	NA
Aroclor-1268			NA	0.28 U	NA	NA	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
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(4) - Geoprobe™ sample collected from 19.5 feet below land surface
F - Filtered sample

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-61 06/18/97	MW-62D 06/18/97	MW-62D 06/04/08	MW-64 06/19/97	MW-65 06/19/97
Aroclor-1016			0.06 U	0.06 U	0.27 U	0.06 U	0.06 U
Aroclor-1221			0.13 U	0.13 U	0.27 U	0.13 U	0.13 U
Aroclor-1232			0.06 U	0.06 U	0.27 U	0.06 U	0.06 U
Aroclor-1242			0.06 U	0.06 U	0.27 U	0.06 U	0.06 U
Aroclor-1248			0.06 U	0.06 U	0.27 U	0.06 U	0.06 U
Aroclor-1254			0.06 U	0.06 U	0.27 U	0.06 U	0.06 U
Aroclor-1260			0.06 U	0.06 U	0.27 U	0.06 U	0.06 U
Aroclor-1262			NA	NA	0.27 U	NA	NA
Aroclor-1268			NA	NA	0.27 U	NA	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
* A petroleum sheen was present
(1) - Split sample analyzed by New York City Transit
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(4) - Geoprobe™ sample collected from 19.5 feet below land surface
F - Filtered sample

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-65R 06/19/97	MW-66 06/19/97	MW-67 06/19/97	MW-68 06/04/08	MW-68* 06/19/97
Aroclor-1016			0.06 U	0.06 U	0.06 U	0.28 U	0.14 U
Aroclor-1221			0.13 U	0.13 U	0.13 U	0.28 U	0.29 U
Aroclor-1232			0.06 U	0.06 U	0.06 U	0.28 U	0.14 U
Aroclor-1242			0.06 U	0.06 U	0.06 U	0.28 U	0.14 U
Aroclor-1248			0.06 U	0.06 U	0.06 U	0.28 U	0.14 U
Aroclor-1254			0.06 U	0.06 U	0.06 U	0.28 U	0.14 U
Aroclor-1260			0.06 U	0.06 U	0.06 U	0.28 U	0.077 J*
Aroclor-1262			NA	NA	NA	0.28 U	NA
Aroclor-1268			NA	NA	NA	0.28 U	NA
Total PCBs:	0.09		0	0	0	0	0.077

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
* A petroleum sheen was present
(1) - Split sample analyzed by New York City Transit
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F - Filtered sample

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-69D 06/20/97	MW-70 06/02/08	MW-78 07/05/05	MW-79 07/05/05	MW-79 06/03/08
Aroclor-1016			0.06 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1221			0.13 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1232			0.06 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1242			0.06 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1248			0.06 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1254			0.06 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1260			0.06 U	0.25 U	0.25 U	0.25 U	0.25 U
Aroclor-1262			NA	0.25 U	NA	NA	0.25 U
Aroclor-1268			NA	0.25 U	NA	NA	0.25 U
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
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DUP - Duplicate
NA - Not analyzed
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* A petroleum sheen was present
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(4) - Geoprobe™ sample collected from 19.5 feet below land surface
F - Filtered sample

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-80 06/04/08	MW-82 06/05/08	MW-83 06/04/08	MW-84 06/05/08	MW-85 06/02/08
Aroclor-1016			0.29 U	0.31 U	0.36 U	0.33 U	0.5 U
Aroclor-1221			0.29 U	0.31 U	0.36 U	0.33 U	0.5 U
Aroclor-1232			0.29 U	0.31 U	0.36 U	0.33 U	0.5 U
Aroclor-1242			0.29 U	0.31 U	0.36 U	0.33 U	0.5 U
Aroclor-1248			0.29 U	0.31 U	0.36 U	0.33 U	0.5 U
Aroclor-1254			0.29 U	0.31 U	0.36 U	0.33 U	0.5 U
Aroclor-1260			0.29 U	0.31 U	0.36 U	0.33 U	0.5 U
Aroclor-1262			0.29 U	0.31 U	0.36 U	0.33 U	0.5 U
Aroclor-1268			0.29 U	0.31 U	0.36 U	0.33 U	0.5 U
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
* A petroleum sheen was present
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F - Filtered sample

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-86 05/21/08	MW-87 05/21/08	MW-88 05/21/08	MW-89 05/21/08	MW-90 06/03/08
Aroclor-1016			0.28 U	0.25 U	0.25 U	0.25 U	0.33 U
Aroclor-1221			0.28 U	0.25 U	0.25 U	0.25 U	0.33 U
Aroclor-1232			0.28 U	0.25 U	0.25 U	0.25 U	0.33 U
Aroclor-1242			0.28 U	0.25 U	0.25 U	0.25 U	0.33 U
Aroclor-1248			0.28 U	0.25 U	0.25 U	0.25 U	0.33 U
Aroclor-1254			0.28 U	0.25 U	0.25 U	0.25 U	0.33 U
Aroclor-1260			0.28 U	0.25 U	0.25 U	0.25 U	0.33 U
Aroclor-1262			0.28 U	0.25 U	0.25 U	0.25 U	0.33 U
Aroclor-1268			0.28 U	0.25 U	0.25 U	0.25 U	0.33 U
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
NA - Not analyzed
ND - Not detected; reporting limit not available
* A petroleum sheen was present
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	MW-91 06/03/08	MW-92 06/03/08	SSY-23 08/20/99	SSY-46 08/20/99	SSY-49 08/20/99
Aroclor-1016			0.27 U	0.25 U	0.51 U	0.55 U	0.5 U
Aroclor-1221			0.27 U	0.25 U	0.51 U	0.55 U	0.5 U
Aroclor-1232			0.27 U	0.25 U	0.51 U	0.55 U	0.5 U
Aroclor-1242			0.27 U	0.25 U	0.51 U	0.55 U	0.5 U
Aroclor-1248			0.27 U	0.25 U	0.51 U	0.55 U	0.5 U
Aroclor-1254			0.27 U	0.25 U	1 U	1.1 U	1 U
Aroclor-1260			0.27 U	0.25 U	1 U	1.1 U	1 U
Aroclor-1262			0.27 U	0.25 U	NA	NA	NA
Aroclor-1268			0.27 U	0.25 U	NA	NA	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
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Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** / **Sample Date:**	SSY-51 08/20/99	TE-MW-OB-1 06/04/08	TE-MW-QA-2 06/05/08	TP-8 06/19/97	TP-9 06/19/97
Aroclor-1016			0.51 U	0.38 U	0.33 U	0.06 U	0.06 U
Aroclor-1221			0.51 U	0.38 U	0.33 U	0.13 U	0.13 U
Aroclor-1232			0.51 U	0.38 U	0.33 U	0.06 U	0.06 U
Aroclor-1242			0.51 U	0.38 U	0.33 U	0.06 U	0.06 U
Aroclor-1248			0.51 U	0.38 U	0.33 U	0.06 U	0.06 U
Aroclor-1254			1 U	0.38 U	0.33 U	0.06 U	0.06 U
Aroclor-1260			1 U	0.38 U	0.33 U	0.06 U	0.06 U
Aroclor-1262			NA	0.38 U	0.33 U	NA	NA
Aroclor-1268			NA	0.38 U	0.33 U	NA	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
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F - Filtered sample

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	TP-10 06/19/97	TP-10 06/03/08	TSB-9[(2)] 10/24/00	TSB-9[(2)] F 10/24/00	TSB-10[(3)] 10/23/00
Aroclor-1016			0.06 U	0.31 U	0.5 U	0.5 U	0.5 U
Aroclor-1221			0.13 U	0.31 U	0.5 U	0.5 U	0.5 U
Aroclor-1232			0.06 U	0.31 U	0.5 U	0.5 U	0.5 U
Aroclor-1242			0.06 U	0.31 U	0.5 U	0.5 U	0.5 U
Aroclor-1248			0.06 U	0.31 U	0.5 U	0.5 U	0.5 U
Aroclor-1254			0.06 U	0.31 U	0.5 U	0.5 U	0.5 U
Aroclor-1260			0.06 U	0.31 U	0.5 U	0.5 U	0.5 U
Aroclor-1262			NA	0.31 U	NA	NA	NA
Aroclor-1268			NA	0.31 U	NA	NA	NA
Total PCBs:	0.09		0	0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
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F - Filtered sample

Table 8. Summary of Polychlorinated Biphenyl Compounds in Groundwater Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	**Sample Designation:** **Sample Date:**	TSB-10[3] F 10/23/00	TSB-16[4] 10/24/00	TSB-16[4] F 10/24/00	UT-9AW 06/04/08
Aroclor-1016			0.5 U	0.5 U	0.5 U	0.31 U
Aroclor-1221			0.5 U	0.5 U	0.5 U	0.31 U
Aroclor-1232			0.5 U	0.5 U	0.5 U	0.31 U
Aroclor-1242			0.5 U	0.5 U	0.5 U	0.31 U
Aroclor-1248			0.5 U	0.5 U	0.5 U	0.31 U
Aroclor-1254			0.5 U	0.5 U	0.5 U	0.31 U
Aroclor-1260			0.5 U	0.5 U	0.5 U	0.31 U
Aroclor-1262			NA	NA	NA	0.31 U
Aroclor-1268			NA	NA	NA	0.31 U
Total PCBs:	0.09		0	0	0	0

Notes:
J - Estimated value
U - Not Detected
µg/L - Micrograms per liter
NYSDEC - New York State Department of Environmental Conservation
AWQSGVs - Ambient Water-Quality Standards and Guidance Values
Bold - Exceeds NYSDEC AWQSGV (No exceedances on this table)
PCBs - Polychlorinated Biphenyl Compounds
DUP - Duplicate
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F - Filtered sample

Table 9. Summary of Chloride and Total Dissolved Solids in Groundwater Samples, OU-6 RI/FS Report
Sunnyside Yard, Queens, New York

		Parameter (Concentrations in mg/L)	
Sample Designation	**Date Sampled**	**Chloride**	**Total Dissolved Solids**
Class GA Ground-Water Standard		**250**	**500**
Class GSA (saline ground water) Criteria		**>250**	**> 1000**
MW-9D	6/3/2008	170	740
MW-9S	6/3/2008	150	740
MW-13D	6/3/2008	230	910
MW-13D DUP	6/3/2008	230	840
MW-13S	6/2/2008	220	740
MW-19	6/18/1997	19	373
MW-19	6/2/2008	10	330
MW-23D	6/20/1997	105	464
MW-25A	6/18/1997	17.4	114
MW-27	6/18/1997	76 V	1090
MW-27	6/4/2008	280 D	850
MW-27 DUP	6/4/2008	280 D	840
MW-28	6/18/1997	725	1480
MW-29	6/18/1997	277	725
MW-30	6/18/1997	313	826
MW-34	6/18/1997	540	1410
MW-35	6/18/1997	20.3	254
MW-35	6/2/2008	150 D	560
MW-37	6/18/1997	115	493
MW-37	6/2/2008	160	500
MW-38D	6/18/1997	220	1030
MW-38D	6/2/2008	220 D	730
MW-39D	7/17/1997	226	842
MW-39D	6/2/2008	240 D	810
MW-40D	6/18/1997	339	1150
MW-41	6/18/1997	384	832
MW-42	6/18/1997	12.2	235
MW-43	6/18/1997	208	580
MW-44D	6/18/1997	345	1230
MW-45	6/18/1997	253	693
MW-45	6/4/2008	450 D	950
MW-46	6/18/1997	127	436
MW-47	6/20/1997	220	625
MW-48D	6/20/1997	126	583
MW-48D	6/3/2008	30	160
MW-49	6/18/1997	15.1	134
MW-57	6/18/1997	48.4	318
MW-59	6/18/1997	7	297
MW-61	6/18/1997	81.1	455
MW-62D	6/18/1997	292	1060
MW-62D	6/4/2008	370 D	1100
MW-64	6/19/1997	43.6	214
MW-65	6/18/1997	166	602
MW-66	6/19/1997	358	1180
MW-67	6/18/1997	54.1	222
MW-68	6/4/2008	42	230

Table 9. Summary of Chloride and Total Dissolved Solids in Groundwater Samples, OU-6 RI/FS Report Sunnyside Yard, Queens, New York

		Parameter (Concentrations in mg/L)	
Sample Designation	**Date Sampled**	**Chloride**	**Total Dissolved Solids**
Class GA Ground-Water Standard		**250**	**500**
Class GSA (saline ground water) Criteria		**>250**	**> 1000**
MW-69D	6/20/1997	290 V	936
MW-70	6/2/2008	34	220
MW-78	7/5/2005	68	430
MW-79	7/5/2005	28	430
MW-79	6/3/2008	26	360
MW-80	6/4/2008	750 D	1600
MW-82	6/5/2008	91	380
MW-83	6/4/2008	110	550
MW-84	6/5/2008	11	210
MW-85	6/2/2008	37	270
MW-86	5/21/2008	20	290
MW-87	5/21/2008	31	390
MW-88	5/21/2008	37	340
MW-89	5/21/2008	130	320
MW-90	6/3/2008	200 D	680
MW-91	6/3/2008	32	270
MW-92	6/3/2008	160	640
TE-MW-OB-1	6/4/2008	380 D	960
TE-MW-QA-2	6/5/2008	230 D	960
TP-8	6/18/1997	16.3	100
TP-9	6/18/1997	34.4	172
TP-10	6/18/1997	100	348
TP-10	6/3/2008	130	440
TSB-9	10/24/2000	17	160
TSB-10	10/23/2000	48	220
TSB-16	10/24/2000	110	350
UT-9AW	6/4/2008	530 D	1200

Notes:
mg/L - Milligrams per liter
D - Dilution
V - Data was qualified by data validator

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-1	PC-1	PC-2	PC-2
	Sample Date:	06/22/05	06/22/05	06/22/05	06/22/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
1,1,1-Trichloroethane		0.2 U	1.1 U	0.99	5.4
1,1,2,2-Tetrachloroethane		0.2 U	1.4 U	0.2 U	1.4 U
1,1,2-Trichloroethane		0.2 U	1.1 U	0.2 U	1.1 U
1,1-Dichloroethane		0.2 U	0.81 U	0.2 U	0.81 U
1,1-Dichloroethene		0.2 U	0.79 U	0.2 U	0.79 U
1,2,4-Trichlorobenzene		0.5 U	3.7 U	0.5 U	3.7 U
1,2,4-Trimethylbenzene		6	29	0.92	4.5
1,2-Dibromoethane		0.2 U	1.5 U	0.2 U	1.5 U
1,2-Dichlorobenzene		0.2 U	1.2 U	0.2 U	1.2 U
1,2-Dichloroethane		0.2 U	0.81 U	0.2 U	0.81 U
1,2-Dichloroethene (total)		0.2 U	0.79 U	0.2 U	0.79 U
1,2-Dichloropropane		0.2 U	0.92 U	0.2 U	0.92 U
1,2-Dichlorotetrafluoroethane		0.2 U	1.4 U	0.2 U	1.4 U
1,3,5-Trimethylbenzene		1.5	7.4	0.23	1.1
1,3-Butadiene		6.3	14	8.7	19
1,3-Dichlorobenzene		0.2 U	1.2 U	0.2 U	1.2 U
1,4-Dichlorobenzene		0.2 U	1.2 U	0.2 U	1.2 U
1,4-Dioxane		5 U	18 U	5 U	18 U
2,2,4-Trimethylpentane		0.46	2.1	0.2 U	0.93 U
2-Chlorotoluene		0.2 U	1 U	0.2 U	1 U
3-Chloropropene		0.2 U	0.63 U	0.2 U	0.63 U
4-Ethyltoluene		4.9	24	0.85	4.2
Acetone		38	90	44 E	100 E
Benzene		2.5	8	4	13
Bromodichloromethane		0.2 U	1.3 U	0.2 U	1.3 U
Bromoethene		0.2 U	0.87 U	0.2 U	0.87 U
Bromoform		0.2 U	2.1 U	0.2 U	2.1 U
Bromomethane		0.2 U	0.78 U	0.2 U	0.78 U
Carbon Disulfide		1.3	4	2.1	6.5
Carbon Tetrachloride		0.2 U	1.3 U	0.2 U	1.3 U
Chlorobenzene		0.2 U	0.92 U	0.2 U	0.92 U
Chloroethane		0.2 U	0.53 U	0.2 U	0.53 U
Chloroform		0.2 U	0.98 U	0.3	1.5
Chloromethane		0.5 U	1 U	0.54	1.1
cis-1,2-Dichloroethene		0.2 U	0.79 U	0.2 U	0.79 U
cis-1,3-Dichloropropene		0.2 U	0.91 U	0.2 U	0.91 U
Cyclohexane		0.61	2.1	0.99	3.4
Dibromochloromethane		0.2 U	1.7 U	0.2 U	1.7 U
Dichlorodifluoromethane		0.68	3.4	1.7	8.4
Ethylbenzene		3.4	15	1	4.3
Freon TF		0.2 U	1.5 U	0.2 U	1.5 U
Hexachlorobutadiene		0.2 U	2.1 U	0.2 U	2.1 U
Isopropyl Alcohol		5 U	12 U	5 U	12 U
m+p-Xylenes		15	65	3.2	14
Methyl Butyl Ketone		0.58	2.4	0.55	2.3
Methyl Ethyl Ketone		8.7	26	7.9	23
Methyl Isobutyl Ketone		0.5 U	2 U	0.5 U	2 U
Methylene Chloride		0.5 U	1.7 U	0.5 U	1.7 U
MTBE		0.5 U	1.8 U	0.5 U	1.8 U

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-1	PC-1	PC-2	PC-2
	Sample Date:	06/22/05	06/22/05	06/22/05	06/22/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
n-Heptane		3.1	13	2.5	10
n-Hexane		4.6	16	4.3	15
o-Xylene		5.1	22	1.4	6.1
Styrene		2.3	9.8	1.2	5.1
tert-Butyl Alcohol		5 U	15 U	5 U	15 U
Tetrachloroethene		0.32	2.2	0.64	4.3
Tetrahydrofuran		5 U	15 U	5 U	15 U
Toluene		15	57	5.8	22
trans-1,2-Dichloroethene		0.2 U	0.79 U	0.2 U	0.79 U
trans-1,3-Dichloropropene		0.2 U	0.91 U	0.2 U	0.91 U
Trichloroethene		0.2 U	1.1 U	0.2 U	1.1 U
Trichlorofluoromethane		0.4	2.2	0.69	3.9
Vinyl Chloride		0.2 U	0.51 U	0.2 U	0.51 U
Xylenes (total)		20	87	4.6	20

Notes:
ppbv - Parts per billion volume
ug/m^3 - Micrograms per cubic meter
D - Dilution
E - Serial dilution exceeds the control limits
U - Compound was analyzed for but not detected

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-2 DL	PC-2 DL	PC-3	PC-3
	Sample Date:	06/22/05	06/22/05	06/22/05	06/22/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
1,1,1-Trichloroethane		1 D	5.5 D	1.1	6
1,1,2,2-Tetrachloroethane		1 U	6.9 U	0.2 U	1.4 U
1,1,2-Trichloroethane		1 U	5.5 U	0.2 U	1.1 U
1,1-Dichloroethane		1 U	4 U	0.2 U	0.81 U
1,1-Dichloroethene		1 U	4 U	0.2 U	0.79 U
1,2,4-Trichlorobenzene		2.5 U	19 U	0.5 U	3.7 U
1,2,4-Trimethylbenzene		1 U	4.9 U	1.5	7.4
1,2-Dibromoethane		1 U	7.7 U	0.2 U	1.5 U
1,2-Dichlorobenzene		1 U	6 U	0.2 U	1.2 U
1,2-Dichloroethane		1 U	4 U	0.2 U	0.81 U
1,2-Dichloroethene (total)		1 U	4 U	0.2 U	0.79 U
1,2-Dichloropropane		1 U	4.6 U	0.2 U	0.92 U
1,2-Dichlorotetrafluoroethane		1 U	7 U	0.2 U	1.4 U
1,3,5-Trimethylbenzene		1 U	4.9 U	0.39	1.9
1,3-Butadiene		9.6 D	21 D	6.5	14
1,3-Dichlorobenzene		1 U	6 U	0.2 U	1.2 U
1,4-Dichlorobenzene		1 U	6 U	0.2 U	1.2 U
1,4-Dioxane		25 U	90 U	5 U	18 U
2,2,4-Trimethylpentane		1 U	4.7 U	0.26	1.2
2-Chlorotoluene		1 U	5.2 U	0.2 U	1 U
3-Chloropropene		1 U	3.1 U	0.2 U	0.63 U
4-Ethyltoluene		1 U	4.9 U	1.3	6.4
Acetone		48 D	110 D	36	86
Benzene		4 D	13 D	2.8	8.9
Bromodichloromethane		1 U	6.7 U	0.2 U	1.3 U
Bromoethene		1 U	4.4 U	0.2 U	0.87 U
Bromoform		1 U	10 U	0.2 U	2.1 U
Bromomethane		1 U	3.9 U	0.2 U	0.78 U
Carbon Disulfide		2.5 U	7.8 U	0.89	2.8
Carbon Tetrachloride		1 U	6.3 U	0.2 U	1.3 U
Chlorobenzene		1 U	4.6 U	0.2 U	0.92 U
Chloroethane		1 U	2.6 U	0.2 U	0.53 U
Chloroform		1 U	4.9 U	0.2 U	0.98 U
Chloromethane		2.5 U	5.2 U	0.5 U	1 U
cis-1,2-Dichloroethene		1 U	4 U	0.2 U	0.79 U
cis-1,3-Dichloropropene		1 U	4.5 U	0.2 U	0.91 U
Cyclohexane		1 D	3.4 D	0.76	2.6
Dibromochloromethane		1 U	8.5 U	0.2 U	1.7 U
Dichlorodifluoromethane		2.5 U	12 U	1.4	6.9
Ethylbenzene		1 U	4.3 U	1.4	6.1
Freon TF		1 U	7.7 U	0.2 U	1.5 U
Hexachlorobutadiene		1 U	11 U	0.2 U	2.1 U
Isopropyl Alcohol		25 U	61 U	5 U	12 U
m+p-Xylenes		3 D	13 D	4.9	21
Methyl Butyl Ketone		2.5 U	10 U	0.6	2.5
Methyl Ethyl Ketone		8.5 D	25 D	7.7	23
Methyl Isobutyl Ketone		2.5 U	10 U	0.5 U	2 U
Methylene Chloride		2.5 U	8.7 U	0.5 U	1.7 U
MTBE		2.5 U	9 U	0.5 U	1.8 U

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-2 DL	PC-2 DL	PC-3	PC-3
	Sample Date:	06/22/05	06/22/05	06/22/05	06/22/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
n-Heptane		2.4 D	9.8 D	2.6	11
n-Hexane		4.7 D	17 D	4.4	16
o-Xylene		1.3 D	5.6 D	1.9	8.3
Styrene		1 D	4.3 D	1.4	6
tert-Butyl Alcohol		25 U	76 U	5 U	15 U
Tetrachloroethene		1 U	6.8 U	0.29	2
Tetrahydrofuran		25 U	74 U	5 U	15 U
Toluene		5.1 D	19 D	6.6	25
trans-1,2-Dichloroethene		1 U	4 U	0.2 U	0.79 U
trans-1,3-Dichloropropene		1 U	4.5 U	0.2 U	0.91 U
Trichloroethene		1 U	5.4 U	0.2 U	1.1 U
Trichlorofluoromethane		1 U	5.6 U	1.1	6.2
Vinyl Chloride		1 U	2.6 U	0.2 U	0.51 U
Xylenes (total)		4.3 D	19 D	6.8	30

Notes:
ppbv - Parts per billion volume
ug/m^3 - Micrograms per cubic meter
D - Dilution
E - Serial dilution exceeds the control limits
U - Compound was analyzed for but not detected

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-3 DL	PC-3 DL	PC-4	PC-4
	Sample Date:	06/22/05	06/22/05	06/22/05	06/22/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
1,1,1-Trichloroethane		1.1 D	6 D	0.44	2.4
1,1,2,2-Tetrachloroethane		0.4 U	2.7 U	0.2 U	1.4 U
1,1,2-Trichloroethane		0.4 U	2.2 U	0.2 U	1.1 U
1,1-Dichloroethane		0.4 U	1.6 U	0.2 U	0.81 U
1,1-Dichloroethene		0.4 U	1.6 U	0.2 U	0.79 U
1,2,4-Trichlorobenzene		1 U	7.4 U	0.5 U	3.7 U
1,2,4-Trimethylbenzene		1.4 D	6.9 D	1.6	7.9
1,2-Dibromoethane		0.4 U	3.1 U	0.2 U	1.5 U
1,2-Dichlorobenzene		0.4 U	2.4 U	0.2 U	1.2 U
1,2-Dichloroethane		0.4 U	1.6 U	0.2 U	0.81 U
1,2-Dichloroethene (total)		0.4 U	1.6 U	0.2 U	0.79 U
1,2-Dichloropropane		0.4 U	1.8 U	0.2 U	0.92 U
1,2-Dichlorotetrafluoroethane		0.4 U	2.8 U	0.2 U	1.4 U
1,3,5-Trimethylbenzene		0.4 U	2 U	0.38	1.9
1,3-Butadiene		6.6 D	15 D	4.1	9.1
1,3-Dichlorobenzene		0.4 U	2.4 U	0.2 U	1.2 U
1,4-Dichlorobenzene		0.4 U	2.4 U	0.2 U	1.2 U
1,4-Dioxane		10 U	36 U	5 U	18 U
2,2,4-Trimethylpentane		0.4 U	1.9 U	0.2 U	0.93 U
2-Chlorotoluene		0.4 U	2.1 U	0.2 U	1 U
3-Chloropropene		0.4 U	1.3 U	0.2 U	0.63 U
4-Ethyltoluene		1.2 D	5.9 D	1.4	6.9
Acetone		36 D	86 D	22	52
Benzene		2.7 D	8.6 D	1.4	4.5
Bromodichloromethane		0.4 U	2.7 U	0.2 U	1.3 U
Bromoethene		0.4 U	1.7 U	0.2 U	0.87 U
Bromoform		0.4 U	4.1 U	0.2 U	2.1 U
Bromomethane		0.4 U	1.6 U	0.2 U	0.78 U
Carbon Disulfide		1 U	3.1 U	1.3	4
Carbon Tetrachloride		0.4 U	2.5 U	0.2 U	1.3 U
Chlorobenzene		0.4 U	1.8 U	0.2 U	0.92 U
Chloroethane		0.4 U	1.1 U	0.2 U	0.53 U
Chloroform		0.4 U	2 U	0.2 U	0.98 U
Chloromethane		1 U	2.1 U	0.5 U	1 U
cis-1,2-Dichloroethene		0.4 U	1.6 U	0.2 U	0.79 U
cis-1,3-Dichloropropene		0.4 U	1.8 U	0.2 U	0.91 U
Cyclohexane		0.76 D	2.6 D	0.59	2
Dibromochloromethane		0.4 U	3.4 U	0.2 U	1.7 U
Dichlorodifluoromethane		1.5 D	7.4 D	0.84	4.2
Ethylbenzene		1.3 D	5.6 D	1.4	6.1
Freon TF		0.4 U	3.1 U	0.2 U	1.5 U
Hexachlorobutadiene		0.4 U	4.3 U	0.2 U	2.1 U
Isopropyl Alcohol		10 U	25 U	5 U	12 U
m+p-Xylenes		4.4 D	19 D	5.5	24
Methyl Butyl Ketone		1 U	4.1 U	0.5 U	2 U
Methyl Ethyl Ketone		7.5 D	22 D	4.9	14
Methyl Isobutyl Ketone		1 U	4.1 U	0.5 U	2 U
Methylene Chloride		1 U	3.5 U	0.5 U	1.7 U
MTBE		1 U	3.6 U	0.5 U	1.8 U

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-3 DL	PC-3 DL	PC-4	PC-4
	Sample Date:	06/22/05	06/22/05	06/22/05	06/22/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
n-Heptane		2.4 D	9.8 D	1.7	7
n-Hexane		4.2 D	15 D	2.9	10
o-Xylene		1.7 D	7.4 D	2	8.7
Styrene		1.2 D	5.1 D	1.7	7.2
tert-Butyl Alcohol		10 U	30 U	5 U	15 U
Tetrachloroethene		0.4 U	2.7 U	0.39	2.6
Tetrahydrofuran		10 U	29 U	5 U	15 U
Toluene		5.9 D	22 D	5.4	20
trans-1,2-Dichloroethene		0.4 U	1.6 U	0.2 U	0.79 U
trans-1,3-Dichloropropene		0.4 U	1.8 U	0.2 U	0.91 U
Trichloroethene		0.4 U	2.1 U	0.2 U	1.1 U
Trichlorofluoromethane		1.1 D	6.2 D	4	22
Vinyl Chloride		0.4 U	1 U	0.2 U	0.51 U
Xylenes (total)		6 D	26 D	7.5	33

Notes:
ppbv - Parts per billion volume
ug/m^3 - Micrograms per cubic meter
D - Dilution
E - Serial dilution exceeds the control limits
U - Compound was analyzed for but not detected

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-5	PC-5	PC-6	PC-6
	Sample Date:	06/22/05	06/22/05	06/22/05	06/22/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
1,1,1-Trichloroethane		2 U	11 U	1 U	5.5 U
1,1,2,2-Tetrachloroethane		2 U	14 U	1 U	6.9 U
1,1,2-Trichloroethane		2 U	11 U	1 U	5.5 U
1,1-Dichloroethane		2 U	8.1 U	1 U	4 U
1,1-Dichloroethene		2 U	7.9 U	1 U	4 U
1,2,4-Trichlorobenzene		5 U	37 U	2.5 U	19 U
1,2,4-Trimethylbenzene		2 U	9.8 U	2.5	12
1,2-Dibromoethane		2 U	15 U	1 U	7.7 U
1,2-Dichlorobenzene		2 U	12 U	1 U	6 U
1,2-Dichloroethane		2 U	8.1 U	1 U	4 U
1,2-Dichloroethene (total)		2 U	7.9 U	1 U	4 U
1,2-Dichloropropane		2 U	9.2 U	1 U	4.6 U
1,2-Dichlorotetrafluoroethane		2 U	14 U	1 U	7 U
1,3,5-Trimethylbenzene		2 U	9.8 U	1 U	4.9 U
1,3-Butadiene		6.4	14	9.3	21
1,3-Dichlorobenzene		2 U	12 U	1 U	6 U
1,4-Dichlorobenzene		2 U	12 U	1 U	6 U
1,4-Dioxane		50 U	180 U	25 U	90 U
2,2,4-Trimethylpentane		2 U	9.3 U	1 U	4.7 U
2-Chlorotoluene		2 U	10 U	1 U	5.2 U
3-Chloropropene		2 U	6.3 U	1 U	3.1 U
4-Ethyltoluene		2 U	9.8 U	1 U	4.9 U
Acetone		51	120	59	140
Benzene		2.8	8.9	2.7	8.6
Bromodichloromethane		2 U	13 U	1 U	6.7 U
Bromoethene		2 U	8.7 U	1 U	4.4 U
Bromoform		2 U	21 U	1 U	10 U
Bromomethane		2 U	7.8 U	1 U	3.9 U
Carbon Disulfide		5 U	16 U	9.2	29
Carbon Tetrachloride		2 U	13 U	1 U	6.3 U
Chlorobenzene		2 U	9.2 U	1 U	4.6 U
Chloroethane		2 U	5.3 U	1 U	2.6 U
Chloroform		2.2	11	1 U	4.9 U
Chloromethane		5 U	10 U	2.5 U	5.2 U
cis-1,2-Dichloroethene		2 U	7.9 U	1 U	4 U
cis-1,3-Dichloropropene		2 U	9.1 U	1 U	4.5 U
Cyclohexane		2 U	6.9 U	4.5	15
Dibromochloromethane		2 U	17 U	1 U	8.5 U
Dichlorodifluoromethane		37	180	15	74
Ethylbenzene		2 U	8.7 U	2	8.7
Freon TF		2 U	15 U	1 U	7.7 U
Hexachlorobutadiene		2 U	21 U	1 U	11 U
Isopropyl Alcohol		50 U	120 U	25 U	61 U
m+p-Xylenes		2 U	8.7 U	6.2	27
Methyl Butyl Ketone		5 U	20 U	2.5 U	10 U
Methyl Ethyl Ketone		7.5	22	6.4	19
Methyl Isobutyl Ketone		5 U	20 U	2.5 U	10 U
Methylene Chloride		5 U	17 U	2.5 U	8.7 U
MTBE		5 U	18 U	2.5 U	9 U

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-5	PC-5	PC-6	PC-6
	Sample Date:	06/22/05	06/22/05	06/22/05	06/22/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
n-Heptane		2 U	8.2 U	11	45
n-Hexane		2.5	8.8	36	130
o-Xylene		2 U	8.7 U	2.4	10
Styrene		2 U	8.5 U	1.6	6.8
tert-Butyl Alcohol		50 U	150 U	25 U	76 U
Tetrachloroethene		2 U	14 U	1 U	6.8 U
Tetrahydrofuran		50 U	150 U	25 U	74 U
Toluene		3	11	6.8	26
trans-1,2-Dichloroethene		2 U	7.9 U	1 U	4 U
trans-1,3-Dichloropropene		2 U	9.1 U	1 U	4.5 U
Trichloroethene		2 U	11 U	1 U	5.4 U
Trichlorofluoromethane		2.2	12	1 U	5.6 U
Vinyl Chloride		2 U	5.1 U	1 U	2.6 U
Xylenes (total)		2 U	8.7 U	8.5	37

Notes:
ppbv - Parts per billion volume
ug/m^3 - Micrograms per cubic meter
D - Dilution
E - Serial dilution exceeds the control limits
U - Compound was analyzed for but not detected

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-7	PC-7	PC-7 DUP	PC-7 DUP
	Sample Date:	06/22/05	06/22/05	06/22/05	06/22/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
1,1,1-Trichloroethane		2.8 U	15 U	1 U	5.5 U
1,1,2,2-Tetrachloroethane		2.8 U	19 U	1 U	6.9 U
1,1,2-Trichloroethane		2.8 U	15 U	1 U	5.5 U
1,1-Dichloroethane		2.8 U	11 U	1 U	4 U
1,1-Dichloroethene		2.8 U	11 U	1 U	4 U
1,2,4-Trichlorobenzene		7 U	52 U	2.5 U	19 U
1,2,4-Trimethylbenzene		6.4	31	7.6	37
1,2-Dibromoethane		2.8 U	22 U	1 U	7.7 U
1,2-Dichlorobenzene		2.8 U	17 U	1 U	6 U
1,2-Dichloroethane		2.8 U	11 U	1 U	4 U
1,2-Dichloroethene (total)		2.8 U	11 U	1 U	4 U
1,2-Dichloropropane		2.8 U	13 U	1 U	4.6 U
1,2-Dichlorotetrafluoroethane		2.8 U	20 U	1 U	7 U
1,3,5-Trimethylbenzene		4.4	22	5.2	26
1,3-Butadiene		7.2	16	8.4	19
1,3-Dichlorobenzene		2.8 U	17 U	1 U	6 U
1,4-Dichlorobenzene		2.8 U	17 U	1 U	6 U
1,4-Dioxane		70 U	250 U	25 U	90 U
2,2,4-Trimethylpentane		2.8 U	13 U	1.5	7
2-Chlorotoluene		2.8 U	14 U	1 U	5.2 U
3-Chloropropene		2.8 U	8.8 U	1 U	3.1 U
4-Ethyltoluene		3.5	17	4.5	22
Acetone		70 U	170 U	25 U	59 U
Benzene		13	42	14	45
Bromodichloromethane		2.8 U	19 U	1 U	6.7 U
Bromoethene		2.8 U	12 U	1 U	4.4 U
Bromoform		2.8 U	29 U	1 U	10 U
Bromomethane		2.8 U	11 U	1 U	3.9 U
Carbon Disulfide		7 U	22 U	2.5 U	7.8 U
Carbon Tetrachloride		2.8 U	18 U	1 U	6.3 U
Chlorobenzene		2.8 U	13 U	1 U	4.6 U
Chloroethane		4	11	4.2	11
Chloroform		2.8 U	14 U	2.8	14
Chloromethane		7 U	14 U	4.1	8.5
cis-1,2-Dichloroethene		2.8 U	11 U	1 U	4 U
cis-1,3-Dichloropropene		2.8 U	13 U	1 U	4.5 U
Cyclohexane		17	59	17	59
Dibromochloromethane		2.8 U	24 U	1 U	8.5 U
Dichlorodifluoromethane		30	150	30	150
Ethylbenzene		7.6	33	8.2	36
Freon TF		2.8 U	21 U	1 U	7.7 U
Hexachlorobutadiene		2.8 U	30 U	1 U	11 U
Isopropyl Alcohol		70 U	170 U	25 U	61 U
m+p-Xylenes		9.4	41	11	48
Methyl Butyl Ketone		7 U	29 U	2.5 U	10 U
Methyl Ethyl Ketone		7 U	21 U	3.9	12
Methyl Isobutyl Ketone		7 U	29 U	2.5 U	10 U
Methylene Chloride		7 U	24 U	2.5 U	8.7 U
MTBE		7 U	25 U	2.5 U	9 U

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation: / Sample Date: / Concentration Units:	PC-7 06/22/05 ppbv	PC-7 06/22/05 ug/m^3	PC-7 DUP 06/22/05 ppbv	PC-7 DUP 06/22/05 ug/m^3
n-Heptane		5.9	24	6.4	26
n-Hexane		12	42	13	46
o-Xylene		6.8	30	7.6	33
Styrene		2.8 U	12 U	1 U	4.3 U
tert-Butyl Alcohol		70 U	210 U	25 U	76 U
Tetrachloroethene		2.8 U	19 U	1 U	6.8 U
Tetrahydrofuran		70 U	210 U	25 U	74 U
Toluene		11	41	11	41
trans-1,2-Dichloroethene		2.8 U	11 U	1 U	4 U
trans-1,3-Dichloropropene		2.8 U	13 U	1 U	4.5 U
Trichloroethene		2.8 U	15 U	1 U	5.4 U
Trichlorofluoromethane		2.8 U	16 U	1 U	5.6 U
Vinyl Chloride		2.8 U	7.2 U	1 U	2.6 U
Xylenes (total)		16	69	18	78

Notes:
ppbv - Parts per billion volume
ug/m^3 - Micrograms per cubic meter
D - Dilution
E - Serial dilution exceeds the control limits
U - Compound was analyzed for but not detected

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-8	PC-8	PC-9	PC-9
	Sample Date:	06/23/05	06/23/05	06/23/05	06/23/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
1,1,1-Trichloroethane		4 U	22 U	1 U	5.5 U
1,1,2,2-Tetrachloroethane		4 U	27 U	1 U	6.9 U
1,1,2-Trichloroethane		4 U	22 U	1 U	5.5 U
1,1-Dichloroethane		4 U	16 U	1 U	4 U
1,1-Dichloroethene		4 U	16 U	1 U	4 U
1,2,4-Trichlorobenzene		10 U	74 U	2.5 U	19 U
1,2,4-Trimethylbenzene		22	110	1.8	8.8
1,2-Dibromoethane		4 U	31 U	1 U	7.7 U
1,2-Dichlorobenzene		4 U	24 U	1 U	6 U
1,2-Dichloroethane		4 U	16 U	1 U	4 U
1,2-Dichloroethene (total)		4 U	16 U	1 U	4 U
1,2-Dichloropropane		4 U	18 U	1 U	4.6 U
1,2-Dichlorotetrafluoroethane		4 U	28 U	1 U	7 U
1,3,5-Trimethylbenzene		9.4	46	1 U	4.9 U
1,3-Butadiene		4 U	8.8 U	6.5	14
1,3-Dichlorobenzene		4 U	24 U	1 U	6 U
1,4-Dichlorobenzene		4 U	24 U	1 U	6 U
1,4-Dioxane		100 U	360 U	25 U	90 U
2,2,4-Trimethylpentane		4 U	19 U	1 U	4.7 U
2-Chlorotoluene		4 U	21 U	1 U	5.2 U
3-Chloropropene		4 U	13 U	1 U	3.1 U
4-Ethyltoluene		15	74	1.5	7.4
Acetone		100 U	240 U	43	100
Benzene		4 U	13 U	2.2	7
Bromodichloromethane		4 U	27 U	1 U	6.7 U
Bromoethene		4 U	17 U	1 U	4.4 U
Bromoform		4 U	41 U	1 U	10 U
Bromomethane		4 U	16 U	1 U	3.9 U
Carbon Disulfide		12	37	2.5 U	7.8 U
Carbon Tetrachloride		4 U	25 U	1 U	6.3 U
Chlorobenzene		4 U	18 U	1 U	4.6 U
Chloroethane		4 U	11 U	1 U	2.6 U
Chloroform		4 U	20 U	1.2	5.9
Chloromethane		10 U	21 U	2.5 U	5.2 U
cis-1,2-Dichloroethene		4 U	16 U	1 U	4 U
cis-1,3-Dichloropropene		4 U	18 U	1 U	4.5 U
Cyclohexane		5.3	18	1 U	3.4 U
Dibromochloromethane		4 U	34 U	1 U	8.5 U
Dichlorodifluoromethane		10 U	49 U	10	49
Ethylbenzene		23	100	1.6	6.9
Freon TF		4 U	31 U	1 U	7.7 U
Hexachlorobutadiene		4 U	43 U	1 U	11 U
Isopropyl Alcohol		100 U	250 U	25 U	61 U
m+p-Xylenes		26	110	5.7	25
Methyl Butyl Ketone		10 U	41 U	2.5 U	10 U
Methyl Ethyl Ketone		10 U	29 U	7.1	21
Methyl Isobutyl Ketone		10 U	41 U	2.5 U	10 U
Methylene Chloride		10 U	35 U	2.5 U	8.7 U
MTBE		10 U	36 U	2.5 U	9 U

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-8	PC-8	PC-9	PC-9
	Sample Date:	06/23/05	06/23/05	06/23/05	06/23/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
n-Heptane		7.3	30	2.7	11
n-Hexane		17	60	5.2	18
o-Xylene		10	43	1.9	8.3
Styrene		4.9	21	1 U	4.3 U
tert-Butyl Alcohol		100 U	300 U	25 U	76 U
Tetrachloroethene		4 U	27 U	1 U	6.8 U
Tetrahydrofuran		100 U	290 U	25 U	74 U
Toluene		71	270	8.2	31
trans-1,2-Dichloroethene		4 U	16 U	1 U	4 U
trans-1,3-Dichloropropene		4 U	18 U	1 U	4.5 U
Trichloroethene		4 U	21 U	1 U	5.4 U
Trichlorofluoromethane		4 U	22 U	1.6	9
Vinyl Chloride		4 U	10 U	1 U	2.6 U
Xylenes (total)		36	160	7.6	33

Notes:
ppbv - Parts per billion volume
ug/m^3 - Micrograms per cubic meter
D - Dilution
E - Serial dilution exceeds the control limits
U - Compound was analyzed for but not detected

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-10	PC-10	PC-11	PC-11
	Sample Date:	06/23/05	06/23/05	06/23/05	06/23/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
1,1,1-Trichloroethane		2 U	11 U	1.6 U	8.7 U
1,1,2,2-Tetrachloroethane		2 U	14 U	1.6 U	11 U
1,1,2-Trichloroethane		2 U	11 U	1.6 U	8.7 U
1,1-Dichloroethane		2 U	8.1 U	1.6 U	6.5 U
1,1-Dichloroethene		2 U	7.9 U	1.6 U	6.3 U
1,2,4-Trichlorobenzene		5 U	37 U	4 U	30 U
1,2,4-Trimethylbenzene		3.1	15	3.8	19
1,2-Dibromoethane		2 U	15 U	1.6 U	12 U
1,2-Dichlorobenzene		2 U	12 U	1.7	10
1,2-Dichloroethane		2 U	8.1 U	1.6 U	6.5 U
1,2-Dichloroethene (total)		2 U	7.9 U	1.6 U	6.3 U
1,2-Dichloropropane		2 U	9.2 U	1.6 U	7.4 U
1,2-Dichlorotetrafluoroethane		2 U	14 U	1.6 U	11 U
1,3,5-Trimethylbenzene		2 U	9.8 U	1.9	9.3
1,3-Butadiene		13	29	14	31
1,3-Dichlorobenzene		2 U	12 U	1.6 U	9.6 U
1,4-Dichlorobenzene		2 U	12 U	1.6 U	9.6 U
1,4-Dioxane		50 U	180 U	40 U	140 U
2,2,4-Trimethylpentane		2 U	9.3 U	1.6 U	7.5 U
2-Chlorotoluene		2 U	10 U	1.6 U	8.3 U
3-Chloropropene		2 U	6.3 U	1.6 U	5 U
4-Ethyltoluene		2.4	12	3.3	16
Acetone		50 U	120 U	40 U	95 U
Benzene		6.6	21	5.4	17
Bromodichloromethane		2 U	13 U	1.6 U	11 U
Bromoethene		2 U	8.7 U	1.6 U	7 U
Bromoform		2 U	21 U	1.6 U	17 U
Bromomethane		2 U	7.8 U	1.6 U	6.2 U
Carbon Disulfide		5 U	16 U	13	40
Carbon Tetrachloride		2 U	13 U	1.6 U	10 U
Chlorobenzene		2 U	9.2 U	1.6 U	7.4 U
Chloroethane		2 U	5.3 U	1.6 U	4.2 U
Chloroform		2 U	9.8 U	2.7	13
Chloromethane		5 U	10 U	4 U	8.3 U
cis-1,2-Dichloroethene		2 U	7.9 U	1.6 U	6.3 U
cis-1,3-Dichloropropene		2 U	9.1 U	1.6 U	7.3 U
Cyclohexane		5.8	20	3.7	13
Dibromochloromethane		2 U	17 U	1.6 U	14 U
Dichlorodifluoromethane		240	1200	4 U	20 U
Ethylbenzene		2.5	11	6.9	30
Freon TF		2 U	15 U	1.6 U	12 U
Hexachlorobutadiene		2 U	21 U	1.6 U	17 U
Isopropyl Alcohol		50 U	120 U	40 U	98 U
m+p-Xylenes		8.4	36	22	96
Methyl Butyl Ketone		5 U	20 U	4 U	16 U
Methyl Ethyl Ketone		5 U	15 U	8.2	24
Methyl Isobutyl Ketone		5 U	20 U	4 U	16 U
Methylene Chloride		5 U	17 U	4 U	14 U
MTBE		50	180	4 U	14 U

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-10	PC-10	PC-11	PC-11
	Sample Date:	06/23/05	06/23/05	06/23/05	06/23/05
	Concentration Units:	ppbv	ug/m^3	ppbv	ug/m^3
n-Heptane		5.4	22	5.7	23
n-Hexane		9.4	33	5.5	19
o-Xylene		3.2	14	7.2	31
Styrene		2 U	8.5 U	1.6 U	6.8 U
tert-Butyl Alcohol		50 U	150 U	40 U	120 U
Tetrachloroethene		2 U	14 U	1.6 U	11 U
Tetrahydrofuran		50 U	150 U	40 U	120 U
Toluene		13	49	270	1000
trans-1,2-Dichloroethene		2 U	7.9 U	1.6 U	6.3 U
trans-1,3-Dichloropropene		2 U	9.1 U	1.6 U	7.3 U
Trichloroethene		2 U	11 U	1.6 U	8.6 U
Trichlorofluoromethane		40	220	2	11
Vinyl Chloride		2 U	5.1 U	1.6 U	4.1 U
Xylenes (total)		11	48	29	130

Notes:
ppbv - Parts per billion volume
ug/m^3 - Micrograms per cubic meter
D - Dilution
E - Serial dilution exceeds the control limits
U - Compound was analyzed for but not detected

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	PC-12	PC-12
	Sample Date:	06/23/05	06/23/05
	Concentration Units:	ppbv	ug/m^3
1,1,1-Trichloroethane		1 U	5.5 U
1,1,2,2-Tetrachloroethane		1 U	6.9 U
1,1,2-Trichloroethane		1 U	5.5 U
1,1-Dichloroethane		1 U	4 U
1,1-Dichloroethene		1 U	4 U
1,2,4-Trichlorobenzene		2.5 U	19 U
1,2,4-Trimethylbenzene		1.5	7.4
1,2-Dibromoethane		1 U	7.7 U
1,2-Dichlorobenzene		1 U	6 U
1,2-Dichloroethane		1 U	4 U
1,2-Dichloroethene (total)		1 U	4 U
1,2-Dichloropropane		1 U	4.6 U
1,2-Dichlorotetrafluoroethane		1 U	7 U
1,3,5-Trimethylbenzene		1 U	4.9 U
1,3-Butadiene		8.9	20
1,3-Dichlorobenzene		1 U	6 U
1,4-Dichlorobenzene		1 U	6 U
1,4-Dioxane		25 U	90 U
2,2,4-Trimethylpentane		1 U	4.7 U
2-Chlorotoluene		1 U	5.2 U
3-Chloropropene		1 U	3.1 U
4-Ethyltoluene		1.4	6.9
Acetone		35	83
Benzene		2.6	8.3
Bromodichloromethane		1 U	6.7 U
Bromoethene		1 U	4.4 U
Bromoform		1 U	10 U
Bromomethane		1 U	3.9 U
Carbon Disulfide		2.5 U	7.8 U
Carbon Tetrachloride		1 U	6.3 U
Chlorobenzene		1 U	4.6 U
Chloroethane		1 U	2.6 U
Chloroform		1 U	4.9 U
Chloromethane		2.5 U	5.2 U
cis-1,2-Dichloroethene		1 U	4 U
cis-1,3-Dichloropropene		1 U	4.5 U
Cyclohexane		1 U	3.4 U
Dibromochloromethane		1 U	8.5 U
Dichlorodifluoromethane		4.3	21
Ethylbenzene		1.5	6.5
Freon TF		1 U	7.7 U
Hexachlorobutadiene		1 U	11 U
Isopropyl Alcohol		25 U	61 U
m+p-Xylenes		4.9	21
Methyl Butyl Ketone		2.5 U	10 U
Methyl Ethyl Ketone		6.5	19
Methyl Isobutyl Ketone		2.5 U	10 U
Methylene Chloride		2.5 U	8.7 U
MTBE		2.5 U	9 U

Table 10. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near Proposed Construction Area, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation: / Sample Date: / Concentration Units:	PC-12 06/23/05 ppbv	PC-12 06/23/05 ug/m^3
n-Heptane		3.3	14
n-Hexane		4.8	17
o-Xylene		1.6	6.9
Styrene		1 U	4.3 U
tert-Butyl Alcohol		25 U	76 U
Tetrachloroethene		1 U	6.8 U
Tetrahydrofuran		25 U	74 U
Toluene		8.4	32
trans-1,2-Dichloroethene		1 U	4 U
trans-1,3-Dichloropropene		1 U	4.5 U
Trichloroethene		1 U	5.4 U
Trichlorofluoromethane		2	11
Vinyl Chloride		1 U	2.6 U
Xylenes (total)		6.5	28

Notes:
ppbv - Parts per billion volume
ug/m^3 - Micrograms per cubic meter
D - Dilution
E - Serial dilution exceeds the control limits
U - Compound was analyzed for but not detected

Table 11. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near HSTF Building, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	INDOOR-1	INDOOR-1	INDOOR-2	INDOOR-2	OUTDOOR-1	OUTDOOR-1
	Sample Date:	03/18/09	03/18/09	03/18/09	03/18/09	03/18/09	03/18/09
	Units:	ppbv	µg/m^3	ppbv	µg/m^3	ppbv	µg/m^3
1,1,1-Trichloroethane		0.2 U	1.1 U	0.2 U	1.1 U	0.2 U	1.1 U
1,1,2,2-Tetrachloroethane		0.2 U	1.4 U	0.2 U	1.4 U	0.2 U	1.4 U
1,1,2-Trichloroethane		0.2 U	1.1 U	0.2 U	1.1 U	0.2 U	1.1 U
1,1-Dichloroethane		0.2 U	0.81 U	0.2 U	0.81 U	0.2 U	0.81 U
1,1-Dichloroethene		0.2 U	0.79 U	0.2 U	0.79 U	0.2 U	0.79 U
1,2,4-Trichlorobenzene		0.2 U	1.5 U	0.2 U	1.5 U	0.2 U	1.5 U
1,2,4-Trimethylbenzene		1.2	5.9	1	4.9	1.3	6.4
1,2-Dibromoethane		0.2 U	1.5 U	0.2 U	1.5 U	0.2 U	1.5 U
1,2-Dichlorobenzene		0.2 U	1.2 U	0.2 U	1.2 U	0.2 U	1.2 U
1,2-Dichloroethane		0.2 U	0.81 U	0.2 U	0.81 U	0.2 U	0.81 U
1,2-Dichloropropane		0.2 U	0.92 U	0.2 U	0.92 U	0.2 U	0.92 U
1,3,5-Trimethylbenzene		0.32	1.6	0.32	1.6	0.34	1.7
1,3-Butadiene		0.2 U	0.44 U	0.2 U	0.44 U	0.2 U	0.44 U
1,3-Dichlorobenzene		0.2 U	1.2 U	0.2 U	1.2 U	0.2 U	1.2 U
1,4-Dichlorobenzene		0.2 U	1.2 U	0.2 U	1.2 U	0.2 U	1.2 U
1,4-Dioxane		0.2 U	0.72 U	0.2 U	0.72 U	0.2 U	0.72 U
2-Butanone (MEK)		2.6	7.7	2.9	8.6	5	15
2-Chlorotoluene		0.2 U	1 U	0.2 U	1 U	0.2 U	1 U
2-Hexanone		0.2 U	0.82 U	0.2 U	0.82 U	0.2 U	0.82 U
2-Propanol		3.8	9.3	2.6	6.4	3.4	8.4
3-Chloropropene		0.2 U	0.63 U	0.2 U	0.63 U	0.2 U	0.63 U
4-Ethyltoluene		0.34	1.7	0.28	1.4	0.33	1.6
4-Methyl-2-pentanone		0.2 U	0.82 U	0.2 U	0.82 U	0.2 U	0.82 U
Acetone		9.1	22	7.6	18	30.9	73.4
Benzene		1.8	5.8	2.1	6.7	2.5	8
Benzyl Chloride		0.2 U	1 U	0.2 U	1 U	0.2 U	1 U
Bromodichloromethane		0.2 U	1.3 U	0.2 U	1.3 U	0.2 U	1.3 U
Bromoethene		0.2 U	0.87 U	0.2 U	0.87 U	0.2 U	0.87 U
Bromoform		0.2 U	2.1 U	0.2 U	2.1 U	0.2 U	2.1 U
Bromomethane		0.2 U	0.78 U	0.2 U	0.78 U	0.2 U	0.78 U
Carbon disulfide		0.2 U	0.62 U	0.2 U	0.62 U	0.2 U	0.62 U
Carbon tetrachloride		0.11 J	0.69 J	0.11 J	0.69 J	0.2 U	1.3 U
Chlorobenzene		0.2 U	0.92 U	0.2 U	0.92 U	0.2 U	0.92 U
Chloroethane		0.2 U	0.53 U	0.2 U	0.53 U	0.2 U	0.53 U
Chloroform		0.2 U	0.98 U	0.2 U	0.98 U	0.2 U	0.98 U
Chloromethane		0.93	1.9	0.9	1.9	0.89	1.8
cis-1,2-Dichloroethene		0.2 U	0.79 U	0.2 U	0.79 U	0.2 U	0.79 U

Table 11. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near HSTF Building, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	INDOOR-1	INDOOR-1	INDOOR-2	INDOOR-2	OUTDOOR-1	OUTDOOR-1
	Sample Date:	03/18/09	03/18/09	03/18/09	03/18/09	03/18/09	03/18/09
	Units:	ppbv	µg/m^3	ppbv	µg/m^3	ppbv	µg/m^3
1,1,1-Trichloroethane		0.2 U	1.1 U	0.2 U	1.1 U	0.2 U	1.1 U
cis-1,3-Dichloropropene		0.2 U	0.91 U	0.2 U	0.91 U	0.2 U	0.91 U
Cyclohexane		1.5	5.2	1.9	6.5	2.2	7.6
Dibromochloromethane		0.2 U	1.7 U	0.2 U	1.7 U	0.2 U	1.7 U
Dichlorodifluoromethane		0.73	3.6	0.8	4	0.8	4
Ethanol		24	45.2	16.8	31.7	22.8	43
Ethyl Acetate		0.35	1.3	0.68	2.4	2.2	7.9
Ethylbenzene		2.3	10	2.3	10	2.3	10
Freon 113		0.2 U	1.5 U	0.2 U	1.5 U	0.2 U	1.5 U
Freon 114		0.2 U	1.4 U	0.2 U	1.4 U	0.2 U	1.4 U
Hexachlorobutadiene		0.2 U	2.1 U	0.2 U	2.1 U	0.2 U	2.1 U
Isooctane		1.1	5.1	1.3	6.1	1.6	7.5
m+p-Xylene		8	35	7.8	34	8.1	35
Methylene chloride		0.38	1.3	0.82	2.8	0.31	1.1
MTBE		0.2 U	0.72 U	0.2 U	0.72 U	0.2 U	0.72 U
n-Heptane		2.7	11	2.8	11	3	12
n-Hexane		5	18	6	21	7.7	27
o-Xylene		2.4	10	2.3	10	2.4	10
Propylene		0.5 U	0.86 U	1.4	2.4	7.2	12
Styrene		0.18 J	0.77 J	0.13 J	0.55 J	0.2	0.85
t-Butyl Alcohol		2.3	7	3.4	10	34.7	105
Tetrachloroethene		0.81	5.5	0.8	5.4	0.75	5.1
Tetrahydrofuran		1.9	5.6	2.4	7.1	3.2	9.4
Toluene		11.3	42.6	11.5	43.3	11.3	42.6
trans-1,2-Dichloroethene		0.2 U	0.79 U	0.2 U	0.79 U	0.2 U	0.79 U
trans-1,3-Dichloropropene		0.2 U	0.91 U	0.2 U	0.91 U	0.2 U	0.91 U
Trichloroethene		0.04 U	0.21 U	0.04 U	0.21 U	0.04 U	0.21 U
Trichlorofluoromethane		0.39	2.2	0.46	2.6	0.36	2
Vinyl Acetate		0.2 U	0.7 U	0.2 U	0.7 U	0.2 U	0.7 U
Vinyl chloride		0.2 U	0.51 U	0.2 U	0.51 U	0.2 U	0.51 U
Xylenes (total)		10.5	45.6	10.1	43.9	10.4	45.2

Notes:
ppb - parts per billion
µg/m^3 - micrograms per cubic meter
J - Estimated value
U - Not Detected

Table 11. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near HSTF Building, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	SUBSLAB-1	SUBSLAB-1	SUBSLAB-2	SUBSLAB-2
	Sample Date:	03/18/09	03/18/09	03/18/09	03/18/09
	Units:	ppbv	µg/m^3	ppbv	µg/m^3
1,1,1-Trichloroethane		0.8 U	4.4 U	0.8 U	4.4 U
1,1,2,2-Tetrachloroethane		0.8 U	5.5 U	0.8 U	5.5 U
1,1,2-Trichloroethane		0.8 U	4.4 U	0.8 U	4.4 U
1,1-Dichloroethane		0.8 U	3.2 U	0.8 U	3.2 U
1,1-Dichloroethene		0.8 U	3.2 U	0.8 U	3.2 U
1,2,4-Trichlorobenzene		0.8 U	5.9 U	0.8 U	5.9 U
1,2,4-Trimethylbenzene		1.1	5.4	1.1	5.4
1,2-Dibromoethane		0.8 U	6.1 U	0.8 U	6.1 U
1,2-Dichlorobenzene		0.8 U	4.8 U	0.8 U	4.8 U
1,2-Dichloroethane		0.8 U	3.2 U	0.8 U	3.2 U
1,2-Dichloropropane		0.8 U	3.7 U	0.8 U	3.7 U
1,3,5-Trimethylbenzene		0.8 U	3.9 U	0.8 U	3.9 U
1,3-Butadiene		0.8 U	1.8 U	0.8 U	1.8 U
1,3-Dichlorobenzene		0.8 U	4.8 U	0.8 U	4.8 U
1,4-Dichlorobenzene		0.8 U	4.8 U	0.8 U	4.8 U
1,4-Dioxane		0.8 U	2.9 U	0.8 U	2.9 U
2-Butanone (MEK)		2.7	8	3.1	9.1
2-Chlorotoluene		0.8 U	4.1 U	0.8 U	4.1 U
2-Hexanone		0.8 U	3.3 U	0.8 U	3.3 U
2-Propanol		0.8 U	2 U	0.8 U	2 U
3-Chloropropene		0.8 U	2.5 U	0.8 U	2.5 U
4-Ethyltoluene		0.8 U	3.9 U	0.8 U	3.9 U
4-Methyl-2-pentanone		0.8 U	3.3 U	0.8 U	3.3 U
Acetone		33.4	79.3	52.5	125
Benzene		1.8	5.8	2	6.4
Benzyl Chloride		0.8 U	4.1 U	0.8 U	4.1 U
Bromodichloromethane		0.8 U	5.4 U	0.8 U	5.4 U
Bromoethene		0.8 U	3.5 U	0.8 U	3.5 U
Bromoform		0.8 U	8.3 U	0.8 U	8.3 U
Bromomethane		0.8 U	3.1 U	0.8 U	3.1 U
Carbon disulfide		0.8 U	2.5 U	0.8 U	2.5 U
Carbon tetrachloride		0.8 U	5 U	0.8 U	5 U
Chlorobenzene		0.8 U	3.7 U	0.8 U	3.7 U
Chloroethane		0.8 U	2.1 U	0.8 U	2.1 U
Chloroform		0.8 U	3.9 U	0.8 U	3.9 U
Chloromethane		0.8 U	1.7 U	0.8 U	1.7 U
cis-1,2-Dichloroethene		0.8 U	3.2 U	0.8 U	3.2 U

Table 11. Summary of Volatile Organic Compounds in Soil Vapor Samples Collected Near HSTF Building, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter	Sample Designation:	SUBSLAB-1	SUBSLAB-1	SUBSLAB-2	SUBSLAB-2
	Sample Date:	03/18/09	03/18/09	03/18/09	03/18/09
	Units:	ppbv	µg/m^3	ppbv	µg/m^3
1,1,1-Trichloroethane		0.8 U	4.4 U	0.8 U	4.4 U
cis-1,3-Dichloropropene		0.8 U	3.6 U	0.8 U	3.6 U
Cyclohexane		1.7	5.9	1.7	5.9
Dibromochloromethane		0.8 U	6.8 U	0.8 U	6.8 U
Dichlorodifluoromethane		0.71 J	3.5 J	0.83	4.1
Ethanol		16.8	31.7	17.1	32.2
Ethyl Acetate		2	7.2	2.3	8.3
Ethylbenzene		1.9	8.3	2.1	9.1
Freon 113		0.8 U	6.1 U	0.8 U	6.1 U
Freon 114		0.8 U	5.6 U	0.8 U	5.6 U
Hexachlorobutadiene		0.8 U	8.5 U	0.8 U	8.5 U
Isooctane		1.1	5.1	1.3	6.1
m+p-Xylene		6.5	28	7.2	31
Methylene chloride		0.68 J	2.4 J	1.4	4.9
MTBE		0.8 U	2.9 U	0.8 U	2.9 U
n-Heptane		2.2	9	2.6	11
n-Hexane		5.1	18	5.2	18
o-Xylene		1.9	8.3	2.1	9.1
Propylene		2 U	3.4 U	2 U	3.4 U
Styrene		0.8 U	3.4 U	0.8 U	3.4 U
t-Butyl Alcohol		3.8	12	4.4	13
Tetrachloroethene		0.69	4.7	0.76	5.2
Tetrahydrofuran		2.2	6.5	2.5	7.4
Toluene		8.8	33	10.1	38.1
trans-1,2-Dichloroethene		0.8 U	3.2 U	0.8 U	3.2 U
trans-1,3-Dichloropropene		0.8 U	3.6 U	0.8 U	3.6 U
Trichloroethene		0.16 U	0.86 U	0.16 U	0.86 U
Trichlorofluoromethane		0.44 J	2.5 J	1.1	6.2
Vinyl Acetate		0.8 U	2.8 U	0.8 U	2.8 U
Vinyl chloride		0.8 U	2 U	0.8 U	2 U
Xylenes (total)		8.4	36	9.2	40

Notes:
ppb - parts per billion
µg/m^3 - micrograms per cubic meter
J - Estimated value
U - Not Detected

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	GE-31-5 8/16/2006 25-25	GE-31-5 8/16/2006 38-38	GE-53-3 7/27/2006 12-12	GE-53-3 7/27/2006 25-25	GE-53-5 7/27/2006 18-18	GE-59-3 7/10/2006 12-15	GE-59-3 7/10/2006 23-25	MW-26 12/5/1990 9-11
1,1,1,2-Tetrachloroethane	--		NR	NR	NR	NR	NR	NR	NR	NR
1,1,1-Trichloroethane	1000000		2.2 U	2.2 U	2.3 U	2.2 U	2.3 U	2.3 U	2.4 U	5 U
1,1,2,2-Tetrachloroethane	--		1.6 U	1.7 U	1.7 U	1.6 U	1.7 U	1.7 U	1.8 U	5 U
1,1,2-Trichloroethane	--		1.5 U	1.6 U	1.6 U	1.5 U	1.6 U	1.6 U	1.7 U	5 U
1,1-Dichloroethane	480000		1.4 U	1.4 U	1.5 U	1.4 U	1.5 U	1.5 U	1.6 U	5 U
1,1-Dichloroethene	1000000		3 U	3.1 U	3.1 U	3 U	3.2 U	3.2 U	3.3 U	5 U
1,1-Dichloropropene	--		NR	NR	NR	NR	NR	NR	NR	NR
1,2,3-Trichlorobenzene	--		NR	NR	NR	NR	NR	NR	NR	NR
1,2,3-Trichloropropane	--		NR	NR	NR	NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--		3.6 U	3.7 U	3.7 U	3.6 U	3.8 U	3.8 U	4 U	NR
1,2,4-Trimethylbenzene	380000		NR	NR	NR	NR	NR	NR	NR	NA
1,2-Dibromo-3-Chloropropane	--		5 U	5.1 U	5.1 U	4.9 U	5.3 U	5.2 U	5.5 U	NR
1,2-Dibromoethane	--		2.1 U	2.2 U	2.2 U	2.1 U	2.3 U	2.2 U	2.3 U	NR
1,2-Dichloroethene (total)	--		NR	NR	NR	NR	NR	NR	NR	5 U
1,2-Dichlorobenzene	1000000		2 U	2.1 U	2.1 U	2 U	2.2 U	2.1 U	2.2 U	5 U
1,2-Dichloroethane	60000		1.6 U	1.6 U	1.7 U	1.6 U	1.7 U	1.7 U	1.8 U	5 U
1,2-Dichloropropane	--		2.1 U	2.1 U	2.2 U	2.1 U	2.2 U	2.2 U	2.3 U	5 U
1,3,5-Trimethlybenzene	--		NR	NR	NR	NR	NR	NR	NR	NR
1,3,5-Trimethylbenzene	380000		NR	NR	NR	NR	NR	NR	NR	NR
1,3-Dichlorobenzene	560000		2.9 U	3 U	3 U	2.9 U	3.1 U	3.1 U	3.2 U	5 U
1,3-Dichloropropane	--		NR	NR	NR	NR	NR	NR	NR	NR
1,4-Dichlorobenzene	250000		2.9 U	2.9 U	3 U	2.8 U	3.1 U	3 U	3.2 U	5 U
2,2-Dichloropropane	--		NR	NR	NR	NR	NR	NR	NR	NR
2-Chloroethylvinylether	--		NR	NR	NR	NR	NR	NR	NR	10 U
2-Butanone (MEK)	1000000		15 U	23 U	15 U	15 U	16 U	16 U	16 U	10 U
2-Chlorotoluene	--		NR	NR	NR	NR	NR	NR	NR	NR
2-Hexanone	--		19 U	19 U	20 U	19 U	20 U	20 U	21 U	10 U
4-Chlorotoluene	--		NR	NR	NR	NR	NR	NR	NR	NA
4-isopropyltoluene	--		NR	NR	NR	NR	NR	NR	NR	NA
4-Methyl-2-Pentanone (MIBK)	--		10 U	11 U	11 U	10 U	11 U	11 U	11 U	10 U
Acetone	1000000		210 B	180 B	18 U	18 U	19 U	110 JB	120 JB	11
Benzene	89000		2.1 U	2.1 U	2.2 U	2.1 U	2.2 U	2.2 U	2.3 U	5 U
Bromobenzene	--		NR	NR	NR	NR	NR	NR	NR	NR
Bromochloromethane	--		NR	NR	NR	NR	NR	NR	NR	5 U

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	GE-31-5 8/16/2006 25-25	GE-31-5 8/16/2006 38-38	GE-53-3 7/27/2006 12-12	GE-53-3 7/27/2006 25-25	GE-53-5 7/27/2006 18-18	GE-59-3 7/10/2006 12-15	GE-59-3 7/10/2006 23-25	MW-26 12/5/1990 9-11
Bromodichloromethane	--		1.8 U	1.8 U	1.8 U	1.7 U	1.9 U	1.8 U	1.9 U	NR
Bromoform	--		1.6 U	1.7 U	1.7 U	1.6 U	1.7 U	1.7 U	1.8 U	5 U
Bromomethane	--		11 U	11 U	11 U	11 U	11 U	11 U	12 U	10 U
Carbon disulfide	--		1.9 U	2 U	2 U	1.9 U	2.1 U	2 U	2.1 U	5 U
Carbon tetrachloride	44000		2.3 U	2.4 U	2.4 U	2.3 U	2.5 U	2.4 U	2.6 U	5 U
Chlorobenzene	1000000		1.9 U	1.9 U	2 U	1.9 U	2 U	2 U	2.1 U	5 U
Chloroethane	--		11 U	11 U	12 U	11 U	12 U	12 U	12 U	10 U
Chloroform	700000		1.8 U	1.9 U	1.9 U	1.8 U	2 U	1.9 U	2 U	5 U
Chloromethane	--		4.5 U	4.6 U	4.6 U	4.5 U	4.8 U	4.7 U	4.9 U	10 U
cis-1,2-Dichloroethene	1000000		1.7 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	1.9 U	NR
cis-1,3-Dichloropropene	--		1.7 U	1.8 U	1.8 U	1.7 U	1.9 U	1.8 U	1.9 U	5 U
Cyclohexane	--		1.7 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U	1.9 U	NR
Dibromochloromethane	--		1.2 U	1.2 U	1.2 U	1.2 U	1.3 U	1.3 U	1.3 U	5 U
Dibromomethane	--		NR	NR	NR	NR	NR	NR	NR	NR
Dichlorodifluoromethane	--		4.5 U	4.6 U	4.7 U	4.5 U	4.8 U	4.7 U	5 U	NR
Ethylbenzene	780000		1.9 U	1.9 U	1.9 U	1.8 U	2 U	1.9 U	2.1 U	5 U
Freon 113	--		3.5 U	3.6 U	3.6 U	3.5 U	3.7 U	3.7 U	3.9 U	NR
Hexachlorobutadiene	--		NR	NR	NR	NR	NR	NR	NR	NR
Isopropylbenzene	--		2.2 U	2.2 U	2.3 U	2.2 U	2.3 U	2.3 U	2.4 U	NA
m+p-Xylene	--		4.6 U	4.6 U	4.7 U	4.5 U	4.8 U	4.8 U	5 U	NA
Methyl Acetate	--		4.6 U	4.6 U	4.7 U	4.5 U	4.8 U	4.8 U	5 U	NR
Methyl tert-butyl ether	--		NR	NR	NR	NR	NR	NR	NR	NR
Methylcyclohexane	--		2.2 U	2.3 U	2.3 U	2.2 U	2.4 U	2.3 U	2.4 U	NR
Methylene Chloride	1000000		9.6 U	9.8 U	9.9 U	9.5 U	10 U	10 U	11 U	5 U
MTBE	1000000		1.9 U	2 U	2 U	1.9 U	2.1 U	2 U	2.1 U	NA
Naphthalene	1000000		NR	NR	NR	NR	NR	NR	NR	NA
n-Butylbenzene	1000000		NR	NR	NR	NR	NR	NR	NR	NA
n-Propylbenzene	1000000		NR	NR	NR	NR	NR	NR	NR	NA
o-Xylene	--		2 U	2.1 U	2.1 U	2 U	2.2 U	2.1 U	2.2 U	NA
sec-Butylbenzene	1000000		NR	NR	NR	NR	NR	NR	NR	NA
Styrene	--		2.4 U	2.5 U	2.5 U	2.4 U	2.6 U	2.5 U	2.7 U	5 U
tert-Butylbenzene	1000000		NR	NR	NR	NR	NR	NR	NR	NA
Tetrachloroethene	300000		3.8 U	3.9 U	4 U	3.8 U	4.1 U	4 U	4.2 U	5 U
Toluene	1000000		2.1 U	2.2 U	2.2 U	2.1 U	2.3 U	2.2 U	2.3 U	5 U

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	GE-31-5 8/16/2006 25-25	GE-31-5 8/16/2006 38-38	GE-53-3 7/27/2006 12-12	GE-53-3 7/27/2006 25-25	GE-53-5 7/27/2006 18-18	GE-59-3 7/10/2006 12-15	GE-59-3 7/10/2006 23-25	MW-26 12/5/1990 9-11
trans-1,2-Dichloroethene	1000000		3.4 U	3.4 U	3.5 U	3.3 U	3.6 U	3.5 U	3.7 U	NR
trans-1,3-Dichloropropene	--		1.9 U	1.9 U	2 U	1.9 U	2 U	2 U	2.1 U	5 U
Trichloroethene	400000		1.6 U	1.7 U	1.7 U	1.6 U	1.7 U	1.7 U	1.8 U	5 U
Trichlorofluoromethane	--		6.6 U	6.7 U	6.8 U	6.5 U	7 U	6.9 U	7.2 U	5 U
Vinyl Acetate	--		NR	NR	NR	NR	NR	NR	NR	10 U
Vinyl chloride	27000		4.3 U	4.4 U	4.5 U	4.3 U	4.6 U	4.5 U	4.8 U	10 U
Xylenes (total)	1000000		NR	NR	NR	NR	NR	NR	NR	5 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	RT-9 8/30/2006 20-20	S-35 11/30/1990 8-10	SY-515 11/17/2006 22-22	SY-516 10/19/2006 45-45	SY-516 10/19/2006 90-90	TE-B/C-2 9/7/2000 48-50	TE-B/C-2 9/8/2000 85-86
1,1,1,2-Tetrachloroethane	--		NR	NR	NR	NR	NR	NR	NR
1,1,1-Trichloroethane	1000000		2.6 U	6 U	2.5 U	2.3 U	2.5 U	6 U	6 U
1,1,2,2-Tetrachloroethane	--		1.9 U	6 U	1.9 U	1.7 U	1.9 U	6 U	6 U
1,1,2-Trichloroethane	--		1.8 U	6 U	1.8 U	1.6 U	1.8 U	6 U	6 U
1,1-Dichloroethane	480000		1.7 U	6 U	1.6 U	1.5 U	1.6 U	6 U	6 U
1,1-Dichloroethene	1000000		3.5 U	6 U	3.5 U	3.1 U	3.5 U	6 U	6 U
1,1-Dichloropropene	--		NR	NR	NR	NR	NR	NR	NR
1,2,3-Trichlorobenzene	--		NR	NR	NR	NR	NR	NR	NR
1,2,3-Trichloropropane	--		NR	NR	NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--		4.2 U	NR	4.2 U	3.7 U	4.1 U	NR	NR
1,2,4-Trimethylbenzene	380000		NR	NA	NR	NR	NR	NR	NR
1,2-Dibromo-3-Chloropropane	--		5.8 U	NR	5.7 U	5.1 U	5.7 U	NR	NR
1,2-Dibromoethane	--		2.5 U	NR	2.5 U	2.2 U	2.4 U	NR	NR
1,2-Dichloroethene (total)	--		NR	6 U	NR	NR	NR	NR	NR
1,2-Dichlorobenzene	1000000		2.4 U	6 U	2.4 U	2.1 U	2.3 U	NR	NR
1,2-Dichloroethane	60000		1.9 U	6 U	1.9 U	1.7 U	1.8 U	6 U	6 U
1,2-Dichloropropane	--		2.5 U	6 U	2.4 U	2.2 U	2.4 U	6 U	6 U
1,3,5-Trimethlybenzene	--		NR	NR	NR	NR	NR	NR	NR
1,3,5-Trimethylbenzene	380000		NR	NR	NR	NR	NR	NR	NR
1,3-Dichlorobenzene	560000		3.5 U	6 U	3.4 U	3 U	3.4 U	NR	NR
1,3-Dichloropropane	--		NR	NR	NR	NR	NR	NR	NR
1,4-Dichlorobenzene	250000		3.4 U	6 U	3.3 U	3 U	3.3 U	NR	NR
2,2-Dichloropropane	--		NR	NR	NR	NR	NR	NR	NR
2-Chloroethylvinylether	--		NR	11 U	NR	NR	NR	NR	NR
2-Butanone (MEK)	1000000		17 U	11 U	17 U	15 U	17 U	11 U	3 J
2-Chlorotoluene	--		NR	NR	NR	NR	NR	NR	NR
2-Hexanone	--		22 U	11 U	22 U	20 U	22 U	11 U	12 U
4-Chlorotoluene	--		NR	NA	NR	NR	NR	NR	NR
4-isopropyltoluene	--		NR	NA	NR	NR	NR	NR	NR
4-Methyl-2-Pentanone (MIBK)	--		12 U	11 U	12 U	11 U	12 U	11 U	12 U
Acetone	1000000		21 U	15	20 U	70 JB	82 JB	22 B	8 JB
Benzene	89000		2.5 U	6 U	2.4 U	2.2 U	2.4 U	6 U	6 U
Bromobenzene	--		NR	NR	NR	NR	NR	NR	NR
Bromochloromethane	--		NR	6 U	NR	NR	NR	NR	NR

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	RT-9 8/30/2006 20-20	S-35 11/30/1990 8-10	SY-515 11/17/2006 22-22	SY-516 10/19/2006 45-45	SY-516 10/19/2006 90-90	TE-B/C-2 9/7/2000 48-50	TE-B/C-2 9/8/2000 85-86
Bromodichloromethane	--		2.1 U	NR	2 U	1.8 U	2 U	6 U	6 U
Bromoform	--		1.9 U	6 U	1.9 U	1.7 U	1.9 U	6 U	6 U
Bromomethane	--		13 U	11 U	12 U	11 U	12 U	11 U	12 U
Carbon disulfide	--		2.3 U	6 U	2.2 U	2 U	2.2 U	6 U	6 U
Carbon tetrachloride	44000		2.7 U	6 U	2.7 U	2.4 U	2.7 U	6 U	6 U
Chlorobenzene	1000000		2.2 U	6 U	2.2 U	2 U	2.2 U	6 U	6 U
Chloroethane	--		13 U	11 U	13 U	12 U	13 U	11 U	12 U
Chloroform	700000		2.2 U	6 U	2.1 U	1.9 U	2.1 U	6 U	6 U
Chloromethane	--		5.3 U	11 U	5.2 U	4.7 U	5.1 U	11 U	12 U
cis-1,2-Dichloroethene	1000000		2 U	NR	2 U	1.8 U	2 U	6 U	6 U
cis-1,3-Dichloropropene	--		2 U	6 U	2 U	1.8 U	2 U	6 U	6 U
Cyclohexane	--		2 U	NR	2 U	1.8 U	2 U	NR	NR
Dibromochloromethane	--		1.4 U	6 U	1.4 U	1.3 U	1.4 U	6 U	6 U
Dibromomethane	--		NR	NR	NR	NR	NR	NR	NR
Dichlorodifluoromethane	--		5.3 U	NR	5.2 U	4.7 U	5.2 U	NR	NR
Ethylbenzene	780000		2.2 U	6 U	2.2 U	1.9 U	2.1 U	6 U	6 U
Freon 113	--		4.1 U	NR	4.1 U	3.6 U	4 U	NR	NR
Hexachlorobutadiene	--		NR	NR	NR	NR	NR	NR	NR
Isopropylbenzene	--		2.6 U	NA	2.5 U	2.3 U	2.5 U	NR	NR
m+p-Xylene	--		5.4 U	NA	5.3 U	4.7 U	5.2 U	NR	NR
Methyl Acetate	--		5.4 U	NR	5.3 U	4.7 U	5.2 U	NR	NR
Methyl tert-butyl ether	--		NR	NR	NR	NR	NR	NR	NR
Methylcyclohexane	--		2.6 U	NR	2.6 U	2.3 U	2.5 U	NR	NR
Methylene Chloride	1000000		11 U	6 U	61 B	10 U	11 U	9 B	8 B
MTBE	1000000		12 J	NA	2.2 U	2 U	2.2 U	NR	NR
Naphthalene	1000000		NR	NA	NR	NR	NR	NR	NR
n-Butylbenzene	1000000		NR	NA	NR	NR	NR	NR	NR
n-Propylbenzene	1000000		NR	NA	NR	NR	NR	NR	NR
o-Xylene	--		2.4 U	NA	2.3 U	2.1 U	2.3 U	NR	NR
sec-Butylbenzene	1000000		NR	NA	NR	NR	NR	NR	NR
Styrene	--		2.8 U	6 U	2.8 U	2.5 U	2.8 U	6 U	6 U
tert-Butylbenzene	1000000		NR	NA	NR	NR	NR	NR	NR
Tetrachloroethene	300000		4.5 U	6 U	4.5 U	4 U	4.4 U	6 U	6 U
Toluene	1000000		2.5 U	6 U	2.5 U	2.2 U	2.4 U	6 U	6 U

