ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

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August 26, 2010

Mr. Shaun Bollers
New York State Department of Environmental Conservation
Division of Environmental Remediation
47-40 21st Street
Long Island City, New York 11101-5407

Re: Addendum to the Work Plan for the Operable Unit 5 (OU-5) Remedial Investigation
Amtrak - Sunnyside Yard, Queens, New York

Dear Mr. Bollers:

Roux Associates, Inc. (Roux Associates) has prepared this letter on behalf of the National Railroad Passenger Corporation (Amtrak) and New Jersey Transit Corporation (New Jersey Transit) to serve as an addendum to the document titled "Work Plan for the Operable Unit 5 (OU-5) Remedial Investigation", prepared by Roux Associates, dated May 13, 2010 (OU-5 RI Work Plan). The OU-5 RI Work Plan was previously submitted to the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH). The NYSDEC provided comments to the OU-5 RI Work Plan in an email dated July 27, 2010. An excerpt from the July 27, 2010 email from NYSDEC providing comments to the OU-5 RI Work Plan is below:

> *In reviewing the QAPP, there is no mention of the preparation of a **third party** validation of sampling/analytical results or DUSR. This is a requirement of DER-10 2.2.(a).1.ii and is clearly defined in Appendix 2B. The QAPP should also include a table titled "Analytical Methods/Quality Assurance Summary" in accordance with DER-10 2.2(a)2v.*

The purpose of this RI Addendum letter is to satisfy the requirements described above, as provided in the July 27, 2010 email. A detailed description of the addendum to the OU-5 RI Work Plan is provided in the following sections.

Independent Data Validation
All samples to be collected for laboratory analysis as part of the scope of the OU-5 RI Work Plan will be submitted to a NYSDOH Environmental Laboratory Approval Program (ELAP) qualified laboratory, and analysis will be conducted in accordance with NYSDEC Analytical Services Protocol (ASP) using the USEPA SW-846 methodology. Sample results will be presented in ASP Category B deliverable package format to allow for a complete review by an independent data validator.

Following receipt of additional data generated as part of the scope of the OU-5 RI Work Plan, analytical data packages will be submitted to an independent, qualified data validator for review. In accordance with the NYSDEC document titled "DER-10 Technical Guidance for Site Investigation and Remediation", dated May 3, 2010 (Section 2.2(a).1.ii), the independent data validator will prepare a Data Usability Summary Report (DUSR) in accordance with DER-10 requirements. The DUSRs will be submitted to the NYSDEC and NYSDOH as part of the RI report submittal.

Updated Quality Assurance Project Plan (QAPP) Table

As described above, NYSDEC has requested that a table titled "Analytical Methods/Quality Assurance Summary", meeting the requirements of DER-10, Section 2.4(a).2.v be included in the Quality Assurance Project Plan (QAPP). Note that Table B-1 and B-2 provided in the Field Sampling Plan (FSP) attached to the OU-5 RI Work Plan provides the information required, however, a concise table presenting this data has been prepared (attached) for inclusion in the QAPP. The QAPP provided as Appendix C of the OU-5 RI Work Plan is hereby amended to include the attached table as Table C-2. This table satisfies the requirements of DER-10, Section 2.4(a).2.v.

Roux Associates is confident that this Addendum to the OU-5 RI Work Plan satisfies the comments provided in your email dated July 27, 2010. Please do not hesitate to contact either of the undersigned if you have any questions or comments regarding this Addendum to the OU-5 RI Work Plan.

Sincerely,

ROUX ASSOCIATES, INC.

Robert Kovacs
Senior Environmental Scientist

Joseph D. Duminuco
Principal Hydrogeologist/
Vice President

cc: J. O'Connell, NYSDEC
J. Vought, NYSDEC
C. Doroski, NYSDOH
R. Mohlenhoff, Amtrak
C. Caldwell, Amtrak
M. Stern, Amtrak
M. Judd, NJ Transit
C. McGuckin, Roux Associates, Inc.
H. Gregory, Roux Associates, Inc.

Table C-2. Analytical Methods/Quality Assurance Summary Table, OU-5 Remedial Investigation Work Plan, Amtrak, Sunnyside Yard, Queens, New York

Sample Matrix	Target Analytes	Analysis Method	Field Samples	Replicates[1]	Trip Blanks[2]	Field Blanks[3]	Matrix Spikes[4]	Spike Duplicates[4]	Total No. of Samples	Sample Preservation	Container Type	Sample Holding Time
Sewer Water	PCBs	USEPA SW-846 Method 8082	108	11	0	0	6	6	131	Cool to 4°C	1-Liter Glass Amber with Teflon Lined Lid	7 Days to Extract; 40 days for analysis
Sewer Sediment	PCBs	USEPA SW-846 Method 8082	54	6	0	6	3	3	72	Cool to 4°C	8 oz glass with Teflon Lined lid	14 Days to Extract; 40 days for analysis

Notes:

[1] Based on 1 per 10 samples or 1 per Sample Delivery Group (3 days max)

[2] Typically based on 1 cooler per day, however, since samples are not being analyzed for volatile organic compounds, no Trip Blanks are proposed

[3] For Sewer Sediment samples, Field Blanks are proposed based on 1 per day. Field Blanks are not proposed for sewer water sampling since only new, disposable sampling equipment will be used. Note that due to the aqueous matrix, Field Blanks have a holding time of 7 days to extract, and 40 days for analysis.

[4] Based on 1 per 20 samples or 1 per Sample Delivery Group (3 days max)

USEPA - United States Environmental Protection Agency

PCBs - Polychlorinated Biphenyls

°C – Degrees Celsius

May 13, 2010

WORK PLAN FOR THE OPERABLE UNIT 5 (OU-5) REMEDIAL INVESTIGATION

Sunnyside Yard
Queens, New York

Prepared for

NATIONAL RAILROAD PASSENGER CORPORATION
Washington, D.C. 20002

ROUX ASSOCIATES, INC.

Environmental Consulting & Management

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ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

ROUX

209 SHAFTER STREET
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October 14, 2010

Mr. Shaun Bollers
New York State Department of Environmental Conservation
Division of Environmental Remediation
47-40 21st Street
Long Island City, New York 11101-5407

Re: Certification for Work Plan for the Operable Unit 5 (OU-5) Remedial Investigation
Amtrak – Sunnyside Yard, Queens, New York

Dear Mr. Bollers:

In accordance with DER Technical Guidance for Site Investigation and Remediation (DER-10), Roux Associates, Inc. (Roux Associates) is submitting the attached certification for the document titled "Work Plan for the Operable Unit 5 (OU-5) Remedial Investigation, Sunnyside Yard, Queens, New York," dated May 13, 2010, as amended by the Addendum Letter dated August 26, 2010.

Should you have any questions or require additional information, please do not hesitate to contact us at (631) 232-2600.

Sincerely,

ROUX ASSOCIATES, INC.

Robert Kovacs
Senior Environmental Scientist

Joseph D. Duminuco
Principal Hydrogeologist/
Vice President

cc: J. O'Connell, NYSDEC
J. Vought, NYSDEC
R. Mohlenhoff, Amtrak
C. McGuckin, Remedial Engineering, P.C.

REPORT CERTIFICATION

This Certification applies to the document titled "Work Plan for the Operable Unit 5 (OU-5) Remedial Investigation, Sunnyside Yard, Queens, New York", prepared by Roux Associates, Inc. dated May 13, 2010, as amended by the Addendum Letter dated August 26, 2010.

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

10/14/10		NJ Subsurface Evaluator (No. 239024)
(Date)	(Signature)	(License)

1.0 INTRODUCTION

Roux Associates, Inc. (Roux Associates) has prepared this Work Plan on behalf of the National Railroad Passenger Corporation (Amtrak) and New Jersey Transit Corporation (New Jersey Transit) for the remedial investigation (RI) activities planned for Operable Unit 5 (OU-5) at Amtrak's Sunnyside Yard, located in Queens, New York (Yard) (Figure 1). This Work Plan was prepared in accordance with the provisions of the Order on Consent (OOC), Index #W2-0081-87-06, as modified between the New York State Department of Environmental Conservation (NYSDEC), Amtrak, and New Jersey Transit. OU-5 is defined as the sewer system located beneath the Yard. The Yard-wide sewer system consists of two separate subsystems: the primary combined sewer system in the main section of the Yard serving among other facilities, the commissary area, engine house, and the body tracks and ultimately discharging to the Bowery Bay Wastewater Treatment Plant. The secondary sewer system is a storm sewer system that serves the western section of the Yard. The secondary sewer system discharges into the New York City Department of Environmental Protection (NYCDEP) sewer system along 28th Street and ultimately discharges into Dutch Kills.

This Work Plan is designed to provide a current evaluation of the accumulation of polychlorinated biphenyl (PCB) containing sewer sediments and sewer water within the Yard-wide sewer system, develop an understanding of the flow patterns and inputs to the sewer system and develop the data necessary to prepare a Feasibility Study (FS) for OU-5 and develop a final remedy for this Operable Unit. This will be achieved by performing the following scope of work:

- Task 1: Sewer System Mapping and Verification
- Task 2: Sewer Sediment and Sewer Water Sampling
- Task 3: Targeted Sewer Camera Inspection
- Task 4: Oversight of the Metropolitan Transportation Authority (MTA) East Side Access (ESA) Project Sewer Modification Work
- Task 5: Preparation of OU-5 RI Report

1.1 Operable Units of Sunnyside Yard

In 1997, to accommodate a rigid construction schedule for Amtrak's High Speed Trainset Facility (HSTF) Services 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. An Operable Unit (OU) represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release, or exposure pathway resulting from the site contamination. As previously stated, the focus of this Work Plan is OU-5, which is defined as the sewer systems beneath the Yard. The remaining operable units for the Yard are:

- OU-1: Soil above the water table within the footprint of the HSTF S&I Building. A Record of Decision (ROD) was issued for OU-1 in August 1997, and the remedial work was completed in April 1998.
- OU-2: Soil above the water table within the footprint of the HSTF S&I Building ancillary structures. A No Further Action ROD was issued for OU-2 in November 1997.
- OU-3: Soil and separate phase petroleum hydrocarbon accumulation above the water table and soil below the water table within 8 acres in the north central portion of the Yard. A ROD was issued for OU-3 in March 2007. Partial remediation has been performed. Remediation will resume upon issuance of a revised OOC.
- OU-4: Consists of the soil above the water table (unsaturated zone) at the Yard, excluding the areas defined as OU-1, OU-2, and OU-3. OU-4 comprises 120 of the total 133 acres of the Yard. A ROD was issued for OU-4 in March 2009. Remediation will commence upon issuance of a revised OOC and remedial action work plan (RAWP) approval.
- OU-6: Saturated soil and the groundwater beneath the Yard. A No Action ROD was issued for OU-6 in March 2010.

1.2 Yard –Specific Compounds of Concern

In 1997, the NYSDEC and the New York State Department of Health (NYSDOH) identified the Yard-specific compounds of concern (COCs) as PCBs, carcinogenic polycyclic aromatic hydrocarbons (cPAHs) which are a subset of semivolatile organic compounds (SVOCs), and lead. The seven cPAHs (considered carcinogenic by NYSDEC) that were collectively identified as a COC by the NYSDEC are benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3 cd)pyrene. The NYSDEC-recommended soil cleanup levels for the Yard were re-established in the OU-4 ROD and are as follows:

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

1.3 Yard Location and Description

The Yard is located in Sunnyside, New York and is identified as Block 214 and Lots 1 and 68 on the New York City Tax Map. A United States Geological Survey (USGS) topographical quadrangle map (Figure 1) shows the Yard location. The Yard is situated on a 133-acre area bounded by the MTA/Long Island Rail Road (LIRR) property to the north, Skillman Avenue to the south, light industrial and commercial properties and 42nd Place to the east, and Thompson Avenue to the west (Figure 2).

1.4 Yard History

The Pennsylvania Tunnel and Terminal Company, a subsidiary of the Pennsylvania Railroad, later known as the Penn Central Transportation Company, originally constructed Sunnyside 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. The MTA/LIRR currently owns a portion of the Yard along the northern boundary (including a portion of OU-3) and maintains rights of way through the Yard. The Yard originally operated as a storage and maintenance facility for railroad rolling stock.

1.5 Sewer System Layout

The original layout of Sunnyside Yard consisted of two separate yards; the North Yard and the South Yard. The North Yard was intended to be used for storage of multiple unit type railcars. The South Yard was intended to be used for storing, cleaning, and repairing Pullman cars, dining cars, and coaches. The construction of the Sewer System beneath the Sunnyside Yard started in 1908.

In constructing the sewer along the north side of the Yard, a very fine quicksand was encountered which caused considerable construction problems. The slope and shape of the Yard caused the surface drainage to flow toward the East River tunnel portals, and it was necessary to intercept it by an adequate sewer system before it reached the tunnels. Two sewer systems were constructed. The primary sewer system was located in the main section of the Yard and the secondary sewer system was located in the western section of the Yard. The primary and secondary sewers were built as two completely separate sewer systems.

The secondary sewer system was to receive only surface drainage to discharge into the NYCDEP sewer system and then discharge into Dutch Kills. The primary sewer system, also called the Payntar Avenue System, was designed and built to receive sanitary and surface drainage, and then discharge into the Webster Avenue Sewer System at Payntar Avenue and Jackson Avenue, ultimately discharging to the Bowery Bay Wastewater Treatment Plant. In some low-lying areas of the Yard, open-jointed sub-surface tile drains were used. Sewers were located, where feasible, in areas where piles would not be required. However, in some areas of the Yard, concrete and iron-pipe sewers were supported by piles. When in proximity to or directly under railroad tracks, the concrete sewers were reinforced. The sewer manholes were made of brick.

On September 29, 1909, a contract was entered into for the construction of five buildings within the Yard: Carpet Shed, Stores and Commissary Building, Store and Lavatory Building, Oil House and Sand House. On October 21, 1909, a contract was entered into for the construction of the Battery Repair Building and Inspection Building and, on February 7, 1910, a contract was entered into for the construction of the Motive Power Facilities Buildings, including the boiler house and Substation, Machine and Smith Shop, and Inspection Pit Shed, along with four (4) signal cabins. Each of these contracts resulted in modifications of the sewer system.

A significant modification to the sewer system at the Yard occurred during the mid 1990s with the construction of the Static Frequency Converter Station (SFC) in the southeast portion of the Yard. Modifications to a portion of the primary sewer system resulted from this construction project located east of the 39th Street Bridge. Approximately eight new manholes (UNK-3, UNK-4, UNK-5, UNK-6, UNK-7, UNK-8, UNK-9, and UNK-10) were added to the sewer system while two manholes (MH-18 and MH-19) were completely abandoned and buried. Flows originating from this newly constructed area ultimately discharge into Manhole MH-13.

Other projects have had some impact on the sewer system, including the 1997 construction of the HSTF S&I Building which introduced a 1,000-foot storm sewer line discharging into Manhole UNK-1, located upstream of MH-13. Major modifications are now taking place with the construction of the ESA Project. The ESA Project is discussed in Section 3.4 of this report. Plate 1 shows the current configuration of the sewer systems at Sunnyside Yard.

At Sunnyside Yard, the ESA Project consists of several contracts that will intersect subsurface environmental elements, including modifications to the existing sewer system to accommodate for tunnels and structures necessary to complete the project. The ESA Project will result in significant new rights of way within the Yard. A detailed description of these contracts is presented in Section 3.0 of this Work Plan.

2.0 BACKGROUND

Numerous investigations have been performed at the Yard and, as described above, the Yard was previously divided into Operable Units. Since OU-3, OU-4 and OU-6 could all potentially impact the sewer system (OU-5) through migration of contaminated soil (OU-3 and OU-4), separate phase petroleum (OU-3) or contaminated groundwater (OU-6) into the sewer system, it was deemed appropriate to begin to address OU-5 after the other OUs. As presented in Section 1.1, RODs have been issued by the NYSDEC for the three OUs (OU-3, OU-4, and OU-6) that could impact OU-5.

A comprehensive summary of all work performed in OU-5 is included in Section 2.3.

2.1 Conceptual Site Model for OU-5

The conceptual site model for OU-5 was developed based on a review of the data previously collected in OU-3, OU-4, OU-5, and OU-6, a review of Amtrak's and predecessor railroad operating histories and discussions with Amtrak personnel. The primary sewer system receives combined stormwater and sanitary flows, while the secondary sewer system receives only stormwater.

The sewer systems are approximately 100 years old and may be damaged or in need of repair in certain sections. Based on the depth to groundwater measurements throughout the Yard, most of the sewer system is located below the water table and, therefore, would receive an inflow of groundwater and soil through any cracks or holes rather than discharge sewer contents into the saturated soil at the Yard.

Inflows to the primary sewer system occur during dry weather conditions (groundwater infiltration, sanitary discharges, and periodic operation of the Car Washer along the south side of the Yard) and additional inflows occur during wet weather conditions (surface drainage and track drains). The only dry weather inflow to the secondary sewer system is from groundwater infiltration and the only additional inflow during wet weather conditions is from surface drainage.

Known or suspected sources of PCBs entering the primary sewer system are: PCB-containing stationary transformers that leaked, trains with PCB-containing transformers that leaked while stored in the Yard, runoff of PCB-contaminated soil during storm events, infiltration of PCB-contaminated soil into cracks in the sewers, and the PCB-containing mobile SPH (Separate Phase Hydrocarbon) plume within OU-3. Note that as a result of previous SPH recovery efforts in OU-3, the volume and overall extent of mobile SPH has been reduced significantly, and is not likely acting as a source of PCBs entering the sewer system.

2.2 Rationale for OU-5 RI Scope of Work

As discussed below, historical investigations of the sewer systems have focused on the presence of PCBs in sewer sediment and sewer water in the primary sewer system. The rationale for the focus on PCBs and the primary sewer system is based on the following:

- NYSDEC's request to evaluate only PCBs in the sewer system during performance of the Phase II RI and all subsequent NYSDEC-approved sampling programs focused only on PCBs;

- NYSDEC/NYSDOH's determination of COCs for the Yard to include PCBs, lead, and cPAHs/SVOCs; and

- Empirical data from OU-3, OU-4, and OU-5 indicating PCBs to be the primary compound of concern at the Yard and that the potential sources of contamination are in locations that would impact the primary sewer system. This data consists of the following:

  – The primary sewer system is partially located beneath OU-3, and there is currently only one lead soil COC exceedance, no cPAH/SVOC soil COC exceedances, and one PCB soil COC exceedance. The PCB-containing mobile SPH could have historically migrated into the primary sewer system (as discussed above, due to the significant reduction in the size, the mobile SPH plume is not likely acting as a source of PCBs to the sewer).

  – In OU-4 there is currently only one lead soil COC exceedance, no cPAH/SVOC soil COC exceedances, and 51 PCB soil COC exceedances. All current COC exceedances are located over the primary sewer system. Many historical soil COC exceedances were PCB exceedances and all but one were located over the primary sewer system.

  – OU-5 historical sewer water data (both primary and secondary sewer systems) contains no exceedances of the NYCDEP site-specific discharge requirements for lead (or for any other listed compounds). During previous investigations, PCB-containing sediments were determined to not be re-accumulating in the secondary sewer system, and PCBs were not present in the sewer water samples collected in the secondary sewer system.

In addition, recent OU-6 groundwater data indicates no exceedances of PCBs or cPAHs/SVOCs, and only one exceedance of lead that was not representative of groundwater quality (attributed to suspended sediment).

2.3 Summary of Previous Investigations in OU-5

A discussion of the findings from all previous NYSDEC-approved investigations that were performed in what is now referred to as OU-5 are summarized below.

2.3.1 Phase II Remedial Investigation dated February 15, 1995

The Phase II RI was the first time the sewer system was considered to be a potential concern. The Phase II RI work plan dated August 5, 1992 was developed by Roux Associates and included the investigation for potential offsite migration of contaminants to determine if the sewer system beneath the Yard was acting as conduit for offsite migration of contaminants, sewer water samples, and sewer sediment samples were scheduled to be collected.

<u>Sewer Sediment in the Primary Sewer System</u>

In February 1993, sewer sediment samples were collected from MH-2, MH-3 and MH-8 (Refer to Plate 1 for Manhole location) and analyzed for PCBs. Sewer sediment samples from MH-2, MH-3, and MH-8 resulted in total PCB concentrations of 82,000, 54,000, and 4,200 micrograms per kilogram (µg/kg), respectively. Results are shown in Table 1 and Plate 2.

<u>Sewer Water in the Primary Sewer System</u>

In order to determine if water containing contaminants was flowing into the primary sewer system and exiting the Yard, sewer water was collected from MH-2. MH-2 was the closest accessible manhole location to the point where the primary sewer system exits the Yard. Sewer water samples collected from MH-2 in February 1993 were analyzed for PCBs, VOCs, SVOCs, and metals. Other locations where sewer water was collected in February 1993 include: MH-3, MH-5, MH-6, MH-7, and MH-8. Sewer water samples from these latter locations were only analyzed for PCBs. PCBs were not detected in sewer water samples from MH-3, MH-5, and MH-6. Sewer water samples from MH-7 and MH-8 resulted in total PCBs concentration of 14.8 and 20.6 µg/L, respectively. Analytical results for VOCs, SVOCs, and metals are shown in

Appendix A, Tables A-1 through A-6. Analytical results for PCBs are shown in Table 2 and Plate 2.

Sewer Sediment in the Secondary Sewer System

In February 1993 sewer sediment was not encountered in the secondary sewer system, therefore a sewer sediment sample could not be obtained for further analysis. In April 1994, sewer sediment samples were collected from MH-1, MH-65 and CB-28 (Refer to Plate 1 for Manhole location). Results indicated low concentrations of PCBs ranging from 490 to 3,500 µg/kg. Results are shown in Table 3 and Plate 2.

Sewer Water in the Secondary Sewer System

In order to determine if water containing contaminants was flowing into the secondary sewer system and exiting the Yard, sewer water was collected from MH-1 which was the closest accessible manhole to the point where the secondary sewer system exits the Yard. Samples collected from MH-1 were analyzed for PCBs, VOCs, SVOCs, and metals. Analytical results for VOCs, SVOCs, and metals are shown in Appendix A, Tables A-1 through A-6. Analytical results for PCBs are shown in Table 4 and Plate 2.

2.3.2 Results of Sewer Sampling Program and Oil/Water Separator Inspection and Evaluation, Sunnyside Yard, Queens, New York, Dated September 6, 1994

In 1993, the configuration of the Yard-wide sewer system was surveyed and discrepancies, between actual conditions and available sewer maps were found. The 1993 Work Plan was developed in a phased approach to allow a more rapid collection of data and determination of sources and due to differences found between actual conditions and information shown in the available sewer maps, a field survey was also conducted. The 1993 Work Plan scope of work consisted mainly of three tasks: sewer water and sewer sediment sampling; sediment removal; and sewer system monitoring.

The first step of the plan was to identify manhole locations with visible sewer sediments. After identifying the locations with sewer sediments, a sampling program was implemented to determine if PCBs were present. Following the sampling program, locations with PCBs containing sewer sediments were recommended for sediment removal. After completion of the sampling program, the sewer system monitoring program was implemented. The sewer system monitoring program was designed to determine if PCBs were continually being introduced into the sewer system or if they were no longer being introduced into the sewer system. The main objective was to determine if the contamination found resulted from historical events and associated residuals that might have remained in the sewer system or from current discharges from continuing sources.

The 1993 Work Plan was executed in April 1994 and results were presented in a report dated September 6, 1994 prepared by Roux Associates and in the Phase II RI Report dated February 15, 1995.

Sewer Sediment in the Primary Sewer System

Analytical results indicated that PCBs were detected in sewer sediment samples collected within the primary sewer system. Based on these results and previous results obtained from the February 1993 sampling round, sediment removal locations were recommended. Roux Associates proposed removal of sediments in 23 locations within the sewer system. Sewer sediment removal activities were conducted in 1996 (see discussion below).

In April 1994, sewer sediment samples were collected from MH-2, MH-29, MH-35, MH-37, MH-39, MH-40, MH-42, MH-45, MH-52, MH-55, and MH-69 (Refer to Plate 1 for Manhole location) and analyzed for PCBs. Results indicated the presence of PCBs in all samples with concentrations ranging from 170 µg/kg to 51,000 µg/kg. Results are shown in Table 1 and Plate 2.

Sewer Water in the Primary Sewer System

Sewer water samples were collected and analyzed for PCBs. Low levels of PCBs, ranging from 0.20 to 4.4 µg/L, were observed in five of the sewer-water samples collected. Results are shown in Table 2 and Plate 2.

In April 1994, sewer water samples were collected from MH-2, MH-29, MH-39, MH-40, MH-43, MH-52 and MH-69 (Refer to Plate 1 for Manhole locations) and analyzed for PCBs. Sewer water samples from MH-2, MH-40, and MH-52 were analyzed filtered and unfiltered to understand the effect that sewer sediment could potentially have in a sewer water sample. PCB concentration in an unfiltered sewer water sample from MH-2 was 0.51 μg/kg, and the PCBs were not found in the filtered sewer water sample. The unfiltered sewer water sample from MH-40 resulted in a PCB concentration of 510 μg/L, while PCBs were not found in the filtered sewer water sample. It was then concluded that this was attributed in part due to suspending the contaminated sediment particles in the sewer water by agitation or sampling turbid water during the collection of sewer water samples. Results are shown in Table 2 and Plate 2.

Sewer Water in the Secondary Sewer System

In April 1994, sewer water samples were collected from MH-1, MH-65, and CB-28 (Refer to Plate 1 for Manhole location). Results indicated no PCBs were present. Results are shown in Table 4 and Plate 2.

2.3.3 Summary of the Results for the June-July 1996 Sewer Sampling Program and Recommended Scope of Work, Sunnyside Yard, Queens, New York, dated November 1, 1996

Sewer Sediment in the Primary Sewer System

In June through July 1996, 20 of the 23 proposed sediment removal locations were cleaned out of sediments using a vacuum truck. Subsequent to sewer sediment removal, a visual inspection was performed during July and August 1996 to determine the presence of returning sewer sediments within those 20 sediment removal locations. If sewer sediments were found during the visual inspection at the sediment removal locations, a sediment sample was taken at that location and sent for PCBs analysis. If sediments were not present at the sewer sediment removal locations, a visual inspection was proposed to be performed at a later date not completed to date. Results from the visual inspection, and results from the sampling of locations with returning sewer sediments were presented in a report dated November 1, 1996. Returning PCB-containing sewer sediments were found at MH-2, MH-40, and MH-42.

Sewer Water in the Secondary Sewer System

A sewer water sample was collected from MH-1 and results indicated PCBs were not present. Results are shown in Table 4 and Plate 2.

Sewer Water in the Primary Sewer System

Unfiltered results for total PCBs detected ranged from 0.015 µg/L in a sewer water sample from MH-6 to 0.91 µg/L in a sewer water sample from MH-42. PCB concentrations in filtered samples are typically an order of magnitude lower than those for unfiltered sewer water samples and ranged from 0.015 µg/L in MH-40 to 0.10 µg/L in MH-2. The observed differences between the levels of PCBs between filtered and unfiltered results were attributed to the adsorption of PCBs to fine sediments which are removed by filtering.

After analyzing these results, the likelihood that PCBs were continually being introduced into the sewer system from a continuous source such as areas where accidental leaks from stationary transformers, and/or from motive power transformers might have occurred (i.e., Transformer area) were considered. However, only six out of twenty sediment removal locations presented returning sewer sediments. Only three of the six locations with returning sewer sediments were found to contain PCBs. Potential contamination pathways were contemplated including contamination entering the sewer system by infiltrations through cracks in the pipes.

To further evaluate the sources of PCB-containing sediments to the sewer system an expanded investigation of the primary sewer system at the Yard was proposed in the November 1996 report. No further work was proposed for the secondary sewer system, as PCBs were never detected in any sewer water sample collected in MH-1 or any other location throughout the secondary sewer system that were analyzed for PCBs from any previous investigation. The NYSDEC approved of this modification as the subsequent expanded sewer system investigation was conducted only in the primary sewer system.

2.3.4 Summary of the Results for the Expanded Sewer System Investigation, Sunnyside Yard, Queens, New York, dated August 28, 1997

During the period of November 1996 to March 1997, an expanded sewer system investigation was performed focused on the primary sewer system and was documented in a summary report dated August 28, 1997. The main components of the expanded sewer system investigation included: investigation of manhole and catch basin interconnectivity, flow rate measurements to determine rate of deposition of sediments and sewer sediment sampling to determine source of contamination and sediment migration patterns.

In order to determine interconnectivity, a visual inspection was performed within manhole MH-39, to determine a possible connection to manhole MH-2. The investigation indicated no direct connection between manhole MH-39 and MH-2. However, a sewer pipe was found to connect manhole MH-39 to the pipe that connects manhole MH-2 to manhole MH-40 approximately three feet downstream of manhole MH-2.

Delineation of PCB-containing sewer sediment accumulation areas within the primary sewer system was the main focus of the sampling events that took place during the expanded sewer system investigation. Selected manholes and catch basins within the primary sewer system were inspected for sediment accumulation. If sewer sediments were present, samples were taken and analyzed for PCBs. To serve as a sediment trap and facilitate sampling in manholes that did not have enough sediment, sandbags were used and removed after sampling collection was completed.