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	RT-9 8/30/2006 20-20	S-35 11/30/1990 8-10	SY-515 11/17/2006 22-22	SY-516 10/19/2006 45-45	SY-516 10/19/2006 90-90	TE-B/C-2 9/7/2000 48-50	TE-B/C-2 9/8/2000 85-86
trans-1,2-Dichloroethene	1000000		4 U	NR	3.9 U	3.5 U	3.8 U	6 U	6 U
trans-1,3-Dichloropropene	--		2.2 U	6 U	2.2 U	2 U	2.2 U	6 U	6 U
Trichloroethene	400000		1.9 U	6 U	1.9 U	1.7 U	1.9 U	6 U	6 U
Trichlorofluoromethane	--		7.7 U	6 U	7.6 U	6.8 U	7.5 U	NR	NR
Vinyl Acetate	--		NR	11 U	NR	NR	NR	11 U	12 U
Vinyl chloride	27000		5.1 U	11 U	5 U	4.5 U	5 U	11 U	12 U
Xylenes (total)	1000000		NR	6 U	NR	NR	NR	6 U	6 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservatio
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	**Sample Designation:**	TE-IB/OB-1	TE-IB/OB-1	TE-IB-3	TE-IB-3	TE-IB-3	TE-MW-A-1	TE-MW-A-1
		Sample Date:	9/11/2000	9/11/2000	9/12/2000	9/12/2000	9/12/2000	9/26/2000	9/26/2000
		Sample Depth (ft bls):	15-17	33-35	38-40	23-25	53-55	37 - 37	14 - 16
1,1,1,2-Tetrachloroethane	--		NR	NR	NR	NR	NR	NR	NR
1,1,1-Trichloroethane	1000000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
1,1,2,2-Tetrachloroethane	--		0.5 J	3 J	1 J	6 U	6 U	6 U	7 U
1,1,2-Trichloroethane	--		6 U	6 U	6 U	6 U	6 U	6 U	7 U
1,1-Dichloroethane	480000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
1,1-Dichloroethene	1000000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
1,1-Dichloropropene	--		NR	NR	NR	NR	NR	NR	NR
1,2,3-Trichlorobenzene	--		NR	NR	NR	NR	NR	NR	NR
1,2,3-Trichloropropane	--		NR	NR	NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--		NR	NR	NR	NR	NR	NR	NR
1,2,4-Trimethylbenzene	380000		NR	NR	NR	NR	NR	NR	NR
1,2-Dibromo-3-Chloropropane	--		NR	NR	NR	NR	NR	NR	NR
1,2-Dibromoethane	--		NR	NR	NR	NR	NR	NR	NR
1,2-Dichloroethene (total)	--		NR	NR	NR	NR	NR	NR	NR
1,2-Dichlorobenzene	1000000		NR	NR	NR	NR	NR	NR	NR
1,2-Dichloroethane	60000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
1,2-Dichloropropane	--		6 U	6 U	6 U	6 U	6 U	6 U	7 U
1,3,5-Trimethlybenzene	--		NR	NR	NR	NR	NR	NR	NR
1,3,5-Trimethylbenzene	380000		NR	NR	NR	NR	NR	NR	NR
1,3-Dichlorobenzene	560000		NR	NR	NR	NR	NR	NR	NR
1,3-Dichloropropane	--		NR	NR	NR	NR	NR	NR	NR
1,4-Dichlorobenzene	250000		NR	NR	NR	NR	NR	NR	NR
2,2-Dichloropropane	--		NR	NR	NR	NR	NR	NR	NR
2-Chloroethylvinylether	--		NR	NR	NR	NR	NR	NR	NR
2-Butanone (MEK)	1000000		12 U	12 U	12 U	12 U	12 U	12 U	14 U
2-Chlorotoluene	--		NR	NR	NR	NR	NR	NR	NR
2-Hexanone	--		12 U	12 U	12 U	12 U	12 U	12 U	14 U
4-Chlorotoluene	--		NR	NR	NR	NR	NR	NR	NR
4-isopropyltoluene	--		NR	NR	NR	NR	NR	NR	NR
4-Methyl-2-Pentanone (MIBK)	--		12 U	12 U	12 U	12 U	12 U	12 U	14 U
Acetone	1000000		15 B	17 B	20	15 B	21	15	16
Benzene	89000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Bromobenzene	--		NR	NR	NR	NR	NR	NR	NR
Bromochloromethane	--		NR	NR	NR	NR	NR	NR	NR

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	Sample Designation: Sample Date: Sample Depth (ft bls):	TE-IB/OB-1 9/11/2000 15-17	TE-IB/OB-1 9/11/2000 33-35	TE-IB-3 9/12/2000 38-40	TE-IB-3 9/12/2000 23-25	TE-IB-3 9/12/2000 53-55	TE-MW-A-1 9/26/2000 37 - 37	TE-MW-A-1 9/26/2000 14 - 16
Bromodichloromethane	--		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Bromoform	--		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Bromomethane	--		12 U	12 U	12 U	12 U	12 U	12 U	14 U
Carbon disulfide	--		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Carbon tetrachloride	44000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Chlorobenzene	1000000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Chloroethane	--		12 U	12 U	12 U	12 U	12 U	12 U	14 U
Chloroform	700000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Chloromethane	--		12 U	12 U	12 U	12 U	12 U	12 U	14 U
cis-1,2-Dichloroethene	1000000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
cis-1,3-Dichloropropene	--		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Cyclohexane	--		NR	NR	NR	NR	NR	NR	NR
Dibromochloromethane	--		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Dibromomethane	--		NR	NR	NR	NR	NR	NR	NR
Dichlorodifluoromethane	--		NR	NR	NR	NR	NR	NR	NR
Ethylbenzene	780000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Freon 113	--		NR	NR	NR	NR	NR	NR	NR
Hexachlorobutadiene	--		NR	NR	NR	NR	NR	NR	NR
Isopropylbenzene	--		NR	NR	NR	NR	NR	NR	NR
m+p-Xylene	--		NR	NR	NR	NR	NR	NR	NR
Methyl Acetate	--		NR	NR	NR	NR	NR	NR	NR
Methyl tert-butyl ether	--		NR	NR	NR	NR	NR	NR	NR
Methylcyclohexane	--		NR	NR	NR	NR	NR	NR	NR
Methylene Chloride	1000000		10 B	10 B	10 B	10 B	11 B	5 JB	7 B
MTBE	1000000		NR	NR	NR	NR	NR	NR	NR
Naphthalene	1000000		NR	NR	NR	NR	NR	NR	NR
n-Butylbenzene	1000000		NR	NR	NR	NR	NR	NR	NR
n-Propylbenzene	1000000		NR	NR	NR	NR	NR	NR	NR
o-Xylene	--		NR	NR	NR	NR	NR	NR	NR
sec-Butylbenzene	1000000		NR	NR	NR	NR	NR	NR	NR
Styrene	--		6 U	6 U	6 U	6 U	6 U	6 U	7 U
tert-Butylbenzene	1000000		NR	NR	NR	NR	NR	NR	NR
Tetrachloroethene	300000		6 U	6 U	6 U	6 U	6 U	2 J	7 U
Toluene	1000000		6 U	6 U	6 U	6 U	0.5 JB	6 U	7 U

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	TE-IB/OB-1 9/11/2000 15-17	TE-IB/OB-1 9/11/2000 33-35	TE-IB-3 9/12/2000 38-40	TE-IB-3 9/12/2000 23-25	TE-IB-3 9/12/2000 53-55	TE-MW-A-1 9/26/2000 37 - 37	TE-MW-A-1 9/26/2000 14 - 16
trans-1,2-Dichloroethene	1000000		6 U	6 U	6 U	6 U	6 U	6 U	7 U
trans-1,3-Dichloropropene	--		6 U	6 U	6 U	6 U	6 U	6 U	7 U
Trichloroethene	400000		6 U	6 U	6 U	6 U	6 U	0.6 J	7 U
Trichlorofluoromethane	--		NR	NR	NR	NR	NR	NR	NR
Vinyl Acetate	--		12 U	12 U	12 U	12 U	12 U	12 U	14 U
Vinyl chloride	27000		12 U	12 U	12 U	12 U	12 U	12 U	14 U
Xylenes (total)	1000000		6 U	6 U	6 U	6 U	6 U	6 U	6 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservatio
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	Sample Designation: Sample Date: Sample Depth (ft bls):	TE-MW-D-1 9/25/2000 10 - 12	TE-MW-D-1 9/25/2000 25 - 25	TE-MW-D-1 9/25/2000 40 - 41	TE-MW-IB-2 10/3/2000 14-16	TE-MW-IB-2 10/3/2000 62-64	TE-MW-IB-2 10/4/2000 93-95
1,1,1,2-Tetrachloroethane	--		NR	NR	NR	NR	NR	NR
1,1,1-Trichloroethane	1000000		6 U	6 U	6 U	5 U	6 U	5 U
1,1,2,2-Tetrachloroethane	--		4 J	7	1 J	5 U	6 U	1 J
1,1,2-Trichloroethane	--		6 U	6 U	6 U	5 U	6 U	5 U
1,1-Dichloroethane	480000		6 U	6 U	6 U	5 U	6 U	5 U
1,1-Dichloroethene	1000000		6 U	6 U	6 U	5 U	6 U	5 U
1,1-Dichloropropene	--		NR	NR	NR	NR	NR	NR
1,2,3-Trichlorobenzene	--		NR	NR	NR	NR	NR	NR
1,2,3-Trichloropropane	--		NR	NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--		NR	NR	NR	NR	NR	NR
1,2,4-Trimethylbenzene	380000		NR	NR	NR	NR	NR	NR
1,2-Dibromo-3-Chloropropane	--		NR	NR	NR	NR	NR	NR
1,2-Dibromoethane	--		NR	NR	NR	NR	NR	NR
1,2-Dichloroethene (total)	--		NR	NR	NR	NR	NR	NR
1,2-Dichlorobenzene	1000000		NR	NR	NR	NR	NR	NR
1,2-Dichloroethane	60000		6 U	6 U	6 U	5 U	6 U	5 U
1,2-Dichloropropane	--		6 U	6 U	6 U	5 U	6 U	5 U
1,3,5-Trimethlybenzene	--		NR	NR	NR	NR	NR	NR
1,3,5-Trimethylbenzene	380000		NR	NR	NR	NR	NR	NR
1,3-Dichlorobenzene	560000		NR	NR	NR	NR	NR	NR
1,3-Dichloropropane	--		NR	NR	NR	NR	NR	NR
1,4-Dichlorobenzene	250000		NR	NR	NR	NR	NR	NR
2,2-Dichloropropane	--		NR	NR	NR	NR	NR	NR
2-Chloroethylvinylether	--		NR	NR	NR	NR	NR	NR
2-Butanone (MEK)	1000000		12 U	11 U	11 U	11 U	12 U	10 U
2-Chlorotoluene	--		NR	NR	NR	NR	NR	NR
2-Hexanone	--		12 U	11 U	11 U	11 U	12 U	10 U
4-Chlorotoluene	--		NR	NR	NR	NR	NR	NR
4-isopropyltoluene	--		NR	NR	NR	NR	NR	NR
4-Methyl-2-Pentanone (MIBK)	--		12 U	11 U	11 U	11 U	12 U	10 U
Acetone	1000000		25	28	13	11 U	19	30
Benzene	89000		6 U	6 U	6 U	5 U	6 U	5 U
Bromobenzene	--		NR	NR	NR	NR	NR	NR
Bromochloromethane	--		NR	NR	NR	NR	NR	NR

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	TE-MW-D-1 9/25/2000 10 - 12	TE-MW-D-1 9/25/2000 25 - 25	TE-MW-D-1 9/25/2000 40 - 41	TE-MW-IB-2 10/3/2000 14-16	TE-MW-IB-2 10/3/2000 62-64	TE-MW-IB-2 10/4/2000 93-95
Bromodichloromethane	--		6 U	6 U	6 U	5 U	6 U	5 U
Bromoform	--		6 U	6 U	6 U	5 U	6 U	5 U
Bromomethane	--		12 U	11 U	11 U	11 U	12 U	10 U
Carbon disulfide	--		6 U	6 U	6 U	0.6 J	1 J	0.5 J
Carbon tetrachloride	44000		6 U	6 U	6 U	5 U	6 U	5 U
Chlorobenzene	1000000		6 U	6 U	6 U	5 U	6 U	5 U
Chloroethane	--		12 U	11 U	11 U	11 U	12 U	10 U
Chloroform	700000		6 U	6 U	6 U	5 U	6 U	5 U
Chloromethane	--		12 U	11 U	11 U	11 U	12 U	10 U
cis-1,2-Dichloroethene	1000000		6 U	6 U	6 U	5 U	6 U	5 U
cis-1,3-Dichloropropene	--		6 U	6 U	6 U	5 U	6 U	5 U
Cyclohexane	--		NR	NR	NR	NR	NR	NR
Dibromochloromethane	--		6 U	6 U	6 U	5 U	6 U	5 U
Dibromomethane	--		NR	NR	NR	NR	NR	NR
Dichlorodifluoromethane	--		NR	NR	NR	NR	NR	NR
Ethylbenzene	780000		6 U	6 U	6 U	5 U	6 U	5 U
Freon 113	--		NR	NR	NR	NR	NR	NR
Hexachlorobutadiene	--		NR	NR	NR	NR	NR	NR
Isopropylbenzene	--		NR	NR	NR	NR	NR	NR
m+p-Xylene	--		NR	NR	NR	NR	NR	NR
Methyl Acetate	--		NR	NR	NR	NR	NR	NR
Methyl tert-butyl ether	--		NR	NR	NR	NR	NR	NR
Methylcyclohexane	--		NR	NR	NR	NR	NR	NR
Methylene Chloride	1000000		8 B	9 B	6 B	10 B	4 JB	6 B
MTBE	1000000		NR	NR	NR	NR	NR	NR
Naphthalene	1000000		NR	NR	NR	NR	NR	NR
n-Butylbenzene	1000000		NR	NR	NR	NR	NR	NR
n-Propylbenzene	1000000		NR	NR	NR	NR	NR	NR
o-Xylene	--		NR	NR	NR	NR	NR	NR
sec-Butylbenzene	1000000		NR	NR	NR	NR	NR	NR
Styrene	--		6 U	6 U	6 U	5 U	6 U	5 U
tert-Butylbenzene	1000000		NR	NR	NR	NR	NR	NR
Tetrachloroethene	300000		6 U	6 U	6 U	5 U	6 U	5 U
Toluene	1000000		6 U	6 U	6 U	5 U	6 U	0.6 JB

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	TE-MW-D-1 9/25/2000 10 - 12	TE-MW-D-1 9/25/2000 25 - 25	TE-MW-D-1 9/25/2000 40 - 41	TE-MW-IB-2 10/3/2000 14-16	TE-MW-IB-2 10/3/2000 62-64	TE-MW-IB-2 10/4/2000 93-95
trans-1,2-Dichloroethene	1000000		6 U	6 U	6 U	5 U	6 U	5 U
trans-1,3-Dichloropropene	--		6 U	6 U	6 U	5 U	6 U	5 U
Trichloroethene	400000		6 U	6 U	6 U	5 U	6 U	5 U
Trichlorofluoromethane	--		NR	NR	NR	NR	NR	NR
Vinyl Acetate	--		12 U	11 U	11 U	11 U	12 U	10 U
Vinyl chloride	27000		12 U	11 U	11 U	11 U	12 U	10 U
Xylenes (total)	1000000		6 U	5 U	6 U	5 U	6 U	5 U

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
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-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	TE-MW-OB-2 9/19/2000 29 - 31	TE-MW-OB-2 9/19/2000 60 - 62	TE-MW-QA-2 10/23/2000 18-20	TE-MW-QA-2 10/23/2000 40-42	TE-OB-4 7/14/2000 24-26	UT-4 1/2/2007 32-32	UT-4RE 1/2/2007 32-32
1,1,1,2-Tetrachloroethane	--		NR	NR	ND	ND	ND	NR	NR
1,1,1-Trichloroethane	1000000		6 U	6 U	ND	ND	ND	6.5 U	6.7 U
1,1,2,2-Tetrachloroethane	--		1 J	6 U	ND	ND	ND	4.9 U	5 U
1,1,2-Trichloroethane	--		6 U	6 U	ND	ND	ND	4.6 U	4.7 U
1,1-Dichloroethane	480000		6 U	6 U	ND	ND	ND	4.2 U	4.3 U
1,1-Dichloroethene	1000000		6 U	6 U	ND	ND	ND	9 U	9.2 U
1,1-Dichloropropene	--		NR	NR	ND	ND	ND	NR	NR
1,2,3-Trichlorobenzene	--		NR	NR	ND	ND	ND	NR	NR
1,2,3-Trichloropropane	--		NR	NR	ND	ND	ND	NR	NR
1,2,4-Trichlorobenzene	--		NR	NR	ND	ND	ND	11 U	11 U
1,2,4-Trimethylbenzene	380000		NR	NR	ND	ND	ND	NR	NR
1,2-Dibromo-3-Chloropropane	--		NR	NR	ND	ND	ND	15 U	15 U
1,2-Dibromoethane	--		NR	NR	ND	ND	ND	6.3 U	6.5 U
1,2-Dichloroethene (total)	--		NR	NR	NR	NR	NR	NR	NR
1,2-Dichlorobenzene	1000000		NR	NR	ND	ND	ND	6 U	6.2 U
1,2-Dichloroethane	60000		6 U	6 U	ND	ND	ND	4.8 U	5 U
1,2-Dichloropropane	--		6 U	6 U	NR	NR	NR	6.2 U	6.4 U
1,3,5-Trimethlybenzene	--		NR	NR	NR	NR	NR	NR	NR
1,3,5-Trimethylbenzene	380000		NR	NR	ND	ND	ND	NR	NR
1,3-Dichlorobenzene	560000		NR	NR	ND	ND	ND	8.7 U	9 U
1,3-Dichloropropane	--		NR	NR	ND	ND	ND	NR	NR
1,4-Dichlorobenzene	250000		NR	NR	ND	ND	ND	8.5 U	8.8 U
2,2-Dichloropropane	--		NR	NR	ND	ND	ND	NR	NR
2-Chloroethylvinylether	--		NR	NR	NR	NR	NR	NR	NR
2-Butanone (MEK)	1000000		12 U	12 U	ND	ND	ND	83 J	99 J
2-Chlorotoluene	--		NR	NR	ND	ND	ND	NR	NR
2-Hexanone	--		12 U	12 U	ND	ND	ND	56 U	58 U
4-Chlorotoluene	--		NR	NR	ND	ND	ND	NR	NR
4-isopropyltoluene	--		NR	NR	ND	ND	ND	NR	NR
4-Methyl-2-Pentanone (MIBK)	--		12 U	12 U	NR	NR	NR	31 U	32 U
Acetone	1000000		8 JB	14 B	16	16	33 B	480	510
Benzene	89000		6 U	6 U	ND	ND	ND	6.2 U	6.4 U
Bromobenzene	--		NR	NR	ND	ND	ND	NR	NR
Bromochloromethane	--		NR	NR	ND	ND	ND	NR	NR

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	TE-MW-OB-2 9/19/2000 29 - 31	TE-MW-OB-2 9/19/2000 60 - 62	TE-MW-QA-2 10/23/2000 18-20	TE-MW-QA-2 10/23/2000 40-42	TE-OB-4 7/14/2000 24-26	UT-4 1/2/2007 32-32	UT-4RE 1/2/2007 32-32
Bromodichloromethane	--		6 U	6 U	ND	ND	ND	5.2 U	5.4 U
Bromoform	--		6 U	6 U	ND	ND	ND	4.9 U	5 U
Bromomethane	--		12 U	12 U	ND	ND	ND	32 U	33 U
Carbon disulfide	--		6 U	6 U	ND	ND	3 JB	47 J	52 J
Carbon tetrachloride	44000		6 U	6 U	ND	ND	ND	6.9 U	7.1 U
Chlorobenzene	1000000		6 U	6 U	ND	ND	ND	5.7 U	5.8 U
Chloroethane	--		12 U	12 U	ND	ND	ND	33 U	34 U
Chloroform	700000		6 U	6 U	ND	ND	ND	5.4 U	5.6 U
Chloromethane	--		12 U	12 U	ND	ND	ND	13 U	14 U
cis-1,2-Dichloroethene	1000000		6 U	6 U	ND	26	ND	5.1 U	5.2 U
cis-1,3-Dichloropropene	--		6 U	6 U	ND	ND	ND	5.2 U	5.3 U
Cyclohexane	--		NR	NR	NR	NR	NR	5.1 U	5.2 U
Dibromochloromethane	--		6 U	6 U	ND	ND	ND	3.6 U	3.7 U
Dibromomethane	--		NR	NR	ND	ND	ND	NR	NR
Dichlorodifluoromethane	--		NR	NR	ND	ND	ND	13 U	14 U
Ethylbenzene	780000		6 U	6 U	ND	ND	ND	5.5 U	5.7 U
Freon 113	--		NR	NR	NR	NR	NR	10 U	11 U
Hexachlorobutadiene	--		NR	NR	ND	ND	ND	NR	NR
Isopropylbenzene	--		NR	NR	ND	ND	ND	6.5 U	6.7 U
m+p-Xylene	--		NR	NR	ND	ND	ND	14 U	14 U
Methyl Acetate	--		NR	NR	NR	NR	NR	14 U	14 U
Methyl tert-butyl ether	--		NR	NR	ND	ND	ND	NR	NR
Methylcyclohexane	--		NR	NR	NR	NR	NR	6.6 U	6.8 U
Methylene Chloride	1000000		8 B	8 B	7 B	8 B	8 B	65 J	65 J
MTBE	1000000		NR	NR	NR	NR	NR	5.8 U	5.9 U
Naphthalene	1000000		NR	NR	ND	ND	ND	NR	NR
n-Butylbenzene	1000000		NR	NR	ND	ND	ND	NR	NR
n-Propylbenzene	1000000		NR	NR	ND	ND	ND	NR	NR
o-Xylene	--		NR	NR	ND	ND	ND	6 U	6.2 U
sec-Butylbenzene	1000000		NR	NR	ND	ND	ND	NR	NR
Styrene	--		6 U	6 U	ND	ND	ND	7.2 U	7.4 U
tert-Butylbenzene	1000000		NR	NR	ND	ND	ND	NR	NR
Tetrachloroethene	300000		0.4 J	1 J	ND	44	ND	11 U	12 U
Toluene	1000000		0.4 J	0.8 J	1 J	ND	ND	6.3 U	6.5 U

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	TE-MW-OB-2 9/19/2000 29 - 31	TE-MW-OB-2 9/19/2000 60 - 62	TE-MW-QA-2 10/23/2000 18-20	TE-MW-QA-2 10/23/2000 40-42	TE-OB-4 7/14/2000 24-26	UT-4 1/2/2007 32-32	UT-4RE 1/2/2007 32-32
trans-1,2-Dichloroethene	1000000		6 U	6 U	ND	0.4 J	ND	10 U	10 U
trans-1,3-Dichloropropene	--		6 U	6 U	ND	ND	ND	5.7 U	5.9 U
Trichloroethene	400000		6 U	0.4 J	ND	9	ND	4.8 U	5 U
Trichlorofluoromethane	--		NR	NR	ND	ND	ND	20 U	20 U
Vinyl Acetate	--		12 U	12 U	NR	NR	NR	NR	NR
Vinyl chloride	27000		12 U	12 U	ND	ND	ND	13 U	13 U
Xylenes (total)	1000000		6 U	6 U	NR	NR	NR	NR	NR

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservatio
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	UT-6 1/4/2007 20-22	UT-9 1/5/2007 22-22	WB-4 6/15/2006 12-12
1,1,1,2-Tetrachloroethane	--		NR	NR	NR
1,1,1-Trichloroethane	1000000		2.5 U	2.5 U	2.6 U
1,1,2,2-Tetrachloroethane	--		1.9 U	1.8 U	2 U
1,1,2-Trichloroethane	--		1.8 U	1.7 U	1.9 U
1,1-Dichloroethane	480000		1.6 U	1.6 U	1.7 U
1,1-Dichloroethene	1000000		3.5 U	3.4 U	3.6 U
1,1-Dichloropropene	--		NR	NR	NR
1,2,3-Trichlorobenzene	--		NR	NR	NR
1,2,3-Trichloropropane	--		NR	NR	NR
1,2,4-Trichlorobenzene	--		4.1 U	4 U	4.3 U
1,2,4-Trimethylbenzene	380000		NR	NR	NR
1,2-Dibromo-3-Chloropropane	--		5.7 U	5.5 U	5.9 U
1,2-Dibromoethane	--		2.4 U	2.4 U	2.5 U
1,2-Dichloroethene (total)	--		NR	NR	NR
1,2-Dichlorobenzene	1000000		2.3 U	2.3 U	2.4 U
1,2-Dichloroethane	60000		1.8 U	1.8 U	1.9 U
1,2-Dichloropropane	--		2.4 U	2.3 U	2.5 U
1,3,5-Trimethlybenzene	--		NR	NR	NR
1,3,5-Trimethylbenzene	380000		NR	NR	NR
1,3-Dichlorobenzene	560000		3.4 U	3.3 U	3.5 U
1,3-Dichloropropane	--		NR	NR	NR
1,4-Dichlorobenzene	250000		3.3 U	3.2 U	3.4 U
2,2-Dichloropropane	--		NR	NR	NR
2-Chloroethylvinylether	--		NR	NR	NR
2-Butanone (MEK)	1000000		17 U	17 U	18 U
2-Chlorotoluene	--		NR	NR	NR
2-Hexanone	--		22 U	21 U	23 U
4-Chlorotoluene	--		NR	NR	NR
4-isopropyltoluene	--		NR	NR	NR
4-Methyl-2-Pentanone (MIBK)	--		12 U	12 U	12 U
Acetone	1000000		20 U	20 U	71 J
Benzene	89000		2.4 U	2.3 U	2.5 U
Bromobenzene	--		NR	NR	NR
Bromochloromethane	--		NR	NR	NR

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	UT-6 1/4/2007 20-22	UT-9 1/5/2007 22-22	WB-4 6/15/2006 12-12
Bromodichloromethane	--		2 U	2 U	2.1 U
Bromoform	--		1.9 U	1.8 U	2 U
Bromomethane	--		12 U	12 U	13 U
Carbon disulfide	--		2.2 U	2.2 U	2.3 U
Carbon tetrachloride	44000		2.7 U	2.6 U	2.8 U
Chlorobenzene	1000000		2.2 U	2.1 U	2.3 U
Chloroethane	--		13 U	13 U	13 U
Chloroform	700000		2.1 U	2 U	2.2 U
Chloromethane	--		5.1 U	5 U	5.4 U
cis-1,2-Dichloroethene	1000000		2 U	1.9 U	2 U
cis-1,3-Dichloropropene	--		2 U	1.9 U	2.1 U
Cyclohexane	--		2 U	1.9 U	2 U
Dibromochloromethane	--		1.4 U	1.3 U	1.4 U
Dibromomethane	--		NR	NR	NR
Dichlorodifluoromethane	--		5.2 U	5 U	5.4 U
Ethylbenzene	780000		2.1 U	2.1 U	2.2 U
Freon 113	--		4 U	3.9 U	4.2 U
Hexachlorobutadiene	--		NR	NR	NR
Isopropylbenzene	--		2.5 U	2.4 U	2.6 U
m+p-Xylene	--		5.2 U	5.1 U	5.4 U
Methyl Acetate	--		5.2 U	5.1 U	5.4 U
Methyl tert-butyl ether	--		NR	NR	NR
Methylcyclohexane	--		2.5 U	2.5 U	2.6 U
Methylene Chloride	1000000		11 U	11 U	11 U
MTBE	1000000		2.2 U	2.2 U	2.3 U
Naphthalene	1000000		NR	NR	NR
n-Butylbenzene	1000000		NR	NR	NR
n-Propylbenzene	1000000		NR	NR	NR
o-Xylene	--		2.3 U	2.3 U	2.4 U
sec-Butylbenzene	1000000		NR	NR	NR
Styrene	--		2.8 U	2.7 U	2.9 U
tert-Butylbenzene	1000000		NR	NR	NR
Tetrachloroethene	300000		4.4 U	17 J	4.6 U
Toluene	1000000		2.4 U	2.4 U	2.6 U

Table 12. Summary of Volatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	UT-6 1/4/2007 20-22	UT-9 1/5/2007 22-22	WB-4 6/15/2006 12-12
trans-1,2-Dichloroethene	1000000		3.8 U	3.7 U	4 U
trans-1,3-Dichloropropene	--		2.2 U	2.1 U	2.3 U
Trichloroethene	400000		1.9 U	7 J	1.9 U
Trichlorofluoromethane	--		7.5 U	7.3 U	7.9 U
Vinyl Acetate	--		NR	NR	NR
Vinyl chloride	27000		5 U	4.8 U	5.2 U
Xylenes (total)	1000000		NR	NR	NR

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservatio
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	GE-31-5 8/16/2006 25-27	GE-31-5 8/16/2006 36-38	GE-31-5DL 8/16/2006 25-27	GE-40-1-1 10/24/2007 10-14	GE-40-1-2 10/24/2007 12-16	GE-40-1-3 10/24/2007 12-16	GE-40-7-6 10/25/2007 10-14
1,1-Biphenyl	--	--		NR	NR	NR	62 U	86 U	64 U	1100
1,2,4-Trichlorobenzene	--	--		NR	NR	NR	NR	NR	NR	NR
1,2-Dichlorobenzene	--	1000000		NR	NR	NR	NR	NR	NR	NR
1,2-Diphenylhydrazine (as Azot	--	--		NR	NR	NR	NR	NR	NR	NR
1,3-Dichlorobenzene	--	560000		NR	NR	NR	NR	NR	NR	NR
1,4-Dichlorobenzene	--	250000		NR	NR	NR	NR	NR	NR	NR
2,2-oxybis(1-Chloropropane)	--	--		55 U	55 U	280 UD	60 U	84 U	62 U	60 U
2,4,5-Trichlorophenol	--	--		52 U	52 U	260 UD	57 U	80 U	59 U	57 U
2,4,6-Trichlorophenol	--	--		50 U	50 U	250 UD	55 U	77 U	57 U	55 U
2,4-Dichlorophenol	--	--		63 U	63 U	320 UD	69 U	97 U	72 U	69 U
2,4-Dimethylphenol	--	--		54 U	54 U	270 UD	60 U	83 U	62 U	59 U
2,4-Dinitrophenol	--	--		290 U	290 U	1500 UD	320 U	450 U	330 U	320 U
2,4-Dinitrotoluene	--	--		50 U	50 U	250 UD	55 U	77 U	57 U	55 U
2,6-Dinitrotoluene	--	--		49 U	48 U	240 UD	53 U	74 U	55 U	53 U
2-Chloronaphthalene	--	--		57 U	56 U	280 UD	62 U	87 U	64 U	62 U
2-Chlorophenol	--	--		55 U	54 U	270 UD	60 U	84 U	62 U	60 U
2-Methylnaphthalene	--	--		460	57 U	440 JD	63 U	87 U	65 U	3600 E
2-Methylphenol	--	1000000		57 U	56 U	290 UD	62 U	87 U	64 U	62 U
2-Nitroaniline	--	--		44 U	43 U	220 UD	48 U	66 U	49 U	48 U
2-Nitrophenol	--	--		53 U	52 U	260 UD	58 U	80 U	60 U	58 U
3,3-Dichlorobenzidine	--	--		59 U	58 U	290 UD	64 U	90 U	66 U	64 U
3+4-Methylphenols	--	--		NR	NR	NR	59 U	83 U	61 U	59 U
3-Nitroaniline	--	--		45 U	44 U	220 UD	49 U	68 U	51 U	49 U
4,6-Dinitro-2-methylphenol	--	--		67 U	66 U	330 UD	73 U	100 U	75 U	73 U
4-Bromophenyl phenyl ether	--	--		51 U	51 U	260 UD	56 U	78 U	58 U	56 U
4-Chloro-3-methylphenol	--	--		47 U	47 U	240 UD	52 U	72 U	54 U	52 U
4-Chloroaniline	--	--		41 U	40 U	200 UD	45 U	62 U	46 U	45 U
4-Chlorophenyl phenyl ether	--	--		54 U	54 U	270 UD	59 U	83 U	61 U	59 U
4-Methylphenol	--	1000000		54 U	53 U	270 UD	NR	NR	NR	NR
4-Nitroaniline	--	--		59 U	58 U	290 UD	64 U	89 U	66 U	64 U
4-Nitrophenol	--	--		42 U	42 U	210 UD	47 U	65 U	48 U	46 U
Acenaphthene	--	1000000		410	60 U	420 JD	67 U	93 U	120 J	67 U
Acenaphthylene	--	1000000		420	55 U	420 JD	61 U	85 U	63 U	61 U
Acetophenone	--	--		50 U	50 U	250 UD	55 U	77 U	57 U	55 U
Anthracene	--	1000000		1700	51 U	2000 D	57 U	79 U	130 J	270 J
Atrazine	--	--		53 U	52 U	260 UD	58 U	80 U	59 U	57 U

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	GE-31-5 8/16/2006 25-27	GE-31-5 8/16/2006 36-38	GE-31-5DL 8/16/2006 25-27	GE-40-1-1 10/24/2007 10-14	GE-40-1-2 10/24/2007 12-16	GE-40-1-3 10/24/2007 12-16	GE-40-7-6 10/25/2007 10-14
Benzaldehyde	--	--		70 U	70 U	350 UD	77 U	110 U	80 U	77 U
Benzidine	--	--		NR	NR	NR	NR	NR	NR	NR
Benzo[a]anthracene	--	11000		2200	47 U	2300 D	53 U	73 U	110 J	52 U
Benzo[a]pyrene	--	1100		2400	54 U	2200 D	60 U	84 U	95 J	60 U
Benzo[b]fluoranthene	--	11000		3200 E	37 U	3000 D	41 U	58 U	120 J	41 U
Benzo(b+k)fluoranthenes	--	--		NR	NR	NR	NR	NR	NR	NR
Benzo[g,h,i]perylene	--	1000000		990	56 U	940 JD	62 U	87 U	64 U	62 U
Benzo[k]fluoranthene	--	110000		1600	75 U	1700 D	83 U	120 U	85 U	82 U
Benzoic acid	--	--		NR	NR	NR	NR	NR	NR	NR
Benzyl alcohol	--	--		NR	NR	NR	NR	NR	NR	NR
Bis(2-chloroethoxy)methane	--	--		56 U	56 U	280 UD	62 U	86 U	64 U	62 U
Bis(2-chloroethyl) ether	--	--		54 U	54 U	270 UD	59 U	83 U	61 U	59 U
Bis(2-chloroisopropyl)ether	--	--		NR	NR	NR	NR	NR	NR	NR
Bis(2-ethylhexyl) phthalate	--	--		180 J	170 J	330 UD	80 J	100 U	110 J	180 JB
Butylbenzylphthalate	--	--		55 U	55 U	280 UD	61 U	85 U	63 U	61 U
Caprolactam	--	--		55 U	55 U	280 UD	60 U	84 U	62 U	60 U
Carbazole	--	--		680	52 U	280 JD	57 U	80 U	59 U	57 U
Chrysene	--	110000		2400	61 U	2600 D	67 U	94 U	97 J	67 U
Dibenzo[a,h]anthracene	--	1100		83 J	43 U	220 UD	47 U	66 U	49 U	47 U
Dibenzofuran	--	1000000		590	56 U	590 JD	62 U	87 U	64 U	62 U
Diethyl phthalate	--	--		59 U	58 U	300 UD	65 U	90 U	67 U	65 U
Dimethyl phthalate	--	--		55 U	55 U	280 UD	60 U	84 U	62 U	60 U
Di-n-butyl phthalate	--	--		52 U	52 U	260 UD	57 U	80 U	59 U	57 U
Di-n-octyl phthalate	--	--		58 U	58 U	290 UD	64 U	89 U	66 U	64 U
Diphenyl	--	--		130 J	56 U	280 UD	NR	NR	NR	NR
Fluoranthene	--	1000000		4300 E	50 U	5600 D	56 U	78 U	270 J	85 J
Fluorene	--	1000000		880	57 U	920 JD	63 U	88 U	75 J	63 U
Hexachlorobenzene	--	12000		55 U	54 U	270 UD	60 U	84 U	62 U	60 U
Hexachlorobutadiene	--	--		53 U	52 U	260 UD	58 U	80 U	60 U	58 U
Hexachlorocyclopentadiene	--	--		55 U	54 U	270 UD	60 U	84 U	62 U	60 U
Hexachloroethane	--	--		58 U	58 U	290 UD	64 U	89 U	66 U	64 U
Indeno[1,2,3-cd]pyrene	--	11000		390	43 U	560 JD	48 U	66 U	52 J	48 U
Isophorone	--	--		52 U	51 U	260 UD	56 U	79 U	58 U	56 U
Naphthalene	--	1000000		790	58 U	840 JD	64 U	89 U	66 U	64 U
Nitrobenzene	--	--		75 U	74 U	370 UD	82 U	110 U	85 U	82 U
N-Nitrosodimethylamine	--	--		NR	NR	NR	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	GE-31-5 8/16/2006 25-27	GE-31-5 8/16/2006 36-38	GE-31-5DL 8/16/2006 25-27	GE-40-1-1 10/24/2007 10-14	GE-40-1-2 10/24/2007 12-16	GE-40-1-3 10/24/2007 12-16	GE-40-7-6 10/25/2007 10-14
n-Nitrosodi-n-propylamine	--	--		57 U	56 U	280 UD	62 U	87 U	64 U	NR
n-Nitrosodiphenylamine	--	--		56 U	56 U	280 UD	62 U	86 U	64 U	NR
Pentachlorophenol	--	55000		79 U	78 U	400 UD	87 U	120 U	90 U	NR
Phenanthrene	--	1000000		4500 E	54 U	6100 D	60 U	83 U	290 J	NR
Phenol	--	1000000		52 U	51 U	260 UD	57 U	79 U	59 U	NR
Pyrene	--	1000000		5900 E	60 U	5800 D	66 U	93 U	280 J	NR
Total cPAHs	25000			12273	0	12360	0	0	474	0
Total SVOCs	500000			34203	170	36710	80	0	1749	5235

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
R - Results rejected by validator
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available
cPAHs - Carcinogenic polyaromatic hydrocarbons
SVOCs - Semivolatile Organic Compounds

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	GE-40-7-6DL 10/25/2007 10-14	GE-53-3 7/27/2006 12-12	GE-53-3 7/27/2006 25-25	GE-53-5 7/27/2006 18-18	GE-59-3 7/10/2006 12-15	GE-59-3 7/10/2006 23-25	GE-59-11 10/19/2006 20 - 22
1,1-Biphenyl	--	--		740 JD	NR	NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--	--		NR	NR	NR	NR	75 U	77 U	NR
1,2-Dichlorobenzene	--	1000000		NR	NR	NR	NR	NR	NR	NR
1,2-Diphenylhydrazine (as Azob	--	--		NR	NR	NR	NR	NR	NR	NR
1,3-Dichlorobenzene	--	560000		NR	NR	NR	NR	NR	NR	NR
1,4-Dichlorobenzene	--	250000		NR	NR	NR	NR	NR	NR	NR
2,2-oxybis(1-Chloropropane)	--	--		120 UD	58 U	57 U	58 U	59 U	60 U	NR
2,4,5-Trichlorophenol	--	--		110 UD	55 U	54 U	55 U	56 U	57 U	NR
2,4,6-Trichlorophenol	--	--		110 UD	53 U	52 U	53 U	53 U	55 U	NR
2,4-Dichlorophenol	--	--		140 UD	66 U	66 U	66 U	67 U	69 U	NR
2,4-Dimethylphenol	--	--		120 UD	57 U	56 U	57 U	58 U	59 U	NR
2,4-Dinitrophenol	--	--		640 UD	310 U	300 U	310 U	310 U	320 U	NR
2,4-Dinitrotoluene	--	--		110 UD	53 U	52 U	53 U	53 U	55 U	NR
2,6-Dinitrotoluene	--	--		110 UD	51 U	50 U	51 U	51 U	53 U	NR
2-Chloronaphthalene	--	--		120 UD	59 U	59 U	59 U	60 U	62 U	NR
2-Chlorophenol	--	--		120 UD	57 U	57 U	57 U	58 U	60 U	NR
2-Methylnaphthalene	--	--		3500 D	60 U	59 U	60 U	61 U	62 U	NR
2-Methylphenol	--	1000000		120 UD	59 U	59 U	59 U	60 U	62 U	NR
2-Nitroaniline	--	--		95 UD	45 U	45 U	45 U	46 U	47 U	NR
2-Nitrophenol	--	--		120 UD	55 U	55 U	55 U	56 U	58 U	NR
3,3-Dichlorobenzidine	--	--		130 UD	61 U	61 U	61 U	62 U	64 U	NR
3+4-Methylphenols	--	--		120 UD	NR	NR	NR	NR	NR	NR
3-Nitroaniline	--	--		98 UD	47 U	46 U	47 U	47 U	49 U	NR
4,6-Dinitro-2-methylphenol	--	--		150 UD	69 U	69 U	69 U	71 U	73 U	NR
4-Bromophenyl phenyl ether	--	--		110 UD	53 U	53 U	53 U	54 U	56 U	NR
4-Chloro-3-methylphenol	--	--		100 UD	49 U	49 U	49 U	50 U	52 U	NR
4-Chloroaniline	--	--		89 UD	43 U	42 U	43 U	43 U	45 U	NR
4-Chlorophenyl phenyl ether	--	--		120 UD	57 U	56 U	57 U	58 U	59 U	NR
4-Methylphenol	--	1000000		NR	56 U	56 U	56 U	57 U	59 U	NR
4-Nitroaniline	--	--		130 UD	61 U	61 U	61 U	62 U	64 U	NR
4-Nitrophenol	--	--		93 UD	44 U	44 U	44 U	45 U	46 U	NR
Acenaphthene	--	1000000		330 JD	64 U	63 U	64 U	65 U	67 U	NR
Acenaphthylene	--	1000000		120 UD	58 U	58 U	73 J	59 U	61 U	NR
Acetophenone	--	--		110 UD	52 U	52 U	52 U	53 U	55 U	NR
Anthracene	--	1000000		250 JD	57 J	53 U	160 J	55 U	56 U	NR
Atrazine	--	--		110 UD	55 U	54 U	55 U	56 U	57 U	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	GE-40-7-6DL 10/25/2007 10-14	GE-53-3 7/27/2006 12-12	GE-53-3 7/27/2006 25-25	GE-53-5 7/27/2006 18-18	GE-59-3 7/10/2006 12-15	GE-59-3 7/10/2006 23-25	GE-59-11 10/19/2006 20 - 22
Benzaldehyde	--	--		150 UD	73 U	73 U	73 U	NR	NR	NR
Benzidine	--	--		NR	NR	NR	NR	NR	NR	NR
Benzo[a]anthracene	--	11000		100 UD	180 J	50 U	260 J	51 U	52 U	ND
Benzo[a]pyrene	--	1100		120 UD	250 J	57 U	280 J	58 U	60 U	ND
Benzo[b]fluoranthene	--	11000		82 UD	330 J	39 U	380	40 U	41 U	ND
Benzo(b+k)fluoranthenes	--	--		NR	NR	NR	NR	NR	NR	NR
Benzo[g,h,i]perylene	--	1000000		120 UD	120 J	59 U	140 J	60 U	62 U	NR
Benzo[k]fluoranthene	--	110000		160 UD	130 J	78 U	150 J	80 U	82 U	ND
Benzoic acid	--	--		NR	NR	NR	NR	NR	NR	NR
Benzyl alcohol	--	--		NR	NR	NR	NR	NR	NR	NR
Bis(2-chloroethoxy)methane	--	--		120 UD	59 U	58 U	59 U	60 U	61 U	NR
Bis(2-chloroethyl) ether	--	--		120 UD	57 U	56 U	57 U	58 U	59 U	NR
Bis(2-chloroisopropyl)ether	--	--		NR	NR	NR	NR	NR	NR	NR
Bis(2-ethylhexyl) phthalate	--	--		140 JBD	69 U	230 J	140 J	70 U	72 U	NR
Butylbenzylphthalate	--	--		120 UD	58 U	57 U	58 U	59 U	60 U	NR
Caprolactam	--	--		120 UD	58 U	57 U	58 U	59 U	60 U	NR
Carbazole	--	--		110 UD	55 U	54 U	110 J	56 U	57 U	NR
Chrysene	--	110000		130 UD	210 J	64 U	280 J	65 U	67 U	ND
Dibenzo[a,h]anthracene	--	1100		94 UD	45 U	44 U	45 U	46 U	47 U	ND
Dibenzofuran	--	1000000		120 UD	59 U	59 U	59 U	60 U	62 U	NR
Diethyl phthalate	--	--		130 UD	62 U	61 U	62 U	63 U	65 U	NR
Dimethyl phthalate	--	--		120 UD	58 U	57 U	58 U	59 U	60 U	NR
Di-n-butyl phthalate	--	--		110 UD	54 U	54 U	55 U	55 U	57 U	NR
Di-n-octyl phthalate	--	--		130 UD	61 U	60 U	61 U	62 U	64 U	NR
Diphenyl	--	--		NR	59 U	58 U	59 U	60 U	62 U	NR
Fluoranthene	--	1000000		110 UD	380	53 U	680	54 U	56 U	NR
Fluorene	--	1000000		660 JD	60 U	60 U	60 U	61 U	63 U	NR
Hexachlorobenzene	--	12000		120 UD	57 U	57 U	57 U	58 U	60 U	NR
Hexachlorobutadiene	--	--		120 UD	55 U	55 U	55 U	56 U	58 U	NR
Hexachlorocyclopentadiene	--	--		120 UD	57 U	57 U	57 U	58 U	60 U	NR
Hexachloroethane	--	--		130 UD	61 U	60 U	61 U	62 U	64 U	NR
Indeno[1,2,3-cd]pyrene	--	11000		95 UD	200 J	45 U	230 J	46 U	47 U	ND
Isophorone	--	--		110 UD	54 U	53 U	54 U	55 U	56 U	NR
Naphthalene	--	1000000		440 JD	61 U	61 U	78 J	62 U	64 U	NR
Nitrobenzene	--	--		160 UD	78 U	77 U	78 U	79 U	82 U	NR
N-Nitrosodimethylamine	--	--		NR	NR	NR	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	GE-40-7-6DL 10/25/2007 10-14	GE-53-3 7/27/2006 12-12	GE-53-3 7/27/2006 25-25	GE-53-5 7/27/2006 18-18	GE-59-3 7/10/2006 12-15	GE-59-3 7/10/2006 23-25	GE-59-11 10/19/2006 20 - 22
n-Nitrosodi-n-propylamine	--	--		62 U	59 U	59 U	59 U	60 U	62 U	NR
n-Nitrosodiphenylamine	--	--		62 U	59 U	58 U	59 U	60 U	62 U	NR
Pentachlorophenol	--	55000		87 U	83 U	82 U	83 U	84 U	87 U	NR
Phenanthrene	--	1000000		1500	240 J	56 U	610	58 U	60 U	NR
Phenol	--	1000000		57 U	54 U	54 U	54 U	55 U	57 U	NR
Pyrene	--	1000000		310 J	330 J	63 U	550	64 U	66 U	NR
Total cPAHs	25000			0	1300	0	1580	0	0	0
Total SVOCs	500000			7870	2427	230	4121	0	0	0

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
R - Results rejected by validator
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available
cPAHs - Carcinogenic polyaromatic hydrocarbons
SVOCs - Semivolatile Organic Compounds

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: Sample Date: Sample Depth (ft bls):	GE-59-12 10/18/2006 28 - 30	MW-26 R 12/5/1990 9-11	RT-7 10/3/2006 25 - 27	RT-9 8/30/2006 20-22	S-35 11/30/1990 8-10	SY-515 11/17/2006 20-22
1,1-Biphenyl	--	--		NR	NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--	--		NR	340 UR	NR	88 U	380 U	NR
1,2-Dichlorobenzene	--	1000000		NR	340 UR	NR	NR	380 U	NR
1,2-Diphenylhydrazine (as Azob	--	--		NR	NR	NR	NR	NR	NR
1,3-Dichlorobenzene	--	560000		NR	340 UR	NR	NR	380 U	NR
1,4-Dichlorobenzene	--	250000		NR	340 UR	NR	NR	380 U	NR
2,2-oxybis(1-Chloropropane)	--	--		NR	NA	NR	69 U	NA	63 U
2,4,5-Trichlorophenol	--	--		NR	1670 UR	NR	66 U	1840 U	60 U
2,4,6-Trichlorophenol	--	--		NR	340 UR	NR	63 U	380 U	58 U
2,4-Dichlorophenol	--	--		NR	340 UR	NR	79 U	380 U	72 U
2,4-Dimethylphenol	--	--		NR	340 UR	NR	68 U	380 U	62 U
2,4-Dinitrophenol	--	--		NR	1670 UR	NR	370 U	1840 U	340 U
2,4-Dinitrotoluene	--	--		NR	340 UR	NR	63 U	380 U	58 U
2,6-Dinitrotoluene	--	--		NR	340 UR	NR	61 U	380 U	55 U
2-Chloronaphthalene	--	--		NR	340 UR	NR	71 U	380 U	65 U
2-Chlorophenol	--	--		NR	340 UR	NR	68 U	380 U	62 U
2-Methylnaphthalene	--	--		NR	340 UR	NR	72 U	380 U	65 U
2-Methylphenol	--	1000000		NR	340 UR	NR	71 U	380 U	65 U
2-Nitroaniline	--	--		NR	1670 UR	NR	54 U	1840 U	50 U
2-Nitrophenol	--	--		NR	340 UR	NR	66 U	380 U	60 U
3,3-Dichlorobenzidine	--	--		NR	690 UR	NR	73 U	760 U	67 U
3+4-Methylphenols	--	--		NR	NR	NR	NR	NR	NR
3-Nitroaniline	--	--		NR	1670 UR	NR	56 U	1840 U	51 U
4,6-Dinitro-2-methylphenol	--	--		NR	1670 UR	NR	83 U	1840 U	76 U
4-Bromophenyl phenyl ether	--	--		NR	340 UR	NR	64 U	380 U	58 U
4-Chloro-3-methylphenol	--	--		NR	340 UR	NR	59 U	380 U	54 U
4-Chloroaniline	--	--		NR	340 UR	NR	51 U	380 U	47 U
4-Chlorophenyl phenyl ether	--	--		NR	340 UR	NR	68 U	380 U	62 U
4-Methylphenol	--	1000000		NR	340 UR	NR	68 U	380 U	62 U
4-Nitroaniline	--	--		NR	1670 UR	NR	73 U	1840 U	67 U
4-Nitrophenol	--	--		NR	1670 UR	NR	53 U	1840 U	49 U
Acenaphthene	--	1000000		NR	340 UR	NR	76 U	380 U	70 U
Acenaphthylene	--	1000000		NR	340 UR	NR	70 U	380 U	64 U
Acetophenone	--	--		NR	NR	NR	63 U	NR	57 U
Anthracene	--	1000000		NR	340 UR	NR	65 U	380 U	59 U
Atrazine	--	--		NR	NR	NR	66 U	NR	60 U

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	GE-59-12 / 10/18/2006 / 28 - 30	MW-26 R / 12/5/1990 / 9-11	RT-7 / 10/3/2006 / 25 - 27	RT-9 / 8/30/2006 / 20-22	S-35 / 11/30/1990 / 8-10	SY-515 / 11/17/2006 / 20-22
Benzaldehyde	--	--		NR	NR	NR	NR	NR	80 U
Benzidine	--	--		NR	625 UR	NR	NR	690 U	NR
Benzo[a]anthracene	--	11000		ND	340 UR	ND	60 U	380 U	55 U
Benzo[a]pyrene	--	1100		ND	340 UR	ND	68 U	380 U	63 U
Benzo[b]fluoranthene	--	11000		ND	NA	ND	47 U	NA	43 U
Benzo(b+k)fluoranthenes	--	--		NR	340 UR	NR	NR	380 U	NR
Benzo[g,h,i]perylene	--	1000000		NR	340 UR	NR	71 U	380 U	65 U
Benzo[k]fluoranthene	--	110000		ND	NA	ND	94 U	NA	86 U
Benzoic acid	--	--		NR	1670 UR	NR	NR	1840 U	NR
Benzyl alcohol	--	--		NR	340 UR	NR	NR	380 U	NR
Bis(2-chloroethoxy)methane	--	--		NR	340 UR	NR	70 U	380 U	64 U
Bis(2-chloroethyl) ether	--	--		NR	340 UR	NR	68 U	380 U	62 U
Bis(2-chloroisopropyl)ether	--	--		NR	340 UR	NR	NR	380 U	NR
Bis(2-ethylhexyl) phthalate	--	--		NR	829 R	NR	82 U	203 J	75 U
Butylbenzylphthalate	--	--		NR	340 UR	NR	69 U	380 U	63 U
Caprolactam	--	--		NR	NR	NR	69 U	NR	63 U
Carbazole	--	--		NR	NA	NR	65 U	NA	60 U
Chrysene	--	110000		ND	340 UR	ND	77 U	380 U	70 U
Dibenzo[a,h]anthracene	--	1100		ND	340 UR	ND	54 U	380 U	49 U
Dibenzofuran	--	1000000		NR	340 UR	NR	71 U	380 U	65 U
Diethyl phthalate	--	--		NR	340 UR	NR	74 U	380 U	68 U
Dimethyl phthalate	--	--		NR	340 UR	NR	69 U	380 U	63 U
Di-n-butyl phthalate	--	--		NR	340 UR	NR	65 U	380 U	60 U
Di-n-octyl phthalate	--	--		NR	340 UR	NR	73 U	380 U	67 U
Diphenyl	--	--		NR	NR	NR	71 U	NR	64 U
Fluoranthene	--	1000000		NR	340 UR	NR	64 U	380 U	58 U
Fluorene	--	1000000		NR	340 UR	NR	72 U	380 U	66 U
Hexachlorobenzene	--	12000		NR	340 UR	NR	68 U	380 U	63 U
Hexachlorobutadiene	--	--		NR	340 UR	NR	66 U	380 U	60 U
Hexachlorocyclopentadiene	--	--		NR	340 UR	NR	68 U	380 U	62 U
Hexachloroethane	--	--		NR	340 UR	NR	73 U	380 U	67 U
Indeno[1,2,3-cd]pyrene	--	11000		ND	340 UR	ND	54 U	380 U	50 U
Isophorone	--	--		NR	340 UR	NR	64 U	380 U	59 U
Naphthalene	--	1000000		NR	340 UR	NR	73 U	380 U	67 U
Nitrobenzene	--	--		NR	340 UR	NR	93 U	380 U	85 U
N-Nitrosodimethylamine	--	--		NR	340 UR	NR	NR	380 U	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:**	GE-59-12	MW-26 R	RT-7	RT-9	S-35	SY-515
			Sample Date:	10/18/2006	12/5/1990	10/3/2006	8/30/2006	11/30/1990	11/17/2006
			Sample Depth (ft bls):	28 - 30	9-11	25 - 27	20-22	8-10	20-22
n-Nitrosodi-n-propylamine	--	--		NR	340 UR	NR	71 U	380 U	65 U
n-Nitrosodiphenylamine	--	--		NR	340 UR	NR	71 U	380 U	64 U
Pentachlorophenol	--	55000		NR	1670 UR	NR	99 U	1840 U	91 U
Phenanthrene	--	1000000		NR	340 UR	NR	68 U	380 U	62 U
Phenol	--	1000000		NR	340 UR	NR	65 U	380 U	59 U
Pyrene	--	1000000		NR	340 UR	NR	76 U	380 U	69 U
Total cPAHs	25000			0	0	0	0	0	0
Total SVOCs	500000			0	829	0	0	203	0

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
R - Results rejected by validator
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available
cPAHs - Carcinogenic polyaromatic hydrocarbons
SVOCs - Semivolatile Organic Compounds

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	SY-516 10/19/2006 43-45	SY-516 10/19/2006 88-90	TE-B/C-2 9/7/2000 48-50	TE-B/C-2 9/8/2000 85-86	TE-IB/OB-1 9/11/2000 15-17	TE-IB/OB-1 9/11/2000 33-35	TE-IB-3 9/11/2000 23-25
1,1-Biphenyl	--	--		NR	NR	NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--	--		82 U	83 U	380 U	400 U	350 U	380 U	390 U
1,2-Dichlorobenzene	--	1000000		NR	NR	380 U	400 U	350 U	380 U	390 U
1,2-Diphenylhydrazine (as Azob	--	--		NR	NR	NR	NR	NR	NR	NR
1,3-Dichlorobenzene	--	560000		NR	NR	380 U	400 U	350 U	380 U	390 U
1,4-Dichlorobenzene	--	250000		NR	NR	380 U	400 U	350 U	380 U	390 U
2,2-oxybis(1-Chloropropane)	--	--		65 U	65 U	380 U	400 U	350 U	380 U	390 U
2,4,5-Trichlorophenol	--	--		61 U	62 U	1900 U	2000 U	1700 U	1800 U	1900 U
2,4,6-Trichlorophenol	--	--		59 U	60 U	380 U	400 U	350 U	380 U	390 U
2,4-Dichlorophenol	--	--		74 U	75 U	380 U	400 U	350 U	380 U	390 U
2,4-Dimethylphenol	--	--		64 U	64 U	380 U	400 U	350 U	380 U	390 U
2,4-Dinitrophenol	--	--		340 U	350 U	1900 U	2000 U	1700 U	1800 U	1900 U
2,4-Dinitrotoluene	--	--		59 U	60 U	380 U	400 U	350 U	380 U	390 U
2,6-Dinitrotoluene	--	--		57 U	57 U	380 U	400 U	350 U	380 U	390 U
2-Chloronaphthalene	--	--		67 U	67 U	380 U	400 U	350 U	380 U	390 U
2-Chlorophenol	--	--		64 U	65 U	380 U	400 U	350 U	380 U	390 U
2-Methylnaphthalene	--	--		67 U	68 U	380 U	400 U	350 U	11 J	390 U
2-Methylphenol	--	1000000		67 U	67 U	380 U	400 U	350 U	380 U	390 U
2-Nitroaniline	--	--		51 U	51 U	NR	NR	1700 U	1800 U	1900 U
2-Nitrophenol	--	--		62 U	62 U	380 U	400 U	350 U	380 U	390 U
3,3-Dichlorobenzidine	--	--		69 U	69 U	NR	NR	700 U	750 U	780 U
3+4-Methylphenols	--	--		NR	NR	770 U	800 U	700 U	750 U	780 U
3-Nitroaniline	--	--		52 U	53 U	1900 U	2000 U	1700 U	1800 U	1900 U
4,6-Dinitro-2-methylphenol	--	--		78 U	79 U	1900 U	2000 U	1700 U	1800 U	1900 U
4-Bromophenyl phenyl ether	--	--		60 U	61 U	380 U	400 U	350 U	380 U	390 U
4-Chloro-3-methylphenol	--	--		55 U	56 U	380 U	400 U	350 U	380 U	390 U
4-Chloroaniline	--	--		48 U	48 U	380 U	400 U	350 U	380 U	390 U
4-Chlorophenyl phenyl ether	--	--		63 U	64 U	380 U	400 U	350 U	380 U	390 U
4-Methylphenol	--	1000000		63 U	64 U	380 U	400 U	350 U	380 U	390 U
4-Nitroaniline	--	--		69 U	69 U	1900 U	2000 U	1700 U	1800 U	1900 U
4-Nitrophenol	--	--		50 U	50 U	1900 U	2000 U	1700 U	1800 U	1900 U
Acenaphthene	--	1000000		71 U	72 U	380 U	400 U	350 U	380 U	390 U
Acenaphthylene	--	1000000		65 U	66 U	380 U	400 U	350 U	380 U	390 U
Acetophenone	--	--		59 U	59 U	NR	NR	NR	NR	NR
Anthracene	--	1000000		61 U	61 U	380 U	400 U	350 U	380 U	390 U
Atrazine	--	--		61 U	62 U	NR	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	SY-516 10/19/2006 43-45	SY-516 10/19/2006 88-90	TE-B/C-2 9/7/2000 48-50	TE-B/C-2 9/8/2000 85-86	TE-IB/OB-1 9/11/2000 15-17	TE-IB/OB-1 9/11/2000 33-35	TE-IB-3 9/11/2000 23-25
Benzaldehyde	--	--		NR	NR	NR	NR	NR	NR	NR
Benzidine	--	--		NR	NR	NR	NR	NR	NR	NR
Benzo[a]anthracene	--	11000		56 U	57 U	380 U	400 U	350 U	380 U	390 U
Benzo[a]pyrene	--	1100		64 U	65 U	380 U	400 U	350 U	380 U	390 U
Benzo[b]fluoranthene	--	11000		44 U	45 U	380 U	400 U	350 U	380 U	390 U
Benzo(b+k)fluoranthenes	--	--		NR	NR	NR	NR	NR	NR	NR
Benzo[g,h,i]perylene	--	1000000		66 U	67 U	380 U	400 U	350 U	380 U	390 U
Benzo[k]fluoranthene	--	110000		88 U	89 U	380 U	400 U	350 U	380 U	390 U
Benzoic acid	--	--		NR	NR	1900 U	2000 U	1700 U	1800 U	1900 U
Benzyl alcohol	--	--		NR	NR	380 U	400 U	350 U	380 U	390 U
Bis(2-chloroethoxy)methane	--	--		66 U	67 U	380 U	400 U	350 U	380 U	390 U
Bis(2-chloroethyl) ether	--	--		63 U	64 U	380 U	400 U	350 U	380 U	390 U
Bis(2-chloroisopropyl)ether	--	--		NR	NR	NR	NR	NR	NR	NR
Bis(2-ethylhexyl) phthalate	--	--		77 U	98 J	380 U	110 J	350 U	53 J	390 U
Butylbenzylphthalate	--	--		65 U	66 U	380 U	400 U	350 U	380 U	390 U
Caprolactam	--	--		65 U	65 U	NR	NR	NR	NR	NR
Carbazole	--	--		61 U	62 U	380 U	400 U	350 U	380 U	390 U
Chrysene	--	110000		72 U	73 U	380 U	400 U	350 U	380 U	390 U
Dibenzo[a,h]anthracene	--	1100		50 U	51 U	380 U	400 U	350 U	380 U	390 U
Dibenzofuran	--	1000000		66 U	67 U	380 U	400 U	350 U	380 U	390 U
Diethyl phthalate	--	--		69 U	70 U	380 U	400 U	350 U	380 U	390 U
Dimethyl phthalate	--	--		65 U	65 U	380 U	400 U	350 U	380 U	390 U
Di-n-butyl phthalate	--	--		61 U	62 U	380 U	400 U	350 U	380 U	390 U
Di-n-octyl phthalate	--	--		68 U	69 U	380 U	400 U	350 U	380 U	390 U
Diphenyl	--	--		66 U	67 U	NR	NR	NR	NR	NR
Fluoranthene	--	1000000		60 U	60 U	380 U	400 U	350 U	380 U	390 U
Fluorene	--	1000000		68 U	68 U	380 U	400 U	350 U	380 U	390 U
Hexachlorobenzene	--	12000		64 U	65 U	380 U	400 U	350 U	380 U	390 U
Hexachlorobutadiene	--	--		62 U	62 U	380 U	400 U	350 U	380 U	390 U
Hexachlorocyclopentadiene	--	--		64 U	65 U	380 U	400 U	350 U	380 U	390 U
Hexachloroethane	--	--		68 U	69 U	380 U	400 U	350 U	380 U	390 U
Indeno[1,2,3-cd]pyrene	--	11000		51 U	51 U	380 U	400 U	350 U	380 U	390 U
Isophorone	--	--		60 U	61 U	380 U	400 U	350 U	380 U	390 U
Naphthalene	--	1000000		69 U	69 U	380 U	400 U	350 U	10 J	390 U
Nitrobenzene	--	--		88 U	88 U	380 U	400 U	350 U	380 U	390 U
N-Nitrosodimethylamine	--	--		NR	NR	NR	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	SY-516 10/19/2006 43-45	SY-516 10/19/2006 88-90	TE-B/C-2 9/7/2000 48-50	TE-B/C-2 9/8/2000 85-86	TE-IB/OB-1 9/11/2000 15-17	TE-IB/OB-1 9/11/2000 33-35	TE-IB-3 9/11/2000 23-25
n-Nitrosodi-n-propylamine	--	--		66 U	67 U	380 U	400 U	350 U	380 U	390 U
n-Nitrosodiphenylamine	--	--		66 U	67 U	380 U	400 U	350 U	380 U	390 U
Pentachlorophenol	--	55000		93 U	94 U	1900 U	2000 U	1700 U	1800 U	1900 U
Phenanthrene	--	1000000		64 U	65 U	380 U	400 U	350 U	380 U	390 U
Phenol	--	1000000		61 U	61 U	380 U	400 U	12 J	29 J	16 J
Pyrene	--	1000000		71 U	72 U	380 U	400 U	350 U	380 U	390 U
Total cPAHs	25000			0	0	0	0	0	0	0
Total SVOCs	500000			0	98	0	110	12	103	16

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
R - Results rejected by validator
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available
cPAHs - Carcinogenic polyaromatic hydrocarbons
SVOCs - Semivolatile Organic Compounds

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	TE-IB-3 9/11/2000 38-40	TE-IB-3 9/11/2000 53-55	TE-MW-A-1 9/19/2000 14 - 16	TE-MW-A-1 9/19/2000 37 - 37	TE-MW-D-1 9/19/2000 10 - 12	TE-MW-D-1 9/19/2000 25 - 25
1,1-Biphenyl	--	--		NR	NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--	--		410 U	400 U	390 U	390 U	360 U	380 U
1,2-Dichlorobenzene	--	1000000		410 U	400 U	390 U	390 U	360 U	380 U
1,2-Diphenylhydrazine (as Azob	--	--		NR	NR	NR	NR	NR	NR
1,3-Dichlorobenzene	--	560000		410 U	400 U	390 U	390 U	360 U	380 U
1,4-Dichlorobenzene	--	250000		410 U	400 U	390 U	390 U	360 U	380 U
2,2-oxybis(1-Chloropropane)	--	--		410 U	400 U	390 U	390 U	360 U	380 U
2,4,5-Trichlorophenol	--	--		2000 U	1900 U	1900 U	1900 U	1700 U	1800 U
2,4,6-Trichlorophenol	--	--		410 U	400 U	390 U	390 U	360 U	380 U
2,4-Dichlorophenol	--	--		410 U	400 U	390 U	390 U	360 U	380 U
2,4-Dimethylphenol	--	--		410 U	400 U	390 U	390 U	360 U	380 U
2,4-Dinitrophenol	--	--		2000 U	1900 U	1900 U	1900 U	1700 U	1800 U
2,4-Dinitrotoluene	--	--		410 U	400 U	390 U	390 U	360 U	380 U
2,6-Dinitrotoluene	--	--		410 U	400 U	390 U	390 U	360 U	380 U
2-Chloronaphthalene	--	--		410 U	400 U	390 U	390 U	360 U	380 U
2-Chlorophenol	--	--		410 U	400 U	390 U	390 U	360 U	380 U
2-Methylnaphthalene	--	--		410 U	10 J	390 U	390 U	360 U	380 U
2-Methylphenol	--	1000000		410 U	400 U	390 U	390 U	360 U	380 U
2-Nitroaniline	--	--		2000 U	1900 U	1900 U	1900 U	1700 U	1800 U
2-Nitrophenol	--	--		410 U	400 U	390 U	390 U	360 U	380 U
3,3-Dichlorobenzidine	--	--		810 U	800 U	780 U	780 U	720 U	760 U
3+4-Methylphenols	--	--		810 U	800 U	NR	NR	NR	NR
3-Nitroaniline	--	--		2000 U	1900 U	1900 U	1900 U	1700 U	1800 U
4,6-Dinitro-2-methylphenol	--	--		2000 U	1900 U	1900 U	1900 U	1700 U	1800 U
4-Bromophenyl phenyl ether	--	--		410 U	400 U	390 U	390 U	360 U	380 U
4-Chloro-3-methylphenol	--	--		410 U	400 U	390 U	390 U	360 U	380 U
4-Chloroaniline	--	--		410 U	400 U	390 U	390 U	360 U	380 U
4-Chlorophenyl phenyl ether	--	--		410 U	400 U	390 U	390 U	360 U	380 U
4-Methylphenol	--	1000000		410 U	400 U	390 U	390 U	360 U	380 U
4-Nitroaniline	--	--		2000 U	1900 U	1900 U	1900 U	1700 U	1800 U
4-Nitrophenol	--	--		2000 U	1900 U	1900 U	1900 U	1700 U	1800 U
Acenaphthene	--	1000000		410 U	400 U	390 U	390 U	360 U	380 U
Acenaphthylene	--	1000000		410 U	400 U	390 U	390 U	360 U	380 U
Acetophenone	--	--		NR	NR	NR	NR	NR	NR
Anthracene	--	1000000		410 U	400 U	390 U	390 U	360 U	380 U
Atrazine	--	--		NR	NR	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	TE-IB-3 9/11/2000 38-40	TE-IB-3 9/11/2000 53-55	TE-MW-A-1 9/19/2000 14 - 16	TE-MW-A-1 9/19/2000 37 - 37	TE-MW-D-1 9/19/2000 10 - 12	TE-MW-D-1 9/19/2000 25 - 25
Benzaldehyde	--	--		NR	NR	NR	NR	NR	NR
Benzidine	--	--		NR	NR	NR	NR	NR	NR
Benzo[a]anthracene	--	11000		410 U	400 U	390 U	390 U	36 J	22 J
Benzo[a]pyrene	--	1100		410 U	400 U	390 U	390 U	29 J	18 J
Benzo[b]fluoranthene	--	11000		410 U	400 U	390 U	390 U	29 J	16 J
Benzo(b+k)fluoranthenes	--	--		NR	NR	NR	NR	NR	NR
Benzo[g,h,i]perylene	--	1000000		410 U	400 U	390 U	390 U	360 U	380 U
Benzo[k]fluoranthene	--	110000		410 U	400 U	390 U	390 U	26 J	21 J
Benzoic acid	--	--		2000 U	1900 U	1900 U	790 J	1700 U	1800 U
Benzyl alcohol	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Bis(2-chloroethoxy)methane	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Bis(2-chloroethyl) ether	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Bis(2-chloroisopropyl)ether	--	--		NR	NR	NR	NR	NR	NR
Bis(2-ethylhexyl) phthalate	--	--		410 U	400 U	240 J	390 U	57 J	380 U
Butylbenzylphthalate	--	--		410 U	400 U	390 U	390 U	58 J	380 U
Caprolactam	--	--		NR	NR	NR	NR	NR	NR
Carbazole	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Chrysene	--	110000		410 U	400 U	390 U	390 U	44 J	25 J
Dibenzo[a,h]anthracene	--	1100		410 U	400 U	390 U	390 U	360 U	380 U
Dibenzofuran	--	1000000		410 U	400 U	390 U	390 U	360 U	380 U
Diethyl phthalate	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Dimethyl phthalate	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Di-n-butyl phthalate	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Di-n-octyl phthalate	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Diphenyl	--	--		NR	NR	NR	NR	NR	NR
Fluoranthene	--	1000000		410 U	400 U	390 U	390 U	67 J	40 J
Fluorene	--	1000000		410 U	400 U	390 U	390 U	360 U	380 U
Hexachlorobenzene	--	12000		410 U	400 U	390 U	390 U	360 U	380 U
Hexachlorobutadiene	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Hexachlorocyclopentadiene	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Hexachloroethane	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Indeno[1,2,3-cd]pyrene	--	11000		410 U	400 U	390 U	390 U	360 U	380 U
Isophorone	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Naphthalene	--	1000000		410 U	10 J	390 U	390 U	360 U	380 U
Nitrobenzene	--	--		410 U	400 U	390 U	390 U	360 U	380 U
N-Nitrosodimethylamine	--	--		NR	NR	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	TE-IB-3 9/11/2000 38-40	TE-IB-3 9/11/2000 53-55	TE-MW-A-1 9/19/2000 14 - 16	TE-MW-A-1 9/19/2000 37 - 37	TE-MW-D-1 9/19/2000 10 - 12	TE-MW-D-1 9/19/2000 25 - 25
n-Nitrosodi-n-propylamine	--	--		410 U	400 U	390 U	390 U	360 U	380 U
n-Nitrosodiphenylamine	--	--		410 U	400 U	390 U	390 U	360 U	380 U
Pentachlorophenol	--	55000		2000 U	1900 U	1900 U	1900 U	1700 U	1800 U
Phenanthrene	--	1000000		410 U	400 U	390 U	390 U	61 J	25 J
Phenol	--	1000000		11 J	30 J	390 U	390 U	360 U	380 U
Pyrene	--	1000000		410 U	400 U	390 U	390 U	69 J	36 J
Total cPAHs	25000			0	0	0	0	164	102
Total SVOCs	500000			11	50	240	790	476	203

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
R - Results rejected by validator
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available
cPAHs - Carcinogenic polyaromatic hydrocarbons
SVOCs - Semivolatile Organic Compounds

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: Sample Date: Sample Depth (ft bls):	TE-MW-D-1 9/19/2000 40 - 41	TE-MW-IB-2 10/3/2000 14-16	TE-MW-IB-2 10/3/2000 62-64	TE-MW-IB-2 10/4/2000 93-95	TE-MW-OB-1 10/11/2000 14-16
1,1-Biphenyl	--	--		NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--	--		380 U	360 U	400 U	390 U	NR
1,2-Dichlorobenzene	--	1000000		380 U	360 U	400 U	390 U	NR
1,2-Diphenylhydrazine (as Azob	--	--		NR	NR	NR	NR	NR
1,3-Dichlorobenzene	--	560000		380 U	360 U	400 U	390 U	NR
1,4-Dichlorobenzene	--	250000		380 U	360 U	400 U	390 U	NR
2,2-oxybis(1-Chloropropane)	--	--		380 U	360 U	400 U	390 U	NR
2,4,5-Trichlorophenol	--	--		1900 U	1700 U	1900 U	1900 U	NR
2,4,6-Trichlorophenol	--	--		380 U	360 U	400 U	390 U	NR
2,4-Dichlorophenol	--	--		380 U	360 U	400 U	390 U	NR
2,4-Dimethylphenol	--	--		380 U	360 U	400 U	390 U	NR
2,4-Dinitrophenol	--	--		1900 U	1700 U	1900 U	1900 U	NR
2,4-Dinitrotoluene	--	--		380 U	360 U	400 U	390 U	NR
2,6-Dinitrotoluene	--	--		380 U	360 U	400 U	390 U	NR
2-Chloronaphthalene	--	--		380 U	360 U	400 U	390 U	NR
2-Chlorophenol	--	--		380 U	360 U	400 U	390 U	NR
2-Methylnaphthalene	--	--		380 U	150 J	43 J	390 U	220 J
2-Methylphenol	--	1000000		380 U	360 U	400 U	390 U	NR
2-Nitroaniline	--	--		1900 U	NR	NR	NR	NR
2-Nitrophenol	--	--		380 U	360 U	400 U	390 U	NR
3,3-Dichlorobenzidine	--	--		770 U	NR	NR	NR	NR
3+4-Methylphenols	--	--		NR	720 U	790 U	780 U	NR
3-Nitroaniline	--	--		1900 U	1700 U	1900 U	1900 U	NR
4,6-Dinitro-2-methylphenol	--	--		1900 U	1700 U	1900 U	1900 U	NR
4-Bromophenyl phenyl ether	--	--		380 U	360 U	400 U	390 U	NR
4-Chloro-3-methylphenol	--	--		380 U	360 U	400 U	390 U	NR
4-Chloroaniline	--	--		380 U	360 U	400 U	390 U	NR
4-Chlorophenyl phenyl ether	--	--		380 U	360 U	400 U	390 U	NR
4-Methylphenol	--	1000000		380 U	360 U	400 U	390 U	NA
4-Nitroaniline	--	--		1900 U	1700 U	1900 U	1900 U	NR
4-Nitrophenol	--	--		1900 U	1700 U	1900 U	1900 U	NR
Acenaphthene	--	1000000		380 U	48 J	27 J	390 U	910
Acenaphthylene	--	1000000		380 U	150 J	24 J	390 U	160 J
Acetophenone	--	--		NR	NR	NR	NR	NR
Anthracene	--	1000000		380 U	370	95 J	390 U	820
Atrazine	--	--		NR	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	TE-MW-D-1 9/19/2000 40 - 41	TE-MW-IB-2 10/3/2000 14-16	TE-MW-IB-2 10/3/2000 62-64	TE-MW-IB-2 10/4/2000 93-95	TE-MW-OB-1 10/11/2000 14-16
Benzaldehyde	--	--		NR	NR	NR	NR	NR
Benzidine	--	--		NR	NR	NR	NR	NA
Benzo[a]anthracene	--	11000		380 U	870	240 J	390 U	1300
Benzo[a]pyrene	--	1100		380 U	720	200 J	390 U	580 J
Benzo[b]fluoranthene	--	11000		380 U	770	240 J	390 U	650 J
Benzo(b+k)fluoranthenes	--	--		NR	NR	NR	NR	NR
Benzo[g,h,i]perylene	--	1000000		380 U	420	230 J	390 U	310 J
Benzo[k]fluoranthene	--	110000		380 U	640	160 J	390 U	690 J
Benzoic acid	--	--		1900 U	1700 U	1900 U	1900 U	ND
Benzyl alcohol	--	--		380 U	360 U	400 U	390 U	NR
Bis(2-chloroethoxy)methane	--	--		380 U	360 U	400 U	390 U	NR
Bis(2-chloroethyl) ether	--	--		380 U	360 U	400 U	390 U	NA
Bis(2-chloroisopropyl)ether	--	--		NR	NR	NR	NR	NR
Bis(2-ethylhexyl) phthalate	--	--		80 J	340 J	300 J	91 J	66 JB
Butylbenzylphthalate	--	--		380 U	360 U	400 U	390 U	ND
Caprolactam	--	--		NR	NR	NR	NR	NR
Carbazole	--	--		380 U	110 J	35 J	390 U	51 J
Chrysene	--	110000		380 U	940	290 J	390 U	1500
Dibenzo[a,h]anthracene	--	1100		380 U	240 J	80 J	390 U	130 J
Dibenzofuran	--	1000000		380 U	98 J	29 J	390 U	240 J
Diethyl phthalate	--	--		380 U	360 U	400 U	390 U	NA
Dimethyl phthalate	--	--		380 U	360 U	400 U	390 U	NA
Di-n-butyl phthalate	--	--		380 U	24 JB	400 U	390 U	20 J
Di-n-octyl phthalate	--	--		380 U	360 U	400 U	390 U	NA
Diphenyl	--	--		NR	NR	NR	NR	NR
Fluoranthene	--	1000000		380 U	920	400	29 J	3100
Fluorene	--	1000000		380 U	79 J	40 J	390 U	590 J
Hexachlorobenzene	--	12000		380 U	360 U	400 U	390 U	NR
Hexachlorobutadiene	--	--		380 U	360 U	400 U	390 U	NR
Hexachlorocyclopentadiene	--	--		380 U	360 U	400 U	390 U	NR
Hexachloroethane	--	--		380 U	360 U	400 U	390 U	NR
Indeno[1,2,3-cd]pyrene	--	11000		380 U	550	220 J	390 U	270 J
Isophorone	--	--		380 U	360 U	400 U	390 U	NR
Naphthalene	--	1000000		380 U	150 J	40 J	390 U	23 J
Nitrobenzene	--	--		380 U	360 U	400 U	390 U	NR
N-Nitrosodimethylamine	--	--		NR	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	TE-MW-D-1 9/19/2000 40 - 41	TE-MW-IB-2 10/3/2000 14-16	TE-MW-IB-2 10/3/2000 62-64	TE-MW-IB-2 10/4/2000 93-95	TE-MW-OB-1 10/11/2000 14-16
n-Nitrosodi-n-propylamine	--	--		380 U	360 U	400 U	390 U	NR
n-Nitrosodiphenylamine	--	--		380 U	360 U	400 U	390 U	NR
Pentachlorophenol	--	55000		1900 U	1700 U	1900 U	1900 U	NA
Phenanthrene	--	1000000		380 U	630	270 J	18 J	4100
Phenol	--	1000000		380 U	360 U	400 U	390 U	NA
Pyrene	--	1000000		380 U	1100	410	20 J	3000
Total cPAHs	25000			0	4730	1430	0	4990
Total SVOCs	500000			80	9319	3373	158	17230

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
R - Results rejected by validator
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available
cPAHs - Carcinogenic polyaromatic hydrocarbons
SVOCs - Semivolatile Organic Compounds

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	TE-MW-OB-1 10/11/2000 45-45	TE-MW-OB-2 9/19/2000 29 - 31	TE-MW-OB-2 9/19/2000 60 - 62	TE-MW-QA-2 10/23/2000 18-20	TE-MW-QA-2 10/23/2000 40-42
1,1-Biphenyl	--	--		NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--	--		NR	390 U	390 U	ND	ND
1,2-Dichlorobenzene	--	1000000		NR	390 U	390 U	ND	ND
1,2-Diphenylhydrazine (as Azob	--	--		NR	NR	NR	ND	ND
1,3-Dichlorobenzene	--	560000		NR	390 U	390 U	ND	ND
1,4-Dichlorobenzene	--	250000		NR	390 U	390 U	ND	ND
2,2-oxybis(1-Chloropropane)	--	--		NR	390 U	390 U	NR	NR
2,4,5-Trichlorophenol	--	--		NR	1900 U	1900 U	ND	ND
2,4,6-Trichlorophenol	--	--		NR	390 U	390 U	NR	NR
2,4-Dichlorophenol	--	--		NR	390 U	390 U	NR	NR
2,4-Dimethylphenol	--	--		NR	390 U	390 U	ND	ND
2,4-Dinitrophenol	--	--		NR	1900 U	1900 U	ND	ND
2,4-Dinitrotoluene	--	--		NR	390 U	390 U	ND	ND
2,6-Dinitrotoluene	--	--		NR	390 U	390 U	ND	ND
2-Chloronaphthalene	--	--		NR	390 U	390 U	ND	ND
2-Chlorophenol	--	--		NR	390 U	390 U	ND	ND
2-Methylnaphthalene	--	--		ND	30 J	390 U	ND	ND
2-Methylphenol	--	1000000		NR	390 U	390 U	ND	ND
2-Nitroaniline	--	--		NR	1900 U	1900 U	ND	ND
2-Nitrophenol	--	--		NR	390 U	390 U	ND	ND
3,3-Dichlorobenzidine	--	--		NR	780 U	780 U	ND	ND
3+4-Methylphenols	--	--		NR	NR	NR	NR	NR
3-Nitroaniline	--	--		NR	1900 U	1900 U	ND	ND
4,6-Dinitro-2-methylphenol	--	--		NR	1900 U	1900 U	ND	ND
4-Bromophenyl phenyl ether	--	--		NR	390 U	390 U	ND	ND
4-Chloro-3-methylphenol	--	--		NR	390 U	390 U	ND	ND
4-Chloroaniline	--	--		NR	390 U	390 U	ND	ND
4-Chlorophenyl phenyl ether	--	--		NR	390 U	390 U	ND	ND
4-Methylphenol	--	1000000		NA	390 U	390 U	ND	ND
4-Nitroaniline	--	--		NR	1900 U	1900 U	ND	ND
4-Nitrophenol	--	--		NR	1900 U	1900 U	ND	ND
Acenaphthene	--	1000000		ND	220 J	390 U	ND	ND
Acenaphthylene	--	1000000		ND	20 J	390 U	ND	ND
Acetophenone	--	--		NR	NR	NR	NR	NR
Anthracene	--	1000000		ND	620	390 U	ND	ND
Atrazine	--	--		NR	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	TE-MW-OB-1 10/11/2000 45-45	TE-MW-OB-2 9/19/2000 29 - 31	TE-MW-OB-2 9/19/2000 60 - 62	TE-MW-QA-2 10/23/2000 18-20	TE-MW-QA-2 10/23/2000 40-42
Benzaldehyde	--	--		NR	NR	NR	NR	NR
Benzidine	--	--		NA	NR	NR	ND	ND
Benzo[a]anthracene	--	11000		ND	1300	24 J	ND	ND
Benzo[a]pyrene	--	1100		ND	970	17 J	ND	ND
Benzo[b]fluoranthene	--	11000		ND	840	17 J	ND	ND
Benzo(b+k)fluoranthenes	--	--		NR	NR	NR	NR	NR
Benzo[g,h,i]perylene	--	1000000		ND	640	390 U	ND	ND
Benzo[k]fluoranthene	--	110000		ND	750	17 J	ND	ND
Benzoic acid	--	--		ND	1900 U	1900 U	ND	ND
Benzyl alcohol	--	--		NR	390 U	390 U	ND	ND
Bis(2-chloroethoxy)methane	--	--		NR	390 U	390 U	ND	ND
Bis(2-chloroethyl) ether	--	--		NA	390 U	390 U	ND	ND
Bis(2-chloroisopropyl)ether	--	--		NR	NR	NR	ND	ND
Bis(2-ethylhexyl) phthalate	--	--		24 JB	160 J	66 J	65 J	87 U
Butylbenzylphthalate	--	--		ND	390 U	390 U	ND	ND
Caprolactam	--	--		NR	NR	NR	NR	NR
Carbazole	--	--		ND	110 J	390 U	ND	ND
Chrysene	--	110000		ND	1300	28 J	ND	ND
Dibenzo[a,h]anthracene	--	1100		ND	390 U	390 U	ND	ND
Dibenzofuran	--	1000000		ND	60 J	390 U	ND	ND
Diethyl phthalate	--	--		NA	390 U	390 U	ND	ND
Dimethyl phthalate	--	--		NA	390 U	390 U	ND	ND
Di-n-butyl phthalate	--	--		10 J	25 J	390 U	ND	ND
Di-n-octyl phthalate	--	--		NA	390 U	390 U	ND	ND
Diphenyl	--	--		NR	NR	NR	NR	NR
Fluoranthene	--	1000000		ND	2300	51 J	ND	ND
Fluorene	--	1000000		ND	230 J	390 U	ND	ND
Hexachlorobenzene	--	12000		NR	390 U	390 U	ND	ND
Hexachlorobutadiene	--	--		NR	390 U	390 U	ND	ND
Hexachlorocyclopentadiene	--	--		NR	390 U	390 U	ND	ND
Hexachloroethane	--	--		NR	390 U	390 U	ND	ND
Indeno[1,2,3-cd]pyrene	--	11000		ND	530	390 U	ND	ND
Isophorone	--	--		NR	390 U	390 U	ND	ND
Naphthalene	--	1000000		5 J	15 J	390 U	ND	ND
Nitrobenzene	--	--		NR	390 U	390 U	ND	ND
N-Nitrosodimethylamine	--	--		NR	NR	NR	ND	ND

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	TE-MW-OB-1 10/11/2000 45-45	TE-MW-OB-2 9/19/2000 29 - 31	TE-MW-OB-2 9/19/2000 60 - 62	TE-MW-QA-2 10/23/2000 18-20	TE-MW-QA-2 10/23/2000 40-42
n-Nitrosodi-n-propylamine	--	--		NR	390 U	390 U	ND	ND
n-Nitrosodiphenylamine	--	--		NR	390 U	390 U	ND	ND
Pentachlorophenol	--	55000		NA	1900 U	1900 U	ND	ND
Phenanthrene	--	1000000		5 J	2100	31 J	ND	ND
Phenol	--	1000000		NA	390 U	390 U	ND	ND
Pyrene	--	1000000		3 J	2300	42 J	ND	ND
Total cPAHs	25000			0	5690	103	0	0
Total SVOCs	500000			47	15160	293	65	87

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
R - Results rejected by validator
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available
cPAHs - Carcinogenic polyaromatic hydrocarbons
SVOCs - Semivolatile Organic Compounds

Table 13. **Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York**

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	TE-OB-4 7/14/2000 24-26	UT-4 1/2/2007 30-32	UT-6 1/4/2007 20-22	UT-9 1/5/2007 20-22	WB-4 6/15/2006 10-12
1,1-Biphenyl	--	--		NR	NR	NR	NR	NR
1,2,4-Trichlorobenzene	--	--		ND	91 U	NR	NR	85 U
1,2-Dichlorobenzene	--	1000000		ND	NR	NR	NR	NR
1,2-Diphenylhydrazine (as Azob	--	--		ND	NR	NR	NR	NR
1,3-Dichlorobenzene	--	560000		ND	NR	NR	NR	NR
1,4-Dichlorobenzene	--	250000		ND	NR	NR	NR	NR
2,2-oxybis(1-Chloropropane)	--	--		NR	71 U	65 U	75 U	66 U
2,4,5-Trichlorophenol	--	--		ND	68 U	61 U	71 U	63 U
2,4,6-Trichlorophenol	--	--		NR	65 U	59 U	68 U	61 U
2,4-Dichlorophenol	--	--		NR	82 U	74 U	86 U	76 U
2,4-Dimethylphenol	--	--		ND	70 U	64 U	74 U	65 U
2,4-Dinitrophenol	--	--		ND	380 U	340 U	400 U	350 U
2,4-Dinitrotoluene	--	--		ND	65 U	59 U	68 U	61 U
2,6-Dinitrotoluene	--	--		ND	63 U	57 U	66 U	58 U
2-Chloronaphthalene	--	--		ND	73 U	67 U	77 U	68 U
2-Chlorophenol	--	--		ND	71 U	64 U	74 U	66 U
2-Methylnaphthalene	--	--		ND	74 U	67 U	77 U	69 U
2-Methylphenol	--	1000000		ND	74 U	67 U	77 U	69 U
2-Nitroaniline	--	--		ND	56 U	51 U	59 U	52 U
2-Nitrophenol	--	--		ND	68 U	62 U	71 U	63 U
3,3-Dichlorobenzidine	--	--		ND	NR	NR	NR	NR
3+4-Methylphenols	--	--		NR	76 U	69 U	79 U	71 U
3-Nitroaniline	--	--		ND	58 U	52 U	60 U	54 U
4,6-Dinitro-2-methylphenol	--	--		ND	86 U	78 U	90 U	80 U
4-Bromophenyl phenyl ether	--	--		ND	66 U	60 U	69 U	62 U
4-Chloro-3-methylphenol	--	--		ND	61 U	55 U	64 U	57 U
4-Chloroaniline	--	--		ND	53 U	48 U	55 U	49 U
4-Chlorophenyl phenyl ether	--	--		ND	70 U	63 U	73 U	65 U
4-Methylphenol	--	1000000		ND	70 U	63 U	73 U	65 U
4-Nitroaniline	--	--		ND	76 U	68 U	79 U	70 U
4-Nitrophenol	--	--		ND	55 U	50 U	57 U	51 U
Acenaphthene	--	1000000		ND	79 U	71 U	83 U	73 U
Acenaphthylene	--	1000000		ND	72 U	65 U	75 U	67 U
Acetophenone	--	--		NR	65 U	59 U	68 U	60 U
Anthracene	--	1000000		ND	67 U	60 U	70 U	140 J
Atrazine	--	--		NR	68 U	61 U	71 U	63 U

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	TE-OB-4 7/14/2000 24-26	UT-4 1/2/2007 30-32	UT-6 1/4/2007 20-22	UT-9 1/5/2007 20-22	WB-4 6/15/2006 10-12
Benzaldehyde	--	--		NR	NR	82 U	95 U	NR
Benzidine	--	--		ND	NR	NR	NR	NR
Benzo[a]anthracene	--	11000		ND	62 U	56 U	65 U	170 J
Benzo[a]pyrene	--	1100		ND	71 U	64 U	74 U	110 J
Benzo[b]fluoranthene	--	11000		ND	49 U	44 U	51 U	120 J
Benzo(b+k)fluoranthenes	--	--		NR	NR	NR	NR	NR
Benzo[g,h,i]perylene	--	1000000		ND	73 U	66 U	77 U	68 U
Benzo[k]fluoranthene	--	110000		ND	97 U	88 U	100 U	91 U
Benzoic acid	--	--		ND	NR	NR	NR	NR
Benzyl alcohol	--	--		ND	NR	NR	NR	NR
Bis(2-chloroethoxy)methane	--	--		ND	73 U	66 U	76 U	68 U
Bis(2-chloroethyl) ether	--	--		ND	70 U	63 U	73 U	65 U
Bis(2-chloroisopropyl)ether	--	--		ND	NR	NR	NR	NR
Bis(2-ethylhexyl) phthalate	--	--		ND	85 U	77 U	89 U	79 U
Butylbenzylphthalate	--	--		ND	72 U	65 U	75 U	67 U
Caprolactam	--	--		NR	71 U	64 U	75 U	66 U
Carbazole	--	--		ND	68 U	61 U	71 U	63 U
Chrysene	--	110000		ND	79 U	72 U	83 U	150 J
Dibenzo[a,h]anthracene	--	1100		ND	56 U	50 U	58 U	52 U
Dibenzofuran	--	1000000		ND	73 U	66 U	77 U	68 U
Diethyl phthalate	--	--		ND	76 U	69 U	80 U	71 U
Dimethyl phthalate	--	--		ND	71 U	64 U	75 U	66 U
Di-n-butyl phthalate	--	--		560 J	67 U	61 U	71 U	63 U
Di-n-octyl phthalate	--	--		ND	75 U	68 U	79 U	70 U
Diphenyl	--	--		NR	73 U	66 U	76 U	68 U
Fluoranthene	--	1000000		ND	66 U	60 U	69 U	380 J
Fluorene	--	1000000		ND	75 U	68 U	78 U	70 U
Hexachlorobenzene	--	12000		ND	71 U	64 U	74 U	66 U
Hexachlorobutadiene	--	--		ND	68 U	62 U	71 U	63 U
Hexachlorocyclopentadiene	--	--		ND	71 U	64 U	74 U	66 U
Hexachloroethane	--	--		ND	75 U	68 U	79 U	70 U
Indeno[1,2,3-cd]pyrene	--	11000		ND	56 U	51 U	59 U	79 J
Isophorone	--	--		ND	66 U	60 U	70 U	62 U
Naphthalene	--	1000000		ND	76 U	68 U	79 U	70 U
Nitrobenzene	--	--		ND	97 U	88 U	100 U	90 U
N-Nitrosodimethylamine	--	--		ND	NR	NR	NR	NR

Table 13. Summary of Semivolatile Organic Compounds in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:**	TE-OB-4	UT-4	UT-6	UT-9	WB-4
			Sample Date:	7/14/2000	1/2/2007	1/4/2007	1/5/2007	6/15/2006
			Sample Depth (ft bls):	24-26	30-32	20-22	20-22	10-12
n-Nitrosodi-n-propylamine	--	--		ND	73 U	66 U	77 U	68 U
n-Nitrosodiphenylamine	--	--		ND	73 U	66 U	76 U	68 U
Pentachlorophenol	--	55000		ND	100 U	93 U	110 U	95 U
Phenanthrene	--	1000000		ND	71 U	64 U	74 U	410 J
Phenol	--	1000000		520 J	67 U	61 U	70 U	62 U
Pyrene	--	1000000		ND	78 U	71 U	82 U	330 J
Total cPAHs	25000			0	0	0	0	629
Total SVOCs	500000			1080	0	0	0	1889

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
R - Results rejected by validator
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available
cPAHs - Carcinogenic polyaromatic hydrocarbons
SVOCs - Semivolatile Organic Compounds

Table 14. Summary of Metals in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in mg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	Sample Designation: / Sample Date: / Sample Depth (ft bls):	GE-31-5 8/16/2006 25-27	GE-31-5 8/16/2006 36-38	GE-40-1-1 10/25/2007 10-14	GE-40-1-2 10/25/2007 12-16	GE-40-1-3 10/25/2007 12-16	GE-40-7-6 10/25/2007 10-14	GE-53-3 7/27/2006 12-12	GE-53-3 7/27/2006 25-25
Aluminum	--	--		2050	2180	2250	5310	2660	1920	NR	NR
Antimony	--	--		0.34 U	0.34 U	0.26 U	0.36 U	0.27 U	0.26 U	NR	NR
Arsenic	--	16		1.3	0.5 J	0.15 U	2.1	0.16 U	0.15 U	1.65	0.414 U
Barium	--	10000		213 E	29.4 E	15.6	20.5	21.2	13.5	38.9 NE	36.9 NE
Beryllium	--	2700		0.13 J	0.16 J	0.2 J	0.45	0.32	0.16 J	NR	NR
Cadmium	--	60		0.03 U	0.03 U	0.05 U	0.06 U	0.05 U	0.05 U	0.035 U	0.035 U
Calcium	--	--		3660	3960	2660	1960	2990	652	NR	NR
Chromium	--	--		16.4 N	17.4 N	7	13.3	10.3	6.3	9.01 E	5.93 E
Cobalt	--	--		3 JE	2.9 JE	2.9	5.3	4.1	2.6	NR	NR
Copper	--	10000		12.3	8.7	8.6	13.9	11.5	5.4	NR	NR
Iron	--	--		5910	6230	7000	13100	11900	5950	NR	NR
Lead	3,900	3900		48.6	6.3	21.5	37.7	21	9.3	41	3.21
Magnesium	--	--		1510	2780	2250	2680	2540	1060	NR	NR
Manganese	--	10000		214	202	58	103	230	75	NR	NR
Mercury	--	5.7		0.088 N	0.009 JN	0.17	0.025	0.005 J	0.004 U	0.166 N*	0.014 N*
Nickel	--	10000		12.4	13	5.5	14.8	8.8	6.3	NR	NR
Potassium	--	--		393 J	444 J	432	893	558	563	NR	NR
Selenium	--	6800		0.89 J	0.35 U	0.14 U	0.19 U	0.14 U	0.14 U	0.365 U	0.36 U
Silver	--	6800		0.64 J	0.61 J	0.14 U	0.19 U	0.14 U	0.14 U	0.085 U	0.083 U
Sodium	--	--		257 JN	256 JN	234	1030	258	451	NR	NR
Thallium	--	--		0.55 U	0.54 U	1.4 U	2 U	1.5 U	1.4 U	NR	NR
Vanadium	--	--		7.8 E	9.4 E	11.9	18.2	14.5	6.9	NR	NR
Zinc	--	10000		98.6	19.3	25.2	77.7	48.1	13.5	NR	NR

J - Estimated value
E - Value exceeds calibration range
U - Indicates that the compound was analyzed for but not detected
N - Spiked sample recovery not within control limits
S - Value determined by method of standard addition
W - Post-digestion spike was outside 85-115% control limits
B - Indicates analyte result between instrument detection limit and the contract required detection limit
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
mg/kg - Milligrams per kilogram
-- No NYSDEC Part 375 Restricted Commercial Standards available
NYSDEC - New York State Department of Environmental Conservation
ft bls - Feet below land surface

Table 14. Summary of Metals in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in mg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	GE-53-5 7/27/2006 18-18	GE-59-3 7/10/2006 12-15	GE-59-3 7/10/2006 23-25	GE-59-11 10/19/2006 20 - 22	GE-59-12 10/18/2006 28 - 30	MW-26 12/5/1990 9-11	RT-7 10/3/2006 25 - 27	RT-9 8/30/2006 20-22
Aluminum	--	--		NR	NR	NR	NR	NR	3010	NR	NR
Antimony	--	--		NR	NR	NR	NR	NR	1.6 UN	NR	NR
Arsenic	--	16		1.9	0.52 J	0.954 J	NR	NR	0.6 U	NR	1.3 J
Barium	--	10000		38.2 NE	24.4	29.4	NR	NR	16 B	NR	41.9 E
Beryllium	--	2700		NR	NR	NR	NR	NR	0.34 U	NR	NR
Cadmium	--	60		0.036 U	0.037 UN	0.037 UN	NR	NR	1.1 U	NR	0.04 U
Calcium	--	--		NR	NR	NR	NR	NR	772 B	NR	NR
Chromium	--	--		19.2 E	10.2 E	8.32 E	NR	NR	6.5 SN	NR	9.6 E
Cobalt	--	--		NR	NR	NR	NR	NR	1.9 B	NR	NR
Copper	--	10000		NR	NR	NR	NR	NR	8.2	NR	NR
Iron	--	--		NR	NR	NR	NR	NR	5990	NR	NR
Lead	3,900	3900		22.3	2.75 E	9.85 E	5.4	6.27	2.3	2.74	4.2 E
Magnesium	--	--		NR	NR	NR	NR	NR	1360	NR	NR
Manganese	--	10000		NR	NR	NR	NR	NR	148	NR	NR
Mercury	--	5.7		0.05 N*	0.006 U	0.007 U	NR	NR	0.1 U	NR	0.008 U
Nickel	--	10000		NR	NR	NR	NR	NR	6.7 B	NR	NR
Potassium	--	--		NR	NR	NR	NR	NR	416 B	NR	NR
Selenium	--	6800		0.37 U	0.815 J	0.81 J	NR	NR	0.55 UNW	NR	1.3
Silver	--	6800		0.086 U	0.087 UN	0.089 UN	NR	NR	0.53 U	NR	0.38 J
Sodium	--	--		NR	NR	NR	NR	NR	113 B	NR	NR
Thallium	--	--		NR	NR	NR	NR	NR	0.74 U	NR	NR
Vanadium	--	--		NR	NR	NR	NR	NR	7.6 B	NR	NR
Zinc	--	10000		NR	NR	NR	NR	NR	16	NR	NR

J - Estimated value
E - Value exceeds calibration range
U - Indicates that the compound was analyzed for but not detected
N - Spiked sample recovery not within control limits
S - Value determined by method of standard addition
W - Post-digestion spike was outside 85-115% control limits
B - Indicates analyte result between instrument detection limit and the contract required detection limit
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
mg/kg - Milligrams per kilogram
-- No NYSDEC Part 375 Restricted Commercial Standards available
NYSDEC - New York State Department of Environmental Conservation
ft bls - Feet below land surface

Table 14. Summary of Metals in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in mg/kg)	Site Specific Soil Cleanup Level	NYSDEC Part 375 Restricted Industrial	**Sample Designation:** **Sample Date:** **Sample Depth (ft bls):**	S-35 11/30/1990 8-10	SY-515 11/17/2006 20-22	SY-516 10/19/2006 43-45	SY-516 10/19/2006 88-90	UT-4 1/2/2007 30-32	UT-6 1/4/2007 20-22	UT-9 1/5/2007 20-22	WB-4 6/15/2006 10-12
Aluminum	--	--		4770	NR	NR	NR	NR	NR	NR	NR
Antimony	--	--		1.7 UN	NR	NR	NR	NR	NR	NR	NR
Arsenic	--	16		0.68 UW	0.792 J	0.479 U	1.94	1.12 J	0.477 U	4.18	0.572 J
Barium	--	10000		32 B	50.7	17.9 J	21.9 J	16.2 J	13.4 JE	249 E	13.9 J
Beryllium	--	2700		0.36 U	NR	NR	NR	NR	NR	NR	NR
Cadmium	--	60		1.1 U	0.039 U	0.04 U	0.041 U	0.045 U	0.04 U	0.046 U	ND
Calcium	--	--		1400	NR	NR	NR	NR	NR	NR	NR
Chromium	--	--		8.2 N	34.2	7.12	17.9	10.1	7 E	36.7 E	7.69
Cobalt	--	--		3 B	NR	NR	NR	NR	NR	NR	NR
Copper	--	10000		12	NR	NR	NR	NR	NR	NR	NR
Iron	--	--		11200	NR	NR	NR	NR	NR	NR	NR
Lead	3,900	3900		3.5	3.62	2.42	7.66	4.08	1 J	13.3	0.8
Magnesium	--	--		2510	NR	NR	NR	NR	NR	NR	NR
Manganese	--	10000		224	NR	NR	NR	NR	NR	NR	NR
Mercury	--	5.7		0.11 U	0.007 UN	0.007 UN	0.007 UN	0.008 U	0.007 U	0.014 J	ND
Nickel	--	10000		11	NR	NR	NR	NR	NR	NR	NR
Potassium	--	--		861 B	NR	NR	NR	NR	NR	NR	NR
Selenium	--	6800		0.59 UNW	0.405 U	0.417 U	0.423 U	0.463 U	0.415 U	0.478 U	ND
Silver	--	6800		0.57 U	0.094 U	0.097 U	0.098 U	0.107 U	0.857 J	7.04	ND
Sodium	--	--		456 B	NR	NR	NR	NR	NR	NR	NR
Thallium	--	--		0.8 U	NR	NR	NR	NR	NR	NR	NR
Vanadium	--	--		13	NR	NR	NR	NR	NR	NR	NR
Zinc	--	10000		20	NR	NR	NR	NR	NR	NR	NR

J - Estimated value
E - Value exceeds calibration range
U - Indicates that the compound was analyzed for but not detected
N - Spiked sample recovery not within control limits
S - Value determined by method of standard addition
W - Post-digestion spike was outside 85-115% control limits
B - Indicates analyte result between instrument detection limit and the contract required detection limit
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
mg/kg - Milligrams per kilogram
-- No NYSDEC Part 375 Restricted Commercial Standards available
NYSDEC - New York State Department of Environmental Conservation
ft bls - Feet below land surface

Table 15. Summary of Polychlorinated biphenyls in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	**Sample Designation:**	GE-40-1-1	GE-40-1-2	GE-40-1-3	GE-40-7-6	GE-53-3	GE-53-3	GE-53-5	GE-59-3
		Sample Date:	10/25/2007	10/25/2007	10/25/2007	10/25/2007	7/27/2006	7/27/2006	7/27/2006	7/10/2006
		Sample Depth (ft bls):	10-14	12-16	12-16	10-14	12-12	25-25	18-18	12-15
Aroclor-1016	--		2.9 U	4 U	3 U	2.9 U	2.7 U	2.7 U	2.7 U	2.8 U
Aroclor-1221	--		4.5 U	6.2 U	4.6 U	4.5 U	4.3 U	4.2 U	4.3 U	4.3 U
Aroclor-1232	--		6.7 U	9.3 U	6.9 U	6.7 U	6.4 U	6.3 U	6.4 U	6.5 U
Aroclor-1242	--		5.9 U	8.3 U	6.1 U	5.9 U	5.7 U	5.6 U	5.7 U	5.8 U
Aroclor-1248	--		2.9 U	4 U	3 U	2.9 U	2.8 U	2.7 U	2.8 U	2.8 U
Aroclor-1254	--		1.9 U	2.6 U	1.9 U	1.9 U	320 P	1.8 U	1.8 U	1.8 U
Aroclor-1260	--		4.8 U	6.7 U	4.9 U	28	4.6 U	4.5 U	4.6 U	4.6 U
TOTAL PCBs	25,000		0	0	0	28	320	0	0	0

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 15. Summary of Polychlorinated biphenyls in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	GE-59-3 / 7/10/2006 / 23-25	GE-59-11 / 10/19/2006 / 20 - 22	GE-59-12 / 10/18/2006 / 28 - 30	MW-26 / 12/5/1990 / 9-11	RT-7 / 10/3/2006 / 25 - 27	RT-9 / 8/30/2006 / 20-22	S-35 / 11/30/1990 / 8-10	SY-515 / 11/17/2006 / 20-22
Aroclor-1016	--		2.9 U	ND	ND	85 U	NR	3.3 U	90 U	3 U
Aroclor-1221	--		4.4 U	ND	ND	85 U	NR	5.1 U	90 U	4.6 U
Aroclor-1232	--		6.6 U	ND	ND	85 U	NR	7.6 U	90 U	6.9 U
Aroclor-1242	--		5.9 U	ND	ND	85 U	NR	6.7 U	90 U	6.2 U
Aroclor-1248	--		2.9 U	ND	ND	85 U	NR	3.3 U	90 U	3 U
Aroclor-1254	--		1.9 U	ND	ND	85 U	NR	2.1 U	90 U	2 U
Aroclor-1260	--		4.8 U	ND	ND	85 U	NR	5.4 U	90 U	5 U
TOTAL PCBs	25,000		0	0	0	0	19 J	0	0	0

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 15. Summary of Polychlorinated biphenyls in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	**Sample Designation:**	SY-516	SY-516	TE-B/C-2	TE-B/C-2	TE-IB/OB-1	TE-IB/OB-1	TE-IB-3
		Sample Date:	10/19/2006	10/19/2006	9/7/2000	9/8/2000	9/11/2000	9/11/2000	9/12/2000
		Sample Depth (ft bls):	43-45	88-90	48-50	85-86	15 - 17	33 - 35	23 - 25
Aroclor-1016	--		3.1 U	3.1 U	38 U	40 U	35 U	37 U	38 U
Aroclor-1221	--		4.7 U	4.8 U	77 U	81 U	71 U	76 U	78 U
Aroclor-1232	--		7.1 U	7.2 U	38 U	40 U	35 U	37 U	38 U
Aroclor-1242	--		6.3 U	6.4 U	38 U	40 U	35 U	37 U	38 U
Aroclor-1248	--		3.1 U	3.1 U	38 U	40 U	35 U	37 U	38 U
Aroclor-1254	--		2 U	2 U	38 U	40 U	35 U	37 U	38 U
Aroclor-1260	--		5.1 U	5.1 U	38 U	40 U	35 U	37 U	38 U
TOTAL PCBs	25,000		0	0	0	0	0	0	0

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 15. Summary of Polychlorinated biphenyls in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	**Sample Designation:**	TE-IB-3	TE-IB-3	TE-MW-A-1	TE-MW-A-1	TE-MW-A-2	TE-MW-A-2	TE-MW-D-1
		Sample Date:	9/12/2000	9/12/2000	9/26/2000	9/26/2000	10/9/2000	10/9/2000	9/25/2000
		Sample Depth (ft bls):	38 - 40	53 - 55	14 - 16	37 - 37	14 - 16	20 - 22	10 - 12
Aroclor-1016	--		40 U	40 U	35 U	39 U	33 U	33 U	36 U
Aroclor-1221	--		80 U	80 U	70 U	79 U	67 U	67 U	73 U
Aroclor-1232	--		40 U	40 U	35 U	39 U	33 U	33 U	36 U
Aroclor-1242	--		40 U	40 U	35 U	39 U	33 U	33 U	36 U
Aroclor-1248	--		40 U	40 U	35 U	39 U	33 U	33 U	36 U
Aroclor-1254	--		40 U	40 U	35 U	39 U	33 U	33 U	36 U
Aroclor-1260	--		40 U	2.1 J	2.4 J	39 U	170	6.2 J	4 J
TOTAL PCBs	25,000		0	2.1	2.4	0	170	6.2	4

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 15. Summary of Polychlorinated biphenyls in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	**Sample Designation:**	TE-MW-D-1	TE-MW-D-1	TE-MW-IB-2	TE-MW-IB-2	TE-MW-IB-2	TE-MW-IB-2
		Sample Date:	9/25/2000	9/25/2000		10/3/2000		10/3/2000
		Sample Depth (ft bls):	25 - 25	40 - 41	14-16	14-16	62-64	62-64
Aroclor-1016	--		35 U	34 U	NR	720 U	NR	200 U
Aroclor-1221	--		71 U	69 U	1500 U	NR	400 U	NR
Aroclor-1232	--		35 U	34 U	720 U	NR	200 U	NR
Aroclor-1242	--		35 U	34 U	720 U	NR	200 U	NR
Aroclor-1248	--		35 U	34 U	720 U	NR	200 U	NR
Aroclor-1254	--		35 U	34 U	680 J	NR	310	NR
Aroclor-1260	--		18 J	34 U	1300	NR	400	NR
TOTAL PCBs	25,000		18	0	1980	0	710	0

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 15. Summary of Polychlorinated biphenyls in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	TE-MW-IB-2	TE-MW-IB-2	TE-MW-OB-1	TE-MW-OB-1	TE-MW-OB-2	TE-MW-OB-2
		Sample Date:		10/4/2000	10/11/2000	10/11/2000	9/19/2000	9/19/2000
		Sample Depth (ft bls):	93-95	93-95	14 - 16	45 - 45	29 - 31	60 - 62
Aroclor-1016	--		NR	39 U	33 U	33 U	38 U	38 U
Aroclor-1221	--		79 U	NR	67 U	67 U	78 U	77 U
Aroclor-1232	--		39 U	NR	33 U	33 U	38 U	38 U
Aroclor-1242	--		39 U	NR	33 U	33 U	6.7 J	38 U
Aroclor-1248	--		39 U	NR	33 U	33 U	38 U	38 U
Aroclor-1254	--		5.1 J	NR	33 U	33 U	38 U	38 U
Aroclor-1260	--		9.9 J	NR	14 J	33 U	9.8 J	2.4 J
TOTAL PCBs	25,000		15	0	14	0	16.5	2.4

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 15. Summary of Polychlorinated biphenyls in Saturated Soil Samples, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Site Specific Soil Cleanup Level	**Sample Designation:** / **Sample Date:** / **Sample Depth (ft bls):**	TE-MW-QA-2 10/23/2000 18-20	TE-MW-QA-2 10/23/2000 40-42	TE-OB-4 7/12/2000 24-26	UT-4 1/2/2007 30-32	UT-6 1/4/2007 20-22	UT-9 1/5/2007 20-22	WB-4 6/15/2006 10-12
Aroclor-1016	--		ND	ND	ND	3.3 U	3.1 U	3.6 U	3.1 U
Aroclor-1221	--		ND	ND	ND	5.2 U	4.8 U	5.5 U	4.9 U
Aroclor-1232	--		ND	ND	ND	7.8 U	7.1 U	8.3 U	7.3 U
Aroclor-1242	--		ND	ND	ND	6.9 U	6.3 U	7.4 U	6.5 U
Aroclor-1248	--		ND	ND	ND	3.4 U	3.1 U	3.6 U	3.2 U
Aroclor-1254	--		ND	ND	ND	2.2 U	2 U	2.3 U	2.1 U
Aroclor-1260	--		ND	ND	ND	5.6 U	5.1 U	5.9 U	5.2 U
TOTAL PCBs	25,000		0	0	0	0	0	0	0

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
ND - Compound was analyzed for but not detected
NR - No data reported
DUP - Duplicate sample
µg/kg - Micrograms per kilogram
ft bls - Feet below land surface
NYSDEC - New York State Department of Environmental Conservation
-- No NYSDEC Part 375 Restricted Commercial Standards available

Table 16. Summary of Physical and Chemical Properties of Organic Compounds Detected in Groundwater Above Standards or Sub-Surface Vapor During the Supplemental OU-6 RI, OU-6 RI/FS Report Sunnyside Yard, Queens, New York

Compound	Matrix Where Detected (Groundwater and/or Sub-Slab Vapor)	Solubility in Water(1) (mg/L)	Vapor Pressure (1) (mm Hg)	Specific Gravity(1)	Henry's Law Constant (atm·m³/ mole)	Log Organic Carbon Distribution Coefficient (Log Koc)	Log Octanol/Water Partition Coefficient (Log Kow)
Aromatics							
Benzene	Groundwater and Sub-slab Vapor	1780	76	0.8786	5.56E-03	1.8	2.13
Cyclohexane	Sub-slab Vapor	55	95	0.78	1.50E-01	-- (3)	3.44
Ethylbenzene	Sub-slab Vapor	152	7	0.867	7.88E-03	-- (3)	3.15
n-Heptane	Sub-slab Vapor	-- (3)	40	0.684	-- (3)	-- (3)	-- (3)
n-Hexane	Sub-slab Vapor	9.5	150 (25°)	0.6603	1.69 (25°)	2.9	3.29
Isooctane	Sub-slab Vapor	-- (3)	41	0.692	-- (3)	-- (3)	-- (3)
Toluene	Sub-slab Vapor	515	22	0.867	6.63E-03	1.9	2.6
1,2,4-Trimethylbenzene	Sub-slab Vapor	57	4.15	0.88	5.18E-03	472	3.78
Methyl tert-butyl ether	Groundwater	50,000	245	0.74	5.87E-04	2.89	1.24
o-Xylene(2)	Groundwater and Sub-slab Vapor	175	5	0.88	5.20E-03	-- (3)	2.77
m-Xylene(2)	Groundwater and Sub-slab Vapor	-- (3)	6	0.864	7.34E-03	-- (3)	3.2
p-Xylene(2)	Groundwater and Sub-slab Vapor	198 (25°)	6.5	0.86	7.66E-03	-- (3)	3.15
Chlorinated Volatile Organic Compounds							
cis-1,2-Dichloroethene	Groundwater	800	200 (25°)	1.28	4.07E-03	-- (3)	0.7
Dichlorodifluoromethane	Sub-slab Vapor	-- (3)	-- (3)	-- (3)	-- (3)	-- (3)	-- (3)
trans-1,2-Dichloroethene	Groundwater	600	200 (14°)	1.26	9.39E-03	-- (3)	0.48
Methylene Chloride (Dichloromethane)	Sub-slab Vapor	20000	349	1.366	2.19E-03	-- (3)	1.28
1,1-Dichloroethene	Groundwater	2500	500	1.218	1.90E-01	1.81	1.32
1,2-Dichloroethane	Groundwater	8690	79.1 (25)	1.253	1.10E-03	1.62	1.48
Tetrachloroethene	Groundwater and Sub-slab Vapor	150 (25°)	14	1.626	1.84E-02	-- (3)	2.6
Trichloroethene	Groundwater	1100 (25°)	60	1.46	1.03E-02	-- (3)	2.38
1,1,2-Trichloroethane	Groundwater	4400	22.49 (25°)	1.44	9.10E-04	1.06	2.42
Vinyl chloride	Groundwater	2763 (25°)	2600	0.9106	2.78E-02	1.99	1.36
Ketones							
Acetone	Sub-slab Vapor	miscible	270 (30°)	0.791	3.88E-05	0.73	-0.22
2-Butanone (MEK)	Sub-slab Vapor	136000 (25°)	90.6 (25°)	0.8054	5.77E-05	0.55	0.29
Other Organics							
Ethyl Acetate	Sub-slab Vapor	-- (3)	76	0.902	1.38E-04	-- (3)	0.73
Ethanol	Sub-slab Vapor	-- (3)	-- (3)	0.79	-- (3)	-- (3)	
T-Butyl alcohol	Sub-slab Vapor	1000000	40.7 (25°)	0.79	9.05E-06	-- (3)	0.35
Tetrahydrofuran	Sub-slab Vapor	-- (3)	<0.01 (25°)	0.88	-- (3)	-- (3)	-- (3)
Trichlorofluoromethane	Sub-slab Vapor	1100	687	1.49	-- (3)	2.13	2.12

mg/L - milligrams per liter
mm - millimeters Hg
n·m³/mole - atmosphere-cubic meters per mole
(1) Solubility, Vapor Pressure, and Specific Gravity values reported at 20°C, except as noted by values in parentheses.
(2) Because xylene analysis was often done for total xylenes, the most stringent isomer chemical property will be used as appropriate in the modeling performed in the assessment.
(3) No information available in the reference sources consulted.

Sources: Verschueren, 1983. Mackay et al., 1982. Mackay, 1982. Gossett, 1987. Nyer et al., 1991. Sims et al., 1984. Federal Register, Vol. 55, No. 61, p. 11816-11817, March 29, 1990. Hutzinger et al., 1974. Monsanto Chemical Co., undated. Mackay and Leiononen, 1975. Hwang, 1982. U.S. EPA, 1980. ATSDR, 1995. USEPA, 1996.

Table 17. Estimated Retardation Factors of Organic Compounds Detected in Groundwater Above Standards During the Supplemental OU-6 RI, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Compound	Log Octanol/Water Partition Coefficient(Log Kow)	Retardation Factor (R)[1]	Relative Mobility[2]
Aromatics			
Benzene	2.13	7	Medium
Methyl tert-butyl ether	1.24	2	High
o-Xylene	2.77	27	Low
m-Xylene	3.2	71	Immobile
p-Xylene	3.15	64	Immobile
Chlorinated Volatile Organic Compounds			
cis-1,2-Dichloroethene	0.7	1.2	High
trans-1,2-Dichloroethene	0.48	1.1	High
1,1-Dichloroethene	1.32	6	Medium
1,2-Dichloroethane	1.48	4	Medium
Tetrachloroethene	2.6	19	Medium
1,1,2-Trichloroethane	2.42	13	Medium
Trichloroethene	2.38	12	Medium
Vinyl chloride	1.36	2.5	Medium

[1] Estimates based on octanol/water partition coefficients, according to the following steps.
Retardation Factor (R) = the ratio (velocity of ground water/velocity of dissolved compound).
ρb = the bulk density of the soil, estimated to be 1.8 g/cm3;
n = the soil porosity, estimated to be 0.25; and
Kd = the distribution coefficient for the contaminant.
Kd was estimated from the log Kow using the relationship (Lyman et al., 1982)
log Kd = 1.00 log Kow + log foc -0.21, where foc is the fraction of organic content in soil.
In the absence of valid analytical data on the total organic carbon (TOC) of the aquifer at the Yard, a default value of 0.01 (1%) was taken as the value of foc for the natural aquifer matrix in these calculations.

[2] Characterization used: High (R between 1.0 and 2.0); Medium (R between 2.1 and 20); Low (R between 21 and 50); and Immobile (R greater than 50).

Table 18. Action and Chemical-Specific SCGs, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Citation	Title	Description	SCG Type
NEW YORK STATE SCGs			
6 NYCRR Subparts 375-1 and 375-2	Environmental Remediation Programs - Inactive Hazardous Waste Sites	Provides general requirements and IHWDS remedial program requirements and procedures for developing RAOs and remedy selection.	Action
6 NYCRR Section 375-1.8 (d)(2)	Groundwater Protection and Control Measures	Specifies the criteria for demonstrating off-site sources of groundwater contamination with no on-site source (or contribution).	Action
6 NYCRR Subpart 375-6	Remedial Program Soil Cleanup Objectives	Establishes the soil cleanup objectives for restricted industrial sites. The Yard soil cleanup level for lead is based on the Restricted Industrial cleanup level.	Chemical
6 NYCRR Section 701.5	Classification of Surface Water and Groundwater - Class GA Fresh Groundwaters	Defines and provides the best usage for Class GA groundwater	Chemical
6 NYCRR Sections 700.1 and 701.16	Classification of Surface Water and Groundwater - Class GSA Saline Groundwaters	Defines and provides the best usage for Class GSA groundwater	Chemical
6 NYCRR Sections 700.1 and 701.18	Assignment of Groundwater Classifications	Designates that all groundwaters of the State are defined by Section 701.15 (Class GA) or 701.16 (Class GSA).	Chemical
6 NYCRR Section 703.5	Water Quality Standards Surface Waters and Groundwater	Provides promulgated numeric groundwater quality standards used for comparison to OU-6 groundwater data and determination of remedial requirements for OU-6 groundwater.	Action, Chemical
Amtrak Sunnyside Yard, OU-4 Record of Decision	Modifies NYSDEC recommended soil cleanup levels for COCs	Current Yard soil cleanup levels for the COCs.	Chemical
FEDERAL SCGs			
NCP, 40 CFR 300.430	Remedial Investigation/Feasibility Study and Selection of Remedy	Establishes procedures and requirements in developing the RAOs and remedy selection.	Action
TSCA, 40 CFR 761.61	PCB Remediation Waste	This standard sets the cleanup levels and the treatment, storage and disposal requirements of PCB-impacted material.	Action, Chemical
29 CFR 1910	Occupational Safety and Health Standards	This regulation will be applicable and relevant to any selected remedy.	Action
29 CFR 1926	Occupational Safety and Health	This regulation will be applicable and relevant to any selected remedy.	Action
LOCAL SCGs			
RCNY Titles 1,15,16	Rules of the City of New York		Action
GUIDANCE			
NYSDEC TAGM 4030	Selection of Remedial Actions at Inactive Hazardous Waste Sites	Provides procedures for development of RAOs and remedial alterative evaluation.	Action
NYSDEC TAGM 4046	Determination of Soil Cleanup Objectives and Cleanup Levels	Provides recommended soil cleanup levels. The Yard soil cleanup level for total SVOCs is derived from this guidance document.	Action, Chemical
NYSDEC TOGS 1.1.1	Ambient Water Quality Standards and Guidance Values	Provides the groundwater quality standards provided in 6 NYCRR Section 703.5 and additional groundwater quality guidance values	Action, Chemical
NYSDOH Generic CAMP for Ground Intrusive Activities	Generic Community Air Monitoring Protocol	Would relate to intrusive remedial actions	Action

Table 18. Action and Chemical-Specific SCGs, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

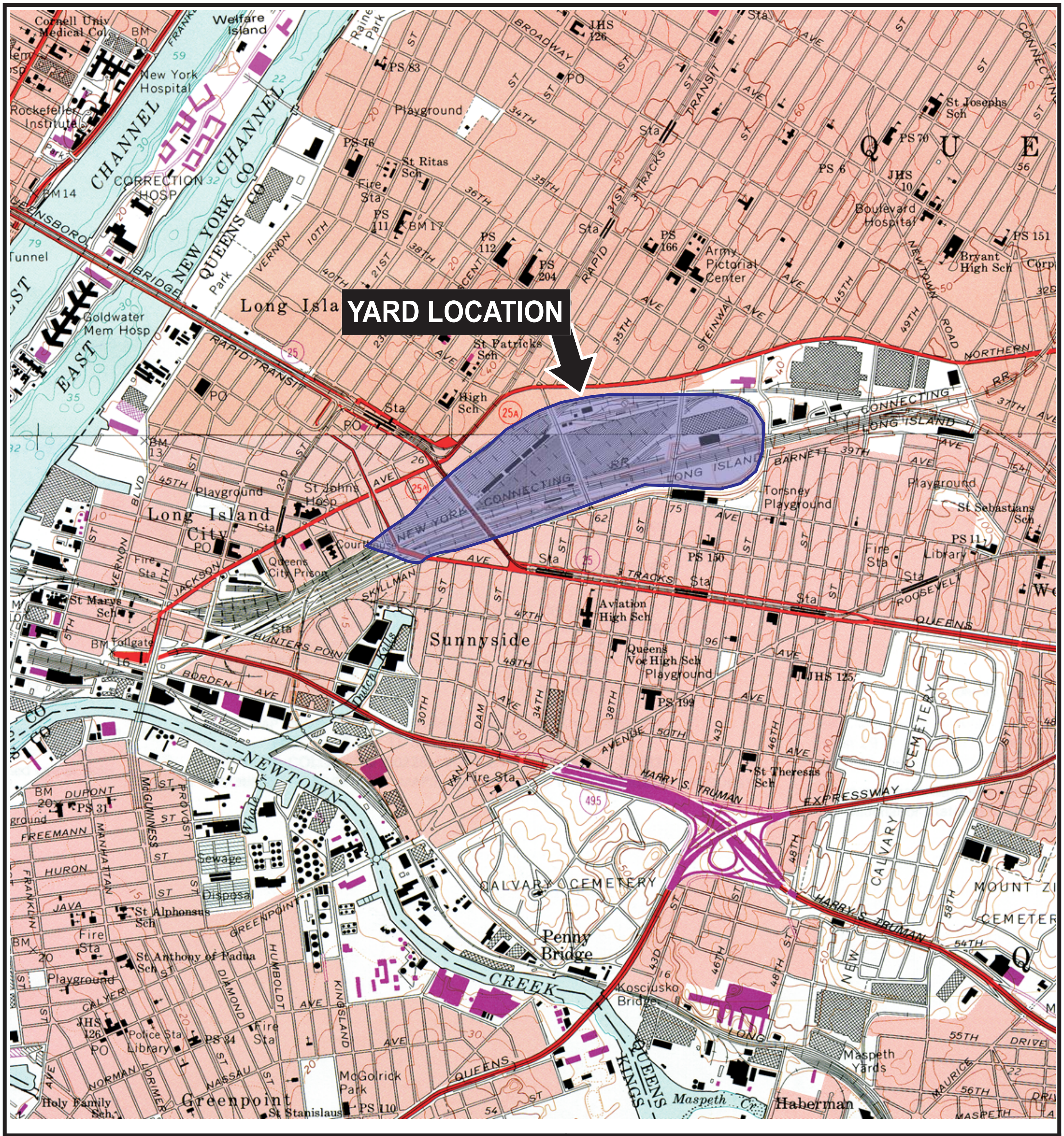
Citation	Title	Description	SCG Type
NYSDEC Draft DER-10	Technical Guidance for Site Investigation and Remediation	Guidance provides procedures for developing RAOs, remedial alternative screening and selection	Action
NYSDEC Draft DER-13	Strategy for Evaluating Soil Vapor Intrusion at Remedial Sites in New York	Requires the evaluation of soil vapor intrusion pathways as part of investigations for sites without final remedial decisions (RODs).	Action
NYSDOH	Guidance for Evaluating Soil Vapor in the State of New York	Guidance document that provides procedures for soil vapor intrusion investigations	Action, Chemical

Glossary of Acronyms

CFR	Code of Federal Regulations
NYSDEC	New York State Department of Environmental Conservation
NYCRR	New York Code of Rules and Regulations
OSHA	Occupational Safety and Health
SCG	Standards, Criteria, and Guidance
USEPA	United States Environmental Protection Agency
DER	Department of Environmental Remediation

Table 19. Remedial Alternative II Cost Estimate, OU-6 RI/FS Report, Sunnyside Yard, Queens, New York

Description	Quantity	Unit	Unit Cost	Total Cost
INSTITUTIONAL/ENGINEERING CONTROLS				
Groundwater Use Restriction	1	LS	$10,000	$10,000
Subtotal				**$10,000**
SITE MANAGEMENT PLAN				
Preparation and Implementation of Site Management Plan	1	LS	$15,000	$15,000
Subtotal				**$15,000**
ENVIRONMENTAL EASEMENTS				
Environmental Easements	1	LS	$10,000	$10,000
Subtotal				**$10,000**
			Subtotal Direct Costs	$35,000
			Contingency (20%)	$7,000
			TOTAL DIRECT COSTS	**$42,000**
			Project Management (10%)	$4,200
			TOTAL CAPITAL COSTS	**$46,200**
GROUNDWATER MONITORING				
Present Value of groundwater monitoring of offsite source plumes, reporting of sampling data, and data collected from offsite sources (SMP and ACCO) to be performed every other year until 2016.				
Groundwater Sampling for 10 years ($5,000/round)	1	LS	$16,552.00	$16,552.00
Reporting for 10 years ($5,000/report)	1	LS	$16,552.00	$16,552.00
			Subtotal Net Present Worth of OM&M Costs	$33,104
			Project Management (10%)	$3,310
			TOTAL PRESENT WORTH OF OM&M COSTS	**$36,414**
			TOTAL OU-6 FS COSTS	**$82,614**



SOURCE:
CENTRAL PARK AND BROOKLYN, NEW YORK
QUADRANGLE 7.5 MINUTE SERIES (TOPOGRAPHIC)

QUADRANGLE
LOCATION

N

0 2000'

N:\PROJECTS\AM055Y\AM65Y113\AM6511306.CDR

Title:

LOCATION OF SITE

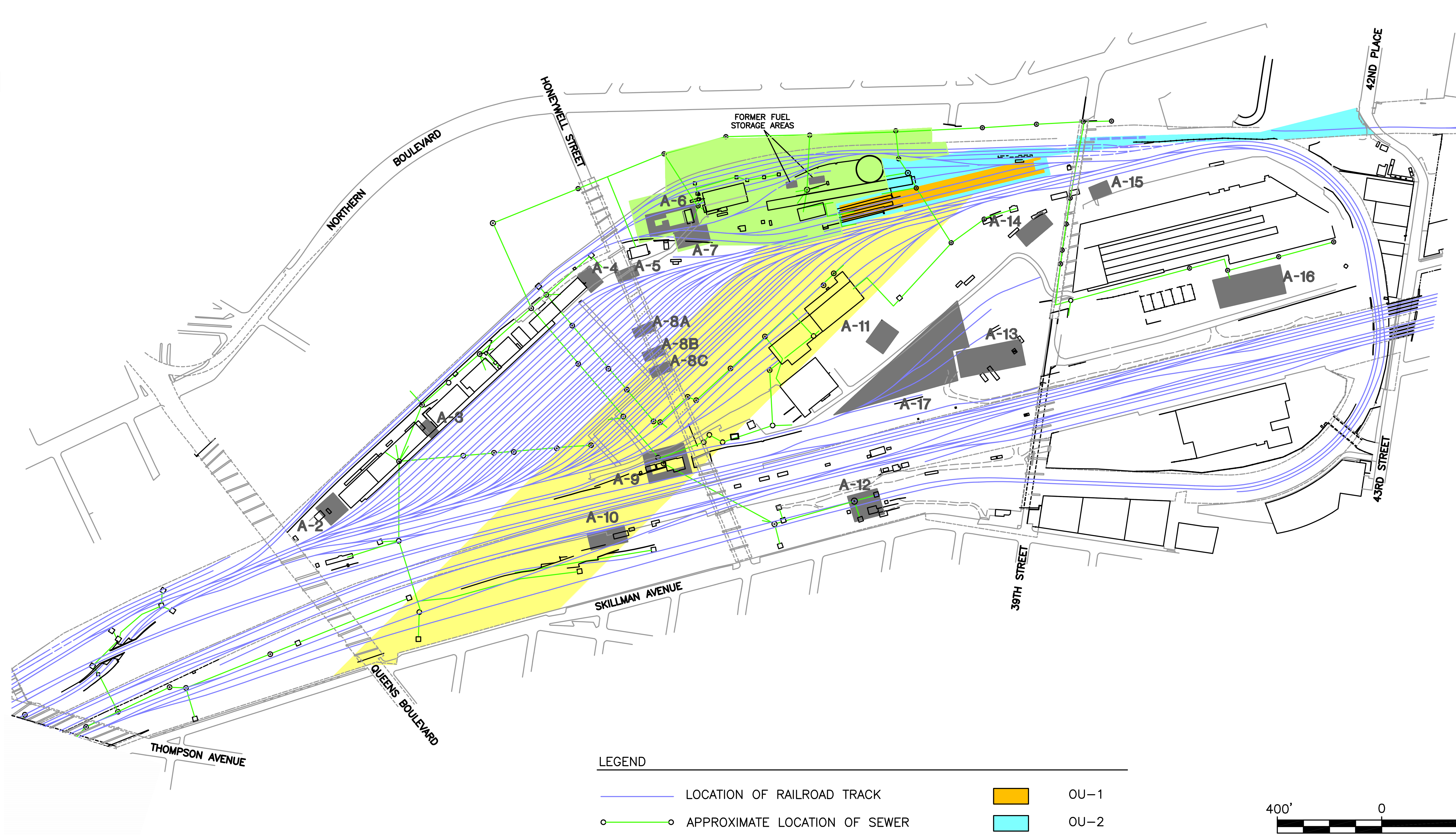
OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared for:

AMTRAK

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: H.G.	Date: 11SEP09	FIGURE
Prepared by: J.A.D.	Scale: 1"=2000'	1
Project Mgr.: H.G.	Office: NY	
File No.: AM6511306.CDR	Project No.: 05565Y03	



LEGEND

	LOCATION OF RAILROAD TRACK		OU-1
	APPROXIMATE LOCATION OF SEWER		OU-2
	GRATE COVER CATCH BASIN LOCATION		OU-3
	SOLID COVER MANHOLE LOCATION		OU-4
	GRATE COVER MANHOLE LOCATION		OU-5
A-2	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN		
	APPROXIMATE PROPERTY BOUNDARY		

400' 0 400'

NOTES

1. LOCATIONS OF SEWER COMPONENTS BASED UPON A REVIEW OF AMTRAK-SUPPLIED ENGINEERING DIAGRAMS AND LIMITED FIELD SURVEY.
2. OU-6, GROUND WATER BENEATH THE YARD, IS NOT SHOWN.
3. RI – REMEDIAL INVESTIGATION
4. LIRR – LONG ISLAND RAIL ROAD

Title:

AMTRAK YARD LAYOUT

OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For: AMTRAK

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: H.G.	Date: 11SEP09	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	2
Project Mgr: H.G.	Office: NY	
File No: AM6511307	Project: 05565Y03	

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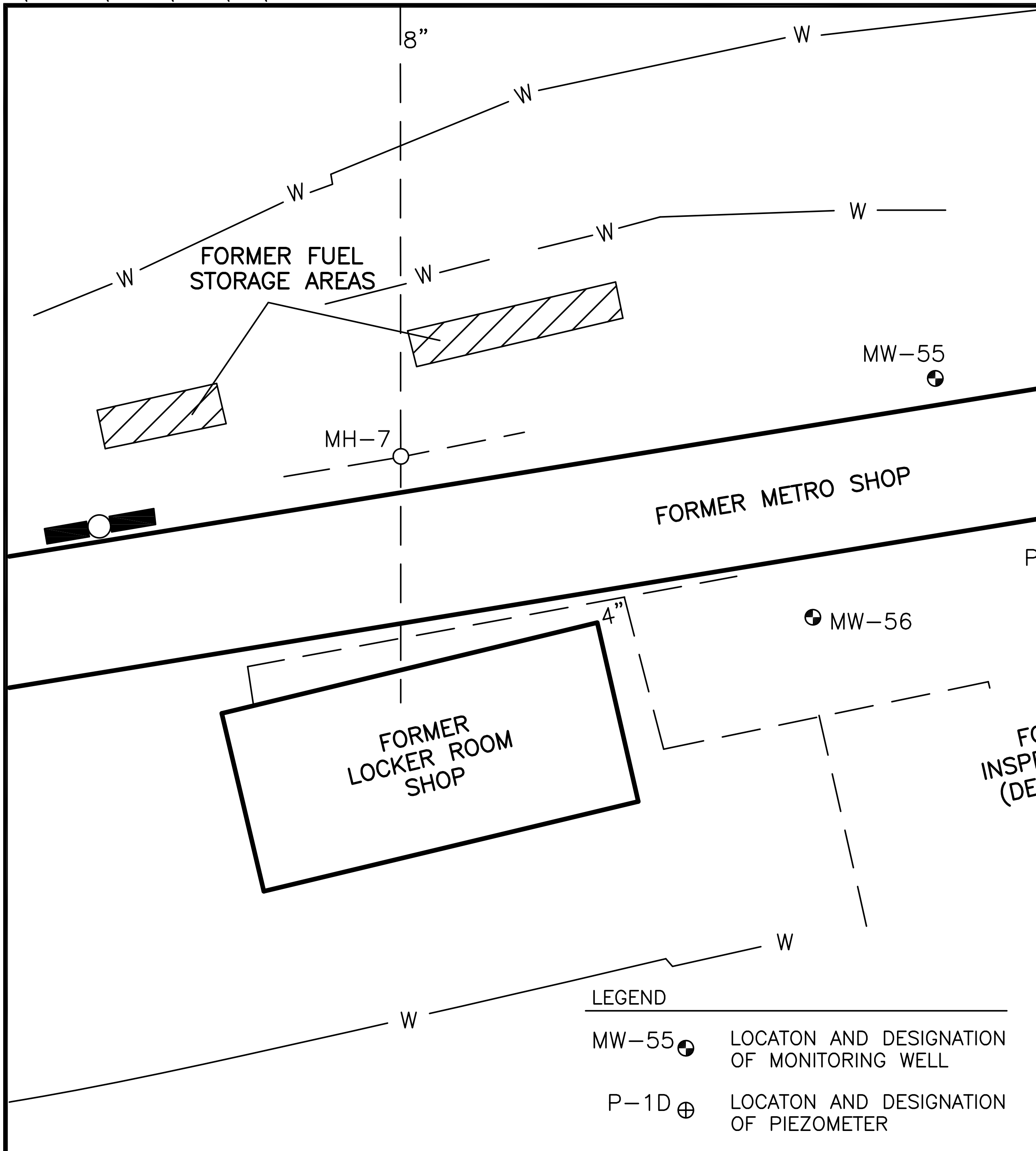


Title:

PUMPING TEST CONFIGURATION
JULY 29, 1994

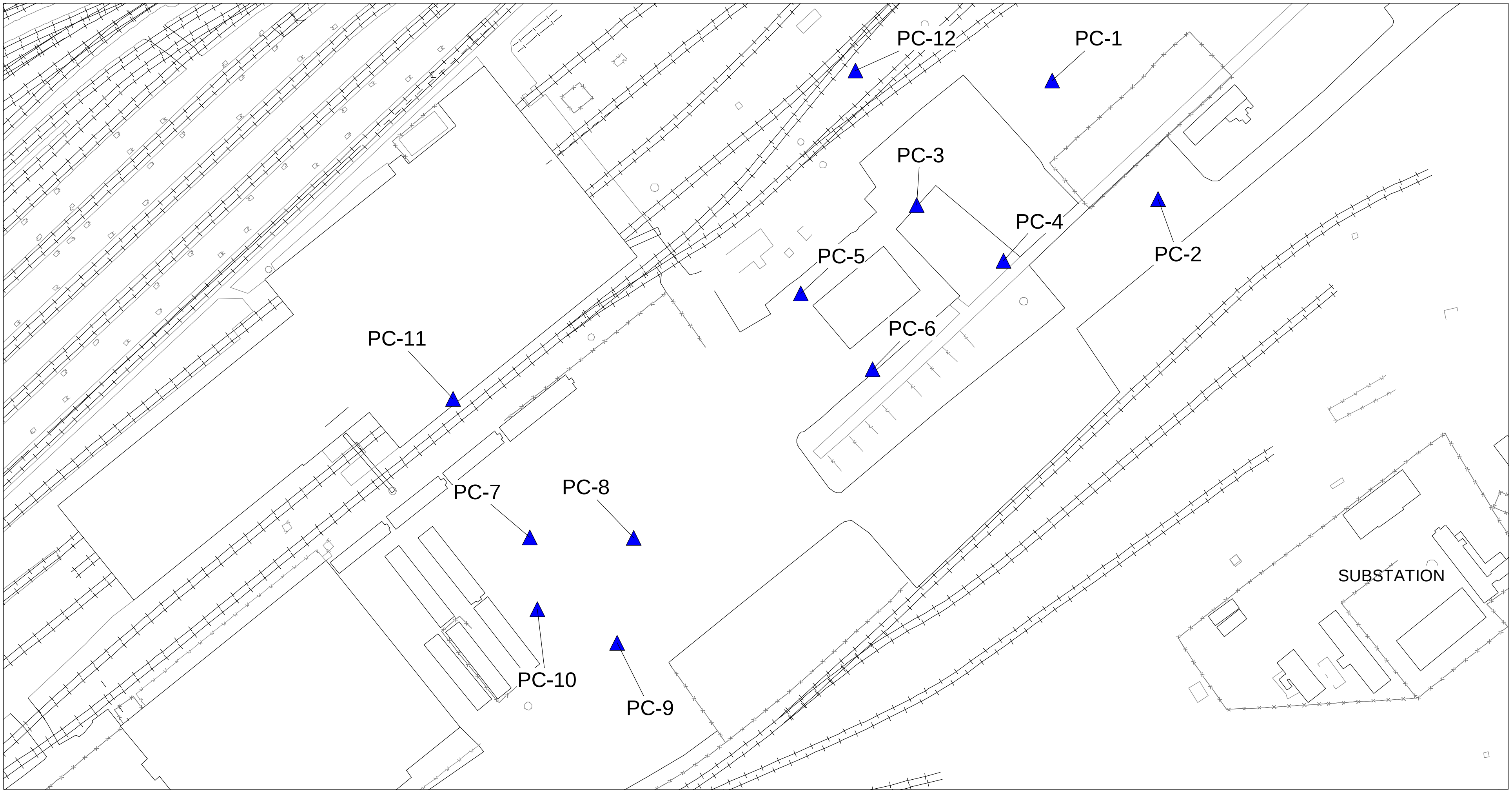
OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting and Management

Compiled by: R.M.	Date: 17SEPT09	FIGURE
Prepared by: G.M.	Scale: NTS	3
Project Mgr: H.G.	Project: 05565Y03	
File: AM6511309		



EXPLANATION

PC-1 ▲ LOCATION AND DESIGNATION OF SOIL VAPOR SAMPLE

100' 0 100'

N

Title:

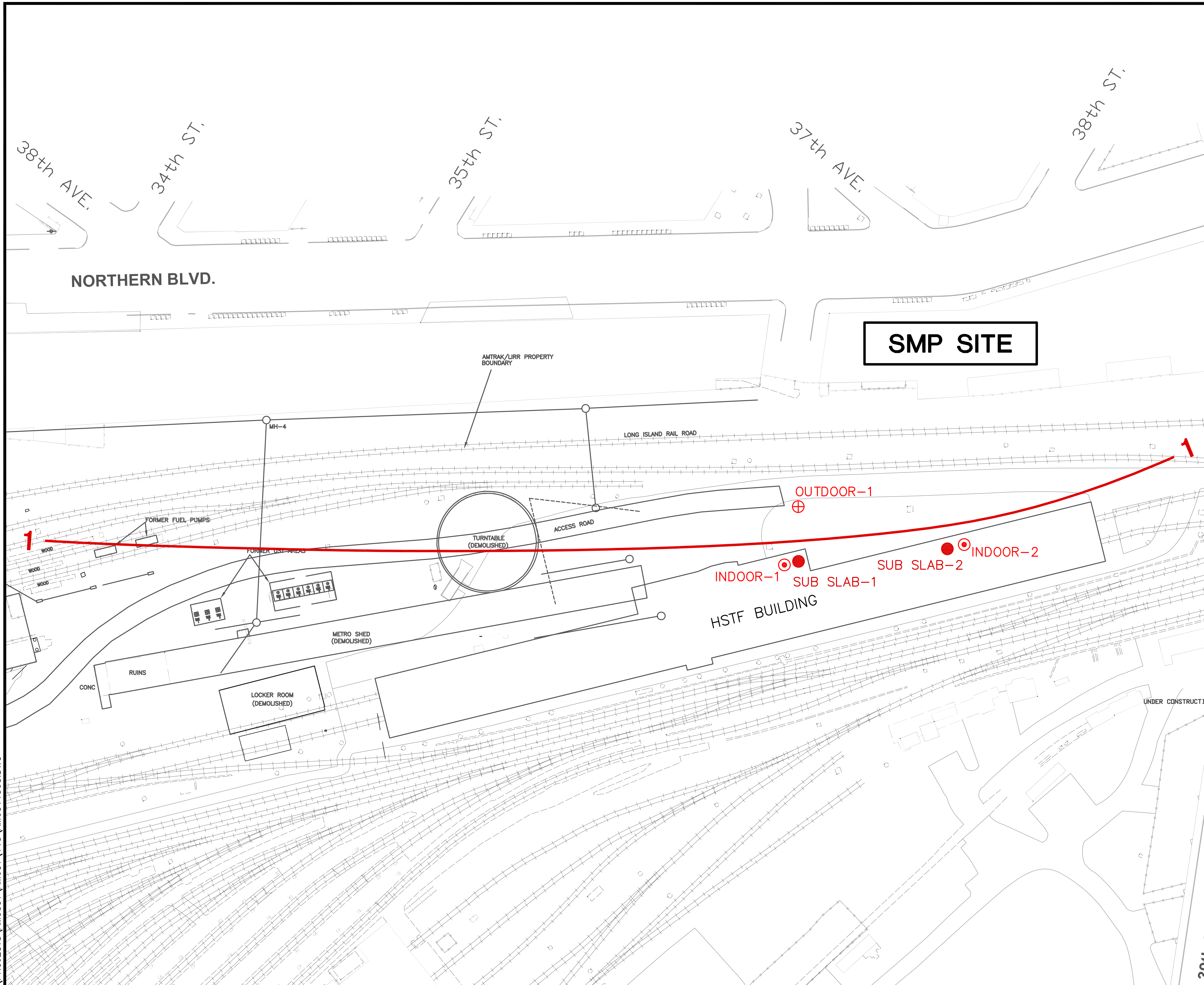
LOCATION AND DESIGNATION OF SOIL VAPOR SAMPLES COLLECTED NEAR PROPOSED CONSTRUCTION AREA

OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX ASSOCIATES INC *Environmental Consulting & Management*	Compiled by: RSK	Date: 10/2/2009	FIGURE
	Prepared by: RSK	Scale: SHOWN	4
	Project Mgr: HG	Office: NY	
	File No: AM6511310.WOR	Project: 0055.0065Y003	



LEGEND

(red line)	LINE OF EQUAL CONCENTRATION OF TOTAL CHLORINATED VOCs IN GROUNDWATER AT THE WATER TABLE IN MAY/JUNE 2008; IN UG/L
SUB SLAB-1 ●	LOCATION OF SUB SLAB SAMPLE
INDOOR-1 ⊙	LOCATION OF INDOOR AIR SAMPLE
OUTDOOR-1 ⊕	LOCATION OF OUTDOOR AIR SAMPLE

NOTES

1. HSTF – HIGH SPEED TRAINSET FACILITY
2. SMP – STANDARD MOTOR PRODUCTS, INC.

100' 0 100'

Title:

LOCATION AND DESIGNATION OF SOIL VAPOR SAMPLES COLLECTED NEAR HSTF

OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX ASSOCIATES, INC.
Environmental Consulting and Management

Compiled by: R.M.	Date: 16OCT09	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	
Project Mgr: H.G.	Project: 05565Y03	5
File: AM6511308		

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APPENDIX A

Historic Groundwater Quality Data
(Generated Prior to Completing the 1999 OU-6 RI)

Table A-1. Summary of Volatile Organic Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: Class GA Ground-Water Standard (µg/L)*	**MW-19 1/4/1991**	**MW-23D 1/7/1991**	**MW-23D 2/9/1993**	**MW-35 2/9/1993**	**MW-37 2/17/1994**	**MW-38D 2/17/1994**
Benzene	0.7	5 U	5 U	10 U	10 U	5 U	5 U
Toluene	5	5 U	5 U	10 U	10 U	5 U	5 U
Ethylbenzene	5	5 U	**8.8**	10 U	10 U	5 U	5 U
Xylene (total)	5	5 U	**18**	**1 J**	10 U	5 U	5 U
Total BTEX		**0**	**26.8**	**1**	**0**	**0**	**0**
1,1,1-Trichloroethane	5	5 U	5 U	10 U	10 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	10 U	10 U	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	10 U	10 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	**2 J**	10 U	5 U	**3 J**
1,1-Dichloroethene	5	5 U	5 U	10 U	10 U	5 U	5 U
1,2-Dichloroethane	5	5 U	5 U	10 U	10 U	5 U	5 U
1,2-Dichloroethene (total)	5	5 U	5 U	10 U	10 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	10 U	10 U	5 U	5 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	--	10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 U	10 U	10 U	10 UV	10 UV	10 U
Bromodichloromethane		5 U	5 U	10 U	10 U	5 U	5 U
Bromoform		5 U	5 U	10 U	10 U	5 U	5 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	--	5 U	5 U	10 U	10 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	10 U	10 U	5 U	5 U
Chlorobenzene		5 U	5 U	10 U	10 U	5 U	5 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		5 U	5 U	10 U	10 U	5 U	5 U
Chloromethane		10 U	10 U	10 U	10 U	10 UJ	10 U
cis-1,3-Dichloropropene		5 U	5 U	10 U	10 U	5 U	5 U
Dibromochloromethane		5 U	5 U	10 U	10 U	5 U	5 U
Methylene Chloride		5 U	5 U	10 U	10 U	5 U	5 U
Styrene	5	5 U	5 U	10 U	10 U	5 U	5 U
Tetrachloroethene	5	2.9 J	5 U	10 U	10 U	5 U	5 U
trans-1,3-Dichloropropene		5 U	5 U	10 U	10 U	5 U	5 U
Trichloroethene	5	2 J	5 U	10 U	10 U	5 U	5 U
Vinyl Acetate		10 U	10 U	NA	NA	NA	NA
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed

* - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-1. Summary of Volatile Organic Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Class GA Ground-Water Standard (µg/L)*	MW-39D 2/17/1994	MW-40D 2/17/1994	MW-41 11/6/1991	MW-41 2/9/1993	MW-42 2/9/1993	MW-43 2/9/1993
Benzene	0.7	5 U	5 U	5 U	10 U	10 U	10 U
Toluene	5	5 U	5 U	5 U	10 U	10 U	10 U
Ethylbenzene	5	5 U	5 U	5 U	**2 J**	10 U	10 U
Xylene (total)	5	5 U	5 U	5 U	10 U	10 U	10 U
Total BTEX		**0**	**0**	**0**	**2**	**0**	**0**
1,1,1-Trichloroethane	5	5 U	5 U	5 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	10 U	10 U	10 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U	10 U	10 U	10 U
1,1-Dichloroethane	5	5 U	5 U	5 U	10 U	10 U	10 U
1,1-Dichloroethene	5	5 U	5 U	5 U	10 U	10 U	10 U
1,2-Dichloroethane	5	5 U	5 U	5 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	5	5 U	5 U	5 U	10 U	10 U	**2 J**
1,2-Dichloropropane		5 U	5 U	5 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	--	10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 UV	10 UV	10 U	10 U	10 U	10 UV
Bromodichloromethane		5 U	5 U	5 U	10 U	10 U	10 U
Bromoform		5 U	5 U	5 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	--	5 U	5 U	5 U	10 U	10 U	10 U
Carbon Tetrachloride		5 U	5 U	5 U	10 U	10 U	10 U
Chlorobenzene		5 U	5 U	5 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		5 U	5 U	5 U	10 U	10 U	10 U
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	10 U	10 U	10 U
Dibromochloromethane		5 U	5 U	5 U	10 U	10 U	10 U
Methylene Chloride		5 U	5 U	5 U	10 U	10 U	10 U
Styrene	5	5 U	5 U	5 U	10 U	10 U	10 U
Tetrachloroethene	5	5 U	**5**	5 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		5 U	5 U	5 U	10 U	10 U	10 U
Trichloroethene	5	5 U	5 U	5 U	10 U	10 U	**11**
Vinyl Acetate		NA	NA	10 U	NA	NA	NA
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed

* - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-1. Summary of Volatile Organic Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Class GA Ground-Water Standard (µg/L)*	MW-44D 2/9/1993	MW-45 2/9/1993	MW-45R 2/9/1993	MW-46 2/9/1993	MW-47 2/9/1993	MW-48D 2/9/1993
Benzene	0.7	10 U	10 U	10 U	10 U	10 U	10 U
Toluene	5	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	5	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	5	10 U	10 U	10 U	10 U	10 U	10 U
Total BTEX		**0**	**0**	**0**	**0**	**0**	**0**
1,1,1-Trichloroethane	5	10 U	**2 J**	**1 J**	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane		**2 J**	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	5	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	5	**46**	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane		10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 UV	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	--	10 UV	10 U	10 U	10 U	10 U	10 U
Acetone		10 UV	10 UV	10 U	10 UV	10 UV	10 UV
Bromodichloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Bromoform		10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	--	10 U	10 U	10 U	10 U	10 U	10 U
Carbon Tetrachloride		10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane		10 U	10 U	10 U	10 U	10 U	10 U
Methylene Chloride		10 U	10 U	10 U	10 U	10 U	10 U
Styrene	5	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene		10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	5	**75**	10 U	10 U	10 U	10 U	10 U
Vinyl Acetate		NA	NA	NA	NA	NA	NA
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed

* - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-1. Summary of Volatile Organic Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Class GA Ground-Water Standard (µg/L)*	MW-49 2/17/1994	MW-57 2/17/1994	MW-57R 2/17/1994	MW-57 5/2/1996	MW-59 2/17/1994	MW-59 5/3/1996
Benzene	0.7	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5	5 U	5 U	5 U	5 U	5 U	5 U
Total BTEX		**0**	**0**	**0**	**0**	**0**	**0**
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	--	10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 U	10 U	10 UV	10 U	10 U	10 U
Bromodichloromethane		5 U	5 U	5 U	5 U	5 U	5 U
Bromoform		5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	--	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene		5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane		10 UJ	10 U	10 UJ	10 U	10 U	10 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U	5 U	5 U
Methylene Chloride		5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl Acetate		NA	NA	NA	10 U	NA	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed

* - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-1. Summary of Volatile Organic Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: / Class GA Ground-Water Standard (µg/L)*	MW-61 2/17/1994	MW-62D 2/17/1994	MW-63 2/17/1994	MW-63 5/2/1996	MW-64 5/3/1996	MW-65 5/3/1996
Benzene	0.7	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	5	5 U	5 U	5 U	5 U	5 U	5 U
Xylene (total)	5	5 U	5 U	5 U	5 U	5 U	5 U
Total BTEX		**0**	**0**	**0**	**0**	**0**	**0**
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	**3 J**	5 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)	5	5 U	5 U	**14**	**2 J**	5 U	**6**
1,2-Dichloropropane		5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	--	10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane		5 U	5 U	5 U	5 U	5 U	5 U
Bromoform		5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	--	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride		5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene		5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane		10 UJ	10 UJ	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane		5 U	5 U	5 U	5 U	5 U	5 U
Methylene Chloride		5 U	5 U	5 U	5 U	5 U	5 U
Styrene	5	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	**9**	**3 J**	**23**	5 U	**7**	5 U
trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5	5 U	5 U	**24**	**2 J**	5 U	5 U
Vinyl Acetate		NA	NA	NA	10 U	10 U	10 U
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed

* - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-1. Summary of Volatile Organic Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Class GA Ground-Water Standard (µg/L)*	MW-65R 5/3/1996	MW-67 5/3/1996	MW-68 5/3/1996	MW-69D 5/9/1996	TW-1 1/26/1993	TW-2 1/26/1993
Benzene	0.7	5 U	5 U	5 U	5 U	10 U	10 U
Toluene	5	5 U	5 U	5 U	5 U	10 U	10 UV
Ethylbenzene	5	5 U	5 U	5 U	5 U	10 U	10 U
Xylene (total)	5	5 U	5 U	5 U	5 U	10 U	10 U
Total BTEX		**0**	**0**	**0**	**0**	**0**	**0**
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	10 U	10 U
1,1,2,2-Tetrachloroethane		5 U	5 U	5 U	5 U	10 U	10 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U	5 U	10 U	10 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	10 U	10 U
1,1-Dichloroethene	5	5 U	5 U	5 U	5 U	10 U	10 U
1,2-Dichloroethane	5	5 U	5 U	5 U	5 U	10 U	10 U
1,2-Dichloroethene (total)	5	**6**	5 U	5 U	5 U	10 U	10 U
1,2-Dichloropropane		5 U	5 U	5 U	5 U	10 U	10 U
2-Butanone		10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone		10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	--	10 U	10 U	10 U	10 U	10 U	10 U
Acetone		10 U	10 U	10 U	10 U	10 U	13 UV
Bromodichloromethane		5 U	5 U	5 U	5 U	10 U	10 U
Bromoform		5 U	5 U	5 U	5 U	10 U	10 U
Bromomethane		10 U	10 U	10 U	10 U	10 U	10 U
Carbon Disulfide	--	5 U	5 U	5 U	5 U	10 U	10 UV
Carbon Tetrachloride		5 U	5 U	5 U	5 U	10 U	10 U
Chlorobenzene		5 U	5 U	5 U	5 U	10 U	10 U
Chloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Chloroform		5 U	5 U	5 U	5 U	10 U	10 U
Chloromethane		10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene		5 U	5 U	5 U	5 U	10 U	10 U
Dibromochloromethane		5 U	5 U	5 U	5 U	10 U	10 U
Methylene Chloride		5 U	5 U	5 U	5 U	10 U	10 U
Styrene	5	5 U	5 U	5 U	5 U	10 U	10 U
Tetrachloroethene	5	5 U	**3 J**	5 U	5 U	10 U	10 U
trans-1,3-Dichloropropene		5 U	5 U	5 U	5 U	10 U	10 U
Trichloroethene	5	5 U	5 U	5 U	5 U	10 U	10 U
Vinyl Acetate		10 U	10 U	10 U	10 U	NA	NA
Vinyl Chloride		10 U	10 U	10 U	10 U	10 U	10 U