<u>Sewer Sediments in the Primary Sewer System</u>

Results from the November 1996 expanded sewer system investigation indicated the presence of returning PCBs containing sewer sediments to the following locations: MH-2, MH-3, MH-5, MH-40, and MH-42. Sewer sediments were sampled and analyzed for PCBs from those locations and from locations including MH-8, MH-37, MH-52, MH-55, MH-69, and CB-4. Sewer sediments found in MH-2 after the sediment removal program resulted in a PCB concentration of 8,760 µg/kg. This is significantly lower than the highest PCB concentration found at this location, when compared to all other sampling rounds, which was 82,000 µg/kg. Similarly, Sewer sediments found in MH-3 after the sediment removal program resulted in a PCB concentration of 32,500 µg/kg, which is lower than the highest PCB concentration of 54,000 µg/kg, found at this location. A decrease in the PCB concentration from the previous sampling round at MH-8, MH-55, and MH-69 was observed. Other locations did not show the same trends. Refer to Table 1 and Plate 2 for results.

<u>Flow Monitoring</u>

The flow rate of some sewer branches was measured to provide a better understanding of the overall stormwater flow, individual sewer branch flow contributions and the potential sediment contribution from each branch. The data was used to obtain information on the total flow expected to be discharged into the NYCDEP sewer system through MH-40 to pinpoint the major sediment source locations.

Two temporary weirs were proposed to be installed within MH-40 for flow measurement purposes. Flow rate measurements were performed at the discharge point of both the 48-inch diameter pipe and 8 foot x 4 foot culvert within manhole MH-40. It was necessary to determine the flow rates in these particular branches since flow from the primary sewer system exits the Yard from Manhole MH-40 through these branches. Based on actual measurements and observations, the maximum combined flow rates from both of the branches was estimated to be 750,000 gallons per day during a precipitation event or 230,000 gallons per day during normal flow.

In the late 1990s, during the construction of the siphon serving the tunnels for a new subway service, the New York City Transit Authority installed a weir within MH-40, the furthest downstream manhole of the primary sewer system, to serve as a sediment trap for sewer water leaving the Yard. The purpose and construction of this weir was completely different from the temporary weirs that were installed for flow measuring purposes.

As part of the recommended actions from the results of the expanded sewer system investigation, a TV inspection was recommended to determine/confirm possible interconnections between existing manholes, locate potential contributions of water and sediment infiltration, locate deteriorations in pipe connections, evaluate current sediment accumulations, and identify other possible sewer pipe failures.

As previously discussed, in 1997, the Yard was divided into Operable Units and the investigation of OU-5 was determined to be most appropriate after the completion of the RI/FS process in OU-3, OU–4, and OU–6. Therefore, none of the recommended actions discussed in the 1997 report were performed.

2.3.5 June 2009 Sewer System Visual Inspection

A preliminary OU-5 RI field survey consisting of a visual inspection of the sewer system and its components was conducted in June 2009. The presence of sediments within some manholes was confirmed. Table 5 presents a summary of the observations made during the 2009 field survey.

2.4 Industrial Wastewater Discharge Permit Sampling

Although not part of the OU-5 RI, industrial wastewater discharge sampling is performed in the sewer systems at the Yard. That data is included below for completeness. On July 21, 2004, the NYCDEP issued Industrial Wastewater Discharge Permit (IWDP) No. 04-P3069-1 to Amtrak authorizing the discharge of industrial wastewater from the Yard into the New York City sewerage system and identifying two discharge monitoring points, determined to be MH-43 and MH-2. On August 17, 2004, NYCDEP issued IWDP No. 04-P3069-2 to supersede No. 04-3069-1, effective August 20, 2004, which removed monitoring point MH-43 from the permit requirement. The sampling requirement in the NYCDEP IWDP No. 04-P3069-2 included monthly pH sampling, and twice yearly collection of discharge samples for VOCs, SVOCs, priority pollutant metals plus Molybdenum, non-polar material, and total suspended solids (TSS) analyses. On September 27, 2005, a waiver was issued removing TSS from the permit sampling requirement.

Beginning in December 2004, Roux Associates has collected the IWDP required samples for laboratory analyses. In accordance with the IWDP, the samples were collected on four consecutive days, twice yearly from MH-2 and analyzed for the parameters listed above. Additionally, a sewer water sample was collected from the secondary sewer system at the most downstream manhole at the Yard (MH-1) as part of the previously completed Phase II RI. Although not part of the IWDP sampling program, this data was included for completeness. The analytical results for metals from all primary and secondary sewer system water samples, compared to IWDP instantaneous maximum permissible concentration levels, are presented on Tables 6 and 7, respectively. The analytical results for non-polar material from all primary sewer system water samples, compared to IWDP instantaneous maximum permissible concentration levels, are presented on Table 8. The analytical results for additional parameters (VOCs, SVOCs, and metals) from all primary and secondary sewer system water samples without corresponding IWDP discharge levels are included on Tables A-1 through A-6 in Appendix A for completeness.

A review of the sewer water data from the primary sewer system resulting from IWDP sampling indicates that the instantaneous maximum permissible concentration for any of the pollutants described in Part I of the IWDP has not been exceeded.

3.0 PROPOSED SCOPE OF WORK FOR THE OU-5 REMEDIAL INVESTIGATION

The OU-5 RI scope of work will be completed in accordance with the applicable Federal and State regulatory requirements, as well as in accordance with the following documents prepared by Roux Associates:

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

These plans are included as Appendix B through E.

Based on the discussions and rationale provided in the preceding sections, to meet the objectives of the OU-5 RI, further remedial investigation activities are not warranted in the secondary sewer system. Therefore, the proposed OU-5 RI scope of work is focused on the primary sewer system (defined hereafter as the "Sewer System"). The proposed scope of work for the OU-5 RI includes the following tasks:

- Task 1: Sewer System Mapping and Verification
- Task 2: Sewer Sediment and Sewer Water Sampling
- Task 3: Limited Sewer Camera Inspection
- Task 4: Oversight of ESA Project Sewer Modification Work
- Task 5: Preparation of OU-5 RI Report

A detailed description of the scope of work for each of these tasks is provided below.

3.1 Task 1: Sewer System Mapping and Verification

Historically, the Sewer System beneath the Yard has undergone modifications due to additions and changes in the Yard and its functions. Over time these changes within the Yard that have affected the Sewer System have included, but are not limited to, the construction and demolition of buildings and structures, construction and removal of track, addition of temporary facilities (i.e., trailers), modifications to subsurface utilities, modifications to surface cover, modifications to the bridges passing over the Yard, and soil excavation and regrading activities. OU-5 is defined as the Sewer System beneath the Yard; therefore, it is critical to define and understand the components and elements that make up this Sewer System.

The purpose of this task is to define OU-5 by identifying current components of the Sewer System, with the ultimate objective being the development of an accurate sewer base map. Based on previous investigations conducted at the Yard and historical site knowledge, Roux Associates has an accurate understanding of the current Yard Sewer System configuration (presented in Plate 1). However, due to the significant ongoing recent construction taking place in the Yard that will impact the Sewer System, this task is an important component to this Work Plan. Examples of ongoing major sewer modifications include the construction of a temporary sewer line that bypasses MH-54 and diverts the flow from MH-53 to MH-55. This modification was completed as part of the ongoing construction efforts by the ESA Project due to the interference of this sewer segment with the proposed emergency exit from three tunnels to be constructed under Contract CQ031. Additionally, ESA Project has recently installed a sewer line running south to north, ending immediately south of the Standard Motor Products building. Two excavations (one immediately south of the Standard Motor Products building, and one near MH-25) were used to facilitate the horizontal drilling activities for the installation of the sewer line. Under Contract CH053, this sewer line is proposed to be connected downstream of MH-13, in the sewer segment from MH-12 to MH-13.

The visual inspection proposed under this task will serve to verify the following conditions:

1. Location of the connection between the new north to south sewer and the segment MH-12 to MH-13.

2. Confirm that the manhole downstream of MH-72 is MH-34 or whether it is MH-43. This connection needs to be identified in order to understand potential source(s) of PCBs into MH-35 and MH-42.

3. Confirm accessibility of MH-5, MH-6, MH-29, MH-35, MH-37, MH-40, and MH-45. These manholes were previously identified to contain PCBs contaminated sediments and/or water and access will be needed to conduct further sampling.

4. Verify existence of any pipe connection between the sewer segments from MH-57 to MH-56.

5. Confirm there have not been any other significant modifications to the Sewer System that have not been documented in the current Sewer Base Map (Plate 1).

During the visual inspection, additional sampling locations may be added if conditions warrant, and will target sewers potentially impacted by ESA Project soil handling (i.e., near 39th Street Bridge and REA Platform). Defining and understanding the Sewer System will lead to an accurate Sewer System base map that will be used to prepare the OU-5 feasibility Study and possibly identify targeted remedial action locations.

3.2 Task 2: Sewer Sediment Sampling and Sewer Water Sampling

The function of the Sewer System is simply to carry off sewage and stormwater runoff to the NYCDEP's combined sewer system to ultimately discharge to the Bowery Bay Wastewater Treatment Plant. Characteristics of the flows reaching the Sewer System at the Yard are mainly affected by the quality of surface runoff which, in turn, is affected by any above grade activity, especially construction activities. If runoff contains contaminants, these contaminants may become a source of pollution into the Sewer System. That is why it is important to understand flow transport during dry weather and during wet weather events. Additionally, track drains can be a source of runoff into the Sewer System.

Sewer sediment and sewer water samples will be collected from the following selected locations: MH-2, MH-3, MH-5, MH-6, MH-7, MH-8, MH-37, MH-40, MH-42, MH-45, MH-51, MH-52, MH-55, and MH-69, if found to be accessible and contain sufficient sediment (Refer to Plate 1 for manhole locations). Analytical results from previous investigations were evaluated in order to identify proposed sampling locations under this task. Based on the NYSDEC/NYSDOH determination of Site Specific Soil Cleanup Levels and Part 375 Industrial standards, if the concentration of PCBs in sewer sediments were greater than 25,000 µg/kg at any given sampling round, the location was targeted for sampling under this task. In addition to the above criteria, locations where changes to the sewer system due to the High Speed Rail Facility Construction, OU-3 remediation and construction in the Car Washer area were also selected for sampling as described in the following table.

Manhole Designation	Justification
MH-2	Previous sampling indicated PCB concentrations exceeded 25 ppm in sediment
MH-3	Previous sampling indicated PCB concentrations exceeded 25 ppm in sediment
MH-5	Sewer system changes due to High Speed Rail Facility construction and OU-3 remediation
MH-6	Sewer system changes due to High Speed Rail Facility construction and OU-3 remediation
MH-7	Sewer system changes due to High Speed Rail Facility construction and OU-3 remediation
MH-8	Sewer system changes due to High Speed Rail Facility construction and OU-3 remediation
MH-37	Previous sampling indicated PCB concentrations exceeded 25 ppm in sediment
MH-40	Previous sampling indicated PCB concentrations exceeded 25 ppm in sediment
MH-42	Previous sampling indicated PCB concentrations exceeded 25 ppm in sediment
MH-45	Sewer system changes due to construction in Car Washer area
MH-51	Characterize PCBs upstream of MH-52 location
MH-52	Previous sampling indicated PCB concentrations exceeded 25 ppm in sediment
MH-55	Previous sampling indicated PCB concentrations exceeded 25 ppm in sediment
MH-69	Previous sampling indicated PCB concentrations exceeded 25 ppm in sediment

PCB-containing sediments were detected in MH-52 during previous investigations. In order to characterize PCBs upstream of this location, MH-51 is recommended for sampling under this task.

The following describes the main items of work to be completed under this task; the FSP attached as Appendix B describes this protocol in more detail:

1. Sampling will exclude sewers ESA Project proposes to clean and abandon in place or remove, as ESA Project is responsible for characterizing these sewers under their Stipulation Agreement with NYSDEC. Roux Associates will incorporate any sewer characterization data for the Yard provided by ESA Project into the OU-5 RI Report.

2. Sewer sediment and sewer water samples will be taken from all selected locations shown in Plate 3, if possible.

3. An initial sewer water sampling round will be conducted during dry weather conditions.

4. A second sewer water sampling round will be conducted during one wet weather event (i.e., 0.5 inches of rain in 24 hours).

5. A third sewer water sampling round will be conducted immediately following the end of the wet weather event.

6. Both filtered and unfiltered sewer water samples will be collected in the locations where sewer water is proposed to be sampled.

7. Sewer water flow measurements will be collected from all manholes selected for sampling (as shown in Plate 3). These flow measurement locations have been strategically selected in order to understand flow patterns within the Sewer System.

Analytical results will be used in determining if areas of the Sewer System will require further investigation or possibly be targeted in the subsequent FS for remedial action.

It is important to note that the proposed samples are dependent on the presence of sufficient quantities of water and or sediment at the time of sampling. It should be noted that a minimum of an eight-ounce sediment sample is required for accurate laboratory analysis which may preclude sample collection at some locations. Both sewer sediment and sewer water samples will be analyzed for PCBs by United States Environmental Protection Agency (USEPA) Method 8082, in accordance with NYSDEC Analytical Services Protocol (ASP) using the USEPA SW 846 methodology. Sample results will be presented in ASP Category B deliverable package format and the data will be validated. All samples will be analyzed on a standard 14-day turnaround time.

3.3 Task 3: Sewer Camera Inspection

Portions of the Sewer System were constructed over 100 years ago and portions of the system have not received adequate upgrades, maintenance, and repairs over time. In addition, a wide variety of materials, designs, and installation practices to construct sewer collection systems might have led to occasional blockages or structural failures. Combined sewer systems are designed to carry sanitary and stormwater in the same pipe to a sewage treatment plant.

In periods of rainfall or snow melt, however, the wastewater volume in a municipal combined sewer system can exceed the capacity of the sewer system or treatment plant. For this reason, combined sewer systems are designed to overflow occasionally and discharge excess wastewater directly to surface water bodies. Overflows may also occur when the collection system experiences pipe blockages, pipe breaks, infiltration, and inflow from leaky pipes, equipment failures, and insufficient system capacity.

Although it is not known at this time the source of sediments entering the Sewer System, it is likely that infiltration through cracks in the pipes could be a source. The need for a sewer camera inspection will be determined based on the results of the sewer water and sediment sampling task (Task 2). If a camera survey is deemed necessary in any part of the Sewer System, Roux Associates will perform the survey in accordance with the scope of work included in this Work Plan. Prior to completing camera survey activities, Roux Associates will submit a written notification to the NYSDEC, including a plan of the exact locations were the camera inspection would be performed. The purpose of the inspection would be to locate potential contributors of waste and sediment infiltration, deteriorations in pipe connections, evaluate current sediment accumulations within the pipes, and identify other possible sewer pipe failures. Other Sewer System elements such as interconnections between manholes and interconnections of track drains that could not be identified during visual inspections from land surface could be identified during the sewer camera inspection.

This task is would be mainly designed to evaluate specific locations between manholes identified after results from Task 2 are received and evaluated. A detailed discussion of the procedures that would be followed during the sewer camera inspection is provided in the FSP (Appendix B). In general, structural defects found within the inspected sewer segments would be recorded and, in some instances, PCB-containing sediments entering the Sewer System would be identified during the inspection. During the sewer camera inspection, the Sewer System would be evaluated to identify structural conditions of potentially affected sewer lines containing accumulation of sediments.

It is a good practice to always internally inspect gravity sanitary sewer lines prior to acceptance of connection or future use, especially when flows to be carried by the Sewer System are expected to increase. Roux Associates will consider locations where flow will likely increase due to proposed modifications to the Sewer System as a result of ESA Project construction when evaluating potential camera survey locations. It is not clear at this time if ESA Project will be conducting sewer camera inspections as part of their work. If, however, camera inspections are completed by ESA Project and made available to Roux Associates, this information will be incorporated into the OU-5 RI Report.

3.4 Task 4: Oversight of ESA Project Sewer Modification Work

Since the ESA Project includes the construction of new tunnels in Queens beneath Amtrak's Sunnyside Yard, drawings prepared as part of the ESA Project to determine any additions and proposed modifications to the sewer systems in the Yard were reviewed. Based on our review, significant additions will be made to the Yard Sewer System as part of the ESA Project. One of the more notable additions include the addition of a 1,200 foot long sewer line running north to south (beginning just south of the Standard Motor Products Site and ending on the south side of the LIRR main line) which construction has already started. Details of the Yard-wide Sewer System and proposed additions and modifications as part of the ESA Project are shown on Plate 4.

Any modification to the Sewer System, after submission of this work plan to the NYSDEC, may impact some RI activities planned for OU-5. Roux Associates has prepared this Work Plan on behalf of Amtrak and New Jersey Transit, in accordance with the provisions of the Order on Consent between the NYSDEC, Amtrak, and New Jersey Transit therefore it is recommended that under this task, Roux Associates be informed of any significant ESA Project sewer work including but not limited to cleaning, abandonment, tie-ins, and new connections of new sewers to existing sewers.

The ESA Project is proposing to introduce drainage from the eastern portion of the North Yard, and anticipates discharging this flow downstream of MH-2 into the sewer segment from MH-2 to MH-40. In addition, since flow from the tunnels cannot be discharged by gravity into the 6 foot x 4 foot combined sewer downstream of MH-2, a new pump station is planned to be constructed near the existing temporary line located between MH-53 and MH-55. Manhole MH-55 was one of the locations previously identified with low concentrations of PCB containing sediments. As mentioned before, the pump station will handle dewatering flow from all the tunnels as well as increased flow from water introduced by fire suppression systems in the event of an emergency and it will be located at the lowest point of discharge. Groundwater and tunnel leakages will be directed to this new pump station.

Another modification to the Sewer System that could potentially modify RI activities planned for OU-5 is the construction of a second pump station, not yet sized, that will be installed near MH-56 and that will handle flow from the westbound bypass structure. The west bound bypass structure will not be able to be drained by gravity. In order to handle that flow, this second pump station will be constructed. The west bound structure will not be an underground structure and a drainage pipe is not scheduled to be installed and/or tied into the Sewer System. However, this "open-drainage" will be discharged into the new pump station for future conveyance into the Sewer System, upstream of MH-40.

There are currently four contract packages under the ESA Project that will affect the Sewer System, but only three could potentially affect the RI activities planned for OU-5. Details of the Yard-wide Sewer System and proposed additions and modifications as part of the ESA Project are shown on Plate 4.

3.4.1 Harold Structures – Part 1 and G.O.2 Substation (Contract CH053)

This contract will include the removal of an inactive 36-inch storm sewer located just west of the 39th Street Bridge, and the installation of a new north-south storm sewer. The new line would cross an existing 36-inch storm sewer line at a different elevation but the present location of the existing 36-inch storm sewer line interferes with the location of the ESA Project proposed Receiving Pit. According to ESA Project representatives, the existing line is not presently connected to any existing sewer line and does not service any area of the Yard. It has been proposed by ESA Project that the line be abandoned in place and filled in with concrete to eliminate any potential future conflicts. The new north-south storm sewer will be constructed to handle flow from the new approach structures. This new line will connect to the existing east-west combined sewer line near MH-12 (near the Standard Motors Products Building). The introduction of contaminated surface runoff due to this modification is not likely to occur, however, flow will likely increase substantially in the east-west sewer line located south of Northern Boulevard.

3.4.2 Harold Structures – Part 2 (Contract CH054)

A new 2,600 foot long storm sewer will be constructed parallel to Skillman Avenue and some sewer segments, including the sewer segment from MH-56 to 57, are anticipated to be grouted in place under a separate contract (CH057).

3.4.3 Harold Structures – Part 3 Eastbound Reroute and Westbound Bypass Structures (Contract CH057)

Modifications due to this contract are not anticipated to interfere with OU-5 RI activities.

3.4.4 Queens Bored Tunnels, Structures and Track Work (Contract CQ031)

Under this contract, there are three separate components that will affect the Sewer System. One of them has been partially completed to date. To facilitate the launch wall for the Tunnel Boring Machine, ESA Project will relocate the 48-inch combined sewer segment from MH-53 to MH-55. To date, MTA has blocked flow in the 48-inch combined sewer line, and installed a temporary sewer connection between MH-53 and MH-55. In the near future, ESA Project will remove the 48-inch combined sewer line, and install the new permanent connection, as show in Plate 4.

The ESA Project proposes to insert a 39-inch sleeve steel pipe, as part of this contract, to reinforce the existing 42-inch RCP located within the sewer segment from MH-45 to MH-44. This modification will reduce the diameter of the existing pipe, which in turn will reduce its flow carrying capacity. In addition, the proposed tunnel emergency exit location interferes with a portion of the existing sewer line from MH-45 to MH-44. The flow will be diverted to a new 42-inch sewer pipe that will be provided to bypass the proposed tunnel emergency exit. These modifications will occur downstream of MH-45 where PCB containing sediments were found during previous investigations. Overall, the scope of work of this contract will potentially affect the anticipated RI activities.

As part of a separate contract under the ESA Project, a segment of the existing secondary sewer system is scheduled to undergo pressure cleaning and inspection for its future reuse. Drainage from the new storage yard, located on MTA property, northwestern of the yard (west of MH-53) will be discharged into this existing storm sewer. The inspection of the storm sewer will start at the first manhole just west of Queens Blvd., ending at the discharge outfall to Dutch kills Basin.

This segment of storm sewer will be pressure cleaned and closed circuit television inspected to understand structural conditions for its future reuse. This will affect only the secondary sewer system, and it not expected to have an impact on the OU-5 RI.

3.5 Task 5: Preparation of Final OU-5 RI Report

The OU-5 RI report will incorporate all sewer data generated as part of previous investigations conducted by Roux Associates, all relevant data generated by ESA Project and provided to Roux Associates related to OU-5, and all newly generated OU-5 RI data (as described above). The OU-5 RI report will provide comprehensive maps showing Sewer System layout and flow direction as well as sample locations.

Roux Associates will prepare a Final RI report to provide results of the Sewer System investigation activities described above. The Final RI report will be completed in accordance with the applicable Federal and State regulatory requirements.

Following completion and NYSDEC approval of the OU-5 Final RI Report, an OU-5 Feasibility Study Report will be prepared. The OU-5 Feasibility Study Report will consider all data included in the Final RI Report as well as status of remedial activities in OU3 and OU4 and Project sewer modifications scheduling.

4.0 REFERENCES

Roux Associates, Inc.; 1993. Work Plan for the Additional Investigation of the Sewer System, Sunnyside Yard, Queens, New York. June 17, 1993; revised August 10, 1993.

Roux Associates, Inc.; 1994. Results of Sewer Sampling Program and Oil/Water Separator Inspection and Evaluation, Sunnyside Yard, Queens, New York. September 6, 1994.

Roux Associates, Inc.; 1995. Phase II Remedial Investigation, Sunnyside Yard, Queens, New York. February 15, 1995.

Roux Associates, Inc.; 1996. Summary of the Results for the June-July 1996 Sewer Sampling Program and Recommended Scope of Work, Sunnyside Yard, Queens, New York. November 1, 1996.

Roux Associates, Inc.; 1997. Summary of the Results for the Expanded Sewer System Investigation, Sunnyside Yard, Queens, New York. August 28, 1997.

East Side Access; 2008. Queens Construction within Amtrak Sunnyside Yard. Construction Contamination Site Management Plan and Final Stipulations List.

Table 1. Summary of Polychlorinated Biphenyl Compound Concentrations in Sewer-Sediment Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Sample Designation:	CB-4	MHS-2	MHS-2	MHS-2	MHS-2DL	MH-2	MH-3	MHS-3	MHS-3
	Sample Date:	11/12/1996	2/9/1993	4/26/1994	7/26/1996	7/26/1996	11/12/1996	11/13/1996	2/8/1993	3/11/1997
	Location:	CB-4	MH-2	MH-2	MH-2	MH-2	MH-2	MH-3	MH-3	MH-3
Aroclor-1016		2000 U	5400 U	1200 U	530 U	5300 U	2200 U	8100 U	4100 U	210 U
Aroclor-1221		4000 U	11000 U	1200 U	1100 U	11000 U	4400 U	16000 U	8400 U	420 U
Aroclor-1232		2000 U	5400 U	1200 U	530 U	5300 U	2200 U	8100 U	4100 U	210 U
Aroclor-1242		2000 U	5400 U	1200 U	530 U	5300 U	2200 U	8100 U	3000 JV	210 U
Aroclor-1248		590 JP	5400 U	2000 J	6100	7300 PD	660 J	2500 J	4100 U	210 U
Aroclor-1254		4200	24000 V	2400 U	8000 P	11000 PD	3100 P	17000	29000 V	520
Aroclor-1260		2600	58000 V	9900 J	21000 P	37000 D	5000	13000	22000 V	860
Total PCBs		7390	82000	11900	35100	55300	8760	32500	54000	1380

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

P - There is a greater than 25 percent difference for detected concentrations between the two GC columns Aroclor target analyte

D - Compound identified in an analysis at a secondary dilution

µg/kg - Micrograms per kilograms

PCBs - Polychlorinated Biphenyls

Table 1. Summary of Polychlorinated Biphenyl Compound Concentrations in Sewer-Sediment Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	**Sample Designation:**	MH-5	MHS-8DL	MH-8	MH-11	MHS-29	MHS-35	MHS-37	MH-37	MHS-40 (48) E
	Sample Date:	11/13/1996	2/9/1993	11/12/1996	3/11/1997	4/27/1994	4/28/1994	4/28/1994	11/12/1996	4/25/1994
	Location:	MH-5	MH-8	MH-8	MH-11	MH-29	MH-35	MH-37	MH-37	MH-40
Aroclor-1016		8900 U	430 U	39 U	2100 U	100 U	170 U	510 U	8400 U	1000 U
Aroclor-1221		18000 U	870 U	79 U	4300 U	100 U	170 U	510 U	17000 U	1000 U
Aroclor-1232		8900 U	430 U	39 U	2100 U	100 U	170 U	510 U	8400 U	1000 U
Aroclor-1242		8900 U	430 U	39 U	2100 U	100 U	700	510 U	8400 U	1000 U
Aroclor-1248		8900 U	430 U	39 U	2100 U	100 U	170 U	510 U	8400 U	5200 J
Aroclor-1254		16000 P	1300 JV	40	2100 U	200 U	340 U	1000 U	7000 JP	2000 U
Aroclor-1260		2800 JP	2900 V	100	1000 J	170 J	250 J	9400	31000	11000 J
Total PCBs		18800	4200	140	1000	170	950	9400	38000	16200

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

P - There is a greater than 25 percent difference for detected concentrations between the two GC columns Aroclor target analyte

D - Compound identified in an analysis at a secondary dilution

µg/kg - Micrograms per kilograms

PCBs - Polychlorinated Biphenyls

Table 1. Summary of Polychlorinated Biphenyl Compound Concentrations in Sewer-Sediment Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Date: / Location:	MHS-40 (4x8) S	MHS-40	MH-40	MHS-42	MHS-42	MHS-42DL	MH-42	MHS-45	MHS-52
	Sample Date:	4/25/1994	7/26/1996	11/13/1996	4/26/1994	8/15/1996	8/15/1996	11/12/1996	4/28/1994	4/26/1994
	Location:	MH-40	MH-40	MH-40	MH-42	MH-42	MH-42	MH-42	MH-45	MH-52
Aroclor-1016		1000 U	8000 U	46000 U	2100 U	33 U	33 U	2200 U	110 U	110 U
Aroclor-1221		1000 U	16000 U	94000 U	2100 U	67 U	67 U	4500 U	110 U	110 U
Aroclor-1232		1000 U	8000 U	46000 U	2100 U	33 U	33 U	2200 U	110 U	110 U
Aroclor-1242		1000 U	8000 U	46000 U	2100 U	33 U	33 U	2200 U	110 U	110 U
Aroclor-1248		2100 J	4900 JP	46000 U	13000 J	33 U	33 U	2200 U	53 J	110 U
Aroclor-1254		2000 U	34000 P	50000 P	4300 U	610	970 D	3100	700 J	1600 J
Aroclor-1260		13000 J	110000	110000 P	38000 J	1200 P	2000 PD	2300	750 J	1300 J
Total PCBs		15100	148900	160000	51000	1810	2970	5400	1503	2900

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

P - There is a greater than 25 percent difference for detected concentrations between the two GC columns Aroclor target analyte

D - Compound identified in an analysis at a secondary dilution

µg/kg - Micrograms per kilograms

PCBs - Polychlorinated Biphenyls

Table 1. Summary of Polychlorinated Biphenyl Compound Concentrations in Sewer-Sediment Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)	Sample Designation:	MH-52	MH-52	MHS-55	MH-55	MHS-69 (18) NE	MHS-69 (36) E	MH-69
	Sample Date:	11/12/1996	3/11/1997	4/26/1994	11/12/1996	4/28/1994	4/28/1994	11/12/1996
	Location:	MH-52	MH-52	MH-55	MH-55	MH-69	MH-69	MH-69
Aroclor-1016		2300 U	8500 U	1000 U	970 U	1100 U	2000 U	40 U
Aroclor-1221		4700 U	17000 U	1000 U	2000 U	1100 U	2000 U	82 U
Aroclor-1232		2300 U	8500 U	1000 U	970 U	1100 U	2000 U	40 U
Aroclor-1242		2300 U	8500 U	1000 U	970 U	1100 U	2000 U	40 U
Aroclor-1248		2300 U	8100 J	1000 U	500 JP	1100 U	2000 U	40 U
Aroclor-1254		4300	34000	13000 J	2100	2100 U	4100 U	46
Aroclor-1260		4300	49000	12000 J	1700	4700	29000 J	99
Total PCBs		8600	91100	25000	4300	4700	29000	145