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
BTEX - Benzene, Toluene, Ethylbenzene and Xylene
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed

* - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** **Sample Date:** Class GA Ground-Water Standard (µg/L)*	**MW-19** **1/4/1991**	**MW-23D** **1/7/1991**	**MW-23D** **2/9/1993**	**MW-35** **2/9/1993**	**MW-37** **2/17/1994**	**MW-38D** **2/17/1994**
1,2,4-Trichlorobenzene	(5)	10 U	10 U	10 U	10 U	11 U	11 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	11 U	11 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	11 U	11 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	11 U	11 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	10 U	11 U	11 U
2,4,5-Trichlorophenol		50 U	50 UIV	25 U	25 U	53 U	53 U
2,4,6-Trichlorophenol		10 U	10 UIV	10 U	10 U	11 U	11 U
2,4-Dichlorophenol		10 U	10 UIV	10 U	10 U	11 U	11 U
2,4-Dimethylphenol		10 U	10 UIV	10 U	10 U	11 U	11 U
2,4-Dinitrophenol		50 U	50 UIV	25 U	25 U	53 U	53 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	11 U	11 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	11 U	11 U
2-Chloronaphthalene		10 U	10 U	10 U	10 U	11 U	11 U
2-Chlorophenol		10 U	10 UIV	10 U	10 U	11 U	11 U
2-Methylnaphthalene	--	10 U	**96**	**23**	**5 J**	11 U	11 U
2-Methylphenol		10 U	10 UIV	10 U	10 U	11 U	11 U
2-Nitroaniline		50 U	50 U	25 U	25 U	53 U	53 U
2-Nitrophenol		10 U	10 UIV	10 U	10 U	11 U	11 U
3,3'-Dichlorobenzidine		20 U	20 U	10 U	10 U	21 U	21 U
3-Nitroaniline		50 U	50 U	25 U	25 U	53 U	53 U
4,6-Dinitro-2-methylphenol		50 U	50 UIV	25 U	25 U	53 U	53 U
4-Bromophenyl-phenylether		10 U	10 U	10 U	10 U	11 U	11 U
4-Chloro-3-methylphenol		10 U	10 UIV	10 U	10 U	11 U	11 U
4-Chloroaniline		10 U	10 U	10 U	10 U	11 U	11 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	11 U	11 U
4-Methylphenol	--	10 U	10 UIV	10 U	10 U	11 U	11 U
4-Nitroaniline		50 U	50 U	25 U	25 U	53 U	53 U
4-Nitrophenol		50 U	50 UIV	25 U	25 U	53 U	53 U
Acenaphthene	(20)	10 U	10 U	**4 J**	**2 J**	11 U	11 U
Acenaphthylene		10 U	10 U	10 U	10 U	11 U	11 U
Anthracene	(50)	10 U	10 U	10 U	**1 J**	11 U	11 U
Benzo(a)anthracene	(0.002)	10 U	10 U	10 U	10 U	11 U	11 U
Benzo(a)pyrene	ND	10 U	10 U	10 U	10 U	11 U	11 U
Benzo(b)fluoranthene	(0.002)	10 U	10 U	10 U	10 U	11 U	11 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	11 U	11 U
Benzo(k)fluoranthene	(0.002)	10 U	10 U	10 U	10 U	11 U	11 U
Benzoic acid	--	50 U	50 UIV	NA	NA	53 U	53 U
Benzyl alcohol		10 U	10 U	NA	NA	11 U	11 U
bis(2-Chloroethoxy)methane		10 U	10 U	10 U	10 U	11 U	11 U
bis(2-Chloroethyl)ether		10 U	**32**	10 U	10 U	11 U	11 U
bis(2-Ethylhexyl)phthalate	50	10 U	10 U	10 UV	10 UV	11 UV	11 UV
Butylbenzylphthalate	(50)	10 U	10 U	10 U	10 U	11 U	11 U
Carbazole		NA	NA	NA	NA	NA	NA
Chrysene	(0.002)	10 U	10 U	10 U	10 U	11 U	11 U
Di-n-butylphthalate		10 U	10 U	10 U	10 UV	11 UV	11 UV

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / Class GA Ground-Water Standard (µg/L)*	**MW-19** **1/4/1991**	**MW-23D** **1/7/1991**	**MW-23D** **2/9/1993**	**MW-35** **2/9/1993**	**MW-37** **2/17/1994**	**MW-38D** **2/17/1994**
Di-n-octylphthalate	(50)	10 U	10 U	10 U	10 U	11 U	11 U
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	11 U	11 U
Dibenzofuran	--	10 U	10 U	**4 J**	10 U	**1 J**	11 U
Diethylphthalate	(50)	10 U	10 U	10 U	10 U	11 U	11 U
Dimethyl Phthalate		10 U	10 U	10 U	10 U	11 U	11 U
Dimethylphthalate		NA	NA	NA	NA	NA	NA
Fluoranthene	(50)	10 U	10 U	10 U	**1 J**	11 U	11 U
Fluorene	(50)	10 U	**9.4 J**	10 U	10 U	11 U	11 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	11 U	11 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	11 U	11 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	11 U	11 U
Hexachloroethane		10 U	10 U	10 U	10 U	11 U	11 U
Indeno(1,2,3-cd)pyrene	(0.002)	10 U	10 U	10 U	10 U	11 U	11 U
Isophorone		10 U	10 U	10 U	10 U	11 U	11 U
N-Nitroso-di-n-propylamine		10 U	10 U	10 U	10 U	11 U	11 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	11 U	11 U
Naphthalene	(10)	10 U	10 U	10 U	10 U	**0.4 J**	11 U
Nitrobenzene		10 U	10 U	10 U	10 U	11 U	11 U
Pentachlorophenol		50 U	50 UIV	25 U	25 U	53 U	53 U
Phenanthrene	(50)	10 U	10 U	**2 J**	10 U	11 U	11 U
Phenol		10 U	10 UIV	10 U	10 U	11 U	11 U
Pyrene	(50)	10 U	10 U	10 U	**0.9 J**	**0.4 J**	11 U
	Total SVOCs	**0**	**137.4**	**33**	**9.9**	**1.8**	**0**

Notes:
R(following Sample Designation) - Replicate sample
R(qualifier) - Data unusable
µg/L - Micrograms per liter
SVOCs - Semivolatile Organic Compounds
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed
-- - No standard available
ND - Not detectable

* NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Class GA Ground-Water Standard (µg/L)*	MW-39D 2/17/1994	MW-40D 2/17/1994	MW-42 2/9/1993	MW-43 2/9/1993	MW-44D 2/9/1993	MW-45 2/9/1993
1,2,4-Trichlorobenzene	(5)	11 U	11 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		11 U	11 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		11 U	11 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		11 U	11 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		11 U	11 U	10 U	10 UJV	10 UJV	10 UJV
2,4,5-Trichlorophenol		53 U	54 URV	25 U	26 U	26 U	26 U
2,4,6-Trichlorophenol		11 U	11 URV	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		11 U	11 URV	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		11 U	11 URV	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		53 U	54 URV	25 U	26 UJV	26 UJV	26 UJV
2,4-Dinitrotoluene		11 U	11 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		11 U	11 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene		11 U	11 U	10 U	10 U	10 U	10 U
2-Chlorophenol		11 U	11 URV	10 U	10 U	10 U	10 U
2-Methylnaphthalene	--	11 U	11 U	10 U	10 U	10 U	10 U
2-Methylphenol		11 U	11 U	10 U	10 U	10 U	10 U
2-Nitroaniline		53 U	54 U	25 U	26 U	26 U	26 U
2-Nitrophenol		11 U	11 URV	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine		21 U	22 U	10 U	10 U	10 U	10 U
3-Nitroaniline		53 U	54 U	25 U	26 U	26 U	26 U
4,6-Dinitro-2-methylphenol		53 U	54 U	25 U	26 U	26 U	26 U
4-Bromophenyl-phenylether		11 U	11 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		11 U	11 URV	10 U	10 U	10 U	10 U
4-Chloroaniline		11 U	11 U	10 U	10 UJV	10 UJV	10 UJV
4-Chlorophenyl-phenylether		11 U	11 U	10 U	10 U	10 U	10 U
4-Methylphenol	--	11 U	11 U	10 U	10 U	10 U	10 U
4-Nitroaniline		53 U	54 U	25 U	26 U	26 U	26 U
4-Nitrophenol		53 U	54 URV	25 U	26 U	26 U	26 U
Acenaphthene	(20)	11 U	11 U	10 U	10 U	10 U	10 U
Acenaphthylene		11 U	11 U	10 U	10 U	10 U	10 U
Anthracene	(50)	11 U	11 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	(0.002)	11 U	11 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	ND	11 U	11 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	(0.002)	11 U	11 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		11 U	11 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	(0.002)	11 U	11 U	10 U	10 U	10 U	10 U
Benzoic acid	--	53 U	54 U	NA	NA	NA	NA
Benzyl alcohol		11 U	11 U	NA	NA	NA	NA
bis(2-Chloroethoxy)methane		11 U	11 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether		11 U	11 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	50	11 UV	11 UV	10 UV	10 UV	10 UV	10 UV
Butylbenzylphthalate	(50)	11 U	11 U	10 U	10 U	10 U	10 U
Carbazole		NA	NA	NA	NA	NA	NA
Chrysene	(0.002)	11 U	11 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate		11 U	11 UV	10 U	10 UV	10 UV	10 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Class GA Ground-Water Standard (µg/L)*	MW-39D 2/17/1994	MW-40D 2/17/1994	MW-42 2/9/1993	MW-43 2/9/1993	MW-44D 2/9/1993	MW-45 2/9/1993
Di-n-octylphthalate	(50)	11 U	11 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene		11 U	11 U	10 U	10 U	10 U	10 U
Dibenzofuran	--	11 U	11 U	10 U	10 U	10 U	10 U
Diethylphthalate	(50)	11 U	11 U	10 U	10 U	10 U	10 U
Dimethyl Phthalate		11 U	11 U	10 U	10 U	10 U	10 U
Dimethylphthalate		NA	NA	NA	NA	NA	NA
Fluoranthene	(50)	11 U	11 U	10 U	10 U	10 U	10 U
Fluorene	(50)	11 U	11 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		11 U	11 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		11 U	11 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		11 U	11 U	10 U	10 U	10 U	10 U
Hexachloroethane		11 U	11 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	(0.002)	11 U	11 U	10 U	10 U	10 U	10 U
Isophorone		11 U	11 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		11 U	11 U	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine (1)		11 U	11 U	10 U	10 U	10 U	10 U
Naphthalene	(10)	**1 J**	11 U	10 U	10 U	10 U	10 U
Nitrobenzene		11 U	11 U	10 U	10 U	10 U	10 U
Pentachlorophenol		53 U	54 URV	25 U	26 U	26 U	26 U
Phenanthrene	(50)	11 U	11 U	10 U	10 U	10 U	10 U
Phenol		11 U	11 URV	10 U	10 U	10 U	10 U
Pyrene	(50)	11 U	11 U	10 U	10 U	10 U	10 U
Total SVOCs		**1**	**0**	**0**	**0**	**0**	**0**

Notes:
R(following Sample Designation) - Replicate sample
R(qualifier) - Data unusable
µg/L - Micrograms per liter
SVOCs - Semivolatile Organic Compounds
U - Compound was analyzed for but not detected
J - Estimated value
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* NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are on for those compounds for which concentrations were detected.

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: Class GA Ground-Water Standard (µg/L)*	**MW-45R 2/9/1993**	**MW-46 2/9/1993**	**MW-47 2/9/1993**	**MW-48D 2/9/1993**	**MW-49 2/17/1994**	**MW-57 2/17/1994**
1,2,4-Trichlorobenzene	(5)	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		10 UJV	10 UJV	10 UJV	10 U	10 U	10 U
2,4,5-Trichlorophenol		26 U	26 U	26 U	26 U	51 URV	50 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	10 URV	10 U
2,4-Dichlorophenol		10 U	10 U	10 U	10 U	10 URV	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 URV	10 U
2,4-Dinitrophenol		26 UJV	26 UJV	26 UJV	26 U	51 URV	50 U
2,4-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 URV	10 U
2-Methylnaphthalene	--	10 U	10 U	10 U	10 U	**0.4 J**	10 U
2-Methylphenol		10 U	10 U	10 U	10 U	10 URV	10 U
2-Nitroaniline		26 U	26 U	26 U	26 U	51 U	50 U
2-Nitrophenol		10 U	10 U	10 U	10 U	10 URV	10 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U	20 U	20 U
3-Nitroaniline		26 U	26 U	26 U	26 U	51 U	50 U
4,6-Dinitro-2-methylphenol		26 U	26 U	26 U	26 U	51 URV	50 UJV
4-Bromophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		10 U	10 U	10 U	10 U	10 URV	10 U
4-Chloroaniline		10 UJV	10 UJV	10 UJV	10 U	10 UJV	10 UJV
4-Chlorophenyl-phenylether		10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	--	10 U	10 U	10 U	10 U	10 URV	10 U
4-Nitroaniline		26 U	26 U	26 U	26 U	51 U	50 U
4-Nitrophenol		26 U	26 U	26 U	26 U	51 URV	50 U
Acenaphthene	(20)	10 U	10 U	10 U	10 U	**3 J**	10 U
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	(50)	10 U	10 U	10 U	10 U	**0.2 J**	10 U
Benzo(a)anthracene	(0.002)	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	ND	10 U	10 U	10 U	10 U	10 UJV	10 UJV
Benzo(b)fluoranthene	(0.002)	10 U	10 U	10 U	10 U	10 UJV	10 UJV
Benzo(g,h,i)perylene		10 U	10 U	10 U	10 U	10 UJV	10 UJV
Benzo(k)fluoranthene	(0.002)	10 U	10 U	10 U	10 U	10 UJV	10 UJV
Benzoic acid	--	NA	NA	NA	NA	51 U	50 U
Benzyl alcohol		NA	NA	NA	NA	10 U	10 U
bis(2-Chloroethoxy)methane		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether		10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	50	10 UV	10 U	10 UV	10 U	10 UV	10 UV
Butylbenzylphthalate	(50)	10 U	10 U	10 U	10 U	10 U	10 U
Carbazole		NA	NA	NA	NA	NA	NA
Chrysene	(0.002)	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate		10 UV	10 UV	10 U	10 UV	10 UV	10 UV

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Class GA Ground-Water Standard (µg/L)*	**MW-45R** **2/9/1993**	**MW-46** **2/9/1993**	**MW-47** **2/9/1993**	**MW-48D** **2/9/1993**	**MW-49** **2/17/1994**	**MW-57** **2/17/1994**
	Sample Designation: / Sample Date:						
Di-n-octylphthalate	(50)	10 U	10 U	10 U	10 U	10 UJV	10 UJV
Dibenzo(a,h)anthracene		10 U	10 U	10 U	10 U	10 UJV	10 UJV
Dibenzofuran	--	10 U	10 U	10 U	10 U	**0.8 J**	10 U
Diethylphthalate	(50)	10 U	10 U	10 U	10 U	10 U	10 U
Dimethyl Phthalate		10 U	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate		NA	NA	NA	NA	NA	NA
Fluoranthene	(50)	10 U	10 U	10 U	10 U	**0.2 J**	10 U
Fluorene	(50)	10 U	10 U	10 U	10 U	**3 J**	10 U
Hexachlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	(0.002)	10 U	10 U	10 U	10 U	10 UJV	10 UJV
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		10 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	(10)	10 U	10 U	10 U	10 U	**2 J**	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		26 U	26 U	26 U	26 U	51 URV	50 U
Phenanthrene	(50)	10 U	10 U	10 U	10 U	**0.5 J**	10 U
Phenol		10 U	10 U	10 U	10 U	10 URV	10 U
Pyrene	(50)	10 U	10 U	10 U	10 U	**0.4 J**	10 U
Total SVOCs		**0**	**0**	**0**	**0**	**10.5**	**0**

Notes:
R(following Sample Designation) - Replicate sample
R(qualifier) - Data unusable
µg/L - Micrograms per liter
SVOCs - Semivolatile Organic Compounds
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed
-- - No standard available
ND - Not detectable

* NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are on for those compounds for which concentrations were detected.

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Class GA Ground-Water Standard (µg/L)*	MW-57R 2/17/1994	MW-57 5/2/1996	MW-59 2/17/1994	MW-59 5/3/1996	MW-61 2/17/1994	MW-62D 2/17/1994
1,2,4-Trichlorobenzene	(5)	11 U	10 U	10 U	10 U	11 U	11 U
1,2-Dichlorobenzene		11 U	10 U	10 U	10 U	11 U	11 U
1,3-Dichlorobenzene		11 U	10 U	10 U	10 U	11 U	11 U
1,4-Dichlorobenzene		11 U	10 U	10 U	10 U	11 U	11 U
2,2'-oxybis(1-Chloropropane)		11 U	10 U	10 U	10 U	11 U	11 U
2,4,5-Trichlorophenol		53 U	50 U	50 U	50 U	56 U	53 U
2,4,6-Trichlorophenol		11 U	10 U	10 U	10 U	11 U	11 U
2,4-Dichlorophenol		11 U	10 U	10 U	10 U	11 U	11 U
2,4-Dimethylphenol		11 U	10 U	10 U	10 U	11 U	11 U
2,4-Dinitrophenol		53 U	50 U	50 U	50 U	56 U	53 U
2,4-Dinitrotoluene		11 U	10 U	10 U	10 U	11 U	11 U
2,6-Dinitrotoluene		11 U	10 U	10 U	10 U	11 U	11 U
2-Chloronaphthalene		11 U	10 U	10 U	10 U	11 U	11 U
2-Chlorophenol		11 U	10 U	10 U	10 U	11 U	11 U
2-Methylnaphthalene	--	11 U	10 U	10 U	10 U	11 U	11 U
2-Methylphenol		11 U	10 U	10 U	10 U	11 U	11 U
2-Nitroaniline		53 U	50 U	50 U	50 U	56 U	53 U
2-Nitrophenol		11 U	10 U	10 U	10 U	11 U	11 U
3,3'-Dichlorobenzidine		21 U	20 U	20 U	20 U	22 U	22 U
3-Nitroaniline		53 U	50 U	50 U	50 U	56 U	53 U
4,6-Dinitro-2-methylphenol		53 UJV	50 U	50 U	50 U	56 UJV	53 UJV
4-Bromophenyl-phenylether		11 U	10 U	10 U	10 U	11 U	11 U
4-Chloro-3-methylphenol		11 U	10 U	10 U	10 U	11 U	11 U
4-Chloroaniline		11 UJV	10 U	10 U	10 U	11 UJV	11 UJV
4-Chlorophenyl-phenylether		11 U	10 U	10 U	10 U	11 U	11 U
4-Methylphenol	--	11 U	10 U	10 U	10 U	11 U	11 U
4-Nitroaniline		53 U	20 U	50 U	20 U	56 U	53 U
4-Nitrophenol		53 U	50 U	50 U	50 U	56 U	53 U
Acenaphthene	(20)	11 U	10 U	10 U	10 U	11 U	11 U
Acenaphthylene		11 U	10 U	10 U	10 U	11 U	11 U
Anthracene	(50)	11 U	10 U	10 U	**0.2 J**	11 U	11 U
Benzo(a)anthracene	(0.002)	11 U	10 U	10 U	10 U	11 U	11 U
Benzo(a)pyrene	ND	11 U	10 U	10 U	**0.2 J**	11 U	11 U
Benzo(b)fluoranthene	(0.002)	11 U	10 U	10 U	**0.2 J**	11 U	11 U
Benzo(g,h,i)perylene		11 U	10 U	10 U	10 U	11 U	11 U
Benzo(k)fluoranthene	(0.002)	11 U	10 U	10 U	**0.3 J**	11 U	11 U
Benzoic acid	--	53 U	50 U	50 U	50 U	56 U	53 U
Benzyl alcohol		11 U	10 U	10 U	10 U	11 U	11 U
bis(2-Chloroethoxy)methane		11 U	10 U	10 U	10 U	11 U	11 U
bis(2-Chloroethyl)ether		11 U	10 U	10 U	10 U	11 U	11 U
bis(2-Ethylhexyl)phthalate	50	11 UV	0.3 JB	10 UV	0.9 JB	11 UV	11 UV
Butylbenzylphthalate	(50)	11 U	10 U	10 U	**0.2 J**	11 U	11 U
Carbazole		NA	NA	NA	NA	NA	NA
Chrysene	(0.002)	11 U	10 U	10 U	10 U	11 U	11 U
Di-n-butylphthalate		11 UV	2 JB	10 UV	0.7 JB	11 UV	11 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Class GA Ground-Water Standard (µg/L)*	**MW-57R 2/17/1994**	**MW-57 5/2/1996**	**MW-59 2/17/1994**	**MW-59 5/3/1996**	**MW-61 2/17/1994**	**MW-62D 2/17/1994**
Di-n-octylphthalate	(50)	11 U	10 U	10 U	**0.3 J**	11 U	11 U
Dibenzo(a,h)anthracene		11 U	10 U	10 U	10 U	11 U	11 U
Dibenzofuran	--	11 U	10 U	10 U	10 U	11 U	11 U
Diethylphthalate	(50)	11 U	0.4 JB	10 U	**0.2 J**	11 U	11 U
Dimethyl Phthalate		11 U	NA	10 U	NA	11 U	11 U
Dimethylphthalate		NA	10 U	NA	10 U	NA	NA
Fluoranthene	(50)	11 U	10 U	10 U	**0.2 J**	11 U	11 U
Fluorene	(50)	11 U	10 U	10 U	10 U	11 U	11 U
Hexachlorobenzene		11 U	10 U	10 U	10 U	11 U	11 U
Hexachlorobutadiene		11 U	10 U	10 U	10 U	11 U	11 U
Hexachlorocyclopentadiene		11 U	10 U	10 U	10 U	11 U	11 U
Hexachloroethane		11 U	10 U	10 U	10 U	11 U	11 U
Indeno(1,2,3-cd)pyrene	(0.002)	11 U	10 U	10 U	**0.2 J**	11 U	11 U
Isophorone		11 U	10 U	10 U	10 U	11 U	11 U
N-Nitroso-di-n-propylamine		11 U	10 U	10 U	10 U	11 U	11 U
N-Nitrosodiphenylamine (1)		11 U	10 U	10 U	10 U	11 U	11 U
Naphthalene	(10)	11 U	10 U	10 U	10 U	11 U	**0.4 J**
Nitrobenzene		11 U	10 U	10 U	10 U	11 U	11 U
Pentachlorophenol		53 U	50 U	50 U	50 U	56 U	53 U
Phenanthrene	(50)	11 U	10 U	10 U	**0.1 J**	11 U	11 U
Phenol		11 U	10 U	10 U	10 U	11 U	11 U
Pyrene	(50)	11 U	10 U	10 U	**0.2 J**	11 U	11 U
Total SVOCs		**0**	**0**	**0**	**2.3**	**0**	**0.4**

Notes:
R(following Sample Designation) - Replicate sample
R(qualifier) - Data unusable
µg/L - Micrograms per liter
SVOCs - Semivolatile Organic Compounds
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed
-- - No standard available
ND - Not detectable

* NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are on for those compounds for which concentrations were detected.

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Class GA Ground-Water Standard (µg/L)*	MW-63 2/17/1994	MW-63 5/2/1996	MW-64 5/3/1996	MW-65 5/3/1996	MW-65R 5/3/1996	MW-67 5/3/1996
1,2,4-Trichlorobenzene	(5)	11 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene		11 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene		11 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene		11 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)		11 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol		56 URV	50 U	50 U	50 U	50 U	50 U
2,4,6-Trichlorophenol		11 URV	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol		11 URV	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		11 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		56 URV	50 U	50 U	50 U	50 U	50 U
2,4-Dinitrotoluene		11 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene		11 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene		11 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		11 URV	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	--	11 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol		11 URV	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline		56 U	50 U	50 U	50 U	50 U	50 U
2-Nitrophenol		11 URV	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine		22 U	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline		56 U	50 U	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol		56 UJV	50 U	50 U	50 U	50 U	50 U
4-Bromophenyl-phenylether		11 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol		11 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline		11 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenylether		11 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	--	11 URV	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline		56 U	20 U	20 U	20 U	20 U	20 U
4-Nitrophenol		56 URV	50 U	50 U	50 U	50 U	50 U
Acenaphthene	(20)	11 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene		11 U	10 U	10 U	10 U	10 U	10 U
Anthracene	(50)	11 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)anthracene	(0.002)	11 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	ND	11 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	(0.002)	11 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene		11 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	(0.002)	11 U	10 U	10 U	10 U	10 U	10 U
Benzoic acid	--	56 U	50 U	50 U	50 U	50 U	50 U
Benzyl alcohol		11 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane		11 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether		11 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	50	11 UV	0.6 JB	1 JB	0.4 JB	2 JB	0.4 JB
Butylbenzylphthalate	(50)	11 U	10 U	10 U	10 U	**0.2 J**	10 U
Carbazole		NA	NA	NA	NA	NA	NA
Chrysene	(0.002)	11 U	10 U	10 U	10 U	10 U	10 U
Di-n-butylphthalate		11 UV	0.5 JB	0.6 JB	0.6 JB	0.8 JB	1 JB

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation: Sample Date:** Class GA Ground-Water Standard (µg/L)*	**MW-63 2/17/1994**	**MW-63 5/2/1996**	**MW-64 5/3/1996**	**MW-65 5/3/1996**	**MW-65R 5/3/1996**	**MW-67 5/3/1996**
Di-n-octylphthalate	(50)	11 UV	**0.3 J**	**0.2 J**	10 U	**0.3 J**	**0.1 J**
Dibenzo(a,h)anthracene		11 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	--	11 U	**0.2 J**	10 U	10 U	10 U	10 U
Diethylphthalate	(50)	**0.5 J**	10 U	10 U	0.2 JB	0.3 JB	0.3 JB
Dimethyl Phthalate		11 U	NA	NA	NA	NA	NA
Dimethylphthalate		NA	10 U	10 U	10 U	10 U	10 U
Fluoranthene	(50)	11 U	10 U	10 U	10 U	10 U	10 U
Fluorene	(50)	11 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene		11 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene		11 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene		11 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane		11 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	(0.002)	11 U	10 U	10 U	10 U	10 U	10 U
Isophorone		11 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine		11 U	10 U	10 U	10 U	10 U	10 U
N-Nitrosodiphenylamine (1)		11 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	(10)	**0.1 J**	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		11 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol		56 URV	50 U	50 U	50 U	50 U	50 U
Phenanthrene	(50)	11 U	10 U	10 U	10 U	10 U	10 U
Phenol		11 URV	10 U	10 U	10 U	10 U	10 U
Pyrene	(50)	11 U	10 U	10 U	10 U	10 U	10 U
	Total SVOCs	**0.6**	**0.5**	**0.2**	**0**	**0.5**	**0.1**

Notes:
R(following Sample Designation) - Replicate sample
R(qualifier) - Data unusable
µg/L - Micrograms per liter
SVOCs - Semivolatile Organic Compounds
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed
-- - No standard available
ND - Not detectable

* NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are on for those compounds for which concentrations were detected.

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Class GA Ground-Water Standard (µg/L)*	MW-68 5/3/1996	MW-68R 5/3/1996	MW-69D 5/9/1996	TW-3 12/6/1993
1,2,4-Trichlorobenzene	(5)	10 U	10 U	10 U	11 U
1,2-Dichlorobenzene		10 U	10 U	10 U	11 U
1,3-Dichlorobenzene		10 U	10 U	10 U	11 U
1,4-Dichlorobenzene		10 U	10 U	10 U	11 U
2,2'-oxybis(1-Chloropropane)		10 U	10 U	10 U	11 U
2,4,5-Trichlorophenol		50 U	50 U	50 U	56 U
2,4,6-Trichlorophenol		10 U	10 U	10 U	11 U
2,4-Dichlorophenol		10 U	10 U	10 U	11 U
2,4-Dimethylphenol		10 U	10 U	10 U	11 U
2,4-Dinitrophenol		50 U	50 U	50 U	56 U
2,4-Dinitrotoluene		10 U	10 U	10 U	11 U
2,6-Dinitrotoluene		10 U	10 U	10 U	11 U
2-Chloronaphthalene		10 U	10 U	10 U	11 U
2-Chlorophenol		10 U	10 U	10 U	11 U
2-Methylnaphthalene	--	10 U	10 U	**2 J**	11 U
2-Methylphenol		10 U	10 U	10 U	11 U
2-Nitroaniline		50 U	50 U	50 U	56 U
2-Nitrophenol		10 U	10 U	10 U	11 U
3,3'-Dichlorobenzidine		20 U	20 U	20 U	20 U
3-Nitroaniline		50 U	50 U	50 U	56 U
4,6-Dinitro-2-methylphenol		50 U	50 U	50 U	56 U
4-Bromophenyl-phenylether		10 U	10 U	10 U	11 U
4-Chloro-3-methylphenol		10 U	10 U	10 U	11 U
4-Chloroaniline		10 U	10 U	10 U	11 U
4-Chlorophenyl-phenylether		10 U	10 U	10 U	11 U
4-Methylphenol	--	10 U	10 U	10 U	11 U
4-Nitroaniline		20 U	20 U	20 U	56 U
4-Nitrophenol		50 U	50 U	50 U	56 U
Acenaphthene	(20)	10 U	10 U	10 U	11 U
Acenaphthylene		10 U	10 U	10 U	11 U
Anthracene	(50)	10 U	10 U	10 U	11 U
Benzo(a)anthracene	(0.002)	10 U	**0.1 J**	10 U	11 U
Benzo(a)pyrene	ND	10 U	10 U	10 U	11 U
Benzo(b)fluoranthene	(0.002)	**0.1 J**	**0.1 J**	10 U	11 U
Benzo(g,h,i)perylene		10 U	10 U	10 U	11 U
Benzo(k)fluoranthene	(0.002)	**0.1 J**	**0.1 J**	10 U	11 U
Benzoic acid	--	50 U	50 U	50 U	**10 J**
Benzyl alcohol		10 U	10 U	10 U	11 U
bis(2-Chloroethoxy)methane		10 U	10 U	10 U	11 U
bis(2-Chloroethyl)ether		10 U	10 U	10 U	11 U
bis(2-Ethylhexyl)phthalate	50	0.6 JB	0.4 JB	**1 J**	10 UV
Butylbenzylphthalate	(50)	10 U	10 U	10 U	11 U
Carbazole		NA	NA	NA	NA
Chrysene	(0.002)	10 U	**0.1 J**	10 U	11 U
Di-n-butylphthalate		0.7 JB	0.6 JB	0.9 JB	11 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Pre-1997 Groundwater Samples
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Class GA Ground-Water Standard (µg/L)*	**MW-68** **5/3/1996**	**MW-68R** **5/3/1996**	**MW-69D** **5/9/1996**	**TW-3** **12/6/1993**
Di-n-octylphthalate	(50)	**1 J**	10 U	10 U	**0.8 J**
Dibenzo(a,h)anthracene		10 U	10 U	10 U	11 U
Dibenzofuran	--	10 U	10 U	10 U	11 U
Diethylphthalate	(50)	10 U	1 JB	10 U	11 U
Dimethyl Phthalate		NA	NA	NA	11 U
Dimethylphthalate		10 U	10 U	10 U	NA
Fluoranthene	(50)	**0.3 J**	**0.2 J**	10 U	11 U
Fluorene	(50)	**3 J**	**2 J**	10 U	11 U
Hexachlorobenzene		10 U	10 U	10 U	11 U
Hexachlorobutadiene		10 U	10 U	10 U	11 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	11 U
Hexachloroethane		10 U	10 U	10 U	11 U
Indeno(1,2,3-cd)pyrene	(0.002)	10 U	10 U	10 U	11 U
Isophorone		10 U	10 U	10 U	11 U
N-Nitroso-di-n-propylamine		10 U	10 U	10 U	11 U
N-Nitrosodiphenylamine (1)		10 U	10 U	10 U	11 U
Naphthalene	(10)	10 U	10 U	**0.4 J**	**1 J**
Nitrobenzene		10 U	10 U	10 U	11 U
Pentachlorophenol		50 U	50 U	50 U	56 U
Phenanthrene	(50)	10 U	10 U	10 U	11 U
Phenol		10 U	10 U	10 U	11 U
Pyrene	(50)	**0.2 J**	**0.1 J**	10 U	**0.7 J**
	Total SVOCs	**4.7**	**2.7**	**3.4**	**12.5**

Notes:
R(following Sample Designation) - Replicate sample
R(qualifier) - Data unusable
µg/L - Micrograms per liter
SVOCs - Semivolatile Organic Compounds
U - Compound was analyzed for but not detected
J - Estimated value
B - Compound was detected in blank sample
V - Data was qualified by validator
NA - Not analyzed
-- - No standard available
ND - Not detectable

* NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are on for those compounds for which concentrations were detected.

Table A-3. Summary of Polychlorinated Biphenyl Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Sample Designation:		MW-19	MW-23D	MW-23D	MW-25A	MW-27	MW-35	MW-35	MW-37	MW-38D
Sample Date:		1/4/1991	1/7/1991	2/9/1993	1/22/1993	2/8/1993	2/9/1993	2/17/1994	2/17/1994	2/17/1994
Parameter (Concentrations in µg/L)	Class GA Ground-Water Standard (µg/L)**									
Aroclor-1016		0.05 U	0.05 U	0.066 U	0.066 U	0.067 U	0.066 U	0.065 UJV	0.065 U	0.065 U
Aroclor-1221		0.05 U	0.05 U	0.066 UJV	0.066 U	0.067 U	0.066 U	0.065 UJV	0.065 U	0.065 U
Aroclor-1232		0.05 U	0.05 U	0.066 U	0.066 U	0.067 U	0.066 U	0.065 UJV	0.065 U	0.065 U
Aroclor-1242		0.05 U	0.05 U	0.066 U	0.066 U	0.067 U	0.066 U	0.065 UJV	0.065 U	0.065 U
Aroclor-1248		0.05 U	0.05 U	0.066 U	0.066 U	0.067 U	0.066 U	0.065 UJV	0.065 U	0.065 U
Aroclor-1254		1 U	1 U	0.066 U	0.066 U	0.067 U	**0.089**	0.065 UJV	0.065 U	0.065 U
Aroclor-1260		1 U	1 U	0.066 U	**0.067**	0.067 U	0.066 U	0.065 UJV	0.065 U	0.065 UJV
Total PCBs	0.1	0	0	0	**0.067**	0	**0.089**	0	0	0

Notes:

R(following Sample Designation) - Replicate sampl
µg/L - Micrograms per liter
U - Compound was analyzed for but not detected
J - Estimated value
V - Data was qualified by validator
* A petroleum sheen was present

** - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-3. Summary of Polychlorinated Biphenyl Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Sample Designation:		MW-39D	MW-40D	MW-43	MW-44D	MW-45	MW-45R	MW-46	MW-46	MW-47	MW-47
Sample Date:		**2/17/1994**	**2/17/1994**	**2/9/1993**	**2/9/1993**	**2/9/1993**	**2/9/1993**	**2/9/1993**	**2/17/1994**	**1/22/1993**	**2/9/1993**
Parameter (Concentrations in µg/L)	Class GA Ground-Water Standard (µg/L)**										
Aroclor-1016		0.065 U	0.065 U	0.066 U	0.066 U	0.067 U	0.065 U	0.065 U	0.065 U	0.067 U	0.066 U
Aroclor-1221		0.065 U	0.065 U	0.066 U	0.066 U	0.067 U	0.065 U	0.065 U	0.065 U	0.067 U	0.066 U
Aroclor-1232		0.065 U	0.065 U	0.066 U	0.066 U	0.067 U	0.065 U	0.065 U	0.065 U	0.067 U	0.066 U
Aroclor-1242		0.065 U	0.065 U	0.066 U	0.066 U	0.067 U	0.065 U	0.065 U	0.065 U	0.067 U	0.066 U
Aroclor-1248		0.065 U	0.065 U	0.066 U	0.066 U	0.067 U	0.065 U	0.065 U	0.065 U	0.067 U	0.066 U
Aroclor-1254		0.065 U	0.065 UJV	0.066 U	0.066 U	0.067 U	0.065 U	**0.59**	0.065 U	0.067 U	0.066 U
Aroclor-1260		0.065 U	0.065 U	0.066 U	0.066 U	0.067 U	0.065 U	**1.7 JV**	0.065 U	0.067 U	0.066 U
Total PCBs	0.1	0	0	0	0	0	0	**2.29 J**	0	0	0

Notes:
R(following Sample Designation) - Replicate sampl
µg/L - Micrograms per liter
U - Compound was analyzed for but not detected
J - Estimated value
V - Data was qualified by validator
* A petroleum sheen was present

** - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-3. Summary of Polychlorinated Biphenyl Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Sample Designation:		MW-48D	MW-49	MW-57	MW-57R	MW-57	MW-59	MW-59	MW-61	MW-62D	MW-63
Sample Date:		2/9/1993	2/17/1994	2/17/1994	2/17/1994	5/2/1996	2/17/1994	5/3/1996	2/17/1994	2/17/1994	2/17/1994
Parameter (Concentrations in µg/L)	Class GA Ground-Water Standard (µg/L)**										
Aroclor-1016		0.066 U	0.065 U	0.065 U	0.065 U	1 U	0.065 U	1.1 U	0.065 U	0.065 U	0.065 U
Aroclor-1221		0.066 U	0.065 U	0.065 U	0.065 U	2 U	0.065 U	2.2 U	0.065 U	0.065 U	0.065 U
Aroclor-1232		0.066 U	0.065 U	0.065 U	0.065 U	1 U	0.065 U	1.1 U	0.065 U	0.065 U	0.065 U
Aroclor-1242		0.066 U	0.065 U	0.065 U	0.065 U	1 U	0.065 U	1.1 U	0.065 U	0.065 U	0.065 U
Aroclor-1248		0.066 U	0.065 U	0.065 U	0.065 U	1 U	0.065 U	1.1 U	0.065 U	0.065 U	0.065 U
Aroclor-1254		0.066 U	0.065 U	0.065 U	0.065 U	1 U	0.065 U	1.1 U	0.065 U	0.065 U	0.065 U
Aroclor-1260		0.066 U	0.065 U	0.065 U	0.065 U	1 U	0.065 U	1.1 U	0.065 U	0.065 U	0.065 U
Total PCBs	0.1	0	0	0	0	0	0	0	0	0	0

Notes:
R(following Sample Designation) - Replicate sampl
µg/L - Micrograms per liter
U - Compound was analyzed for but not detected
J - Estimated value
V - Data was qualified by validator
* A petroleum sheen was present

** - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-3. Summary of Polychlorinated Biphenyl Compound Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

	Sample Designation: **Sample Date:**	**MW-63** **5/2/1996**	**MW-64** **5/3/1996**	**MW-65** **5/3/1996**	**MW-67** **5/3/1996**	**MW-68** **5/3/1996**	**MW-69D** **5/9/1996**	**TW-3** **12/6/1993**
Parameter (Concentrations in µg/L)	Class GA Ground-Water Standard (µg/L)**							
Aroclor-1016		1 U	1.1 U	1.1 U	1 U	1 U	1 U	0.072 U
Aroclor-1221		2 U	2.2 U	2.2 U	2.1 U	2.1 U	2.1 U	0.072 U
Aroclor-1232		1 U	1.1 U	1.1 U	1 U	1 U	1 U	0.072 U
Aroclor-1242		1 U	1.1 U	1.1 U	1 U	1 U	1 U	0.072 U
Aroclor-1248		1 U	1.1 U	1.1 U	1 U	1 U	1 U	0.072 U
Aroclor-1254		1 U	1.1 U	1.1 U	1 U	1 U	1 U	**2.4**
Aroclor-1260		1 U	1.1 U	1.1 U	1 U	1 U	1 U	**1.9**
Total PCBs	0.1	0	0	0	0	0	0	**4.3**

Notes:
R(following Sample Designation) - Replicate sampl
µg/L - Micrograms per liter
U - Compound was analyzed for but not detected
J - Estimated value
V - Data was qualified by validator
* A petroleum sheen was present

** - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-4. Summary of Metal Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	Class GA Ground-Water Standard (µg/L)**	MW-47 2/9/1993 (BACKGROUND WELLS)	MW-48D 2/9/1993 (BACKGROUND WELLS)	MW-61 2/17/1994 (BACKGROUND WELLS)	MW-62D 2/17/1994 (BACKGROUND WELLS)	MW-19 1/5/1991	MW-23D 1/8/1991	MW-25 1/15/1993
Aluminum	28,400 JV	NS	**7660**	**11900**	**174 B**	**264**	**1710 N*V**	**887 N*V**	**18000**
Antimony	46.9 B	(3)	21 U	21 U	29 U	**46.9 B**	7.6 U	7.6 U	21 U
Arsenic	3.6 B	25	**2.1 B**	**3.6 B**	1 U	1 U	3 U	3 U	1 U
Barium	275	1,000	**87.6 B**	**199 B**	**64.1 B**	**102 B**	**89 B**	**532 B**	**191 B**
Beryllium	1.8 B	(3)	1 U	1 U	1 U	1 U	1.6 U	1.6 U	**1.1 B**
Cadmium	2.2 B	10	**2.2 B**	2 U	2 U	2 U	5 U	5 U	2 U
Calcium	132,000	NS	**83800**	**95300**	**79800**	**108000**	**49300**	**70300**	**28100**
Chromium	70.9 JV	50	**17.4**	**39.1**	8 U	8 U	**6.7 BWV**	**9 BWV**	**42**
Cobalt	23.3 B	NS	**5.8 B**	**11.3 B**	3 U	3 U	8.7 U	8.7 U	**26.1 B**
Copper	65.0 JV	200	**38.8**	**62**	**8.1 B**	**11.8 B**	**17 B**	**31 B**	**98.1**
Iron	46,500 JV	300	**9890**	**28500**	**377**	**679**	**2710**	**14000**	**50000 JV**
Lead	21.9 JV	25	**10.8**	**19**	**1 J**	1 UJV	**50 N*V**	**31 N*V**	**37.8**
Magnesium	47,600	(35,000)	**28000**	**42200**	**21100**	**42900**	**6290**	**15900**	**13400**
Manganese	2,650	300	**135**	**721**	**96.8**	**130**	**2340 NV**	**2940 NV**	**2550**
Mercury	0.33	2	0.2 U	0.2 U	0.2 U	0.2 U	**0.5**	**0.7**	0.2 U
Nickel	48.1	NS	**21.1 B**	**24.5 B**	11 U	11 U	22 U	22 U	**56.3**
Potassium	11,900	NS	**7160**	**11900**	**2220 B**	**2860 B**	**5820**	**5460**	**4870 B**
Selenium	10.1	10	2 U	2 U	**4.7 B**	**2.7 BJV**	3.3 UN*V	3.3 UN*V	1 U
Silver	3.0 U	50	3 U	3 U	3 U	3 U	2.8 U	2.5 U	3 U
Sodium	216,000	20,000	**61900**	**19300**	**26800**	**130000**	**40700**	**209000**	**16700**
Thallium	3.0 U	(4)	2 U	2 U	1 U	1 U	3.5 UWNV	3.5 UWNV	2 U
Vanadium	72.9	NS	**47 B**	**53.5**	7 U	7 U	9.2 U	9.2 U	**61.6**
Zinc	160 JV	300	**53**	**67.4**	**13.7 B**	**14.6 B**	**32**	**28**	234 UV

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
U - Analyte was analyzed for but not detected
B - Analyte concentration was between method detection limit and practical quantitation limit
J - Estimated value
V - Data was qualified by validator
NS - No standard or guidance value available

* - Background concentrations for metals were determined from analytical results for upgradient boundary Monitoring Wells TP-9, TP-10, MW-30, MW-34, MW-47, MW-48D, MW-61 and MW-62D.

** - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-4. Summary of Metal Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	Class GA Ground-Water Standard (µg/L)**	**MW-29** **2/9/1993**	**MW-35** **2/9/1993**	**MW-37** **2/17/1994**	**MW-43** **2/9/1993**	**MW-44D** **2/9/1993**	**MW-45** **2/9/1993**	**MW-45R** **2/9/1993**	**MW-46** **2/9/1993**	**MW-49** **2/17/1994**
		Sample Designation: / Sample Date:									
Aluminum	28,400 JV	NS	**5800**	**9210**	**297**	**4420**	**3260**	**1030**	**872**	**80000**	**86.2 B**
Antimony	46.9 B	(3)	21 U	21 U	29 U	21 U	21 U	21 U	21 U	21 U	29 U
Arsenic	3.6 B	25	**5.4 B**	**16.5**	**3.4 BJ**	**1.2 B**	**2 B**	1 U	**1.2 B**	**10.9**	**7.4 B**
Barium	275	1,000	**168 B**	**696**	**59.8 B**	**142 B**	**207**	**67.5 B**	**66 B**	**1030**	**330**
Beryllium	1.8 B	(3)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**3.7 B**	1 U
Cadmium	2.2 B	10	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**4.4 B**	2 U
Calcium	132,000	NS	**63600**	**65300**	**9950**	**29800**	**148000**	**47600**	**47700**	**57000**	**24400**
Chromium	70.9 JV	50	**4.9 B**	**27.8**	8 U	3 U	**9.3 B**	3 U	3 U	**146**	8 U
Cobalt	23.3 B	NS	**4.3 B**	**6.2 B**	3 U	**5.6 B**	**3.4 B**	3 U	3 U	**111**	**15.5 B**
Copper	65.0 JV	200	**40.3**	**114**	**6.5 B**	**46.2**	**43**	**31.2**	**19.1 B**	**421**	**13.8 B**
Iron	46,500 JV	300	**32600**	**45200**	**749**	**8410**	**8930**	**1760**	**1570**	**152000**	**118000**
Lead	21.9 JV	25	**43.7**	**207**	**1.3 BJ**	**5.4**	**5.7**	**2.2 B**	**2.2 B**	**165**	**1 BJ**
Magnesium	47,600	(35,000)	**21700**	**15100**	**1540 B**	**15000**	**49800**	**12500**	**12400**	**47200**	**5340**
Manganese	2,650	300	**2380**	**1280**	**803**	**3470**	**1750**	**142**	**126**	**9410**	**3030**
Mercury	0.33	2	0.2 U	**0.49**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	**0.4**	0.2 U
Nickel	48.1	NS	21 U	**22.6 B**	11 U	21 U	21 U	21 U	21 U	**186**	11 U
Potassium	11,900	NS	**7030**	**6180**	**1220 B**	**1590 B**	**7470**	**2950 B**	**3040 B**	**19800**	**2630 B**
Selenium	10.1	10	2 U	2 U	**1.2 B**	2 U	2 U	2 U	2 U	2 U	**1 JV**
Silver	3.0 U	50	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	216,000	20,000	**132000**	**131000**	**176000**	**213000**	**91900**	**14700**	**14700**	**41400**	**13700**
Thallium	3.0 U	(4)	2 U	2 U	**1**	2 U	2 U	2 U	2 U	2 U	1 U
Vanadium	72.9	NS	**24.8 B**	**51.4**	**9.4 B**	6 U	**9.2 B**	6 U	6 U	**205**	7 U
Zinc	160 JV	300	**35.8**	**153**	**19.1 B**	**55.1**	**36.3**	**27.8**	**20.3**	**696**	**76.5**

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
U - Analyte was analyzed for but not detected
B - Analyte concentration was between method detection limit and practical quantitation limit
J - Estimated value
V - Data was qualified by validator
NS - No standard or guidance value available

* - Background concentrations for metals were determined from analytical results for upgradient boundary Monitoring Wells TP-9, TP-10, MW-30, MW-34, MW-47, MW-48D, MW-61 and MW-62D.

** - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-4. Summary of Metal Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	Class GA Ground-Water Standard (µg/L)**	MW-57 2/17/1994	MW-57R 2/17/1994	MW-57 5/2/1996	MW-59 2/17/1994	MW-59 5/3/1996	MW-63 2/17/1994	MW-63 5/2/1996	MW-64 5/3/1996	MW-65 5/3/1996
Aluminum	28,400 JV	NS	**470**	**371**	**1770**	**614**	**752**	**823**	**402**	**5940**	**290**
Antimony	46.9 B	(3)	29 U	**45.5 B**	6 U	29 U	6 U	29 U	6 U	6 U	6 U
Arsenic	3.6 B	25	**1 B**	1 U	4 U	**3 B**	4 U	1 U	4 U	4 U	4 U
Barium	275	1,000	**47 B**	**34.7 B**	**66.9 B**	**18.1 B**	**30.2 B**	**176 B**	**126 B**	**119 B**	**74.6 B**
Beryllium	1.8 B	(3)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	2.2 B	10	2 U	2 U	1 U	2 U	1 U	2 U	1 U	1 U	1 U
Calcium	132,000	NS	**27300**	**27500**	**51500**	**26800**	**40200**	**128000**	**66000**	**21300**	**107000**
Chromium	70.9 JV	50	8 U	8 U	**3.6 B**	8 U	**2.5 B**	8 U	**1.5 B**	**16.8**	**1.3 B**
Cobalt	23.3 B	NS	3 U	**3.5 B**	**3 B**	3 U	**1.7 B**	**3.4 B**	**1.4 B**	**10.8 B**	**2.2 B**
Copper	65.0 JV	200	**31.2**	**28.7**	**17.9 B**	**9.6 B**	**6.8 B**	**10.5 B**	**8.3 B**	**29.2**	**3.9 B**
Iron	46,500 JV	300	**874**	**689**	**2980**	**966**	**1630**	**1900**	**1520**	**21500**	**803**
Lead	21.9 JV	25	**5.7**	**4.9**	**8.6**	**3.2 JV**	**4**	**1.4 BJ**	2 U	**9.6**	2 U
Magnesium	47,600	(35,000)	**5760**	**5760**	**12000**	**1750 B**	**3160**	**30900**	**20600**	**7420**	**39500**
Manganese	2,650	300	**1700**	**1700**	**522**	**85.2**	**1200**	**2120**	**1370**	**1500**	**1680**
Mercury	0.33	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	48.1	NS	11 U	11 U	**7.3 B**	11 U	**4 B**	11 U	**8.1 B**	**22 B**	**7.7 B**
Potassium	11,900	NS	**2890 B**	**2980 B**	**5440**	**4370 B**	**3900**	**5140**	**3560**	**2710**	**8030**
Selenium	10.1	10	**1.1 BJ**	**1.9 B**	**5.4**	**3 BJ**	4 U	**1.4 BJ**	**5.8**	**4.5 B**	4 U
Silver	3.0 U	50	3 U	3 U	1 U	3 U	1 U	3 U	1 U	1 U	1 U
Sodium	216,000	20,000	**71500**	**71400**	**76700**	**54300**	**21200**	**77200**	**38300**	**17500**	**89100**
Thallium	3.0 U	(4)	1 U	1 U	6 U	1 U	6 U	1 U	6 U	6 U	6 U
Vanadium	72.9	NS	7 U	7 U	**5 B**	**10.9 B**	**3 B**	7 U	**2.6 B**	**19 B**	1 U
Zinc	160 JV	300	**41.5**	**39.8**	**47.6**	**25.2**	**37.3**	**25.9**	**13.6 B**	**534**	**12.5 B**

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
U - Analyte was analyzed for but not detected
B - Analyte concentration was between method detection limit and practical quantitation limit
J - Estimated value
V - Data was qualified by validator
NS - No standard or guidance value available

* - Background concentrations for metals were determined from analytical results for upgradient boundary Monitoring Wells TP-9, TP-10, MW-30, MW-34, MW-47, MW-48D, MW-61 and MW-62D.

** - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

Table A-4. Summary of Metal Concentrations in Pre-1997 Groundwater Samples, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Background Concentrations (µg/L)*	Class GA Ground-Water Standard (µg/L)**	MW-65R 5/3/1996	MW-66 5/3/1996	MW-67 5/3/1996	MW-68 5/3/1996	MW-69D 5/9/1996
Aluminum	28,400 JV	NS	**500**	16300	**142 B**	**1290**	**445**
Antimony	46.9 B	(3)	6 U	6 U	6 U	6 U	6 U
Arsenic	3.6 B	25	4 U	5.2 B	4 U	4 U	**4.1 B**
Barium	275	1,000	**77.9 B**	282	**22.9 B**	**95.2 B**	**76.9 B**
Beryllium	1.8 B	(3)	1 U	1 U	1 U	1 U	1 U
Cadmium	2.2 B	10	1 U	1 U	1 U	1 U	1 U
Calcium	132,000	NS	**109000**	95200	**51000**	**19600**	**78800**
Chromium	70.9 JV	50	**1.7 B**	31	**1.1 B**	**4.3 B**	**1.7 B**
Cobalt	23.3 B	NS	**2.5 B**	10.9 B	1 U	**3.9 B**	**1.2 B**
Copper	65.0 JV	200	**5.6 B**	42.1	2 U	**11.1 B**	**2.8 B**
Iron	46,500 JV	300	**1540**	23100	**219**	**13000**	**999**
Lead	21.9 JV	25	2 U	17.5	2 U	**3.6**	2 U
Magnesium	47,600	(35,000)	**40300**	**40700**	**19900**	**6880**	**27200**
Manganese	2,650	300	**1710**	**1570**	**252**	**4750**	**3180**
Mercury	0.33	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	48.1	NS	**5 B**	19.5 B	**3.3 B**	**8.2 B**	**3.8 B**
Potassium	11,900	NS	**8230**	14900	**2350**	**2850**	**3410**
Selenium	10.1	10	**4.1 B**	**11.4**	4 U	**4.6 B**	4 U
Silver	3.0 U	50	1 U	1 U	1 U	1 U	1 U
Sodium	216,000	20,000	**92500**	**95400**	**37500**	**28300**	**71300**
Thallium	3.0 U	(4)	6 U	6 U	6 U	6 U	6 U
Vanadium	72.9	NS	1.8 B	43.7 B	1 U	**5.1 B**	1 U
Zinc	160 JV	300	22.6	42.9	**14.8 B**	**42.6**	**9.2 B**

Notes:
R(following Sample Designation) - Replicate sample
µg/L - Micrograms per liter
U - Analyte was analyzed for but not detected
B - Analyte concentration was between method detection limit and practical quantitation limit
J - Estimated value
V - Data was qualified by validator
NS - No standard or guidance value available

* - Background concentrations for metals were determined from analytical results for upgradient boundary Monitoring Wells TP-9, TP-10, MW-30, MW-34, MW-47, MW-48D, MW-61 and MW-62D.

** - NYS Standards and Guidance Values taken from October, 1993 New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1.), Ambient Water Quality Standards and Guidance Values. Guidance Values (in parentheses) and Standards are only for those compounds for which concentrations were detected.

APPENDIX B

Historic Water Level Elevations and
Separate-Phase Hydrocarbon Measurements
Preceding OU-6 RI

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

July 9, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.63	--	13.45
MW-16	20.92	5.12	8.60	3.48	15.36 *
MW-17	19.51	5.16	7.21	2.05	14.09 *
MW-19	20.13	--	7.62	--	12.51
MW-20	19.09	4.95	5.50	0.55	14.07 *
MW-21	17.54	--	3.14	--	14.40
MW-22	16.51	1.87	2.40	0.53	14.57 *
MW-23D	19.19	--	5.19	--	14.00
RW-2	19.69	5.40	5.61	0.21	14.26 *

July 29, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.31	--	13.77
MW-16	20.92	4.45	8.90	4.45	15.91 *
MW-17	19.51	4.43	7.58	3.15	14.68 *
MW-19	20.13	--	7.33	--	12.80
MW-20	19.09	4.44	4.83	0.39	14.60 *
MW-21	17.54	--	2.39	--	15.15
MW-22	16.51	1.53	2.26	0.73	14.89 *
MW-23D	19.19	--	4.87	--	14.32

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

August 5, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.55	--	13.53
MW-16	20.92	4.96	9.10	4.14	15.44 *
MW-17	19.51	7.95	9.87	1.92	11.32 *
MW-19	20.13	--	7.54	--	12.59
MW-20	19.09	4.69	5.26	0.57	14.33 *
MW-21	17.54	--	3.05	--	14.49
MW-22	16.51	1.77	2.43	0.66	14.66 *
MW-23D	19.19	--	5.09	--	14.10

August 12, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.11	--	13.97
MW-16	20.92	4.32	9.93	5.61	15.89 *
MW-17	19.51	4.33	7.69	3.36	14.76 *
MW-19	20.13	--	7.10	--	13.03
MW-20	19.09	4.28	4.67	0.39	14.76 *
MW-21	17.54	--	2.29	--	15.25
MW-22	16.51	1.32	2.43	1.11	15.05 *
MW-23D	19.19	--	4.73	--	14.46

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

August 21, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	1.65	--	14.43
MW-16	20.92	3.85	9.08	5.23	16.41 *
MW-17	19.51	3.83	7.97	4.14	15.16 *
MW-19	20.13	--	6.72	--	13.41
MW-20	19.09	4.10	4.39	0.29	14.95 *
MW-21	17.54	--	1.96	--	15.58
MW-22	16.51	0.91	2.33	1.42	15.42 *
MW-23D	19.19	--	4.35	--	14.84

September 6, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.51	--	13.57
MW-16	20.92	4.94	8.45	3.51	15.54 *
MW-17	19.51	4.83	7.36	2.53	14.36 *
MW-19	20.13	--	7.50	--	12.63
MW-20	19.09	4.68	5.22	0.54	14.34 *
MW-21	17.54	--	3.01	--	14.53
MW-22	16.51	1.69	2.19	0.50	14.76 *
MW-23D	19.19	--	5.07	--	14.12

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

October 4, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.53	--	13.55
MW-16	20.92	4.82	8.81	3.99	15.60 *
MW-17	19.51	4.73	7.52	2.79	14.43 *
MW-19	20.13	--	7.54	--	12.59
MW-20	19.09	4.67	5.21	0.54	14.35 *
MW-21	17.54	--	2.97	--	14.57
MW-22	16.51	1.65	2.16	0.51	14.80 *
MW-23D	19.19	--	4.99	--	14.20

October 23, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.63	--	13.45
MW-16	20.92	5.08	8.73	3.65	15.38 *
MW-17	19.51	4.98	7.43	2.45	14.22 *
MW-19	20.13	--	7.57	--	12.56
MW-20	19.09	4.74	5.31	0.57	14.28 *
MW-21	17.54	--	3.04	--	14.50
MW-22	16.51	2.15	2.54	0.39	14.31 *
MW-23D	19.19	--	5.18	--	14.01
MW-35	18.68	--	6.00	--	12.68
MW-36	20.01	6.81	8.08	1.27	13.04 *

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

November 26, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.56	--	13.52
MW-16	20.92	5.03	8.85	3.82	15.41 *
MW-17	19.51	4.98	7.32	2.34	14.24 *
MW-19	20.13	--	7.54	--	12.59
MW-20	19.09	4.65	5.21	0.56	14.37 *
MW-21	17.54	--	2.99	--	14.55
MW-22	16.51	1.88	2.57	0.69	14.54 *
MW-23D	19.19	--	5.18	--	14.01
MW-35	18.68	--	5.96	--	12.72
MW-36	20.01	6.73	8.33	1.60	13.08 *

December 30, 1991

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-16	20.92	4.92	6.99	2.07	15.74 *
MW-17	19.51	5.01	7.87	2.86	14.14 *
MW-19	20.13	--	7.47	--	12.66
MW-20	19.09	4.60	5.13	0.53	14.42 *
MW-21	17.54	--	3.01	--	14.53
MW-22	16.51	1.87	2.59	0.72	14.55 *
MW-23D	19.19	--	5.20	--	13.99
MW-35	18.68	--	5.99	--	12.69
MW-36	20.01	6.71	8.49	1.78	13.08 *

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

February 10, 1992

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	2.85	2.85	0.00	13.23 *
MW-16	20.92	5.46	8.61	3.15	15.06 *
MW-17	19.51	5.41	7.25	1.84	13.87 *
MW-19	20.13	--	7.81	--	12.32
MW-20	19.09	4.92	5.58	0.66	14.09 *
MW-21	17.54	--	3.26	--	14.28
MW-22	16.51	2.13	2.78	0.65	14.30 *
MW-23D	19.19	--	5.45	--	13.74
MW-25	22.77	--	6.34	--	16.43
MW-27	21.50	--	11.16	--	10.34
MW-28	18.22	--	8.29	--	9.93
MW-30	16.39	--	8.57	--	7.82
MW-31	14.35	--	4.51	--	9.84
MW-32	26.07	--	5.23	--	20.84
MW-33	24.90	--	9.31	--	15.59
MW-34	28.96	--	15.79	--	13.17
MW-35	18.68	--	6.24	--	12.44
MW-36	20.01	7.01	8.62	1.61	12.80 *

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

June 4, 1992

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.53	--	13.55
MW-16	20.92	4.88	8.62	3.74	15.57 *
MW-17	19.51	4.76	7.71	2.95	14.38 *
MW-19	20.13	--	7.46	--	12.67
MW-20	19.09	4.53	5.03	0.50	14.50 *
MW-21	17.54	--	2.78	--	14.76
MW-22	16.51	1.87	2.62	0.75	14.55 *
MW-23D	19.19	--	5.15	--	14.04
MW-35	18.68	--	5.89	--	12.79
MW-36	20.01	6.59	8.46	1.87	13.18 *

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

February 8, 1993					
Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.22	--	13.86
MW-16	20.92	4.74	7.31	2.57	15.86 *
MW-17	19.51	4.54	7.20	2.66	14.63 *
MW-19	20.13	--	7.31	--	12.82
MW-20	19.09	4.33	4.69	0.36	14.71 *
MW-21	17.54	--	2.42	--	15.12
MW-22	16.51	1.48	1.86	0.38	14.98 *
MW-23D	19.19	--	4.80	--	14.39
MW-25	22.77	--	5.71	--	17.06
MW-25A	25.28	--	9.59	--	15.69
MW-27	21.50	--	10.71	--	10.79
MW-28	18.22	--	7.97	--	10.25
MW-29	12.29	--	4.60	--	7.69
MW-29	12.29	--	4.60	--	7.69
MW-30	16.39	--	7.97	--	8.42
MW-31	14.35	--	4.24	--	10.11
MW-32	26.07	--	4.61	--	21.46
MW-33	24.90	--	8.63	--	16.27
MW-34	28.96	--	14.68	--	14.28
MW-35	18.68	--	5.74	--	12.94
MW-36	20.01	6.51	7.40	0.89	13.39 *
MW-41	14.98	--	4.35	--	10.63
MW-42	15.71	--	5.99	--	9.72
MW-43	15.14	--	5.33	--	9.81
MW-44D	14.27	--	4.36	--	9.91
MW-45	22.64	--	12.12	--	10.52
MW-46	26.51	--	10.65	--	15.86
MW-47	28.78	--	9.32	--	19.46
MW-48D	28.97	--	11.53	--	17.44

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

September 8, 1993

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	NM	--	NM
MW-17	19.51	4.44	7.11	2.67	14.73 *
MW-19	20.13	--	7.39	--	12.74
MW-20	19.09	4.32	4.77	0.45	14.71 *
MW-21	17.54	--	2.58	--	14.96
MW-22	16.51	1.35	1.99	0.64	15.08 *
MW-23D	19.19	--	4.49	--	14.70
MW-35	18.68	--	5.73	--	12.95
MW-36	20.01	6.58	6.61	0.03	13.43 *
RW-2	19.69	--	4.82	--	14.87

September 22, 1993

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	1.89	--	14.19
MW-17	19.51	4.32	7.21	2.89	14.83 *
MW-19	20.13	--	7.23	--	12.90
MW-20	19.09	4.00	4.69	0.69	15.00 *
MW-21	17.54	--	2.26	--	15.28
MW-22	16.51	1.25	1.97	0.72	15.17 *
MW-23D	19.19	--	4.61	--	14.58
MW-35	18.68	--	5.53	--	13.15
MW-36	20.01	6.49	6.55	0.06	13.51 *
RW-2	19.69	--	4.13	--	15.56

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

October 19, 1993

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	2.13	--	13.95
MW-17	19.51	4.65	7.15	2.50	14.55 *
MW-19	20.13	--	7.38	--	12.75
MW-20	19.09	4.34	4.76	0.42	14.70 *
MW-21	17.54	--	2.54	--	15.00
MW-22	16.51	1.43	1.99	0.56	15.01 *
MW-23D	19.19	--	4.79	--	14.40
MW-35	18.68	--	5.74	--	12.94
MW-36	20.01	6.65	6.79	0.14	13.34 *
RW-2	19.69	--	5.06	--	14.63

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

December 9, 1993

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-17	19.51	4.33	7.28	2.95	14.81 *
MW-19	20.13	--	6.98	--	13.15
MW-20	19.09	4.12	4.54	0.42	14.92 *
MW-21	17.54	--	2.12	--	15.42
MW-23D	19.19	--	4.64	--	14.55
MW-35	18.68	--	5.38	--	13.30
MW-36	20.01	6.34	6.97	0.63	13.59 *
RW-2	19.69	--	4.32	--	15.37

December 23, 1993

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	1.78	--	14.30
MW-17	19.51	4.17	7.34	3.17	14.94 *
MW-19	20.13	--	6.72	--	13.41
MW-20	19.09	4.02	4.48	0.46	15.01 *
MW-21	17.54	--	1.95	--	15.59
MW-22	18.20	2.99	3.13	0.14	15.19 *
MW-23D	19.19	--	4.48	--	14.71
MW-35	18.68	--	5.02	--	13.66
MW-36	20.01	6.14	7.13	0.99	13.75 *
RW-2	19.69	--	4.01	--	15.68

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

February 1, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	1.67	--	14.41
MW-17	19.51	4.02	7.06	3.04	15.11 *
MW-19	20.13	--	6.77	--	13.36
MW-20	19.09	3.96	4.36	0.40	15.08 *
MW-21	17.54	--	1.89	--	15.65
MW-22	18.20	2.83	2.94	0.11	15.36 *
MW-23D	19.19	--	4.33	--	14.86
MW-25A	25.28	--	9.13	--	16.15
MW-27	21.50	--	10.26	--	11.24
MW-28	18.22	--	7.45	--	10.77
MW-29	12.29	--	3.87	--	8.42
MW-30	16.39	--	6.37	--	10.02
MW-31	14.35	--	3.72	--	10.63
MW-34	28.96	--	14.72	--	14.24
MW-35	18.68	--	4.84	--	13.84
MW-36	20.01	5.97	7.27	1.30	13.88 *
MW-37	17.87	--	4.92	--	12.95
MW-38D	20.27	--	5.71	--	14.56
MW-39D	20.12	--	6.25	--	13.87
MW-40D	21.59	--	6.15	--	15.44
MW-42	15.71	--	5.47	--	10.24
MW-43	15.14	--	4.71	--	10.43
MW-44D	14.27	--	3.92	--	10.35
MW-45	22.64	--	11.75	--	10.89
MW-46	26.51	--	11.07	--	15.44
MW-47	28.78	--	7.84	--	20.94
MW-48D	28.97	--	10.84	--	18.13
MW-49	19.17	--	5.06	--	14.11
MW-50	19.00	4.04	8.60	4.56	14.39 *
MW-51	19.23	--	3.89	--	15.34
MW-52	18.02	--	3.14	--	14.88
MW-53	20.16	4.71	6.09	1.38	15.28 *
MW-54	19.35	3.90	4.28	0.38	15.40 *
MW-55	19.27	--	3.79	--	15.48
MW-56	21.62	--	5.90	--	15.72
MW-57	21.98	--	6.52	--	15.46
MW-58	18.37	--	2.93	--	15.44
MW-59	21.36	--	5.91	--	15.45
MW-60	23.31	7.81	8.84	1.03	15.37 *

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

February 1, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-61	30.95	--	14.52	--	16.43
MW-62D	30.61	--	14.82	--	15.79
MW-63	20.92	--	5.55	--	15.37

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

March 7, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	1.52	--	14.56
MW-17	19.51	3.71	7.20	3.49	15.36 *
MW-19	20.13	--	6.50	--	13.63
MW-20	19.09	3.88	4.36	0.48	15.15 *
MW-21	19.06	--	4.01	--	15.05
MW-22	18.20	2.63	3.35	0.72	15.48 *
MW-23D	19.19	--	4.17	--	15.02
MW-35	18.68	--	4.89	--	13.79
MW-36	20.01	5.59	6.59	1.00	14.29 *
MW-37	17.87	--	4.79	--	13.08
MW-38D	20.27	--	5.57	--	14.70
MW-39D	20.12	--	6.04	--	14.08
MW-40D	21.59	--	5.90	--	15.69
MW-49	19.17	--	4.59	--	14.58
MW-50	19.00	3.89	7.17	3.28	14.70 *
MW-51	19.23	--	3.84	--	15.39
MW-52	18.02	2.99	2.99	0.00	15.03 *
MW-53	20.16	4.59	6.05	1.46	15.39 *
MW-54	19.35	3.69	5.20	1.51	15.47 *
MW-55	19.27	--	3.70	--	15.57
MW-56	21.62	--	5.79	--	15.83
MW-57	21.98	--	6.46	--	15.52
MW-58	18.37	--	2.86	--	15.51
MW-59	21.36	--	5.61	--	15.75
MW-60	23.31	7.72	8.89	1.17	15.44 *
MW-63	20.92	--	5.50	--	15.42

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

April 11, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	1.66	--	14.42
MW-17	19.51	4.17	6.82	2.65	15.01 *
MW-19	20.13	--	6.93	--	13.20
MW-20	19.09	3.98	4.47	0.49	15.05 *
MW-21	19.06	--	4.20	--	14.86
MW-22	18.20	2.68	3.64	0.96	15.40 *
MW-23D	19.19	--	4.31	--	14.88
MW-35	18.68	--	5.34	--	13.34
MW-36	20.01	6.21	6.31	0.10	13.79 *
MW-37	17.87	--	5.06	--	12.81
MW-38D	20.27	--	5.70	--	14.57
MW-39D	20.12	--	6.27	--	13.85
MW-40D	21.59	--	6.09	--	15.50
MW-49	19.17	--	5.18	--	13.99
MW-50	19.00	4.14	7.95	3.81	14.38 *
MW-51	19.23	3.92	4.03	0.11	15.30 *
MW-52	18.02	--	3.16	--	14.86
MW-53	20.16	4.68	6.15	1.47	15.29 *
MW-54	19.35	3.72	5.17	1.45	15.45 *
MW-55	19.27	--	3.74	--	15.53
MW-56	21.62	--	5.84	--	15.78
MW-57	21.98	--	6.48	--	15.50
MW-58	18.37	--	2.88	--	15.49
MW-59	21.36	--	5.83	--	15.53
MW-60	23.31	7.80	8.84	1.04	15.38 *
MW-63	20.92	--	5.56	--	15.36

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

April 25, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	1.76	--	14.32
MW-17	19.51	4.15	6.91	2.76	15.01 *
MW-19	20.13	--	7.03	--	13.10
MW-20	19.09	4.04	4.54	0.50	14.99 *
MW-21	19.06	--	4.28	--	14.78
MW-22	18.20	2.82	3.00	0.18	15.36 *
MW-23D	19.19	--	4.37	--	14.82
MW-35	18.68	--	5.43	--	13.25
MW-36	20.01	6.27	6.41	0.14	13.72 *
MW-37	17.87	--	5.22	--	12.65
MW-38D	20.27	--	5.82	--	14.45
MW-39D	20.12	--	6.33	--	13.79
MW-40D	21.59	--	6.14	--	15.45
MW-49	19.17	--	5.29	--	13.88
MW-50	19.00	4.14	8.85	4.71	14.27 *
MW-51	19.23	3.96	4.12	0.16	15.25 *
MW-52	18.02	--	3.26	--	14.76
MW-53	20.16	4.75	6.11	1.36	15.24 *
MW-54	19.35	3.87	4.74	0.87	15.37 *
MW-55	19.27	--	3.81	--	15.46
MW-56	21.62	--	5.94	--	15.68
MW-57	21.98	--	6.55	--	15.43
MW-58	18.37	--	2.96	--	15.41
MW-59	21.36	--	5.89	--	15.47
MW-60	23.31	7.87	8.83	0.96	15.32 *
MW-63	20.92	--	5.61	--	15.31

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

May 31, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	16.08	--	1.84	--	14.24
MW-17	19.51	4.12	7.04	2.92	15.02 *
MW-19	20.13	--	7.11	--	13.02
MW-20	19.09	4.08	4.59	0.51	14.95 *
MW-21	19.06	--	4.39	--	14.67
MW-22	18.20	2.86	3.62	0.76	15.24 *
MW-23D	19.19	--	4.44	--	14.75
MW-35	18.68	--	5.47	--	13.21
MW-36	20.01	6.36	6.50	0.14	13.63 *
MW-37	17.87	--	5.28	--	12.59
MW-38D	20.27	--	5.86	--	14.41
MW-39D	20.12	--	6.38	--	13.74
MW-40D	21.59	--	6.22	--	15.37
MW-49	19.17	--	5.35	--	13.82
MW-50	19.00	4.17	8.75	4.58	14.25 *
MW-51	19.23	4.02	4.18	0.16	15.19 *
MW-52	18.02	--	3.30	--	14.72
MW-53	20.16	4.80	6.08	1.28	15.20 *
MW-54	19.35	3.92	4.80	0.88	15.32 *
MW-55	19.27	--	3.87	--	15.40
MW-56	21.62	--	6.03	--	15.59
MW-57	21.98	--	6.14	--	15.84
MW-58	18.37	--	3.03	--	15.34
MW-59	21.36	--	5.99	--	15.37
MW-60	23.31	7.92	8.85	0.93	15.27 *
MW-63	20.92	--	5.68	--	15.24

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

June 14, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.29	--	14.01
MW-17	19.51	4.39	6.98	2.59	14.79 *
MW-19	20.13	--	7.26	--	12.87
MW-20	19.09	4.21	4.70	0.49	14.82 *
MW-21	19.06	--	4.65	--	14.41
MW-22	18.20	3.10	3.93	0.83	15.00 *
MW-23D	19.19	--	4.68	--	14.51
MW-25A	25.28	--	9.28	--	16.00
MW-27	21.50	--	10.69	--	10.81
MW-28	18.22	--	7.97	--	10.25
MW-29	12.29	--	5.05	--	7.24
MW-30	16.39	--	8.13	--	8.26
MW-31	14.35	--	4.28	--	10.07
MW-32	26.07	--	4.00	--	22.07
MW-33	24.90	--	8.31	--	16.59
MW-34	28.96	--	14.58	--	14.38
MW-35	18.68	--	5.63	--	13.05
MW-36	20.01	6.50	6.61	0.11	13.50 *
MW-37	17.87	--	5.50	--	12.37
MW-38D	20.27	--	6.02	--	14.25
MW-39D	20.12	--	6.54	--	13.58
MW-40D	21.59	--	6.40	--	15.19
MW-41	14.98	--	3.79	--	11.19
MW-42	15.71	--	6.10	--	9.61
MW-43	15.14	--	5.36	--	9.78
MW-44D	14.27	--	4.43	--	9.84
MW-45	22.64	--	12.13	--	10.51
MW-46	26.51	--	11.38	--	15.13
MW-47	28.78	--	7.47	--	21.31
MW-48D	28.97	--	10.83	--	18.14
MW-49	19.17	--	5.63	--	13.54
MW-50	19.00	4.41	8.96	4.55	14.02 *
MW-51	19.23	4.23	4.42	0.19	14.98 *
MW-52	18.02	--	3.55	--	14.47
MW-53	20.16	5.03	6.40	1.37	14.96 *
MW-54	19.35	4.15	4.85	0.70	15.11 *
MW-55	19.27	--	4.05	--	15.22
MW-56	21.62	--	6.25	--	15.37
MW-57	21.98	--	6.81	--	15.17
MW-58	18.37	--	3.27	--	15.10
MW-59	21.36	--	6.20	--	15.16

June 14, 1994

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-60	23.31	8.14	8.88	0.74	15.08 *
MW-61	30.95	--	14.85	--	16.10
MW-62D	30.61	--	14.55	--	16.06
MW-63	20.92	--	5.85	--	15.07

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

July 12, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.05	--	14.25
MW-17	19.51	4.21	7.02	2.81	14.95 *
MW-19	20.13	--	7.16	--	12.97
MW-20	19.09	4.12	4.62	0.50	14.91 *
MW-21	19.06	--	4.48	--	14.58
MW-22	18.20	2.90	3.68	0.78	15.20 *
MW-23D	19.19	--	4.47	--	14.72
MW-35	18.68	--	5.48	--	13.20
MW-36	20.01	6.34	6.52	0.18	13.65 *
MW-37	17.87	--	5.24	--	12.63
MW-38D	20.27	--	5.88	--	14.39
MW-39D	20.12	--	6.42	--	13.70
MW-40D	21.59	--	6.26	--	15.33
MW-49	19.17	--	5.34	--	13.83
MW-50	19.00	4.20	8.79	4.59	14.22 *
MW-51	19.23	4.06	4.17	0.11	15.16 *
MW-52	18.02	--	3.32	--	14.70
MW-53	20.16	4.85	6.13	1.28	15.15 *
MW-54	19.35	3.95	4.96	1.01	15.27 *
MW-55	19.27	--	3.91	--	15.36
MW-56	21.62	--	6.10	--	15.52
MW-57	21.98	--	6.67	--	15.31
MW-58	18.37	--	3.08	--	15.29
MW-59	21.36	--	6.02	--	15.34
MW-60	23.31	7.96	8.90	0.94	15.23 *
MW-63	20.92	--	5.71	--	15.21

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

August 25, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	2.50	--	14.80
MW-17	19.51	3.57	7.05	3.48	15.50 *
MW-19	20.13	--	6.47	--	13.66
MW-20	19.09	3.77	4.27	0.50	15.26 *
MW-21	19.06	--	4.04	--	15.02
MW-22	18.20	2.36	2.98	0.62	15.76 *
MW-23D	19.19	--	3.93	--	15.26
MW-35	18.68	--	4.80	--	13.88
MW-36	20.01	5.81	6.12	0.31	14.16 *
MW-37	17.87	--	4.66	--	13.21
MW-38D	20.27	--	5.45	--	14.82
MW-39D	20.12	--	5.82	--	14.30
MW-40D	21.59	--	5.75	--	15.84
MW-49	19.17	--	4.89	--	14.28
MW-50	19.00	3.65	8.31	4.66	14.76 *
MW-51	19.23	3.54	3.61	0.07	15.68 *
MW-52	18.02	--	2.79	--	15.23
MW-53	20.16	4.40	5.92	1.52	15.57 *
MW-54	19.35	3.25	4.40	1.15	15.96 *
MW-55	19.27	--	3.40	--	15.87
MW-56	21.62	--	5.62	--	16.00
MW-57	21.98	--	6.17	--	15.81
MW-58	18.37	--	2.58	--	15.79
MW-59	21.36	--	5.51	--	15.85
MW-60	23.31	7.33	9.30	1.97	15.73 *
MW-63	20.92	--	5.19	--	15.73

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

September 29, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.01	--	14.29
MW-17	19.51	4.16	7.13	2.97	14.98 *
MW-19	20.13	--	7.06	--	13.07
MW-20	19.09	4.06	4.57	0.51	14.97 *
MW-21	19.06	--	4.39	--	14.67
MW-22	18.20	2.90	3.68	0.78	15.20 *
MW-23D	19.19	--	4.42	--	14.77
MW-35	18.68	--	5.12	--	13.56
MW-36	20.01	6.27	6.53	0.26	13.71 *
MW-37	17.87	--	4.94	--	12.93
MW-38D	20.27	--	5.85	--	14.42
MW-39D	20.12	--	6.36	--	13.76
MW-40D	21.59	--	6.25	--	15.34
MW-49	19.17	--	5.26	--	13.91
MW-50	19.00	4.11	8.74	4.63	14.31 *
MW-51	19.23	4.07	4.19	0.12	15.14 *
MW-52	18.02	--	3.29	--	14.73
MW-53	20.16	4.88	5.89	1.01	15.15 *
MW-54	19.35	3.92	5.19	1.27	15.27 *
MW-55	19.27	--	3.93	--	15.34
MW-56	21.62	--	6.13	--	15.49
MW-57	21.98	--	6.67	--	15.31
MW-58	18.37	--	3.08	--	15.29
MW-59	21.36	--	6.03	--	15.33
MW-60	23.31	7.97	8.95	0.98	15.22 *
MW-63	20.92	--	5.70	--	15.22

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

October 25, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.14	--	14.16
MW-17	19.51	4.38	6.93	2.55	14.81 *
MW-19	20.13	--	7.20	--	12.93
MW-20	19.09	4.13	4.63	0.50	14.90 *
MW-21	19.06	--	4.44	--	14.62
MW-22	18.20	3.10	3.54	0.44	15.04 *
MW-23D	19.19	--	4.60	--	14.59
MW-35	18.68	--	5.53	--	13.15
MW-36	20.01	6.43	6.64	0.21	13.55 *
MW-37	17.87	--	5.16	--	12.71
MW-38D	20.27	--	5.99	--	14.28
MW-39D	20.12	--	6.52	--	13.60
MW-40D	21.59	--	6.40	--	15.19
MW-49	19.17	--	5.50	--	13.67
MW-50	19.00	4.29	8.95	4.66	14.12 *
MW-51	19.23	4.22	4.31	0.09	15.00 *
MW-52	18.02	--	3.44	--	14.58
MW-53	20.16	5.05	6.06	1.01	14.98 *
MW-54	19.35	4.15	4.71	0.56	15.13 *
MW-55	19.27	--	4.07	--	15.20
MW-56	21.62	--	6.29	--	15.33
MW-57	21.98	--	6.82	--	15.16
MW-58	18.37	--	3.25	--	15.12
MW-59	21.36	--	6.20	--	15.16
MW-60	23.31	8.14	8.82	0.68	15.08 *
MW-63	20.92	--	5.81	--	15.11

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

November 29, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	2.78	--	14.52
MW-17	19.51	4.20	7.01	2.81	14.96 *
MW-19	20.13	--	6.80	--	13.33
MW-20	19.09	3.94	4.43	0.49	15.09 *
MW-21	19.06	--	4.14	--	14.92
MW-22	18.20	2.85	3.09	0.24	15.32 *
MW-23D	19.19	--	4.34	--	14.85
MW-35	18.68	--	4.96	--	13.72
MW-36	20.01	6.08	6.54	0.46	13.87 *
MW-37	17.87	--	4.76	--	13.11
MW-38D	20.27	--	5.69	--	14.58
MW-39D	20.12	--	6.28	--	13.84
MW-40D	21.59	--	6.19	--	15.40
MW-49	19.17	--	5.04	--	14.13
MW-50	19.00	4.09	7.72	3.63	14.45 *
MW-51	19.23	4.02	4.08	0.06	15.20 *
MW-52	18.02	--	3.15	--	14.87
MW-53	20.16	4.83	5.76	0.93	15.21 *
MW-54	19.35	3.89	4.80	0.91	15.35 *
MW-55	19.27	--	3.86	--	15.41
MW-56	21.62	--	6.01	--	15.61
MW-57	21.98	--	6.60	--	15.38
MW-58	18.37	--	3.01	--	15.36
MW-59	21.36	--	5.95	--	15.41
MW-60	23.31	7.89	8.90	1.01	15.29 *
MW-63	20.92	--	5.57	--	15.35

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

December 29, 1994

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.18	--	14.12
MW-17	19.51	4.45	7.24	2.79	14.71 *
MW-19	20.13	--	7.14	--	12.99
MW-20	19.09	4.10	4.59	0.49	14.93 *
MW-21	19.06	--	4.52	--	14.54
MW-22	18.20	3.17	3.72	0.55	14.96 *
MW-23D	19.19	--	4.65	--	14.54
MW-35	18.68	--	5.44	--	13.24
MW-36	20.01	6.42	6.95	0.53	13.52 *
MW-37	17.87	--	5.32	--	12.55
MW-38D	20.27	--	6.03	--	14.24
MW-39D	20.12	--	6.55	--	13.57
MW-40D	21.59	--	6.47	--	15.12
MW-49	19.17	--	5.42	--	13.75
MW-50	19.00	4.41	8.54	4.13	14.07 *
MW-51	19.23	4.29	4.40	0.11	14.93 *
MW-52	18.02	--	3.51	--	14.51
MW-53	20.16	5.13	6.12	0.99	14.91 *
MW-54	19.35	4.21	5.11	0.90	15.03 *
MW-55	19.27	--	4.14	--	15.13
MW-56	21.62	--	6.39	--	15.23
MW-57	21.98	--	6.88	--	15.10
MW-58	18.37	--	3.32	--	15.05
MW-59	21.36	--	6.25	--	15.11
MW-60	23.31	8.19	9.04	0.85	15.01 *
MW-63	20.92	--	5.89	--	15.03

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

February 16, 1995

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.15	--	14.15
MW-17	19.51	4.42	7.16	2.74	14.74 *
MW-19	20.13	--	7.29	--	12.84
MW-20	19.09	4.08	4.49	0.41	14.96 *
MW-22	18.20	3.00	3.70	0.70	15.11 *
MW-23D	19.19	--	4.57	--	14.62
MW-35	18.68	--	5.64	--	13.04
MW-36	20.01	6.43	7.27	0.84	13.47 *
MW-37	17.87	--	5.34	--	12.53
MW-38D	20.27	--	6.03	--	14.24
MW-39D	20.12	--	6.67	--	13.45
MW-40D	21.59	--	6.46	--	15.13
MW-49	19.17	--	5.53	--	13.64
MW-50	19.00	4.44	8.73	4.29	14.02 *
MW-51	19.23	4.28	4.37	0.09	14.94 *
MW-52	18.02	--	3.47	--	14.55
MW-53	20.16	5.09	6.04	0.95	14.95 *
MW-54	19.35	4.25	4.78	0.53	15.03 *
MW-55	19.27	--	4.12	--	15.15
MW-56	21.62	--	6.32	--	15.30
MW-57	21.98	--	6.85	--	15.13
MW-58	18.37	--	3.27	--	15.10
MW-59	21.36	--	6.20	--	15.16
MW-60	23.31	8.18	8.85	0.67	15.05 *
MW-63	20.92	--	5.88	--	15.04

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

March 14, 1995					
Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.27	--	14.03
MW-17	19.51	4.30	7.56	3.26	14.80 *
MW-19	20.13	--	7.23	--	12.90
MW-20	19.09	4.08	4.55	0.47	14.95 *
MW-21	19.06	--	4.57	--	14.49
MW-22	18.20	3.33	3.90	0.57	14.80 *
MW-23D	19.19	--	4.78	--	14.41
MW-36	20.01	6.33	8.09	1.76	13.46 *
MW-37	17.87	--	5.34	--	12.53
MW-38D	20.27	--	6.13	--	14.14
MW-39D	20.12	--	6.67	--	13.45
MW-40D	21.59	--	6.68	--	14.91
MW-49	19.17	--	5.39	--	13.78
MW-50	19.00	4.53	8.44	3.91	13.98 *
MW-51	19.23	4.48	4.68	0.20	14.72 *
MW-52	18.02	--	3.61	--	14.41
MW-53	20.16	6.30	6.35	0.05	13.85 *
MW-54	19.35	4.43	5.44	1.01	14.79 *
MW-55	19.27	--	4.66	--	14.61
MW-56	21.62	--	6.54	--	15.08
MW-57	21.98	--	7.15	--	14.83
MW-58	18.37	--	3.49	--	14.88
MW-59	21.36	--	6.44	--	14.92
MW-60	23.31	8.53	9.85	1.32	14.61 *
MW-63	20.92	--	7.12	--	13.80

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

	April 28, 1995				
Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.59	--	13.71
MW-17	19.51	4.63	7.40	2.77	14.53 *
MW-19	20.13	--	7.61	--	12.52
MW-20	19.09	4.37	4.85	0.48	14.66 *
MW-21	19.06	--	5.11	--	13.95
MW-22	18.20	3.62	4.18	0.56	14.51 *
MW-23D	19.19	--	5.07	--	14.12
MW-35	18.68	--	5.93	--	12.75
MW-36	20.01	6.68	8.21	1.53	13.14 *
MW-37	17.87	--	5.77	--	12.10
MW-38D	20.27	--	6.46	--	13.81
MW-39D	20.12	--	7.02	--	13.10
MW-40D	21.59	--	6.95	--	14.64
MW-49	19.17	--	5.90	--	13.27
MW-50	19.00	4.81	9.29	4.48	13.63 *
MW-51	19.23	4.72	4.90	0.18	14.49 *
MW-52	18.02	3.92	4.15	0.23	14.07 *
MW-53	20.16	5.56	6.64	1.08	14.46 *
MW-54	19.35	4.71	5.29	0.58	14.57 *
MW-55	19.27	--	4.59	--	14.68
MW-56	21.62	--	6.85	--	14.77
MW-57	21.98	--	6.86	--	15.12
MW-58	18.37	--	3.77	--	14.60
MW-59	21.36	--	6.71	--	14.65
MW-60	23.31	8.66	9.30	0.64	14.57 *
MW-63	20.92	--	6.34	--	14.58

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

	September 19, 1995				
Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.53	--	13.77
MW-17	19.51	4.87	6.93	2.06	14.38 *
MW-19	20.13	--	7.59	--	12.54
MW-20	19.09	4.77	5.18	0.41	14.27 *
MW-21	19.06	--	5.19	--	13.87
MW-22	18.20	3.71	4.05	0.34	14.45 *
MW-23D	19.19	--	5.12	--	14.07
MW-35	18.68	--	5.96	--	12.72
MW-36	20.01	6.84	7.54	0.70	13.08 *
MW-37	17.87	--	5.54	--	12.33
MW-38D	20.27	--	6.49	--	13.78
MW-39D	20.12	--	7.10	--	13.02
MW-40D	21.59	--	7.02	--	14.57
MW-49	19.17	--	6.03	--	13.14
MW-50	19.00	4.87	8.96	4.09	13.61 *
MW-51	19.23	4.81	4.90	0.09	14.41 *
MW-52	18.02	3.90	4.09	0.19	14.10 *
MW-53	20.16	5.65	6.65	1.00	14.38 *
MW-54	19.35	4.73	5.60	0.87	14.51 *
MW-55	19.27	--	4.68	--	14.59
MW-56	21.62	--	6.95	--	14.67
MW-57	21.98	--	7.45	--	14.53
MW-58	18.37	--	3.87	--	14.50
MW-59	21.36	--	6.83	--	14.53
MW-60	23.31	8.79	9.14	0.35	14.48 *
MW-63	20.92	--	6.43	--	14.49

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

November 9, 1995

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	2.97	--	14.33
MW-17	19.51	4.33	7.19	2.86	14.82 *
MW-19	20.13	--	6.92	--	13.21
MW-20	19.09	4.05	4.38	0.33	15.00 *
MW-21	19.06	--	4.35	--	14.71
MW-22	18.20	3.22	3.25	0.03	14.98 *
MW-23D	19.19	--	4.62	--	14.57
MW-35	18.68	--	5.23	--	13.45
MW-36	20.01	6.13	8.05	1.92	13.64 *
MW-37	17.87	--	4.84	--	13.03
MW-38D	20.27	--	5.96	--	14.31
MW-39D	20.12	--	6.58	--	13.54
MW-40D	21.59	--	6.55	--	15.04
MW-49	19.17	--	5.03	--	14.14
MW-50	19.00	4.34	8.42	4.08	14.15 *
MW-51	19.23	4.35	4.39	0.04	14.87 *
MW-52	18.02	3.38	3.75	0.37	14.59 *
MW-53	20.16	5.16	6.13	0.97	14.88 *
MW-54	19.35	4.21	5.65	1.44	14.96 *
MW-55	19.27	--	4.21	--	15.06
MW-56	21.62	--	6.57	--	15.05
MW-57	21.98	--	6.99	--	14.99
MW-58	18.37	--	3.36	--	15.01
MW-59	21.36	--	6.33	--	15.03
MW-60	23.31	8.25	9.21	0.96	14.94 *
MW-63	20.92	--	5.91	--	15.01

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

May 2, 1996

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-13	17.30	--	3.03	--	14.27
MW-17	19.51	4.14	6.83	2.69	15.03 *
MW-19	20.13	--	6.97	--	13.16
MW-20	19.09	4.06	4.36	0.30	14.99 *
MW-21	19.06	--	4.27	--	14.79
MW-22	18.20	3.14	3.22	0.08	15.05 *
MW-23D	19.19	--	4.53	--	14.66
MW-25A	25.28	--	9.40	--	15.88
MW-27	21.50	--	10.45	--	11.05
MW-28	18.22	--	8.09	--	10.13
MW-29	12.29	--	3.86	--	8.43
MW-30	16.39	--	7.17	--	9.22
MW-31	14.35	--	4.34	--	10.01
MW-34	28.96	--	13.98	--	14.98
MW-35	18.68	--	5.22	--	13.46
MW-36	20.01	6.09	7.70	1.61	13.72 *
MW-37	17.87	--	5.20	--	12.67
MW-38D	20.27	--	5.89	--	14.38
MW-39D	20.12	--	6.40	--	13.72
MW-40D	21.59	--	6.44	--	15.15
MW-41	14.98	--	3.89	--	11.09
MW-42	15.71	--	6.20	--	9.51
MW-43	15.14	--	5.72	--	9.42
MW-44D	14.27	--	5.00	--	9.27
MW-45	22.64	--	12.04	--	10.60
MW-46	26.51	--	11.28	--	15.23
MW-47	28.78	--	7.22	--	21.56
MW-48D	28.97	--	10.82	--	18.15
MW-49	19.17	--	5.29	--	13.88
MW-50	19.00	4.22	7.82	3.60	14.33 *
MW-51	19.23	4.21	4.22	0.01	15.02 *
MW-52	18.02	3.28	3.81	0.53	14.67 *
MW-53	20.16	4.87	7.16	2.29	15.00 *
MW-54	19.35	4.07	5.16	1.09	15.14 *
MW-55	19.27	--	4.15	--	15.12
MW-56	21.62	--	6.47	--	15.15
MW-57	21.98	--	6.90	--	15.08
MW-58	18.37	--	3.25	--	15.12
MW-59	21.36	--	6.22	--	15.14
MW-60	23.31	8.14	8.82	0.68	15.08 *
MW-61	30.95	--	14.65	--	16.30

May 2, 1996

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-62D	30.61	--	14.98	--	15.63
MW-63	20.92	--	5.87	--	15.05
MW-64	21.55	--	6.16	--	15.39
MW-65	21.02	--	5.35	--	15.67
MW-66	22.80	--	6.79	--	16.01
MW-67	22.46	--	7.57	--	14.89
MW-68	25.38	--	9.93	--	15.45

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

June 17 - 19, 1997

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-17	19.51	4.54	6.65	2.11	14.70 *
MW-19	20.13	--	7.88	--	12.25
MW-20	19.09	4.31	4.63	0.32	14.74 *
MW-21	19.06	--	4.77	--	14.29
MW-22	18.20	3.18	3.32	0.14	15.00 *
MW-23D	19.19	--	4.76	--	14.43
MW-25A	25.28	--	9.28	--	16.00
MW-27	21.50	--	10.61	--	10.89
MW-28	18.22	--	8.16	--	10.06
MW-29	12.29	--	4.67	--	7.62
MW-30	16.39	--	8.00	--	8.39
MW-34	28.96	--	14.55	--	14.41
MW-35	18.68	--	6.25	--	12.43
MW-36	20.01	6.62	8.65	2.03	13.13 *
MW-37	17.87	--	6.11	--	11.76
MW-38D	20.27	--	6.19	--	14.08
MW-39D	20.12	--	7.19	--	12.93
MW-40D	21.59	--	6.45	--	15.14
MW-41	14.98	--	4.47	--	10.51
MW-42	15.71	--	6.84	--	8.87
MW-43	15.14	--	6.29	--	8.85
MW-44D	14.27	--	5.51	--	8.76
MW-45	22.64	--	10.15	--	12.49
MW-46	26.51	--	11.30	--	15.21
MW-47	28.78	--	7.40	--	21.38
MW-48D	28.97	--	10.88	--	18.09
MW-49	19.17	--	5.75	--	13.42
MW-50	19.00	4.70	8.83	4.13	13.78 *
MW-51	19.23	4.28	4.29	0.01	14.95 *
MW-52	18.02	3.45	4.61	1.16	14.42 *
MW-56	21.62	6.49	6.52	0.03	15.13 *
MW-57	21.98	--	6.88	--	15.10
MW-59	21.36	--	6.24	--	15.12
MW-60	23.31	8.17	8.91	0.74	15.05 *
MW-61	30.95	--	14.92	--	16.03
MW-62D	30.61	--	14.56	--	16.05
MW-64	21.55	--	6.16	--	15.39
MW-65	21.02	--	5.43	--	15.59
MW-66	22.80	--	7.05	--	15.75
MW-67	22.46	--	7.50	--	14.96

Appendix B. Historic Water-Level Elevations and Separate-Phase Hydrocarbon Thickness Measurements
OU-6 RI/FS Report , Sunnyside Yard, Queens, New York

June 17 - 19, 1997

Well Designation	Measuring Point Elevation (ft above NAVD 1988 mean sea level)	Depth to Petroleum (ft below measuring point)	Depth to Water (ft below measuring point)	Petroleum Thickness (ft)	Water-Level Elevation (ft relative to mean sea level)
MW-68	25.38	--	9.90	--	15.48
MW-69D	25.46	--	9.97	--	15.49
RW-2	19.69	--	5.01	--	14.68
TP-8	25.60	--	9.26	--	16.34
TP-9	29.71	--	10.13	--	19.58
TP-10	36.83	--	14.05	--	22.78

-- - No measurable petroleum
* - Water-level elevations corrected for presence of separate-phase petroleum. Correction assumes density of 0.874 (average specific gravity of petroleum samples collected at the Yard).

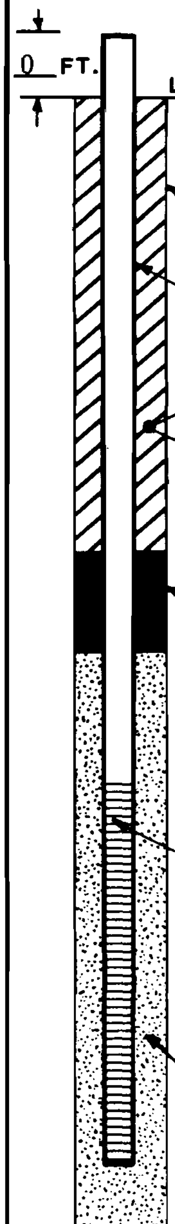
APPENDIX C

Soil Boring and Monitoring Well
Construction Logs

ROUX

Consulting Ground-Water Geologists
ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



0 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

0.5 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

1 FT.

2 FT.

WELL SCREEN
4 INCH DIAMETER,
SS* 20 SLOT

#2 GRAVEL PACK

12 FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-13 PERMIT NO. ____

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ____ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/06/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pump.
10 gpm for 1 hour, 12/18/90.

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 600 GALLONS

STATIC DEPTH TO WATER 4 FEET BELOW M.P.

PUMPING DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DURATION ____ HOURS

YIELD ____ GPM ____ DATE ____

SPECIFIC CAPACITY ____ GPM/FT.

WELL PURPOSE Monitoring

REMARKS *SS - stainless steel continuous slot.

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/06/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-13
Location
M.P. Elevation
Drilling Started 08:40 Ended 10:30
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.) 12
Screen Setting (ft.) 12 - 2
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	SAMPLE Rec.	SAMPLE Depth	SAMPLE Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample		0-2	Brown fine to medium SAND, trace silt and fine gravel.
0.1			2-4'	Grab sample		2-4	Brown fine to medium SAND, trace silt and fine gravel, gray staining to silt. Water table at 4 ft.
					SAND		
30		1.7	9-11'	3, 3, 10, 12		9-11	Brown fine to medium SAND, trace silt, fine gravel, gray staining.
					------14 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

NOTE: 2nd attempt - 1st attempt abandoned when augers broke water pipe on 10/20/90

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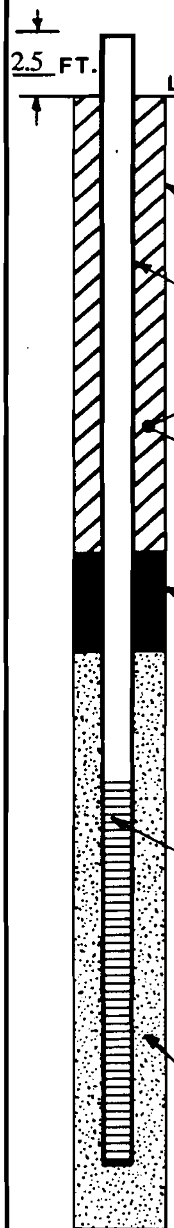
ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



2.5 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

1.0 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

2.0 FT.

2.5 FT.

WELL SCREEN
4 INCH DIAMETER,
SS* 20 SLOT

#2 GRAVEL PACK

12.5 FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-16 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/07/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Bailed; pump & surge - submersible pump, 12/17/90, 12/19/90.

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 50 GALLONS

STATIC DEPTH TO WATER 7 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS *SS - stainless steel continuous slot.

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/07/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-16
Location
M.P. Elevation
Drilling Started 09:45 Ended 14:45
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.) 15
Screen Setting (ft.) 12.5 - 2.5
Screen Slot & Type 20-slot S.S.
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S.

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge - bail product

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
30			0-2'	Grab sample		0-2	Brown fine to medium SAND and silt; railroad bed fill; broken concrete
35			2-4'	Grab sample		2-4	Brown fine to medium SAND stained gray
					SAND		
60		1.1	4-6'	5, 7, 21, 27		4-6	Brown medium SAND, trace fine sand and fine gravel stained gray, wet
							Water table at 5.2 ft.
81		1.4	6-8'	11, 12, 36, 25			
131		1,4	10-12'	8, 12, 25, 17		10-12	Brown medium to coarse SAND stained gray
					------14 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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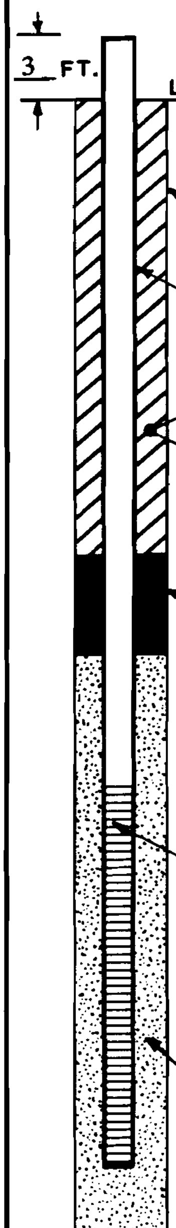
MONITORING WELL CONSTRUCTION LOG



3 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

0.5 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

1.3 FT.

2 FT.

WELL SCREEN
4 INCH DIAMETER,
SS* 20 SLOT

#2 GRAVEL PACK

12 FT.

13 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-17 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/08/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Service

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pump, 7 gpm for 1 hour

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 420 GALLONS

STATIC DEPTH TO WATER 7 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS *SS - stainless steel continuous slot

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/08/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By B. Woods
Well No. MW-17
Location
M.P. Elevation
Drilling Started 12:35 Ended 15:00
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 13
Casing Diam. (in.) 4
Casing Length (ft.) 15
Screen Setting (ft.) 12 - 2
Screen Slot & Type 20-slot S.S.
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample		0-2	Brown and black sand, little gravel.
62			2-4'	Grab sample		2-4	Strong hydrocarbon odor.
					SAND		
52		1.0	4-6'	N/R		4-6	Gray fine to medium SAND, little gravel, strong hydrocarbon odor.
60		1.3	9-11'	6, 12, 12, 25		9-11	Gray stained fine to medium SAND, trace silt, strong hydrocarbon odor.
					------13 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

NOTE: 3rd attempt to install well. 1st and 2nd attempts were abandoned due to auger refusal and heaving sand.

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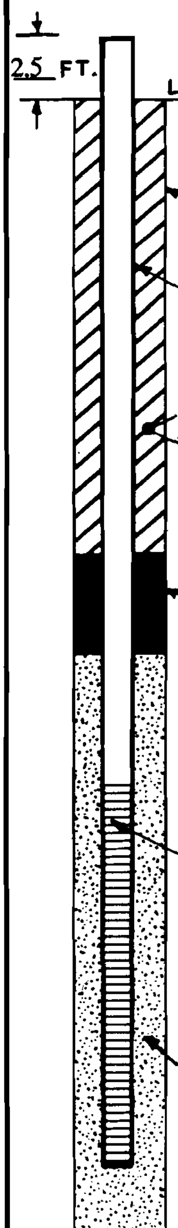
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y
WELL NO. MW-19 PERMIT NO. ______
TOWN/CITY Long Island City
COUNTY Queens STATE New York
LAND-SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED
INSTALLATION DATE(S) 12/20/90
DRILLING METHOD Hollow Stem Auger
DRILLING CONTRACTOR Land, Air, Water Enviro. Services
DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Bailed; pump & surge - submersible pump, 12/20/90

FLUID LOSS DURING DRILLING None GALLONS
WATER REMOVED DURING DEVELOPMENT 25 GALLONS
STATIC DEPTH TO WATER 8 FEET BELOW M.P.
PUMPING DEPTH TO WATER ______ FEET BELOW M.P.
PUMPING DURATION ______ HOURS
YIELD ______ GPM ______ DATE ______
SPECIFIC CAPACITY ______ GPM/FT.
WELL PURPOSE Monitoring

REMARKS *SS - stainless steel continuous slot.

HYDROGEOLOGIST J. Duminuco

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 12/07/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-19
Location
M.P. Elevation
Drilling Started 09:00 Ended 3:30
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 15
Casing Diam. (in.) 4
Casing Length (ft.) 16.5
Screen Setting (ft.) 13.5 - 3.5
Screen Slot & Type 20-slot S.S.
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
30			0-2'	Grab sample		0-2	Dark brown fine to medium SAND. Gravel to cinders; Railroad bed fill.
70/23			2-4'	Grab sample	SAND	2-4	Top 1.0': Dark brown fine to coarse SAND, gravel and cinders, Railroad bed fill. Bottom 1.0': Brown fine to coarse SAND, trace silt.
18		1.1	4-6'	1, 3, 4, 10	and	4-6	Brown to gray brown fine SAND, trace silt (iron staining). Tip had gray fine sand with wet clayey silt.
					SILT		Water table at 5.5'
3.9		1.5	6-8'	4, 5, 5, 6		6-8	Top 0.5': Gray-brown fine SAND, trace clayey silt. Bottom 1.0': Brown fine to medium SAND, wet.
60		13	12-14'	18, 21, 29, 30		12-14	Brown fine to coarse SAND, trace silt.
					------15 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG

2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

0.5 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

1.5 FT.

2.5 FT.

WELL SCREEN
4 INCH DIAMETER,
SS* 20 SLOT

#2 GRAVEL PACK

12.5 FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-20 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED
☐ ESTIMATED

INSTALLATION DATE(S) 12/11/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pump, 12/17/90

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT 60 GALLONS

STATIC DEPTH TO WATER 4.5 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS *SS - stainless continuous slot

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 12/11/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-20
Location
M.P. Elevation
Drilling Started 08:30 Ended 10:30
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.) 14.5
Screen Setting (ft.) 12.5 - 2.5
Screen Slot & Type 20-slot S.S.
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
12.2			0-2'	Grab sample		0-2	Dark brown fine to medium SAND and cinders (railroad bed fill).
19.1			2-4'	Grab sample	SAND	2-4	Dark gray-brown stained fine to medium SAND. Trace silt, oil soaked, free product entering hole.
59.1		1.1	4-6'	6, 5, 5, 9		4-6	Dark gray-brown stained fine to coarse SAND, trace silt, oil soaked, wet oily sheen. Water table at 4 ft.
50.4		0.8	9-11'	7, 12, 8, 17		9-11	Gray-brown fine to coarse SAND, trace silt, wet, oily sheen, tight.
					------14 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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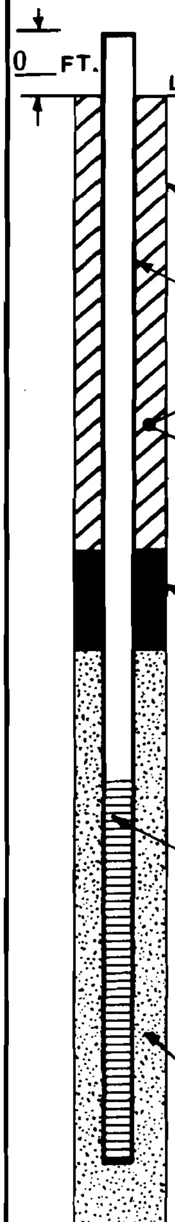
MONITORING WELL CONSTRUCTION LOG



0 FT. LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

0.3 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

1 FT.

2 FT.

WELL SCREEN
4 INCH DIAMETER,
SS* 20 SLOT

#2 GRAVEL PACK

12 FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-21 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED
☐ ESTIMATED

INSTALLATION DATE(S) 12/06/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pumps, 12/13/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 25 GALLONS

STATIC DEPTH TO WATER 3 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS *SS - stainless steel continuous slot

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 12/06/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-21
Location
M.P. Elevation
Drilling Started 10:00 Ended 12:50
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.) 12
Screen Setting (ft.) 12 - 2
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	SAMPLE Rec.	SAMPLE Depth	SAMPLE Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
8.2			0-2'	Grab sample		0-2	Dark brown to black stained fine to medium SAND and silt with railroad bed cinders.
19			2-4'	Grab sample		2-4	Brown fine SAND, little silt.
1.5		1.3	4-6'	N/R	SAND	4-6	Brown fine SAND, trace Silt, wet. Water table at 4 ft.
47.7		0.2	9-9.5'	26, 102/0		9-9.5	Spoon refusal at 9.5'; Dark gray stained medium to coarse SAND with fractured gravel.
*		1.8	9-11	10, 12, 28, 35		9-11	Dark gray to black stained fine to coarse SAND, trace gravel.
					------14 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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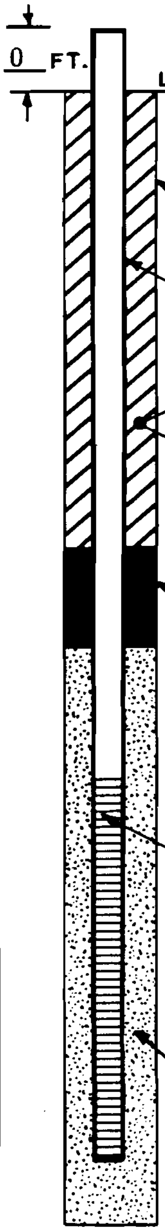
ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



0 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

0 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

0.5 FT.

1 FT.

WELL SCREEN
4 INCH DIAMETER,
SS* 20 SLOT

#2 GRAVEL PACK

11 FT.

12 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-22 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 10/20/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pump, 8-9 gpm for 1 hour, 12/13/90

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT 500 GALLONS

STATIC DEPTH TO WATER 1.5 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS Flush mount curb box installed 0.5 ft. above grade.
*SS-stainless steel continuous slot.

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 10/20/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-22
Location
M.P. Elevation
Drilling Started 08:30 Ended 11:00
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 12
Casing Diam. (in.) 4
Casing Length (ft.) 11
Screen Setting (ft.) 1 - 11
Screen Slot & Type 20-slot S.S.
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
40			0-2'	Grab sample		0-2	Brown fine to medium SAND, little coarse gravel, hydrocarbon odor and staining.
55			2-4'	Grab sample		2-4	Brown medium SAND, trace coarse gravel; Hydrocarbon odor, black staining; free product. Water table at 3 ft.
					SAND		
44		2	8-10'	4, 3, 3, 3		8-10	Brown medium to coarse SAND; Hydrocarbon odor; black staining; Wet
					------12 ft------- Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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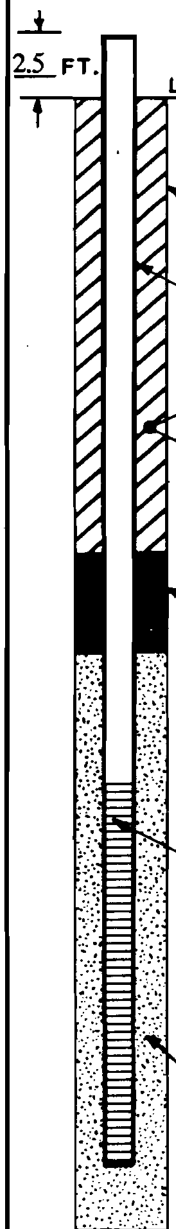
Consulting Ground-Water Geologists

ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



2.5 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING 4 INCH DIAMETER,

☐ BACKFILL

☒ GROUT cement

18* FT.

BENTONITE ☐ SLURRY ☒ PELLETS

22 FT.

26.5 FT.

WELL SCREEN 4 INCH DIAMETER, PVC 20 SLOT

#2 GRAVEL PACK

36.5 FT.

37.5 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-23 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/10/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pump, 6-7 gmp for 1 hour, 12/14/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 400 GALLONS

STATIC DEPTH TO WATER 5 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring Well.

REMARKS Well completed on third attempt.
* 22 ft to 18 ft - Bentonite and formation collapse.

HYDROGEOLOGIST V. Singh

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/16/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 3
Logged By V. Singh
Well No. MW-23
Location
M.P. Elevation
Drilling Started 09:15 Ended 17:00
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 40
Casing Diam. (in.) 4
Casing Length (ft.) 39
Screen Setting (ft.) 36.5 - 26.5
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S.

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
35			0-2'	Grab sample		0-2	Brown fine to medium SAND with gravel and cinders (railroad bed fill).
107			2-4'	Grab sample		2-4	Gray/brown stained fine to coarse SAND, trace gravel, hydrocarbon odor; free floating product observed at 3.5 ft. Water table at 3.5 ft.
					SAND		
75		0.8	9-11'	N/R		9-11	Gray stained fine to coarse SAND; strong hydrocarbon odor, free floating product, wet.
100		1.2	14-16'	N/R		14-16	Gray fine to coarse SAND, trace gravel, wet; Strong odor.
100		1.4	19-21'	N/R		19-21	Gray fine to coarse SAND, wet; Strong odor.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No.	05509Y
Date	11/16/90
Project	Sunnyside Yard
Client	AMTRAK
Page	2 of 3
Logged By	V. Singh
Well No.	MW-23
Location	
M.P. Elevation	
Drilling Started	09:15
Ended	17:00
Driller	Land, Air, Water Environmental Services
Type of Rig	Hollow stem auger

WELL DATA

Hole Diam. (in.)	10
Final Depth (ft.)	40
Casing Diam. (in.)	4
Casing Length (ft.)	39
Screen Setting (ft.)	36.5 - 26.5
Screen Slot & Type	PVC
Well Status	Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type	Split Spoon
Hammer	140 lb.
Fall	30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
					SAND		
45		1.7	24-26'	N/R		24-26–	Gray stained fine to coarse SAND, wet, strong odor; (5' of heave in Augers; used split spoon and removed 5 full spoons, keeping 5th as most representative archive sample).
65		2.0	29-31'	N/R		29-31–	Gray stained fine to medium SAND, wet: Strong odor (sampling procedure as above).
32		2.0	34-36'	N/R	------36 ft------	34-36–	Gray fine to coarse SAND, Wet: Strong odor (sampling procedure same as above). Bottom of boring abandoned 11/06/90; restart 11/26/90; plugged auger and drilled to 40' (OK per Chris Magee of DEC.); plug had dislodged and heave measures 9' inside auger. Unable to set screen; augers pulled at this time. Bottom auger contained a fine gray clayey SILT with trace coarse gravel and cobbles (inside auger and outside); samples of this were collected and archived at 36- to 40' sample. Gray clayey SILT, trace coarse gravel and cobbles.
					SILT		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/16/90
Project Sunnyside Yard
Client AMTRAK
Page 3 of 3
Logged By V. Singh
Well No. MW-23
Location
M.P. Elevation
Drilling Started 09:15 Ended 17:00
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 40
Casing Diam. (in.) 4
Casing Length (ft.) 39
Screen Setting (ft.) 36.5 - 26.5
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
					------40 ft------ Bottom of boring	40–	Boring abandoned at this time. Well completed 12/10/90 (see well construction log). NOTE: Well completed on third attempt.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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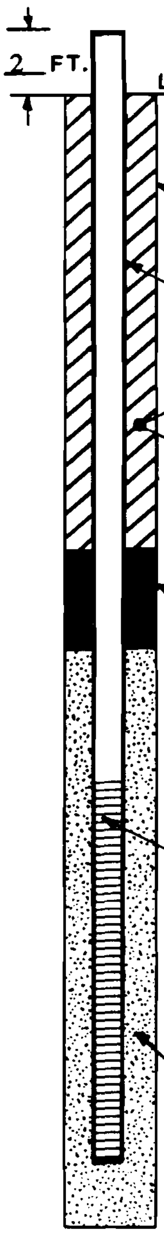
Consulting Ground-Water Geologists

ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING 4 INCH DIAMETER,

☐ BACKFILL

☒ GROUT cement

4 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

11 FT.

14 FT.

WELL SCREEN 4 INCH DIAMETER, PVC 20 SLOT

#2 GRAVEL PACK

24 FT.

27 FT.

NOTE: ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-24 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/28/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump & surge - submersible pump, 18-20 gpm for 1 hour, 12/12/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 1100-1200 GALLONS

STATIC DEPTH TO WATER 18 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/27&28/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 2
Logged By H. Gregory
Well No. MW-24
Location
M.P. Elevation
Drilling Started 11:30/27 Ended 13:30/28
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 27
Casing Diam. (in.) 4
Casing Length (ft.) 26
Screen Setting (ft.) 24 - 14
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample		0-2	Top 0.7': Dark brown fine SAND and silt. Bottom 1.3': Brown medium to coarse SAND, little fine gravel.
0			2-4'	Grab sample		2-4	Brown medium to coarse SAND, little fine gravel.
0		0.6	4-6'	60, 70, 100/1"		4-6	Brown medium to coarse SAND, some fine to coarse gravel and fractured gravel.
0		.5	6-7'	17,100/5"	SAND	6-7	Brown medium to coarse SAND, little gravel and fractured gravel.
0		.3	7-8'	39, 150/6"		7-8	Fractured rock.
0		.6	8-9'	119, 77		8-9	Brown fine to coarse SAND and gravel with fractured gravel.
0		1.2	9-11'	13, 15, 53, 87		9-11	Brown medium to coarse SAND, little gravel; fractured gravel at tip.
0		1.5	11-13'	9, 27, 42, 57		11-13	Brown medium to coarse SAND, trace fine gravel.
0		1.4	13-15'	7, 20, 27, 34		13-15	Brown fine to medium SAND
0		1.6	15-17'	15, 33, 47, 65		15-17	Brown fine to medium SAND, wet at tip Water table at 16 ft.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No.	05509Y
Date	11/27&28/90
Project	Sunnyside Yard
Client	AMTRAK
Page	2 of 2
Logged By	H. Gregory
Well No.	MW-24
Location	
M.P. Elevation	
Drilling Started	11:30/27
Ended	13:30/28
Driller	Land, Air, Water Environmental Services
Type of Rig	Hollow stem auger

WELL DATA

Hole Diam. (in.)	10
Final Depth (ft.)	27
Casing Diam. (in.)	4
Casing Length (ft.)	26
Screen Setting (ft.)	24 - 14
Screen Slot & Type	PVC
Well Status	Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S.

SAMPLER

Type	Split Spoon
Hammer	140 lb.
Fall	30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			22-24	4, 3, 8, 14		22-24	Brown fine to medium SAND, wet.
					SAND		
					------27 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

NOTE: 3rd attempt to install well. 1st and 2nd attempts abandoned due to auger; refusal and heaving sands

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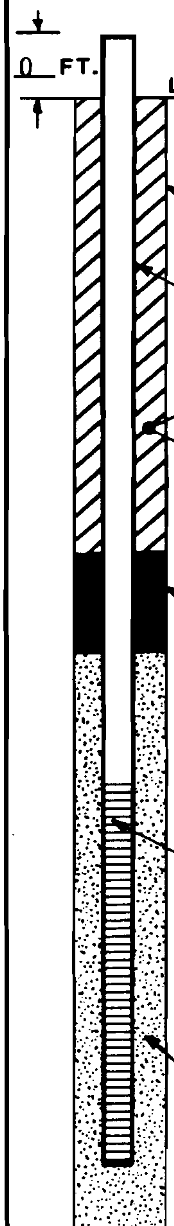
Consulting Ground-Water Geologists

ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



0 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING

4 INCH DIAMETER,

☐ BACKFILL

☒ GROUT cement

1.5 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

3.5 FT.

5.5 FT.

WELL SCREEN

4 INCH DIAMETER,

PVC 20 SLOT

#2 GRAVEL PACK

15.5 FT.

16.5 FT.

NOTE:

ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-25 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION

AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/17/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump & surge - submersible pump, 18-20 gpm for 1 hour, 12/11/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 1100-1200 GALLONS

STATIC DEPTH TO WATER 8 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS

HYDROGEOLOGIST B. Woods

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/17/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By B. Woods
Well No. MW-25
Location
M.P. Elevation
Drilling Started 10:55 Ended 12:30
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 15.5
Casing Diam. (in.) 4
Casing Length (ft.) 15
Screen Setting (ft.) 15.5 - 5.5
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S.

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample		0-2	Top 0-0.8': Dark brown fine SAND, little gravel. Bottom 0.8-2.0': Light brown fine SAND.
0			2-4'	Grab sample		2-4	Light brown medium SAND, well sorted.
0		1.2	4-6'			4-6	Light brown-gray medium SAND, well sorted.
					SAND		
0		1.5	6-8'	3, 8, 16, 25		6-8	Brown to light brown medium to coarse SAND, moist. Water table at 8 ft.
0		1.8	13-15'	6, 8, 5, 4		13-15	Brown medium SAND, well sorted, wet.
					-----15.5 ft----- Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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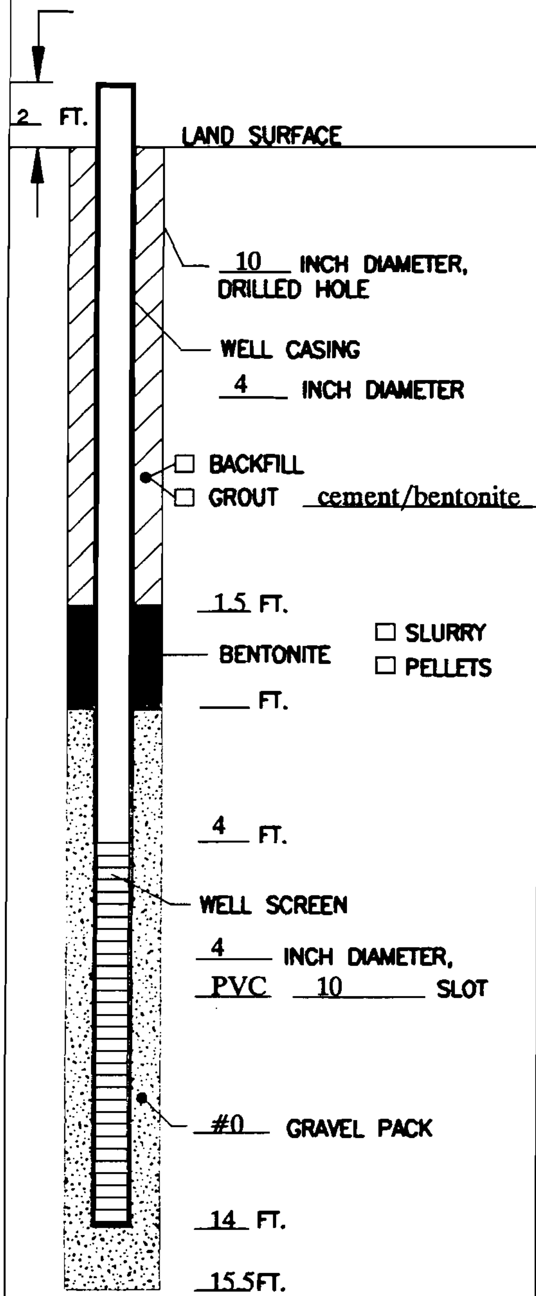
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-25A PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION

AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 01/06/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump and Surge - Submersible Pump.

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 140 GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION 1 HOURS

YIELD 3 GPM ______ DATE 01/07/93

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Pump at end of screen extends from 14' to 14.5'bls.

HYDROGEOLOGIST C. Clark

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 01/06/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By C. Clark
Well/Boring No. MW-25A
Location
M.P. Elevation
Drilling Started 12:00 Ended 12:45
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 15.5
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 14' to 4'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Cuttings
Hammer ______ lb.
Fall ______ in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
				Cuttings	Sand, gravel, cobbles	0	Dark brown to black fine to coarse(+) SAND, little fine to coarse Gravel.
						2	Brown medium to coarse(+) SAND, little coarse Gravel; Moist; (fill). Large Cobble at 2 ft bls. Brown medium to coarse SAND, trace fine to coarse Gravel.
						4	
					Sand		Brown medium to coarse SAND.
						6	
						8	
					Sand, gravel	10	Brownish gray medium to coarse SAND, trace fine Gravel. Wet at 10 ft bls.
						12	
						14	
					---------- Bottom of Boring		Bottom of boring 15.5 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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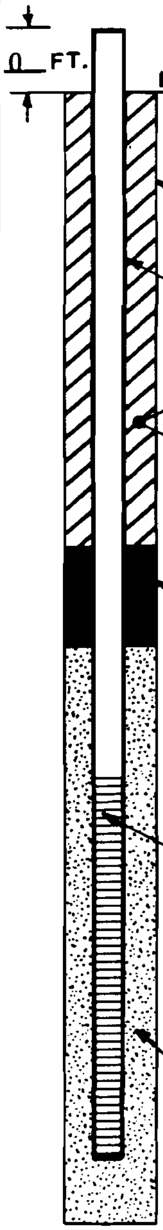
ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

1.5 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

8 FT.

11 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 20 SLOT

#2 GRAVEL PACK

21 FT.

22.5 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-26 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/05/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pump, 18-20 gpm for 1 hour, 12/12/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 1100-1200 GALLONS

STATIC DEPTH TO WATER 13 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring.

REMARKS

HYDROGEOLOGIST B. Woods

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 12/05/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By V. Singh, B. Woods
Well No. MW-26
Location
M.P. Elevation
Drilling Started 12:30 Ended 18:00
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 8
Final Depth (ft.) 22.5
Casing Diam. (in.) 4
Casing Length (ft.) 20
Screen Setting (ft.) 21 - 11
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample	SAND & SILT	0-2	Dark brown fine to medium SAND and SILT (Railroad fill)
0			2-3'	Grab sample	------2 ft------	2-3	Brown medium to fine SAND (Railroad fill).
0		0.8	3-4'			3-4	Brown fine to medium SAND, trace gravel.
		0	4-6'	N/R		4-6	Repeated auger refusals.
12		0.25'	6-8'	N/R		6-8	Fractured gravel (not enough for sampling).
70		1.1'	9-11'	N/R		9-11	Brown medium to fine SAND.
-		0	11-11.7'	N/R			
40		0.9'	12-14'	38, 28, 66, 80	SAND	12-14	Brown medium to fine SAND, some fractured gravel, wet. Water table at 13 ft
34		0.8'	17-19'	43, 67, 38, 62		17-19	Brown medium to fine SAND.
					-----22.5 ft----- Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

NOTE: 3rd attempt to install well. 1st and 2nd attempts abandoned due to auger refusal, and heaving sands

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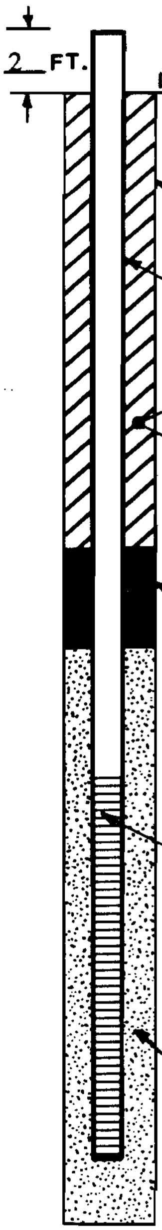
Consulting Ground-Water Geologists

ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING

4 INCH DIAMETER,

☐ BACKFILL

☒ GROUT cement

2 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

6 FT.

8 FT.

WELL SCREEN

4 INCH DIAMETER,

PVC 20 SLOT

#2 GRAVEL PACK

18 FT.

19 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-27 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/01/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump & surge - submersible pump, 8-9 gpm for 1 hour,
12/05/90

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT 500 GALLONS

STATIC DEPTH TO WATER 11 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 12/01/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory, B. Woods
Well No. MW-27
Location
M.P. Elevation
Drilling Started 13:15 Ended 16:30
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 19
Casing Diam. (in.) 4
Casing Length (ft.) 20
Screen Setting (ft.) 18 - 8
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S.

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
37			0-2'	Grab sample		0-2	Dark brown to light brown, medium SAND, some gravel, trace cobbles; dark stained in 0-7" interval.
9.0			2-4'	Grab sample		2-4	Light brown, fine to medium SAND, trace cobbles.
15.5		1.2	4-6'	N/R		4-6	Brown to light brown fine to coarse SAND, poorly sorted, wet in top 0.2.
		0	6-8'	N/R	SAND		
2.3		0.8	7-9'	11, 32, 56, 65		7-9	Gray medium to fine SAND, crushed rock.
3.9		1.1	9-11'	4, 9, 21, 19		9-11	Brown fine to medium SAND, well sorted; wet. Water table at 10 ft
11.1		1.8	14-16'	12, 34, 19, 25		14-16	Brown, medium to fine, SAND, wet.
					Bottom of boring ------19 ft------		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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Consulting Ground-Water Geologists
ROUX ASSOCIATES INC

MONITORING WELL CONSTRUCTION LOG

0 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

2 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

4 FT.

6 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 20 SLOT

#2 GRAVEL PACK

16 FT.

17 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-28 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/09/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pump, 12/11/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 50 GALLONS

STATIC DEPTH TO WATER 7.5 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS 6" clay layer encountered at 14 ft, sand, silt and clay below.

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/09/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-28
Location
M.P. Elevation
Drilling Started 08:00 Ended 11:00
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 17
Casing Diam. (in.) 4
Casing Length (ft.) 16
Screen Setting (ft.) 16 - 6
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
7.1			0-2'	Grab sample		0-2	Brown fine SAND, trace gravel and silt.
21.4			2-4'	Grab sample	SAND	2-4	Brown fine SAND, trace gravel and silt.
12		1.6	4-6'	2, 2, 2, 6		4-6	Brown fine SAND, trace silt and gravel.
10.6		1.1	6-8'	5, 5,, 6, 7		6-8	Brown fine SAND, little silt. (silt on bands 0.1' - 0.2' thick) Water table at 8 ft.
7.4		1.3	13-15'	10, 13, 10, 7		13-15	Brown fine SAND, Trace Silt and clay; gray clay layer about 0.5' at 14.5 - 15'.
		1.8	14-16'	7, 6, 13, 21	------14.5 ft----- CLAY ------15 ft------- SAND -------17 ft------ Bottom of boring	14-16	Brown fine SAND; Bottom .3': Gray brown medium to coarse SAND. Middle 0.8': Brown fine SAND, trace Silted clay top 0.5'.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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Consulting Ground-Water Geologists

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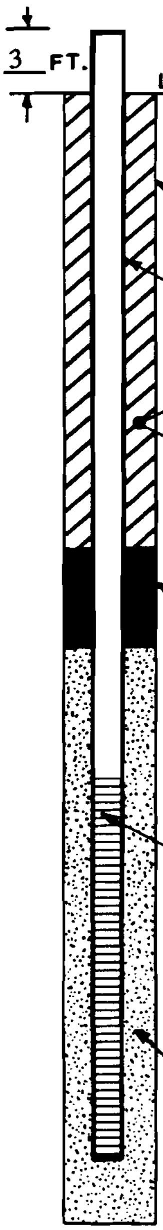
MONITORING WELL CONSTRUCTION LOG



3 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING 4 INCH DIAMETER,

☐ BACKFILL

☐ GROUT cement*

0 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

0.5 FT.

1 FT.

WELL SCREEN 4 INCH DIAMETER,

PVC 20 SLOT

#2 GRAVEL PACK

11 FT.

12 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-29 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/17/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pump, 12/13/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 100 GALLONS

STATIC DEPTH TO WATER 4 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS *Cement grout around protective steel casing.

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/17/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-29
Location
M.P. Elevation
Drilling Started 09:20 Ended 11:35
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 13
Casing Diam. (in.) 4
Casing Length (ft.) 14
Screen Setting (ft.) 11 - 1
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S.

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample		0-2	Dark Brown fine to medium SAND and silt with gravel and cinders, (Railroad bed fill), wet at 2 ft.
0			2-4'	Grab sample		2-4	Brown fine to medium SAND, trace silt and gravel, wet. Water table at 2 ft.
					SAND		
0		1.4	7-9'	2, 4, 3, 4		7-9	Brown fine SAND, trace silt and gravel.
0		1.8	11-13'	2, 2, 2, 3		11-13	Brown fine SAND, trace silt and gravel.
					------13 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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Consulting Ground-Water Geologists

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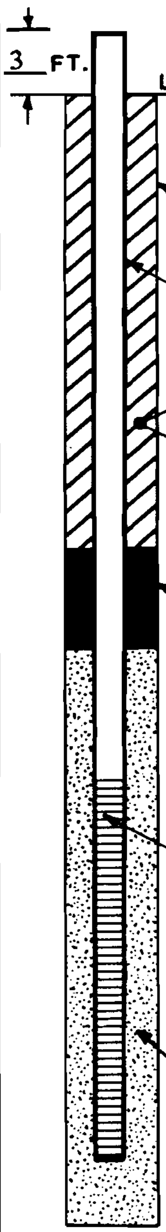
MONITORING WELL CONSTRUCTION LOG



3 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING

4 INCH DIAMETER,

☐ BACKFILL

☐ GROUT cement

1 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

2.5 FT.

4 FT.

WELL SCREEN

4 INCH DIAMETER,

PVC 20 SLOT

#2 GRAVEL PACK

14 FT.

16 FT.

NOTE:

ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-30 PERMIT NO. ____

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION

AND DATUM ____ FEET ☐ SURVEYED

☐ ESTIMATED

INSTALLATION DATE(S) 11/30/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump & surge - submersible pump, 12/05/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 25 GALLONS

STATIC DEPTH TO WATER 7.5 FEET BELOW M.P.

PUMPING DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DURATION ____ HOURS

YIELD ____ GPM ____ DATE ____

SPECIFIC CAPACITY ____ GPM/FT.

WELL PURPOSE Monitoring

REMARKS Screen set in meadow mat with organic silty clay.

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/30/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-30
Location
M.P. Elevation
Drilling Started 9:00 Ended 14:00
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 16
Casing Diam. (in.) 4
Casing Length (ft.) 17
Screen Setting (ft.) 14 - 4
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/"6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample	SAND, SILT & GRAVEL	0-2	Top 0.6': Dark brown fine to medium SAND and Silt. Middle 0.4': Cinders Bottom 1': Brown fine to coarse SAND and gravel.
0			2-4'	Grab sample		2-4	Brown fine to coarse SAND and gravel.
0		1.0	4-6'	4, 8, 7, 11	------4 ft------	4-6	Brown fine to coarse SAND, Trace gravel; wet at tip. Water table at 6 ft.
11		1.2	6-8'	2, 4, 6, 9	SAND	6-8	Top is brown fine to coarse SAND Bottom 0.2': Dark gray silty clay; organic; trace Peat.
		2	8-10'	4, 9, 6, 11	-------8 ft------ CLAY -------9 ft------	8-10	Top 0.5': Brown fine to coarse SAND Bottom 1.5': Meadow Mat; Wet.
13		2	11-13'	5, 7, 7, 9		11-13	Meadow mat with gray black organic silty clay.
					Meadow Mat with Silty CLAY ------16 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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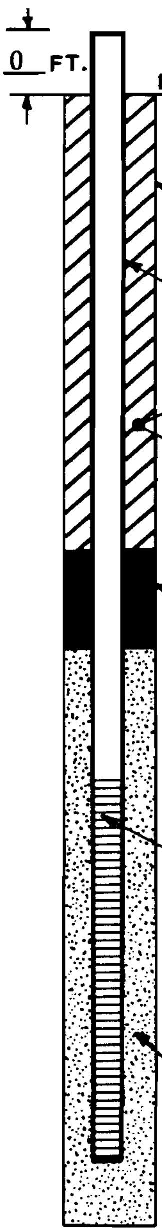
MONITORING WELL CONSTRUCTION LOG



0 FT. LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING

4 INCH DIAMETER,

☐ BACKFILL

☐ GROUT cement

0.5 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

1.5 FT.

2.5 FT.

WELL SCREEN

4 INCH DIAMETER,

PVC 20 SLOT

#2 GRAVEL PACK

12.5 FT.

13 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-31 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION

AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/08/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump & surge - submersible pump, 18-20 gpm for 1 hour, 12/11/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 1100-1200 GALLONS

STATIC DEPTH TO WATER 4 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/08/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well No. MW-31
Location
M.P. Elevation
Drilling Started 08:20 Ended 11:10
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 13
Casing Diam. (in.) 4
Casing Length (ft.) 12.5
Screen Setting (ft.) 12.5 - 2.5
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample	SAND and Silt	0-2	Brown fine SAND and silt, trace gravel, stained dark brown to black.
0			2-4'	Grab sample		2-4	Brown fine to medium SAND and silt, trace gravel.
0		0.7	4-6'	N/R	-------4 ft------	4-6	Brown fine to medium SAND, trace silt, wet. Water table at 4.5 ft.
					SAND		
25		1.2	10-12'	5, 7, 25, 50		10-12	Brown medium to coarse SAND, little fine gravel.
					------13 ft------ Bottom of boring		

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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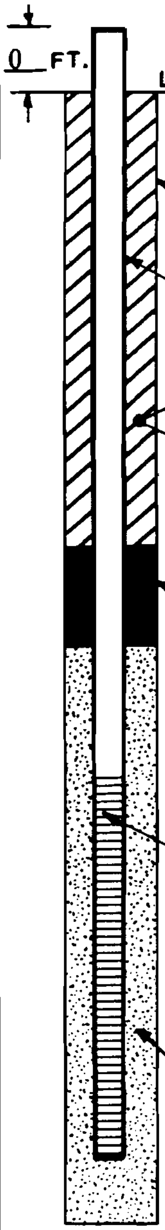
MONITORING WELL CONSTRUCTION LOG



0 FT. LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING 4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

0.5 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

1.5 FT.

2.6 FT.

WELL SCREEN 4 INCH DIAMETER, PVC 20 SLOT

#2 GRAVEL PACK

12.6 FT.

17 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-32 PERMIT NO. ____

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION AND DATUM ____ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 10/04/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump & surge - submersible pump, 12/05/90.

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 25 GALLONS

STATIC DEPTH TO WATER 4.5 FEET BELOW M.P.

PUMPING DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DURATION ____ HOURS

YIELD ____ GPM ____ DATE ____

SPECIFIC CAPACITY ____ GPM/FT.

WELL PURPOSE Monitoring

REMARKS

HYDROGEOLOGIST V. Singh

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 10/04/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By V. Singh
Well No. MW-32
Location
M.P. Elevation
Drilling Started 08:30 Ended 1000
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 17
Casing Diam. (in.) 4
Casing Length (ft.) 12.6
Screen Setting (ft.) 12.2 - 2.6
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
		1.3	0-2'	7, 11, 10, 15		0-2	Black to brown fine to coarse SAND, trace gravel finer toward bottom.
		1.3	2-4'	8, 16, 19, 8		2-4	Black to brown fine to coarse SAND, trace gravel coarser toward bottom.
		1.1	4-6'	24, 16, 8, 10		4-6	Brown medium to coarse SAND, trace gravel in Top .8'; Wet Water table at 5 ft.
					SAND		
		1.4	10-12'	7, 7, 9, 14		10-12	Brown to black medium coarse SAND, trace gravel; wet.
		1.3	15-17'	4, 8, 9, 8	------15 ft------ SAND & SILT ------17 ft------ Bottom of boring	15-17	Gray/brown fine to medium SAND and SILT, trace clay; Wet.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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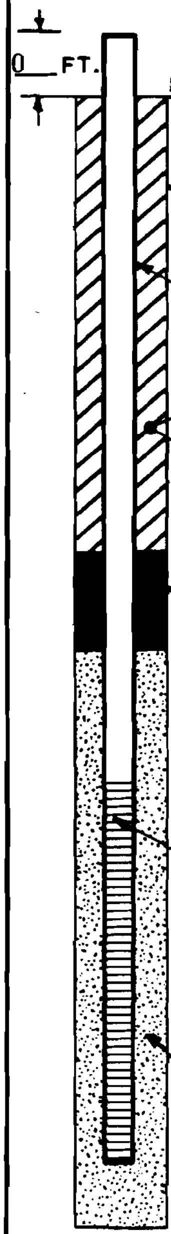
MONITORING WELL CONSTRUCTION LOG



0 FT. LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER,

☐ BACKFILL
☒ GROUT cement

3 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

6 FT.

8 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 20 SLOT

#2 GRAVEL PACK

18 FT.

18.5 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-33 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION

AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/15/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water, Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump & surge - submersible pump, 18-20 gpm for 1 hour 12/05/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 1100-1200 GALLONS

STATIC DEPTH TO WATER 10 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring Well

REMARKS

HYDROGEOLOGIST V. Singh

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/15/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By V. Singh
Well No. MW-33
Location
M.P. Elevation
Drilling Started 12:00 Ended 3:20
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 20
Casing Diam. (in.) 4
Casing Length (ft.) 18
Screen Setting (ft.) 18 - 8
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S.

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample		0-2	Black/brown fine to medium SAND and gravel (railroad bed fill).
3.8			2-4'	Grab sample		2-4	Brown fine to medium SAND, trace gravel and cobbles.
0		1.25	4-6'	N/R	SAND	4-6	Brown fine to medium SAND.
0		0	6-8'	N/R		6-8	
0		.9	8-10'	13, 21, 53, 31		8-10	Brown fine to medium SAND; Wet at top.
							Water table at 10 ft.
	0.5	18-20'	N/R		Bottom of boring ------20 ft------	18-20	Gray fine to coarse SAND, trace fine gravel; wet.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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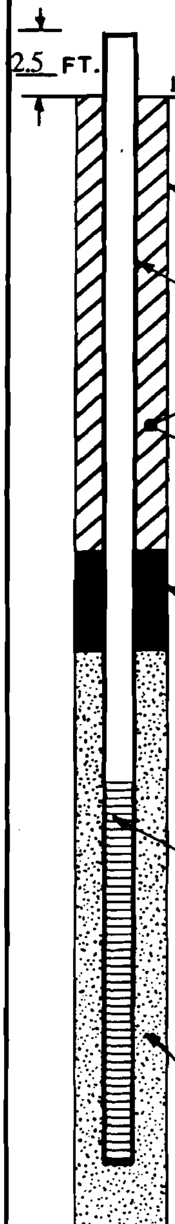
MONITORING WELL CONSTRUCTION LOG



2.5 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING

4 INCH DIAMETER,

☐ BACKFILL

☒ GROUT cement

1.5 FT.

BENTONITE ☐ SLURRY ☒ PELLETS

5 FT.

7.3 FT.

WELL SCREEN

4 INCH DIAMETER,

PVC 20 SLOT

#2 GRAVEL PACK

17.3 FT.

19 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME Amtrak/Sunnyside Yard NUMBER 05509Y

WELL NO. MW-34 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND-SURFACE ELEVATION

AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/29/90

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Enviro. Services

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump & surge - submersible pump, 12/05/90

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 15 GALLONS

STATIC DEPTH TO WATER 14.5 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring

REMARKS Screen set 3 ft above proposed depth to avoid silty clay layers below 17 ft depth.

HYDROGEOLOGIST H. Gregory/V.Singh

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 11/29/90
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By V. Singh
Well No. MW-34
Location
M.P. Elevation
Drilling Started 09:45 Ended 12:45
Driller Land, Air, Water Environmental Services
Type of Rig Hollow stem auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 21
Casing Diam. (in.) 4
Casing Length (ft.) 19.8
Screen Setting (ft.) 17.3 - 7.3
Screen Slot & Type PVC
Well Status Monitoring well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split Spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

Pump and surge

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows/6"	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
0			0-2'	Grab sample	SAND & SILT	0-2	Dark brown fine SAND and silt.
0			2-4'	Grab sample	-------2 ft------	2-4	Brown fine to medium SAND, trace fine gravel.
0		1.6	4-6'	9, 17, 23, 28	SAND	4-6	Brown fine to medium SAND, trace silt and gravel.
0		1.2	6-8'	13, 18, 22, 27		6-8	Brown fine to medium SAND, trace silt and gravel.
0		1.3	8-10'	17, 19, 25, 32		8-10	Top 0.5': Brown fine SAND, trace gravel. 0.5-1.3: Red/brown fine to medium SAND.
0		1.2	10-12'	32, 37, 45, 48		10-12	Red/brown fine to medium SAND, interbedded in layers; Wet at tip.
0		1.7	12-14'	7, 12, 17, 20		12-14	Red/brown fine SAND; Wet. Water table at 12 ft.
0		1.8	17-19'	5, 12, 25, 32	Sand, Silt and Clay	17-19	Red/brown fine sand, silt, and CLAY interbedded in layers; Wet.
*0		1.8	19-21'	N/R	------19 ft------ Clay	19-21	Red/brown CLAY and silty clay in interbedded layers. Bottom of boring at 21 ft.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

NOTE: Well Screen set high to avoid clay

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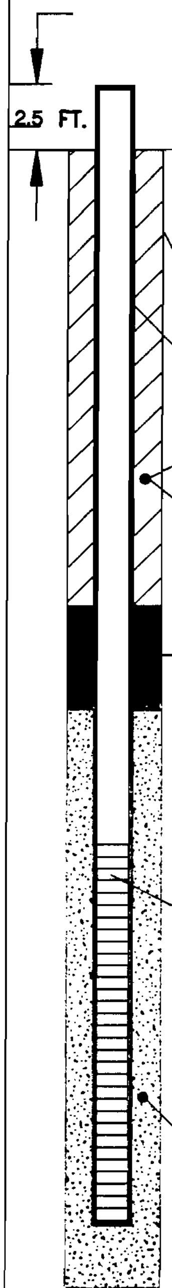
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-35 PERMIT NO. ____

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION

AND DATUM ____ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 10/15/91

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump and Surge, 10/15/91

FLUID LOSS DURING DRILLING ____ GALLONS

WATER REMOVED DURING DEVELOPMENT 100 GALLONS

STATIC DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DURATION ____ HOURS

YIELD ____ GPM ____ DATE ____

SPECIFIC CAPACITY ____ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 10/15/91
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-35
Location North of sewer line
M.P. Elevation
Drilling Started 10:45 Ended 11:15
Driller Land, Air, Water, Inc.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.) 3 ft to grade
Screen Setting (ft.) 3-13
Screen Slot & Type PVC .020 slot
Well Status Monitoring

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type cuttings
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0-5 ft	Cuttings	Sand, silt and gravel, fill	0	Orange-brown to brown, fine to medium SAND, and Silt, cinders and building debris.
						2	
					Sand, silt and gravel	4	Wet at 4.5 ft bls.
			5-10 ft	Cuttings			Gray-brown fine to medium SAND and Silt, some Gravel.
						6	
						8	
			10-14 ft	Cuttings		10	Gray-brown fine to medium SAND and Silt, some Gravel.
						12	
					-------------- Bottom of Boring	14	Bottom of boring 14 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) sample description logged from drill cuttings

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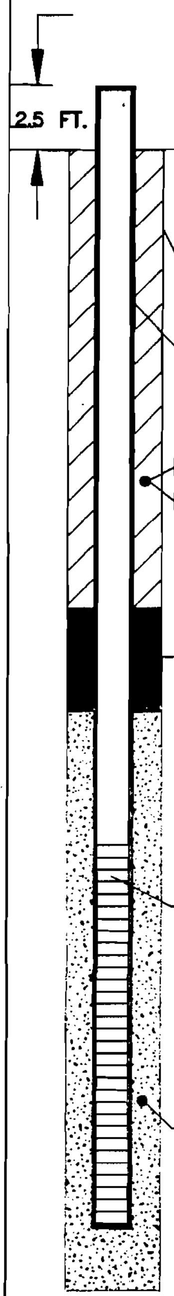
MONITORING WELL CONSTRUCTION LOG



2.5 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement

0.5 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

1.5 FT.

3 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 0.020 SLOT

#1 GRAVEL PACK

13 FT.

15 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-36 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 10/15/91

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge, 10/15/91

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ~50 GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Product observed, development water drummed.

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05509Y Date 10/15/91
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-36
Location South of sewer line
M.P. Elevation
Drilling Started 14:45 Ended 15:40
Driller Land, Air, Water, Inc.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 15
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type cuttings
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
			0-4 ft	Cuttings	Sand, silt and gravel, fill	0	Brown fine to medium SAND and Silt, bricks and debris.
						2	
			4-7 ft	Cuttings		4	Brown fine to medium SAND and Silt, bricks and debris; Petroleum odor. Wet at 4.5 - 5 ft bls.
						6	
			7-9 ft	Cuttings		8	Gray-brown, fine to medium SAND and Silt, some RR bed cinders; Strong petroleum odor.
			9-13 ft	Cuttings	Sand, silt and gravel	10	Gray-brown, fine to medium SAND and Silt, some Gravel.
						12	
			13-15 ft	Cuttings		14	Gray-brown fine to coarse SAND, some Gravel.
							Bottom of boring 15 ft bls.
					-------------- Bottom of Boring	16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) sample description logged from drill cuttings

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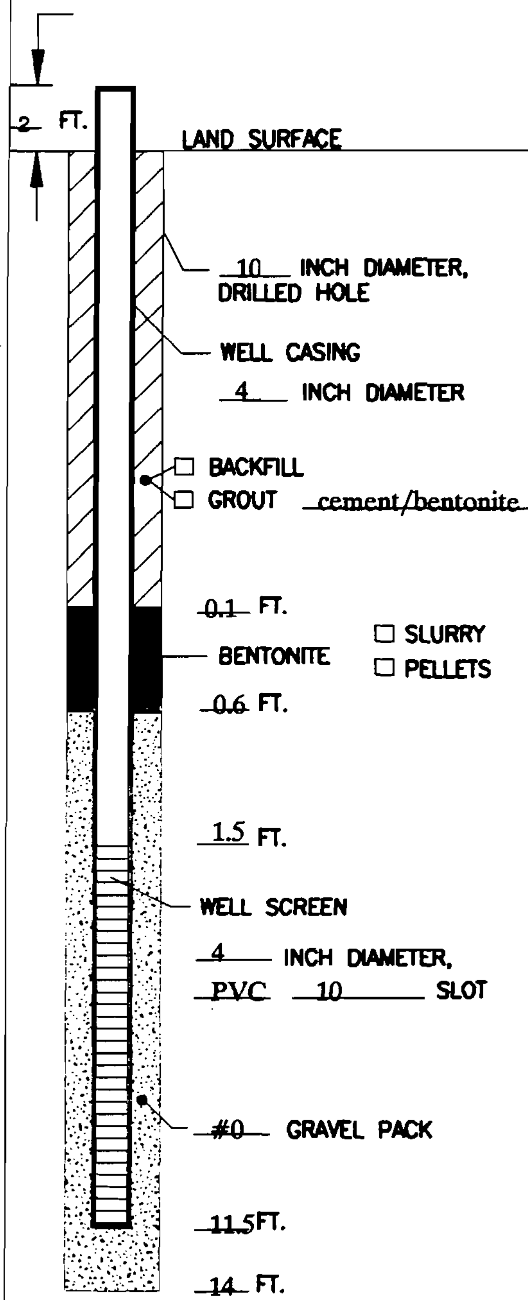
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-37 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET

☐ SURVEYED

☐ ESTIMATED

INSTALLATION DATE(S) 12/14/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 12/14/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-37
Location
M.P. Elevation
Drilling Started 11:30 Ended 14:20
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 11.5' to 1.5'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
			0 - 3'	Posthole	Sand	0	Brown fine to medium SAND.
						2	
0	1	2	3-4'		Sand, gravel, cinders, railroad fill	4	Grey brown to black stained fine to medium SAND, trace Gravel and Cinders; Railroad ballast. Wet at 3 ft bls.
			4-6'		Sand, gravel		Brown fine to medium SAND, trace Gravel; No odor; No sheen.
						6	
						8	
0	2	1.9	9 - 11'		Sand, silt		Tan fine SAND, trace Silt.
						10	
						12	
					----------- Bottom of Boring	14	Bottom of Boring 14 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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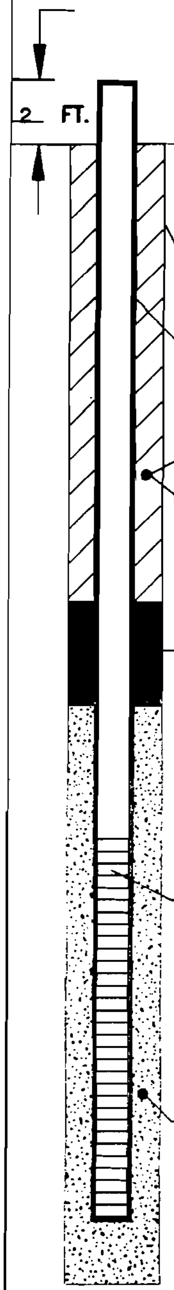
MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

23 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

25 FT.

29.5 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

39.5 FT.

44 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-38D PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/10 - 11/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ______

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.I

PUMPING DEPTH TO WATER ______ FEET BELOW M.I

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 12/10-13/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 2
Logged By H. Gregory
Well/Boring No. MW-38D
Location
M.P. Elevation
Drilling Started 10:00 Ended 13:00
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 44
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 39.5' to 29.5'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
			0-4'	Posthole	Railroad Fill, sand Sand	0	Brown-black stained fine to medium SAND; Railroad ballast. Orange-brown fine to medium SAND.
						2	
0	1	1.2	4-6'			4	Grey/brown medium to coarse SAND.
0	2	2	6-8'		Sand, gravel, brick	6	Grey-brown fine to coarse SAND, trace Gravel, trace of red brick (fill).
						8	
0	3	1	9-11'	10,5,6,6	Sand, cinders		Grey-brown medium to coarse SAND; Cinders (fill).
						10	
						12	
0	4	1	14-16'	24,16,14,15	Sand, gravel	14	Grey-brown fine to coarse SAND, trace Gravel.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 12/13/93
Project Sunnyside Yard
Client AMTRAK
Page 2 of 2
Logged By H. Gregory
Well/Boring No. MW-38D
Location
M.P. Elevation
Drilling Started 10:00 Ended 13:00
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 44
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 39.5' to 29.5'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
						40	
						42	
					----------- Bottom of Boring	44	Bottom of boring 44 ft bls.
						46	
						48	
						50	
						52	
						54	
						56	
						58	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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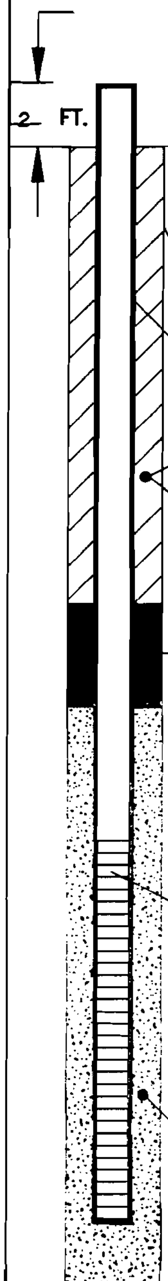
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

23 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

27 FT.

30.5 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

40.5 FT.

43.5 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-39D PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/15 - 16/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 12/15-16/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 3
Logged By H. Gregory and J. Gerlach
Well/Boring No. MW-39D
Location
M.P. Elevation
Drilling Started 14:15 Ended 13:00
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 43.5
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 40.5' to 30.5'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
30			0-2'	Grab Sample	Sand, railroad fill	0	0 - 19' based on log MW-19(Project #05509Y). Dark brown fine to medium SAND; Gravel; Cinders; Railroad bed fill.
70/23			2-4'	Grab Sample	Sand, silt	2	Dark brown fine to medium SAND; Gravel; Cinders; Railroad bed fill. Brown fine to coarse SAND, trace Silt.
18			4-6'	1,3,4,10		4	Brown to gray-brown fine SAND, trace Silt; Iron staining; gray fine sand with wet clayey silt in tip. Wet at 5.5 ft bls.
3.9			6-8'	4,5,5,6	Sand	6	Gray-brown fine SAND, trace clayey Silt. Brown fine to medium SAND.
						8	
						10	
60			12-14'	18,21,29,30	Sand, silt	12	Brown fine to coarse SAND, trace Silt.
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 12/15-16/93
Project Sunnyside Yard
Client AMTRAK
Page 2 of 3
Logged By H. Gregory and J. Gerlach
Well/Boring No. MW-39D
Location
M.P. Elevation
Drilling Started 14:15 Ended 13:00
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 43.5
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 40.5' to 30.5'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0	1	2	19-21'		Sand, silt	20	Tan fine to medium SAND. Grey-brown fine to medium SAND, trace Silt.
						22	
						24	No sample, unable to wash out over 5 ft of sand in augers.
						26	
						28	
						30	
						32	
						34	
						36	
						38	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 12/15-16/93
Project Sunnyside Yard
Client AMTRAK
Page 3 of 3
Logged By H. Gregory and J. Gerlach
Well/Boring No. MW-39D
Location
M.P. Elevation
Drilling Started 14:15 Ended 13:00
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 43.5
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 40.5' to 30.5'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
						40	
						42	
					------------ Bottom of Boring	44	Bottom of Boring 43.5 ft bls.
						46	
						48	
						50	
						52	
						54	
						56	
						58	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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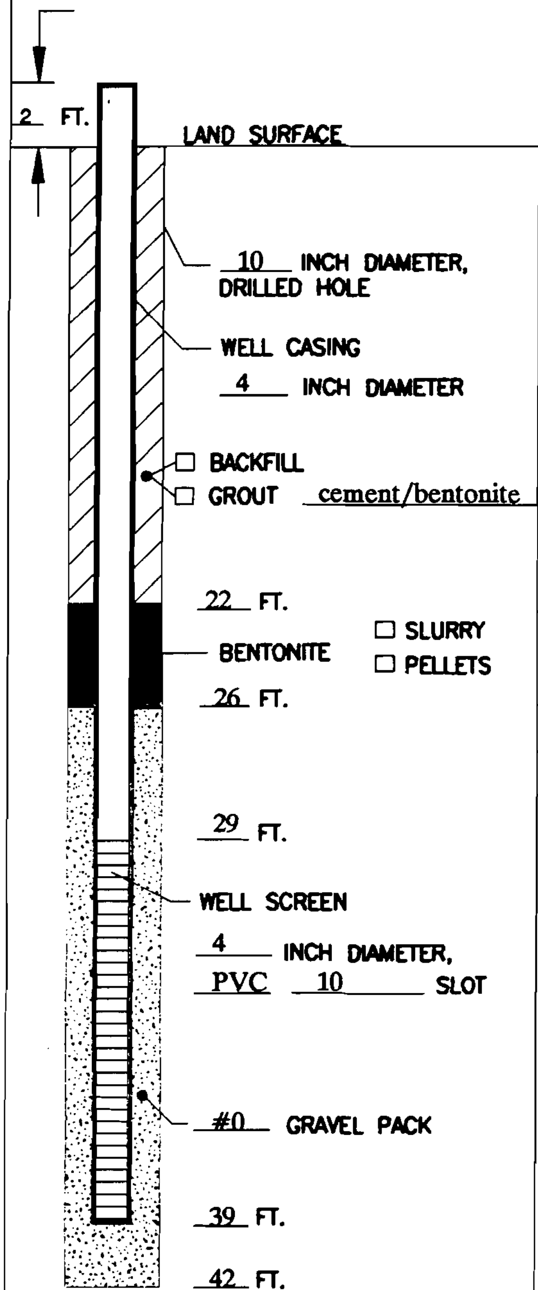
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-40D PERMIT NO. ____

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION

AND DATUM ____ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/09/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ____

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pump and Surge

FLUID LOSS DURING DRILLING ____ GALLONS

WATER REMOVED DURING DEVELOPMENT ____ GALLONS

STATIC DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DURATION ____ HOURS

YIELD ____ GPM ____ DATE ____

SPECIFIC CAPACITY ____ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 11/09/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 3
Logged By H. Gregory and J. Gerlach
Well/Boring No. MW-40D
Location
M.P. Elevation
Drilling Started 10:00 Ended 19:30
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 42
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 39' to 29'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
			0 - 3'	Posthole	Railroad Fill	0	Black stained SAND and Gravel; Railroad ballast.
						2	
10.0	1	1.5	3 - 5'	9,10,9,11	Sand, gravel		Brown fine to coarse(+) SAND, trace Gravel; Moderate sewer odor.
						4	
14.5	2	1.5	5 - 7'	25,18,15,19		6	Dark brown fine to coarse SAND, trace Gravel; Finer grained at tip of spoon; Mild sewer odor. Wet at 5 ft bls.
						8	
12.0	3	1	10 - 12'	1,13,16,19		10	Brown medium to coarse(+) SAND, trace Gravel; No odor.
						12	
						14	
7.0	4	0.7	15 - 17'	27,22,10,9		16	Brown medium to coarse(+) SAND, trace Gravel; No odor.
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 11/09/93
Project Sunnyside Yard
Client AMTRAK
Page 2 of 3
Logged By H. Gregory and J. Gerlach
Well/Boring No. MW-40D
Location
M.P. Elevation
Drilling Started 10:00 Ended 19:30
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 42
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 39' to 29'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
5.0	5	2	20 - 22'	31,25,23,23	Sand, gravel	20	Brown medium to coarse(+) SAND, trace Gravel; No odor.
					Sand, silt	22	Grey-brown fine to medium(+) to coarse SAND, trace Silt.
						24	
3.5	6	1.7	25 - 27'	18,30,54,58	Sand, gravel		Medium to coarse SAND, trace Gravel; (appears to be auger wash)
						26	
			28 - 32'	Cuttings	Cobble layer	28	Cobble zone.
						30	
				Cuttings	Sand, gravel, cobbles	32	Fine to coarse SAND, trace Gravel; Cobbles; Drilled like Sand.
						34	
						36	
						38	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 11/09/93
Project Sunnyside Yard
Client AMTRAK
Page 3 of 3
Logged By H. Gregory and J. Gerlach
Well/Boring No. MW-40D
Location
M.P. Elevation
Drilling Started 10:00 Ended 19:30
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 42
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 39' to 29'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
				Cuttings	Sand, gravel, cobbles	40	Fine to coarse SAND, trace Gravel, trace Cobbles; Drilled like Sand
					----------- Bottom of Boring	42	Bottom of Boring 42 ft bls
						44	
						46	
						48	
						50	
						52	
						54	
						56	
						58	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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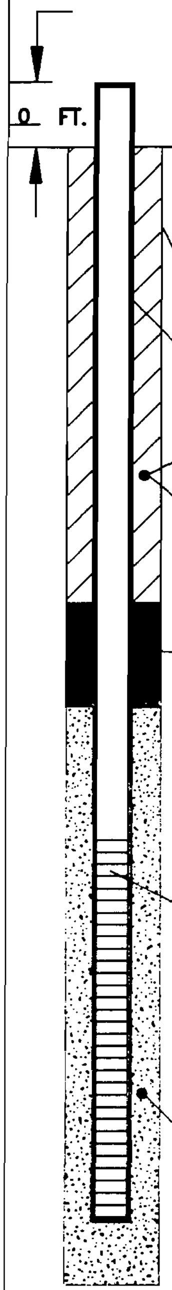
MONITORING WELL CONSTRUCTION LOG



0 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement

1 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

2 FT.

3.4 FT.

WELL SCREEN
4 INCH DIAMETER,
SS 10 SLOT

#0 GRAVEL PACK

13.4 FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05511Y

WELL NO. MW-41 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 10/30/91

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge - Centrifugal Pump, 10/30/91

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT ~500 GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION 2 HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Flush mount to grade.