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

P - There is a greater than 25 percent difference for detected concentrations between the two GC columns Aroclor target analyte

D - Compound identified in an analysis at a secondary dilution

µg/kg - Micrograms per kilograms

PCBs - Polychlorinated Biphenyls

Table 2. Summary of Polychlorinated Biphenyl Concentrations in Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MHW-2 2/9/1993 MH-2	MHW-2 (4x8)N 4/26/1994 MH-2	MHWF-2 (4x8)N 4/26/1994 MH-2	MHW-2 7/26/1996 MH-2	MHWF-2 7/26/1996 MH-2	MHW-3 2/8/1993 MH-3	MHW-3 7/26/1996 MH-3
Aroclor-1016		0.065 U	0.065 UJ	0.065 UJ	1.0 U	1.0 U	0.065 U	1.0 U
Aroclor-1221		0.065 U	0.065 UJ	0.065 UJ	2.0 U	2.0 U	0.065 U	2.0 U
Aroclor-1232		0.065 U	0.065 UJ	0.065 UJ	1.0 U	1.0 U	0.065 U	1.0 U
Aroclor-1242		0.065 U	0.065 UJ	0.065 UJ	1.0 U	1.0 U	0.065 U	1.0 U
Aroclor-1248		0.065 U	0.065 UJ	0.065 UJ	1.0 U	1.0 U	0.065 U	1.0 U
Aroclor-1254		1.1 JV	0.23 J	0.065 UJ	0.084 JP	1.0 U	0.32 UV	0.35 P
Aroclor-1260		1.2 JV	0.43 J	0.065 UJ	0.14 P	0.1	0.31 UV	0.54
Total PCBs		2.3	0.66	0	0.224	0.1	0	0.89

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

P – Aroclor concentrations between two GC columns differed by greater than 25 percent

µg/L - Micrograms per liter

ft bls - Feet below land surface

PCBs - Polychlorinated Biphenyls

Table 2. Summary of Polychlorinated Biphenyl Concentrations in Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:**	MHWF-3	MHW-5	MHW-5	MHW-6	MHW-6	MHW-7	MHW-8
	Sample Date:	7/26/1996	2/8/1993	7/26/1996	2/8/1993	7/26/1996	2/8/1993	2/9/1993
	Location:	MH-3	MH-5	MH-5	MH-6	MH-6	MH-7	MH-8
Aroclor-1016		1.0 U	0.065 U	1.0 U	0.067 U	1.0 U	0.32 U	0.33 U
Aroclor-1221		2.0 U	0.065 U	2.0 U	0.067 U	2.0 U	0.32 U	0.33 U
Aroclor-1232		1.0 U	0.065 U	1.0 U	0.067 U	1.0 U	0.32 U	0.33 U
Aroclor-1242		1.0 U	0.065 U	1.0 U	0.067 U	1.0 U	0.32 U	0.33 U
Aroclor-1248		1.0 U	0.065 U	1.0 U	0.067 U	1.0 U	2.6	0.33 U
Aroclor-1254		1.0 U	0.065 U	0.034 J	0.48 UV	1.0 U	5.9	9.6 JV
Aroclor-1260		0.017 JP	0.065 U	0.043 J	0.33 UV	0.015 JP	6.3	11 JV
Total PCBs		0.017	0	0.077	0	0.015	14.8	20.6

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
P – Aroclor concentrations between two GC columns differed by greater than 25 percent
µg/L - Micrograms per liter
ft bls - Feet below land surface
PCBs - Polychlorinated Biphenyls

Table 2. Summary of Polychlorinated Biphenyl Concentrations in Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	MHW-29	MHW-37	MHW-39	MHW-39 (24)S	MHW-40 (4x8)S	MHW-40 (48)E	MHWF-40 (48)E
	Sample Date:	4/27/1994	7/26/1996	4/26/1994	4/26/1994	4/25/1994	4/25/1994	4/25/1994
	Location:	MH-29	MH-37	MH-39	MH-39	MH-40	MH-40	MH-40
Aroclor-1016		0.50 U	1.0 U	0.065 UJ	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1221		0.50 U	2.0 U	0.065 UJ	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1232		0.50 U	1.0 U	0.065 UJ	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1242		0.50 U	1.0 U	0.065 UJ	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1248		0.50 U	1.0 U	0.065 UJ	0.065 U	0.065 U	0.065 U	0.065 U
Aroclor-1254		1.0 U	1.0 U	0.065 UJ	0.065 U	0.065 U	0.24 J	0.065 U
Aroclor-1260		1.0 U	0.14 P	0.20 J	0.065 U	0.065 U	0.27 J	0.065 U
Total PCBs		0	0.14	0.2	0	0	0.51	0

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

P – Aroclor concentrations between two GC columns differed by greater than 25 percent

µg/L - Micrograms per liter

ft bls - Feet below land surface

PCBs - Polychlorinated Biphenyls

Table 2. Summary of Polychlorinated Biphenyl Concentrations in Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation:	MHW-40	MHWF-40	MHW-42	MHW-42D	MHW-43	MHW-43 DUP
	Sample Date:	7/26/1996	7/26/1996	7/26/1996	7/26/1996	4/27/1994	4/27/1994
	Location:	MH-40	MH-40	MH-42	MH-42	MH-43	MH-43
Aroclor-1016		1.0 U	1.0 U	1.0 U	1.0 U	0.065 UJ	0.065 U
Aroclor-1221		2.0 U	2.0 U	2.0 U	2.0 U	0.065 UJ	0.065 U
Aroclor-1232		1.0 U	1.0 U	1.0 U	1.0 U	0.065 UJ	0.065 U
Aroclor-1242		1.0 U	1.0 U	1.0 U	1.0 U	0.065 UJ	0.065 U
Aroclor-1248		1.0 U	1.0 U	1.0 U	1.0 U	0.065 UJ	0.065 U
Aroclor-1254		0.26 P	1.0 U	0.18 P	0.14 P	0.065 UJ	0.22 J
Aroclor-1260		0.36	0.015 JP	0.73	0.48	0.065 UJ	0.56 J
Total PCBs		0.62	0.015	0.91	0.62	0	0.78

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
P – Aroclor concentrations between two GC columns differed by greater than 25 percent
µg/L - Micrograms per liter
ft bls - Feet below land surface
PCBs - Polychlorinated Biphenyls

Table 2. Summary of Polychlorinated Biphenyl Concentrations in Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation:	MHW-52 (10)N	MHW-52 (18)SE	MHW-52 (42)SW	MHWF-52 (42)SW	MHW-52	MHW-69
	Sample Date:	4/26/1994	4/26/1994	4/26/1994	4/26/1994	7/26/1996	4/28/1994
	Location:	MH-52	MH-52	MH-52	MH-52	MH-52	MH-69
Aroclor-1016		0.065 U	0.065 U	0.065 U	0.065 UJ	1.0 U	0.050 U
Aroclor-1221		0.065 U	0.065 U	0.065 U	0.065 UJ	2.0 U	0.050 U
Aroclor-1232		0.065 U	0.065 U	0.065 U	0.065 UJ	1.0 U	0.050 U
Aroclor-1242		0.065 U	0.065 U	0.065 U	0.065 UJ	1.0 U	0.050 U
Aroclor-1248		0.065 U	0.065 U	0.065 U	0.065 UJ	1.0 U	0.050 U
Aroclor-1254		0.065 U	0.065 U	0.065 U	0.065 UJ	1.0 U	1.0 U
Aroclor-1260		0.065 U	0.065 U	0.065 U	0.065 UJ	0.29	4.4
Total PCBs		0	0	0	0	0.29	4.4

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

P – Aroclor concentrations between two GC columns differed by greater than 25 percent

µg/L - Micrograms per liter

ft bls - Feet below land surface

PCBs - Polychlorinated Biphenyls

Table 3. Summary of Polychlorinated Biphenyl Compound Concentrations in Sewer-Sediment Samples Collected in the Secondary Sewer System, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/kg)		CBS-28	MHS-1	MHS-65
	Sample Designation:	CBS-28	MHS-1	MHS-65
	Sample Date:	4/28/1994	4/28/1994	4/28/1994
	Location:	CB-28	MH-1	MH-65
Aroclor-1016		96 U	530 U	150 U
Aroclor-1221		96 U	530 U	150 U
Aroclor-1232		96 U	530 U	150 U
Aroclor-1242		96 U	530 U	150 U
Aroclor-1248		96 U	530 U	220
Aroclor-1254		230	1800	300 U
Aroclor-1260		260	1700	440
Total PCBs		490	3500	660

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
P - There is a greater than 25 percent difference for detected concentrations between the two GC columns Aroclor target analyte
D - Compound identified in an analysis at a secondary dilution
µg/kg - Micrograms per kilograms
PCBs - Polychlorinated Biphenyls

Table 4. Summary of Polychlorinated Biphenyl Concentrations in Sewer-Water Samples Collected in The Secondary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	CBW-28 4/28/1994 CB-28	MHW-1 2/9/1993 MH-1	MHW-1 4/28/1994 MH-1	MHWF-1 4/28/1994 MH-1	MHW-1 8/15/1996 MH-1	MHWF-1 8/15/1996 MH-1	MHW-59 4/28/1994 MH-59
Aroclor-1016		0.065 UJ	0.066 U	0.065 U	0.065 U	1.0 U	1.0 U	0.065 U
Aroclor-1221		0.065 UJ	0.066 U	0.065 U	0.065 U	2.0 U	2.0 U	0.065 U
Aroclor-1232		0.065 UJ	0.066 U	0.065 U	0.065 U	1.0 U	1.0 U	0.065 U
Aroclor-1242		0.065 UJ	0.066 U	0.065 U	0.065 U	1.0 U	1.0 U	0.065 U
Aroclor-1248		0.065 UJ	0.066 U	0.065 U	0.065 U	1.0 U	1.0 U	0.065 U
Aroclor-1254		0.065 UJ	0.33 UV	0.065 U	0.065 U	1.0 U	1.0 U	0.065 U
Aroclor-1260		0.065 UJ	0.13 UV	0.065 U	0.065 U	1.0 U	1.0 U	0.065 U
Total PCBs		0	0	0	0	0	0	0

J - Estimated value
U - Indicates that the compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
µg/L - Micrograms per liter
ft bls - Feet below land surface
PCBs - Polychlorinated Biphenyls

Table 5. Summary of 2009 Field Survey Observations, Sunnyside Yard, Queens, New York

Sample Location	Cover Type	Flow Speed	Sediment Accumulation	Observations
PRIMARY SEWER SYSTEM (Combined Sewer System)				
MH -2	Solid	Moderate	Moderate	Sediments accumulate around middle pipe
MH-3	Solid	Fast	Minimal	Located within OU-3
MH-4	-	-	-	Could not locate
MH-5	-	-	-	Could not locate
MH-6	-	-	-	Could not locate
MH-7	-	-	-	Not attempted
MH-8	Solid	Moderate	Moderate	
MH-10	-	-	-	Could not locate
MH-11	-	-	-	Could not locate
MH-12	-	-	-	Could not locate
MH-13	-	-	-	Could not locate
MH-14	-	-	-	Could not locate
MH-20	Solid	None	Heavy	
MH-22	Open Grate	Minimal	None	Silty water observed
MH-23	-	-	-	Could not locate
MH-24	Open Grate	Minimal	Minimal	
MH-25	Solid - Rectangular	Minimal	Moderate	
MH-26	-	-	-	Could not locate
MH-27	-	-	-	Could not locate
MH-28	-	-	-	Could not locate
MH-29	Solid	None	Heavy	
MH-30	Solid	None	Moderate	
MH-31	Solid	Moderate	Heavy	
MH-32	Solid	None	Heavy	Standing water observed
MH-33	Solid	None	Heavy	
MH-34	Solid	Moderate	None	
MH-35	Solid	Fast	Minimal	
MH-37	-	-	-	Inspection not attempted
MH-38	Solid	Fast	Minimal	Between tracks 4 and 5
MH-39	-	-	-	Could not locate
MH-40	-	-	-	Could not locate
MH-41	-	-	-	Could not locate
MH-42	Solid	Fast	None	Between tracks 25 and 26
MH-43	Open Grate	Fast	Minimal	
MH-45	-	-	-	Could not locate
MH-46	Solid	Moderate	Minimal	Car washer area
MH-51	Open Grate	Fast	Moderate	Between track 7 and 8
MH-52	Solid	Fast	Minimal	
MH-55	-	-	-	Manhole covered with steel plate as part of ESA on-going construction efforts
MH-57	Solid	None	None	
MH-66	Solid	Moderate	Heavy	Located in HSTF parking lot
MH-67	Solid	None	Heavy	-
MH-68	Solid	Minimal	Heavy	-
MH-69	Open Grate	Minimal	Minimal	-
MH-70	Open Grate	Minimal	Minimal	-
MH-71	Open Grate	Minimal	Heavy	-
MH-72	Open Grate	High	Heavy	-
CB-4	-	-	-	Inspection not attempted
UNK-1	Fast	Fast	Moderate	
UNK-2	Moderate	Moderate	Minimal	

Table 5. Summary of 2009 Field Survey Observations, Sunnyside Yard, Queens, New York

Sample Location	Cover Type	Flow Speed	Sediment Accumulation	Observations
UNK-3	Minimal	Minimal	Moderate	
UNK-4	-	-	-	Could not locate
UNK-5	Minimal	Minimal	Heavy	
UNK-6	Minimal	Minimal	Moderate (sanitary)	
UNK-7	Minimal	Minimal	ND	
UNK-8	None	None	Heavy	
UNK-9	None	None	Heavy	
UNK-10				
UNK-11	Minimal	Minimal	Moderate	
UNK-12	Minimal	Minimal	Minimal	
UNK-13	Moderate	Moderate	Minimal	
UNK-14	Fast	Fast	Heavy	
SECONDARY SEWER SYSTEM (Storm Sewer System)				
MH-1	Solid	Fast	Minimal	-
MH-59	Solid	Fast	Moderate	-
MH-65	-	Fast	Minimal	Missing cover. Temporarily covered with plywood
CB-28	-	-	-	Inspection not attempted

Notes:
Bold - not a previous sampling location

Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:**	4-08-A 9:00 Field comp	4-08 B (COMP)	4-08C FIELD COMPOSITE
		Sample Date:	4/28/2008	4/29/2008	4/30/2008
		Location:	MH-2	MH-2	MH-2
Cadmium	2000		3.5 U	3.5 U	3.7
Chromium, Hexavalent	5000		25 U	25 U	25 U
Copper	5000		300	230	590
Cyanide (Amenable)	200		NA	NA	NA
Lead	2000		48	13	60
Mercury	50		0.7 U	0.7 U	0.7 U
Nickel	3000		50 U	50 U	50 U
Zinc	5000		280	170	320

NYCDEP - New York City Department of Environmental Protection
* - Sewer Use Limits (15 R.C.N.Y. ch.19)
Source: Rules of City of New York Title 15 DEP Chapter 19
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
S – The reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
- - No NYCDEP Limitations available
Bold data indicates that parameter was detected above the NYCDEP Limitations
NA - Compound was not analyzed by laboratory
HSTF - High speed trainset facility

Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** **Sample Date:** **Location:**	4-08D 9:00 Field Comp 5/1/2008 MH-2	06-05A 6/13/2005 MH-2	06-05B 6/14/2005 MH-2	06-05D 6/16/2005 MH-2	6-06A (COMP) 6/12/2006 MH-2
Cadmium	2000		3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	25 U	25 U	25 U
Copper	5000		470	290	240	270	300
Cyanide (Amenable)	200		NA	10 U	10 U	10 U	NA
Lead	2000		66	40	32	20	19
Mercury	50		0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Nickel	3000		50 U	50 U	50 U	50 U	50 U
Zinc	5000		270	350	320	180	210

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Source: Rules of City of New York Title 15 DEP Chapter 19
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** / **Sample Date:** / **Location:**	6-06B COMP 6/13/2006 MH-2	6-06C Composite 6/14/2006 MH-2	6-06D COMPOSITE 6/15/2006 MH-2	6-07 C (Field Comp) 6/27/2007 MH-2
Cadmium	2000		3.5 U	3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	25 U	25 U
Copper	5000		230	230	120	230
Cyanide (Amenable)	200		NA	NA	NA	NA
Lead	2000		28	18	14	30
Mercury	50		0.7 U	0.7 U	0.7 U	0.7 U
Nickel	3000		50 U	50 U	50 U	50 U
Zinc	5000		160	160	110	150

NYCDEP - New York City Department of Environmental Protection
* - Sewer Use Limits (15 R.C.N.Y. ch.19)
Source: Rules of City of New York Title 15 DEP Chapter 19
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
S – The reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
 - - No NYCDEP Limitations available
Bold data indicates that parameter was detected above the NYCDEP Limitations
NA - Compound was not analyzed by laboratory
HSTF - High speed trainset facility

Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** **Sample Date:** **Location:**	6-07 D (Field Comp) 6/28/2007 MH-2	6-07A (Field Comp) 6/25/2007 MH-2	6-07B (Field Composite) 6/26/2007 MH-2
Cadmium	2000		3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	25 U
Copper	5000		220	290	300
Cyanide (Amenable)	200		NA	NA	NA
Lead	2000		37	17	35
Mercury	50		0.7 U	0 U D	0.7 U
Nickel	3000		50 U	50 U	50 U
Zinc	5000		180	160	200

NYCDEP - New York City Department of Environmental Protection
* - Sewer Use Limits (15 R.C.N.Y. ch.19)
Source: Rules of City of New York Title 15 DEP Chapter 19
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
S – The reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
- - No NYCDEP Limitations available
Bold data indicates that parameter was detected above the NYCDEP Limitations
NA - Compound was not analyzed by laboratory
HSTF - High speed trainset facility

Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** **Sample Date:** **Location:**	10-06A 8:30-11:30 COMP 10/10/2006 MH-2	10-06B-600-900 COMP 10/11/2006 MH-2	10-06C 7:00-10:00 10/12/2006 MH-2
Cadmium	2000		3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	25 U
Copper	5000		180	63	350
Cyanide (Amenable)	200		NA	NA	NA
Lead	2000		28	4 U	92
Mercury	50		0.7 U	0.7 U	0.7 U
Nickel	3000		50 U	50 U	50 U
Zinc	5000		140	50 U	250

NYCDEP - New York City Department of Environmental Protection
* - Sewer Use Limits (15 R.C.N.Y. ch.19)
Source: Rules of City of New York Title 15 DEP Chapter 19
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
S – The reported value was determined by the method of standard additions (MSA)
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Bold data indicates that parameter was detected above the NYCDEP Limitations
NA - Compound was not analyzed by laboratory
HSTF - High speed trainset facility

Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** **Sample Date:** **Location:**	10-06D 6:30-9:30 COMP 10/13/2006 MH-2	11-08A Field Comp 11/10/2008 MH-2	11-08B Field Comp 11/11/2008 MH-2
Cadmium	2000		3.5 U	3.7	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	25 U
Copper	5000		260	740	200
Cyanide (Amenable)	200		NA	NA	NA
Lead	2000		72	270	66
Mercury	50		0.7 U	0.7 U	0.7 U
Nickel	3000		50 U	50 U	50 U
Zinc	5000		180	500	160

NYCDEP - New York City Department of Environmental Protection
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Source: Rules of City of New York Title 15 DEP Chapter 19
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
S – The reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** / **Sample Date:** / **Location:**	11-08C Field Comp 11/12/2008 MH-2	11-08D Field Comp 11/13/2008 MH-2	12A-Composite 12/6/2004 MH-2	12B-Composite 12/7/2004 MH-2
Cadmium	2000		3.5 U	3.5 U	5 U	5 U
Chromium, Hexavalent	5000		25 U	25 U	20 U	80 U
Copper	5000		420	170	140	410
Cyanide (Amenable)	200		NA	NA	20 U	20 U
Lead	2000		130	36	14	19
Mercury	50		0.7 U	0.7 U	1 U	1 U
Nickel	3000		50 U	50 U	10 U	10
Zinc	5000		270	130	160	320

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J - Estimated Value
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B – Indicates the analyte was found in the blank as well as the sample
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DUP - Duplicate
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** **Sample Date:** **Location:**	12C-Composite 12/8/2004 MH-2	12D-Composite 12/9/2004 MH-2	12-05 A (Comp) 12/16/2005 MH-2	12-05-B (Comp) 12/19/2005 MH-2	12-05C 12/20/2005 MH-2
Cadmium	2000		5 U	5 U	3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		20 U	80 U	25 U	25 U	25 U
Copper	5000		130	210	500	370	130
Cyanide (Amenable)	200		20 U	20 U	10 U	10 U	10 U
Lead	2000		10	9	75	31	5.9
Mercury	50		1 U	1 U	0.7 U	0.7 U	0.7 U
Nickel	3000		10 U	10	50 U	50 U	50 U
Zinc	5000		150	190	420	310	70

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µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** / **Sample Date:** / **Location:**	12-05 D-COMP 12/21/2005 MH-2	12-07 A (Field Comp) 12/10/2007 MH-2	12-07B FIELD COMP 12/11/2007 MH-2
Cadmium	2000		3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	25 U
Copper	5000		400	360	470
Cyanide (Amenable)	200		10 U	NA	NA
Lead	2000		42	20	26
Mercury	50		0.7 U	0.7 U	0.7 U
Nickel	3000		50 U	50 U	50 U
Zinc	5000		190	240	240

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Source: Rules of City of New York Title 15 DEP Chapter 19
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** / **Sample Date:** / **Location:**	12-07 C (Field Comp) 12/12/2007 MH-2	12-07D (Field Comp) 12/13/2007 MH-2	MHW-2 2/9/1993 MH-2	6209A-MH2 Field Comp 6/2/2009 MH-2
Cadmium	2000		3.5 U	3.5 U	7.8	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	NA	25 U
Copper	5000		620	120	94.5	160
Cyanide (Amenable)	200		NA	NA	NA	NA
Lead	2000		16	7.8	21.6 S	15
Mercury	50		0.7 U	0.7 U	2.0 UV	0.7 U
Nickel	3000		50 U	50 U	21.0 U	50 U
Zinc	5000		200	150	130	110

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Source: Rules of City of New York Title 15 DEP Chapter 19
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
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DUP - Duplicate
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** **Sample Date:** **Location:**	6209B-MH2 Field Comp 6/3/2009 MH-2	6209C-MH2 FIELD COMP 6/4/2009 MH-2	6209D-MH2-Field Comp 6/5/2009 MH-2
Cadmium	2000		3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	25 U
Copper	5000		140	290	210
Cyanide (Amenable)	200		NA	NA	NA
Lead	2000		10	24	35
Mercury	50		0.7 U	0.7 U	0.7 U
Nickel	3000		50 U	50 U	50 U
Zinc	5000		93	130	230

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Source: Rules of City of New York Title 15 DEP Chapter 19
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J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
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DUP - Duplicate
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** **Sample Date:** **Location:**	6909HSRA FIELD COMP 6/9/2009 HSTF	6909HSRB Field Comp 6/10/2009 HSTF	6909HSRC Field Comp 6/11/2009 HSTF
Cadmium	2000		3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	25 U
Copper	5000		230	50 U	50 U
Cyanide (Amenable)	200		NA	NA	NA
Lead	2000		13	13	9.8
Mercury	50		0.7 U	0.7 U	0.7 U
Nickel	3000		50 U	50 U	50 U
Zinc	5000		300	100	79

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J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
S – The reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** / **Sample Date:** / **Location:**	6909HSRD Field COMP 6/12/2009 HSTF	CW-1 8/4/2003 MH-43	CW-1 COMP 8/4/2003 MH-43	CW-2 8/7/2003 MH-43	CW-2 COMP 8/7/2003 MH-43	CW-3 8/8/2003 MH-43
Cadmium	2000		3.5 U	1.4 B	NA	4.6 B	NA	5.2 B
Chromium, Hexavalent	5000		25 U	NA	NA	NA	NA	NA
Copper	5000		50 U	182	NA	419	NA	527
Cyanide (Amenable)	200		NA	NA	NA	NA	NA	NA
Lead	2000		4.9	54.3	NA	57	NA	59.5
Mercury	50		0.7 U	0.2 U	NA	0.2 U	NA	0.2 U
Nickel	3000		50 U	12.4	NA	25.9	NA	26
Zinc	5000		80	121	NA	267	NA	346

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µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** / **Sample Date:** / **Location:**	CW-3 COMP 8/8/2003 MH-43	EH-1 8/4/2003 MH-43	EH-1 COMP 8/4/2003 MH-43	EH-1 8/5/2003 MH-43	EH-1 COMP 8/5/2003 MH-43	EH-1 8/6/2003 MH-43
Cadmium	2000		NA	10 U	NA	10 U	NA	1.8 B
Chromium, Hexavalent	5000		NA	NA	NA	NA	NA	NA
Copper	5000		NA	54.3	NA	165	NA	80.5
Cyanide (Amenable)	200		NA	NA	NA	NA	NA	NA
Lead	2000		NA	10 U	NA	25.6	NA	63.7
Mercury	50		NA	0.2 U	NA	0.2 U	NA	0.2 U
Nickel	3000		NA	10 U	NA	6.5 B	NA	15
Zinc	5000		NA	12.2 B	NA	375	NA	652

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J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** / **Sample Date:** / **Location:**	EH-1 COMP 8/6/2003 MH-43	HS-10/27-FC 10/27/2009 HSTF	HS-10/28-Field Comp 10/28/2009 HSTF	HS-10/29-Field Comp 10/29/2009 HSTF
Cadmium	2000		NA	3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		NA	25 U	25 U	25 U
Copper	5000		NA	50 U	50 U	260
Cyanide (Amenable)	200		NA	NA	NA	NA
Lead	2000		NA	4 U	4 U	61
Mercury	50		NA	0.7 U	0.7 U	0.7 U
Nickel	3000		NA	50 U	50 U	50 U
Zinc	5000		NA	130	75	180

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µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
S – The reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** **Sample Date:** **Location:**	HS-10/30 Field Comp 10/30/2009 MH-2	MH-10/27-FC 10/27/2009 HSTF	MH-10/28-Field Comp 10/28/2009 MH-2
Cadmium	2000		3.5 U	3.5 U	3.5 U
Chromium, Hexavalent	5000		25 U	25 U	25 U
Copper	5000		50 U	180	160
Cyanide (Amenable)	200		NA	NA	NA
Lead	2000		4 U	22	48
Mercury	50		0.7 U	0.7 U	0.7 U
Nickel	3000		50 U	50 U	50 U
Zinc	5000		80	150	140

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µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
S – The reported value was determined by the method of standard additions (MSA)
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Table 6. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	Sample Designation:	MH-10/29-Field Comp	MH-10/30 Field Comp
		Sample Date:	10/29/2009	10/30/2009
		Location:	MH-2	MH-2
Cadmium	2000		3.5 U	3.5 U
Chromium, Hexavalent	5000		25 U	25 U
Copper	5000		50 U	110
Cyanide (Amenable)	200		NA	NA
Lead	2000		4 U	16
Mercury	50		0.7 U	0.7 U
Nickel	3000		50 U	50 U
Zinc	5000		80	85

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J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
S – The reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
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Table 7. Summary of Metals with NYCDEP Sewer Use Limits for Sewer-Water Samples Collected in The Secondary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Permissible Maximum Concentration for Any Given Time*	**Sample Designation:** **Sample Date:** **Location:**	MHW-1 2/9/1993 MH-1
Cadmium	2000		2.0 U
Chromium, Hexavalent	5000		NA
Copper	5000		50.6
Cyanide (Amenable)	200		NA
Lead	2000		15.1
Mercury	50		1.6 UV
Nickel	3000		21.0 U
Zinc	5000		75.5

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µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
DUP - Duplicate
- - No NYCDEP Limitations available
Bold data indicates that parameter was detected above the NYCDEP Limitations
NA - Compound was not analyzed by laboratory

Table 8. Summary of Non-Polar Material with NYCDEP Sewer Use Limits in Sewer-Water Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York