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05511Y Date 10/30/91
Project Sunnyside Yard UST
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-41
Location Area 2
M.P. Elevation
Drilling Started 13:40 Ended 14:15
Driller Land, Air, Water
Type of Rig B-61 Mobile

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.) 1
Screen Setting (ft.) 13.4
Screen Slot & Type 10 Slot - SS
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type Split spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION
159 ppm			0 - 2'	Grab Sample	Railroad Fill	0	Dark brown fine to coarse SAND with railroad bed fill.
			2 - 4'	Grab Sample	Sand and Gravel	2	Brown to orange brown medium to coarse SAND, trace gravel. Petroleum odor.
151 ppm	0.9		4 - 6'	4,7,12,18		4	Orange brown medium to coarse SAND trace gravel. Slight staining, moist, odor.
54.8	0.5		6 - 8'	8,7,16,19		6	Brown medium to coarse SAND/trace gravel. Odor, wet, water table at 6.4 ft.
40.1	0.6		8 - 10'	25,17,9,8		8	Grey to black medium to coarse SAND, trace gravel. Odor, staining.
38.2	1.1		10 - 12'	8,7,10,11		10	Grey medium to coarse SAND, trace gravel. Slight odor.
						12	
					------------------- Bottom of Boring	14	Bottom of boring 14 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing

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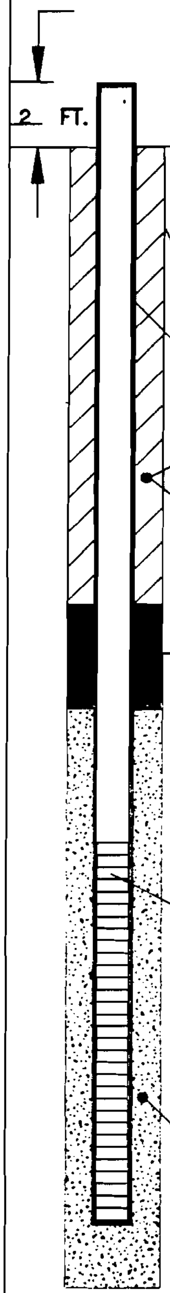
MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

0.2 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

0.8 FT.

2 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

12 FT.

13.5FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-42 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 01/18/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Pump at end of screen extends form 12' to 12.5'bls

HYDROGEOLOGIST D. Keohane

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 01/18/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By D. Keohane
Well/Boring No. MW-42
Location
M.P. Elevation
Drilling Started 13:45 Ended 14:40
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 13.5
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 12' - 2'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	SAMPLE Rec.	SAMPLE Depth	SAMPLE Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
				Posthole	Sand, railroad fill	0	Dark brown medium to coarse SAND, trace Cobble; Railroad ballast.
							Dark brown to black coarse SAND, some coarse gravel; Coal; Cinder fragments.
						2	
0.3		2.0	3-5'	15,20,20,18	Sand, gravel		Reddish-brown medium to coarse SAND, little fine to coarse Gravel.
						4	
							Wet at 5 ft bls.
				Cuttings	Sand	6	Reddish-brown medium to coarse SAND.
						8	
0.0		2.0	10-12'	10,14,26,36	Sand, silt	10	Reddish-brown fine SAND, little Silt; Tight.
						12	
					------------ Bottom of Boring		Bottom of boring 13.5 ft bls.
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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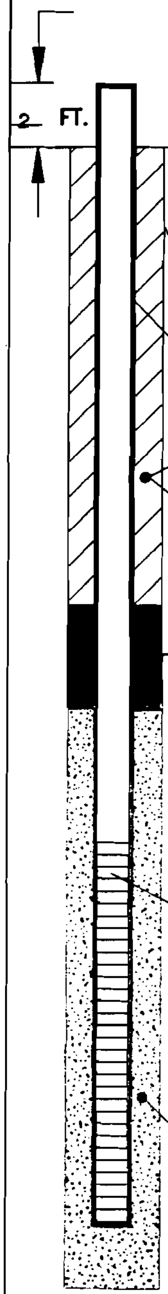
MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

11 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement

0.5 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

1.5 FT.

2.5 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

12.5FT.

14.0FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-43 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 01/29/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge - Submersible Pump.

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION 6 HOURS

YIELD 230 GPM 0.5 DATE 02/01/93

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Sump at end of screen extends from 12.5' to 13.0'bls.
-Well pumped sporadically(approx. 7.5gpm for <1 minute before running dry).
-Well as originally installed on 1-14-93 but was damaged and abandoned.

HYDROGEOLOGIST C. Clark

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No.	05526Y
Date	01/29/93
Project	Sunnyside Yard
Client	AMTRAK
Page	1 of 1
Logged By	C. Clark
Well/Boring No.	MW-43
Location	
M.P. Elevation	
Drilling Started	12:20
Ended	
Driller	A.D.T.
Type of Rig	Hollow Stem Auger

WELL DATA

Hole Diam. (in.)	10
Final Depth (ft.)	14'
Casing Diam. (in.)	4
Casing Length (ft.)	
Screen Setting (ft.)	12.5' ro 1.5'bls.
Screen Slot & Type	10 Slot - PVC
Well Status	Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type	2" Split-spoon
Hammer	140 lb.
Fall	30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
			0-3'	Posthole	Sand, railroad fill	0	0-9' based on Log MW-44 Dark brown coarse SAND; Railroad ballast.
					Sand, gravel, cobbles	2	Light brown medium to coarse(+) SAND, little fine to coarse(+) Gravel, trace Cobbles.
		1.5	9-11'	6,7,6,7	Sand, silt, gravel		Gray fine SAND and Silt, trace coarse Gravel; Tight. Wet at 9 ft bls.
					Silt, clay	10	Mottled gray and reddish-brown SILT and Clay.
					---------- Bottom of Boring	14	Bottom of boring 14 ft bls.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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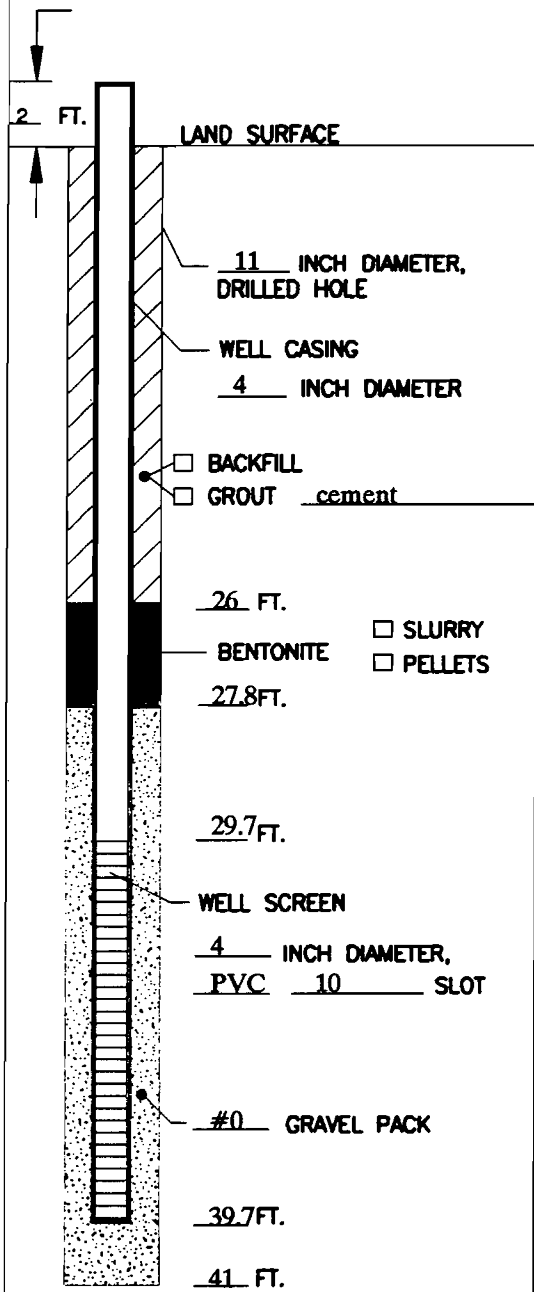
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-44 PERMIT NO. ____

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ____ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 01/19/93 - 01/20/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge - Submersible Pump.

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT ____ GALLONS

STATIC DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DURATION ____ HOURS

YIELD ____ GPM ____ DATE 01/27/93

SPECIFIC CAPACITY ____ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Sump at end of screen extenda from 39.7 tp 40.2'bls.
-Well was originally on 01/13/93 but was damaged & had to be abandoned.

HYDROGEOLOGIST C. Clark

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date
Project Sunnyside Yard
Client AMTRAK
Page 1 of 3
Logged By C. Clark
Well/Boring No. MW-44
Location
M.P. Elevation
Drilling Started Ended
Driller A.D.T.
Type of Rig B-57 ATV

WELL DATA

Hole Diam. (in.) 11
Final Depth (ft.) 41
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 39.7 to 28.7 ft bls
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
				Posthole	Sand, railroad fill	0	Dark brown stained coarse SAND; Railroad ballast.
					Sand, gravel, cobbles	2	Light brown medium to coarse (+) SAND, little fine to coarse Gravel, trace Cobbles.
		0	4-6'	5,3,5,4		4	No recovery. Wet at 4 ft bls.
						6	
						8	
		1.5	9-11'	6,7,6,7	Sand, silt, gravel		Grey fine SAND and Silt, trace coarse Gravel.
					Silt, clay	10	Grey to reddish-brown mottled fine SILT and Clay; Tight.
						12	
		0	14-16'	20,20,20,22		14	No Recovery.
						16	
					Cobbles		Cobble zone.
					Sand		Grey medium to coarse (+) SAND
						18	
		2	19-21'	7,3,2,2	Sand, silt, clay		Brown medium to fine SAND, some Silt, trace Clay; Tight.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 01/13/93
Project Sunnyside Yard
Client AMTRAK
Page 2 of 3
Logged By C. Clark
Well/Boring No. MW-44
Location
M.P. Elevation
Drilling Started 12:55 Ended
Driller A.D.T.
Type of Rig B-57 ATV

WELL DATA

Hole Diam. (in.) 11
Final Depth (ft.) 41
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 39.7' to 29.7'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
					Sand, silt, clay	20	
						22	
		2	24-26'	26,14,6,14	Sand, silt	24	Tan, fine(+) to medium SAND, trace Silt; Tight.
						26	
						28	
		1.3	29-31'	14,15,16,24			Tan medium to fine(+) SAND, trace Silt; Tight.
						30	
						32	
					Cobbles		Cobble zone.
		0.25	34-36'	64, 50/3"	Cobbles, sand	34	Fractured cobbles. Red-brown medium SAND.
						36	
						38	
							Cobbles.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 01/13/93
Project Sunnyside Yard
Client AMTRAK
Page 3 of 3
Logged By C. Clark
Well/Boring No. MW-44
Location
M.P. Elevation
Drilling Started 12:55 Ended
Driller A.D.T.
Type of Rig B-57 ATV

WELL DATA

Hole Diam. (in.) 11
Final Depth (ft.) 41
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 39.7' to 29.7'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
					Cobbles	40	
					----------- Bottom of Boring	41	Bottom of boring 41 ft bls.
						42	
						44	
						46	
						48	
						50	
						52	
						54	
						56	
						58	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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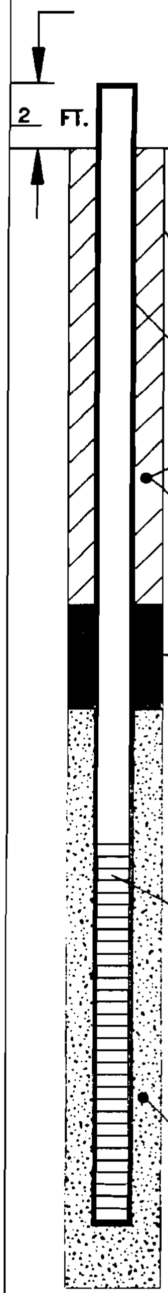
MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

11 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement

3.5 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

5 FT.

7 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

17.0FT.

20 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-45 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 01/11/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge - Submersible Pump

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 560 GALLONS

STATIC DEPTH TO WATER 10.6 FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD 8 GPM ______ DATE 01/12/93

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Sump at end of screen extends from 17' to 17.5'bls.

HYDROGEOLOGIST D. Keohane

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 01/11/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By D. Keohane
Well/Boring No. MW-45
Location
M.P. Elevation
Drilling Started 09:00 Ended 10:25
Driller A.D.T.
Type of Rig B-57 ATV

WELL DATA

Hole Diam. (in.) 11
Final Depth (ft.) 20
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 17 to 7 ft bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
				Posthole	Sand, gravel, cobbles	0	Dark brown to black fine to coarse SAND, little coarse Gravel, trace Cobble. Tan-brown medium to coarse SAND, little fine to coarse Gravel, trace Cobble; Moist.
						2	
				Cuttings			Red-brown medium to coarse SAND, little fine to coarse gravel, trace cobble, moist.
						4	
							Red-brown medium to coarse SAND, little fine to coarse gravel, trace cobble.
						6	
						8	
					Sand, gravel	10	Brown medium to coarse SAND little fine to coarse(+) Gravel.
						12	Wet at 12 ft bls.
						14	
						16	
						18	
					------------ Bottom of Boring		Bottom of Boring 20 ft bls.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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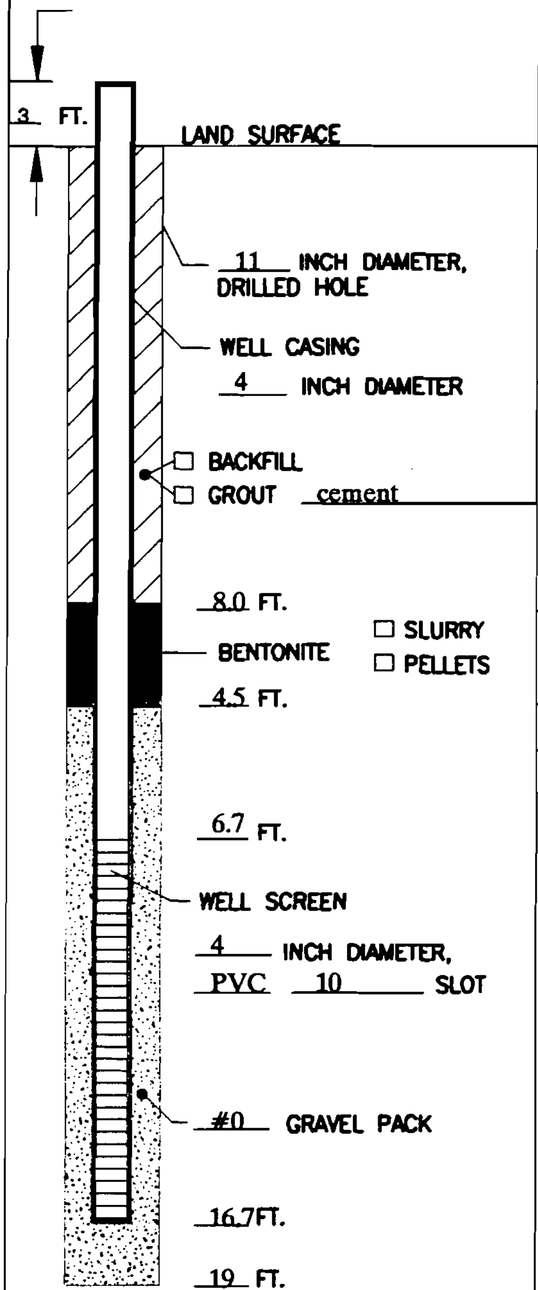
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-46 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 01/11/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge - Submersible Pump.

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.I

PUMPING DEPTH TO WATER ______ FEET BELOW M.I

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE 01/12/93

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Sump at end of screen extends from 16.7' to 17.2'bls.

HYDROGEOLOGIST D. Keohane

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 01/11/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By D. Keohane
Well/Boring No. MW-46
Location
M.P. Elevation
Drilling Started 12:50 Ended 15:45
Driller A.D.T.
Type of Rig B-57 ATV

WELL DATA

Hole Diam. (in.) 11
Final Depth (ft.) 19
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 16.7 to 6.7 ft bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
				Posthole	Sand, gravel	0	Dark brown to black stained, medium to coarse SAND, little fine to coarse(+) Gravel, trace Cobble; Moist. Dark brown fine to medium SAND, trace coarse Gravel.
						2	
		1.2'	4 - 6'	3,3,4,11		4	Dark brown fine to medium SAND, trace coarse Gravel; Coal fragments. Light brown medium to coarse SAND, little fine to coarse Gravel.
5.3		1.5'	6 - 8'	16,11,11,17		6	Cobble fragments. Light brown medium to coarse SAND, trace fine Gravel.
4.7		1.2'	8 - 10'	5,20,25,34		8	Light brown medium to coarse SAND, little fine grey Gravel. Light brown medium to coarse SAND, little fine to coarse(+) Gravel. Wet at 9 ft bls.
						10	
						12	
5.5		2.0	13 - 15'	17,23,42,39			Brown fine to medium SAND, trace coarse Gravel; Cinders, piece of plastic (fill).
						14	No split spoon below 15 feet
						16	
					------------- Bottom of boring	18	Bottom of boring 19.0 ft bls.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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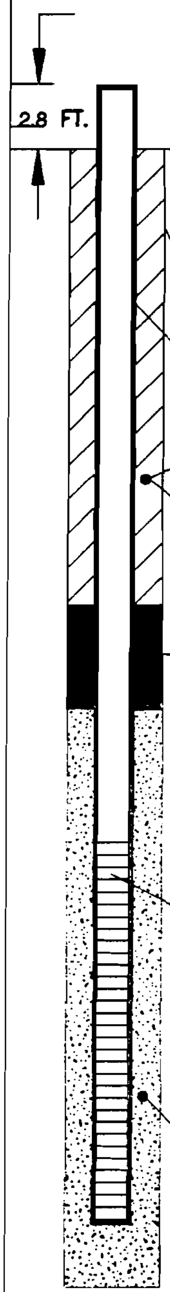
MONITORING WELL CONSTRUCTION LOG



2.8 FT.

LAND SURFACE

11 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement

1 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

2 FT.

3 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

13 FT.

14.5FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-47 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 01/05/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge - Submersible Pump.

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE 01/7-8/93

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Sump at end of screen extends from 13' to 13.5'bls.

HYDROGEOLOGIST D. Keohane

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 01/05/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By D. Keohane
Well/Boring No. MW-47
Location
M.P. Elevation
Drilling Started 12:10 Ended 16:45
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 11
Final Depth (ft.) 14.5
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 13' to 3'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0-2'	Posthole	Concrete Sand, silt	0	Concrete pavement. Brown, medium to coarse SAND. Gray fine to coarse SAND, little silt, moist.
0.0		1.0	2-4'	7,6,5,11		2	Gray fine to coarse SAND.
					Sand, silt, mica	4	Gray fine SAND and Silt; Mica flakes; Moist.
0.0		0.0	4-6'	7,6,3,4			
0.0		1.0	6-8'	7,2,2,4	Sand, gravel Sand	6	Gray fine to coarse SAND, trace fine Gravel. Brown medium to coarse SAND. Wet at 6.5 ft bls.
0.0		2.0	8-10'	7,6,4,4		8	Brown medium to coarse SAND.
					Sand, gravel	10	Brown medium to coarse SAND, trace fine Gravel.
		0.0	10-12'	14,12,14,9			
0.0		1.2	12-14'	15,20,16,17		12	Brown medium to coarse SAND, some fine(+) to coarse Gravel; Loose.
					------------ Bottom of Boring	14	Bottom of boring 14.5 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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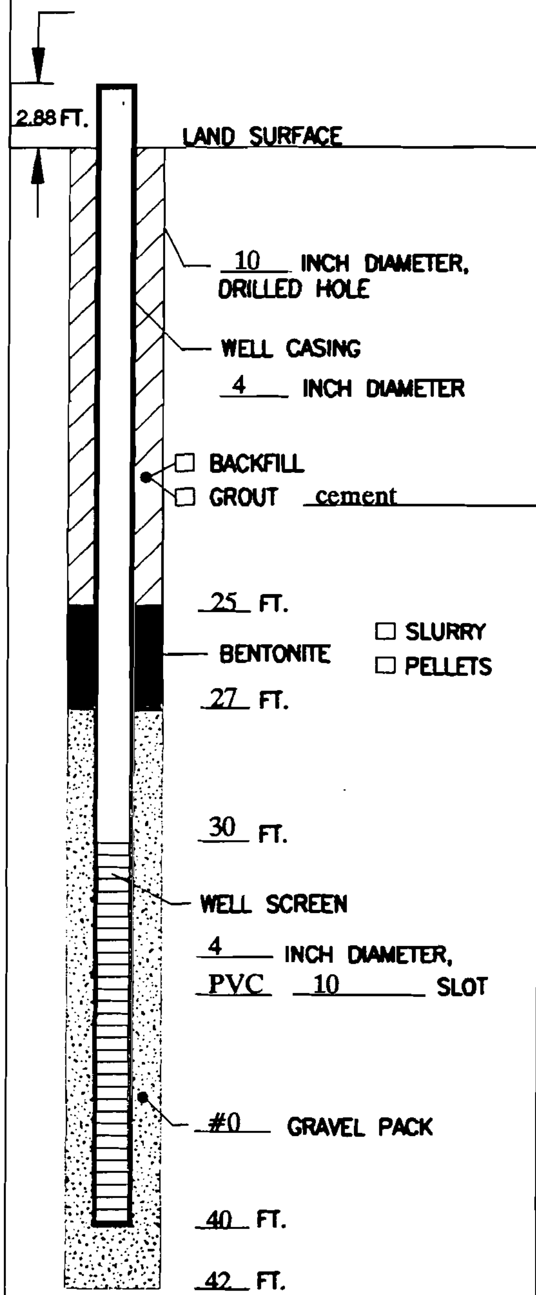
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05526Y

WELL NO. MW-48 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM 28.29 FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 2/1/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID None

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge - Submersible Pump

FLUID LOSS DURING DRILLING None GALLONS

WATER REMOVED DURING DEVELOPMENT 950 GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION 7.5 HOURS

YIELD ______ GPM ______ DATE 2/2/93

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS Sump at end of screen extends from 40 ft bls to 40.4 ft bls. Well pumped sporadically, approximately 10 gpm for two minutes before running dry.

HYDROGEOLOGIST H. Gregory, D. Keohane

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 02/01/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 3
Logged By H. Gregory, D. Keohane and C. Clark
Well/Boring No. MW-48
Location
M.P. Elevation
Drilling Started Ended
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 11
Final Depth (ft.) 42.0
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 30 to 40 ft bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3] Lithology to 14 ft bls based on log for MW-47
			0-2'	Posthole	Concrete Sand, silt	0	Concrete pavement. Brown, medium to coarse SAND. Gray fine to coarse SAND, little silt, moist.
0.0		1.0	2-4'	7,6,5,11		2	Gray fine to coarse SAND.
					Sand, silt, mica		Gray fine SAND and Silt; Mica flakes; Moist.
0.0		0.0	4-6'	7,6,3,4		4	
0.0		1.0	6-8'	7,2,2,4	Sand, gravel Sand	6	Gray fine to coarse SAND, trace fine Gravel. Brown medium to coarse SAND. Wet at 6.5 ft bls.
0.0		2.0	8-10'	7,6,4,4		8	Brown medium to coarse SAND.
					Sand, gravel		Brown medium to coarse SAND, trace fine Gravel.
		0.0	10-12'	14,12,14,9		10	
0.0		1.2	12-14'	15,20,16,17		12	Brown medium to coarse SAND, some fine(+) to coarse Gravel; Loose.
2.1		2.0	14-16'	11,7,5,6		14	Brown medium to coarse SAND, trace fine to coarse Gravel; Loose.
		0.0	16-18'	15,11,14,17		16	No recovery.
		1.5	18-20'	12,11,13		18	Brown medium(+) to coarse SAND.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 02/01/93
Project Sunnyside Yard
Client AMTRAK
Page 2 of 3
Logged By H. Gregory, D. Keohane & C. Clark
Well/Boring No. MW-48
Location
M.P. Elevation
Drilling Started Ended
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 42
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
					Sand	20	
						22	
						24	
2.2		2.0	25-27'	54,40,55/5	Cobble zone		Cobble Zone Brown fine SAND. Brown fine SAND and Silt. Brown medium to coarse SAND and fine Gravel; Narrow band of green staining. Grey fine SAND and Silt, little coarse Gravel.
						26	
					Sand, silt, gravel	28	
						30	Drilling advances easily to 41.5 ft bls.
						32	
						34	
						36	
						38	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05526Y Date 02/01/93
Project Sunnyside Yard
Client AMTRAK
Page 3 of 3
Logged By H. Gregory,D. Keohane&C. Clark
Well/Boring No. MW-48
Location
M.P. Elevation
Drilling Started Ended
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 41.5
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
						40	
					----------- Bottom of Boring	42	Bottom of Boring 41.5 ft bls.
						44	
						46	
						48	
						50	
						52	
						54	
						56	
						58	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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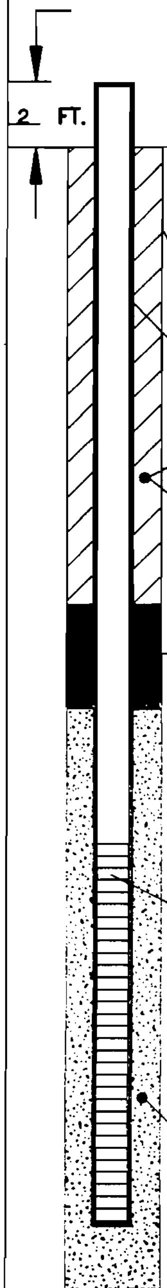
MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

0.3 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

0.8 FT.

1.7 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

11.7FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-49 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/13/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ______

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 12/13/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-49
Location
M.P. Elevation
Drilling Started 13:15 Ended 15:45
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 11.7 to 1.7'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
			0 - 4'	Posthole	Railroad Fill, sand	0	Brown-black stained fine to medium SAND; Railroad ballast.
					Sand	2	Orange-brown fine to medium SAND.
							Wet at 3.2 ft bls.
0	1	1.2	4 - 6'			4	Orange-brown fine to medium SAND.
							Grey-brown medium to coarse SAND.
0	2	2	6 - 8'		Sand, gravel, brick	6	Grey-brown fine to coarse SAND, trace Gravel, trace Red Brick (fill).
						8	
0	3	1	9 - 11'	10,5,6,6	Sand, cinders		Grey-brown medium to coarse SAND; Cinders (fill).
						10	
					Sand, silt, clay		Grey-brown fine SAND and Silt, trace Clay in spoon tip.
						12	
					----------- Bottom of Boring	14	Bottom of Boring at 14' below land surface.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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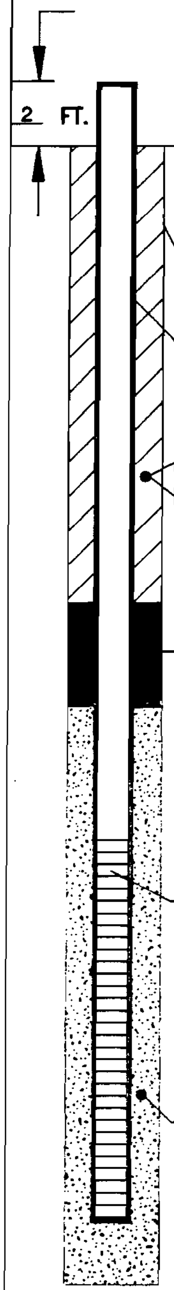
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-50 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/17/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ______

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 12/17/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-50
Location
M.P. Elevation
Drilling Started 11:15 Ended 13:00
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 15
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 12 - 2'
Screen Slot & Type 20 Slot - S/S
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0 - 5'	Posthole	Railroad Fill, sand	0	Brown fine to medium SAND; Railroad ballast.
					Sand, silt, clay		Green-grey fine SAND and Silt, trace Clay.
13.5						4	Green-grey fine SAND and Silt, trace Clay; Stained grey; Moist; Petroleum hydrocarbon odor.
50.4	1	2	9 - 11'		Sand, silt		Grey stained fine to medium SAND, trace Silt.
20.1	2	1	13 - 15'		Sand		Grey-brown fine to medium SAND.
					----------- Bottom of Boring		Bottom of Boring 15 ft bls.

Depth scale (ft): 0, 2, 4, 6, 8, 10, 12, 14, 16, 18

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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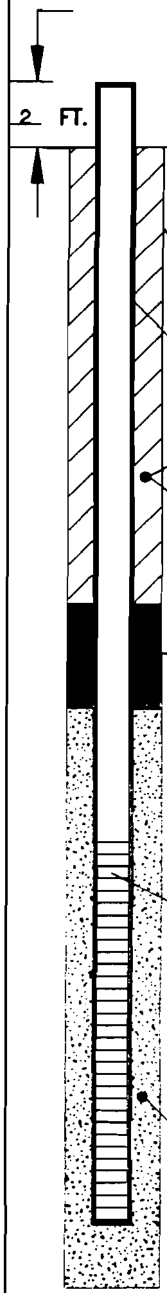
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

0.2 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

0.7 FT.

1.5 FT.

WELL SCREEN
4 INCH DIAMETER,
S/Steel 20 SLOT

#2 GRAVEL PACK

11.5FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-51 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/15/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 12/15/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-51
Location
M.P. Elevation
Drilling Started 9:30 Ended 13:30
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 11.5' to 1.5'bls.
Screen Slot & Type 20 Slot - S/S
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0 - 3'	Posthole	Railroad Fill, sand	0	Brown fine to coarse SAND, trace Gravel; Railroad ballast.
					Sand		Grey stained fine to coarse SAND; Petroleum hydrocarbon odor; Separate phase noted. Wet at 2 ft bls.
50.1	1	1.5	3 - 5'			2	Grey stained fine to coarse SAND; Petroleum hydrocarbon odor.
						4	
						6	
						8	
32.7	2	2	9 - 11'				Grey stained fine to coarse SAND; Petroleum hydrocarbon odor.
						10	
						12	
					------------- Bottom of Boring	14	Bottom of Boring 14 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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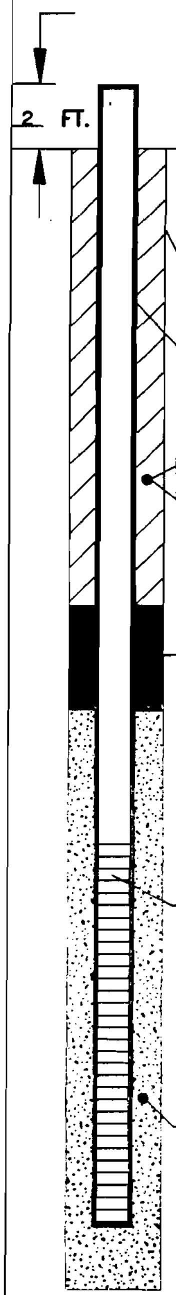
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

____ INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

0.6 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

1 FT.

1.7 FT.

WELL SCREEN
4 INCH DIAMETER,
S/Steel 20 SLOT

#2 GRAVEL PACK

11.7FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-52 PERMIT NO. ____

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ____ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/09/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ____

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ____ GALLONS

WATER REMOVED DURING DEVELOPMENT ____ GALLONS

STATIC DEPTH TO WATER ____ FEET BELOW M.I

PUMPING DEPTH TO WATER ____ FEET BELOW M.I

PUMPING DURATION ____ HOURS

YIELD ____ GPM ____ DATE ____

SPECIFIC CAPACITY ____ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 12/09/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By G. Murphy
Well/Boring No. MW-52
Location
M.P. Elevation
Drilling Started 08:30 Ended 11:25
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 11.7' to 1.7'bls.
Screen Slot & Type 20 Slot - S/S
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
8.6			0-0.5'		Concrete Sand	0	Concrete. Brown fine to coarse SAND and silt.
						2	
3.2	1		4-6'	13,10,4,6	Sand, silt, clay	4	Brown medium SAND; Petroleum hydrocarbon odor. Wet at 4 ft bls. Brown fine SAND and Silt, trace Clay.
						6	
						8	
						10	
						12	
					-------------- Bottom of Boring	14	Bottom of Boring 14 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ROUX
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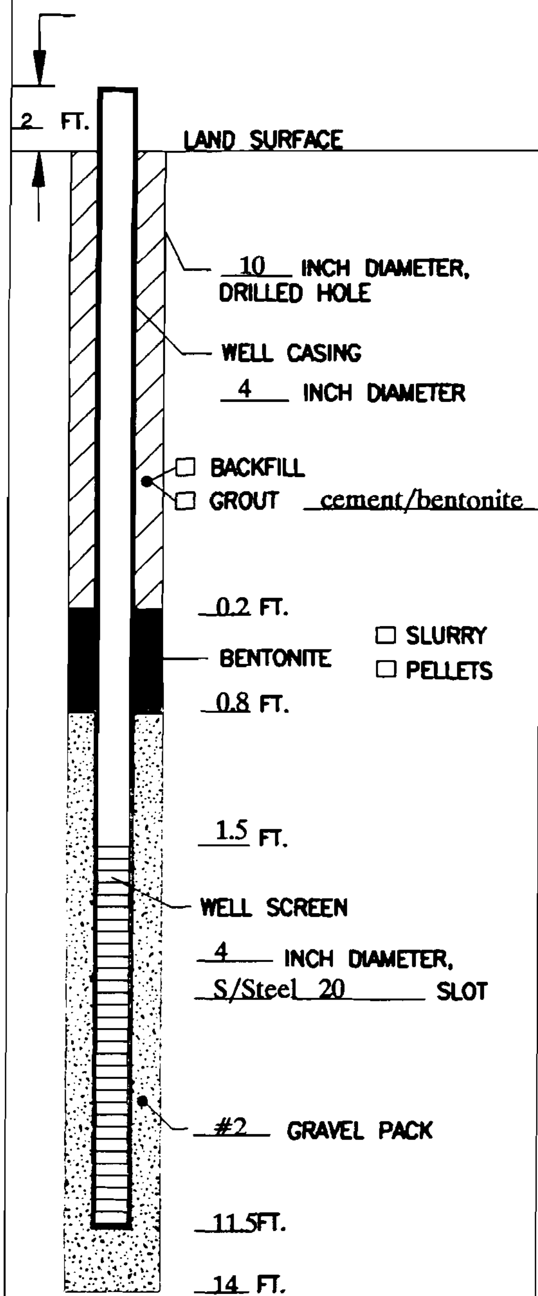
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-53 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/07/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ______

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 12/07/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By G. Murphy
Well/Boring No. MW-53
Location
M.P. Elevation
Drilling Started 13:00 Ended 16:00
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 11.5 to 1.5bls.
Screen Slot & Type 20 Slot - S/S
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0 - 3.5'	Posthole	Sand	0	Stained fill - SAND.
						2	
				Cuttings		4	Grey stained fine to coarse SAND. Wet at 3.5 ft bls.
						6	
						8	
						10	
						12	
					-------------- Bottom of Boring	14	Bottom of Boring 14 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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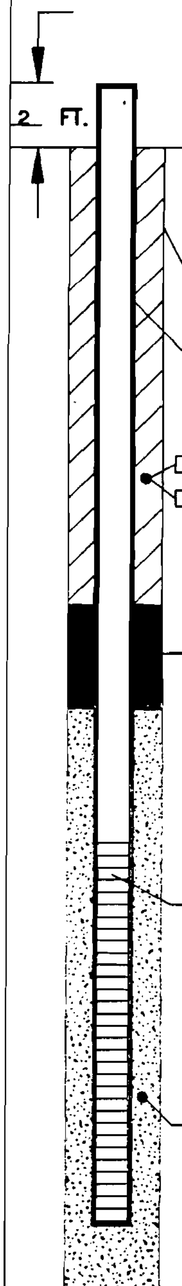
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
2 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

0.2 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

0.7 FT.

1.3 FT.

WELL SCREEN
4 INCH DIAMETER,
S/Steel 20 SLOT

#2 GRAVEL PACK

11.3FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-54 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/29/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 11/29/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-54
Location
M.P. Elevation
Drilling Started 10:45 Ended 13:35
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 11.3' to 1.3'bls.
Screen Slot & Type 20 Slot - S/S
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0 - 3'	Posthole	Railroad Fill	0	Railroad ballast; Fill.
					Sand		Tan medium to coarse SAND.
20.1	1	2	3 - 5'		Sand, gravel		Grey stained fine to coarse SAND, trace Gravel; Hydrocarbon odor. Wet at 3 ft bls. Brown to black separate phase on water table, sample collected for analysis.
45.8	2	2	9 - 11'				Grey stained fine to medium(+) to coarse SAND, trace Gravel.
					---------- Bottom of Boring	14	Bottom of Boring 14 ft bls.

Depth scale (ft): 0, 2, 4, 6, 8, 10, 12, 14, 16, 18

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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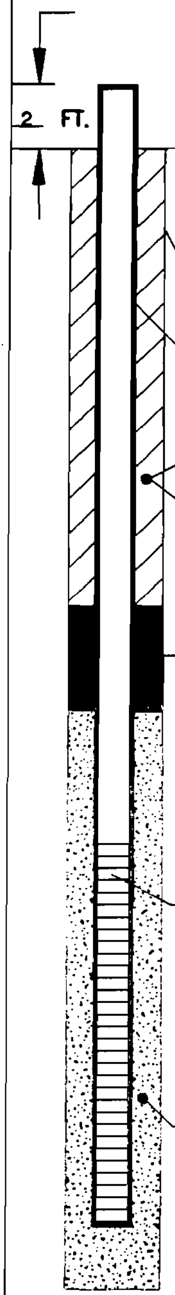
MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

0.5 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

1 FT.

1.5 FT.

WELL SCREEN
4 INCH DIAMETER,
S/Steel 20 SLOT

#2 GRAVEL PACK

11.5FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-55 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/17/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 11/17/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By G. Murphy
Well/Boring No. MW-55
Location
M.P. Elevation
Drilling Started 13:30 Ended 16:30
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 11.5' to 1.5'bls.
Screen Slot & Type 20 Slot - S/S
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
			0 - 3'	Posthole	Sand, silt, cobbles	0	Brown fine to medium SAND, trace Silt, trace Cobbles.
						2	
	1	1	4 - 6'	12,7,6,5	Sand	4	Grey stained fine to medium to coarse SAND; Hydrocarbon odor. Wet at 4 ft bls.
						6	
						8	
	2	2	9 - 11'	12,13,25,30	Sand, gravel		Grey stained fine to medium(+) to coarse SAND, trace Gravel; Hydrocarbon odor.
						10	
						12	
					------------ Bottom of Boring	14	Bottom of Boring 14 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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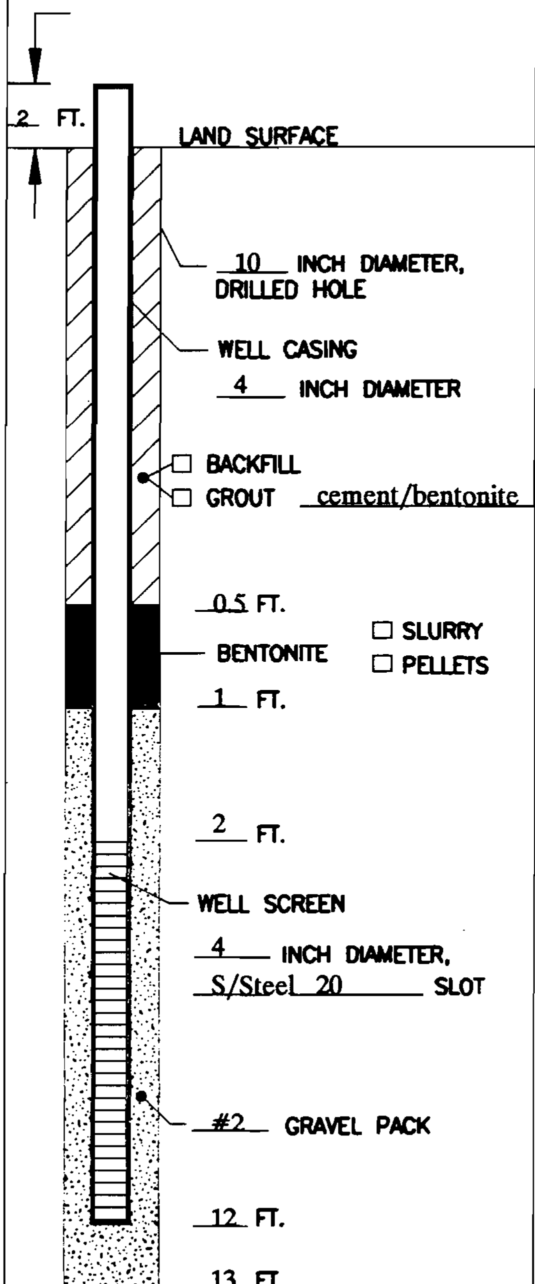
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-56 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/17/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ______

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 11/17/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By G. Murphy
Well/Boring No. MW-56
Location
M.P. Elevation
Drilling Started 09:15 Ended 12:00
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 13
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 12 - 2'bls.
Screen Slot & Type 20 Slot - S/S
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0 - 4'	Posthole	Railroad Fill	0	Railroad ballast; Fill.
						2	
	1	1.3	4 - 6'	12,7,10,11	Sand, silt	4	Brown fine to coarse SAND, trace Gravel, trace Silt. Wet at 4 ft bls. Grey stained fine SAND; Hydrocarbon odor.
						6	
						8	
	2	1.2	9 - 11'	32,39,12,27	Sand, gravel		Grey stained medium to coarse SAND, trace Gravel; Hydrocarbon odor.
						10	
						12	
					------------- Bottom of Boring		Bottom of Boring 13 ft bls.
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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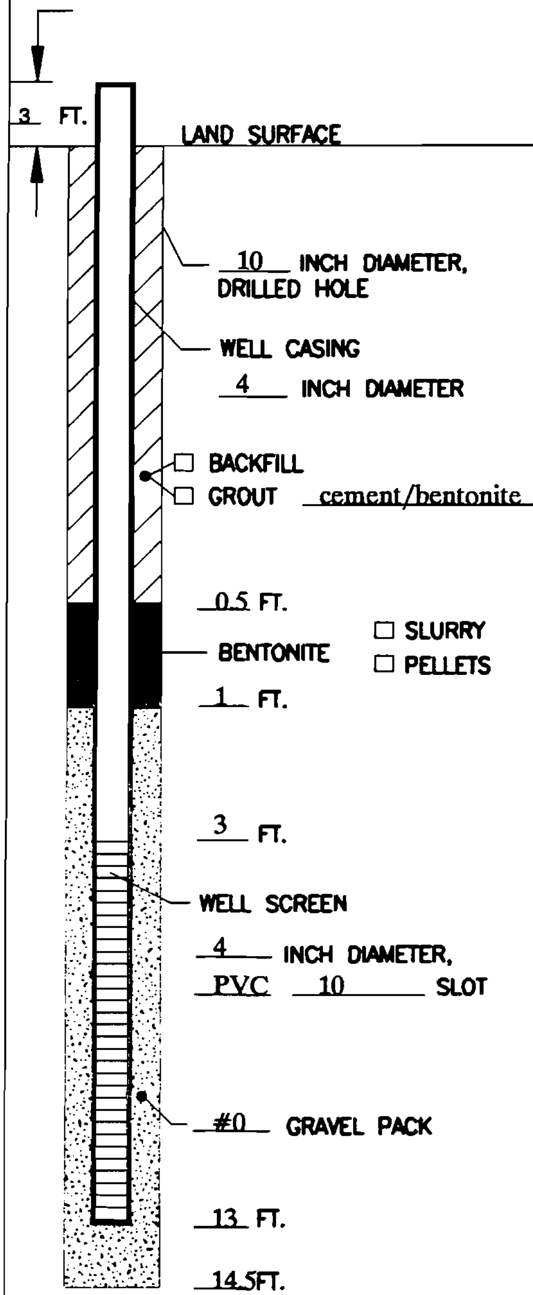
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-57 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/10/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ______

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST J. Gerlach & H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 11/10/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By J. Gerlach
Well/Boring No. MW-57
Location
M.P. Elevation
Drilling Started 08:15 Ended 10:30
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14.5'
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 13' to 3'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0-3'	Posthole	Railroad Fill	0	Black stained SAND and Gravel; Railroad ballast.
10.0	1	1.5	3-5'	9,10,9,11	Sand, gravel	2	Brown fine to coarse(+) SAND, trace Gravel; Moderate sewer odor.
14.5	2	1.5	5-7'	25,18,15,19		4–6	Brown fine to coarse(+) SAND, trace Gravel; Moderate sewer odor; finer grained at tip of spoon. Wet at 5 ft bls.
						8	
12.0	3	1	10-12'	1,13,16,19		10	Brown medium to coarse(+)SAND, trace gravel.
						12	
					------------ Bottom of Boring	14	Bottom of Boring 14.5 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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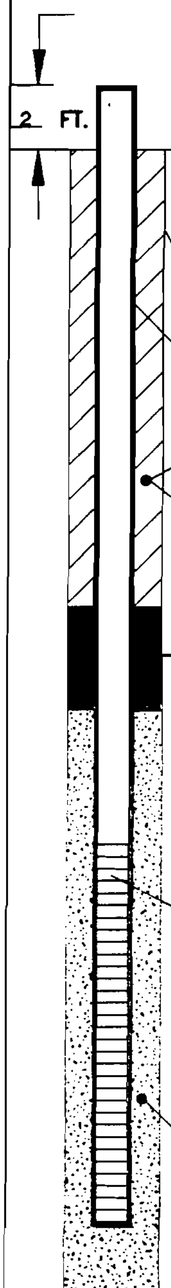
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

0.2 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

0.8 FT.

11.3 FT.

WELL SCREEN
4 INCH DIAMETER,
S/Steel 20 SLOT

#2 GRAVEL PACK

11.3 FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-58 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/08/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.I

PUMPING DEPTH TO WATER ______ FEET BELOW M.I

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 12/08/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By G. Murphy
Well/Boring No. MW-58
Location
M.P. Elevation
Drilling Started 09:20 Ended 14:30
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 11.3 to 1.3'bls.
Screen Slot & Type 20 Slot - S/S
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	SAMPLE Rec.	SAMPLE Depth	SAMPLE Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0-3'	Posthole	Railroad Fill	0	Black stained SAND; Railroad ballast. Wet at 2 ft bls.
						2	
30.4			3 - 5'	Cuttings	Sand		Grey stained fine to coarse SAND; Hydrocarbon odor.
						4	
						6	
						8	
						10	Grey stained fine to coarse SAND; Hydrocarbon odor.
						12	
					------------- Bottom of Boring	14	Bottom of Boring 14 ft bls.
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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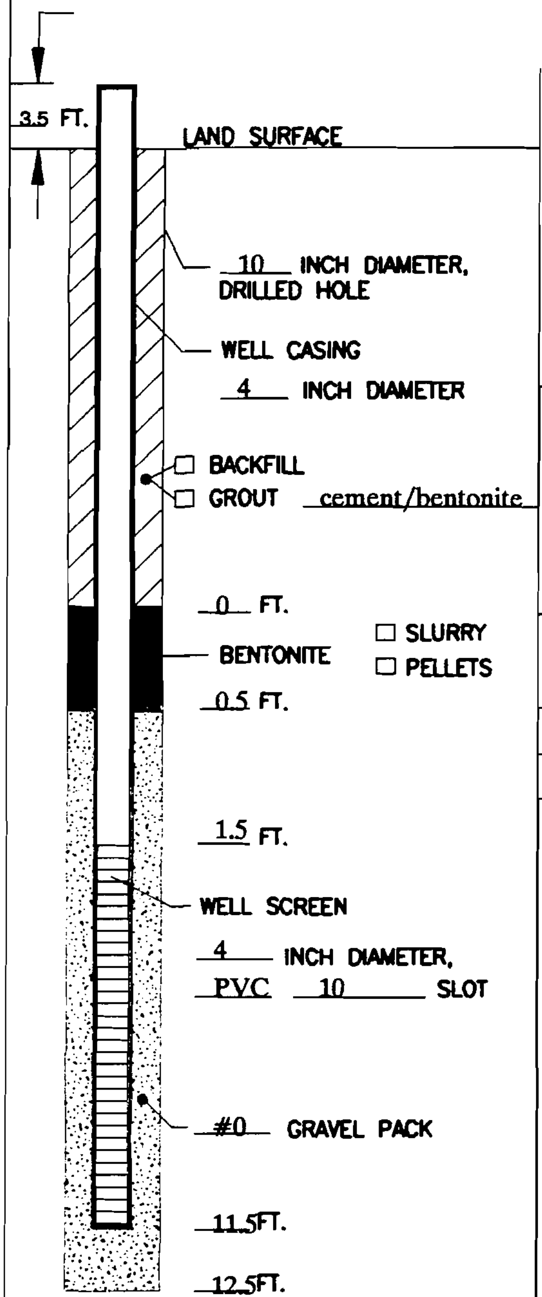
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-59 PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/03/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ______

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 12/03/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-59
Location
M.P. Elevation
Drilling Started 13:00 Ended 16:45
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 12.5
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 11.5' to 1.5'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0 - 0.7'	Posthole	Concrete	0	Concrete.
			0.7 - 3'		Sand		Tan fine to coarse SAND.
						2	
			3 - 9'	From cuttings	Sand, gravel		Tan fine to coarse SAND, trace Gravel.
						4	
						6	
						8	
0	1	2	9 - 11'	10,6,9,12			Tan-brown medium to coarse SAND, trace Gravel; No odor. Wet at 9 ft bls.
						10	
						12	
					--------------- Bottom of Boring		Bottom of Boring 12.5 ft bls.
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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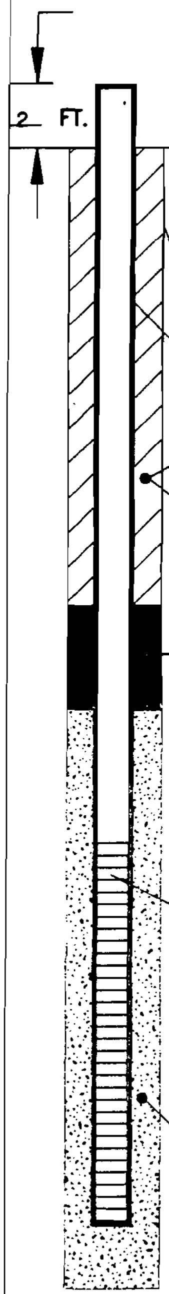
ROUX ASSOCIATES INC
Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

1.5 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

3 FT.

4.5 FT.

WELL SCREEN
4 INCH DIAMETER,
S/Steel 20 SLOT

#2 GRAVEL PACK

14.5 FT.

18 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-60 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/28/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 12/28/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By J. Gerlach
Well/Boring No. MW-60
Location
M.P. Elevation
Drilling Started 08:45 Ended 10:30
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 18
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 14.5 to 4.5'bls.
Screen Slot & Type 20 Slot - S/S
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0 - 3'	Posthole	Sand	0	Tan SAND.
			3 - 5'	Cuttings			Black SAND.
			7 - 18'	Cuttings			Black SAND; Petroleum odor and staining.
					-------------- Bottom of Boring	18	Bottom of Boring 18 ft bls.

Depth scale (ft): 0, 2, 4, 6, 8, 10, 12, 14, 16, 18

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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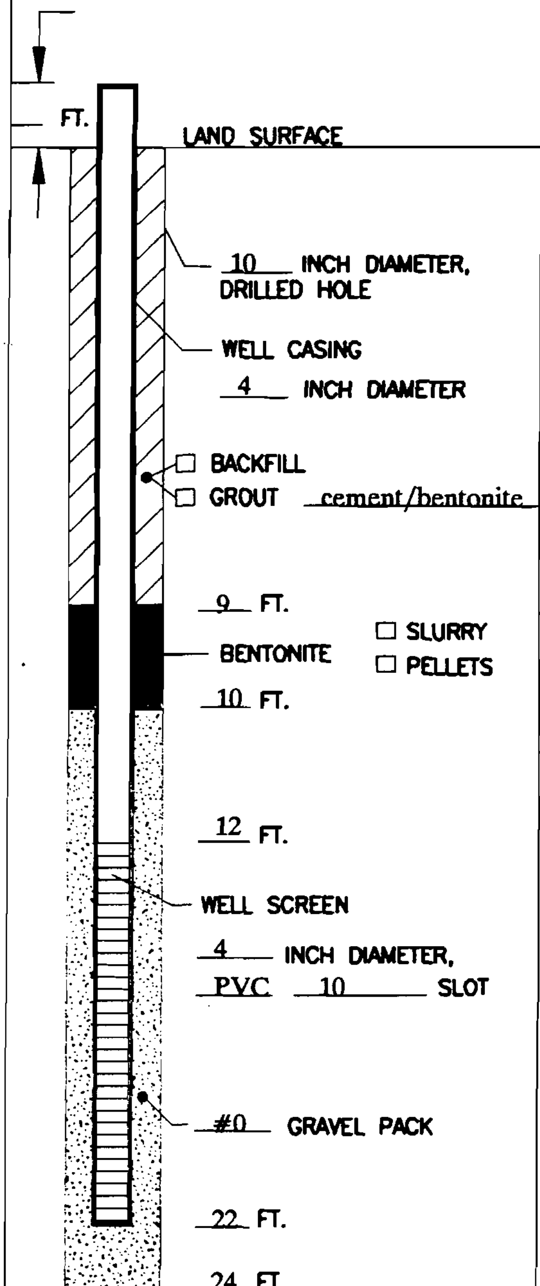
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-61 PERMIT NO. ____

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ____ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 11/12-13/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ____

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ____ GALLONS

WATER REMOVED DURING DEVELOPMENT ____ GALLONS

STATIC DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DEPTH TO WATER ____ FEET BELOW M.P.

PUMPING DURATION ____ HOURS

YIELD ____ GPM ____ DATE ____

SPECIFIC CAPACITY ____ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 11/12/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 2
Logged By J. Gerlach and H. Gregory
Well/Boring No. MW-61
Location
M.P. Elevation
Drilling Started Ended
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 24
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 22' to 12'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
0ppm					Sand, silt, organics	0	Brown fine to medium SAND, trace Silt; Organic material.
	1	0	3-5'	22,24,20,14	Sand, gravel	2	Brown fine to medium SAND, trace cobbles (from cuttings).
	2	1	5-7'	8,31,50		4	Light brown fine to coarse SAND, trace Gravel; Rounded quartz pebble blocking tip of spoon.
	3	1	7-9'	26,58,46,50	Sand, cobble layer, gravel	6	Light brown fine to medium SAND, trace Gravel, Cobbles.
	4	0	9-11'	62,70/3"		8	Light brown medium to coarse SAND, trace Gravel; Moist.
5ppm	5	0.5	11-13'	88,100/5"		10	Brown fine to medium(+) to coarse SAND, trace Gravel. Wet at 11 ft bls.
4ppm	6	1.5	13-15'	8,18,22,28		12	Brown fine to medium(+) to coarse SAND, trace Gravel.
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 11/12/93
Project Sunnyside Yard
Client AMTRAK
Page 2 of 2
Logged By J. Gerlach and H. Gregory
Well/Boring No. MW-61
Location
M.P. Elevation
Drilling Started Ended
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 24
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 22' - 12'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION[3]
					Sand, gravel	20	Brown fine to medium SAND, trace coarse Sand and Gravel.
						22	
					---------------- Bottom of Boring	24	Bottom of Boring 24 ft bls.
						26	
						28	
						30	
						32	
						34	
						36	
						38	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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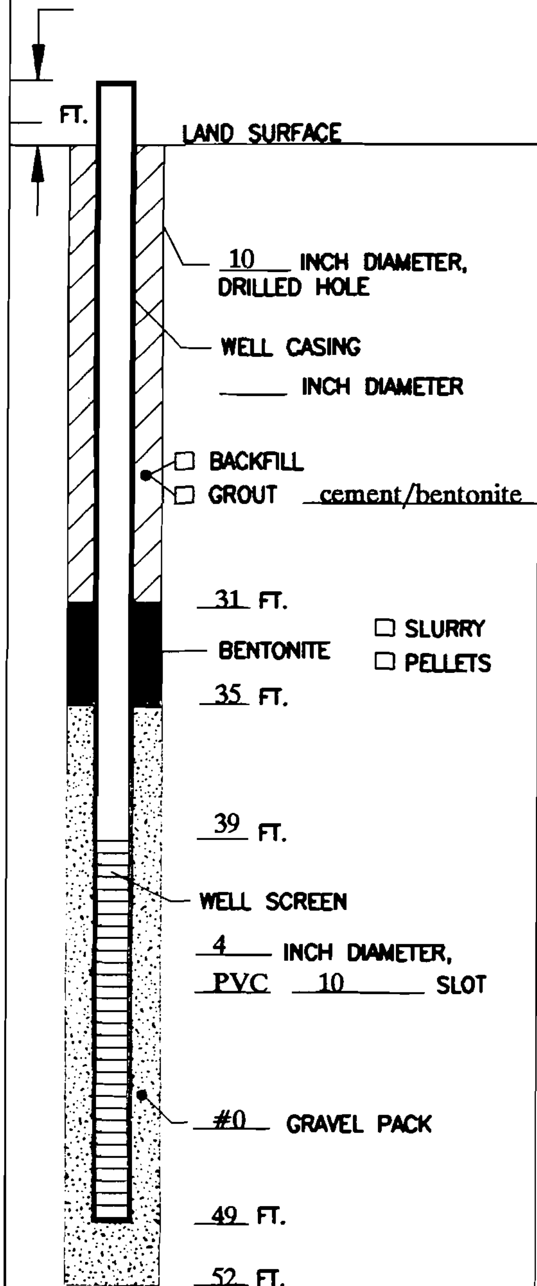
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-62D PERMIT NO. ____

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ____ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/01/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID ____

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ____ GALLONS

WATER REMOVED DURING DEVELOPMENT ____ GALLONS

STATIC DEPTH TO WATER ____ FEET BELOW M.F

PUMPING DEPTH TO WATER ____ FEET BELOW M.F

PUMPING DURATION ____ HOURS

YIELD ____ GPM ____ DATE ____

SPECIFIC CAPACITY ____ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 11/16/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 3
Logged By H. Gregory and G. Murphy
Well/Boring No. MW-62D
Location
M.P. Elevation
Drilling Started Ended
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 52
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 49' to 39'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
ppm					Sand, silt, organics	0	Brown fine to medium SAND, trace Silt; Organic material.
	1	0	3-5'	22,24,20,14	Sand, gravel	2	Brown fine to medium SAND, trace cobbles (from cuttings).
	2	1	5-7'	8,31,50		4	Light brown fine to coarse SAND, trace Gravel; Rounded quartz pebble blocking tip of spoon.
	3	1	7-9'	26,58,46,50	Sand, cobble, gravel	6	Light brown fine to medium SAND, trace Gravel, Cobbles.
	4	0	9-11'	62,70/3"		8	Light brown medium to coarse SAND, trace Gravel; Moist.
5	5	0.5	11-13'	88,100/5"		10	Brown fine to medium(+) to coarse SAND, trace Gravel. Wet at 11 ft bls.
	6	1.5	13-15'	8,18,22,28		12	Brown fine to medium(+) to coarse SAND, trace Gravel.
						14	
						16	
						18	
0	1	1.2	19-21'	13,15,12,10	Sand, gravel		Tan fine to coarse SAND, trace Gravel.

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 11/16/93
Project Sunnyside Yard
Client AMTRAK
Page 2 of 3
Logged By H. Gregory and G. Murphy
Well/Boring No. MW-62D
Location
M.P. Elevation
Drilling Started Ended
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 52
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 49' to 39'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
					Sand, gravel	20	
						22	
0	2	2'	24-26'	18,20,11,20		24	Tan fine to medium(+) to coarse SAND, trace Gravel.
						26	
						28	
0	3	2'	29-31'	27,14,12,16			Tan fine to medium(+) to coarse SAND, trace Gravel.
						30	
						32	
0	4	2'	34-36'	24,33,30,38		34	Tan fine to coarse SAND, trace Gravel, trace Silt.
						36	
						38	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 11/16/93
Project Sunnyside Yard
Client AMTRAK

Logged By H. Gregory and G. Murphy
Well/Boring No. MW-62D
Location
M.P. Elevation
Drilling Started Ended
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 52
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 49' to 39'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
						40	
						42	
0	1	1.5'	44 - 46'	20,30,27,38		44	Tan fine to coarse SAND, trace Gravel.
						46	
						48	
						50	
					-------------- Bottom of Boring	52	Bottom of Boring 52 ft bls.
						54	
						56	
						58	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

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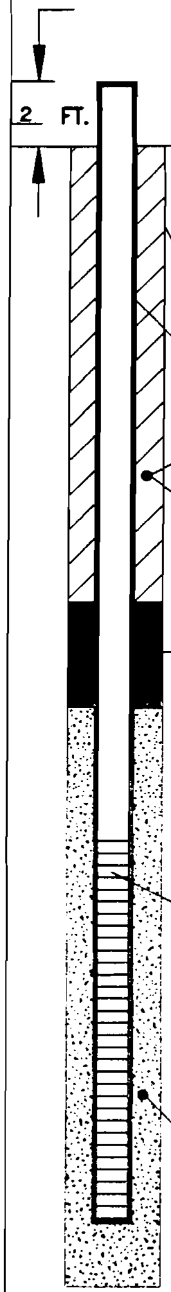
MONITORING WELL CONSTRUCTION LOG



2 FT.

LAND SURFACE

10 INCH DIAMETER, DRILLED HOLE

WELL CASING
4 INCH DIAMETER

☐ BACKFILL
☐ GROUT cement/bentonite

0.5 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

1.5 FT.

2.5 FT.

WELL SCREEN
4 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

12.5 FT.

14 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05545Y

WELL NO. MW-63 PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 12/14/93

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR A.D.T.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pump and Surge

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Monitoring well

REMARKS

HYDROGEOLOGIST H. Gregory

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05545Y Date 12/14/93
Project Sunnyside Yard
Client AMTRAK
Page 1 of 1
Logged By H. Gregory
Well/Boring No. MW-63
Location
M.P. Elevation
Drilling Started 8:45 Ended 10:45
Driller A.D.T.
Type of Rig Hollow Stem Auger

WELL DATA

Hole Diam. (in.) 10
Final Depth (ft.) 14
Casing Diam. (in.) 4
Casing Length (ft.)
Screen Setting (ft.) 12.5' to 2.5'bls.
Screen Slot & Type 10 Slot - PVC
Well Status Monitoring Well

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type 2" Split-spoon
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
			0 - 3'	Posthole	Sand, gravel, railroad fill	0	Brown fine to medium SAND, trace gravel; Railroad ballast, cinders.
0	1	1.9	3 - 5'		Sand, silt, clay		Tan fine SAND and Silt, trace Clay. Wet at 4 ft bls.
0	2	2	9-11'		Sand, silt, clay, gravel		Tan fine SAND and Silt, trace Clay, trace Gravel.
					----------- Bottom of Boring	14	Bottom of Boring 14 ft bls.

Depth scale (ft): 0, 2, 4, 6, 8, 10, 12, 14, 16, 18

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ROUX

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**	Log of Well No. **MW-64**
Date Started: **4/23/96** Completed: **4/23/96**	Measuring Point Elevation: Total Depth: **15.0 ft**
Logged By: **M. Pancoast** Checked By: **H. Gregory**	Water Level During Drilling: **7.0 ft** Post-Development: **5.0 ft**
Drilling Co: **ADT** Driller:	Casing: **4-inch Schedule 40 PVC** Drill Bit Diameter: **8-inch**
Drilling Method: **Hollow-Stem Auger**	Perforation: **10-Slot** from **14** to **4**
	Pack: **#1 Gravel** from **15** to **2.5**
Drilling Equipment:	Seal: **Bentonite Pellets** from **2.5** to **0.5**
Sampler: **2-inch Split Spoon**	**Grout** from **0.5** to **0**

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
0	Black to brown fine to medium SAND, some Silt; Dry	SW				0	Lithology derived from cuttings
	Black to brown fine to medium SAND, some Silt; Dry						
	Black to brown fine to medium SAND, some Silt; Dry to moist					0	
5	Orange to tan medium to coarse SAND, some Silt, little Gravel; Moist to wet						
	Tan medium to coarse SAND, trace Gravel; Wet						Wet at 7 feet below land surface
						0	
	Tan medium to coarse SAND, trace Gravel; Wet						
10							
	Tan medium to coarse SAND, trace Gravel; Wet						
	Tan medium to coarse SAND, trace Gravel; Wet						
15							Bottom of boring at 15 feet below land surface
20							
25							

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**	Log of Well No. **MW-65**
Date Started: **4/22/96** Completed: **4/22/96**	Measuring Point Elevation: Total Depth: **14.5 ft**
Logged By: **M. Pancoast** Checked By: **H. Gregory**	Water Level During Drilling: **7.0 ft** Post-Development: **5.2 ft**
Drilling Co: **ADT** Driller:	Casing: **4-inch Schedule 40 PVC** Drill Bit Diameter: **8-inch**
Drilling Method: **Hollow-Stem Auger**	Perforation: **10-Slot** from **14** to **4**
Drilling Equipment:	Pack: **#1 Gravel** from **14.5** to **2.0**
Sampler: **2-inch Split Spoon**	Seal: **Bentonite Pellets** from **2.0** to **0**
	rout from to

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Dark brown to black fine to medium SAND, some Silt, some coal; Dry	SW		G		0	Lithology derived from cuttings
	Dark brown to black fine to medium SAND, some Silt, some Coal; Dry						
	Dark brown to black fine to medium SAND, some Silt, some Coal; Dry					0	
5	Orange brown to tan medium to coarse SAND, some Silt, some Gravel; Dry to moist						
	Orange brown to tan medium to coarse SAND, some Silt, some Gravel; Moist to wet						Wet at 7 feet below land surface
						0	
10	Orange brown to tan medium to coarse SAND, some Silt, some Gravel; Wet						
	Orange brown to tan medium to coarse SAND, some Silt, some Gravel; Wet						
	Orange brown to tan medium to coarse SAND, some Silt, some Gravel; Wet						
15							Bottom of boring at 14.5 feet below land surface
20							
25							

ROUX

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**	Log of Well No. **MW-66**
Date Started: **4/23/96** Completed: **4/23/96**	Measuring Point Elevation: Total Depth: **15.0 ft**
Logged By: **M. Pancoast** Checked By: **H. Gregory**	Water Level During Drilling: **6.5 ft** Post-Development: **5.3 ft**
Drilling Co: **ADT** Driller:	Casing: **4-inch Schedule 40 PVC** Drill Bit Diameter: **8-inch**
Drilling Method: **Hollow-Stem Auger**	Perforation: **10-Slot** from **14** to **4**
Drilling Equipment:	Pack: **#1 Gravel** from **15** to **2.5**
Sampler: **2-inch Split Spoon**	Seal: **Bentonite Pellets** from **2.5** to **0.5**
	Grout from **0.5** to **0**

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Dark brown to black fine to medium SAND, little Silt, little Gravel; Dry	SW				0	Lithology derived from cuttings
	Orange brown medium to coarse SAND, some Gravel; Dry						
	Orange brown medium to coarse SAND, some Gravel; Dry					0	
5	Orange brown medium to coarse SAND, little Gravel; Dry to moist						
	Orange brown medium to coarse SAND, little Gravel; Moist to wet						Wet at 6.5 feet below,land surface
						0	
	Orange brown medium to coarse SAND, little Gravel; Wet						
10	Orange to tan fine to medium SAND, little Silt; Wet						
	Orange to tan fine to medium SAND; little Silt; Wet						
	Orange to tan fine to medium SAND, little Silt; Wet						
15							Bottom of boring at 15 feet below land surface
20							
25							

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**	Log of Well No. **MW-67**
Date Started: **4/19/96** Completed: **4/19/96**	Measuring Point Elevation: Total Depth: **17.0 ft**
Logged By: **M. Pancoast** Checked By: **H. Gregory**	Water Level During Drilling: **6.5 ft** Post-Development: **5.9 ft**
Drilling Co: **ADT** Driller:	Casing: **4-inch Schedule 40 PVC** Drill Bit Diameter: **8-inch**
Drilling Method: **Hollow-Stem Auger**	Perforation: **20-Slot** from **14** to **4**
	Pack: **#1 Gravel** from **15** to **2.0**
Drilling Equipment:	Seal: **Bentonite Pellets** from **2.0** to **1.0**
Sampler: **2-inch Split Spoon**	**Grout** from **1.0** to **0**

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Dark brown to black fine to coarse SAND, trace cement, trace Gravel; Dry	SW		G		0	Lithology derived from cuttings
	Black brown to tan fine to coarse SAND, trace cement, trace Gravel; Dry						
5	Black brown to tan fine to coarse SAND, trace cement, trace Gravel; Dry					0	
	Orange brown fine to coarse SAND, trace Gravel; Dry to moist						
	Orange brown fine to coarse SAND, trace Gravel; Wet						Wet at 6.5 feet below land surface
10	Orange brown fine to coarse SAND, trace Gravel; Wet					0	
	Orange to tan medium to coarse SAND, trace Gravel; Wet						
	Orange to tan medium to coarse SAND, trace Gravel; Wet						
15	Orange to tan medium to coarse SAND, trace Gravel; Wet						
	Orange to tan fine to coarse SAND, trace Gravel; Wet						Bottom of boring at 15 feet below land surface
20							
25							

ROUX

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**	Log of Well No. **MW-68**
Date Started: **4/24/96** Completed: **4/24/96**	Measuring Point Elevation: Total Depth: **17.0 ft**
Logged By: **M. Pancoast** Checked By: **H. Gregory**	Water Level During Drilling: **14.0 ft** Post-Development: **9.4** ft
Drilling Co: **ADT** Driller:	Casing: **4-inch Schedule 40 PVC** Drill Bit Diameter: **8-inch**
Drilling Method: **Hollow-Stem Auger**	Perforation: **10-Slot** from **16** to **6**
Drilling Equipment:	Pack: **#1 Gravel** from **17** to **4.0**
Sampler: **2-inch Split Spoon**	Seal: **Bentonite Pellets** from **4.0** to **2.0**
	Grout from **2.0** to **0**

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
0–1	Black to brown fine to medium SAND, some Gravel, some Cobbles; Dry	SW			10 15 16 12	0	
	Black to brown fine to medium SAND, some Gravel, some Cobbles; Dry						
5	Black to brown fine to medium SAND, some coarse Gravel, some Cobbles; Dry				15 17 10 7	50	
	Orange to tan fine to medium SAND, some Silt; Dry						
	Orange to tan fine to medium SAND, some Silt; Dry						
10	Dark black to brown fine to medium SAND, some Silt; Dry				9 7 9 6	70	
	Dark black to brown fine to medium SAND, some Silt; Dry to moist						
15	Dark black to brown fine to medium SAND, some Silt; Moist						Slight water content from 14 feet below land surface
	Dark black to brown fine to medium SAND, some Silt; Moist						
17							Bottom of boring at 17 feet below land surface
20							
25							

ROUX

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**	Log of Well No. **MW-69D**
Date Started: **4/24/96** Completed: **4/24/96**	Measuring Point Elevation: Total Depth: **35.0 ft**
Logged By: **M. Pancoast** Checked By: **H. Gregory**	Water Level During Drilling: **10.0 ft** Post-Development: **9.5 ft**
Drilling Co: **ADT** Driller:	Casing: **4-inch Schedule 40 PVC** Drill Bit Diameter: **8-inch**
Drilling Method: **Hollow-Stem Auger**	Perforation: **10-Slot** from **33** to **23**
Drilling Equipment:	Pack: **#1 Gravel** from **35** to **21**
Sampler: **2-inch Split Spoon**	Seal: **Bentonite Pellets** from **21** to **19**
	Grout from **19** to **0**

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Blows per 6"	PID (ppm)	REMARKS
0	Black to brown fine to medium SAND, some Gravel, some Cobbles; Dry	SW		0	
2	Black to brown fine to medium SAND, some Gravel, some Cobbles; Dry				
4	Orange to tan medium to coarse SAND; Dry				
5			60 NR NR NR	0	
6	Orange to tan medium to coarse SAND; Dry				
7				10	
8	Orange to tan medium to coarse SAND; Dry				
10	Orange to tan medium to coarse SAND; Dry to moist		11 13 11 10	46	Wet at 10 feet below land surface
12	Orange to tan medium to coarse SAND, some Silt, some Gravel; Wet				Strong petroleum odor from 10 to 15 feet below land surface
14	Orange to tan medium to coarse SAND, some Gravel, some Silt; Wet				
15			17 17 15 15	35	
16	Orange to tan medium to coarse SAND, some Gravel, some Silt; Wet				
17				40	
18	Orange to tan medium to coarse SAND, little Silt; Wet				
20	Orange to tan medium to coarse SAND, little Silt; Wet		10 15 14 15	50	
22	Orange to tan medium to coarse SAND, little Silt; Wet			62	
24	Orange to tan medium to coarse SAND, little Silt; Wet				
25					

Continued Next Page

Project: **AMTRAK - Sunnyside Yard HST**
Queens, New York

Log of Well No. MW-69D

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Orange to tan fine to coarse SAND, some Silt; Wet				10 11 10 10	20	
	Orange to tan fine to coarse SAND, some Silt; Wet						
30	Orange to tan fine to coarse SAND, some Silt, Wet				13 12 10 9	0	
	Orange to tan fine to coarse SAND, some Silt; Wet						
	Orange to tan fine to coarse SAND, some Silt; Wet						
35							Bottom of boring at 35 feet below land surface
40							
45							
50							

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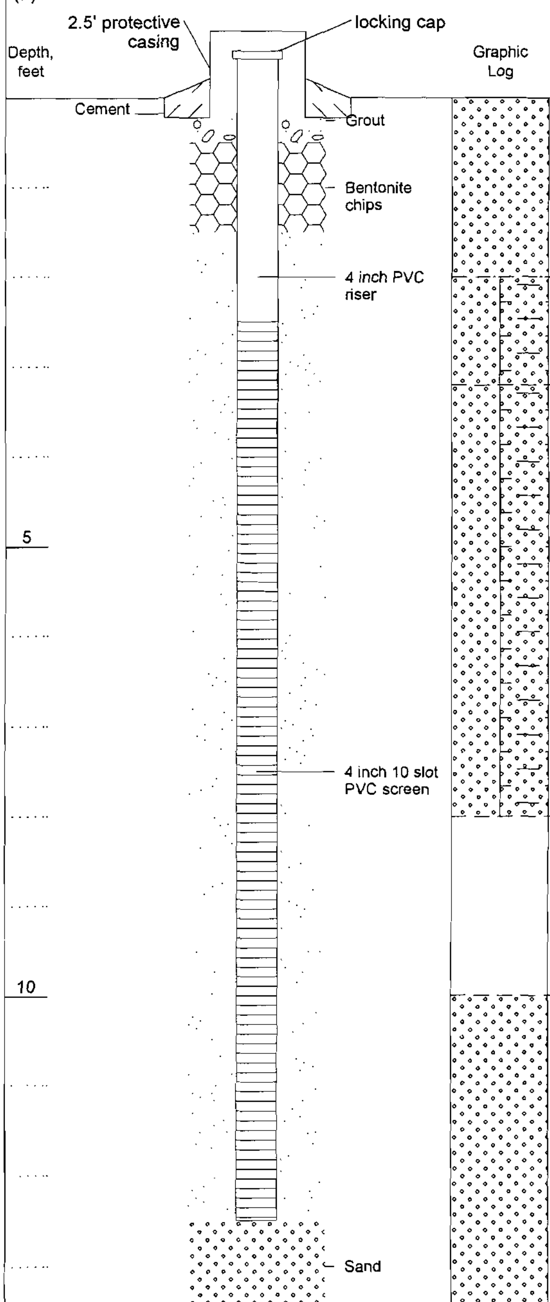
WELL CONSTRUCTION LOG

DESIGNATION: **MW-70**	NORTHING: **Not Measured**	EASTING: **Not Measured**
PROJECT NO./NAME: **05545Y04 / Amtrak**		LOCATION: **Sunnside Yard** **Queens, New York**
APPROVED BY: **H. Gregory**	LOGGED BY: **H. Gregory**	
DRILLING CONTRACTOR/DRILLER: **Land, Air & Water / Land, Air & Water**		GEOGRAPHIC AREA
DRILL BIT DIAMETER/TYPE: **/**	BOREHOLE DIAMETER: **10-inches**	DRILLING EQUIPMENT/METHOD: **Hollow Stem Auger /**; SAMPLING METHOD: **Split-spoon**; START-FINISH DATE: **10/18/99-10/18/99**
CASING MAT./DIA.: **PVC / 4-inch**	SCREEN: TYPE **Slotted** MAT. **PVC** TOTAL LENGTH	DIA. **4-inch** SLOT SIZE **10-Slot**
ELEVATION OF: (F)	GROUND SURFACE; TOP OF WELL CASING	TOP & BOTTOM SCREEN **/**; GW SURFACE; GRAVEL PACK **Morie #1**



Depth, feet	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0	Brown fine to medium SAND, trace Silt, Gravel and Ballast			
	Orange/Tan fine SAND and SILT, trace Gravel			
	Grey fine SAND and Clayey SILT, wet			Water table at 3.5 feet More clay here at depth
				No Recovery-wood in spoon
10	Grey medium to coarse SAND, trace one inch Grey Silty Clay at 10 feet			Organic odor Screen set predominantly in tight clayey silt- low yield

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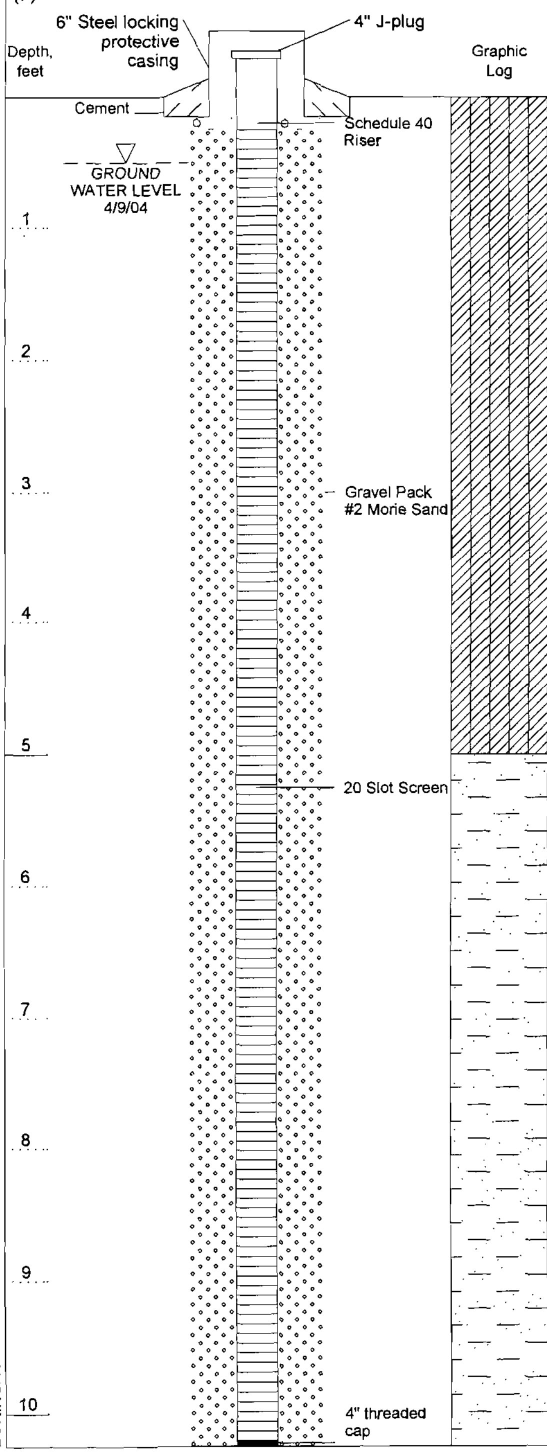
WELL CONSTRUCTION LOG

DESIGNATION **MW-71**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **05545Y09 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, NY**		
APPROVED BY **H. Gregory**	LOGGED BY **R. Kovacs**			
DRILLING CONTRACTOR/DRILLER **Land Air Water Environmental / J. Palmer**		GEOGRAPHIC AREA **OU-3**		
DRILL BIT DIAMETER/TYPE **6.25 / Auger**	BOREHOLE DIAMETER **10-inches**	DRILLING EQUIPMENT/METHOD **6610-DT / HSA**	SAMPLING METHOD **Cuttings**	START-FINISH DATE **4/9/04-4/9/04**
CASING MAT./DIA. **PVC / 4-inch**	SCREEN: TYPE **Slotted**	MAT. **PVC** TOTAL LENGTH **10.0**	DIA. **4-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (F)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN **/** GW SURFACE	GRAVEL PACK **Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–5		Brown to black Clay and Silt little medium to fine Sand; Wet		NM	Hydrocarbon odor, free product
5–10		Gray to brown fine to medium SAND, some Silt, trace Clay, trace coarse Sand, trace Gravel; Wet		NM	Hydrocarbon odor

BORING/WELL 05545Y09.GPJ ROUX.GDT 5/23/05

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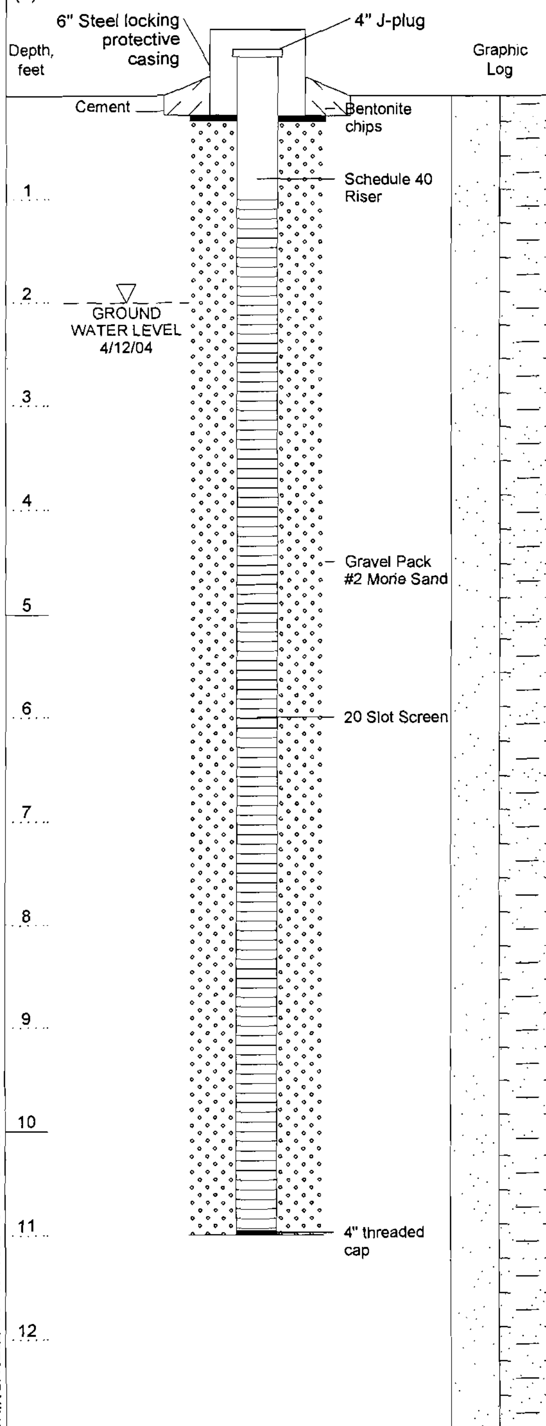
WELL CONSTRUCTION LOG

DESIGNATION MW-72	NORTHING Not Measured	EASTING Not Measured		
PROJECT NO./NAME 05545Y09 / Amtrak		LOCATION Sunnyside Yard Queens, NY		
APPROVED BY H. Gregory	LOGGED BY R. Kovacs			
DRILLING CONTRACTOR/DRILLER Land Air Water Environmental / J. Palmer		GEOGRAPHIC AREA OU-3		
DRILL BIT DIAMETER/TYPE 6.25 / Auger	BOREHOLE DIAMETER 10-inches	DRILLING EQUIPMENT/METHOD 6610-DT / HSA	SAMPLING METHOD Cuttings	START-FINISH DATE 4/12/04-4/12/04
CASING MAT./DIA. PVC / 4-inch	SCREEN: TYPE Slotted	MAT. PVC	TOTAL LENGTH 10.0 DIA. 4-inch	SLOT SIZE 20-Slot
ELEVATION OF: (F) GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GW SURFACE	GRAVEL PACK Morie #2



Depth, feet	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0	Black to gray medium to fine SAND, some coarse Sand, some Silt; Moist to wet		NM	Strong hydrocarbon odor, staining, and free product
5	Black to dark brown to gray medium to fine SAND, some Silt; Wet		NM	Strong hydrocarbon odor and staining
10	Black to gray medium to fine SAND, some Silt; Wet		NM	Strong hydrocarbon odor and staining

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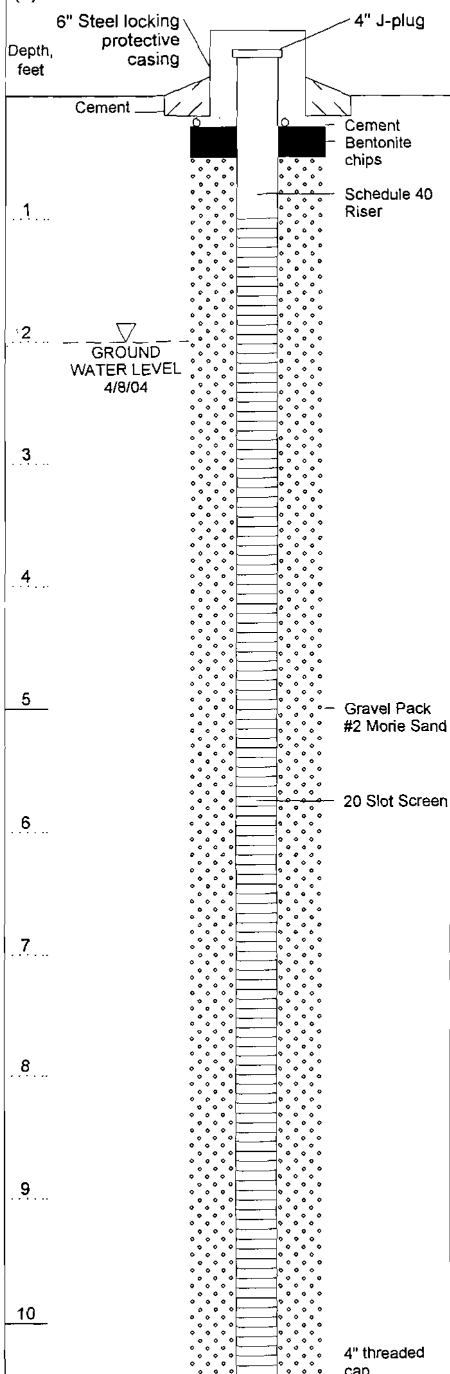
WELL CONSTRUCTION LOG

DESIGNATION **MW-73**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **05545Y09 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, NY**		
APPROVED BY **H. Gregory**	LOGGED BY **R. Kovacs**			
DRILLING CONTRACTOR/DRILLER **Land Air Water Environmental / J. Palmer**		GEOGRAPHIC AREA **OU-3**		
DRILL BIT DIAMETER/TYPE **6.25 / Auger**	BOREHOLE DIAMETER **10-inches**	DRILLING EQUIPMENT/METHOD **6610-DT / HSA**	SAMPLING METHOD **Cuttings**	START-FINISH DATE **4/8/04-4/8/04**
CASING MAT./DIA. **PVC / 4-inch**	SCREEN: TYPE **Slotted** MAT. **PVC**	TOTAL LENGTH **9.5**	DIA. **4-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (F)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GW SURFACE
GRAVEL PACK **Morie #2**				



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–1.5		Brown to black medium to fine SAND, some Silt, some Ballast; Moist		NM	
1.5–5		Dark brown to black SILT little medium to fine Sand; Moist to wet		NM	Hydrocarbon odor and free product
5–10.5		Dark brown to black medium to coarse SAND, some fine Sand, some Silt; Wet		NM	Hydrocarbon odor and staining

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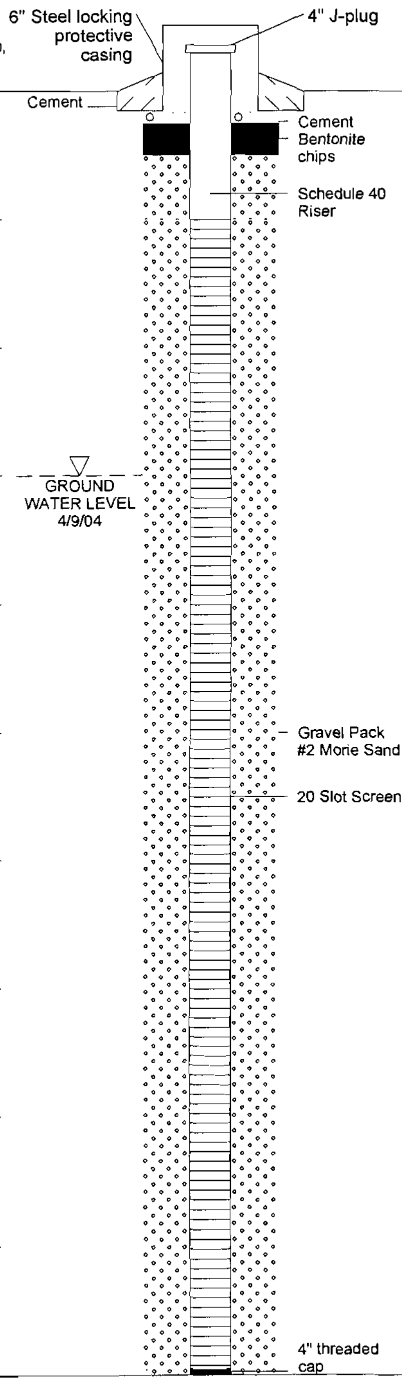
WELL CONSTRUCTION LOG

DESIGNATION **MW-74**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **05545Y09 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, NY**		
APPROVED BY **H. Gregory**	LOGGED BY **R. Kovacs**			
DRILLING CONTRACTOR/DRILLER **Land Air Water Environmental / J. Palmer**		GEOGRAPHIC AREA **OU-3**		
DRILL BIT DIAMETER/TYPE **6.25 / Auger**	BOREHOLE DIAMETER **10-inches**	DRILLING EQUIPMENT/METHOD **6610-DT / HSA**	SAMPLING METHOD **Cuttings**	START-FINISH DATE **4/9/04-4/9/04**
CASING MAT./DIA. **PVC / 4-inch**	SCREEN: TYPE **Slotted** MAT. **PVC**	TOTAL LENGTH **9.0**	DIA. **4-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (F) GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GW SURFACE	GRAVEL PACK **Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0		Dark brown to black coarse to fine SAND, some Silt; Moist to wet		NM	Hydrocarbon odor
3		Dark brown to black coarse to fine SAND, little Silt; Wet		NM	Hydrocarbon odor, free product
5		Dark brown to black coarse to fine SAND, some Silt; Wet		NM	Strong hydrocarbon odor
10					Auger refusal at 10 ft bgs

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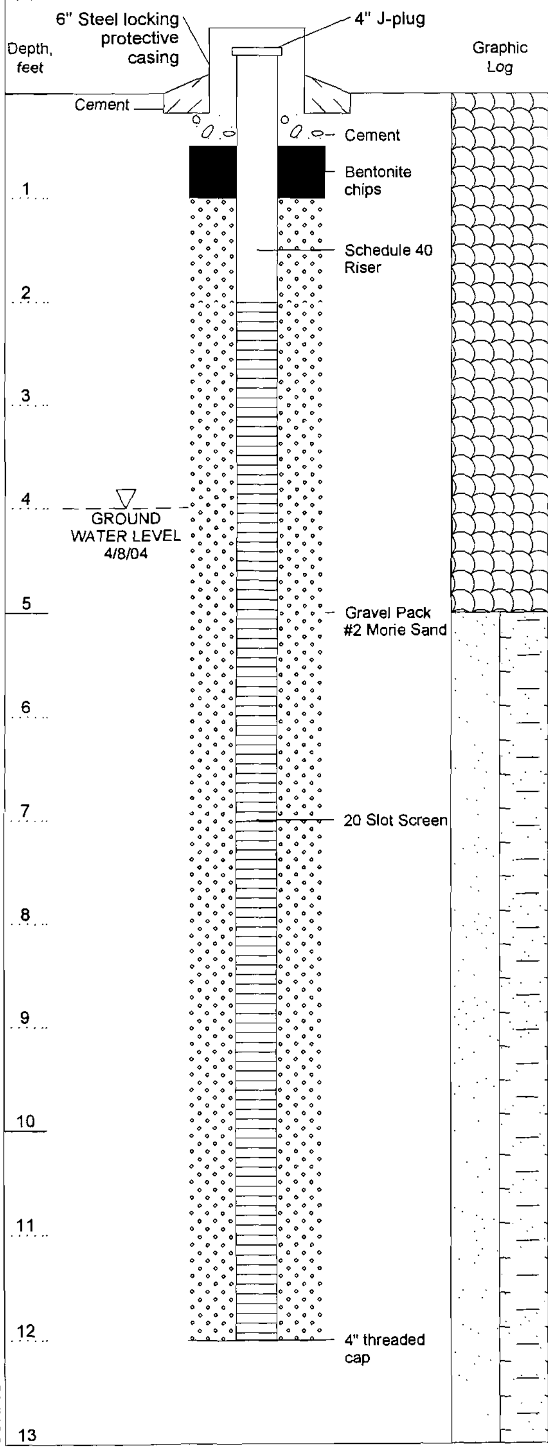
WELL CONSTRUCTION LOG

DESIGNATION **MW-75**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **05545Y09 / Amtrak**		LOCATION **Sunnyside Yard**		
APPROVED BY **H. Gregory**	LOGGED BY **R. Kovacs**	**Queens, NY**		
DRILLING CONTRACTOR/DRILLER **Land Air Water Environmental / J. Palmer**		GEOGRAPHIC AREA **OU-3**		
DRILL BIT DIAMETER/TYPE **6.25 / Auger**	BOREHOLE DIAMETER **10-inches**	DRILLING EQUIPMENT/METHOD **6610-DT / HSA**	SAMPLING METHOD **Cuttings**	START-FINISH DATE **4/8/04-4/8/04**
CASING MAT./DIA. **PVC / 4-inch**	SCREEN: TYPE **Slotted** MAT. **PVC**	TOTAL LENGTH **10.0**	DIA. **4-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (F)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GW SURFACE
GRAVEL PACK **Morie #2**				



Depth, feet	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–5	Black medium to fine SAND, some Silt, trace Concrete, trace Cobbles; Moist to wet		15.1	
5–10	Black to brown medium to fine SAND, some coarse Sand, some Silt; Wet		59	Strong hydrocarbon odor
10–13	Black to brown medium to coarse SAND, some Silt; Wet		NM	

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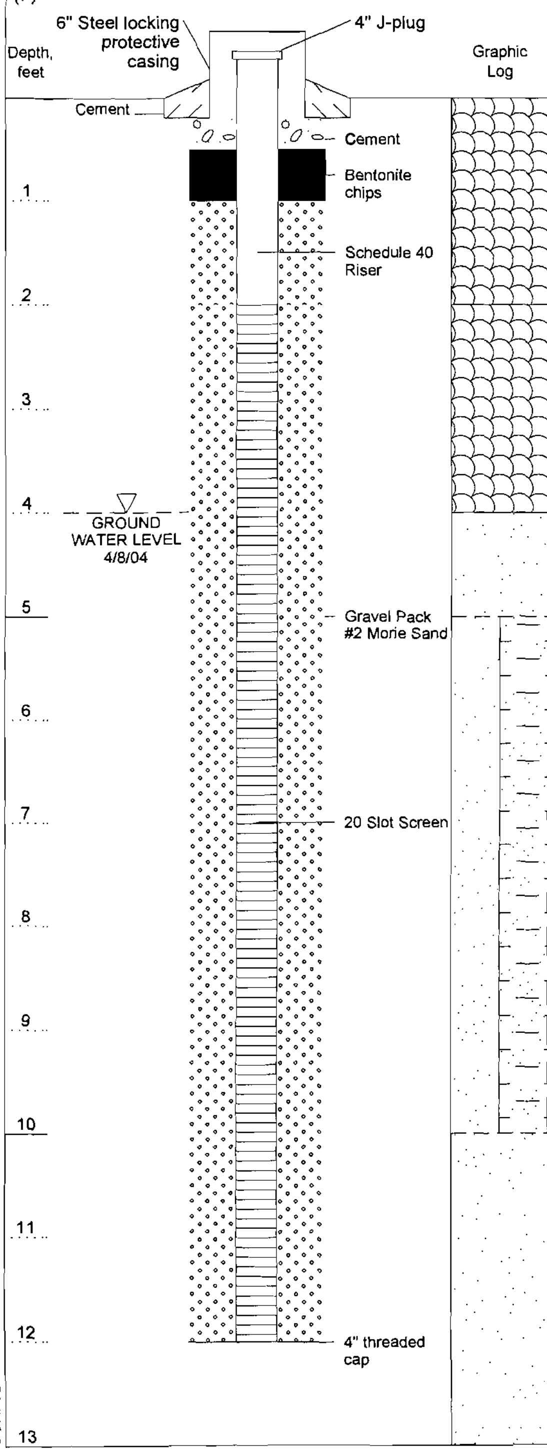
WELL CONSTRUCTION LOG

DESIGNATION **MW-76**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **05545Y09 / Amtrak**		LOCATION **Sunnyside Yard**		
APPROVED BY **H. Gregory**	LOGGED BY **R. Kovacs**	**Queens, NY**		
DRILLING CONTRACTOR/DRILLER **Land Air Water Environmental / J. Palmer**		GEOGRAPHIC AREA **OU-3**		
DRILL BIT DIAMETER/TYPE **6.25 / Auger**	BOREHOLE DIAMETER **10-inches**	DRILLING EQUIPMENT/METHOD **6610-DT / HSA**	SAMPLING METHOD **Cuttings**	START-FINISH DATE **4/8/04-4/8/04**
CASING MAT./DIA. **PVC / 4-inch**	SCREEN: TYPE **Slotted**	MAT. **PVC** TOTAL LENGTH **10.0**	DIA. **4-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (F) GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GW SURFACE	GRAVEL PACK **Morie #2**



Depth (feet)	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–2	Dark brown to brown medium to coarse SAND, some Ballast, some Silt; Dry		0.4	
2–4	Dark brown to black medium to coarse SAND, some Ballast, some Gravel; Moist to wet		4.9	Slight hydrocarbon odor
4–5	Gray medium to coarse SAND, some fine Sand; wet		NM	Strong hydrocarbon odor
5–10	Gray to black medium to coarse SAND, some Silt; wet		NM	Strong hydrocarbon odor
10–13	Gray to black medium to coarse SAND, trace fine Sand; wet		NM	

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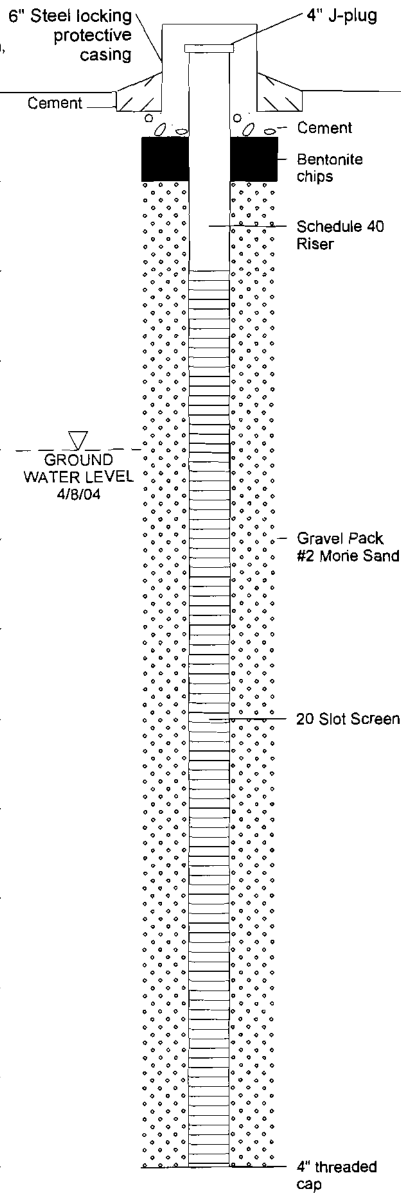
WELL CONSTRUCTION LOG

DESIGNATION **MW-77**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **05545Y09 / Amtrak**		LOCATION **Sunnyside Yard**		
APPROVED BY **H. Gregory**	LOGGED BY **R. Kovacs**	**Queens, NY**		
DRILLING CONTRACTOR/DRILLER **Land Air Water Environmental / J. Palmer**		GEOGRAPHIC AREA **OU-3**		
DRILL BIT DIAMETER/TYPE **6.25 / Auger**	BOREHOLE DIAMETER **10-inches**	DRILLING EQUIPMENT/METHOD **6610-DT / HSA**	SAMPLING METHOD **2" Macro-Core**	START-FINISH DATE **4/8/04-4/8/04**
CASING MAT./DIA. **PVC / 4-inch**	SCREEN: TYPE **Slotted**	MAT. **PVC** TOTAL LENGTH **10.0**	DIA. **4-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (F)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GW SURFACE
GRAVEL PACK **Morie #2**				



Depth, feet	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0	Dark brown to brown medium to coarse SAND, some fine Sand, some Ballast, little Silt; Dry		0.0	
1	Dark brown to brown medium to coarse SAND, some fine Sand, some Ballast; moist		0.2	
3	Dark brown to black medium to coarse SAND, some fine Sand, some Gravel, trace Cobble; Moist to wet		20.4	Strong hydrocarbon odor
5	Dark brown to black medium to coarse SAND, some fine Sand, trace Gravel; Wet		71.2	Strong hydrocarbon odor
	Gray to dark brown medium to coarse SAND, some fine Sand, trace Gravel; Wet		94.3	Strong hydrocarbon odor
	Gray coarse to fine SAND, trace Gravel, Silt; Wet		128	Strong hydrocarbon odor
10	Gray coarse to fine SAND, trace Gravel, Silt; Wet		44.5	Strong hydrocarbon odor
	Gray coarse to fine SAND, some Gravel, Silt; Wet		44.5	Hydrocarbon odor
15				

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WELL CONSTRUCTION LOG

WELL NO.	NORTHING	EASTING
MW-78	**Not Measured**	**Not Measured**

PROJECT NO./NAME	LOCATION
05571Y05 / Amtrak	**Sunnyside Yard**

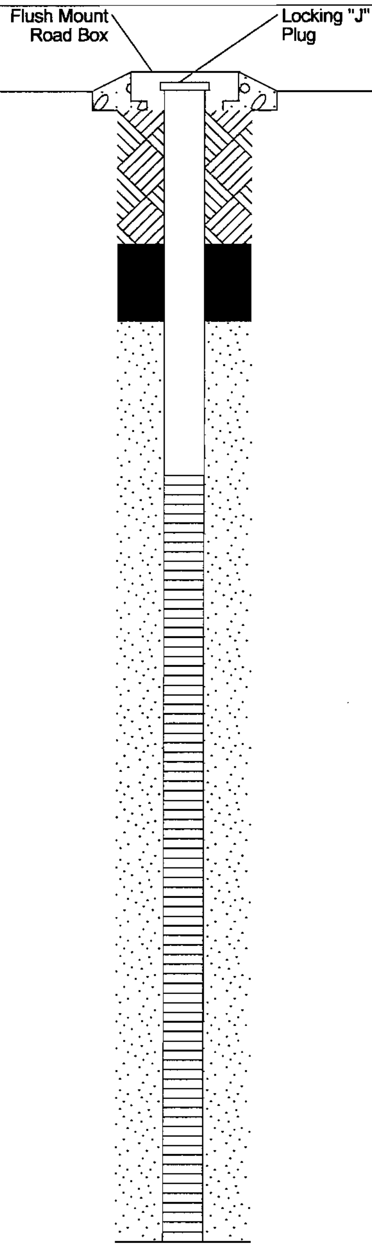
APPROVED BY	LOGGED BY	
H. Gregory	**R. Kovacs/M. Kroll**	**Sunnyside, Queens, New York**

DRILLING CONTRACTOR/DRILLER	GEOGRAPHIC AREA
Roux Associates / J. Veiss/J. Sakellis	

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
4.25 ID / Auger	**8-inches**	**Geoprobe 6420DT / Geoprobe**	**2" Macro-Core**	**6/20/05-6/20/05**

CASING MAT./DIA.: **PVC / 2-inch**
SCREEN: TYPE **Slotted** MAT. **PVC** TOTAL LENGTH **10.0**ft DIA. **2-inch** SLOT SIZE **10-Slot**

ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN	GRAVEL PACK SIZES
			/	**Morie #1**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
		Dark brown fine to medium SAND, some Gravel, little Silt; dry		1.2	
		Dark brown to brown fine to medium SAND, trace Gravel, trace coarse Sand; dry		1.8	
		Dark brown to brown fine to medium SAND, some light brown Sand, trace Gravel; dry		0	
5		Brown to tan crushed stone, little fine to coarse Sand, little Gravel; dry		0.5	
		Brown to tan fine to coarse SAND, some Crushed Stone, little Gravel; wet at 9' bls		0.6	
10		Dark brown to brown fine to coarse SAND, little Gravel, trace tan Sand; wet		0.7	
15		Brown to orange-brown medium to coarse SAND; wet		0.7	Botton of boring at 17.5 feet.

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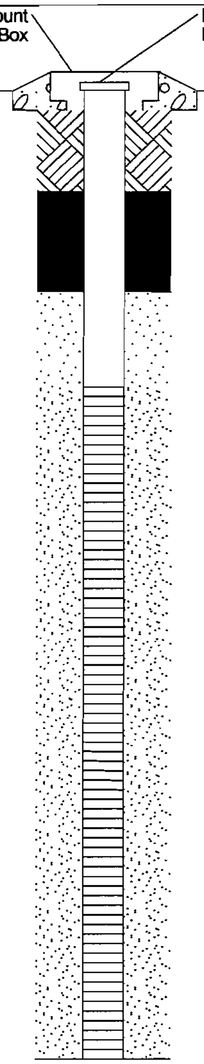
WELL CONSTRUCTION LOG

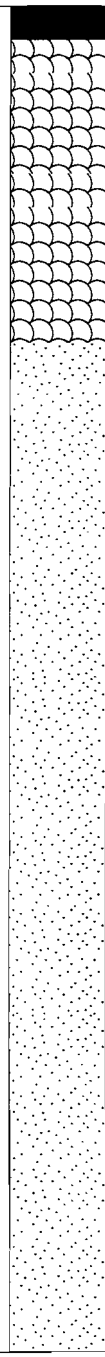
WELL NO. **MW-79**	NORTHING **Not Measured**	EASTING **Not Measured**
PROJECT NO./NAME **05571Y05 / Amtrak**		LOCATION **Sunnyside Yard** **Sunnyside, Queens, New York**
APPROVED BY **H. Gregory**	LOGGED BY **R. Kovacs/M. Kroll**	
DRILLING CONTRACTOR/DRILLER **Roux Associates / J. Veiss/J. Sakellis**		GEOGRAPHIC AREA

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
4.25 ID / Auger	**8-inches**	**Geoprobe 6420DT / Geoprobe**	**2" Macro-Core**	**6/20/05-6/21/05**

CASING MAT./DIA. **PVC / 2-inch**
SCREEN: TYPE **Slotted** MAT. **PVC** TOTAL LENGTH **10.0**ft DIA. **2-inch** SLOT SIZE **10-Slot**

ELEVATION OF: (Feet) GROUND SURFACE TOP OF WELL CASING TOP & BOTTOM SCREEN / GRAVEL PACK SIZES **Morie #1**





Depth, feet	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0	ASPHALT			
	Dark brown fine to medium SAND and SILT; dry		0.1	
	Brwon fine to medium SAND, little Silt; dry		0.3	
	Gray BALLAST			
	Brown to light brown fine to medium SAND, little Gravel; dry		0.4	
5	Brown fine to coarse SAND, some light brown Sand, trace Silt; wet at 10' bls		0.4	
10	Brown fine to coarse SAND, trace dark brown Sand; wet		0.8	
15	Brown fine to coarse SAND, trace brown Sand; wet		0.2	
20				Bottom of boring at 20 feet.

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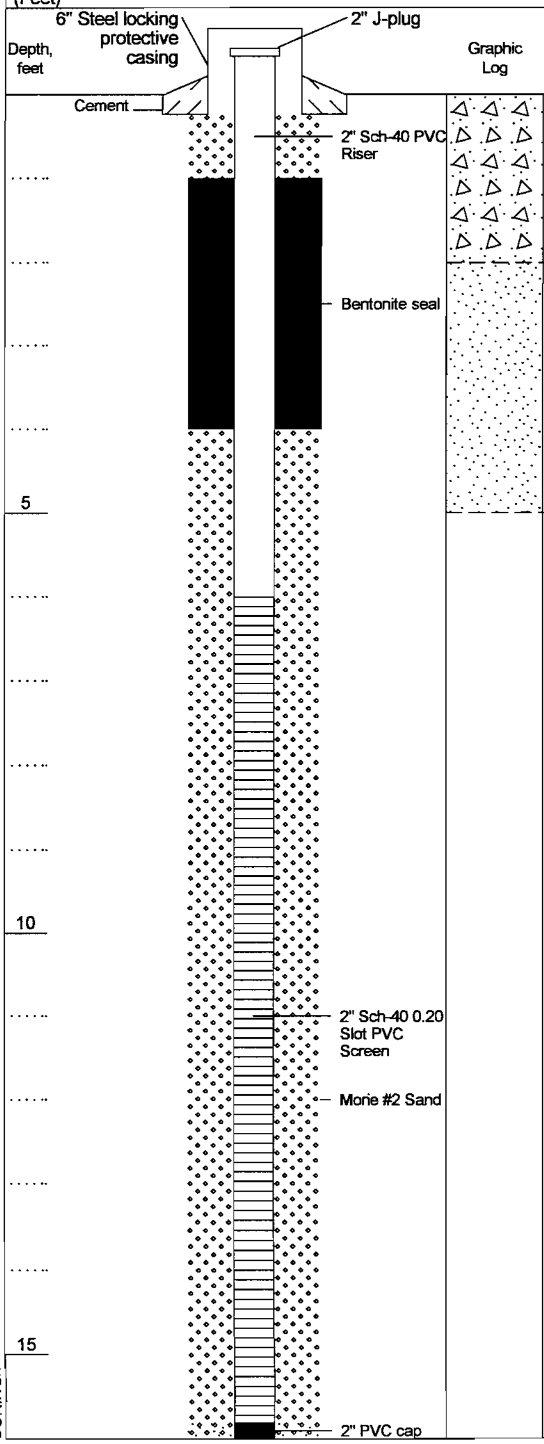
WELL CONSTRUCTION LOG

WELL NO. **MW-80**	NORTHING **Not Measured**	EASTING **Not Measured**
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard**
APPROVED BY	LOGGED BY **H. Gregory**	**Queens, New York**
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / E. Santiago**		GEOGRAPHIC AREA
DRILL BIT DIAMETER/TYPE **3-in. / Drive Sampler**	BOREHOLE DIAMETER **3-inches**	DRILLING EQUIPMENT/METHOD **7720DT / Geoprobe**; SAMPLING METHOD; START-FINISH DATE **4/22/08-4/28/08**
CASING MAT./DIA. **PVC / 2-inch**	SCREEN: TYPE **Slotted** MAT. **PVC**	TOTAL LENGTH **10.0ft** DIA. **2-inch** SLOT SIZE **20-Slot**
ELEVATION OF: (Feet) GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN / ; GRAVEL PACK SIZES **Morie #2**



Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
Dark brown, fine to coarse SAND and ballast (fill)			
Orange brown, fine to coarse SAND	G		

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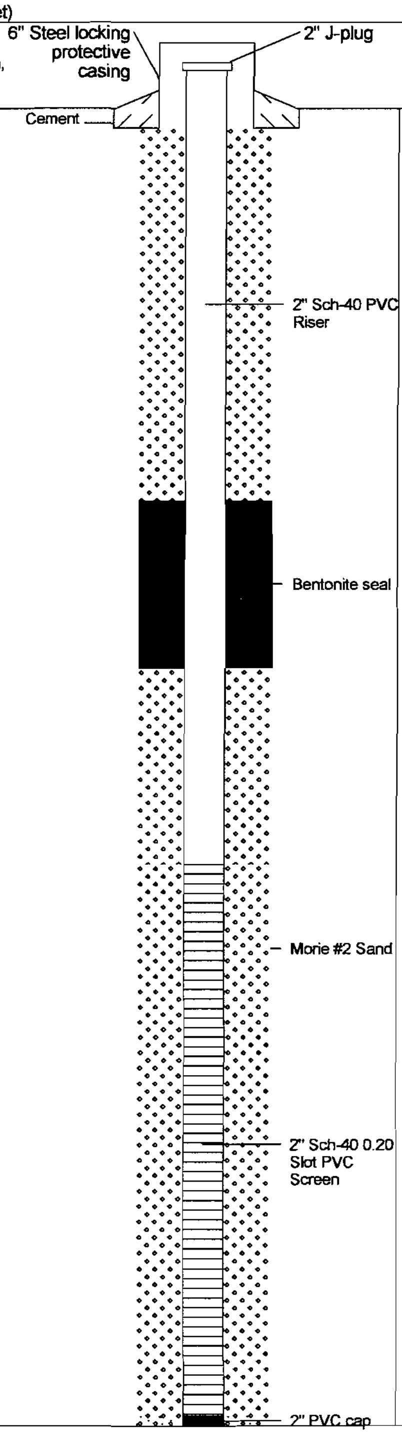
WELL CONSTRUCTION LOG

WELL NO. **MW-82**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, New York**		
APPROVED BY	LOGGED BY **H. Gregory**			
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / K. McGourty**		GEOGRAPHIC AREA		
DRILL BIT DIAMETER/TYPE **3-in. / Drive Sampler**	BOREHOLE DIAMETER **3-inches**	DRILLING EQUIPMENT/METHOD **7720DT / Geoprobe**	SAMPLING METHOD	START-FINISH DATE **4/22/08-4/30/08**
CASING MAT./DIA. **PVC / 2-inch**	SCREEN: TYPE **Slotted**	MAT. **PVC**	TOTAL LENGTH **10.0**ft DIA. **2-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GRAVEL PACK SIZES **Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
5					5
10					10
15					15
20					20

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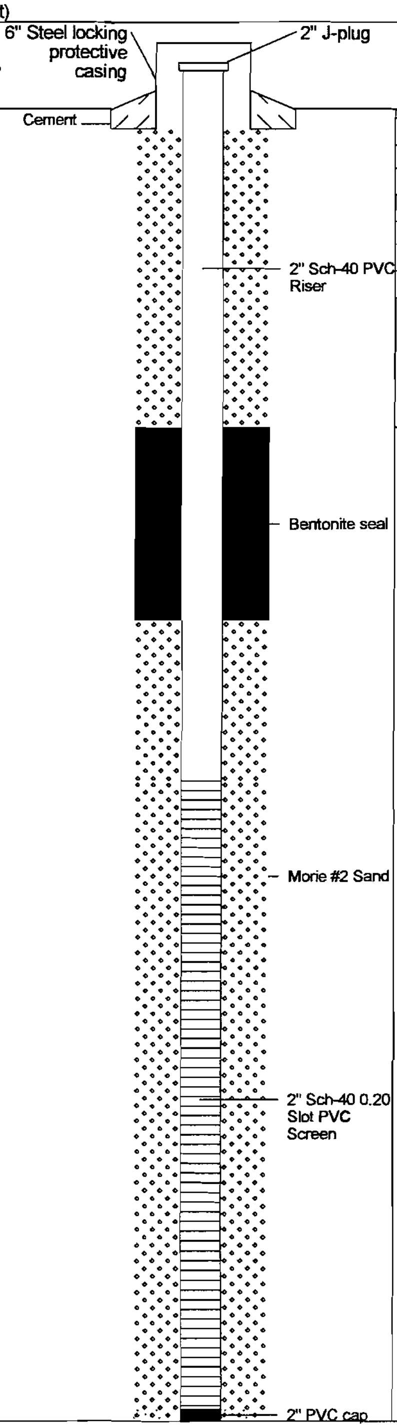
WELL CONSTRUCTION LOG

WELL NO.	NORTHING	EASTING		
MW-83	**Not Measured**	**Not Measured**		
PROJECT NO./NAME: **0055.0065Y003 / Amtrak**		LOCATION: **Sunnyside Yard** **Queens, New York**		
APPROVED BY:	LOGGED BY: **H. Gregory**			
DRILLING CONTRACTOR/DRILLER: **Land, Air, Water / K. McGourty**		GEOGRAPHIC AREA:		
DRILL BIT DIAMETER/TYPE: **3-in. / Drive Sampler**	BOREHOLE DIAMETER: **3-inches**	DRILLING EQUIPMENT/METHOD: **7720DT / Geoprobe**	SAMPLING METHOD:	START-FINISH DATE: **4/22/08-4/23/08**
CASING MAT./DIA.: **PVC / 2-inch**	SCREEN: TYPE **Slotted** MAT. **PVC**	TOTAL LENGTH **10.0**ft	DIA. **2-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN: /	GRAVEL PACK SIZES: **Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–5		Light brown, fine to coarse SAND			
5					
10					
15					
20					

BORING/FEET 05565Y03.GPJ ROUX.GDT 9/11/09

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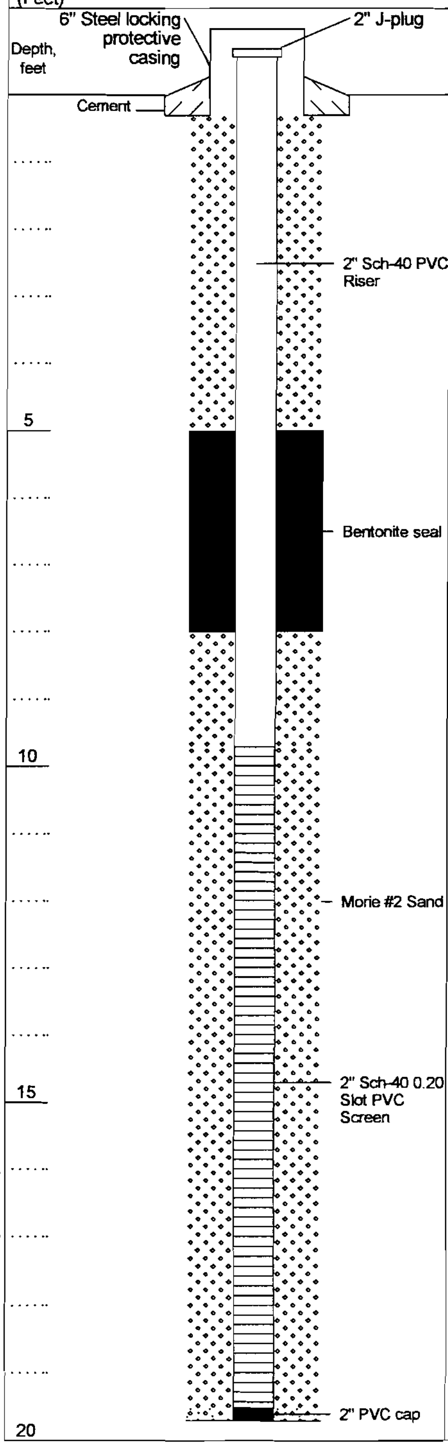
WELL CONSTRUCTION LOG

WELL NO. **MW-84**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, New York**		
APPROVED BY	LOGGED BY **H. Gregory**			
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / K. McGourty**		GEOGRAPHIC AREA		
DRILL BIT DIAMETER/TYPE **3-in. / Drive Sampler**	BOREHOLE DIAMETER **3-inches**	DRILLING EQUIPMENT/METHOD **7720DT / Geoprobe**	SAMPLING METHOD	START-FINISH DATE **4/22/08-4/23/08**
CASING MAT./DIA. **PVC / 2-inch**	SCREEN: TYPE **Slotted** MAT. **PVC**	TOTAL LENGTH **10.0**ft	DIA. **2-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GRAVEL PACK SIZES **Morie #2**



Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
	Tan, fine to medium SAND			
	Brown, fine to coarse SAND	G		
	Orange brown, fine to coarse SAND			

BORING/FEET 05565Y03.GPJ ROUX.GDT 9/11/09

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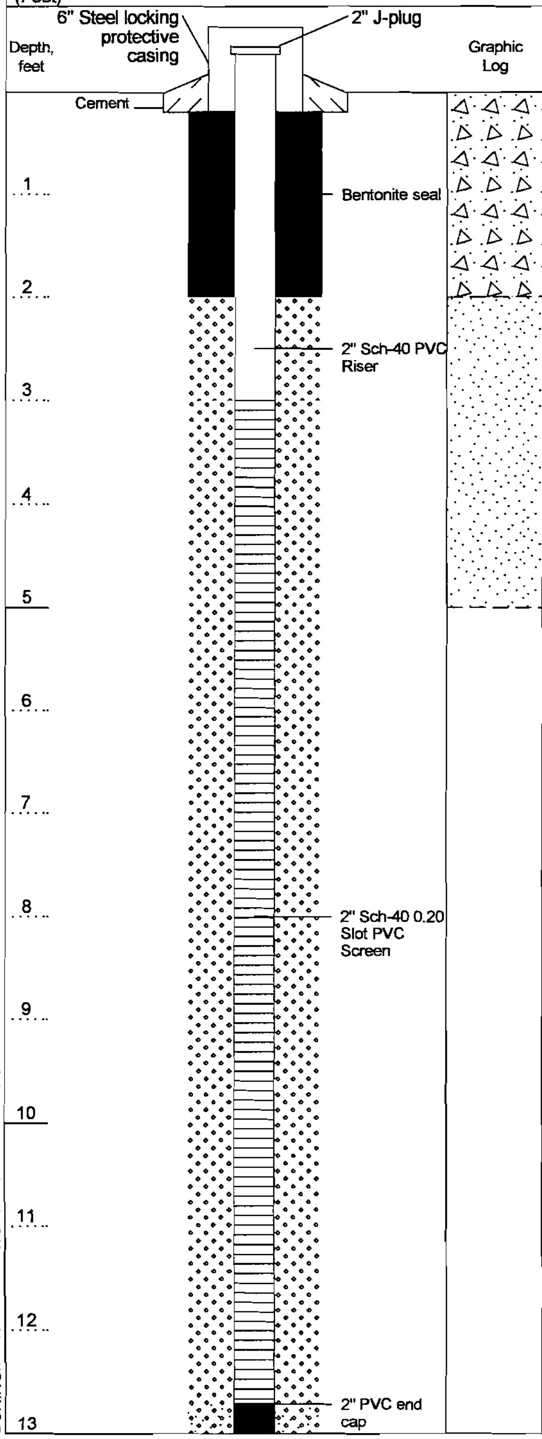
WELL CONSTRUCTION LOG

WELL NO.	NORTHING	EASTING		
MW-85	**Not Measured**	**Not Measured**		
PROJECT NO./NAME: **0055.0065Y003 / Amtrak**		LOCATION: **Sunnyside Yard** **Queens, New York**		
APPROVED BY	LOGGED BY: **H. Gregory**			
DRILLING CONTRACTOR/DRILLER: **Land, Air, Water / E. Santiago**		GEOGRAPHIC AREA		
DRILL BIT DIAMETER/TYPE: **3-in. / Drive Sampler**	BOREHOLE DIAMETER: **3-inches**	DRILLING EQUIPMENT/METHOD: **7720DT / Geoprobe**	SAMPLING METHOD	START-FINISH DATE: **4/21/08-4/28/08**
CASING MAT./DIA.: **PVC / 2-inch**	SCREEN: TYPE **Slotted**	MAT. **PVC**	TOTAL LENGTH **10.0ft** DIA. **2-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN: /	GRAVEL PACK SIZES: **Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–2		Dark brown, fine to coarse SAND, some ballast (fill)			
2–5		Orange brown, fine to coarse SAND, trace cobbles; wet			

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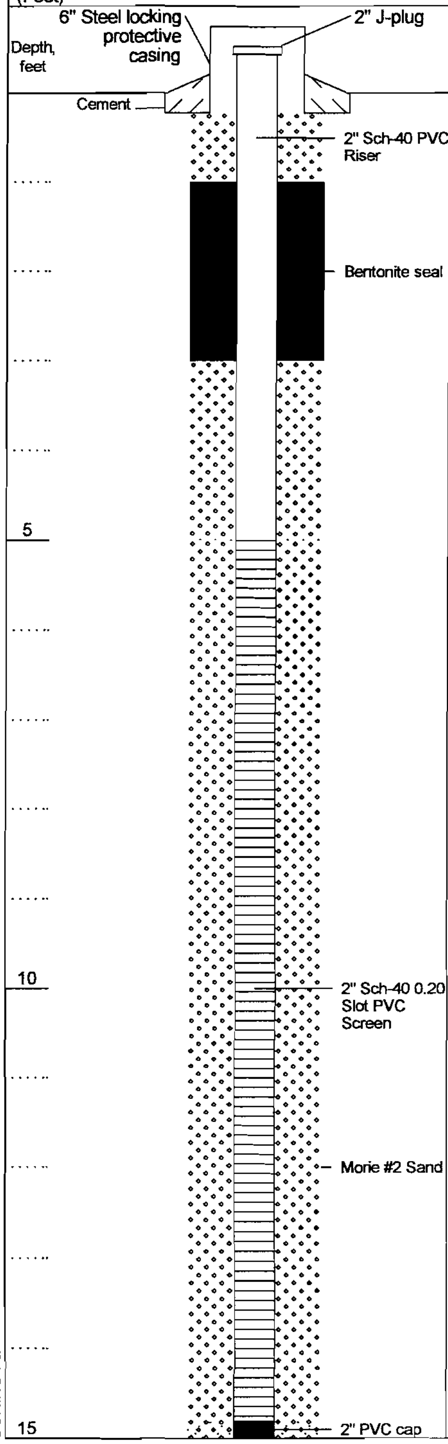
WELL CONSTRUCTION LOG

WELL NO. **MW-86**	NORTHING **Not Measured**	EASTING **Not Measured**
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, New York**
APPROVED BY	LOGGED BY **H. Gregory**	
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / E. Santiago**		GEOGRAPHIC AREA

DRILL BIT DIAMETER/TYPE **3-in. / Drive Sampler**	BOREHOLE DIAMETER **3-inches**	DRILLING EQUIPMENT/METHOD **7720DT / Geoprobe**	SAMPLING METHOD	START-FINISH DATE **4/21/08-4/29/08**

CASING MAT./DIA. **PVC / 2-inch** SCREEN: TYPE **Slotted** MAT. **PVC** TOTAL LENGTH **10.0**ft DIA. **2-inch** SLOT SIZE **20-Slot**

ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN	GRAVEL PACK SIZES
			/	**Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0		Dark brown to black, fine to coarse SAND and coarse ballast (fill)	G		
		Orange brown, fine to medium SAND			
5					5
10					10
15					15

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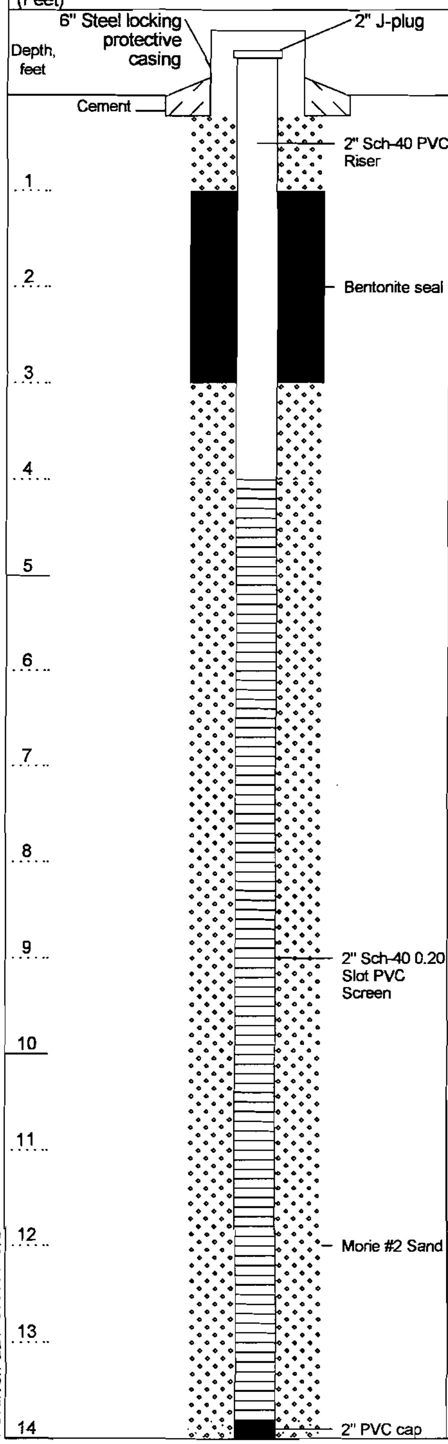
WELL CONSTRUCTION LOG

WELL NO. **MW-87**	NORTHING **Not Measured**	EASTING **Not Measured**
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, New York**
APPROVED BY	LOGGED BY **H. Gregory**	
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / E. Santiago**		GEOGRAPHIC AREA

DRILL BIT DIAMETER/TYPE **3-in. / Drive Sampler**	BOREHOLE DIAMETER **3-inches**	DRILLING EQUIPMENT/METHOD **7720DT / Geoprobe**	SAMPLING METHOD	START-FINISH DATE **4/21/08-4/29/08**

CASING MAT./DIA. **PVC / 2-inch** | SCREEN: TYPE **Slotted** MAT. **PVC** TOTAL LENGTH **10.0**ft DIA. **2-inch** SLOT SIZE **20-Slot**

ELEVATION OF: (Feet) | GROUND SURFACE | TOP OF WELL CASING | TOP & BOTTOM SCREEN / | GRAVEL PACK SIZES **Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–3.5		Dark brown to black, fine to coarse SAND and coarse ballast (fill)			
3.5–5		Orange brown, fine to coarse SAND			

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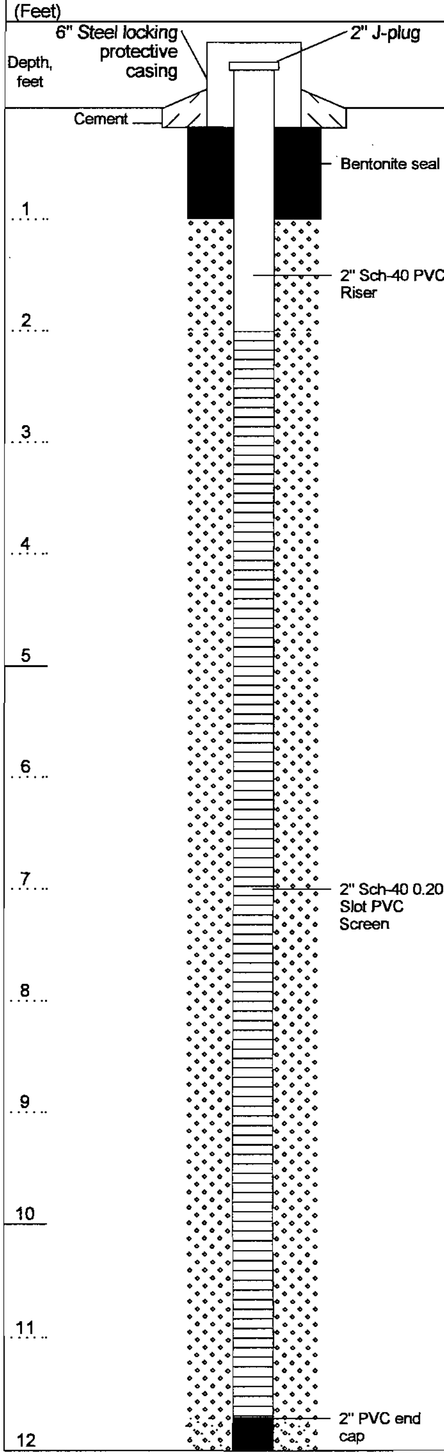
WELL CONSTRUCTION LOG

WELL NO. **MW-88**	NORTHING **Not Measured**	EASTING **Not Measured**
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, New York**
APPROVED BY	LOGGED BY **H. Gregory**	
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / K. McGourty**		GEOGRAPHIC AREA

DRILL BIT DIAMETER/TYPE **3-in. / Drive Sampler**	BOREHOLE DIAMETER **3-inches**	DRILLING EQUIPMENT/METHOD **7720DT / Geoprobe**	SAMPLING METHOD	START-FINISH DATE **4/21/08-4/30/08**

CASING MAT./DIA. **PVC / 2-inch** — SCREEN: TYPE **Slotted** MAT. **PVC** TOTAL LENGTH **10.0**ft DIA. **2-inch** SLOT SIZE **20-Slot**

ELEVATION OF: (Feet) — GROUND SURFACE — TOP OF WELL CASING — TOP & BOTTOM SCREEN / — GRAVEL PACK SIZES **Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–4		Dark grey to black, fine to coarse SAND and ballast (fill); stained, no odor			
4–5		Dark grey to black, fine to coarse SAND and ballast (fill); stained, no odor; wet			
6					
7					
8					
9					
10					
11					
12					

BORING/FEET 05565Y03.GPJ ROUX.GDT 9/11/09

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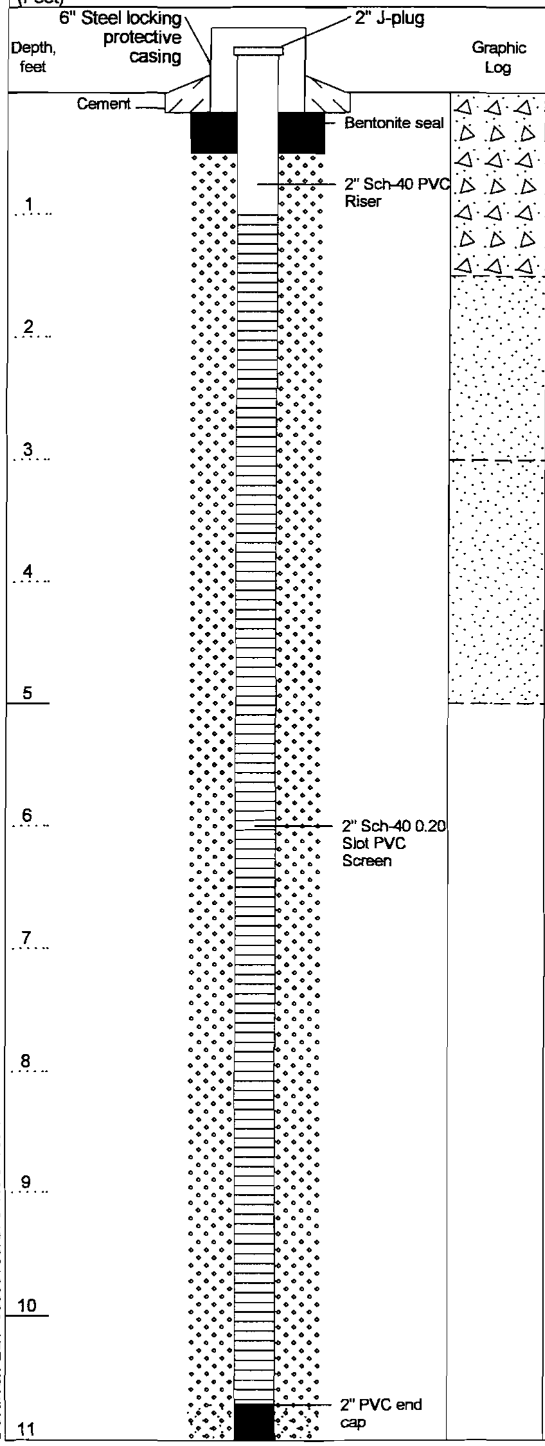
WELL CONSTRUCTION LOG

WELL NO. **MW-89**	NORTHING **Not Measured**	EASTING **Not Measured**
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, New York**
APPROVED BY	LOGGED BY **H. Gregory**	
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / K. McGourty**		GEOGRAPHIC AREA

DRILL BIT DIAMETER/TYPE **3-in. / Drive Sampler**	BOREHOLE DIAMETER **3-inches**	DRILLING EQUIPMENT/METHOD **7720DT / Geoprobe**	SAMPLING METHOD	START-FINISH DATE **4/21/08-4/30/08**

CASING MAT./DIA. **PVC / 2-inch** | SCREEN: TYPE **Slotted** MAT. **PVC** TOTAL LENGTH **10.0**ft DIA. **2-inch** SLOT SIZE **20-Slot**

ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN	GRAVEL PACK SIZES
			/	**Morie #2**



Depth, feet	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–1.5	Dark brown to black, fine to coarse SAND and ballast, some cinders (fill)			
1.5–3	Orange brown, fine to coarse SAND			
3–5	Orange brown, fine to coarse SAND; wet			

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

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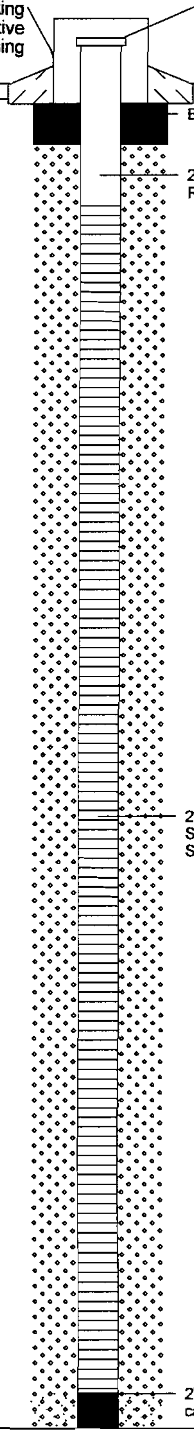
WELL CONSTRUCTION LOG

WELL NO. **MW-90**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, New York**		
APPROVED BY	LOGGED BY **H. Gregory**			
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / K. McGourty**		GEOGRAPHIC AREA		
DRILL BIT DIAMETER/TYPE **3-in. / Drive Sampler**	BOREHOLE DIAMETER **3-inches**	DRILLING EQUIPMENT/METHOD **7720DT / Geoprobe**	SAMPLING METHOD	START-FINISH DATE **4/21/08-4/30/08**
CASING MAT./DIA. **PVC / 2-inch**	SCREEN: TYPE **Slotted** MAT. **PVC**	TOTAL LENGTH **10.0ft**	DIA. **2-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GRAVEL PACK SIZES **Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–1.5		Dark brown to black, fine to coarse SAND and ballast, some cinders (fill)			
1.5–3		Orange brown, fine to coarse SAND	G		
3–5		Orange brown, fine to coarse SAND; wet			

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

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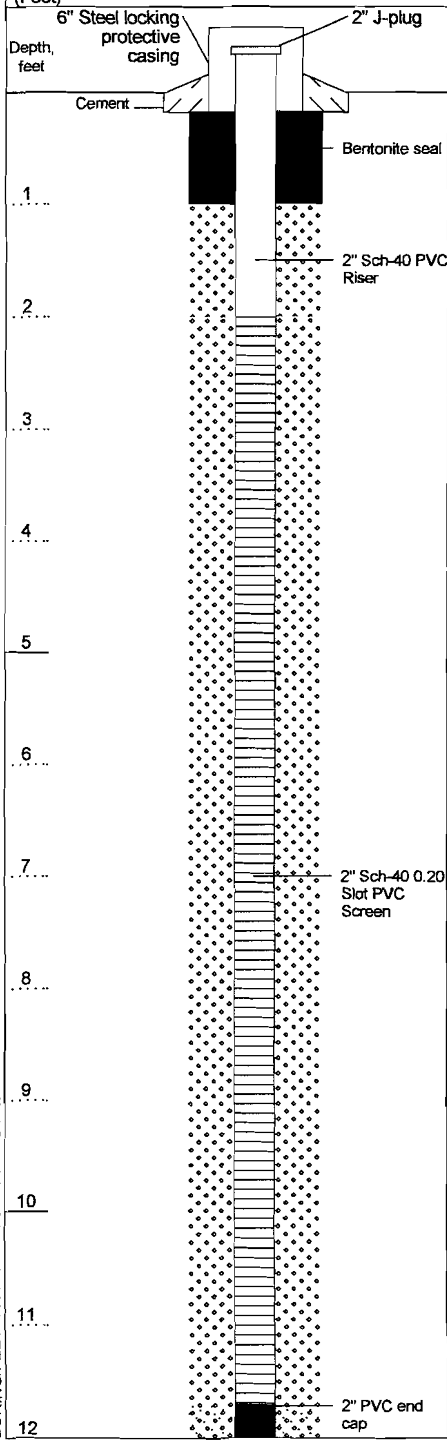
WELL CONSTRUCTION LOG

WELL NO. **MW-91**	NORTHING **Not Measured**	EASTING **Not Measured**
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, New York**
APPROVED BY	LOGGED BY **H. Gregory**	
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / K. McGourty**		GEOGRAPHIC AREA

DRILL BIT DIAMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING METHOD	START-FINISH DATE
3-in. / Drive Sampler	**3-inches**	**7720DT / Geoprobe**		**4/21/08-4/30/08**

CASING MAT./DIA. **PVC / 2-inch** — SCREEN: TYPE **Slotted** MAT. **PVC** TOTAL LENGTH **10.0ft** DIA. **2-inch** SLOT SIZE **20-Slot**

ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN	GRAVEL PACK SIZES
			/	**Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–4		Dark brown to black, fine to coarse SAND and ballast, some cinders (fill)			
4–5		Orange brown, fine to coarse SAND; wet			

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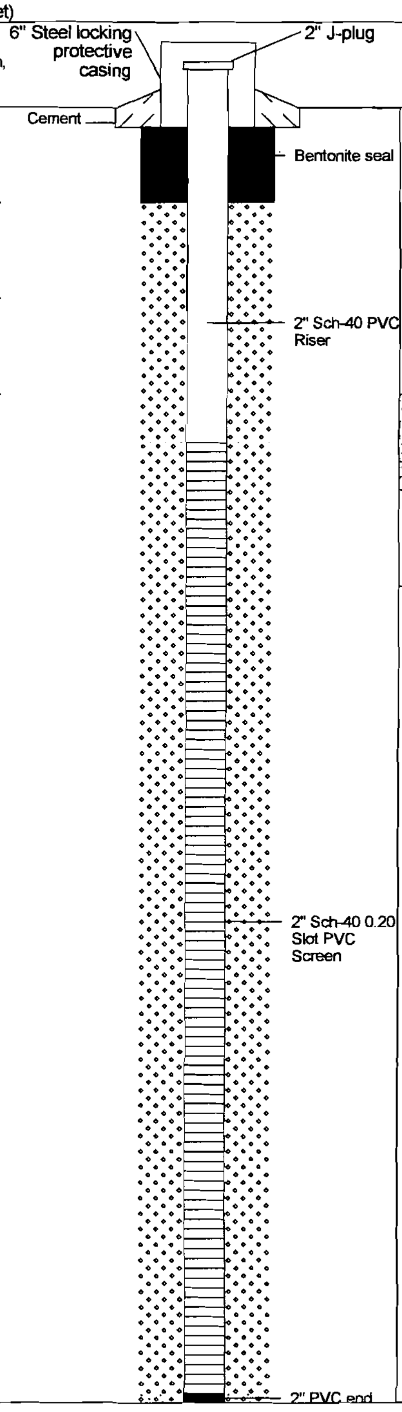
WELL CONSTRUCTION LOG

WELL NO. **MW-92**	NORTHING **Not Measured**	EASTING **Not Measured**		
PROJECT NO./NAME **0055.0065Y003 / Amtrak**		LOCATION **Sunnyside Yard** **Queens, New York**		
APPROVED BY	LOGGED BY **H. Gregory**			
DRILLING CONTRACTOR/DRILLER **Land, Air, Water / K. McGourty**		GEOGRAPHIC AREA		
DRILL BIT DIAMETER/TYPE **3-in. / Drive Sampler**	BOREHOLE DIAMETER **3-inches**	DRILLING EQUIPMENT/METHOD **7720DT / Geoprobe**	SAMPLING METHOD	START-FINISH DATE **4/22/08-4/23/08**
CASING MAT./DIA. **PVC / 2-inch**	SCREEN: TYPE **Slotted**	MAT. **PVC** TOTAL LENGTH **10.0**ft	DIA. **2-inch**	SLOT SIZE **20-Slot**
ELEVATION OF: (Feet)	GROUND SURFACE	TOP OF WELL CASING	TOP & BOTTOM SCREEN /	GRAVEL PACK SIZES **Morie #2**



Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–3		Dark brown, fine to coarse SAND and ballast (fill)		G	
3–4		Orange brown, fine to coarse SAND, some cobbles			
4–5		Orange brown, fine to coarse SAND			

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13

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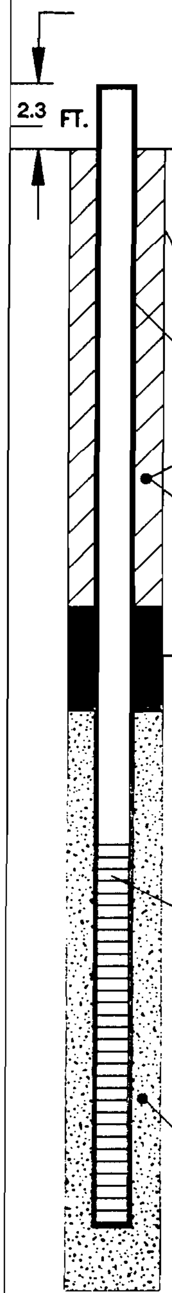
MONITORING WELL CONSTRUCTION LOG



2.3 FT.

LAND SURFACE

8 INCH DIAMETER, DRILLED HOLE

WELL CASING
2 INCH DIAMETER

☐ BACKFILL
☐ GROUT #00 sand/cement

3 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

7 FT.

29.8 FT.

WELL SCREEN
2 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

39.8 FT.

42 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05525Y02

WELL NO. P-1D PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 07/08/94

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Environmental Services, Inc.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pumping and Surging

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.

PUMPING DEPTH TO WATER ______ FEET BELOW M.

PUMPING DURATION ______ HOURS

YIELD ______ GPM DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Piezometer

REMARKS #00 Sand from 7' to 27'bls.

HYDROGEOLOGIST H. Gregory

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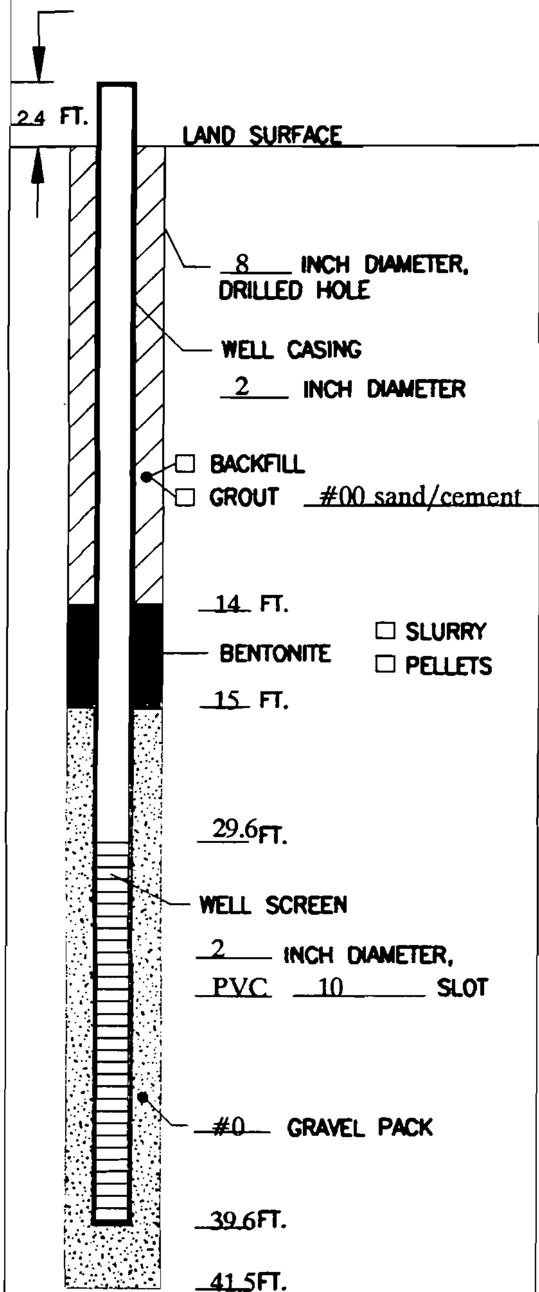
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05525Y02

WELL NO. P-2D PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 07/06/94

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Environmental Services, Inc.

DRILLING FLUID ______

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pumping and Surging

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Piezometer

REMARKS

HYDROGEOLOGIST H. Gregory

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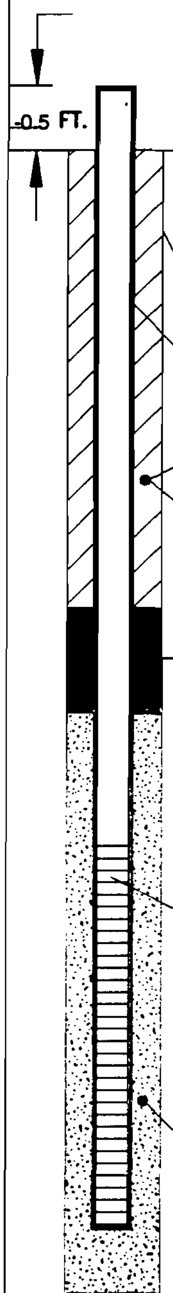
MONITORING WELL CONSTRUCTION LOG



0.5 FT.

LAND SURFACE

8 INCH DIAMETER, DRILLED HOLE

WELL CASING
2 INCH DIAMETER

☐ BACKFILL
☐ GROUT #00 sand/cement

6 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

7 FT.

29.8 FT.

WELL SCREEN
2 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

39.8 FT.

41 FT.

NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05525Y02

WELL NO. P-3D PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 07/07/94

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Environmental Services, Inc.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pumping and Surging

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Piezometer

REMARKS #00 Sand from 7' to 27'bls.

HYDROGEOLOGIST H. Gregory

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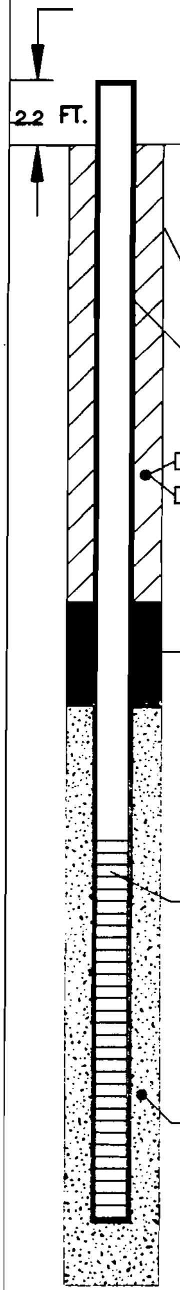
MONITORING WELL CONSTRUCTION LOG



2.2 FT.

LAND SURFACE

8 INCH DIAMETER, DRILLED HOLE

WELL CASING
2 INCH DIAMETER

☐ BACKFILL
☐ GROUT #00 sand/cement

14 FT.

BENTONITE ☐ SLURRY ☐ PELLETS

15 FT.

29.8 FT.

WELL SCREEN
2 INCH DIAMETER,
PVC 10 SLOT

#0 GRAVEL PACK

39.8 FT.

42 FT.

NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05525Y02

WELL NO. P-4D PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 07/06/94

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Environmental Services, Inc.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pumping and Surging

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DEPTH TO WATER ______ FEET BELOW M.P

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Piezometer

REMARKS

HYDROGEOLOGIST H. Gregory

ROUX
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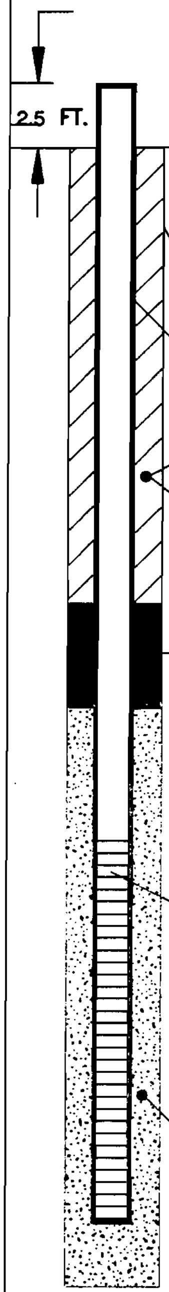
MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05525Y02

WELL NO. P-5S PERMIT NO.

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 07/06/94

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Environmental Services, Inc.

DRILLING FLUID

DEVELOPMENT TECHNIQUE(S) AND DATE(S)
Pumping and Surging

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Piezometer

REMARKS

HYDROGEOLOGIST H. Gregory

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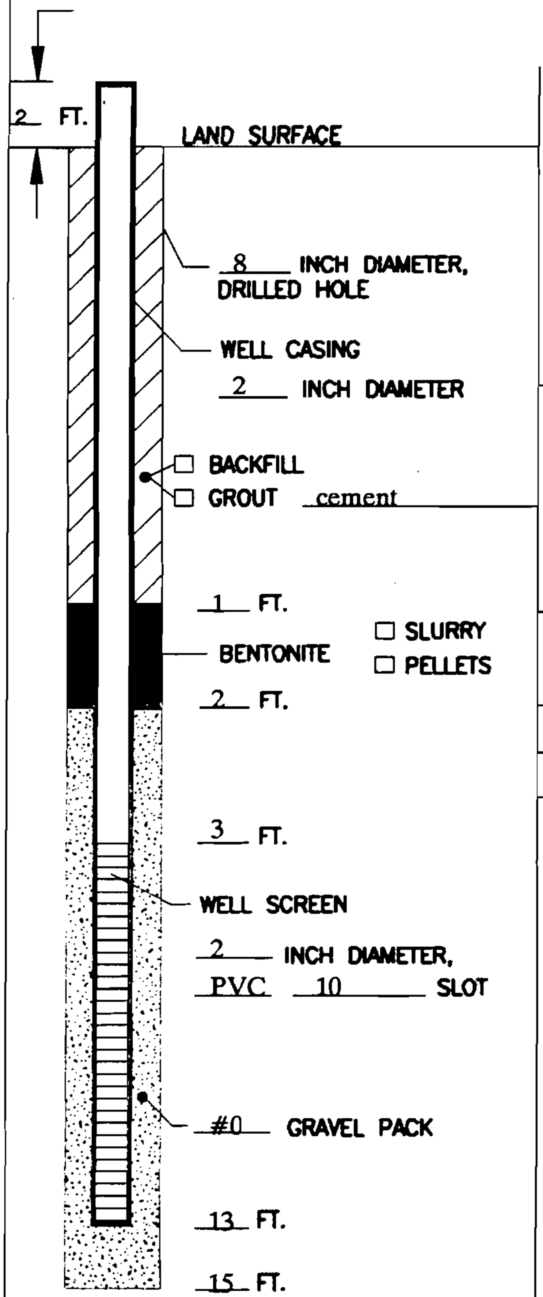
ROUX ASSOCIATES INC

Environmental Consulting & Management

MONITORING WELL CONSTRUCTION LOG



NOTE:
ALL DEPTHS IN FEET
BELOW LAND SURFACE

PROJECT NAME AMTRAK NUMBER 05525Y02

WELL NO. P-6S PERMIT NO. ______

TOWN/CITY Long Island City

COUNTY Queens STATE New York

LAND SURFACE ELEVATION
AND DATUM ______ FEET ☐ SURVEYED ☐ ESTIMATED

INSTALLATION DATE(S) 07/08/94

DRILLING METHOD Hollow Stem Auger

DRILLING CONTRACTOR Land, Air, Water Environmental Services, Inc.