Sample Designation	Location	Sample Date	Permissible Maximum Concentration for Any Given Time*	SGT-HEM (Non-Polar Material) (mg/L)
06-05A	MH-2	6/13/2005	50	3.7
06-05B	MH-2	6/14/2005	50	NA
06-05C	MH-2	6/15/2005	50	1.4 U
06-05D	MH-2	6/16/2005	50	1.5 U
10-06A 8:30	MH-2	10/10/2006	50	1.5 U
10-06A 9:30	MH-2	10/10/2006	50	1.5 U
10-06A 10:30	MH-2	10/10/2006	50	1.5 U
10-06A 11:30	MH-2	10/10/2006	50	1.5 U
10-06B-6:00	MH-2	10/11/2006	50	1.6
10-06B-7:00	MH-2	10/11/2006	50	1.5 U
10-06B-8:00	MH-2	10/11/2006	50	1.4 U
10-06B-9:00	MH-2	10/11/2006	50	2
10-06C-7:00	MH-2	10/12/2006	50	2.1
10-06C-8:00	MH-2	10/12/2006	50	1.4
10-06C-9:00	MH-2	10/12/2006	50	1.5 U
10-06C-10:00	MH-2	10/12/2006	50	1.7
10-06D 6:30	MH-2	10/13/2006	50	4.2
10-06D 7:30	MH-2	10/13/2006	50	1.4
10-06D 8:30	MH-2	10/13/2006	50	1.4 U
10-06D 9:30	MH-2	10/13/2006	50	1.6 U
11-08A 08:30	MH-2	11/10/2008	50	13
11-08A 09:30	MH-2	11/10/2008	50	4.5
11-08A 10:30	MH-2	11/10/2008	50	2.9
11-08A 11:30	MH-2	11/10/2008	50	6
11-08B 0800	MH-2	11/11/2008	50	13
11-08B 0900	MH-2	11/11/2008	50	4.6
11-08B 1000	MH-2	11/11/2008	50	2.2
11-08B 1100	MH-2	11/11/2008	50	2.1
11-08C 0830	MH-2	11/12/2008	50	3.3
11-08C 0930	MH-2	11/12/2008	50	3.9
11-08C 1030	MH-2	11/12/2008	50	4.7
11-08C 1130	MH-2	11/12/2008	50	4.8
11-08D 0830	MH-2	11/13/2008	50	13
11-08D 0930	MH-2	11/13/2008	50	1.6 U
11-08D 1030	MH-2	11/13/2008	50	1.7
11-08D 1130	MH-2	11/13/2008	50	3
12A-Composite	MH-2	12/6/2004	50	5 U
12B-Composite	MH-2	12/7/2004	50	5 U
12C-Composite	MH-2	12/8/2004	50	12
12D-Composite	MH-2	12/9/2004	50	5 U
12-05 D 11:30	MH-2	12/21/2005	50	1.5
12-05 D 12:30	MH-2	12/21/2005	50	2.8
12-05 D 09:30	MH-2	12/21/2005	50	2.2
12-05 D 10:30	MH-2	12/21/2005	50	1.9
12-05-B (0930)	MH-2	12/19/2005	50	1.4
12-05-B (1030)	MH-2	12/19/2005	50	0 U
12-05-B (1130)	MH-2	12/19/2005	50	0 U
12-05-B (Comp)	MH-2	12/19/2005	50	1.4
12-05C 09:45	MH-2	12/20/2005	50	2.5
12-05C 10:45	MH-2	12/20/2005	50	0 U
12-05C 11:45	MH-2	12/20/2005	50	0 U

Table 8. Summary of Non-Polar Material with NYCDEP Sewer Use Limits in Sewer-Water Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York

Sample Designation	Location	Sample Date	Permissible Maximum Concentration for Any Given Time*	SGT-HEM (Non-Polar Material) (mg/L)
12-05C 12:45	MH-2	12/20/2005	50	0 U
12-05E 10:20	MH-2	12/22/2005	50	1.7
12-05E 11:20	MH-2	12/22/2005	50	0 U
12-05E 8:20	MH-2	12/22/2005	50	0 U
12-05E 9:20	MH-2	12/22/2005	50	1.8
12-07 A 11:30	MH-2	12/10/2007	50	4.6
12-07 A 12:30	MH-2	12/10/2007	50	2.1
12-07 A 13:30	MH-2	12/10/2007	50	2.6
12-07 A 14:30	MH-2	12/10/2007	50	7.4
12-07 C 09:30	MH-2	12/12/2007	50	1.6 U
12-07 C 10:30	MH-2	12/12/2007	50	1.5 U
12-07 C 11:30	MH-2	12/12/2007	50	1.5 U
12-07 C 12:30	MH-2	12/12/2007	50	1.5 U
12-07B 10:00	MH-2	12/11/2007	50	3.7
12-07B 11:00	MH-2	12/11/2007	50	5
12-07B 12:00	MH-2	12/11/2007	50	3.7
12-07B 13:00	MH-2	12/11/2007	50	6.3
12-07D 09:30	MH-2	12/13/2007	50	4.9
12-07D 10:30	MH-2	12/13/2007	50	1.6
12-07D 11:30	MH-2	12/13/2007	50	1.5 U
12-07D 12:30	MH-2	12/13/2007	50	1.5 U
4-08 B 08:30	MH-2	4/29/2008	50	1.5 U
4-08 B 09:30	MH-2	4/29/2008	50	1.5 U
4-08 B 10:30	MH-2	4/29/2008	50	2.2
4-08 B 11:30	MH-2	4/29/2008	50	2.6
4-08-A 10:00	MH-2	4/28/2008	50	4
4-08-A 11:00	MH-2	4/28/2008	50	5
4-08-A 12:00	MH-2	4/28/2008	50	1.5 U
4-08-A 9:00	MH-2	4/28/2008	50	1.6
4-08C 10:45	MH-2	4/30/2008	50	1.9
4-08C 11:45	MH-2	4/30/2008	50	2.2
4-08C 8:45	MH-2	4/30/2008	50	1.5 U
4-08C 9:45	MH-2	4/30/2008	50	2.6
4-08D 10:00	MH-2	5/1/2008	50	2.9
4-08D 11:00	MH-2	5/1/2008	50	1.6
4-08D 9:00	MH-2	5/1/2008	50	1.5 U
4-08D12:00	MH-2	5/1/2008	50	1.5 U
6-06-A-0900	MH-2	6/12/2006	50	0 U
6-06-A-1000	MH-2	6/12/2006	50	0 U
6-06-A-1100	MH-2	6/12/2006	50	0 U
6-06-A-1200	MH-2	6/12/2006	50	0 U
6-06B 0930	MH-2	6/13/2006	50	0 U
6-06B 1030	MH-2	6/13/2006	50	0 U
6-06B 1130	MH-2	6/13/2006	50	0 U
6-06B 1230	MH-2	6/13/2006	50	0 U
6-06C 0900	MH-2	6/14/2006	50	1.5 U
6-06C 1000	MH-2	6/14/2006	50	1.5 U
6-06C 1100	MH-2	6/14/2006	50	1.5 U
6-06C 1200	MH-2	6/14/2006	50	1.4 U
6-06D 1030	MH-2	6/15/2006	50	1.5 U
6-06D 1130	MH-2	6/15/2006	50	1.5 U

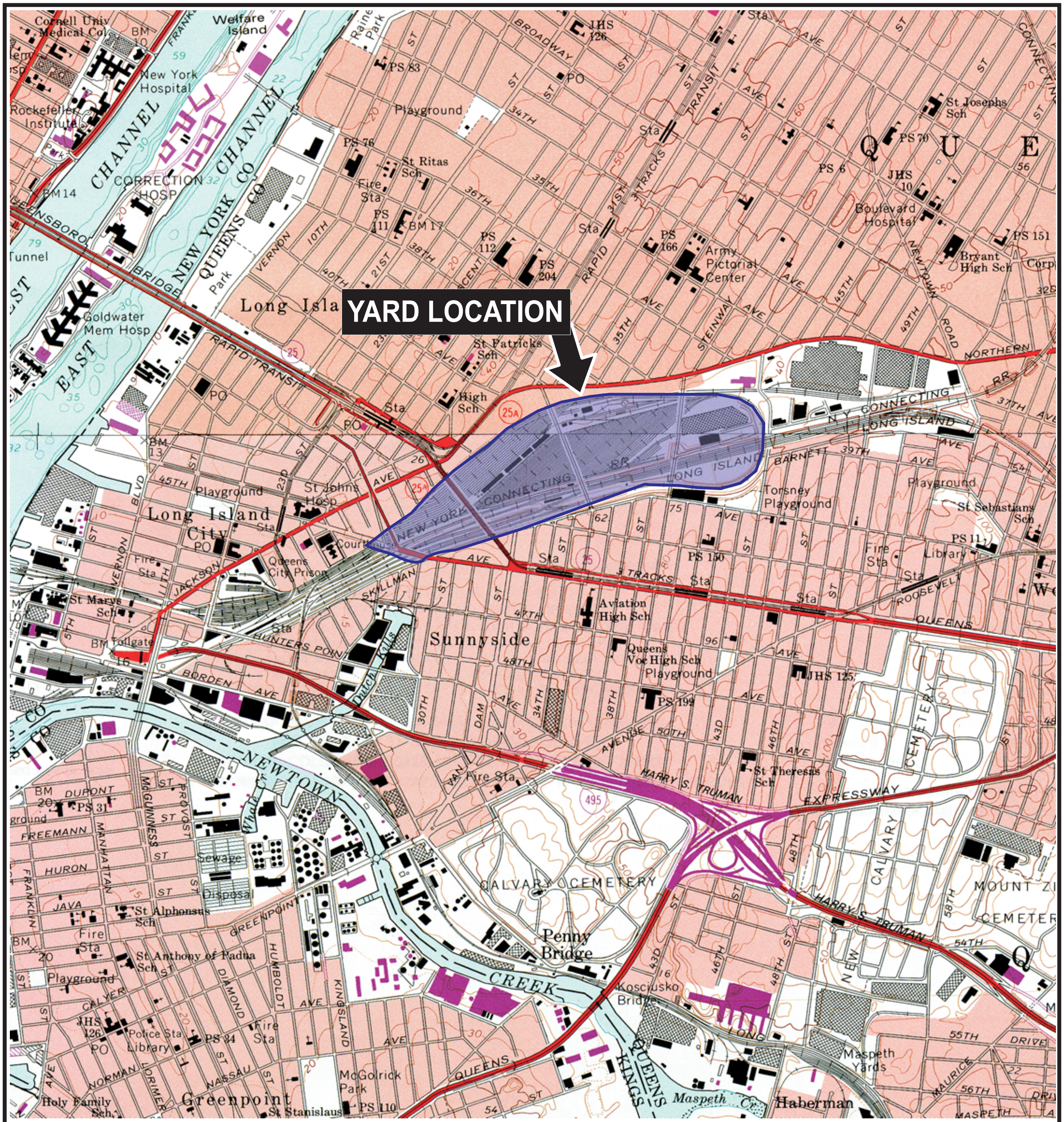
Table 8. Summary of Non-Polar Material with NYCDEP Sewer Use Limits in Sewer-Water Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York

Sample Designation	Location	Sample Date	Permissible Maximum Concentration for Any Given Time*	SGT-HEM (Non-Polar Material) (mg/L)
6-06D 1230	MH-2	6/15/2006	50	1.4 U
6-06D 930	MH-2	6/15/2006	50	1.5 U
6-07 C 10:00	MH-2	6/27/2007	50	1.8 U
6-07 C 11:00	MH-2	6/27/2007	50	1.7 U
6-07 C 12:00	MH-2	6/27/2007	50	1.6 U
6-07 C 13:00	MH-2	6/27/2007	50	1.6 U
6-07 D 10:00	MH-2	6/28/2007	50	1.5 U
6-07 D 11:00	MH-2	6/28/2007	50	1.5 U
6-07 D 12:00	MH-2	6/28/2007	50	1.5 U
6-07 D 13:00	MH-2	6/28/2007	50	1.5 U
6-07A 10:30	MH-2	6/25/2007	50	3.1
6-07A 11:30	MH-2	6/25/2007	50	8.5
6-07A 12:30	MH-2	6/25/2007	50	2.2
6-07A 13:30	MH-2	6/25/2007	50	2.8
6-07B 10:00	MH-2	6/26/2007	50	1.8 U
6-07B 11:00	MH-2	6/26/2007	50	2
6-07B 12:00	MH-2	6/26/2007	50	1.8 U
6-07B 13:00	MH-2	6/26/2007	50	1.6 U
6209A-MH2 07:45	MH-2	6/2/2009	50	2.2
6209A-MH2 08:45	MH-2	6/2/2009	50	1.4 U
6209A-MH2 09:45	MH-2	6/2/2009	50	1.4 U
6209A-MH2 10:45	MH-2	6/2/2009	50	1.4 U
6209B-MH2 08:30	MH-2	6/3/2009	50	1.4 U
6209B-MH2 09:30	MH-2	6/3/2009	50	1.4 U
6209B-MH2 10:30	MH-2	6/3/2009	50	1.4 U
6209B-MH2 11:30	MH-2	6/3/2009	50	1.4 U
6209C-MH2 8:30	MH-2	6/4/2009	50	1.4 U
6209C-MH2 9:30	MH-2	6/4/2009	50	1.9
6209C-MH2 10:30	MH-2	6/4/2009	50	1.4 U
6209C-MH2 11:30	MH-2	6/4/2009	50	1.4 U
6209D-MH2 8:15	MH-2	6/5/2009	50	1.4 U
6209D-MH2 9:15	MH-2	6/5/2009	50	1.4 U
6209D-MH2 10:15	MH-2	6/5/2009	50	1.4 U
6209D-MH2 11:15	MH-2	6/5/2009	50	1.4 U
6909HSRA 8:30	HSTF	6/9/2009	50	26
6909HSRA 9:30	HSTF	6/9/2009	50	37
6909HSRA 10:30	HSTF	6/9/2009	50	16
6909HSRA 11:30	HSTF	6/9/2009	50	12
6909HSRB 11:00	HSTF	6/10/2009	50	19
6909HSRB 12:00	HSTF	6/10/2009	50	1.5 U
6909HSRB 13:00	HSTF	6/10/2009	50	19
6909HSRB 14:00	HSTF	6/10/2009	50	16
6909HSRC 11:00	HSTF	6/11/2009	50	20
6909HSRC 12:00	HSTF	6/11/2009	50	1.4 U
6909HSRC 13:00	HSTF	6/11/2009	50	1.4 U
6909HSRC 14:00	HSTF	6/11/2009	50	1.4 U
6909HSRD 11:00	HSTF	6/12/2009	50	1.4 U
6909HSRD 12:00	HSTF	6/12/2009	50	1.4 U
6909HSRD 13:00	HSTF	6/12/2009	50	1.5 U
6909HSRD 14:00	HSTF	6/12/2009	50	1.5 U
CW-1 COMP	MH-43	8/4/2003	50	3.17 B

Table 8. Summary of Non-Polar Material with NYCDEP Sewer Use Limits in Sewer-Water Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York

Sample Designation	Location	Sample Date	Permissible Maximum Concentration for Any Given Time*	SGT-HEM (Non-Polar Material) (mg/L)
CW-2 COMP	MH-43	8/7/2003	50	6.7
CW-3 COMP	MH-43	8/8/2003	50	6.25
EH-1 COMP	EH-1	8/4/2003	50	4.59 B
EH-1 COMP	EH-1	8/5/2003	50	14.8
EH-1 COMP	EH-1	8/6/2003	50	7.1
HS-10/27-1	HSTF	10/27/2009	50	1.5 U
HS-10/27-2	HSTF	10/27/2009	50	1.5 U
HS-10/27-3	HSTF	10/27/2009	50	1.5 U
HS-10/27-4	HSTF	10/27/2009	50	1.4 U
HS-10/28-1	HSTF	10/28/2009	50	1.5 U
HS-10/28-2	HSTF	10/28/2009	50	1.4 U
HS-10/28-3	HSTF	10/28/2009	50	1.5 U
HS-10/28-4	HSTF	10/28/2009	50	1.5 U
HS-10/29-1	HSTF	10/29/2009	50	1.4 U
HS-10/29-2	HSTF	10/29/2009	50	1.4 U
HS-10/29-3	HSTF	10/29/2009	50	1.5 U
HS-10/29-4	HSTF	10/29/2009	50	1.4 U
HS-10/30-1	HSTF	10/30/2009	50	1.4 U
HS-10/30-2	HSTF	10/30/2009	50	1.4 U
HS-10/30-3	HSTF	10/30/2009	50	1.5 U
HS-10/30-4	HSTF	10/30/2009	50	1.4 U
MH-10/27-1	MH-2	10/27/2009	50	1.5 U
MH-10/27-2	MH-2	10/27/2009	50	1.5 U
MH-10/27-3	MH-2	10/27/2009	50	1.5 U
MH-10/27-4	MH-2	10/27/2009	50	1.4 U
MH-10/28-1	MH-2	10/28/2009	50	1.5 U
MH-10/28-2	MH-2	10/28/2009	50	1.5 U
MH-10/28-3	MH-2	10/28/2009	50	1.5 U
MH-10/28-4	MH-2	10/28/2009	50	1.5 U
MH-10/29-1	MH-2	10/29/2009	50	1.5
MH-10/29-2	MH-2	10/29/2009	50	1.4 U
MH-10/29-3	MH-2	10/29/2009	50	1.5 U
MH-10/29-4	MH-2	10/29/2009	50	1.4 U
MH-10/30-1	MH-2	10/30/2009	50	2.4
MH-10/30-2	MH-2	10/30/2009	50	1.4
MH-10/30-3	MH-2	10/30/2009	50	1.4 U
MH-10/30-4	MH-2	10/30/2009	50	1.4 U

NYCDEP - New York City Department of Environmental Protection
* - Limitations for effluent to sanitary or combined sewers
Source: Rules of City of New York Title 15 DEP Chapter 19
µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
DUP - Duplicate
- - No NYCDEP Limitations available
Bold data indicates that parameter was detected above the NYCDEP Limitations
NA - Compound was not analyzed by laboratory
HSTF - High speed trainset facility



SOURCE:
CENTRAL PARK AND BROOKLYN, NEW YORK
QUADRANGLE 7.5 MINUTE SERIES (TOPOGRAPHIC)

QUADRANGLE LOCATION

N

0 2000'

Title:

LOCATION OF SITE

OPERABLE UNIT 5 REMEDIAL INVESTIGATION WORK PLAN
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared for:

AMTRAK

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: H.G.	Date: 15APR10	FIGURE
Prepared by: J.A.D.	Scale: 1"=2000'	1
Project Mgr.: H.G.	Office: NY	
File No.: AM5011906.CDR	Project No.: 05550Y05	

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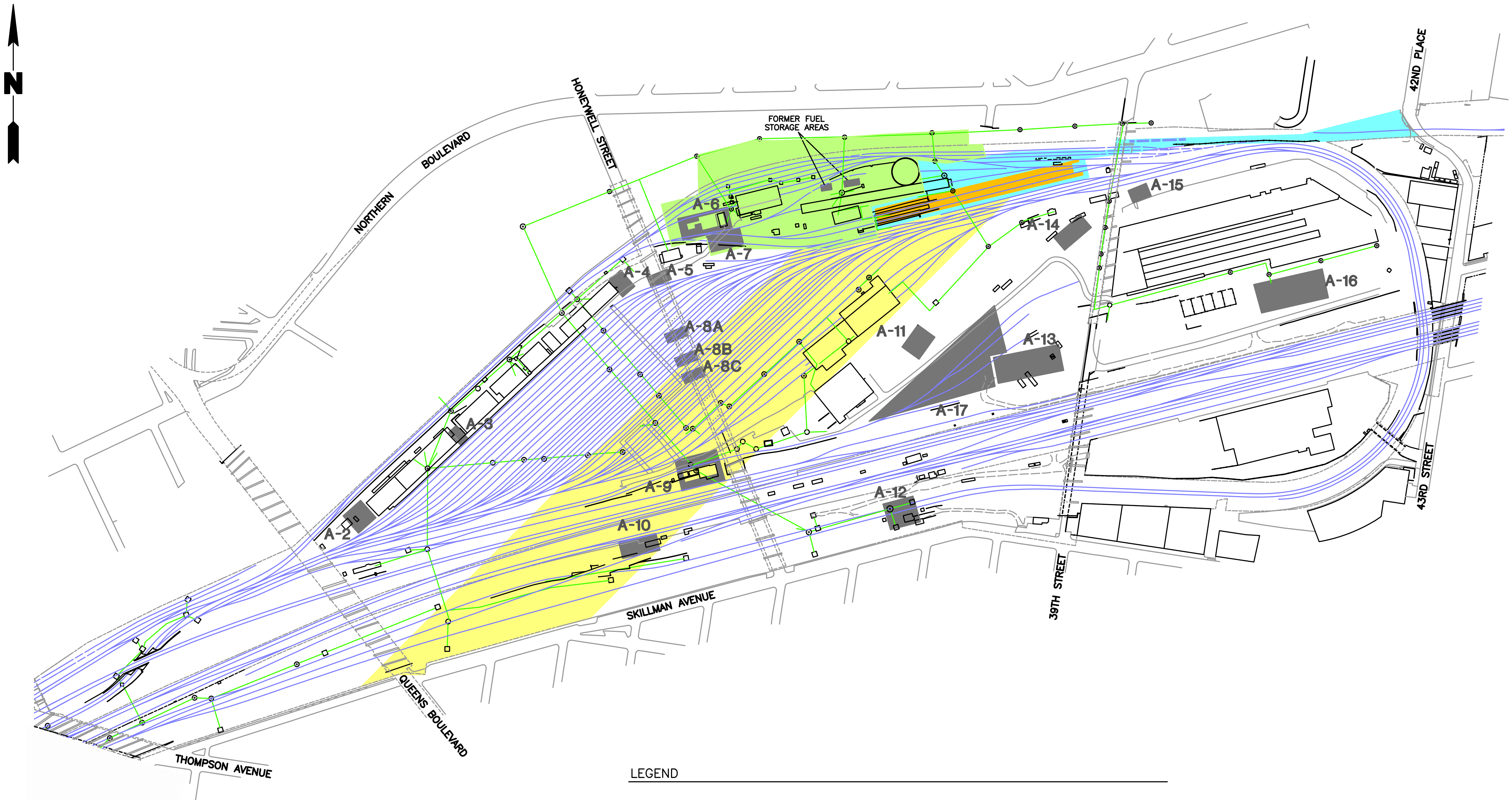

LEGEND

- LOCATION OF RAILROAD TRACK
- APPROXIMATE LOCATION OF SEWER
- GRATE COVER CATCH BASIN LOCATION
- SOLID COVER MANHOLE LOCATION
- GRATE COVER MANHOLE LOCATION
- A-2 LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN
- APPROXIMATE PROPERTY BOUNDARY

- OU–1
- OU–2
- OU–3
- OU–4
- OU–5

OU–6, GROUNDWATER BENEATH THE YARD (UNDERLIES ALL OTHER OU's)

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, GROUNDWATER BENEATH THE YARD (UNDERLIES ALL OTHER OU's)
3. RI – REMEDIAL INVESTIGATION
4. LIRR – LONG ISLAND RAIL ROAD

Title:

AMTRAK YARD LAYOUT

OPERABLE UNIT 5 REMEDIAL INVESTIGATION WORK PLAN
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For: AMTRAK

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: H.G.	Date: 15APR10	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	2
Project Mgr: H.G.	Office: NY	
File No: AM5011905	Project: 05550Y05	

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APPENDIX A

Additional Industrial Wastewater Discharge Permit (IWDP) Parameters

A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York
A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York
A-3. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Secondary Sewer System, Sunnyside Yard, Queens, New York
A-4. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Secondary Sewer System, Sunnyside Yard, Queens, New York
A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in the Primary Sewer System, Sunnyside Yard, Queens, New York
A-6. Summary of Metal Concentrations in Sewer-Water Samples Collected in the Secondary Sewer System, Sunnyside Yard, Queens, New York

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MHW-2 2/9/1993 MH-2	12A-Composite 12/6/2004 MH-2	12B-Composite 12/7/2004 MH-2	12C-Composite 12/8/2004 MH-2
1,1,1-Trichloroethane		10 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane		10 U	1 U	1 U	1 U
1,1,2-Trichloroethane		10 U	1 U	1 U	1 U
1,1-Dichloroethane		10 U	1 U	1 U	1 U
1,1-Dichloroethene		10 U	1 U	1 U	1 U
1,2-Dichlorobenzene		NA	1 U	1 U	1 U
1,2-Dichloroethane		10 U	1 U	1 U	1 U
1,2-Dichloroethene (total)		10 U	NA	NA	NA
1,2-Dichloropropane		10 U	1 U	1 U	1 U
1,3-Dichlorobenzene		NA	1 U	1 U	1 U
1,3-Dichloropropene		NA	1 U	1 U	1 U
1,4-Dichlorobenzene		NA	1 U	1 U	1 U
2-Butanone (MEK)		10 U	NA	NA	NA
2-Chloroethyl vinyl ether		NA	1 U	1 U	1 U
2-Hexanone		10 U	NA	NA	NA
4-Methyl-2-Pentanone (MIBK)		10 U	NA	NA	NA
Acetone		10 UV	NA	NA	NA
Acrolein		NA	25 U	25 U	25 U
Acrylonitrile		NA	25 U	25 U	25 U
Benzene		10 U	1 U	1 U	1 U
Bromodichloromethane		10 U	1 U	1 U	1 U
Bromoform		10 U	1 U	1 U	1 U
Bromomethane		10 U	1 U	1 U	1 U
Carbon disulfide		10 U	NA	NA	NA
Carbon tetrachloride		10 U	1 U	1 U	1 U
Chlorobenzene		10 U	1 U	1 U	1 U
Chloroethane		10 U	1 U	1 U	1 U
Chloroform		5 J	7	5	5
Chloromethane		10 U	1 U	1 U	1 U
cis-1,2-Dichloroethene		NA	3	2	5
cis-1,3-Dichloropropene		10 U	1 U	1 U	1 U
Dibromochloromethane		10 U	1 U	1 U	1 U
Dichlorodifluoromethane		NA	1 U	1 U	1 U
Ethylbenzene		10 U	1 U	1 U	1 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MHW-2 2/9/1993 MH-2	12A-Composite 12/6/2004 MH-2	12B-Composite 12/7/2004 MH-2	12C-Composite 12/8/2004 MH-2
m+p-Xylene		NA	2 U	2 U	2 U
Methylene Chloride		10 U	1 U	19	1 U
O-Xylene		NA	1 U	1 U	1 U
Styrene		10 U	NA	NA	NA
Tetrachloroethene		10 U	13	10	29
Toluene		10 U	1 U	1 U	1 U
trans-1,2-Dichloroethene		NA	1 U	1 U	1 U
trans-1,3-Dichloropropene		10 U	1 U	1 U	1 U
Trichloroethene		10 U	36	24	80
Trichlorofluoromethane		NA	1 U	1 U	1 U
Vinyl acetate		NA	NA	NA	NA
Vinyl chloride		10 U	1 U	1 U	1 U
Xylenes (total)		10 U	NA	NA	NA

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	12D-Composite 12/9/2004 MH-2	06-05A 6/13/2005 MH-2	06-05B 6/14/2005 MH-2	06-05C 6/154/2005 MH-2	06-05D 6/16/2005 MH-2
1,1,1-Trichloroethane		1 U	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		1 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane		1 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane		1 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene		1 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene		1 U	NA	NA	NA	NA
1,2-Dichloroethane		1 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		NA	NA	NA	NA	NA
1,2-Dichloropropane		1 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene		1 U	NA	NA	NA	NA
1,3-Dichloropropene		1 U	NA	NA	NA	NA
1,4-Dichlorobenzene		1 U	NA	NA	NA	NA
2-Butanone (MEK)		NA	5 U	5 U	5 U	5 U
2-Chloroethyl vinyl ether		1 U	5 U	5 U	5 U	5 U
2-Hexanone		NA	5 U	5 U	5 U	5 U
4-Methyl-2-Pentanone (MIBK)		NA	5 U	5 U	5 U	5 U
Acetone		NA	25 U	25 U	25 U	25 U
Acrolein		25 U	25 U	25 U	25 U	25 U
Acrylonitrile		25 U	5 U	5 U	5 U	5 U
Benzene		1 U	1 U	1 U	1 U	1 U
Bromodichloromethane		1 U	5 U	5 U	5 U	5 U
Bromoform		1 U	5 U	5 U	5 U	5 U
Bromomethane		1 U	5 U	5 U	5 U	5 U
Carbon disulfide		NA	1 U	1 U	1 U	1 U
Carbon tetrachloride		1 U	5 U	5 U	5 U	5 U
Chlorobenzene		1 U	5 U	5 U	5 U	5 U
Chloroethane		1 U	5 U	5 U	5 U	5 U
Chloroform		5	5 U	1.2 J	5 U	3.9 J
Chloromethane		1 U	5 U	5 U	5 U	5 U
cis-1,2-Dichloroethene		3	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		1 U	5 U	5 U	5 U	5 U
Dibromochloromethane		1 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane		1 U	NA	NA	NA	NA
Ethylbenzene		1 U	1 U	1 U	1 U	1 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	12D-Composite 12/9/2004 MH-2	06-05A 6/13/2005 MH-2	06-05B 6/14/2005 MH-2	06-05C 6/154/2005 MH-2	06-05D 6/16/2005 MH-2
m+p-Xylene		2 U	2 U	NA	2 U	2 U
Methylene Chloride		1 U	2.7 J	6.8 J	4.1 J	2.3 J
O-Xylene		1 U	1 U	1 U	1 U	1 U
Styrene		NA	5 U	5 U	5 U	5 U
Tetrachloroethene		17	5 U	5 U	5 U	5 U
Toluene		1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene		1 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene		1 U	5 U	5 U	5 U	5 U
Trichloroethene		43	5 U	5 U	5 U	2.2 J
Trichlorofluoromethane		1 U	NA	NA	NA	NA
Vinyl acetate		NA	5 U	5 U	5 U	5 U
Vinyl chloride		1 U	5 U	5 U	5 U	5 U
Xylenes (total)		NA	NA	2 U	NA	NA

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	12-05 A (Comp) 12/16/2005 MH-2	12-05-B (Comp) 12/19/2005 MH-2	12-05C 12/20/2005 MH-2	12-05 D-COMP 12/21/2005 MH-2
1,1,1-Trichloroethane		0.45 U	0.45 U	0.45 U	0.43 U
1,1,2,2-Tetrachloroethane		0.28 U	0.28 U	0.28 U	0.29 U
1,1,2-Trichloroethane		0.4 U	0.4 U	0.4 U	0.35 U
1,1-Dichloroethane		0.29 U	0.29 U	0.29 U	0.47 U
1,1-Dichloroethene		0.48 U	0.48 U	0.48 U	0.45 U
1,2-Dichlorobenzene		NA	NA	NA	NA
1,2-Dichloroethane		0.22 U	0.22 U	0.22 U	0.39 U
1,2-Dichloroethene (total)		NA	NA	NA	NA
1,2-Dichloropropane		0.37 U	0.37 U	0.37 U	0.39 U
1,3-Dichlorobenzene		NA	NA	NA	NA
1,3-Dichloropropene		NA	NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA	NA
2-Butanone (MEK)		3.3 U	3.3 U	3.3 U	0.44 U
2-Chloroethyl vinyl ether		0.77 U	0.77 U	0.77 U	0.45 U
2-Hexanone		0.39 U	0.39 U	0.39 U	0.31 U
4-Methyl-2-Pentanone (MIBK)		0.53 U	0.53 U	0.53 U	0.12 U
Acetone		4 U	4 U	4 U	21
Acrolein		5.4 U	5.4 U	5.4 U	10 U
Acrylonitrile		5.6 U	5.6 U	5.6 U	0.49 U
Benzene		0.43 U	0.43 U	0.43 U	0.32 U
Bromodichloromethane		0.46 U	0.46 U	0.46 U	0.23 U
Bromoform		0.47 U	0.47 U	0.47 U	0.33 U
Bromomethane		0.76 U	0.76 U	0.76 U	0.43 U
Carbon disulfide		0.51 U	0.51 U	0.51 U	0.42 U
Carbon tetrachloride		0.54 U	0.54 U	0.54 U	0.59 U
Chlorobenzene		0.2 U	1.7	2.3	2.7
Chloroethane		0.53 U	0.53 U	0.53 U	0.43 U
Chloroform		1.2	3.1	5.4	3
Chloromethane		0.32 U	0.32 U	0.32 U	0.37 U
cis-1,2-Dichloroethene		0.5 U	0.5 U	0.5 U	1.7
cis-1,3-Dichloropropene		0.18 U	0.18 U	0.18 U	0.33 U
Dibromochloromethane		0.56 U	0.56 U	0.56 U	0.5 U
Dichlorodifluoromethane		NA	NA	NA	NA
Ethylbenzene		0.49 U	7.7	0.49 U	0.46 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	12-05 A (Comp) 12/16/2005 MH-2	12-05-B (Comp) 12/19/2005 MH-2	12-05C 12/20/2005 MH-2	12-05 D-COMP 12/21/2005 MH-2
m+p-Xylene		NA	NA	NA	NA
Methylene Chloride		0.87 U	0.87 U	2.2 B	1.6
O-Xylene		0.55 U	23	0.55 U	0.23 U
Styrene		0.29 U	0.29 U	0.29 U	0.28 U
Tetrachloroethene		0.31 U	1.4	10	10
Toluene		0.31 U	12	1.6	3
trans-1,2-Dichloroethene		0.5 U	0.5 U	0.5 U	0.39 U
trans-1,3-Dichloropropene		0.4 U	0.4 U	0.4 U	0.33 U
Trichloroethene		0.36 U	2.3	23	30
Trichlorofluoromethane		NA	NA	NA	NA
Vinyl acetate		0.51 U	0.51 U	0.51 U	0.33 U
Vinyl chloride		0.54 U	0.54 U	0.54 U	0.37 U
Xylenes (total)		0.86 U	54	0.86 U	0.23 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	6-06A (COMP) 6/12/2006 MH-2	6-06B COMP 6/13/2006 MH-2	6-06C Composite 6/14/2006 MH-2	6-06D COMPOSITE 6/15/2006 MH-2
1,1,1-Trichloroethane		5 U	5 U	0.4 U	0.4 U
1,1,2,2-Tetrachloroethane		5 U	5 U	0.25 U	0.25 U
1,1,2-Trichloroethane		5 U	5 U	0.34 U	0.34 U
1,1-Dichloroethane		5 U	5 U	0.39 U	0.39 U
1,1-Dichloroethene		5 U	5 U	0.39 U	0.39 U
1,2-Dichlorobenzene		NA	NA	NA	NA
1,2-Dichloroethane		5 U	5 U	0.49 U	0.49 U
1,2-Dichloroethene (total)		NA	NA	NA	NA
1,2-Dichloropropane		5 U	5 U	0.5 U	0.5 U
1,3-Dichlorobenzene		NA	NA	NA	NA
1,3-Dichloropropene		NA	NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA	NA
2-Butanone (MEK)		35	5 U	1.7 U	250
2-Chloroethyl vinyl ether		5 U	5 U	0.44 U	0.44 U
2-Hexanone		5 U	5 U	1.4 U	1.4 U
4-Methyl-2-Pentanone (MIBK)		5 U	5 U	0.21 U	0.21 U
Acetone		25 U	25 U	5.6 U	25
Acrolein		25 U	25 U	6 U	6 U
Acrylonitrile		5 U	5 U	1.6 U	1.6 U
Benzene		1 U	1 U	0.14 U	0.14 U
Bromodichloromethane		5 U	5 U	0.33 U	0.33 U
Bromoform		5 U	5 U	0.62 U	0.62 U
Bromomethane		5 U	5 U	0.87 U	0.87 U
Carbon disulfide		5 U	5 U	0.2 U	0.2 U
Carbon tetrachloride		5 U	5 U	0.53 U	0.53 U
Chlorobenzene		5 U	5 U	0.17 U	3.1
Chloroethane		5 U	5 U	0.42 U	0.42 U
Chloroform		2.3 J	2.5 J	1.9	1.1
Chloromethane		5 U	5 U	0.65 U	0.65 U
cis-1,2-Dichloroethene		5 U	5 U	0.34 U	0.34 U
cis-1,3-Dichloropropene		5 U	5 U	0.34 U	0.34 U
Dibromochloromethane		5 U	5 U	0.49 U	0.49 U
Dichlorodifluoromethane		NA	NA	NA	NA
Ethylbenzene		1 U	1 U	0.31 U	0.31 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	6-06A (COMP) 6/12/2006 MH-2	6-06B COMP 6/13/2006 MH-2	6-06C Composite 6/14/2006 MH-2	6-06D COMPOSITE 6/15/2006 MH-2
m+p-Xylene		NA	NA	NA	NA
Methylene Chloride		1.6 J	2 J	3.7	2.6
O-Xylene		1 U	1 U	0.21 U	0.21 U
Styrene		5 U	5 U	0.21 U	0.21 U
Tetrachloroethene		2.8 J	5 U	0.46 U	0.46 U
Toluene		5.9	1.8	2.7	360
trans-1,2-Dichloroethene		5 U	5 U	1.4 U	1.4 U
trans-1,3-Dichloropropene		5 U	5 U	0.51 U	0.51 U
Trichloroethene		5.7	5 U	0.76 U	2.4
Trichlorofluoromethane		NA	NA	NA	NA
Vinyl acetate		5 U	5 U	1.3 U	1.3 U
Vinyl chloride		5 U	5 U	0.48 U	0.48 U
Xylenes (total)		2 U	2 U	0.49 U	0.49 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:**	10-06A 8:30-11:30 COMP	10-06B-600-900 COMP	10-06C 7:00-10:00
	Sample Date:	10/10/2006	10/11/2006	10/12/2006
	Location:	MH-2	MH-2	MH-2
1,1,1-Trichloroethane		0.53 U	0.53 U	0.4 U
1,1,2,2-Tetrachloroethane		0.2 U	0.2 U	0.25 U
1,1,2-Trichloroethane		0.44 U	0.44 U	0.34 U
1,1-Dichloroethane		0.38 U	0.38 U	0.39 U
1,1-Dichloroethene		0.29 U	0.29 U	0.39 U
1,2-Dichlorobenzene		NA	NA	NA
1,2-Dichloroethane		0.37 U	0.37 U	0.49 U
1,2-Dichloroethene (total)		NA	NA	NA
1,2-Dichloropropane		0.56 U	0.56 U	0.5 U
1,3-Dichlorobenzene		NA	NA	NA
1,3-Dichloropropene		NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA
2-Butanone (MEK)		0.84 U	0.84 U	1.7 U
2-Chloroethyl vinyl ether		0.52 U	0.52 U	0.44 U
2-Hexanone		0.66 U	0.66 U	1.4 U
4-Methyl-2-Pentanone (MIBK)		0.24 U	0.24 U	0.21 U
Acetone		38	24	16
Acrolein		2.1 U	2.1 U	6 U
Acrylonitrile		1.1 U	1.1 U	1.6 U
Benzene		0.2 U	0.2 U	0.14 U
Bromodichloromethane		0.46 U	0.46 U	0.33 U
Bromoform		0.39 U	0.39 U	0.62 U
Bromomethane		0.43 U	0.43 U	0.87 U
Carbon disulfide		0.18 U	0.18 U	0.2 U
Carbon tetrachloride		0.3 U	0.3 U	0.53 U
Chlorobenzene		0.089 U	0.089 U	0.17 U
Chloroethane		0.66 U	0.66 U	0.42 U
Chloroform		2.3	2.7	1
Chloromethane		0.74 U	0.74 U	0.65 U
cis-1,2-Dichloroethene		34	40	5.1
cis-1,3-Dichloropropene		0.26 U	0.26 U	0.34 U
Dibromochloromethane		0.34 U	0.34 U	0.49 U
Dichlorodifluoromethane		NA	NA	NA
Ethylbenzene		0.53 U	0.53 U	0.31 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	10-06A 8:30-11:30 COMP 10/10/2006 MH-2	10-06B-600-900 COMP 10/11/2006 MH-2	10-06C 7:00-10:00 10/12/2006 MH-2
m+p-Xylene		0.5 U	0.5 U	0.49 U
Methylene Chloride		4.1	2.3	3.3
O-Xylene		0.11 U	0.11 U	0.21 U
Styrene		0.27 U	0.27 U	0.21 U
Tetrachloroethene		3.4	7	0.46 U
Toluene		21	14	9.1
trans-1,2-Dichloroethene		0.38 U	0.38 U	1.4 U
trans-1,3-Dichloropropene		0.24 U	0.24 U	0.51 U
Trichloroethene		9.9	28	1
Trichlorofluoromethane		NA	NA	NA
Vinyl acetate		0.34 U	0.34 U	1.3 U
Vinyl chloride		2.5	2.4	0.48 U
Xylenes (total)		0.5 U	0.5 U	0.49 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	10-06D 6:30-9:30 COMP / 10/13/2006 / MH-2	6-07A (Lab Comp) / 6/25/2007 / MH-2	6-07B (Lab Composite) / 6/26/2007 / MH-2
1,1,1-Trichloroethane		0.43 U	0.48 U	0.48 U
1,1,2,2-Tetrachloroethane		0.37 U	0.34 U	0.34 U
1,1,2-Trichloroethane		0.25 U	0.7 U	0.7 U
1,1-Dichloroethane		0.28 U	0.39 U	0.39 U
1,1-Dichloroethene		0.4 U	0.61 U	0.61 U
1,2-Dichlorobenzene		NA	NA	NA
1,2-Dichloroethane		0.42 U	0.3 U	0.3 U
1,2-Dichloroethene (total)		NA	NA	NA
1,2-Dichloropropane		0.48 U	0.4 U	0.4 U
1,3-Dichlorobenzene		NA	NA	NA
1,3-Dichloropropene		NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA
2-Butanone (MEK)		33	0.28 U	160
2-Chloroethyl vinyl ether		0.33 U	1.8 U	1.8 U
2-Hexanone		0.58 U	1.2 U	1.2 U
4-Methyl-2-Pentanone (MIBK)		0.55 U	0.99 U	0.99 U
Acetone		100	77	78
Acrolein		5.9 U	4.2 U	4.2 U
Acrylonitrile		0.47 U	1.1 U	1.1 U
Benzene		0.15 U	0.41 U	0.41 U
Bromodichloromethane		0.2 U	0.3 U	0.3 U
Bromoform		0.36 U	0.24 U	0.24 U
Bromomethane		0.61 U	0.31 U	0.31 U
Carbon disulfide		0.62 U	6.2	0.51 U
Carbon tetrachloride		0.44 U	0.55 U	0.55 U
Chlorobenzene		3.8	0.38 U	0.38 U
Chloroethane		0.6 U	0.43 U	0.43 U
Chloroform		0.24 U	1.3	0.35 U
Chloromethane		0.64 U	0.46 U	0.46 U
cis-1,2-Dichloroethene		12	0.41 U	0.41 U
cis-1,3-Dichloropropene		0.45 U	0.65 U	0.65 U
Dibromochloromethane		0.39 U	0.39 U	0.39 U
Dichlorodifluoromethane		NA	NA	NA
Ethylbenzene		0.67 U	0.47 U	0.47 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	10-06D 6:30-9:30 COMP 10/13/2006 MH-2	6-07A (Lab Comp) 6/25/2007 MH-2	6-07B (Lab Composite) 6/26/2007 MH-2
m+p-Xylene		0.71 U	NA	NA
Methylene Chloride		6.9	3.9	2.9
O-Xylene		0.45 U	0.4 U	0.4 U
Styrene		0.37 U	0.71 U	0.71 U
Tetrachloroethene		0.35 U	0.44 U	0.44 U
Toluene		260	0.58 U	0.58 U
trans-1,2-Dichloroethene		0.44 U	0.83 U	0.83 U
trans-1,3-Dichloropropene		0.22 U	0.36 U	0.36 U
Trichloroethene		5.9	0.58 U	0.58 U
Trichlorofluoromethane		NA	NA	NA
Vinyl acetate		0.43 U	0.86 U	0.86 U
Vinyl chloride		6.3	0.56 U	0.56 U
Xylenes (total)		0.71 U	1.1 U	1.1 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	6-07 C (Lab Comp) 6/27/2007 MH-2	6-07 D (Lab Comp) 6/28/2007 MH-2	12-07 A (Lab Comp) 12/10/2007 MH-2
1,1,1-Trichloroethane		0.48 U	0.48 U	0.82 U
1,1,2,2-Tetrachloroethane		0.34 U	0.34 U	0.55 U
1,1,2-Trichloroethane		0.7 U	0.7 U	0.55 U
1,1-Dichloroethane		0.39 U	0.39 U	0.31 U
1,1-Dichloroethene		0.61 U	0.61 U	0.61 U
1,2-Dichlorobenzene		NA	NA	0.42 U
1,2-Dichloroethane		0.3 U	0.3 U	0.29 U
1,2-Dichloroethene (total)		NA	NA	NA
1,2-Dichloropropane		0.4 U	0.4 U	0.52 U
1,3-Dichlorobenzene		NA	NA	0.37 U
1,3-Dichloropropene		NA	NA	NA
1,4-Dichlorobenzene		NA	NA	0.21 U
2-Butanone (MEK)		22	0.28 U	0.66 U
2-Chloroethyl vinyl ether		1.8 U	1.8 U	0.97 U
2-Hexanone		1.2 U	1.2 U	0.87 U
4-Methyl-2-Pentanone (MIBK)		0.99 U	0.99 U	0.82 U
Acetone		39	41	16
Acrolein		4.2 U	4.2 U	4.4 U
Acrylonitrile		1.1 U	1.1 U	1.3 U
Benzene		0.41 U	0.41 U	0.39 U
Bromodichloromethane		0.3 U	0.3 U	0.36 U
Bromoform		0.24 U	0.24 U	0.77 U
Bromomethane		0.31 U	0.31 U	0.97 U
Carbon disulfide		0.51 U	0.51 U	0.4 U
Carbon tetrachloride		0.55 U	0.55 U	0.46 U
Chlorobenzene		0.38 U	0.38 U	0.9
Chloroethane		0.43 U	0.43 U	0.96 U
Chloroform		1.4	2.2	1.7
Chloromethane		0.46 U	0.46 U	1 U
cis-1,2-Dichloroethene		0.41 U	0.41 U	0.88 U
cis-1,3-Dichloropropene		0.65 U	0.65 U	0.54 U
Dibromochloromethane		0.39 U	0.39 U	0.41 U
Dichlorodifluoromethane		NA	NA	NA
Ethylbenzene		0.47 U	0.47 U	0.66 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:**	6-07 C (Lab Comp)	6-07 D (Lab Comp)	12-07 A (Lab Comp)
	Sample Date:	6/27/2007	6/28/2007	12/10/2007
	Location:	MH-2	MH-2	MH-2
m+p-Xylene		NA	NA	NA
Methylene Chloride		2.3	1.5 U	4.7
O-Xylene		0.4 U	0.4 U	0.48 U
Styrene		0.71 U	0.71 U	0.25 U
Tetrachloroethene		0.44 U	0.44 U	0.46 U
Toluene		0.58 U	0.58 U	0.63 U
trans-1,2-Dichloroethene		0.83 U	0.83 U	0.89 U
trans-1,3-Dichloropropene		0.36 U	0.36 U	0.43 U
Trichloroethene		0.58 U	0.58 U	0.76 U
Trichlorofluoromethane		NA	NA	NA
Vinyl acetate		0.86 U	0.86 U	0.84 U
Vinyl chloride		0.56 U	0.56 U	0.35 U
Xylenes (total)		1.1 U	1.1 U	0.35 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	12-07B LAB COMP 12/11/2007 MH-2	12-07 C (Lab Comp) 12/12/2007 MH-2	12-07D (Lab Comp) 12/13/2007 MH-2
1,1,1-Trichloroethane		0.82 U	0.82 U	0.82 U
1,1,2,2-Tetrachloroethane		0.55 U	0.55 U	0.55 U
1,1,2-Trichloroethane		0.55 U	0.55 U	0.55 U
1,1-Dichloroethane		0.31 U	0.31 U	0.31 U
1,1-Dichloroethene		0.61 U	0.61 U	0.61 U
1,2-Dichlorobenzene		0.42 U	0.42 U	0.42 U
1,2-Dichloroethane		0.29 U	0.29 U	0.29 U
1,2-Dichloroethene (total)		NA	NA	NA
1,2-Dichloropropane		0.52 U	0.52 U	0.52 U
1,3-Dichlorobenzene		0.37 U	0.37 U	0.37 U
1,3-Dichloropropene		NA	NA	NA
1,4-Dichlorobenzene		0.21 U	0.21 U	0.21 U
2-Butanone (MEK)		0.66 U	0.66 U	0.66 U
2-Chloroethyl vinyl ether		0.97 U	0.97 U	0.97 U
2-Hexanone		0.87 U	0.87 U	0.87 U
4-Methyl-2-Pentanone (MIBK)		0.82 U	0.82 U	0.82 U
Acetone		20	18	35
Acrolein		4.4 U	4.4 U	4.4 U
Acrylonitrile		1.3 U	1.3 U	1.3 U
Benzene		0.39 U	0.39 U	0.39 U
Bromodichloromethane		0.36 U	0.36 U	0.36 U
Bromoform		0.77 U	0.77 U	0.77 U
Bromomethane		0.97 U	0.97 U	0.97 U
Carbon disulfide		0.4 U	0.4 U	0.4 U
Carbon tetrachloride		0.46 U	0.46 U	0.46 U
Chlorobenzene		0.66	0.52	2.5
Chloroethane		0.96 U	0.96 U	0.96 U
Chloroform		2.7	2.8	0.86
Chloromethane		1 U	1 U	1 U
cis-1,2-Dichloroethene		0.88 U	0.88 U	0.88 U
cis-1,3-Dichloropropene		0.54 U	0.54 U	0.54 U
Dibromochloromethane		0.41 U	0.41 U	0.41 U
Dichlorodifluoromethane		NA	NA	NA
Ethylbenzene		0.66 U	0.66 U	0.66 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation:	12-07B LAB COMP	12-07 C (Lab Comp)	12-07D (Lab Comp)
	Sample Date:	12/11/2007	12/12/2007	12/13/2007
	Location:	MH-2	MH-2	MH-2
m+p-Xylene		NA	NA	NA
Methylene Chloride		1.3 U	2.3	3.2
O-Xylene		0.48 U	0.48 U	0.48 U
Styrene		0.25 U	0.25 U	0.25 U
Tetrachloroethene		0.46 U	0.46 U	0.46 U
Toluene		0.63 U	0.63 U	0.63 U
trans-1,2-Dichloroethene		0.89 U	0.89 U	0.89 U
trans-1,3-Dichloropropene		0.43 U	0.43 U	0.43 U
Trichloroethene		0.76 U	0.76 U	0.76 U
Trichlorofluoromethane		NA	NA	NA
Vinyl acetate		0.84 U	0.84 U	0.84 U
Vinyl chloride		0.35 U	0.35 U	0.35 U
Xylenes (total)		0.35 U	0.35 U	0.35 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	4-08-A 9:00-12:00 Lab comp 4/28/2008 MH-2	4-08 B (LAB COMP) 4/29/2008 MH-2
1,1,1-Trichloroethane		0.7 U	0.7 U
1,1,2,2-Tetrachloroethane		0.6 U	0.6 U
1,1,2-Trichloroethane		0.38 U	0.38 U
1,1-Dichloroethane		0.74 U	0.74 U
1,1-Dichloroethene		0.36 U	0.36 U
1,2-Dichlorobenzene		0.47 U	0.47 U
1,2-Dichloroethane		0.29 U	0.29 U
1,2-Dichloroethene (total)		NA	NA
1,2-Dichloropropane		0.7 U	0.7 U
1,3-Dichlorobenzene		0.3 U	0.3 U
1,3-Dichloropropene		NA	NA
1,4-Dichlorobenzene		0.73 U	0.73 U
2-Butanone (MEK)		0.69 U	0.69 U
2-Chloroethyl vinyl ether		0.68 U	0.68 U
2-Hexanone		0.67 U	0.67 U
4-Methyl-2-Pentanone (MIBK)		0.51 U	0.51 U
Acetone		4.3 U	4.3 U
Acrolein		4.7 U	4.7 U
Acrylonitrile		1.3 U	1.3 U
Benzene		0.32 U	0.32 U
Bromodichloromethane		0.71 U	0.71 U
Bromoform		0.74 U	0.74 U
Bromomethane		0.6 U	0.6 U
Carbon disulfide		0.45 U	0.45 U
Carbon tetrachloride		0.74 U	0.74 U
Chlorobenzene		0.39	0.53
Chloroethane		0.83 U	0.83 U
Chloroform		2.4	4.5
Chloromethane		0.91 U	0.91 U
cis-1,2-Dichloroethene		0.6 U	0.93
cis-1,3-Dichloropropene		0.39 U	0.39 U
Dibromochloromethane		0.73 U	0.73 U
Dichlorodifluoromethane		NA	NA
Ethylbenzene		0.58	0.57 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	4-08-A 9:00-12:00 Lab comp 4/28/2008 MH-2	4-08 B (LAB COMP) 4/29/2008 MH-2
m+p-Xylene		NA	NA
Methylene Chloride		1.2 U	1.2 U
O-Xylene		0.36 U	0.36 U
Styrene		0.43 U	0.43 U
Tetrachloroethene		5.4	7.8
Toluene		8	0.79
trans-1,2-Dichloroethene		0.76 U	0.76 U
trans-1,3-Dichloropropene		0.47 U	0.47 U
Trichloroethene		16	27
Trichlorofluoromethane		NA	NA
Vinyl acetate		0.54 U	0.54 U
Vinyl chloride		0.77 U	0.77 U
Xylenes (total)		1.5	0.82 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	4-08C-8:45-11:45 LAB COMP 4/30/2008 MH-2	4-08D 9:00-12:00 Lab Comp 5/1/2008 MH-2
1,1,1-Trichloroethane		0.7 U	0.7 U
1,1,2,2-Tetrachloroethane		0.6 U	0.6 U
1,1,2-Trichloroethane		0.38 U	0.38 U
1,1-Dichloroethane		0.74 U	0.74 U
1,1-Dichloroethene		0.36 U	0.36 U
1,2-Dichlorobenzene		0.47 U	0.47 U
1,2-Dichloroethane		0.29 U	0.29 U
1,2-Dichloroethene (total)		NA	NA
1,2-Dichloropropane		0.7 U	0.7 U
1,3-Dichlorobenzene		0.3 U	0.3 U
1,3-Dichloropropene		NA	NA
1,4-Dichlorobenzene		0.73 U	0.73 U
2-Butanone (MEK)		32	0.69 U
2-Chloroethyl vinyl ether		0.68 U	0.68 U
2-Hexanone		0.67 U	0.67 U
4-Methyl-2-Pentanone (MIBK)		0.51 U	0.51 U
Acetone		42	4.3 U
Acrolein		4.7 U	4.7 U
Acrylonitrile		1.3 U	1.3 U
Benzene		0.32 U	0.32 U
Bromodichloromethane		0.71 U	0.71 U
Bromoform		0.74 U	0.74 U
Bromomethane		0.6 U	0.6 U
Carbon disulfide		0.45 U	0.45 U
Carbon tetrachloride		0.74 U	0.74 U
Chlorobenzene		0.55	0.41
Chloroethane		0.83 U	0.83 U
Chloroform		3	3
Chloromethane		0.91 U	0.91 U
cis-1,2-Dichloroethene		0.76	0.6 U
cis-1,3-Dichloropropene		0.39 U	0.39 U
Dibromochloromethane		0.73 U	0.73 U
Dichlorodifluoromethane		NA	NA
Ethylbenzene		0.57 U	0.57 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	4-08C-8:45-11:45 LAB COMP 4/30/2008 MH-2	4-08D 9:00-12:00 Lab Comp 5/1/2008 MH-2
m+p-Xylene		NA	NA
Methylene Chloride		1.2 U	1.2 U
O-Xylene		0.36 U	0.36 U
Styrene		0.43 U	0.43 U
Tetrachloroethene		6.7	2.9
Toluene		0.53	0.45
trans-1,2-Dichloroethene		0.76 U	0.76 U
trans-1,3-Dichloropropene		0.47 U	0.47 U
Trichloroethene		23	9.2
Trichlorofluoromethane		NA	NA
Vinyl acetate		0.54 U	0.54 U
Vinyl chloride		0.77 U	0.77 U
Xylenes (total)		0.82 U	0.82 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	11-08A Lab Comp 11/10/2008 MH-2	11-08B Lab Comp 11/11/2008 MH-2	11-08C Lab Comp 11/12/2008 MH-2
1,1,1-Trichloroethane		0.21 U	0.21 U	0.21 U
1,1,2,2-Tetrachloroethane		0.21 U	0.21 U	0.21 U
1,1,2-Trichloroethane		0.28 U	0.28 U	0.28 U
1,1-Dichloroethane		0.2 U	0.2 U	0.2 U
1,1-Dichloroethene		0.23 U	0.23 U	0.23 U
1,2-Dichlorobenzene		0.16 U	0.16 U	0.16 U
1,2-Dichloroethane		0.25 U	0.25 U	0.25 U
1,2-Dichloroethene (total)		NA	NA	NA
1,2-Dichloropropane		0.37 U	0.37 U	0.37 U
1,3-Dichlorobenzene		0.17 U	0.17 U	0.17 U
1,3-Dichloropropene		NA	NA	NA
1,4-Dichlorobenzene		0.17 U	0.17 U	0.17 U
2-Butanone (MEK)		1.5 U	1.5 U	1.5 U
2-Chloroethyl vinyl ether		NA	NA	NA
2-Hexanone		0.47 U	0.47 U	0.47 U
4-Methyl-2-Pentanone (MIBK)		0.28 U	0.28 U	0.28 U
Acetone		4.4 U	4.4 U	4.4 U
Acrolein		NA	NA	NA
Acrylonitrile		NA	NA	NA
Benzene		0.14 U	0.14 U	0.14 U
Bromodichloromethane		0.23 U	0.23 U	0.23 U
Bromoform		0.18 U	0.18 U	0.18 U
Bromomethane		0.45 U	0.45 U	0.45 U
Carbon disulfide		0.23 U	0.23 U	0.23 U
Carbon tetrachloride		0.26 U	0.26 U	0.26 U
Chlorobenzene		0.14 U	0.14 U	0.14 U
Chloroethane		0.5 U	0.5 U	0.5 U
Chloroform		1.9	2.2	2.6
Chloromethane		0.41 U	0.41 U	0.41 U
cis-1,2-Dichloroethene		0.29 U	0.29 U	0.29 U
cis-1,3-Dichloropropene		0.16 U	0.16 U	0.16 U
Dibromochloromethane		0.17 U	0.17 U	0.17 U
Dichlorodifluoromethane		NA	NA	NA
Ethylbenzene		0.23 U	0.23 U	0.23 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	11-08A Lab Comp 11/10/2008 MH-2	11-08B Lab Comp 11/11/2008 MH-2	11-08C Lab Comp 11/12/2008 MH-2
m+p-Xylene		0.31 U	0.31 U	0.31 U
Methylene Chloride		0.27 U	0.27 U	0.27 U
O-Xylene		0.13 U	0.13 U	0.13 U
Styrene		0.21 U	0.21 U	0.21 U
Tetrachloroethene		0.23 U	0.23 U	0.23 U
Toluene		1.5	0.11 U	0.11 U
trans-1,2-Dichloroethene		0.35 U	0.35 U	0.35 U
trans-1,3-Dichloropropene		0.15 U	0.15 U	0.15 U
Trichloroethene		0.16 U	0.16 U	0.16 U
Trichlorofluoromethane		NA	NA	NA
Vinyl acetate		0.43 U	0.43 U	0.43 U
Vinyl chloride		0.47 U	0.47 U	0.47 U
Xylenes (total)		0.13 U	0.13 U	0.13 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	11-08D Lab Comp 11/13/2008 MH-2	6209A-MH2 Lab Comp 6/2/2009 MH-2	6209B-MH2 Lab Comp 6/3/2009 MH-2
1,1,1-Trichloroethane		0.21 U	1 U	1 U
1,1,2,2-Tetrachloroethane		0.21 U	1 U	1 U
1,1,2-Trichloroethane		0.28 U	1 U	1 U
1,1-Dichloroethane		0.2 U	1 U	1 U
1,1-Dichloroethene		0.23 U	1 U	1 U
1,2-Dichlorobenzene		0.16 U	1 U	1 U
1,2-Dichloroethane		0.25 U	0.5 U	0.5 U
1,2-Dichloroethene (total)		NA	NA	NA
1,2-Dichloropropane		0.37 U	1 U	1 U
1,3-Dichlorobenzene		0.17 U	1 U	1 U
1,3-Dichloropropene		NA	NA	NA
1,4-Dichlorobenzene		0.17 U	1 U	1 U
2-Butanone (MEK)		1.5 U	1 U	1 U
2-Chloroethyl vinyl ether		NA	NA	NA
2-Hexanone		0.47 U	1 U	1 U
4-Methyl-2-Pentanone (MIBK)		0.28 U	1 U	1 U
Acetone		4.4 U	19	5 U
Acrolein		NA	NA	NA
Acrylonitrile		NA	NA	NA
Benzene		0.14 U	0.5 U	0.5 U
Bromodichloromethane		0.23 U	1 U	1 U
Bromoform		0.18 U	1 U	1 U
Bromomethane		0.45 U	1 U	1 U
Carbon disulfide		0.23 U	1 U	1 U
Carbon tetrachloride		0.26 U	1 U	1 U
Chlorobenzene		0.14 U	2.2	6.2
Chloroethane		0.5 U	1 U	1 U
Chloroform		2.8	2.1	3.1
Chloromethane		0.41 U	1 U	1 U
cis-1,2-Dichloroethene		2	1 U	1 U
cis-1,3-Dichloropropene		0.16 U	1 U	1 U
Dibromochloromethane		0.17 U	1 U	1 U
Dichlorodifluoromethane		NA	NA	NA
Ethylbenzene		0.23 U	1 U	1 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	11-08D Lab Comp 11/13/2008 MH-2	6209A-MH2 Lab Comp 6/2/2009 MH-2	6209B-MH2 Lab Comp 6/3/2009 MH-2
m+p-Xylene		0.31 U	1 U	1 U
Methylene Chloride		0.27 U	1 U	1 U
O-Xylene		0.13 U	1 U	1 U
Styrene		0.21 U	1 U	1 U
Tetrachloroethene		14	1 U	1 U
Toluene		0.11 U	1.4	3.7
trans-1,2-Dichloroethene		0.35 U	1 U	1 U
trans-1,3-Dichloropropene		0.15 U	1 U	1 U
Trichloroethene		60	1 U	1 U
Trichlorofluoromethane		NA	NA	NA
Vinyl acetate		0.43 U	1 U	1 U
Vinyl chloride		0.47 U	0.5 U	0.5 U
Xylenes (total)		0.13 U	1 U	1 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation:	6209C-MH2 LAB COMP	6209D-MH2-Lab Comp	MH-10/27-Lab comp
	Sample Date:	6/4/2009	6/5/2009	10/27/2009
	Location:	MH-2	MH-2	MH-2
1,1,1-Trichloroethane		1 U	1 U	1 U
1,1,2,2-Tetrachloroethane		1 U	1 U	0.5 U
1,1,2-Trichloroethane		1 U	1 U	1 U
1,1-Dichloroethane		1 U	1 U	1 U
1,1-Dichloroethene		1 U	1 U	1 U
1,2-Dichlorobenzene		1 U	1 U	1 U
1,2-Dichloroethane		0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)		NA	NA	NA
1,2-Dichloropropane		1 U	1 U	1 U
1,3-Dichlorobenzene		1 U	1 U	1 U
1,3-Dichloropropene		NA	NA	NA
1,4-Dichlorobenzene		1 U	1 U	1 U
2-Butanone (MEK)		1 U	1 U	1 U
2-Chloroethyl vinyl ether		NA	NA	NA
2-Hexanone		1 U	1 U	1 U
4-Methyl-2-Pentanone (MIBK)		1 U	1 U	1 U
Acetone		19	5 U	29
Acrolein		NA	NA	NA
Acrylonitrile		NA	NA	NA
Benzene		0.5 U	0.5 U	0.5 U
Bromodichloromethane		1 U	1 U	0.5 U
Bromoform		1 U	1 U	1 U
Bromomethane		5 U	5 U	1 U
Carbon disulfide		1 U	1 U	1 U
Carbon tetrachloride		1 U	1 U	1 U
Chlorobenzene		1.1	1 U	1 U
Chloroethane		1 U	1 U	1 U
Chloroform		2.6	2.1	7.2
Chloromethane		1 U	1 U	1 U
cis-1,2-Dichloroethene		1 U	1 U	1.5
cis-1,3-Dichloropropene		1 U	1 U	0.5 U
Dibromochloromethane		1 U	1 U	0.5 U
Dichlorodifluoromethane		NA	NA	NA
Ethylbenzene		1 U	1 U	1 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:**	6209C-MH2 LAB COMP	6209D-MH2-Lab Comp	MH-10/27-Lab comp
	Sample Date:	6/4/2009	6/5/2009	10/27/2009
	Location:	MH-2	MH-2	MH-2
m+p-Xylene		1 U	1 U	1 U
Methylene Chloride		1 U	1 U	1 U
O-Xylene		1 U	1 U	1 U
Styrene		1 U	1 U	1 U
Tetrachloroethene		1 U	1 U	3.4
Toluene		1 U	1 U	19
trans-1,2-Dichloroethene		1 U	1 U	1 U
trans-1,3-Dichloropropene		1 U	1 U	0.5 U
Trichloroethene		1 U	1 U	7.9
Trichlorofluoromethane		NA	NA	NA
Vinyl acetate		1 U	1 U	1 U
Vinyl chloride		1 U	1 U	1 U
Xylenes (total)		1 U	1 U	1 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MH-10/28-Lab Comp 10/28/2009 MH-2	MH-10/29-Lab Comp 10/29/2009 MH-2	MH-10/30 Lab Comp 10/30/2009 MH-2
1,1,1-Trichloroethane		1 U	1 U	1 U
1,1,2,2-Tetrachloroethane		0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane		1 U	1 U	1 U
1,1-Dichloroethane		1 U	1 U	1 U
1,1-Dichloroethene		1 U	1 U	1 U
1,2-Dichlorobenzene		1 U	1 U	1 U
1,2-Dichloroethane		0.5 U	0.5 U	0.5 U
1,2-Dichloroethene (total)		NA	NA	NA
1,2-Dichloropropane		1 U	1 U	1 U
1,3-Dichlorobenzene		1 U	1 U	1 U
1,3-Dichloropropene		NA	NA	NA
1,4-Dichlorobenzene		1 U	1 U	1 U
2-Butanone (MEK)		25	24	40
2-Chloroethyl vinyl ether		NA	NA	NA
2-Hexanone		1 U	1 U	1 U
4-Methyl-2-Pentanone (MIBK)		1 U	1 U	1 U
Acetone		57	87	100
Acrolein		NA	NA	NA
Acrylonitrile		NA	NA	NA
Benzene		0.5 U	0.5 U	0.5 U
Bromodichloromethane		0.5 U	0.5 U	0.5 U
Bromoform		1 U	1 U	1 U
Bromomethane		1 U	1 U	1 U
Carbon disulfide		1 U	1 U	1 U
Carbon tetrachloride		1 U	1 U	1 U
Chlorobenzene		1 U	2.4	3
Chloroethane		1 U	1 U	1 U
Chloroform		3.7	3.4	2.3
Chloromethane		1 U	1 U	1 U
cis-1,2-Dichloroethene		4	9.2	11
cis-1,3-Dichloropropene		0.5 U	0.5 U	0.5 U
Dibromochloromethane		0.5 U	0.5 U	0.5 U
Dichlorodifluoromethane		NA	NA	NA
Ethylbenzene		1 U	1 U	1 U