DRILLING FLUID ______

DEVELOPMENT TECHNIQUE(S) AND DATE(S)

Pumping and Surging

FLUID LOSS DURING DRILLING ______ GALLONS

WATER REMOVED DURING DEVELOPMENT ______ GALLONS

STATIC DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DEPTH TO WATER ______ FEET BELOW M.P.

PUMPING DURATION ______ HOURS

YIELD ______ GPM ______ DATE ______

SPECIFIC CAPACITY ______ GPM/FT.

WELL PURPOSE Piezometer

REMARKS

HYDROGEOLOGIST H. Gregory

ROUX

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**	Log of Well No. **TP-6**
Date Started: **4/17/96** Completed: **4/18/96**	Measuring Point Elevation: Total Depth: **10.0 ft**
Logged By: **H. Gregory** Checked By: **J.Duminuco**	Water Level During Drilling: **6.0 ft** Post-Development: **3.6 ft**
Drilling Co: **ADT** Driller:	Casing: **2-inch Schedule 40 PVC** Drill Bit Diameter: **3**
Drilling Method: **Hollow-Stem Auger**	Perforation: **10-Slot** from **8.7** to **3.7**
Drilling Equipment: **Mobil Drill B-57**	Pack: **#1 Gravel** from **10** to **2.0**
	Seal: **Bentonite Pellets** from **2.0** to **1.0**
Sampler:	**Grout** from **1.0** to **0**

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
0–1	Brown to black fine to coarse SAND, some Gravel; Dry	SW					Lithology derived from cuttings
1–2	Orange tan to brown fine to coarse SAND, trace Gravel			G			Sample from 0-2 feet was collected for laboratory analysis
2–3	Orange tan to brown fine to coarse SAND, trace Gravel; Dry to moist						
3–4	Orange tan medium to coarse SAND, trace Gravel; Wet						Wet at 3 feet below land surface
4–5	Orange tan medium to coarse SAND, trace Gravel; moist to wet						Sample from 3-5 feet collected for laboratory analysis
6–7	Orange tan medium to coarse SAND, trace Gravel; Wet						
8–9	Orange tan medium to coarse SAND, trace Gravel; Wet						
10							Bottom of boring at 10 feet below land surface

ROUX

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**	Log of Well No. **TP-7**
Date Started: **4/17/96** Completed: **4/23/96**	Measuring Point Elevation: Total Depth: **8.0 ft**
Logged By: **H. Gregory** Checked By: **J.Duminuco**	Water Level During Drilling: **4.5 ft** Post-Development: **5.7 ft**
Drilling Co: **ADT** Driller:	Casing: **2-inch Schedule 40 PVC** Drill Bit Diameter: **3**
Drilling Method: **Hollow-Stem Auger**	Perforation: **10-Slot** from **8.0** to **3.0**
Drilling Equipment: **Mobil Drill B-57**	Pack: **#1 Gravel** from **8.0** to **2.0**
Sampler:	Seal: **Bentonite Pellets** from **2.0** to **1.0**
	Grout from **1.0** to **0**

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
0–1	Black to brown fine to medium SAND, some Gravel; Dry	SW					Lithology derived from cuttings
1–2				G			Sample from 0-2 feet collected for laboratory analysis
2–4	Orange to tan medium to coarse SAND, some Gravel, little Silt; Dry to moist						
4–6	Orange to tan medium to coarse SAND, some Gravel, little Silt; Moist to wet						Wet at 4.5 feet below land surface
6–8	Orange to tan medium to coarse SAND, some Gravel, little Silt; Wet						Sample from 5-7 feet collected for laboratory analysis
8							Bottom of boring at 8 feet below land surface
10							
15							
20							
25							

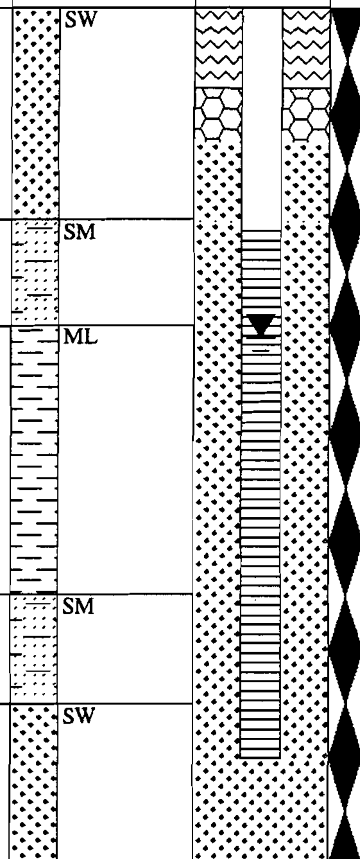
ROUX

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**	Log of Well No. **TP-8**
Date Started: **3/25/97** Completed: **3/25/97**	Measuring Point Elevation: Total Depth: **15.0 ft**
Logged By: **H. Gregory** Checked By: **J.Dominuco**	Water Level During Drilling: **6.0 ft** Post-Development: **6.0 ft**
Drilling Co: **L.A.W.** Driller:	Casing: **2-inch Schedule 40 PVC** Drill Bit Diameter: **6**
Drilling Method: **Hollow-Stem Auger**	Perforation: **10-Slot** from **3** to **13**
Drilling Equipment: **B-61 Rig**	Pack: **#1 Gravel** from **2** to **15**
Sampler: **140lb / 30" split-spoon**	Seal: **Bentonite Pellets** from **1** to **2**
	Cement Grout from **0** to **1**

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown fine to medium SAND, trace Silt, trace Gravel, trace Cinders; Dry	SW				0.0	Casing finished as stick-up 2 feet above land surface
	Orange-brown fine to medium SAND, trace Gravel; Dry to moist					0.0	
5	Orange-brown fine to coarse SAND; Moist to wet					0.0	
	Orange-brown fine to coarse SAND, some coarse Gravel; Wet					0.0	Wet at 6 feet below land surface
	Orange-brown fine to coarse SAND, some coarse Gravel; Wet					0.0	
10	Orange-brown fine to coarse SAND, some coarse Gravel; Wet					0.0	
	Orange-brown fine to coarse SAND, some coarse Gravel; Wet					0.0	
	Brown to orange-brown fine to coarse SAND; Wet					0.0	
15							Bottom of boring at 15 feet below land surface
20							
25							

ROUX

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**		**Log of Well No. TP-9**	
Date Started: **3/24/97**	Completed: **3/24/97**	Measuring Point Elevation:	Total Depth: **16.0 ft**
Logged By: **H. Gregory**	Checked By: **J.Dominuco**	Water Level During Drilling: **6.2 ft**	Post-Development: **6.2 ft**
Drilling Co: **L.A.W.**	Driller:	Casing: **2-inch Schedule 40 PVC**	Drill Bit Diameter: **6**
Drilling Method: **Hollow-Stem Auger**		Perforation: **10-Slot**	☰ from **4** to **14**
Drilling Equipment: **B-61 Rig**		Pack: **#1 Gravel**	⠿ from **2.5** to **16**
Sampler: **140lb / 30" split-spoon**		Seal: **Bentonite Pellets**	⬡ from **1.5** to **2.5**
		Cement Grout	≋ from **0** to **1.5**



Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
	Brown to orange-brown fine to coarse SAND, trace Gravel, trace Silt; Dry	SW				0.0	Casing finished as stick-up 2 feet above land surface
	Orange-brown fine to medium SAND, trace Gravel, trace Silt; Dry					0.0	
5	Orange-brown fine SAND and Silt, little Clay; dry to moist	SM				0.0	
	Brown to orange-brown SILT and Clay; Wet	ML				0.0	Wet at 6.2 feet below land surface
	Brown to orange-brown SILT and Clay; Wet					0.0	
10	Brown to orange-brown SILT and Clay; Wet					0.0	
	Grey-brown fine SAND and Silt; Wet	SM				0.0	
15	Orange-brown fine to coarse SAND, trace Silt; Wet	SW				0.0	
							Bottom of boring at 16 feet below land surface
20							
25							

ROUX

Project: **AMTRAK - Sunnyside Yard HST Queens, New York**		Log of Well No. **TP-10**	
Date Started: **3/24/97**	Completed: **3/24/97**	Measuring Point Elevation:	Total Depth: **19.0 ft**
Logged By: **H. Gregory**	Checked By: **J.Dominuco**	Water Level During Drilling: **11.0 ft**	Post-Development: **11.0 ft**
Drilling Co: **L.A.W.**	Driller:	Casing: **2-inch Schedule 40 PVC**	Drill Bit Diameter: **6**
Drilling Method: **Hollow-Stem Auger**		Perforation: **10-Slot**	from **8** to **18**
Drilling Equipment: **B-61 Rig**		Pack: **#1 Gravel**	from **6.5** to **19**
Sampler: **140lb / 30" split-spoon**		Seal: **Bentonite Pellets**	from **4** to **6.5**
		Cement Grout	from **0** to **4**

Depth (feet)	LITHOLOGIC DESCRIPTION	Lithology	Monitoring Well Construction	Sampler	Blows per 6"	PID (ppm)	REMARKS
0	Dark brown fine to medium loomy SAND, trace Gravel, trace Silt; Dry	SW				0.0	Casing finished as stick-up 2 feet above land surface
	Dark brown fine to medium loomy SAND, some Cinders, trace Gravel, trace Silt; Dry					0.0	
	Brown to orange-brown fine to coarse SAND, trace Gravel, trace Silt, trace Clay; Dry						
	Brown to light brown fine to medium SAND; Dry					0.0	
5	Light brown fine to medium SAND; Dry						
	Light brown fine to medium SAND; Dry					0.0	
	Light brown fine to medium SAND; Moist to wet					0.0	
10	Light brown fine to medium SAND; Wet					0.0	
	Light brown to tan medium to coarse SAND, trace Gravel; Wet						Wet at 11 feet below land surface
						0.0	
	Light brown to tan medium to coarse SAND, trace Gravel; Wet					0.0	
15							
	Light brown to tan medium to coarse SAND, trace Gravel; Wet					0.0	
						0.0	
							Bottom of boring at 19 feet below land surface
20							
25							

ROUX
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1377 Motor Parkway
Islandia, NY 11788
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Fax: 516-232-9898

SOIL BORING LOG

WELL NO. TSB-9	NORTHING	EASTING		
PROJECT NO./NAME 05545Y04 / Amtrak		LOCATION Sunnyside Rail Yard Queens, New York		
APPROVED BY H. Gregory	LOGGED BY R. Kovacs			
DRILLING CONTRACTOR/DRILLER Land, Air & Water / Chris O'Shea		GEOGRAPHIC AREA OU-3		
DRILL BIT DIAMETER/TYPE 2 Inch / Drive Sampler	BOREHOLE DIAMETER 2-inches	DRILLING EQUIPMENT/METHOD Geoprobe / Geoprobe	SAMPLING METHOD 2" Macro-Core	START-FINISH DATE 10/24/00-10/24/00
LAND SURFACE ELEVATION (FT.)	DEPTH TO WATER (Feet BLS)	BACKFILL Cuttings		

Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–2		Black medium to coarse SAND, trace Gravel, trace Ballast		41.8	Strong hydrocarbon odor detected
2–5		Grey coarse to medium SAND, some fine Sand, trace Gravel, trace Ballast		64.9	Water encountered
5		Grey medium SAND, some fine Sand, trace Gravel		75.6	Odor detected
10		Grey coarse to medium SAND, trace Gravel		68.9	Soil staining observed
15		Grey fine to coarse Sand, some black Sand, some Gravel		25	Bottom of soil boring 17 feet bls.

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SOIL BORING LOG

WELL NO. TSB-10	NORTHING	EASTING		
PROJECT NO./NAME 05545Y04 / Amtrak		LOCATION Sunnyside Rail Yard Queens, New York		
APPROVED BY H. Gregory	LOGGED BY R. Kovacs			
DRILLING CONTRACTOR/DRILLER Land, Air & Water / Chris O'Shea		GEOGRAPHIC AREA OU-3		
DRILL BIT DIAMETER/TYPE 2 Inch / Drive Sampler	BOREHOLE DIAMETER 2-inches	DRILLING EQUIPMENT/METHOD Geoprobe / Geoprobe	SAMPLING METHOD 2" Macro-Core	START-FINISH DATE 10/23/00-10/23/00
LAND SURFACE ELEVATION (FT.)	DEPTH TO WATER (Feet BLS)	BACKFILL Cuttings		

Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
0–2		Dark brown to black, medium to coarse SAND, trace Ballast, trace Gravel			Odor detected
2–3		Dark grey to black fine to coarse SAND, trace Silt, trace Gravel			Water encountered at 2.5'
3–4		Grey fine Sand and Silt, trace Clay		41	
4–5		Grey fine to coarse SAND, trace Gravel		32	
5–6		Grey fine to coarse SAND, trace Gravel		52	
6–7		Light grey to tan fine to medium SAND		28	
7–9		Light grey to tan medium to coarse SAND, trace Gravel		38	
9–11		Light grey to tan medium to coarse SAND, trace Gravel		7.5	
11–13		Tan fine to medium SAND, trace Gravel		4.2	Bottom of soil boring 13 feet bls.

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SOIL BORING LOG

WELL NO. TSB-16	NORTHING	EASTING
PROJECT NO./NAME 05545Y04 / Amtrak		LOCATION Sunnyside Rail Yard Queens, New York
APPROVED BY H. Gregory	LOGGED BY R. Kovacs	
DRILLING CONTRACTOR/DRILLER Land, Air & Water / Chris O'Shea		GEOGRAPHIC AREA OU-3
DRILL BIT DIAMETER/TYPE 2 Inch / Drive Sampler	BOREHOLE DIAMETER 2-inches	DRILLING EQUIPMENT/METHOD Geoprobe / Geoprobe; SAMPLING METHOD 2" Macro-Core; START-FINISH DATE 10/24/00-10/24/00
LAND SURFACE ELEVATION (FT.)	DEPTH TO WATER (Feet BLS)	BACKFILL Cuttings

Depth, feet	Graphic Log	Visual Description	Blow Counts per 6"	PID Values (ppm)	REMARKS
		Black coarse to medium SAND, trace Gravel, trace Ballast		43.2	Odor detected
		Grey fine SAND, some medium Sand			
5		Grey medium Sand, some coarse Sand, trace Gravel		44	Water encountered; Odor detected
10		Grey coarse Sand, some medium to fine Sand		120	
		Gray medium Sand, some fine Sand, some coarse Sand		62.3	Odor detected
15		Grey medium to coarse SAND		18	Bottom of soil boring 19 feet bls.

BORING/WELL 05545Y05.GPJ ROUX.GDT 3/20/01

APPENDIX D

Groundwater Sampling Field Forms

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-9D

Weather: 70°F, sunny, clear

Date: 6/3/08

Purge Water Disposal: ground.

Sampled By: JD, EV

Well Diameter / Type: 4" PVC

Depth of Well (ft): 37.75

Water Column (ft):

Depth to Water(ft): 4.22

Volume of Water in Well (gal)

Depth to Product (ft): —

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 0938

Purge Rate: 400 mL/min

End Purging: 1003

Volume of Water Removed (gal): 2.25

Method of Purge: peristaltic pump

Method of Sampling: peristaltic pump

Physical Appearance/ Comments: Clear, slight gray silt

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

Laboratory : Veritech

Sampletime 1005

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
4.22	0938	400						
4.22	0943	400	7.21	1.27	0.0	0.00	16.47	-59
4.22	0948	400	7.10	1.25	10.6	0.00	16.43	-62
4.22	0951	400	7.10	1.25	5.0	0.00	16.36	-66
4.22	0954	400	7.17	1.25	5.1	0.00	16.31	-72
4.22	0957	400	7.25	1.25	5.7	0.00	16.29	-80
4.22	1000	400	7.30	1.24	5.0	0.00	16.20	-82
4.22	1003	400	7.32	1.24	5.3	0.00	16.19	-87

Well Sampling Data Form

Client: Amtrak **Project Number:** 0055.0065Y003

Site Location: OU-6

Well No: MW-95 Weather: 70F, partly cloudy

Date: 6/3/08 Purge Water Disposal: ground

Sampled By: JD, EV Well Diameter / Type: PVC 4"

Depth of Well (ft): 18.70 Water Column (ft): 14.60

Depth to Water(ft): 4.06 Volume of Water in Well (gal)

Depth to Product (ft): — Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1029 Purge Rate: 400ml/min

End Purging: 1057 Volume of Water Removed (gal):

Method of Purge: peri pump Method of Sampling: peri pump

Physical Appearance/ Comments: clear, slight silty grey

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

Sample time 1100 Laboratory :

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
4.06	1029	400						
4.06	1034	400	7.08	1.20	0.0*	0.00	16.07	64
4.06	1039	400	6.97	1.19	0.0	0.83	16.03	88
4.06	1042	400	7.00	1.18	0.0*	0.00	15.91	79
4.06	1045	400	7.03	1.18	0.0*	0.00	15.91	75
4.06	1048	400	7.06	1.18	0.0*	0.00	15.90	71
4.06	1051	400	7.08	1.18	0.0*	0.00	15.86	70
4.06	1054	400	7.10	1.17	0.0	0.00	15.79	69
4.06	1057	400	7.11	1.18	0.0	0.00	15.80	69

* Flashing

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-13D

Weather: 70°F, clear, sunny

Date: 6/3/08

Purge Water Disposal: ground

Sampled By: JD, EV

Well Diameter / Type: PVC

Depth of Well (ft): 38.20

Water Column (ft): 34.41

Depth to Water(ft): 3.79

Volume of Water in Well (gal):

Depth to Product (ft): —

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 0819

Purge Rate: 450mL/min

End Purging: 0847

Volume of Water Removed (gal): 2.4 gal

Method of Purge: peristaltic pump

Method of Sampling: peristaltic pump

Physical Appearance/ Comments: clear, slight yellow tint

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

Sample time: 0850

Laboratory: Vanitech

DUP time: DUP-060308 @0930

Field Measurements:

	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
3.79	0819							
3.80	0824	450	7.04	1.43	32.4	0.00	15.69	201
3.80	0829	450	7.19	1.43	31.6	0.00	15.76	177
3.80	0832	450	7.21	1.42	31.5	0.00	15.83	173
3.80	0835	450	7.27	1.42	32.7	0.00	15.74	161
3.80	0838	450	7.32	1.41	34.7	0.00	15.79	151
3.80	0841	450	7.35	1.41	34.8	0.00	15.89	145
3.80	0844	450	7.36	1.41	34.4	0.06	15.88	141
3.80	0847	450	7.36	1.40	34.6	0.00	15.86	136

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-13S

Weather: 75°F, sunny, clear

Date: 6/2/08

Purge Water Disposal: ground

Sampled By: JD, EV

Well Diameter / Type: 4" PVC

Depth of Well (ft): 19.10

Water Column (ft): 14.94

Depth to Water(ft): 4.16

Volume of Water in Well (gal):

Depth to Product (ft): —

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1450

Purge Rate: 400 ml/min

End Purging: 1515

Volume of Water Removed (gal):

Method of Purge: peri pump

Method of Sampling: peri pump

Physical Appearance/ Comments: clear, slight greyish tint.

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

sample time 1520

Laboratory : Veritech.

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
4.16	1450	400						
4.16	1455	400	6.64	1.31	95.9	1.74	17.55	-7
4.16	1500	400	6.62	1.33	60.0	1.23	17.62	-21
4.16	1503	400	6.63	1.33	61.6	1.09	17.77	-26
4.16	1506	400	6.64	1.33	57.7	0.98	17.66	-31
4.16	1509	400	6.67	1.33	66.3	0.86	17.99	-36
4.16	1512	400	6.69	1.33	67.0	0.83	17.63	-38
4.16	1515	400	6.69	1.33	65.5	0.82	17.58	-39
4.16	1518	400	6.65	1.33	67.3	0.80	17.60	-39

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-19

Weather: 70's, sunny + clear

Date: 6/2/08

Purge Water Disposal: ground

Sampled By: JD, EV

Well Diameter / Type: PVC

Depth of Well (ft): 16.28

Water Column (ft):

Depth to Water(ft): 7.18

Volume of Water in Well (gal)

Depth to Product (ft): —

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1015

Purge Rate: 400mL/min

End Purging: 1049

Volume of Water Removed (gal):

Method of Purge: peristaltic pump

Method of Sampling:

Physical Appearance/ Comments: clear

Samples Collected: VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids
(analyses / no. bottles)

sample time 1045 on bottles

Laboratory :

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
7.18	1015	400						
7.50	1020	400	6.96	0.458	0.2	1.75	16.15	-32
7.80	1025	400	6.80	0.455	0.0	1.39	16.20	-31
8.00	1028	400	6.78	0.455	1.3	2.24	16.19	-25
8.10	1031	400	6.81	0.463	0.00	2.03	15.92	-29
8.25	1034	400	6.84	0.459	0.0	0.90	15.76	-37
8.45	1037	400	6.85	0.457	0.0	0.80	15.65	-39
8.55	1040	400	6.86	0.457	0.0	0.67	15.56	-43
8.70	1043	400	6.88	0.456	0.0	0.63	15.58	-45
8.83	1046	400	6.89	0.455	0.0	0.61	15.65	-46
8.95	1049	400	6.90	0.455	0.0	0.60	15.65	-47

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-27

DTW: 10.91

DTB: 19.75

Purge Start: 1015

Date: 6/4/08

Intake (Depth of Pump): ~ 15'

Total Volume Purged:

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1015	10.91	550	15.16	1.30	4.06	7.08	37	0.0	0.1
1020	10.95	550	15.01	1.24	1.82	7.00	31	0.0	0.9
1025	10.95	550	15.03	1.24	1.52	6.96	26	0.0	2.25
1030	10.95	550	15.03	1.26	1.35	6.92	29	0.0	2.75
1035	10.95	550	15.11	1.27	1.15	6.91	26	0.0	3.25
1040	10.95	550	15.10	1.29	1.10	6.96	21	0.0	3.5
1043	10.95	550	15.07	1.30	1.10	7.00	20	0.0	4.0
1046	10.95	550	15.07	1.30	1.10	7.01	19	0.0	4.5

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: CLEAR, ODORLESS, NO NOTICEABLE SHEEN

Purge End:

Sample Time: 1050

Sample Time on Bottles: 1056

NOTE: DUPLICATE (DUP-060408) COLLECTED AT 1100 (COLLECTED IN MW-27)

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-35

Weather: 75°, sunny, clear

Date: 6/2/08

Purge Water Disposal: ground

Sampled By: JD, EV

Well Diameter / Type: U PVC

Depth of Well (ft):

Water Column (ft):

Depth to Water(ft): 5.89

Volume of Water in Well (gal)

Depth to Product (ft): —

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: ~~DTW~~ 1313

Purge Rate: 400mL/min

End Purging: 1345

Volume of Water Removed (gal): 3 gal

Method of Purge: peri pump

Method of Sampling: peri pump

Physical Appearance/ Comments:

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

sample time on bottles 1345

Laboratory :

Field Measurements:

DTW	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
5.89	1314	400						
6.20	1319	400	6.55	0.96	18.4	0.49	17.66	-155
6.30	1324	400	6.53	0.96	21.8	0.50	17.57	-154
6.35	1327	400	6.51	0.96	40.0	0.46	17.60	-152
6.39	1330	400	6.50	0.96	43.4	0.46	17.60	-151
6.41	1333	400	6.53	0.96	43.8	0.43	17.66	-154
6.43	1336	400	6.60	0.96	53.0	0.42	17.78	-157
6.43	1339	400	6.75	0.95	80.1	0.41	1786	-164
6.43	1342	400	6.87	0.95	80.3	0.39	17.90	-168
6.43	1345	400	6.93	0.95	79.8	0.37	17.95	-172
6.43	1348	400	6.99	0.95	80.9	0.35	17.95	-175

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-37

DTW: 5.57

DTB: 14.35

Date: 6/2/08

Intake (Depth of Pump):

Total Volume Purged:

Purge Start:

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1200	5.57	300 ml/min	16.83	0.98	2.07	7.91	253	27.8	0
1205	5.68	250	17.09	0.96	0.14	7.54	260	32.2	0.4
1210	5.75	250	17.11	0.95	0.0	7.53	246	35.8	0.6
1215	5.77	250	17.21	0.94	0.0	7.58	225	36.4	1.1
1220	5.78	250	17.28	0.93	0.0	7.68	210	39.4	1.5
1225	5.72	250	17.14	0.92	0.0	7.69	198	39.1	2.0
1230	5.69	250	17.23	0.92	0.0	7.73	191	39.8	2.2
1235	5.70	250	17.43	0.92	0.0	7.78	189	39.2	2.5

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: MOSTLY CLEAR, ODORLESS, NO VISIBLE SHEEN

Purge End:

Sample Time: 1240

Sample Time on Bottles: 1240

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-38D

Date: 6/2/08

DTW: 5.66

Intake (Depth of Pump): ~35'

DTB: 43.44

Total Volume Purged:

Purge Start: 1320

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1320	5.66	250	14.56	1.34	2.88	7.26	-113	141	0
1325	5.67	250	19.65	1.28	0.0	7.50	-151	141	0.5
1330	5.69	250	19.38	1.26	0.0	7.50	-159	166	0.75
1335	5.70	250	19.67	1.25	0.0	7.56	-165	199	1.50
1340	5.70	250	19.07	1.25	0.0	7.59	-170	192	1.75
1343	5.70	250	19.71	1.24	0.0	7.58	-172	235	2.3
1346	5.70	250	19.45	1.25	0.0	7.61	-170	304	2.5
1349	5.70	250	19.57	1.25	0.0	7.62	-174	309	2.75
1352	5.70	250	19.59	1.25	0.0	7.64	-173	311	3.0

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: SLIGHTLY YELLOW, ODORLESS, NO NOTICEABLE SHEEN

Purge End:

Sample Time: 1355

Sample Time on Bottles: 1355

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-39D

Weather: 70s, clear, sunny

Date: 6/2/08

Purge Water Disposal: ground

Sampled By: JD, EV

Well Diameter / Type: PVC 4"

Depth of Well (ft): 42.59

Water Column (ft): 36.29

Depth to Water(ft): 6.30

Volume of Water in Well (gal)

Depth to Product (ft): —

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1118

Purge Rate: 400 mL/min

End Purging: 1141

Volume of Water Removed (gal): 1.4gal

Method of Purge: peri pump

Method of Sampling: peri pump

Physical Appearance/ Comments: clean, slight brown tint

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

sample 1145

Laboratory :

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
6.30	1118	400						
6.30	1123	400	7.43	1.32	20.4	1.01	16.89	-185
6.30	1126	400	7.43	1.31	27.2	0.80	17.07	-187
6.30	1129	400	7.43	1.31	30.6	0.73	17.09	-187
6.30	1132	400	7.43	1.31	26.1	0.65	17.26	-188
6.30	1135	400	7.44	1.31	23.1	0.60	17.33	-188
6.30	1138	400	7.44	1.31	22.9	0.59	17.32	-189
6.30	1141	400	7.44	1.31	21.1	0.58	17.34	-189

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-45 **Date:** 6/4/08

DTW: 10.30 **Intake (Depth of Pump):** 13.00

DTB: 18.11 **Total Volume Purged:** 3.0

Purge Start: 905

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
~~855~~		250				6.84			
905	10.30	550	15.00	1.62	8.46	7.05	87	7.9	0
910	10.37	550	14.75	1.64	8.44	7.04	95	0.0	1.0
915	10.38	550	14.64	1.63	~~8~~ 9.19	6.98	103	4.1	1.5
920	10.40	550	14.67	1.64	8.56	6.90	110	5.6	2.0
925	10.39	550	14.67	1.63	8.50	6.85	115	5.9 ~~5.6~~ TO	2.5
930	10.39	550	14.65	1.63	8.55	6.80	119	5.2	3.0

TO

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: Clear

Purge End: 930

Sample Time: 0935 **Sample Time on Bottles:** 0935

Note: Pump running of AC current in generator. Can not go any slower.

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-48D

DTW: 7.03

DTB: 39.42

Purge Start: 1350

Date: 6/3/08

Intake (Depth of Pump): ~15'

Total Volume Purged:

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1350	7.03	250	22.17	.576	15.81	7.77	-39	56.4	0
1355	7.10	250	19.44	.364	2.96	6.02	-50	31.9	0.5
1400	7.10	250	19.33	.279	2.10	5.81	-51	9.0	0.75
1405	7.10	250	19.64	.256	1.76	5.81	-50	6.8	1.25
1410	7.10	250	19.62	.254	1.50	5.84	-56	6.0	1.6
1413	7.10	250	19.63	.252	1.41	5.87	-58	5.8	1.9
1416	7.10	250	19.80	0.241	1.30	5.92	-59	5.6	2.2
1419	7.10	250	19.41	0.245	1.26	5.93	-61	5.9	2.5
1422	7.10	250	19.37	0.242	1.25	5.94	-61	5.7	3.0

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description:

Purge End:

Sample Time: 1430

Sample Time on Bottles: 1430

Well Sampling Data Form

Client: Amtrak **Project Number:** 0055.0065Y003

Site Location: OU-6

Well No: MW-62D Weather:

Date: 6/4/08 Purge Water Disposal:

Sampled By: TO, AF Well Diameter / Type: PVC 4" ∅

Depth of Well (ft): 50.40 Water Column (ft):

Depth to Water(ft): 14.27 Volume of Water in Well (gal)

Depth to Product (ft): — Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1235 Purge Rate: 550 mL/min

End Purging: Volume of Water Removed (gal):

Method of Purge: Low-flow Method of Sampling:

Physical Appearance/ Comments:

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids
3 2 2 1 1 1

Laboratory: Veritech

Field Measurements:

Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV	DTW (FT)
1235	550	7.23	1.63	63.9	4.15	16.33	41	14.27
1240	550	7.16	1.60	37.1	6.21	16.30	45	14.29
1245	550	7.16	1.60	18.8	3.05	16.42	46	14.29
1250	550	7.16	1.60	20.1	2.88	16.35	48	14.29
1253	550	7.16	1.62	20.8	2.61	16.41	48	14.29
1256	550	7.16	1.62	19.9	2.30	16.42	48	14.29
1259	550	7.16	1.61	20.7	2.26	16.43	50	14.29
1302	550	7.16	1.62	19.9	2.25	16.48	50	14.29

TIME ON BOTTLES: 13:05

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-68

Weather: 70°F, cloudy, overcast

Date: 10/4/08

Purge Water Disposal: ground

Sampled By: JD, EV

Well Diameter / Type: PVC

Depth of Well (ft): 17.10

Water Column (ft):

Depth to Water(ft): 9.49

Volume of Water in Well (gal)

Depth to Product (ft): —

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1031

Purge Rate: 350

End Purging: 1056

Volume of Water Removed (gal): 1.5 gal

Method of Purge: peristaltic pump

Method of Sampling: peristaltic pump

Physical Appearance/ Comments: clear

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

sample time: 1105

Laboratory : Veritech

Field Measurements:

	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
9.49	1036	350	6.44	0.297	3.3	0.00	14.98	-99
9.49	1041	350	6.28	0.301	2.7	0.00	14.90	-98
9.49	1044	350	6.30	0.304	2.4	0.00	14.80	-105
	1047	350	6.33	0.306	3.5	0.00	14.84	-109
	1050	350	6.36	0.308	3.5	0.00	14.83	-113
	1053	350	6.37	0.308	3.4	0.00	14.80	-115
	1056	350	6.35	0.307	3.3	0.00	14.86	-118

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-70

Weather: 70s, clear & sunny

Date: 6/2/08

Purge Water Disposal:

Sampled By: JD, EV

Well Diameter / Type: PVC

Depth of Well (ft): 15.0

Water Column (ft):

Depth to Water(ft): 5.50

Volume of Water in Well (gal)

Depth to Product (ft): ———

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 0909

Purge Rate: 400 ml/min

End Purging: 0935

Volume of Water Removed (gal): 3.5 gal

Method of Purge: peristaltic pump

Method of Sampling:

Physical Appearance/ Comments: clear, yellow tint

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

Sample time on bottles 0935

Laboratory :

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
5.50	0909	400	~~6.52~~	~~0.351~~	~~5.8~~	~~0.96~~	~~16.97~~	~~-58~~
5.67	0914	400	6.32	0.351	5.8	0.96	16.97	-55
5.78	0919	400	6.18	0.349	4.8	0.78	17.08	-59
5.86	0922	400	6.23	0.350	4.2	0.76	17.06	-67
5.91	0925	400	6.28	0.348	2.3	0.63	16.63	-72
5.98	0928	400	6.28	0.348	2.5	0.63	16.57	-73
6.03	0931	400	6.29	0.346	2.8	0.62	16.58	-75
6.05	0934	400	6.30	0.345	3.0	0.62	16.60	-77

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-79

Weather: 75°F, mostly sunny

Date: 6/3/08

Purge Water Disposal: ground

Sampled By: JD, EV

Well Diameter / Type: 2" PVC

Depth of Well (ft): 14.58

Water Column (ft): 6.64

Depth to Water(ft): 7.94

Volume of Water in Well (gal)

Depth to Product (ft): ——

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1317

Purge Rate:

End Purging:

Volume of Water Removed (gal):

Method of Purge: peristaltic pump

Method of Sampling: peristaltic pump

Physical Appearance/ Comments: clear. turbidity is wrong on Horiba

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

Sample time 1349

Laboratory :

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
7.94	1317	400						
7.90	1322	400	6.32	0.513	123.0	5.62	15.05	205
7.90	1327	400	6.23	0.510	190.0	5.22	14.83	200
7.90	1330	400	6.31	0.509	264.0	5.28	14.72	203
7.90	1333	400	6.47	0.508	302.0	5.32	14.77	197
7.90	1336	400	6.57	0.506	300.0	5.31	14.88	192
7.90	1339	400	6.69	0.504	302.0	5.26	14.81	187
7.90	1342	400	6.71	0.503	301.0	5.29	14.79	186
7.90	1345	400	6.71	0.503	305.6	5.29	14.80	185

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-80

Weather: 65°F, cloudy

Date: 6/4/08

Purge Water Disposal: ground

Sampled By: JD, EV

Well Diameter / Type: 2"PVC

Depth of Well (ft): 18.95

Water Column (ft): 8.43

Depth to Water(ft): 10.52

Volume of Water in Well (gal):

Depth to Product (ft):

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1254

Purge Rate: 300-350 mL/min

End Purging:

Volume of Water Removed (gal): 2.6gal

Method of Purge: peri pump

Method of Sampling: peri pump.

Physical Appearance/ Comments: clear purgewater

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

sample time: 1340

Laboratory: Veritech

Field Measurements:

	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
10.52	1254	350						
10.62	1259	350	6.77	0.450	14.4	5.32	14.30	80
10.61	1304	300	6.76	0.575	13.1	3.41	14.67	34
10.61	1307	300	6.80	0.769	12.7	2.57	14.63	15
10.61	1310	300	6.74	0.896	13.0	2.35	14.31	-8
10.61	1313	300	6.65	1.44	13.4	2.19	14.32	-26
10.61	1316	300	6.64	1.82	10.9	2.02	14.30	-39
10.61	1319	300	6.67	2.09	10	1.88	14.30	-48
10.61	1322	300	6.72	2.25	8.9	1.77	14.47	-54
10.61	1325	300	6.74	2.39	10.1	1.77	14.41	-57
10.61	1328	300	6.75	2.46	11.9	1.76	14.45	-60
10.61	1331	300	6.77	2.49	12.1	1.75	14.43	-62

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-82

Weather: 60°F, overcast.

Date: 6/5/08

Purge Water Disposal: ground

Sampled By: JD, TD

Well Diameter / Type: 2" PVC

Depth of Well (ft): 27.15

Water Column (ft): 9.02

Depth to Water(ft): 18.13

Volume of Water in Well (gal):

Depth to Product (ft): —

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 0920

Purge Rate: 300 ml/min

End Purging: 0954

Volume of Water Removed (gal): 2.75 gal

Method of Purge: peristaltic pump.

Method of Sampling: peristaltic pump

Physical Appearance/ Comments: slight brown silty

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

Sample time: 0955

Laboratory : Veritech.

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
18.13	0920	300						
18.13	0925	300	6.45	0.685	203.0	6.17	14.58	155
18.13	0930	300	6.04	0.631	158	6.48	14.61	171
18.13	0933	300	6.02	0.612	144	6.50	14.57	173
18.13	0936	300	6.03	0.581	106.0	6.68	14.50	174
18.13	0939	300	6.04	0.558	97.4	6.52	14.49	175
18.13	0942	300	6.04	0.533	70.9	6.55	14.47	176
18.13	0945	300	6.07	0.516	43.0	6.55	14.47	178
18.13	0948	300	6.07	0.508	38.5	6.58	14.49	179
18.13	0951	300	6.07	0.495	26.8	6.54	14.45	180
18.13	0954	300	6.09	0.502	23.9	6.55	14.47	181

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MV-83

DTW: 14.10

DTB: 22.10

Date: 6/4/08

Intake (Depth of Pump): 20'

Total Volume Purged:

Purge Start:

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1145	14.10	550	14.61	1.37	7.34	7.01	91	35.7	0
1150	14.10	550	14.36	1.12	7.42	7.09	98	17.6	1.0
1155	14.10	550	14.31	0.930	7.83	7.04	103	19.8	2.0
1200	14.10	550	14.35	0.895	7.80	7.01	106	2.5	2.75
1205	14.10	550	14.33	0.910	7.86	7.05	105	2.5	3.75
1210	14.10	550	14.37	0.890	7.84	7.04	101	2.7	4.75

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: Clear

Purge End: 1210

Sample Time: 1215

Sample Time on Bottles: 1215

Well Sampling Data Form

Client: Amtrak **Project Number:** 0055.0065Y003

Site Location: OU-6

Well No: MW-84 Weather: ~60° overcast

Date: 6/5/08 Purge Water Disposal: ground

Sampled By: JD, TO Well Diameter / Type: PVC

Depth of Well (ft): 22.80 Water Column (ft):

Depth to Water(ft): 17.76 Volume of Water in Well (gal)

Depth to Product (ft): 22.80 Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 808 Purge Rate: 550 mL/min

End Purging: 0833 Volume of Water Removed (gal): 4.5 gal

Method of Purge: peristaltic pump Method of Sampling: peristaltic pump

Physical Appearance/ Comments: clear

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

sample time: 0835 Laboratory: Veritech

Field Measurements:

Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV	DTW
808	550	7.88	0.396	51.0	9.98	12.23	79	17.76
813	550	7.52	0.383	60.0	9.81	12.17	99	17.80
0818	550	7.20	0.372	58.8	9.81	12.13	113	17.80
0821	550	7.20	0.358	50.2	9.79	12.17	113	17.79
0824	550	7.30	0.354	60.0	9.78	12.22	109	17.79
0827	550	7.36	0.354	61.0	9.79	12.19	106	17.79
0830	550	7.43	0.347	60.9	9.74	12.21	103	
0833	550	7.48	0.346	61.2	9.77	12.17	100	

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-85 **Date:** 6/2/08

DTW: 7.36 **Intake (Depth of Pump):** 12'

DTB: 15.99 **Total Volume Purged:**

Purge Start: 1450

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1450	7.41	250mL	17.80	.189	7.02	6.77	138	25.5	0.3
1455	7.41	250	17.77	0.200	6.0	5.55	193	22.0	0.75
1500	7.41	250	17.84	0.228	5.81	5.45	213	16.0	1.2
1505	7.41	250	17.34	.308	5.11	5.64	217	17.7	1.75
1510	7.41	250	17.70	0.336	4.65	5.76	217	18.1	2.0
1515	7.41	250	17.73	0.339	4.48	5.93	213	33.8	2.3
1520	7.41	250	17.56	0.339	4.39	6.08	210	40.1	2.6
1523	7.41	250	17.27	0.339	4.36	6.11	208	40.9	2.9
1526	7.41	250	17.61	0.341	4.33	6.12	207	40.9	3.3

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description:

Purge End:

Sample Time: **Sample Time on Bottles:**

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-86

DTW: 7.54

DTB: 17.79

Purge Start: 1200

Date: 05/21/08

Intake (Depth of Pump): ~~[illegible]~~ RK 13 ft below TOC

Total Volume Purged: 2 gal

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1200	7.54	350	14.77	0.419	2.63	6.41	132	39.6	0
1204	7.65	350	13.92	0.424	2.45	6.36	133	25.6	0.25
1208	7.65	350	13.36	0.423	2.42	6.29	144	11.2	0.5
1212	7.65	350	13.17	0.422	2.39	6.24	151	8.7	1.0
1221 ~~1215~~	7.65	350	13.17	0.424	2.43	6.20	161	8.3	1.75
1224	7.65	350	13.08	0.426	2.43	6.20	163	7.7	2.0
	~~[illegible]~~								

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: MOSTLY CLEAR, ODORLESS

Purge End: 1225

Sample Time: 1225

Sample Time on Bottles: 1225

Sampled for VOCs, SVOCs, TAL metals, PCBs, Chloride, TDS

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-87
Date: 5/21/08

DTW: 5.90
Intake (Depth of Pump): 12 ft below TOC

DTB: 13.75
Total Volume Purged: 2.5 gal

Purge Start: 1050

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1050	5.90	350	13.81	0.542	1.81	7.17	-71	195	0
1054	6.46	350	13.02	0.521	0	7.30	-102	165	0.5
1058	6.59	350	13.48	0.496	0	7.59	-130	147	0.75
1102	6.60	300	13.35	0.490	0	7.76	-144	157	1.0
1105	6.64	300	13.53	0.490	0	7.91	-154	163	1.5
1108	6.63	300	13.57	0.488	0	7.88	-156	159	1.75
1111	6.67	300	13.57	0.485	0	7.95	-161	139	2.0
1114	6.67	360	13.35	0.489	0	7.97	-161	121	2.25
1117	6.70	300	13.47	0.489	0	7.96	-163	129	2.50

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: Purge water is slight brownish, turbid color. Turbidity does not appear to be decreasing with purging.

Purge End: 1120

Sample Time: 1120
Sample Time on Bottles: 1120

Sampled for VOCs, SVOCs, ~~TAL~~ TAL Metals, PCBs, TDS, Chloride

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-88

DTW: 5.05

DTB: 14.94

Purge Start: 0955

Date: 5/21/08

Intake (Depth of Pump): 10 ft Below TOC

Total Volume Purged: 1.75 Gal

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
0955	5.05	350	13.55	0.548	1.30	6.88	-93	132	0
0959	5.52	350	13.25	0.535	0	6.91	-109	136	0.25
1004	5.55	350	13.27	0.524	0	6.87	-115	66.6	0.50
1008	5.55	350	13.26	0.526	0	6.82	-115	34.2	0.75
1012	5.59	300	13.23	0.529	0	6.81	-117	21.3	1.25
1015	5.59	300	13.22	0.530	0	6.81	-117	21.1	1.50
1017	5.59	300	13.23	0.531	0	6.82	-119	19.7	1.75

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: Clear, minor amounts of small, red particles (possibly iron scale)

Purge End: 1020

Sample Time: 1020

Sample Time on Bottles: 1020

Sampled for VOCs, SVOCs, TAL Metals, PCBs, Chloride, TDS

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-89
DTW: 3.89
DTB: 13.87
Purge Start: 0905

Date: 5/21/08
Intake (Depth of Pump): 9 ft ~~bls~~ below TOC
Total Volume Purged: 1.5 gal

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
0905	3.89	400	14.21	0.564	1.48	6.44	132	36.2	0
0909	4.17	400	14.12	0.535	1.25	6.61	120	24.2	0.5
0913	4.17	350	14.22	0.518	1.25	6.59	87	13.7	0.75
0917	4.17	350	14.16	0.515	1.11	6.59	63	9.8	1.0
0920	4.17	350	14.13	0.521	1.03	6.61	59	10.0	1.25
0923	4.17	350	14.09	0.528	1.05	6.62	56	9.1	1.50

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: MOSTLY CLEAR, SOME SEDIMENTS, ODORLESS

Purge End: 0925

Sample Time: 0925

Sample Time on Bottles: 0925

Sampled for VOCs, SVOCs, TAL metals, PCBs, Chloride, TDS

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-90 **Date:** 6/3/08

DTW: 4.74 **Intake (Depth of Pump):**

DTB: 14.09 **Total Volume Purged:**

Purge Start: 1000

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [±/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1000	4.74	250	18.22	1.33	7.02	6.57	12	64.1	0
1005	4.89	250	17.91	1.21	2.23	6.31	9	18.1	0.6
1010	4.90	250	17.88	1.18	1.61	6.10	16	0.0	0.8
1015	4.91	250	17.89	1.24	1.30	6.09	11	0.0	1.[illegible]
1020	4.91	250	17.74	1.43	1.20	6.20	10	6.0	1.6
1023	4.91	250	17.71	1.50	1.07	6.33	11	1.0	1.9
1026	4.91	250	17.82	1.52	1.03	6.40	-22	1.1	2.1
1029	4.91	250	17.68	1.50	1.00	6.49	-22	1.1	2.3
1032	4.91	250	17.61	1.50	0.95	6.55	-29	0.0	2.5
1035	4.91	250	17.64	1.48	0.97	6.58	-32	1.1	2.8

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: Clear

Purge End: 1035

Sample Time: 1040 **Sample Time on Bottles:** 1040

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: MW-91

Date: 6/3/08

DTW: 5.80

Intake (Depth of Pump): ~12'

DTB: 15.00

Total Volume Purged:

Purge Start: 0830

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
0830	6.0	250	15.81	1.99	5.07	6.51	-120	869	0.2
0835	6.03	250	15.71	1.50	3.19	6.44	-110	418	0.4
0840	6.03	250	15.58	1.11	2.56	6.29	-91	220	0.6
0845	6.04	250	15.54	0.738	2.29	6.22	-72	103	0.75
0850	6.05	250	15.78	0.533	2.01	6.19	-59	99.6	1.25
0855	6.05	250	15.90	0.480	1.71	6.35	-88	74.5	1.5
0900	6.06	250	15.87	0.473	1.45	6.47	-105	65.7	1.75
0903	6.07	250	15.86	0.484	1.38	6.55	-117	48.1	2.0
0906	6.07	250	16.09	0.484	1.31	6.55	-120	42.1	2.2
0909	6.07	250	16.08	0.485	1.31	6.56	-121	42.2	2.3
0912	6.07	250	16.07	0.489	1.29	6.59	-122	43.0	2.5

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: SLIGHTLY BROWN AT THE BEGINNING. MOSTLY CLEAR AFTER 5 MIN. PURGING. ODORLESS. NO NOTICEABLE SHEEN

Purge End:

Sample Time: 0915

Sample Time on Bottles: 0915

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: MW-92

Weather: 70°F, mostly sunny, breeze

Date: 6/3/08

Purge Water Disposal: ground

Sampled By: JD, EV

Well Diameter / Type: 2" PVC

Depth of Well (ft): 13.9

Water Column (ft): 6.4

Depth to Water(ft): 7.50

Volume of Water in Well (gal):

Depth to Product (ft): ——

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1159

Purge Rate: 400 ml/min

End Purging: 1227

Volume of Water Removed (gal): 2.5 gal

Method of Purge: peristaltic pump

Method of Sampling: peristaltic pump

Physical Appearance/ Comments: clear

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

sample time: 1234

Laboratory: Veritech.

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
7.50	11:59	400						
7.53	1204	400	6.87	0.987	24.1	0.04	17.56	157
7.53	1209	400	6.68	1.17	17.8	0.00	17.58	157
7.53	1212	400	6.71	1.16	13.9	0.00	17.47	155
7.53	1215	400	6.75	1.14	6.8	0.00	17.54	151
7.53	1218	400	6.82	1.13	40.5	0.00	17.55	147
7.53	1221	400	6.88	1.13	41.7	0.00	17.55	143
7.53	1224	400	6.90	1.14	40.4	0.00	17.86	142
7.53	1227	400	6.91	1.14	40.9	0.00	17.56	140

Well Sampling Data Form

Client: Amtrak

Project Number: 0055.0065Y003

Site Location: OU-6

Well No: TE-MW-A4

Weather: 60°F, overcast

Date: 6/5/08

Purge Water Disposal: ground

Sampled By: JD, TO

Well Diameter / Type: PVC

Depth of Well (ft): 58.20

Water Column (ft):

Depth to Water(ft): 35.45

Volume of Water in Well (gal)

Depth to Product (ft): —

Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging:

Purge Rate:

End Purging:

Volume of Water Removed (gal):

Method of Purge: peristaltic pump

Method of Sampling: peristaltic pump.

Physical Appearance/ Comments: note: well very silty upon bailing. Harry determines we will not sample the well

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

Sample time:

Laboratory: Veritech

Field Measurements:

Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV

Well Sampling Data Form

Client: Amtrak **Project Number:** 0055.0065Y003

Site Location: OU-6

Well No: TE-MW-OB-1 Weather: 60s, overcast, some rain

Date: 6/4/08 Purge Water Disposal: ground

Sampled By: JD Well Diameter / Type: 2" PVC

Depth of Well (ft): 44.70 Water Column (ft): 34.35

Depth to Water(ft): 10.35 Volume of Water in Well (gal):

Depth to Product (ft): — Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 0904 Purge Rate: 250-300 ml/min

End Purging: 0935 Volume of Water Removed (gal): 2.2 gal

Method of Purge: peristaltic pump Method of Sampling: peristaltic pump

Physical Appearance/ Comments: clear, slight brownish tint

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

sample time 0940 Laboratory : Veritech

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
10.35	0904	300						
10.35	0909	300	6.71	1.75	28.9	4.61	14.58	296
10.35	0914	300	6.78	1.73	32.0	4.44	14.61	287
10.35	0917	300	6.86	1.73	33.3	4.31	14.62	277
10.35	0920	300	6.93	1.73	32.3	4.25	14.64	268
10.35	0923	250	6.97	1.72	30.2	4.12	14.82	262
10.35	0926	250	7.01	1.72	24.8	4.15	14.89	255
10.35	0929	250	7.02	1.73	24.0	4.06	14.90	252
10.35	0932	250	7.04	1.73	23.9	4.02	14.92	248
10.35	0935	250	7.05	1.73	23.0	3.99	14.93	246

Well Sampling Data Form

Client: Amtrak **Project Number:** 0055.0065Y003

Site Location: OU-6

Well No: TE-MW-QA-2 Weather: 65°F overcast

Date: 6/5/08 Purge Water Disposal: ground.

Sampled By: JD,TO Well Diameter / Type: 1" PVC

Depth of Well (ft): 55.00 Water Column (ft):

Depth to Water(ft): 28.79 Volume of Water in Well (gal) 0.8gal

Depth to Product (ft): —— Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1215 Purge Rate: 100 ml/min

End Purging: 1255 Volume of Water Removed (gal): 1gal

Method of Purge: peri pump Method of Sampling: peri pump.

Physical Appearance/ Comments: slightly brown silty.

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

Sample time: 1250 Laboratory :

Field Measurements:

	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
28.79	1217	200	7.71	0.013	324.0	11.05	18.56	34
30.11	1220	200	7.74	1.51	218	1.62	18.13	-14
30.69	1225	100	7.67	1.50	354.0	1.39	18.49	-16
30.90	1228	100	7.66	1.50	144.0	1.27	18.62	-12
31.06	1231	100	7.68	1.50	116.0	1.15	18.84	-11
31.12	1234	100	7.72	1.50	76.9	1.11	19.01	-17
31.16	1237	100	7.75	1.50	89.5	1.02	19.24	-18
31.18	1240	100	7.77	1.50	91.2	0.98	19.36	-22
31.20	1243	100	7.78	1.50	85.7	0.94	19.53	-23
31.21	1246	100	7.80	1.50	63.1	0.92	19.37	-26
31.22	1249	100	7.80	1.50	55.3	0.85	19.45	-35
31.22	1252	100	7.81	1.49	56.2	0.86	19.64	-34
31.22	1255	100	7.81	1.49	52.2	0.85	19.74	-37

Low Flow Groundwater Sampling Field Form

Amtrak - Operable Unit 6, Sunnyside Yard, Queens, New York

Well ID: TP-10

Date: 6/3/08

DTW: 13.87

Intake (Depth of Pump): 17'

DTB: 19.45

Total Volume Purged:

Purge Start: 1130

Time	DTW (ft bls) [0.3 ft*]	FR (ml/min) [100-500 ml/min]	T (°C) [3%]	Sp. Cond. (mS/cm) [3%]	DO (mg/L) [10%]	pH (SU) [+/- 0.1 units]	ORP (mV) [+/- 10 mV]	Turb (NTU) [10%]	Volume Purged (gallons)
1130	13.87	250	17.06	0.844	10.01	6.21	43	46.0	0.1
1135	13.91	250	16.84	0.853	5.92	6.06	45	27.8	0.2
1140	13.91	250	16.55	0.836	5.41	5.64	65	7.5	0.4
1145	13.92	250	16.82	0.816	4.61	5.52	71	12.1	0.7
1150	13.92	250	16.89	0.800	4.33	5.61	65	16.1	1.2
1153	13.92	250	16.99	0.796	4.25	5.65	64	28.4	1.5
1156	13.92	250	17.01	0.790	4.23	5.77	59	29.1	1.7
1159	13.92	250	17.00	0.789	4.19	5.89	51	30.9	1.8
1202	13.92	250	17.26	0.779	4.09	6.03	42	42.7	1.9
1205	13.92	250	17.00	0.782	4.12	6.06	40.4	42	2.1
1208	13.92	2500	17.00	0.781	4.12	6.08	42	41	2.3

*Ideal drawdown from start to finish, not stabilization criteria

Purge Water Description: MOSTLY CLEAR, ODORLESS, NO NOTICEABLE SHEEN

Purge End:

Sample Time: 1210

Sample Time on Bottles: 1210

Well Sampling Data Form

Client: Amtrak **Project Number:** 0055.0065Y003

Site Location: OU-6

Well No: ~~TE-MW-GA-2~~ UT-9 Weather: 70°F, cloudy

Date: 6/9/08 Purge Water Disposal: ground

Sampled By: JD, EV Well Diameter / Type: PVC

Depth of Well (ft): 40.70 Water Column (ft): 23.27

Depth to Water(ft): 17.43 Volume of Water in Well (gal):

Depth to Product (ft): Volume of Water to Remove (gal):

well diameter:	1 in	2 in	4 in	6 in	8 in
gallons per foot:	0.041	0.163	0.653	1.469	2.611

Start Purging: 1408 Purge Rate: 250-300 mL/min

End Purging: Volume of Water Removed (gal):

Method of Purge: peri pump Method of Sampling: peri pump.

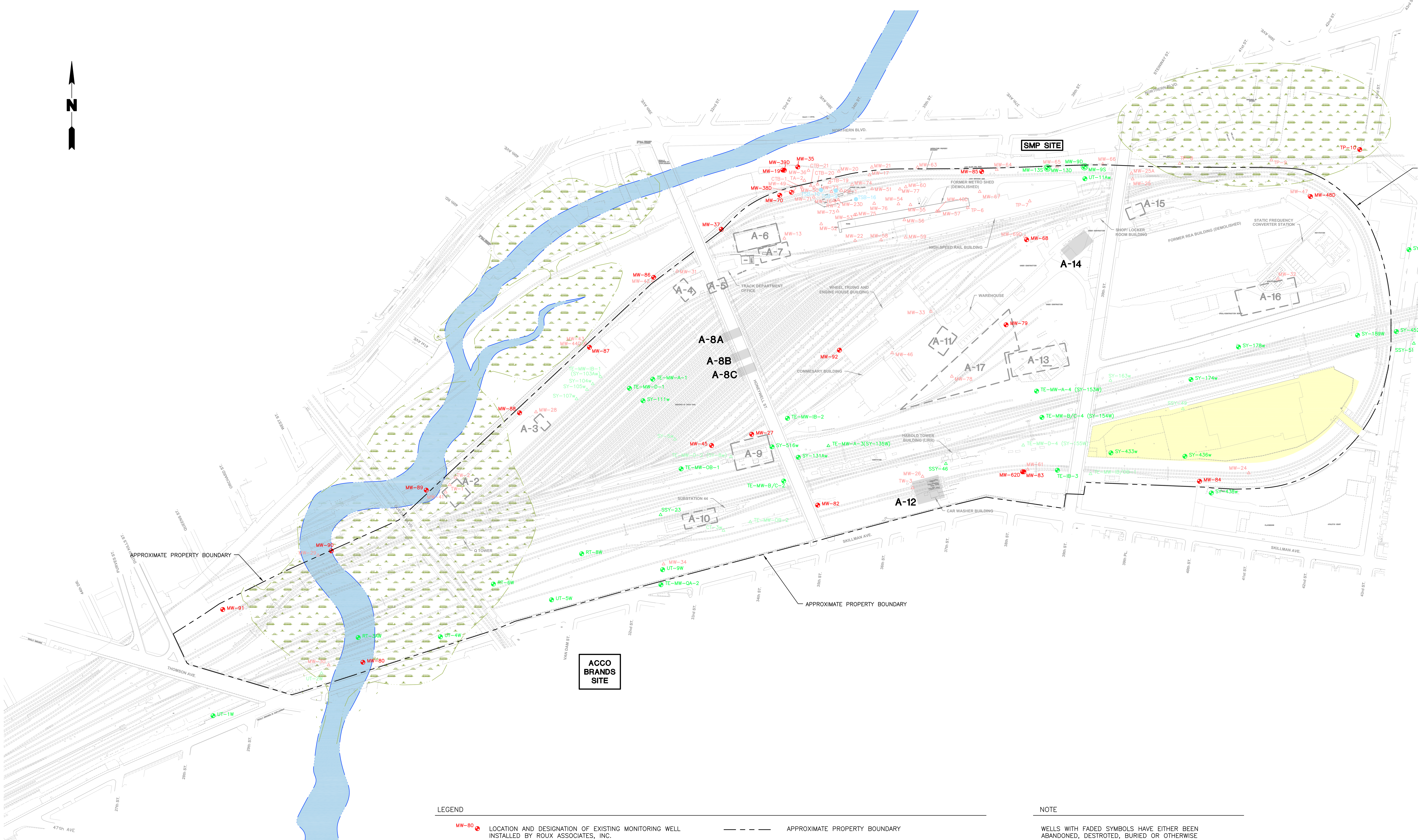
Physical Appearance/ Comments: clear

Samples Collected: (analyses / no. bottles) VOC, SVOC, PCBs, Metals, Chloride, Total Dissolved Solids

Sample time: 1435 (as UT) Laboratory: Veritech

Field Measurements:

dtw	Time	Flow Rate ml/min	pH SU	Conductivity mS/cm	Turbidity NTU	DO mg/l	Temperature C°	ORP mV
17.43	1408	300						
17.80	1413	250	6.93	2.15	11.2	5.54	16.97	91
17.80	1418	250	6.91	2.15	9.1	5.30	17.17	89
17.80	1421	250	6.90	2.15	8.9	5.06	17.03	93
17.80	1424	250	6.90	2.14	18.2	5.92	16.96	95
17.80	1427	250	6.91	2.15	20.0	5.95	16.73	98
17.80	1430	250	6.91	2.15	20.5	5.93	16.60	101



LEGEND

MW-80	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC.
TE-IB-3	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY OTHERS FOR EAST SIDE ACCESS (ESA) PROJECT
MW-13	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL CLUSTER (CONTAINING ONE SHALLOW AND ONE DEEP MONITORING WELL) INSTALLED BY OTHERS AS PART OF THE RI/FS FOR THE STANDARD MOTOR PRODUCTS, INC. (SMP) SITE.
MW-31	LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC. THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING
TE-MW-OB-2	LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY OTHERS THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING
TSB-16	LOCATION AND DESIGNATION OF GEOPROBE™ SOIL BORINGS/ GROUNDWATER SAMPLING POINT FROM OU-3 REMEDIAL INVESTIGATION
	APPROXIMATE PROPERTY BOUNDARY
A-12	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN WHERE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES WERE EVALUATED
A-2	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN THAT DOES NOT REQUIRE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES
	PRIVATE PROPERTY NOT OWNED BY AMTRAK (NOT PART OF OU-6)
	APPROXIMATE 1907 EXTENT OF ORIGINAL WETLANDS
	APPROXIMATE 1890 FLOW PATH OF DUTCH KILLS CREEK

NOTE

WELLS WITH FADED SYMBOLS HAVE EITHER BEEN ABANDONED, DESTROYED, BURIED OR OTHERWISE UNFIT FOR SAMPLING.

200' 0 200'

Title:

MONITORING WELL LOCATIONS AND HISTORIC SURFACE WATER FEATURES

OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: L.D.	Date: 16OCT09	PLATE
Prepared by: J.A.D.	Scale: AS SHOWN	
Project Mgr: H.G.	Office: NY	1
File No: AM6511301	Project: 05565Y03	

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LEGEND

MW-80	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC.
TE-IB-3	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY OTHERS FOR EAST SIDE ACCESS (ESA) PROJECT
MW-13	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL CLUSTER (CONTAINING ONE SHALLOW AND ONE DEEP MONITORING WELL) INSTALLED BY OTHERS AS PART OF THE RI/FS FOR THE STANDARD MOTOR PRODUCTS, INC. (SMP) SITE.
MW-31	LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC. THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING
TE-MW-OB-2	LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY OTHERS THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING
TBB-16	LOCATION AND DESIGNATION OF GEOPROBE™ SOIL BORINGS/ GROUNDWATER SAMPLING POINT FROM OU-3 REMEDIAL INVESTIGATION
	APPROXIMATE PROPERTY BOUNDARY
A-12	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN WHERE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES WERE EVALUATED
A-2	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN THAT DOES NOT REQUIRE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES
	PRIVATE PROPERTY NOT OWNED BY AMTRAK (NOT PART OF OU-6)
(8.68)	WATER TABLE ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
8	ELEVATION OF WATER TABLE IN MAY AND JUNE 2008 IN FEET RELATIVE TO MEAN SEA LEVEL, DASHED WHERE INFERRED
	DIRECTION OF GROUNDWATER FLOW

NOTES

1. WATER TABLE ELEVATION CONTOURS WERE GENERALIZED USING DATA FROM EXISTING MONITORING WELLS INSTALLED BY ROUX ASSOCIATES FOR AMTRAK AND WELLS INSTALLED BY OTHERS FOR SMP AND ESA.
2. ONLY WELLS WITH SCREEN ZONES SET ACROSS THE WATER TABLE WERE USED IN THE CONSTRUCTION OF THIS GROUNDWATER CONTOUR MAP.
3. WELLS WITH FADED SYMBOLS AND DESIGNATIONS ARE EITHER CONSTRUCTED WITH SCREENS SET ENTIRELY BELOW THE WATER TABLE (i.e., DEEP SCREEN ZONES), OR HAVE BEEN ABANDONED, DESTROYED OR BURIED. THESE WELLS WERE NOT USED IN THE CONSTRUCTION OF THIS GROUNDWATER CONTOUR MAP.
4. ELEVATION DATA IS IN FEET RELATIVE TO MEAN SEA LEVEL (MSL) USING THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)

200' 0 200'

Title:

WATER TABLE CONTOUR MAP MAY/JUNE 2008

OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX	Compiled by: L.D.	Date: 16OCT09	PLATE
ROUX ASSOCIATES, INC. Environmental Consulting & Management	Prepared by: J.A.D.	Scale: AS SHOWN	2
	Project Mgr: H.G.	Office: NY	
	File No: AM6511302	Project: 05565Y03	

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LEGEND

MW-80	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC.
TE-IB-3	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY OTHERS FOR EAST SIDE ACCESS (ESA) PROJECT
MW-13	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL CLUSTER (CONTAINING ONE SHALLOW AND ONE DEEP MONITORING WELL) INSTALLED BY OTHERS AS PART OF THE RI/FS FOR THE STANDARD MOTOR PRODUCTS, INC. (SMP) SITE.
MW-31	LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC. THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING
TE-MW-OB-2	LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY OTHERS THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING
TSB-16	LOCATION AND DESIGNATION OF GEOPROBE™ SOIL BORINGS/ GROUNDWATER SAMPLING POINT FROM OU-3 REMEDIAL INVESTIGATION
	APPROXIMATE PROPERTY BOUNDARY
A-12	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN WHERE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES WERE EVALUATED
A-2	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN THAT DOES NOT REQUIRE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES
	PRIVATE PROPERTY NOT OWNED BY AMTRAK (NOT PART OF OU-6)
(8.78)	WATER TABLE ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
NM	NOT MEASURED
8	EQUIPOTENTIAL LINE FOR GROUNDWATER IN WELLS SCREENED ENTIRELY BELOW THE WATER TABLE, IN FEET RELATIVE TO MEAN SEA LEVEL, DASHED WHERE INFERRED
	DIRECTION OF GROUNDWATER FLOW

NOTES

1. ONLY WELLS WITH SCREEN ZONES SET ENTIRELY BELOW THE WATER TABLE WERE USED IN THE CONSTRUCTION OF THIS GROUNDWATER CONTOUR MAP.
2. WELLS WITH FADED SYMBOLS AND DESIGNATIONS ARE EITHER CONSTRUCTED WITH SCREENS BRIDGING THE WATER TABLE (i.e., SHALLOW WATER TABLE WELLS), OR HAVE BEEN ABANDONED, DESTROYED OR BURIED. THESE WELLS WERE NOT USED IN THE CONSTRUCTION OF THIS GROUNDWATER CONTOUR MAP.
3. EQUIPOTENTIAL LINES FOR GROUNDWATER IN WELLS SCREENED BELOW THE WATER TABLE WERE GENERALIZED USING DATA FROM EXISTING MONITORING WELLS INSTALLED BY ROUX ASSOCIATES, AND OTHERS.
4. ELEVATION DATA FOR WELLS SURVEYED BY ROUX ASSOCIATES IS IN FEET RELATIVE TO MEAN SEA LEVEL (MSL) USING THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).
5. ELEVATION DATA FOR ESA WELLS SURVEYED BY OTHERS WERE PROVIDED TO ROUX ASSOCIATES IN REPORTEDLY NATIONAL GEODETIC VERTICAL DATUM 1927 (NGVD 27) PLUS 300 FEET REFERENCE DATUM. ROUX ASSOCIATES RESURVEYED ESA WELLS TE-MW-OB-1, TE-MW-QA-2, TE-MW-A-4 AND UT-9 AND USED THAT DATA WHEN PREPARING GROUNDWATER CONTOURS. ELEVATION DATA FOR ALL OTHER ESA WELLS WERE CONVERTED TO NAVD 88. GAUGING DATA FOR WELL SY-131AW WAS CONSIDERED ANOMALOUS AND NOT USED FOR GROUNDWATER CONTOURS.
7. GAUGING DATA FROM ESA WELLS UT-5W, RT-3AW, RT-6W AND RT-8W WAS COLLECTED IN MARCH AND APRIL SO ELEVATION CONTOURS ARE THEREFORE INFERRED.

200' 0 200'

Title:
EQUIPOTENTIAL MAP FOR GROUNDWATER IN WELLS SCREENED BELOW THE WATER TABLE JUNE/JULY 2008

OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:
AMTRAK

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: L.D.	Date: 16OCT09	PLATE
Prepared by: J.A.D.	Scale: AS SHOWN	3
Project Mgr: H.G.	Office: NY	
File No: AM6511303	Project: 05565Y03	

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LEGEND

MW-80	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC.
TE-IB-3	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY OTHERS FOR EAST SIDE ACCESS (ESA) PROJECT
MW-13	LOCATION AND DESIGNATION OF EXISTING MONITORING WELL CLUSTER (CONTAINING ONE SHALLOW AND ONE DEEP MONITORING WELL) INSTALLED BY OTHERS AS PART OF THE RI/FS FOR THE STANDARD MOTOR PRODUCTS, INC. (SMP) SITE.
MW-31	LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC. THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING
TE-MW-OB-2	LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY OTHERS THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING
TSB-16	LOCATION AND DESIGNATION OF GEOPROBE™ SOIL BORINGS/ GROUNDWATER SAMPLING POINT FROM OU-3 REMEDIAL INVESTIGATION
MW-27	LOCATION AND DESIGNATION OF PROPOSED MONITORING WELL TO BE SAMPLED FOR REMEDIAL ALTERNATIVE II GROUNDWATER MONITORING PLAN
	APPROXIMATE PROPERTY BOUNDARY
A-12	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN WHERE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES WERE EVALUATED
A-2	LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN THAT DOES NOT REQUIRE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES
	PRIVATE PROPERTY NOT OWNED BY AMTRAK (NOT PART OF OU-6)
8	ELEVATION OF WATER TABLE IN MAY AND JUNE 2008 IN FEET RELATIVE TO MEAN SEA LEVEL, DASHED WHERE INFERRED
	DIRECTION OF GROUNDWATER FLOW
1	LINE OF EQUAL CONCENTRATION OF TOTAL CHLORINATED VOCs IN GROUNDWATER AT THE WATER TABLE IN MAY/JUNE 2008 IN UG/L
	APPROXIMATE EXTENT OF TOTAL CHLORINATED VOCs IN GROUNDWATER AT THE WATER TABLE
	INDICATES CURRENTLY OCCUPIED BUILDING (MINIMUM 8 HOURS) CONTINUOUS OCCUPANCY (AS OF AUGUST 2009)
	INDICATES CURRENTLY OCCUPIED BUILDING (LESS THAN 8 HOURS) CONTINUOUS OCCUPANCY (AS OF AUGUST 2009)

SAMPLE LOCATION — SAMPLE DATE

MW-92	6/3/08
Screen elevation:	19.3 to 9.3
Analyte:	
Total BTEX	ND
Total cVOCs	ND

SAMPLE DEPTH
ANALYTES
CONCENTRATIONS

MTBE	METHYL TERT-BUTYL ETHER
VOCs	VOLATILE ORGANIC COMPOUNDS
CVOCs	CHLORINATED VOLATILE ORGANIC COMPOUNDS
BTEX	BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES
ND	ALL CVOCs OR BTEX NOT DETECTED

NOTES

1. ONLY GROUNDWATER QUALITY DATA GENERATED FROM WELLS SCREENED ACROSS THE WATER TABLE ARE PRESENTED ON THIS FIGURE.
2. WELLS WITH FADED SYMBOLS AND DESIGNATIONS ARE EITHER CONSTRUCTED WITH SCREENS SET ENTIRELY BELOW THE WATER TABLE (i.e., DEEP SCREEN ZONES), OR HAVE BEEN ABANDONED, DESTROYED OR BURIED. DEEP GROUNDWATER QUALITY DATA IS NOT PRESENTED ON THIS FIGURE.
3. ALL ELEVATION DATA IS IN FEET RELATIVE TO MEAN SEA LEVEL (MSL) USING THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
4. ALL DATA REPORTED IN MICROGRAMS PER LITER (ug/L).

200' 0 200'

Title:

GROUNDWATER QUALITY AT THE WATER TABLE MAY/JUNE 2008

OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: L.D.	Date: 11NOV09	PLATE
Prepared by: J.A.D.	Scale: AS SHOWN	4
Project Mgr: H.G.	Office: NY	
File No: AM6511304	Project: 05565Y03	

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MW-38D	6/2/08
Screen elevation:	-12 to -22
Analyte:	
Total BTEX	1.9
Total cVOCs	ND

MW-39D	6/2/08
Screen elevation:	-11.8 to -21.8
Analyte:	
Total BTEX	ND
Total cVOCs	ND

MW-13D	6/3/08
Screen elevation:	-8.2 to -18.2
Analyte:	
Total BTEX	ND
Total cVOCs	32.7

UT-11AW	6/25/08
Screen elevation:	3.8 to -6.3
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

MW-9D	6/3/08
Screen elevation:	-7.3 to -17.3
Analyte:	
Total BTEX	ND
Total cVOCs	49.1

MW-48D	6/3/08
Screen elevation:	-4.3 to -14.3
Analyte:	
Total BTEX	ND
Total cVOCs	ND

TE-MW-IB-2	6/16/08
Screen elevation:	-67.4 to -77.4
Analyte:	
Total BTEX	ND
MTBE	660
Total cVOCs	ND

TE-MW-A-1	6/17/08
Screen elevation:	-6.2 to -16.2
Analyte:	
Total BTEX	2.1
MTBE	110
Total cVOCs	86.8

TE-MW-D-1	6/18/08
Screen elevation:	-11.6 to -21.6
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	15.4

SY-111W	6/17/08
Screen elevation:	-38.8 to -48.8
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	66.9

TE-MW-OB-1	6/4/08	6/18/08
Screen elevation:	-14.2 to -24.2	-14.2 to -24.2
Analyte:		
Total BTEX	ND	ND
MTBE	NA	310
Total cVOCs	21.3	23

RT-6W	3/25/08	9/3/08
Screen elevation:	-15.3 to -25.3	-15.3 to -25.3
Analyte:		
Total BTEX	73	ND
MTBE	120	110
Total cVOCs	19466.8	24964.7

RT-3AW	3/25/08
Screen elevation:	-15.3 to -25.3
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

UT-1W	4/1/08
Screen elevation:	-17 to -27
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

SY-178W	7/7/08
Screen elevation:	26 to 16
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

SY-174W	7/7/08
Screen elevation:	25.7 to 15.7
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

SY-436W	6/10/08
Screen elevation:	-30 to -40
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

SY-438W	6/10/08
Screen elevation:	5.7 to -9.4
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

UT-9AW	4/8/08	6/4/08
Screen elevation:	-3.2 to -13.2	-3.2 to -13.2
Analyte:		
Total BTEX	ND	3.8
MTBE	130	NA
Total cVOCs	123.4	46

SY-516W	6/16/08
Screen elevation:	-17 to -27
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

SY-131AW	6/26/08
Screen elevation:	-5.7 to -15.6
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

MW-62D	6/4/08
Screen elevation:	-9.5 to -19.5
Analyte:	
Total BTEX	ND
Total cVOCs	58.3

SY-154W	4/15/08
Screen elevation:	1.2 to -8.8
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

SY-153W	6/25/08
Screen elevation:	1.7 to -8.3
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

SY-433W	6/10/08
Screen elevation:	21.7 to 11.7
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

UT-4W	4/1/08
Screen elevation:	-8.9 to -18.9
Analyte:	
Total BTEX	8.9
MTBE	3.1
Total cVOCs	ND

UT-5W	4/22/08
Screen elevation:	7.5 to -2.6
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	14

RT-8W	3/25/08
Screen elevation:	-14.6 to -24.6
Analyte:	
Total BTEX	ND
MTBE	5.1
Total cVOCs	221.4

TE-MW-QA-2	4/8/08	6/5/08
Screen elevation:	-4.2 to -14.2	-4.2 to -14.2
Analyte:		
Total BTEX	ND	11.3
MTBE	110	NA
Total cVOCs	31.4	118.3

LEGEND

MW-80 LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC.

TE-IB-3 LOCATION AND DESIGNATION OF EXISTING MONITORING WELL INSTALLED BY OTHERS FOR EAST SIDE ACCESS (ESA) PROJECT

MW-13 LOCATION AND DESIGNATION OF EXISTING MONITORING WELL CLUSTER (CONTAINING ONE SHALLOW AND ONE DEEP MONITORING WELL) INSTALLED BY OTHERS AT THE RI/FS FOR THE STANDARD MOTOR PRODUCTS, INC. (SMP) SITE.

MW-31 LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY ROUX ASSOCIATES, INC. THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING

TE-MW-OB-2 LOCATION AND DESIGNATION OF MONITORING WELL INSTALLED BY OTHERS THAT IS ABANDONED, DESTROYED, BURIED OR UNFIT FOR SAMPLING

TSB-16 LOCATION AND DESIGNATION OF GEOPROBE™ SOIL BORINGS/ GROUNDWATER SAMPLING POINT FROM OU-3 REMEDIAL INVESTIGATION

APPROXIMATE PROPERTY BOUNDARY

A-12 LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN WHERE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES WERE EVALUATED

A-2 LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN THAT DOES NOT REQUIRE ADDITIONAL GROUNDWATER INVESTIGATION ACTIVITIES

PRIVATE PROPERTY NOT OWNED BY AMTRAK (NOT PART OF OU-6)

8 EQUIPOTENTIAL LINE FOR GROUNDWATER IN WELLS SCREENED ENTIRELY BELOW THE WATER TABLE, IN FEET RELATIVE TO MEAN SEA LEVEL, DASHED WHERE INFERRED

DIRECTION OF GROUNDWATER FLOW

SAMPLE LOCATION — SAMPLE DATE — SAMPLE DEPTH — ANALYTES — CONCENTRATIONS

SY-154W	4/15/08
Screen elevation:	1.2 to -8.8
Analyte:	
Total BTEX	ND
MTBE	ND
Total cVOCs	ND

MTBE METHYL TERT-BUTYL ETHER

VOCs VOLATILE ORGANIC COMPOUNDS

CVOCs CHLORINATED VOLATILE ORGANIC COMPOUNDS

BTEX BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES

ND ALL CVOCs OR BTEX NOT DETECTED

NA NOT ANALYZED

NOTES

1. ONLY GROUNDWATER QUALITY DATA GENERATED FROM WELLS WITH SCREEN ZONES SET ENTIRELY BELOW THE WATER TABLE ARE PRESENTED ON THIS FIGURE.
2. WELLS WITH FADED SYMBOLS AND DESIGNATIONS ARE EITHER CONSTRUCTED WITH SCREENS BRIDGING THE WATER TABLE (i.e., SHALLOW WATER TABLE WELLS), OR HAVE BEEN ABANDONED, DESTROYED OR BURIED. SHALLOW GROUNDWATER QUALITY DATA IS NOT PRESENTED ON THIS FIGURE.
3. ALL ELEVATION DATA IS IN FEET RELATIVE TO MEAN SEA LEVEL (MSL) USING THE NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
4. DATA PRESENTED IN A GREEN FONT WITHIN DATA BOXES INDICATE SAMPLE WAS COLLECTED BY ESA, ALL OTHER DATA WAS COLLECTED BY ROUX ASSOCIATES.
5. ALL DATA REPORTED IN MICROGRAMS PER LITER (ug/L)

200' 0 200'

Title:

GROUNDWATER QUALITY IN WELLS SCREENED BELOW THE WATER TABLE APRIL THROUGH JUNE 2008

OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX ASSOCIATES, INC. Environmental Consulting & Management

Compiled by: L.D.	Date: 16OCT09	PLATE
Prepared by: J.A.D.	Scale: AS SHOWN	5
Project Mgr: H.G.	Office: NY	
File No: AM6511305	Project: 05565Y03	

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EXPLANATION

S-35 ● LOCATION AND DESIGNATION OF SOIL BORING COMPLETED IN OU-6 WHERE A SATURATED SOIL SAMPLE WAS COLLECTED

APPROXIMATE PROPERTY BOUNDARY

A-9 LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN (AREA)

PRIVATE PROPERTY NOT OWNED BY AMTRAK (NOT PART OF SUNNYSIDE YARD)

NOTES:

OU-6 - OPERABLE UNIT 6

ONLY SOIL BORING LOCATIONS WHERE SATURATED SOIL SAMPLES WERE COLLECTED IN OU-6 ARE PRESENTED IN THIS FIGURE

160' 0 160'

N

Title:

LOCATIONS OF SOIL BORINGS WITH SATURATED SOIL SAMPLES COLLECTED IN OU-6

OPERABLE UNIT 6 RI/FS REPORT
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For: AMTRAK

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: RSK	Date: 10/24/2009	PLATE
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