Table A-1. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MH-10/28-Lab Comp 10/28/2009 MH-2	MH-10/29-Lab Comp 10/29/2009 MH-2	MH-10/30 Lab Comp 10/30/2009 MH-2
m+p-Xylene		1 U	1 U	1 U
Methylene Chloride		1 U	1 U	1 U
O-Xylene		1 U	1 U	1 U
Styrene		1 U	1 U	1 U
Tetrachloroethene		7.8	7.8	5.4
Toluene		46	210	320
trans-1,2-Dichloroethene		1 U	1 U	1 U
trans-1,3-Dichloropropene		0.5 U	0.5 U	0.5 U
Trichloroethene		23	30	24
Trichlorofluoromethane		NA	NA	NA
Vinyl acetate		1 U	1 U	1 U
Vinyl chloride		2	4.8	3.6
Xylenes (total)		1 U	1 U	1 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MHW-2 2/9/1993 MH-2	CW-1 8/4/2003 MH-43	EH-1 8/4/2003 EH-1	EH-1 8/5/2003 EH-1	EH-1 8/6/2003 EH-1	CW-2 8/7/2003 MH-43	CW-3 8/8/2003 MH-43
1,2,4-Trichlorobenzene		1 J	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	10 U
1,2-Diphenylhydrazine		NA	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	10 U
1,4-Dichlorobenzene		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis (1-chloropropane)		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		26 U	NA	NA	NA	NA	NA	NA
2,4,6-Trichlorophenol		10 U	10 U	10 U	10 U	2 J	10 U	10 U
2,4-Dichlorophenol		10 U	3 J	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol		10 U	50 U	50 U	50 U	50 U	50 U	50 U
2,4-Dinitrotoluene		10 U	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	10 U
2-Chloronaphthalene		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene		10 U	NA	NA	NA	NA	NA	NA
2-Methylphenol		10 U	NA	NA	NA	NA	NA	NA
2-Nitroaniline		26 U	NA	NA	NA	NA	NA	NA
2-Nitrophenol		10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine		10 U	20 U	20 U	20 U	20 U	20 U	20 U
3-Nitroaniline		26 U	NA	NA	NA	NA	NA	NA
3&4-Methylphenol		NA	NA	NA	NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		26 U	50 U	50 U	50 U	50 U	50 U	50 U
4-Bromophenyl phenyl ether		10 U	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 U	10 U	10 U
4-Chloroaniline		10 U	NA	NA	NA	NA	NA	NA
4-Chlorophenyl phenyl ether		10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol sodium salt		10 U	NA	NA	NA	NA	NA	NA
4-Nitroaniline		26 U	NA	NA	NA	NA	NA	NA
4-Nitrophenol		10 U	50 U	50 U	50 U	50 U	50 U	50 U
Acenaphthene		10 U	3 J	10 U	10 U	10 U	3 J	3 J

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	MHW-2 2/9/1993 MH-2	CW-1 8/4/2003 MH-43	EH-1 8/4/2003 EH-1	EH-1 8/5/2003 EH-1	EH-1 8/6/2003 EH-1	CW-2 8/7/2003 MH-43	CW-3 8/8/2003 MH-43
Acenaphthylene		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene		2 J	2 J	10 U	10 U	10 UM	1 J	2 J
Azobenzene		NA	NA	NA	NA	NA	NA	NA
Benzidine		NA	100 U	100 U	100 U	100 U	100 U	100 U
Benzo[a]anthracene		3 J	10 U	10 U	10 U	10 U	10 U	2 J
Benzo[a]pyrene		10 U	0.8 J	10 U	10 U	10 U	10 U	10 U
Benzo[b]fluoranthene		4 J	1 J	10 U	10 U	10 U	10 UH	10 U
Benzo[g,h,i]perylene		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo[k]fluoranthene		10 U	10 UM	10 U	10 U	10 U	10 U	1 J
Benzoic Acid		NA	NA	NA	NA	NA	NA	NA
Benzyl Alcohol		NA	NA	NA	NA	NA	NA	NA
Bis(2-chloroethoxy)methane		10 U	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	10 U
bis(2-Chloroisopropyl) ether		NA	NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate		10 UV	6 J	10 U	50	10 U	10 U	10 U
Butylbenzyl phthalate		10 UV	10 U	10 U	11 H	10 U	10 U	10 U
Carbazole		NA	NA	NA	NA	NA	NA	NA
Chrysene		7 J	2 J	10 U	10 U	10 U	1 J	2 J
Dibenzo[a,h]anthracene		10 U	10 UH	10 U	10 U	10 U	10 U	10 U
Dibenzofuran		0.9 J	NA	NA	NA	NA	NA	NA
Diethyl phthalate		10 UV	2 J	10 U	5 J	10 U	10 U	10 U
Dimethyl phthalate		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate		10 UV	10 U	10 U	10 U	10 U	1 J	1 J
Di-n-octyl phthalate		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluoranthene		16	5 J	10 U	10 U	10 U	8 J	9 J
Fluorene		10 U	3 J	10 U	0.9 J	10 U	2 J	3 J
Hexachlorobenzene		10 U	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	10 U
Hexachlorocyclopentadiene		10 U	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	10 U
Indeno[1,2,3-cd]pyrene		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone		10 U	10 U	10 U	10 U	10 U	10 U	10 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MHW-2 2/9/1993 MH-2	CW-1 8/4/2003 MH-43	EH-1 8/4/2003 EH-1	EH-1 8/5/2003 EH-1	EH-1 8/6/2003 EH-1	CW-2 8/7/2003 MH-43	CW-3 8/8/2003 MH-43
Naphthalene		0.7 J	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene		10 U	10 U	10 U	10 U	10 U	10 U	10 U
n-Nitrosodimethylamine		NA	10 U	10 U	10 U	10 U	10 U	10 U
n-Nitrosodi-n-propylamine		10 U	10 U	10 U	10 U	10 U	10 U	10 U
n-Nitrosodiphenylamine		10 U	10 U	10 U	2 JH	10 U	10 U	10 U
Pentachlorophenol		26 U	50 U	50 U	50 U	50 U	50 U	50 U
Phenanthrene		7 J	5 J	10 U	3 J	10 U	3 J	4 J
Phenol		10 U	29	10 U	23	19	10 U	10 U
Pyrene		10 J	4 J	10 U	2 J	10 U	4 J	6 J

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard
D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	12A-Composite 12/6/2004 MH-2	12B-Composite 12/7/2004 MH-2	12C-Composite 12/8/2004 MH-2	12D-Composite 12/9/2004 MH-2
1,2,4-Trichlorobenzene		1 U	1 U	1 U	1 U
1,2-Dichlorobenzene		1 U	1 U	1 U	1 U
1,2-Diphenylhydrazine		NA	NA	NA	NA
1,3-Dichlorobenzene		1 U	1 U	1 U	1 U
1,4-Dichlorobenzene		1 U	1 U	1 U	1 U
2,2'-oxybis (1-chloropropane)		NA	NA	NA	NA
2,2'-oxybis (2-chloropropane)		NA	NA	NA	NA
2,4,5-Trichlorophenol		NA	NA	NA	NA
2,4,6-Trichlorophenol		1 U	1 U	1 U	1 U
2,4-Dichlorophenol		1 U	1 U	1 U	1 U
2,4-Dimethylphenol		1 U	1 U	1 U	1 U
2,4-Dinitrophenol		10 U	10 U	10 U	10 U
2,4-Dinitrotoluene		1 U	1 U	1 U	1 U
2,6-Dinitrotoluene		1 U	1 U	1 U	1 U
2-Chloronaphthalene		1 U	1 U	1 U	1 U
2-Chlorophenol		1 U	1 U	1 U	1 U
2-Methylnaphthalene		NA	NA	NA	NA
2-Methylphenol		NA	NA	NA	NA
2-Nitroaniline		NA	NA	NA	NA
2-Nitrophenol		1 U	1 U	1 U	1 U
3,3'-Dichlorobenzidine		10 U	10 U	10 U	10 U
3-Nitroaniline		NA	NA	NA	NA
3&4-Methylphenol		NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether		1 U	1 U	1 U	1 U
4-Chloro-3-methylphenol		1 U	1 U	1 U	1 U
4-Chloroaniline		NA	NA	NA	NA
4-Chlorophenyl phenyl ether		1 U	1 U	1 U	1 U
4-Methylphenol sodium salt		NA	NA	NA	NA
4-Nitroaniline		NA	NA	NA	NA
4-Nitrophenol		10 U	10 U	10 U	10 U
Acenaphthene		1	1	1 U	1 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	12A-Composite 12/6/2004 MH-2	12B-Composite 12/7/2004 MH-2	12C-Composite 12/8/2004 MH-2	12D-Composite 12/9/2004 MH-2
Acenaphthylene		1 U	1 U	1 U	1 U
Anthracene		1 U	1 U	1 U	1 U
Azobenzene		1 U	1 U	1 U	1 U
Benzidine		10 U	10 U	10 U	10 U
Benzo[a]anthracene		1 U	1	1 U	1 U
Benzo[a]pyrene		1 U	1 U	1 U	1 U
Benzo[b]fluoranthene		1 U	1 U	1 U	1 U
Benzo[g,h,i]perylene		1 U	1 U	1 U	1 U
Benzo[k]fluoranthene		1 U	1 U	1 U	1 U
Benzoic Acid		NA	NA	NA	NA
Benzyl Alcohol		NA	NA	NA	NA
Bis(2-chloroethoxy)methane		1 U	1 U	1 U	1 U
Bis(2-chloroethyl) ether		1 U	1 U	1 U	1 U
bis(2-Chloroisopropyl) ether		1 U	1 U	1 U	1 U
Bis(2-ethylhexyl) phthalate		2	4	1 U	2
Butylbenzyl phthalate		1 U	1 U	1 U	1 U
Carbazole		NA	NA	NA	NA
Chrysene		1 U	1	1 U	1 U
Dibenzo[a,h]anthracene		1 U	1 U	1 U	1 U
Dibenzofuran		NA	NA	NA	NA
Diethyl phthalate		1 U	1 U	1 U	8
Dimethyl phthalate		1 U	1 U	1 U	1 U
Di-n-butyl phthalate		1 U	2	1 U	1 U
Di-n-octyl phthalate		1 U	1 U	1 U	1 U
Fluoranthene		3	3	1	2
Fluorene		1	1	1 U	1 U
Hexachlorobenzene		1 U	1 U	1 U	1 U
Hexachlorobutadiene		1 U	1 U	1 U	1 U
Hexachlorocyclopentadiene		10 U	10 U	10 U	10 U
Hexachloroethane		1 U	1 U	1 U	1 U
Indeno[1,2,3-cd]pyrene		1 U	1 U	1 U	1 U
Isophorone		1 U	1 U	1 U	1 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	12A-Composite 12/6/2004 MH-2	12B-Composite 12/7/2004 MH-2	12C-Composite 12/8/2004 MH-2	12D-Composite 12/9/2004 MH-2
Naphthalene		1 U	1 U	1 U	1 U
Nitrobenzene		1 U	1 U	1 U	1 U
n-Nitrosodimethylamine		1 U	1 U	1 U	1 U
n-Nitrosodi-n-propylamine		1 U	1 U	1 U	1 U
n-Nitrosodiphenylamine		1 U	1 U	1 U	1 U
Pentachlorophenol		10 U	10 U	10 U	10 U
Phenanthrene		2	3	1 U	2
Phenol		1 U	8	1 U	6
Pyrene		3	1 U	1 U	2

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard
D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	06-05A 6/13/2005 MH-2	06-05B 6/14/2005 MH-2	06-05C 6/15/2005 MH-2	06-05D 6/16/2005 MH-2	12-05 A (Comp) 12/16/2005 MH-2	12-05-B (Comp) 12/19/2005 MH-2
1,2,4-Trichlorobenzene		10 U	10 U	11 U	10 U	10 U	0.17 U
1,2-Dichlorobenzene		10 U	10 U	11 U	10 U	10 U	0.4 U
1,2-Diphenylhydrazine		NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene		10 U	10 U	11 U	10 U	10 U	0.28 U
1,4-Dichlorobenzene		10 U	10 U	11 U	10 U	10 U	0.18 U
2,2'-oxybis (1-chloropropane)		10 U	10 U	11 U	10 U	10 U	0.21 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA	NA	NA	NA
2,4,5-Trichlorophenol		10 U	10 U	11 U	10 U	10 U	1.6 U
2,4,6-Trichlorophenol		10 U	10 U	11 U	10 U	10 U	0.75 U
2,4-Dichlorophenol		10 U	10 U	11 U	10 U	10 U	1.3 U
2,4-Dimethylphenol		10 U	10 U	11 U	10 U	10 U	0.85 U
2,4-Dinitrophenol		25 U	25 U	56 U	25 U	25 U	1.8 U
2,4-Dinitrotoluene		10 U	10 U	56 U	10 U	10 U	0.36 U
2,6-Dinitrotoluene		10 U	10 U	28 U	10 U	10 U	0.45 U
2-Chloronaphthalene		10 U	10 U	11 U	10 U	10 U	0.11 U
2-Chlorophenol		10 U	10 U	11 U	10 U	10 U	1.8 U
2-Methylnaphthalene		10 U	10 U	11 U	25 U	1.6 J	1.4 J
2-Methylphenol		1.7 J	10 U	11 U	10 U	10 U	3.7 U
2-Nitroaniline		10 U	10 U	11 U	10 U	10 U	1.3 U
2-Nitrophenol		10 U	10 U	11 U	10 U	10 U	1.2 U
3,3'-Dichlorobenzidine		10 U	10 U	11 U	10 U	10 U	1.8 U
3-Nitroaniline		10 U	10 U	11 U	10 U	10 U	2.5 U
3&4-Methylphenol		NA	NA	2.1 J	NA	NA	NA
4,6-Dinitro-2-methylphenol		25 U	25 U	28 U	50 U	10 U	1.9 U
4-Bromophenyl phenyl ether		10 U	10 U	11 U	10 U	10 U	0.41 U
4-Chloro-3-methylphenol		10 U	10 U	11 U	10 U	10 U	2 U
4-Chloroaniline		10 U	10 U	11 U	10 U	10 U	6.8 U
4-Chlorophenyl phenyl ether		10 U	10 U	11 U	10 U	10 U	0.28 U
4-Methylphenol sodium salt		8.2 J	14	11 U	25 U	17	1.2 J
4-Nitroaniline		10 U	10 U	11 U	10 U	10 U	1.5 U
4-Nitrophenol		10 U	10 U	28 U	10 U	10 U	1.4 U
Acenaphthene		1.5 J	1.2 J	11 U	1.1 J	4.2 J	0.16 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	06-05A 6/13/2005 MH-2	06-05B 6/14/2005 MH-2	06-05C 6/15/2005 MH-2	06-05D 6/16/2005 MH-2	12-05 A (Comp) 12/16/2005 MH-2	12-05-B (Comp) 12/19/2005 MH-2
Acenaphthylene		10 U	10 U	11 U	10 U	10 U	0.15 U
Anthracene		10 U	10 U	11 U	10 U	3.9 J	0.2 U
Azobenzene		NA	NA	NA	NA	NA	NA
Benzidine		NA	NA	NA	NA	NA	NA
Benzo[a]anthracene		10 U	10 U	11 U	10 U	4.1 J	1.5
Benzo[a]pyrene		10 U	10 U	11 U	10 U	2 J	0.17 U
Benzo[b]fluoranthene		10 U	10 U	11 U	10 U	4.5 J	1.2
Benzo[g,h,i]perylene		10 U	10 U	11 U	10 U	10 U	0.14 U
Benzo[k]fluoranthene		10 U	10 U	11 U	10 U	10 U	0.35 U
Benzoic Acid		13 J	43	56 U	10 U	130 D	2.2 J
Benzyl Alcohol		10 U	10 U	11 U	10 U	5.9 J	3.3 U
Bis(2-chloroethoxy)methane		10 U	10 U	11 U	10 U	10 U	0.23 U
Bis(2-chloroethyl) ether		10 U	10 U	11 U	10 U	10 U	0.44 U
bis(2-Chloroisopropyl) ether		NA	NA	NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate		3.1 J	2.8 J	3.3 J	1.2 J	2.8 J	2.3
Butylbenzyl phthalate		10 U	10 U	11 U	10 U	10 U	0.27 U
Carbazole		1.2 J	1 J	11 U	10 U	1.9 J	0.19 U
Chrysene		1.3 J	1.1 J	1.3 J	10 U	5.5 J	1.7
Dibenzo[a,h]anthracene		25 U	25 U	11 U	10 U	10 U	0.18 U
Dibenzofuran		1 J	10 U	11 U	1.3 J	2.5 J	1.3 U
Diethyl phthalate		10 U	10 U	11 U	10 U	10 U	0.24 U
Dimethyl phthalate		10 U	10 U	11 U	10 U	10 U	0.17 U
Di-n-butyl phthalate		1.2 J	1.4 J	1.9 J	2.3 J	1.3 J	1.2
Di-n-octyl phthalate		25 U	25 U	11 U	10 U	10 U	0.34 U
Fluoranthene		4.3 J	4.5 J	4.4 J	1.4 J	14	6.2
Fluorene		1.6 J	1.4 J	11 U	1.9 J	3.4 J	0.24 U
Hexachlorobenzene		10 U	10 U	11 U	10 U	10 U	0.41 U
Hexachlorobutadiene		10 U	10 U	11 U	10 U	10 U	0.25 U
Hexachlorocyclopentadiene		10 U	10 U	11 U	10 U	10 U	2.7 U
Hexachloroethane		10 U	10 U	11 U	10 U	10 U	0.35 U
Indeno[1,2,3-cd]pyrene		10 U	10 U	11 U	10 U	10 U	0.17 U
Isophorone		10 U	10 U	11 U	10 U	10 U	5.3 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	06-05A 6/13/2005 MH-2	06-05B 6/14/2005 MH-2	06-05C 6/15/2005 MH-2	06-05D 6/16/2005 MH-2	12-05 A (Comp) 12/16/2005 MH-2	12-05-B (Comp) 12/19/2005 MH-2
Naphthalene		10 U	10 U	11 U	25 U	10 U	3.5
Nitrobenzene		10 U	10 U	11 U	10 U	10 U	0.28 U
n-Nitrosodimethylamine		NA	NA	NA	NA	NA	NA
n-Nitrosodi-n-propylamine		10 U	10 U	11 U	10 U	10 U	0.32 U
n-Nitrosodiphenylamine		10 U	10 U	11 U	10 U	10 U	0.27 U
Pentachlorophenol		10 U	10 U	28 U	25 U	25 U	0.97 U
Phenanthrene		4.3 J	3.8 J	2.7 J	1.6 J	8.9 J	2
Phenol		1.8 J	3.5 J	11 U	1.4 J	25	25
Pyrene		3.2 J	3 J	2.8 J	10 U	12	3.5

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
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D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	12-05C 12/20/2005 MH-2	12-05 D-COMP 12/21/2005 MH-2	6-06A (COMP) 6/12/2006 MH-2	6-06B COMP 6/13/2006 MH-2
1,2,4-Trichlorobenzene		0.17 U	0.17 U	0 U D	10 U
1,2-Dichlorobenzene		0.4 U	0.4 U	0 U D	10 U
1,2-Diphenylhydrazine		NA	NA	NA	NA
1,3-Dichlorobenzene		0.28 U	0.28 U	0 U D	10 U
1,4-Dichlorobenzene		0.18 U	0.18 U	0 U D	10 U
2,2'-oxybis (1-chloropropane)		0.21 U	0.21 U	0 U D	10 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA	NA
2,4,5-Trichlorophenol		1.6 U	1.6 U	0 U D	10 U
2,4,6-Trichlorophenol		0.75 U	0.75 U	0 U D	10 U
2,4-Dichlorophenol		1.3 U	1.3 U	0 U D	10 U
2,4-Dimethylphenol		0.85 U	0.85 U	0 U D	10 U
2,4-Dinitrophenol		1.8 U	1.8 U	0 U D	26 U
2,4-Dinitrotoluene		0.36 U	0.36 U	0 U D	10 U
2,6-Dinitrotoluene		0.45 U	0.45 U	0 U D	10 U
2-Chloronaphthalene		0.11 U	0.11 U	0 U D	10 U
2-Chlorophenol		1.8 U	1.8 U	0 U D	10 U
2-Methylnaphthalene		1.7 U	1.7 U	0 U D	10 U
2-Methylphenol		3.7 U	3.7 U	0 U D	10 U
2-Nitroaniline		1.3 U	1.3 U	0 U D	10 U
2-Nitrophenol		1.2 U	1.2 U	0 U D	10 U
3,3'-Dichlorobenzidine		1.8 U	1.8 U	0 U D	10 U
3-Nitroaniline		2.5 U	2.5 U	0 U D	10 U
3&4-Methylphenol		NA	NA	NA	NA
4,6-Dinitro-2-methylphenol		1.9 U	1.9 U	0 U D	26 U
4-Bromophenyl phenyl ether		0.41 U	0.41 U	0 U D	10 U
4-Chloro-3-methylphenol		2 U	2 U	0 U D	10 U
4-Chloroaniline		6.8 U	6.8 U	0 U D	10 U
4-Chlorophenyl phenyl ether		0.28 U	0.28 U	0 U D	10 U
4-Methylphenol sodium salt		3.7 U	8	290 D	10 U
4-Nitroaniline		1.5 U	1.5 U	0 U D	10 U
4-Nitrophenol		1.4 U	1.4 U	0 U D	10 U
Acenaphthene		0.16 U	0.16 U	0 U D	2 J

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	12-05C 12/20/2005 MH-2	12-05 D-COMP 12/21/2005 MH-2	6-06A (COMP) 6/12/2006 MH-2	6-06B COMP 6/13/2006 MH-2
Acenaphthylene		0.15 U	0.15 U	0 U D	10 U
Anthracene		0.2 U	0.2 U	0 U D	10 U
Azobenzene		NA	NA	NA	NA
Benzidine		NA	NA	NA	NA
Benzo[a]anthracene		0.14 U	0.14 U	0 U D	10 U
Benzo[a]pyrene		0.17 U	0.17 U	0 U D	10 U
Benzo[b]fluoranthene		0.28 U	0.28 U	0 U D	10 U
Benzo[g,h,i]perylene		0.14 U	0.14 U	0 U D	10 U
Benzo[k]fluoranthene		0.35 U	0.35 U	0 U D	10 U
Benzoic Acid		6.1 U	22	1400 D	26 U
Benzyl Alcohol		3.3 U	5.6	50 J D	10 U
Bis(2-chloroethoxy)methane		0.23 U	0.23 U	0 U D	10 U
Bis(2-chloroethyl) ether		0.44 U	0.44 U	0 U D	10 U
bis(2-Chloroisopropyl) ether		NA	NA	NA	NA
Bis(2-ethylhexyl) phthalate		0.63 U	3.1	0 U D	4.8 J
Butylbenzyl phthalate		0.27 U	0.27 U	0 U D	10 U
Carbazole		0.19 U	0.19 U	0 U D	1.1 J
Chrysene		0.28 U	0.28 U	0 U D	10 U
Dibenzo[a,h]anthracene		0.18 U	0.18 U	0 U D	10 U
Dibenzofuran		1.3 U	1.3 U	0 U D	1.5 J
Diethyl phthalate		0.24 U	0.24 U	0 U D	10 U
Dimethyl phthalate		0.17 U	0.17 U	0 U D	10 U
Di-n-butyl phthalate		0.2 U	0.2 U	0 U D	1.6 J
Di-n-octyl phthalate		0.34 U	0.34 U	0 U D	10 U
Fluoranthene		0.16 U	2.1	0 U D	3.1 J
Fluorene		0.24 U	0.24 U	0 U D	1.4 J
Hexachlorobenzene		0.41 U	0.41 U	0 U D	10 U
Hexachlorobutadiene		0.25 U	0.25 U	0 U D	10 U
Hexachlorocyclopentadiene		2.7 U	2.7 U	0 U D	10 U
Hexachloroethane		0.35 U	0.35 U	0 U D	10 U
Indeno[1,2,3-cd]pyrene		0.17 U	0.17 U	0 U D	10 U
Isophorone		5.3 U	5.3 U	0 U D	10 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	12-05C 12/20/2005 MH-2	12-05 D-COMP 12/21/2005 MH-2	6-06A (COMP) 6/12/2006 MH-2	6-06B COMP 6/13/2006 MH-2
Naphthalene		0.097 U	0.097 U	0 U D	10 U
Nitrobenzene		0.28 U	0.28 U	0 U D	10 U
n-Nitrosodimethylamine		NA	NA	NA	NA
n-Nitrosodi-n-propylamine		0.32 U	0.32 U	0 U D	10 U
n-Nitrosodiphenylamine		0.27 U	0.27 U	0 U D	10 U
Pentachlorophenol		0.97 U	0.97 U	0 U D	26 U
Phenanthrene		0.22 U	0.22 U	0 U D	2 J
Phenol		4.6	22	110 D	10 U
Pyrene		0.23 U	1.5	0 U D	2.6 J

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard
D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	6-06C Composite 6/14/2006 MH-2	6-06D COMPOSITE 6/15/2006 MH-2	10-06A 8:30-11:30 COMP 10/10/2006 MH-2
1,2,4-Trichlorobenzene		0.53 U	0 U D	0 U-D
1,2-Dichlorobenzene		0.64 U	0 U D	0 U-D
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		0.78 U	0 U D	0 U-D
1,4-Dichlorobenzene		0.84 U	0 U D	0 U-D
2,2'-oxybis (1-chloropropane)		0.25 U	0 U D	0 U-D
2,2'-oxybis (2-chloropropane)		NA	NA	NA
2,4,5-Trichlorophenol		2.1 U	0 U D	0 U-D
2,4,6-Trichlorophenol		0.97 U	0 U D	0 U-D
2,4-Dichlorophenol		1.4 U	0 U D	0 U-D
2,4-Dimethylphenol		2.2 U	0 U D	0 U-D
2,4-Dinitrophenol		0.7 U	0 U D	0 U-D
2,4-Dinitrotoluene		0.4 U	0 U D	0 U-D
2,6-Dinitrotoluene		0.37 U	0 U D	0 U-D
2-Chloronaphthalene		0.45 U	0 U D	0 U-D
2-Chlorophenol		1.6 U	0 U D	0 U-D
2-Methylnaphthalene		3.9 U	0 U D	0 U-D
2-Methylphenol		4.3 U	0 U D	0 U-D
2-Nitroaniline		1.8 U	0 U D	0 U-D
2-Nitrophenol		0.9 U	0 U D	0 U-D
3,3'-Dichlorobenzidine		0.89 U	0 U D	0 U-D
3-Nitroaniline		2.9 U	0 U D	0 U-D
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		0.9 U	0 U D	0 U-D
4-Bromophenyl phenyl ether		0.58 U	0 U D	0 U-D
4-Chloro-3-methylphenol		1.2 U	0 U D	0 U-D
4-Chloroaniline		3.4 U	0 U D	0 U-D
4-Chlorophenyl phenyl ether		0.42 U	0 U D	0 U-D
4-Methylphenol sodium salt		4.6 U	480 D	91 D
4-Nitroaniline		1.7 U	0 U D	0 U-D
4-Nitrophenol		1.2 U	0 U D	0 U-D
Acenaphthene		2.2	0 U D	0 U-D

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	6-06C Composite 6/14/2006 MH-2	6-06D COMPOSITE 6/15/2006 MH-2	10-06A 8:30-11:30 COMP 10/10/2006 MH-2
Acenaphthylene		0.27 U	0 U D	0 U-D
Anthracene		0.21 U	0 U D	0 U-D
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		0.25 U	0 U D	0 U-D
Benzo[a]pyrene		0.18 U	0 U D	0 U-D
Benzo[b]fluoranthene		0.24 U	0 U D	0 U-D
Benzo[g,h,i]perylene		0.32 U	0 U D	0 U-D
Benzo[k]fluoranthene		0.35 U	0 U D	0 U-D
Benzoic Acid		1.8 J	100 D	290 D
Benzyl Alcohol		4 U	0 U D	0 U-D
Bis(2-chloroethoxy)methane		0.21 U	0 U D	0 U-D
Bis(2-chloroethyl) ether		0.48 U	0 U D	0 U-D
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		2.3	0 U D	0 U-D
Butylbenzyl phthalate		0.26 U	0 U D	0 U-D
Carbazole		1.2	0 U D	0 U-D
Chrysene		0.21 U	0 U D	0 U-D
Dibenzo[a,h]anthracene		0.28 U	0 U D	0 U-D
Dibenzofuran		1.5 J	0 U D	0 U-D
Diethyl phthalate		0.32 U	0 U D	0 U-D
Dimethyl phthalate		0.2 U	0 U D	0 U-D
Di-n-butyl phthalate		1.9	0 U D	0 U-D
Di-n-octyl phthalate		0.21 U	0 U D	0 U-D
Fluoranthene		3.8	0 U D	0 U-D
Fluorene		1.5	0 U D	0 U-D
Hexachlorobenzene		0.3 U	0 U D	0 U-D
Hexachlorobutadiene		0.69 U	0 U D	0 U-D
Hexachlorocyclopentadiene		5.1 U	0 U D	0 U-D
Hexachloroethane		0.76 U	0 U D	0 U-D
Indeno[1,2,3-cd]pyrene		0.2 U	0 U D	0 U-D
Isophorone		0.16 U	0 U D	0 U-D

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:**	6-06C Composite	6-06D COMPOSITE	10-06A 8:30-11:30 COMP
	Sample Date:	6/14/2006	6/15/2006	10/10/2006
	Location:	MH-2	MH-2	MH-2
Naphthalene		0.49 U	0 U D	0 U-D
Nitrobenzene		0.26 U	0 U D	0 U-D
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		0.28 U	0 U D	0 U-D
n-Nitrosodiphenylamine		0.17 U	0 U D	0 U-D
Pentachlorophenol		0.85 U	0 U D	0 U-D
Phenanthrene		2.7	0 U D	0 U-D
Phenol		2.3	43 D	25 D
Pyrene		3	0 U D	0 U-D

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard
D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** **Sample Date:** **Location:**	10-06B-600-900 COMP 10/11/2006 MH-2	10-06C 7:00-10:00 10/12/2006 MH-2	10-06D 6:30-9:30 COMP 10/13/2006 MH-2
1,2,4-Trichlorobenzene		1.5 U	0.48 U	1.5 U
1,2-Dichlorobenzene		1.8 U	0.57 U	1.8 U
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		2.1 U	0.7 U	2.1 U
1,4-Dichlorobenzene		2.3 U	0.75 U	2.3 U
2,2'-oxybis (1-chloropropane)		0.69 U	0.23 U	0.69 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA
2,4,5-Trichlorophenol		5.8 U	1.9 U	5.8 U
2,4,6-Trichlorophenol		2.7 U	0.88 U	2.7 U
2,4-Dichlorophenol		3.8 U	1.3 U	3.8 U
2,4-Dimethylphenol		6.1 U	2 U	6.1 U
2,4-Dinitrophenol		1.9 U	0.63 U	1.9 U
2,4-Dinitrotoluene		1.1 U	0.36 U	1.1 U
2,6-Dinitrotoluene		1 U	0.33 U	1 U
2-Chloronaphthalene		1.2 U	0.41 U	1.2 U
2-Chlorophenol		4.5 U	1.5 U	4.5 U
2-Methylnaphthalene		11 U	3.5 U	11 U
2-Methylphenol		12 U	3.9 U	12 U
2-Nitroaniline		5.1 U	1.7 U	5.1 U
2-Nitrophenol		2.5 U	0.81 U	2.5 U
3,3'-Dichlorobenzidine		2.5 U	0.8 U	2.5 U
3-Nitroaniline		7.9 U	2.6 U	7.9 U
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		2.5 U	0.81 U	2.5 U
4-Bromophenyl phenyl ether		1.6 U	0.53 U	1.6 U
4-Chloro-3-methylphenol		3.4 U	1.1 U	3.4 U
4-Chloroaniline		9.3 U	3 U	9.3 U
4-Chlorophenyl phenyl ether		1.2 U	0.38 U	1.2 U
4-Methylphenol sodium salt		220 D	67	320
4-Nitroaniline		4.8 U	1.6 U	4.8 U
4-Nitrophenol		3.3 U	1.1 U	3.3 U
Acenaphthene		0.78 U	1.2	0.78 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	10-06B-600-900 COMP 10/11/2006 MH-2	10-06C 7:00-10:00 10/12/2006 MH-2	10-06D 6:30-9:30 COMP 10/13/2006 MH-2
Acenaphthylene		0.75 U	0.24 U	0.75 U
Anthracene		0.57 U	0.19 U	0.57 U
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		0.69 U	1.4	0.69 U
Benzo[a]pyrene		0.49 U	0.16 U	0.49 U
Benzo[b]fluoranthene		0.65 U	1.6	0.65 U
Benzo[g,h,i]perylene		0.88 U	0.29 U	0.88 U
Benzo[k]fluoranthene		0.96 U	0.31 U	0.96 U
Benzoic Acid		210 D	76	33 U
Benzyl Alcohol		11 U	3.6 U	11 U
Bis(2-chloroethoxy)methane		0.58 U	0.19 U	0.58 U
Bis(2-chloroethyl) ether		1.3 U	0.43 U	1.3 U
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		1.1 U	2.7	3.2
Butylbenzyl phthalate		0.71 U	0.23 U	0.71 U
Carbazole		0.5 U	0.16 U	0.5 U
Chrysene		0.57 U	1.6	0.57 U
Dibenzo[a,h]anthracene		0.76 U	0.25 U	0.76 U
Dibenzofuran		4.8 U	1.6 U	4.8 U
Diethyl phthalate		0.87 U	0.28 U	0.87 U
Dimethyl phthalate		0.54 U	0.18 U	0.54 U
Di-n-butyl phthalate		0.98 U	0.32 U	0.98 U
Di-n-octyl phthalate		0.58 U	0.19 U	0.58 U
Fluoranthene		0.47 U	4.4	0.47 U
Fluorene		0.46 U	1.1	0.46 U
Hexachlorobenzene		0.84 U	0.27 U	0.84 U
Hexachlorobutadiene		1.9 U	0.62 U	1.9 U
Hexachlorocyclopentadiene		14 U	4.6 U	14 U
Hexachloroethane		2.1 U	0.68 U	2.1 U
Indeno[1,2,3-cd]pyrene		0.55 U	0.18 U	0.55 U
Isophorone		0.43 U	0.14 U	0.43 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	10-06B-600-900 COMP 10/11/2006 MH-2	10-06C 7:00-10:00 10/12/2006 MH-2	10-06D 6:30-9:30 COMP 10/13/2006 MH-2
Naphthalene		1.4 U	0.44 U	1.4 U
Nitrobenzene		0.72 U	0.24 U	0.72 U
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		0.78 U	0.26 U	0.78 U
n-Nitrosodiphenylamine		0.47 U	0.15 U	0.47 U
Pentachlorophenol		2.3 U	0.76 U	2.3 U
Phenanthrene		0.7 U	2.9	0.7 U
Phenol		35 D	10	30
Pyrene		0.45 U	3.3	0.45 U

µg/L -Micrograms per liter
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D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	6-07A (Field Comp) 6/25/2007 MH-2	6-07B (Field Composite) 6/26/2007 MH-2	6-07 C (Field Comp) 6/27/2007 MH-2
1,2,4-Trichlorobenzene		0 U D	1.1 U	1.2 U
1,2-Dichlorobenzene		0 U D	0.93 U	1 U
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		0 U D	0.96 U	1 U
1,4-Dichlorobenzene		0 U D	0.89 U	0.97 U
2,2'-oxybis (1-chloropropane)		NA	NA	NA
2,2'-oxybis (2-chloropropane)		0 U D	0.16 U	0.18 U
2,4,5-Trichlorophenol		0 U D	2.7 U	3 U
2,4,6-Trichlorophenol		0 U D	1.3 U	1.4 U
2,4-Dichlorophenol		0 U D	1.7 U	1.8 U
2,4-Dimethylphenol		0 U D	2.1 U	2.3 U
2,4-Dinitrophenol		0 U D	1.4 U	1.5 U
2,4-Dinitrotoluene		0 U D	0.33 U	0.36 U
2,6-Dinitrotoluene		0 U D	0.34 U	0.37 U
2-Chloronaphthalene		0 U D	0.59 U	0.64 U
2-Chlorophenol		0 U D	2.1 U	2.3 U
2-Methylnaphthalene		0 U D	9 U	9.8 U
2-Methylphenol		0 U D	6.9 U	7.5 U
2-Nitroaniline		0 U D	1.7 U	1.9 U
2-Nitrophenol		0 U D	1 U	1.1 U
3,3'-Dichlorobenzidine		0 U D	0.66 U	0.71 U
3-Nitroaniline		0 U D	2.8 U	3.1 U
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		0 U D	1.8 U	2 U
4-Bromophenyl phenyl ether		0 U D	0.44 U	0.48 U
4-Chloro-3-methylphenol		0 U D	2 U	2.2 U
4-Chloroaniline		0 U D	4.2 U	4.5 U
4-Chlorophenyl phenyl ether		0 U D	0.64 U	0.69 U
4-Methylphenol sodium salt		260 D	6.5 U	7.1 U
4-Nitroaniline		0 U D	2.6 U	2.8 U
4-Nitrophenol		0 U D	1.3 U	1.4 U
Acenaphthene		0 U D	2.8	1.4

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	6-07A (Field Comp) 6/25/2007 MH-2	6-07B (Field Composite) 6/26/2007 MH-2	6-07 C (Field Comp) 6/27/2007 MH-2
Acenaphthylene		0 U D	0.38 U	0.41 U
Anthracene		0 U D	1.4	0.37 U
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		0 U D	1.9	0.14 U
Benzo[a]pyrene		0 U D	0.24 U	0.26 U
Benzo[b]fluoranthene		0 U D	2	0.2 U
Benzo[g,h,i]perylene		0 U D	0.18 U	0.19 U
Benzo[k]fluoranthene		0 U D	0.21 U	0.23 U
Benzoic Acid		640 D	12 U	13 U
Benzyl Alcohol		0 U D	3.8 U	4.1 U
Bis(2-chloroethoxy)methane		0 U D	0.26 U	0.28 U
Bis(2-chloroethyl) ether		0 U D	0.4 U	0.43 U
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		0 U D	2.3	2.6
Butylbenzyl phthalate		0 U D	0.14 U	0.15 U
Carbazole		0 U D	1.9	1.2
Chrysene		0 U D	2	0.16 U
Dibenzo[a,h]anthracene		0 U D	0.18 U	0.2 U
Dibenzofuran		0 U D	4.7 U	5.1 U
Diethyl phthalate		0 U D	0.18 U	0.2 U
Dimethyl phthalate		0 U D	0.14 U	0.16 U
Di-n-butyl phthalate		0 U D	1.2	0.17 U
Di-n-octyl phthalate		0 U D	0.34 U	0.37 U
Fluoranthene		0 U D	6.6	3.3
Fluorene		0 U D	2.8	1.5 B
Hexachlorobenzene		0 U D	0.35 U	0.38 U
Hexachlorobutadiene		0 U D	0.41 U	0.44 U
Hexachlorocyclopentadiene		0 U D	9.2 U	10 U
Hexachloroethane		0 U D	1.1 U	1.2 U
Indeno[1,2,3-cd]pyrene		0 U D	0.047 U	0.052 U
Isophorone		0 U D	0.29 U	0.32 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	6-07A (Field Comp) 6/25/2007 MH-2	6-07B (Field Composite) 6/26/2007 MH-2	6-07 C (Field Comp) 6/27/2007 MH-2
Naphthalene		0 U D	2	0.67 U
Nitrobenzene		0 U D	0.43 U	0.47 U
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		0 U D	0.18 U	0.19 U
n-Nitrosodiphenylamine		0 U D	0.39 U	0.42 U
Pentachlorophenol		0 U D	1.1 U	1.2 U
Phenanthrene		0 U D	6.4	3.8
Phenol		90 D	14	0.95 U
Pyrene		0 U D	5	2.5

µg/L -Micrograms per liter

J - Estimated Value

U - Compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard

D – Comound as identified in an analysis at a secondary dilution factor

M- Manually integrated compound

DUP - Duplicate

NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	6-07 D (Field Comp) 6/28/2007 MH-2	12-07 A (Field Comp) 12/10/2007 MH-2	12-07B FIELD COMP 12/11/2007 MH-2
1,2,4-Trichlorobenzene		1.1 U	1.2 U	0 D
1,2-Dichlorobenzene		0.96 U	NA	NA
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		1 U	NA	NA
1,4-Dichlorobenzene		0.93 U	NA	NA
2,2'-oxybis (1-chloropropane)		NA	0.17 U	0 D
2,2'-oxybis (2-chloropropane)		0.17 U	NA	NA
2,4,5-Trichlorophenol		2.8 U	2.9 U	0 D
2,4,6-Trichlorophenol		1.3 U	1.4 U	0 D
2,4-Dichlorophenol		1.7 U	1.8 U	0 D
2,4-Dimethylphenol		2.2 U	2.2 U	0 D
2,4-Dinitrophenol		1.4 U	1.5 U	0 D
2,4-Dinitrotoluene		0.35 U	0.35 U	0 D
2,6-Dinitrotoluene		0.36 U	0.36 U	0 D
2-Chloronaphthalene		0.62 U	0.62 U	0 D
2-Chlorophenol		2.2 U	2.2 U	0 D
2-Methylnaphthalene		9.4 U	9.5 U	0 D
2-Methylphenol		7.2 U	7.3 U	0 D
2-Nitroaniline		1.8 U	1.8 U	0 D
2-Nitrophenol		1 U	1.1 U	0 D
3,3'-Dichlorobenzidine		0.68 U	0.69 U	0 D
3-Nitroaniline		3 U	3 U	0 D
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		1.9 U	1.9 U	0 D
4-Bromophenyl phenyl ether		0.46 U	0.46 U	0 D
4-Chloro-3-methylphenol		2.1 U	2.1 U	0 D
4-Chloroaniline		4.3 U	4.4 U	0 D
4-Chlorophenyl phenyl ether		0.67 U	0.67 U	0 D
4-Methylphenol sodium salt		6.8 U	6.9 U	67 D
4-Nitroaniline		2.7 U	2.7 U	0 D
4-Nitrophenol		1.3 U	1.3 U	0 D
Acenaphthene		2	3.5	4.7 D

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	6-07 D (Field Comp) 6/28/2007 MH-2	12-07 A (Field Comp) 12/10/2007 MH-2	12-07B FIELD COMP 12/11/2007 MH-2
Acenaphthylene		0.39 U	0.4 U	0 D
Anthracene		0.35 U	2.3	2.2 D
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		0.13 U	2.5	3.7 D
Benzo[a]pyrene		0.25 U	1.1	0 D
Benzo[b]fluoranthene		0.19 U	2.2	2.5 D
Benzo[g,h,i]perylene		0.18 U	0.49	0 D
Benzo[k]fluoranthene		0.22 U	0.94	0 D
Benzoic Acid		12 U	16	610 D
Benzyl Alcohol		3.9 U	5.8	24 D
Bis(2-chloroethoxy)methane		0.27 U	0.27 U	0 D
Bis(2-chloroethyl) ether		0.41 U	0.42 U	0 D
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		2.5	2	3.7 D
Butylbenzyl phthalate		0.14 U	0.47	0 D
Carbazole		1.4	1.3	2 D
Chrysene		0.15 U	2.6	3.3 D
Dibenzo[a,h]anthracene		0.19 U	0.19 U	0 D
Dibenzofuran		4.9 U	5 U	0 D
Diethyl phthalate		0.19 U	0.29	1.2 D
Dimethyl phthalate		0.15 U	0.15 U	0 D
Di-n-butyl phthalate		3.2	0.72	1.2 D
Di-n-octyl phthalate		0.36 U	0.36 U	0 D
Fluoranthene		3.2	9.9	12 D
Fluorene		1.9	3.4	3.4 D
Hexachlorobenzene		0.36 U	0.37 U	0 D
Hexachlorobutadiene		0.42 U	0.43 U	0 D
Hexachlorocyclopentadiene		9.6 U	9.7 U	0 D
Hexachloroethane		1.1 U	1.2 U	0 D
Indeno[1,2,3-cd]pyrene		0.049 U	0.45	0 D
Isophorone		0.3 U	0.31 U	0 D

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	6-07 D (Field Comp) 6/28/2007 MH-2	12-07 A (Field Comp) 12/10/2007 MH-2	12-07B FIELD COMP 12/11/2007 MH-2
Naphthalene		1.3	1.4	0 D
Nitrobenzene		0.45 U	0.45 U	0 D
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		0.19 U	0.19 U	0 D
n-Nitrosodiphenylamine		0.4 U	0.41 U	0 D
Pentachlorophenol		1.1 U	1.1 U	0 D
Phenanthrene		3.8	8.1	13 D
Phenol		1.9	1.2	19 D
Pyrene		2.5	7.3	8.6 D

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard
D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

**Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York**

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	12-07 C (Field Comp) 12/12/2007 MH-2	12-07D (Field Comp) 12/13/2007 MH-2	4-08-A 9:00 Field comp 4/28/2008 MH-2
1,2,4-Trichlorobenzene		1.1 U	1.1 U	1.1 U
1,2-Dichlorobenzene		NA	NA	NA
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA
2,2'-oxybis (1-chloropropane)		0.17 U	0.17 U	0.16 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA
2,4,5-Trichlorophenol		2.8 U	2.8 U	2.7 U
2,4,6-Trichlorophenol		1.3 U	1.3 U	1.3 U
2,4-Dichlorophenol		1.7 U	1.7 U	1.7 U
2,4-Dimethylphenol		2.1 U	2.1 U	2.1 U
2,4-Dinitrophenol		1.4 U	1.4 U	1.4 U
2,4-Dinitrotoluene		0.34 U	0.34 U	0.33 U
2,6-Dinitrotoluene		0.35 U	0.35 U	0.34 U
2-Chloronaphthalene		0.6 U	0.6 U	0.59 U
2-Chlorophenol		2.1 U	2.1 U	2.1 U
2-Methylnaphthalene		9.1 U	9.1 U	9 U
2-Methylphenol		7 U	7 U	6.9 U
2-Nitroaniline		1.8 U	1.8 U	1.7 U
2-Nitrophenol		1 U	1 U	1 U
3,3'-Dichlorobenzidine		0.66 U	0.66 U	0.66 U
3-Nitroaniline		2.9 U	2.9 U	2.8 U
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		1.8 U	1.8 U	1.8 U
4-Bromophenyl phenyl ether		0.45 U	0.45 U	0.44 U
4-Chloro-3-methylphenol		2 U	2 U	2 U
4-Chloroaniline		4.2 U	4.2 U	4.2 U
4-Chlorophenyl phenyl ether		0.65 U	0.65 U	0.64 U
4-Methylphenol sodium salt		28	20	6.5 U
4-Nitroaniline		2.6 U	2.6 U	2.6 U
4-Nitrophenol		1.3 U	1.3 U	1.3 U
Acenaphthene		3.6	0.81	1.6

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	12-07 C (Field Comp) 12/12/2007 MH-2	12-07D (Field Comp) 12/13/2007 MH-2	4-08-A 9:00 Field comp 4/28/2008 MH-2
Acenaphthylene		0.38 U	0.38 U	0.38 U
Anthracene		2.1	0.4	1.6
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		2	0.31	2.9
Benzo[a]pyrene		0.87	0.24 U	1.5
Benzo[b]fluoranthene		1.7	0.18 U	3.2
Benzo[g,h,i]perylene		0.27	0.18 U	0.63
Benzo[k]fluoranthene		0.53	0.22 U	1
Benzoic Acid		270 D	25	12 U
Benzyl Alcohol		19	12	3.8 U
Bis(2-chloroethoxy)methane		0.26 U	0.26 U	0.26 U
Bis(2-chloroethyl) ether		0.4 U	0.4 U	0.4 U
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		2	2	4.1
Butylbenzyl phthalate		0.14 U	0.14 U	0.86
Carbazole		1.2	0.44	0.71
Chrysene		2.2	0.33	3.6
Dibenzo[a,h]anthracene		0.18 U	0.18 U	0.18 U
Dibenzofuran		4.8 U	4.8 U	4.7 U
Diethyl phthalate		0.39	0.19 U	0.23
Dimethyl phthalate		0.15 U	0.15 U	0.45
Di-n-butyl phthalate		0.98	0.16 U	0.88
Di-n-octyl phthalate		0.35 U	0.35 U	0.34 U
Fluoranthene		8	1.5	9.8
Fluorene		3.2	0.79	1.5
Hexachlorobenzene		0.35 U	0.35 U	0.35 U
Hexachlorobutadiene		0.41 U	0.41 U	0.41 U
Hexachlorocyclopentadiene		9.3 U	9.3 U	9.2 U
Hexachloroethane		1.1 U	1.1 U	1.1 U
Indeno[1,2,3-cd]pyrene		0.34	0.048 U	0.56
Isophorone		0.3 U	0.3 U	0.29 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation:	12-07 C (Field Comp)	12-07D (Field Comp)	4-08-A 9:00 Field comp
	Sample Date:	12/12/2007	12/13/2007	4/28/2008
	Location:	MH-2	MH-2	MH-2
Naphthalene		1.7	0.62 U	0.88
Nitrobenzene		0.44 U	0.44 U	0.43 U
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		0.18 U	0.18 U	0.18 U
n-Nitrosodiphenylamine		0.39 U	0.39 U	0.39 U
Pentachlorophenol		1.1 U	1.1 U	1.1 U
Phenanthrene		9	1.9	4.3
Phenol		13	1.5	0.88 U
Pyrene		5.7	0.88	7.3

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard
D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	4-08 B (COMP) 4/29/2008 MH-2	4-08C FIELD COMPOSITE 4/30/2008 MH-2	4-08D 9:00 Field Comp 5/1/2008 MH-2
1,2,4-Trichlorobenzene		1.1 U	1.1 U	1.1 U
1,2-Dichlorobenzene		NA	NA	NA
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA
2,2'-oxybis (1-chloropropane)		0.16 U	0.16 U	0.16 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA
2,4,5-Trichlorophenol		2.7 U	2.7 U	2.7 U
2,4,6-Trichlorophenol		1.3 U	1.3 U	1.3 U
2,4-Dichlorophenol		1.7 U	1.7 U	1.7 U
2,4-Dimethylphenol		2.1 U	2.1 U	2.1 U
2,4-Dinitrophenol		1.4 U	1.4 U	1.4 U
2,4-Dinitrotoluene		0.33 U	0.33 U	0.33 U
2,6-Dinitrotoluene		0.34 U	0.34 U	0.34 U
2-Chloronaphthalene		0.59 U	0.59 U	0.59 U
2-Chlorophenol		2.1 U	2.1 U	2.1 U
2-Methylnaphthalene		9 U	9 U	9 U
2-Methylphenol		6.9 U	6.9 U	6.9 U
2-Nitroaniline		1.7 U	1.7 U	1.7 U
2-Nitrophenol		1 U	1 U	1 U
3,3'-Dichlorobenzidine		0.66 U	0.66 U	0.66 U
3-Nitroaniline		2.8 U	2.8 U	2.8 U
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		1.8 U	1.8 U	1.8 U
4-Bromophenyl phenyl ether		0.44 U	0.44 U	0.44 U
4-Chloro-3-methylphenol		2 U	2 U	2 U
4-Chloroaniline		4.2 U	4.2 U	4.2 U
4-Chlorophenyl phenyl ether		0.64 U	0.64 U	0.64 U
4-Methylphenol sodium salt		6.5 U	6.5 U	6.5 U
4-Nitroaniline		2.6 U	2.6 U	2.6 U
4-Nitrophenol		1.3 U	1.3 U	1.3 U
Acenaphthene		1.8	1.7	1.6

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	4-08 B (COMP) 4/29/2008 MH-2	4-08C FIELD COMPOSITE 4/30/2008 MH-2	4-08D 9:00 Field Comp 5/1/2008 MH-2
Acenaphthylene		0.38 U	0.38 U	0.38 U
Anthracene		0.92	1.5	0.97
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		1	1.8	1
Benzo[a]pyrene		0.49	0.82	0.47
Benzo[b]fluoranthene		1	1.7	0.99
Benzo[g,h,i]perylene		0.31	0.31	0.18 U
Benzo[k]fluoranthene		0.35	0.59	0.41
Benzoic Acid		12 U	12 U	12 U
Benzyl Alcohol		3.8 U	3.8 U	3.8 U
Bis(2-chloroethoxy)methane		0.26 U	0.26 U	0.26 U
Bis(2-chloroethyl) ether		0.4 U	0.4 U	0.4 U
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		1.5	2.5	2.8
Butylbenzyl phthalate		0.3	0.14 U	0.14 U
Carbazole		0.69	0.91	0.71
Chrysene		1.1	2.2	1.2
Dibenzo[a,h]anthracene		0.18 U	0.18 U	0.18 U
Dibenzofuran		4.7 U	4.7 U	4.7 U
Diethyl phthalate		0.34	0.44	0.38
Dimethyl phthalate		0.14 U	0.14 U	0.14 U
Di-n-butyl phthalate		1.7	0.93	0.87
Di-n-octyl phthalate		0.34 U	0.34 U	0.34 U
Fluoranthene		4.6	7.4	4.9
Fluorene		1.4	1.5	1.5
Hexachlorobenzene		0.35 U	0.35 U	0.35 U
Hexachlorobutadiene		0.41 U	0.41 U	0.41 U
Hexachlorocyclopentadiene		9.2 U	9.2 U	9.2 U
Hexachloroethane		1.1 U	1.1 U	1.1 U
Indeno[1,2,3-cd]pyrene		0.047 U	0.3	0.047 U
Isophorone		0.29 U	0.29 U	0.29 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	4-08 B (COMP) 4/29/2008 MH-2	4-08C FIELD COMPOSITE 4/30/2008 MH-2	4-08D 9:00 Field Comp 5/1/2008 MH-2
Naphthalene		0.68	1.6	0.88
Nitrobenzene		0.43 U	0.43 U	0.43 U
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		0.18 U	0.18 U	0.18 U
n-Nitrosodiphenylamine		0.39 U	0.39 U	0.39 U
Pentachlorophenol		1.1 U	1.1 U	1.1 U
Phenanthrene		2.7	4.6	4
Phenol		0.88 U	0.88 U	0.92
Pyrene		3.3	5.4	4.1

µg/L -Micrograms per liter

J - Estimated Value

U - Compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard

D – Comound as identified in an analysis at a secondary dilution factor

M- Manually integrated compound

DUP - Duplicate

NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:**	11-08A Field Comp	11-08B Field Comp	11-08C Field Comp
	Sample Date:	11/10/2008	11/11/2008	11/12/2008
	Location:	MH-2	MH-2	MH-2
1,2,4-Trichlorobenzene		0.18 U	0.18 U	0.17 U
1,2-Dichlorobenzene		NA	NA	NA
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA
2,2'-oxybis (1-chloropropane)		0.24 U	0.25 U	0.23 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA
2,4,5-Trichlorophenol		1.4 U	1.5 U	1.4 U
2,4,6-Trichlorophenol		0.81 U	0.84 U	0.78 U
2,4-Dichlorophenol		0.94 U	0.97 U	0.9 U
2,4-Dimethylphenol		2.4 U	2.5 U	2.3 U
2,4-Dinitrophenol		4 U	4.1 U	3.8 U
2,4-Dinitrotoluene		0.21 U	0.22 U	0.21 U
2,6-Dinitrotoluene		0.21 U	0.21 U	0.2 U
2-Chloronaphthalene		0.1 U	0.11 U	0.1 U
2-Chlorophenol		1.1 U	1.1 U	1.1 U
2-Methylnaphthalene		1.7 U	1.8 U	1.7 U
2-Methylphenol		3.5 U	3.7 U	3.4 U
2-Nitroaniline		1 U	1.1 U	0.99 U
2-Nitrophenol		1.3 U	1.4 U	1.3 U
3,3'-Dichlorobenzidine		4.5 U	4.6 U	4.3 U
3-Nitroaniline		2.6 U	2.7 U	2.5 U
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		1.2 U	1.3 U	1.2 U
4-Bromophenyl phenyl ether		0.27 U	0.28 U	0.26 U
4-Chloro-3-methylphenol		1.2 U	1.2 U	1.1 U
4-Chloroaniline		9.7 U	10 U	9.3 U
4-Chlorophenyl phenyl ether		0.093 U	0.096 U	0.089 U
4-Methylphenol sodium salt		14	17	5.9
4-Nitroaniline		1.2 U	1.3 U	1.2 U
4-Nitrophenol		0.96 U	0.99 U	0.92 U
Acenaphthene		0.18 U	0.19 U	0.17 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	11-08A Field Comp 11/10/2008 MH-2	11-08B Field Comp 11/11/2008 MH-2	11-08C Field Comp 11/12/2008 MH-2
Acenaphthylene		0.3 U	0.31 U	0.29 U
Anthracene		0.25 U	0.25 U	0.24 U
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		0.14 U	0.14 U	0.13 U
Benzo[a]pyrene		0.26 U	0.27 U	0.25 U
Benzo[b]fluoranthene		0.24 U	0.25 U	0.23 U
Benzo[g,h,i]perylene		0.46 U	0.47 U	0.44 U
Benzo[k]fluoranthene		0.26 U	0.27 U	0.25 U
Benzoic Acid		40	54	12
Benzyl Alcohol		3	2.3	2.2
Bis(2-chloroethoxy)methane		0.18 U	0.18 U	0.17 U
Bis(2-chloroethyl) ether		0.24 U	0.24 U	0.23 U
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		30	0.28 U	3.2
Butylbenzyl phthalate		0.23 U	0.24 U	0.22 U
Carbazole		0.13 U	0.14 U	0.13 U
Chrysene		0.19 U	0.19 U	0.18 U
Dibenzo[a,h]anthracene		0.46 U	0.47 U	0.44 U
Dibenzofuran		0.97 U	1 U	0.93 U
Diethyl phthalate		2.3 U	2.4 U	2.2 U
Dimethyl phthalate		0.14 U	0.15 U	0.14 U
Di-n-butyl phthalate		0.21 U	0.22 U	0.21 U
Di-n-octyl phthalate		0.42 U	0.44 U	0.41 U
Fluoranthene		4.9	3.2	3.8
Fluorene		0.15 U	0.16 U	0.15 U
Hexachlorobenzene		0.25 U	0.26 U	0.24 U
Hexachlorobutadiene		0.36 U	0.37 U	0.35 U
Hexachlorocyclopentadiene		1.2 U	1.2 U	1.1 U
Hexachloroethane		0.12 U	0.13 U	0.12 U
Indeno[1,2,3-cd]pyrene		0.39 U	0.4 U	0.38 U
Isophorone		0.17 U	0.18 U	0.16 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:**	11-08A Field Comp	11-08B Field Comp	11-08C Field Comp
	Sample Date:	11/10/2008	11/11/2008	11/12/2008
	Location:	MH-2	MH-2	MH-2
Naphthalene		0.19 U	0.19 U	0.18 U
Nitrobenzene		0.22 U	0.23 U	0.21 U
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		0.24 U	0.25 U	0.23 U
n-Nitrosodiphenylamine		0.3 U	0.31 U	0.29 U
Pentachlorophenol		0.76 U	0.78 U	0.73 U
Phenanthrene		3.6	2.7	3.1
Phenol		3.3	6.6	1.3 U
Pyrene		3.8	0.22 U	2.8

µg/L -Micrograms per liter

J - Estimated Value

U - Compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard

D – Comound as identified in an analysis at a secondary dilution factor

M- Manually integrated compound

DUP - Duplicate

NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	11-08D Field Comp 11/13/2008 MH-2	6209A-MH2 Field Comp 6/2/2009 MH-2	6209B-MH2 Field Comp 6/3/2009 MH-2
1,2,4-Trichlorobenzene		0.18 U	2 U	2 U
1,2-Dichlorobenzene		NA	NA	NA
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA
2,2'-oxybis (1-chloropropane)		0.24 U	2 U	2 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA
2,4,5-Trichlorophenol		1.4 U	2 U	2 U
2,4,6-Trichlorophenol		0.82 U	2 U	2 U
2,4-Dichlorophenol		0.95 U	2 U	2 U
2,4-Dimethylphenol		2.4 U	2 U	2 U
2,4-Dinitrophenol		4 U	10 U	10 U
2,4-Dinitrotoluene		0.22 U	2 U	2 U
2,6-Dinitrotoluene		0.21 U	2 U	2 U
2-Chloronaphthalene		0.11 U	2 U	2 U
2-Chlorophenol		1.1 U	2 U	2 U
2-Methylnaphthalene		1.8 U	2 U	2 U
2-Methylphenol		3.6 U	2 U	2 U
2-Nitroaniline		1 U	2 U	2 U
2-Nitrophenol		1.3 U	2 U	2 U
3,3'-Dichlorobenzidine		4.5 U	2 U	2 U
3-Nitroaniline		2.7 U	2 U	2 U
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		1.3 U	10 U	10 U
4-Bromophenyl phenyl ether		0.27 U	2 U	2 U
4-Chloro-3-methylphenol		1.2 U	2 U	2 U
4-Chloroaniline		9.8 U	2 U	2 U
4-Chlorophenyl phenyl ether		0.094 U	2 U	2 U
4-Methylphenol sodium salt		12	46	8.6
4-Nitroaniline		1.2 U	2 U	2 U
4-Nitrophenol		0.97 U	2 U	2 U
Acenaphthene		0.18 U	2 U	2 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	11-08D Field Comp 11/13/2008 MH-2	6209A-MH2 Field Comp 6/2/2009 MH-2	6209B-MH2 Field Comp 6/3/2009 MH-2
Acenaphthylene		0.3 U	2 U	2 U
Anthracene		0.25 U	2 U	2 U
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		0.14 U	2 U	2 U
Benzo[a]pyrene		0.27 U	2 U	2 U
Benzo[b]fluoranthene		0.25 U	2 U	2 U
Benzo[g,h,i]perylene		0.46 U	2 U	2 U
Benzo[k]fluoranthene		0.26 U	2 U	2 U
Benzoic Acid		16	380	10 U
Benzyl Alcohol		2.1 U	9.5	2 U
Bis(2-chloroethoxy)methane		0.18 U	2 U	2 U
Bis(2-chloroethyl) ether		0.24 U	2 U	2 U
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		0.28 U	2 U	2 U
Butylbenzyl phthalate		0.23 U	2 U	2 U
Carbazole		0.14 U	2 U	2 U
Chrysene		0.19 U	2 U	2 U
Dibenzo[a,h]anthracene		0.46 U	2 U	2 U
Dibenzofuran		0.98 U	2 U	2 U
Diethyl phthalate		2.3 U	2 U	2 U
Dimethyl phthalate		0.14 U	2 U	2 U
Di-n-butyl phthalate		0.22 U	2 U	2 U
Di-n-octyl phthalate		0.43 U	2 U	2 U
Fluoranthene		0.24 U	2 U	2 U
Fluorene		0.15 U	2 U	2 U
Hexachlorobenzene		0.25 U	2 U	2 U
Hexachlorobutadiene		0.37 U	2 U	2 U
Hexachlorocyclopentadiene		1.2 U	10 U	2 U
Hexachloroethane		0.12 U	2 U	2 U
Indeno[1,2,3-cd]pyrene		0.4 U	2 U	2 U
Isophorone		0.17 U	2 U	2 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	11-08D Field Comp 11/13/2008 MH-2	6209A-MH2 Field Comp 6/2/2009 MH-2	6209B-MH2 Field Comp 6/3/2009 MH-2
Naphthalene		0.19 U	2 U	2 U
Nitrobenzene		0.22 U	2 U	2 U
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		0.24 U	2 U	2 U
n-Nitrosodiphenylamine		0.3 U	2 U	2 U
Pentachlorophenol		0.77 U	10 U	10 U
Phenanthrene		0.23 U	2 U	2 U
Phenol		4	24	2 U
Pyrene		0.21 U	2 U	2 U

µg/L -Micrograms per liter

J - Estimated Value

U - Compound was analyzed for but not detected

V – Qualifier added and/or value altered during validation

H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard

D – Comound as identified in an analysis at a secondary dilution factor

M- Manually integrated compound

DUP - Duplicate

NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	6209C-MH2 FIELD COMP 6/4/2009 MH-2	6209D-MH2-Field Comp 6/5/2009 MH-2	MH-10/27-FC 10/27/2009 MH-2
1,2,4-Trichlorobenzene		2 U	2 U	2 U
1,2-Dichlorobenzene		NA	NA	NA
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA
2,2'-oxybis (1-chloropropane)		2 U	2 U	2 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA
2,4,5-Trichlorophenol		2 U	2 U	2 U
2,4,6-Trichlorophenol		2 U	2 U	2 U
2,4-Dichlorophenol		2 U	2 U	2 U
2,4-Dimethylphenol		2 U	2 U	2 U
2,4-Dinitrophenol		10 U	10 U	10 U
2,4-Dinitrotoluene		2 U	2 U	2 U
2,6-Dinitrotoluene		2 U	2 U	2 U
2-Chloronaphthalene		2 U	2 U	2 U
2-Chlorophenol		2 U	2 U	2 U
2-Methylnaphthalene		2 U	2 U	2 U
2-Methylphenol		2 U	2 U	2 U
2-Nitroaniline		2 U	2 U	2 U
2-Nitrophenol		2 U	2 U	2 U
3,3'-Dichlorobenzidine		2 U	2 U	2 U
3-Nitroaniline		2 U	2 U	2 U
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		10 U	10 U	10 U
4-Bromophenyl phenyl ether		2 U	2 U	2 U
4-Chloro-3-methylphenol		2 U	2 U	2 U
4-Chloroaniline		2 U	2 U	2 U
4-Chlorophenyl phenyl ether		2 U	2 U	2 U
4-Methylphenol sodium salt		2 U	2 U	13
4-Nitroaniline		2 U	2 U	2 U
4-Nitrophenol		2 U	2 U	2 U
Acenaphthene		2 U	2 U	2 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	6209C-MH2 FIELD COMP 6/4/2009 MH-2	6209D-MH2-Field Comp 6/5/2009 MH-2	MH-10/27-FC 10/27/2009 MH-2
Acenaphthylene		2 U	2 U	2 U
Anthracene		2 U	2 U	2 U
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		2 U	2 U	2 U
Benzo[a]pyrene		2 U	2 U	2 U
Benzo[b]fluoranthene		2 U	2 U	2 U
Benzo[g,h,i]perylene		2 U	2 U	2 U
Benzo[k]fluoranthene		2 U	2 U	2 U
Benzoic Acid		10 U	10 U	140
Benzyl Alcohol		2 U	3.5	2.6
Bis(2-chloroethoxy)methane		2 U	2 U	2 U
Bis(2-chloroethyl) ether		2 U	2 U	2 U
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		2 U	22	2 U
Butylbenzyl phthalate		2 U	2 U	2 U
Carbazole		2 U	2 U	2 U
Chrysene		2 U	2 U	2 U
Dibenzo[a,h]anthracene		2 U	2 U	2 U
Dibenzofuran		2 U	2 U	2 U
Diethyl phthalate		2 U	2 U	2 U
Dimethyl phthalate		2 U	2 U	2 U
Di-n-butyl phthalate		2 U	2 U	2 U
Di-n-octyl phthalate		2 U	2 U	2 U
Fluoranthene		3	3	2.3
Fluorene		2 U	2 U	2 U
Hexachlorobenzene		2 U	2 U	2 U
Hexachlorobutadiene		2 U	2 U	2 U
Hexachlorocyclopentadiene		2 U	2 U	2 U
Hexachloroethane		2 U	2 U	2 U
Indeno[1,2,3-cd]pyrene		2 U	2 U	2 U
Isophorone		2 U	2 U	2 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation:	6209C-MH2 FIELD COMP	6209D-MH2-Field Comp	MH-10/27-FC
	Sample Date:	6/4/2009	6/5/2009	10/27/2009
	Location:	MH-2	MH-2	MH-2
Naphthalene		2 U	2 U	2 U
Nitrobenzene		2 U	2 U	2 U
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		2 U	2 U	2 U
n-Nitrosodiphenylamine		2 U	2 U	2 U
Pentachlorophenol		10 U	10 U	10 U
Phenanthrene		2 U	2	2 U
Phenol		2 U	2 U	30
Pyrene		2 U	2.1	2 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard
D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MH-10/28-Field Comp 10/28/2009 MH-2	MH-10/29-Field Comp 10/29/2009 MH-2	HS-10/30 Field Comp 10/30/2009 MH-2
1,2,4-Trichlorobenzene		2.1 U	20 U	2 U
1,2-Dichlorobenzene		NA	NA	NA
1,2-Diphenylhydrazine		NA	NA	NA
1,3-Dichlorobenzene		NA	NA	NA
1,4-Dichlorobenzene		NA	NA	NA
2,2'-oxybis (1-chloropropane)		2.1 U	20 U	2 U
2,2'-oxybis (2-chloropropane)		NA	NA	NA
2,4,5-Trichlorophenol		2.1 U	20 U	2 U
2,4,6-Trichlorophenol		2.1 U	20 U	2 U
2,4-Dichlorophenol		2.1 U	20 U	2 U
2,4-Dimethylphenol		2.1 U	20 U	2 U
2,4-Dinitrophenol		10 U	100 U	10 U
2,4-Dinitrotoluene		2.1 U	20 U	2 U
2,6-Dinitrotoluene		2.1 U	20 U	2 U
2-Chloronaphthalene		2.1 U	20 U	2 U
2-Chlorophenol		2.1 U	20 U	2 U
2-Methylnaphthalene		2.1 U	20 U	2 U
2-Methylphenol		2.1 U	20 U	2 U
2-Nitroaniline		2.1 U	20 U	2 U
2-Nitrophenol		2.1 U	20 U	2 U
3,3'-Dichlorobenzidine		2.1 U	20 U	2 U
3-Nitroaniline		2.1 U	20 U	2 U
3&4-Methylphenol		NA	NA	NA
4,6-Dinitro-2-methylphenol		10 U	100 U	10 U
4-Bromophenyl phenyl ether		2.1 U	20 U	2 U
4-Chloro-3-methylphenol		2.1 U	20 U	2 U
4-Chloroaniline		2.1 U	20 U	2 U
4-Chlorophenyl phenyl ether		2.1 U	20 U	2 U
4-Methylphenol sodium salt		110	770	2 U
4-Nitroaniline		2.1 U	20 U	2 U
4-Nitrophenol		2.1 U	20 U	2 U
Acenaphthene		2.1 U	20 U	2 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MH-10/28-Field Comp 10/28/2009 MH-2	MH-10/29-Field Comp 10/29/2009 MH-2	HS-10/30 Field Comp 10/30/2009 MH-2
Acenaphthylene		2.1 U	20 U	2 U
Anthracene		2.1 U	20 U	2 U
Azobenzene		NA	NA	NA
Benzidine		NA	NA	NA
Benzo[a]anthracene		2.1 U	20 U	2 U
Benzo[a]pyrene		2.1 U	20 U	2 U
Benzo[b]fluoranthene		2.1 U	20 U	2 U
Benzo[g,h,i]perylene		2.1 U	20 U	2 U
Benzo[k]fluoranthene		2.1 U	20 U	2 U
Benzoic Acid		96	620	65
Benzyl Alcohol		2.1 U	20 U	17
Bis(2-chloroethoxy)methane		2.1 U	20 U	2 U
Bis(2-chloroethyl) ether		2.1 U	20 U	2 U
bis(2-Chloroisopropyl) ether		NA	NA	NA
Bis(2-ethylhexyl) phthalate		2.1 U	20 U	2 U
Butylbenzyl phthalate		2.1 U	20 U	2 U
Carbazole		2.1 U	20 U	2 U
Chrysene		2.1 U	20 U	2 U
Dibenzo[a,h]anthracene		2.1 U	20 U	2 U
Dibenzofuran		2.1 U	20 U	2 U
Diethyl phthalate		2.1 U	20 U	2 U
Dimethyl phthalate		2.1 U	20 U	2 U
Di-n-butyl phthalate		2.1 U	20 U	2 U
Di-n-octyl phthalate		2.1 U	20 U	2 U
Fluoranthene		3.6	20 U	2 U
Fluorene		2.1 U	20 U	2 U
Hexachlorobenzene		2.1 U	20 U	2 U
Hexachlorobutadiene		2.1 U	20 U	2 U
Hexachlorocyclopentadiene		2.1 U	100 U	2 U
Hexachloroethane		2.1 U	20 U	2 U
Indeno[1,2,3-cd]pyrene		2.1 U	20 U	2 U
Isophorone		2.1 U	20 U	2 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	MH-10/28-Field Comp 10/28/2009 MH-2	MH-10/29-Field Comp 10/29/2009 MH-2	HS-10/30 Field Comp 10/30/2009 MH-2
Naphthalene		2.1 U	20 U	2 U
Nitrobenzene		2.1 U	20 U	2 U
n-Nitrosodimethylamine		NA	NA	NA
n-Nitrosodi-n-propylamine		2.1 U	20 U	2 U
n-Nitrosodiphenylamine		2.1 U	20 U	2 U
Pentachlorophenol		10 U	100 U	10 U
Phenanthrene		2.1 U	20 U	2 U
Phenol		30	150	4.6
Pyrene		2.5	20 U	2 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard
D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** **Sample Date:** **Location:**	MH-10/30 Field Comp 10/30/2009 MH-2
1,2,4-Trichlorobenzene		6 U
1,2-Dichlorobenzene		NA
1,2-Diphenylhydrazine		NA
1,3-Dichlorobenzene		NA
1,4-Dichlorobenzene		NA
2,2'-oxybis (1-chloropropane)		6 U
2,2'-oxybis (2-chloropropane)		NA
2,4,5-Trichlorophenol		6 U
2,4,6-Trichlorophenol		6 U
2,4-Dichlorophenol		6 U
2,4-Dimethylphenol		6 U
2,4-Dinitrophenol		30 U
2,4-Dinitrotoluene		6 U
2,6-Dinitrotoluene		6 U
2-Chloronaphthalene		6 U
2-Chlorophenol		6 U
2-Methylnaphthalene		6 U
2-Methylphenol		6 U
2-Nitroaniline		6 U
2-Nitrophenol		6 U
3,3'-Dichlorobenzidine		6 U
3-Nitroaniline		6 U
3&4-Methylphenol		NA
4,6-Dinitro-2-methylphenol		30 U
4-Bromophenyl phenyl ether		6 U
4-Chloro-3-methylphenol		6 U
4-Chloroaniline		6 U
4-Chlorophenyl phenyl ether		6 U
4-Methylphenol sodium salt		650
4-Nitroaniline		6 U
4-Nitrophenol		6 U
Acenaphthene		6 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MH-10/30 Field Comp / 10/30/2009 / MH-2
Acenaphthylene		6 U
Anthracene		6 U
Azobenzene		NA
Benzidine		NA
Benzo[a]anthracene		6 U
Benzo[a]pyrene		6 U
Benzo[b]fluoranthene		6 U
Benzo[g,h,i]perylene		6 U
Benzo[k]fluoranthene		6 U
Benzoic Acid		730
Benzyl Alcohol		6 U
Bis(2-chloroethoxy)methane		6 U
Bis(2-chloroethyl) ether		6 U
bis(2-Chloroisopropyl) ether		NA
Bis(2-ethylhexyl) phthalate		6 U
Butylbenzyl phthalate		6 U
Carbazole		6 U
Chrysene		6 U
Dibenzo[a,h]anthracene		6 U
Dibenzofuran		6 U
Diethyl phthalate		6 U
Dimethyl phthalate		6 U
Di-n-butyl phthalate		6 U
Di-n-octyl phthalate		6 U
Fluoranthene		6 U
Fluorene		6 U
Hexachlorobenzene		6 U
Hexachlorobutadiene		6 U
Hexachlorocyclopentadiene		6 U
Hexachloroethane		6 U
Indeno[1,2,3-cd]pyrene		6 U
Isophorone		6 U

Table A-2. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in the Primary Sewer System Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)		
	Sample Designation:	MH-10/30 Field Comp
	Sample Date:	10/30/2009
	Location:	MH-2
Naphthalene		6 U
Nitrobenzene		6 U
n-Nitrosodimethylamine		NA
n-Nitrosodi-n-propylamine		6 U
n-Nitrosodiphenylamine		6 U
Pentachlorophenol		30 U
Phenanthrene		6 U
Phenol		120
Pyrene		6 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
H - This flag indicates that the analyte in question was quantitated using peak heights rather than peak areas for both the analyte and its internal standard
D – Comound as identified in an analysis at a secondary dilution factor
M- Manually integrated compound
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-3. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Secondary Sewer System, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	MHW-1 / 2/9/1993 / MH-1
1,1,1-Trichloroethane		6 J
1,1,2,2-Tetrachloroethane		10 U
1,1,2-Trichloroethane		10 U
1,1-Dichloroethane		10 U
1,1-Dichloroethene		10 U
1,2-Dichlorobenzene		NA
1,2-Dichloroethane		10 U
1,2-Dichloroethene (total)		10 U
1,2-Dichloropropane		10 U
1,3-Dichlorobenzene		NA
1,3-Dichloropropene		NA
1,4-Dichlorobenzene		NA
2-Butanone (MEK)		10 U
2-Chloroethyl vinyl ether		NA
2-Hexanone		10 U
4-Methyl-2-Pentanone (MIBK)		10 UV
Acetone		10 UV
Acrolein		NA
Acrylonitrile		NA
Benzene		6 J
Bromodichloromethane		10 U
Bromoform		10 U
Bromomethane		10 U
Carbon disulfide		10 U
Carbon tetrachloride		10 U
Chlorobenzene		10 U
Chloroethane		10 U
Chloroform		1 J
Chloromethane		10 U
cis-1,2-Dichloroethene		NA
cis-1,3-Dichloropropene		10 U
Dibromochloromethane		10 U
Dichlorodifluoromethane		NA
Ethylbenzene		3 J
m+p-Xylene		NA
Methylene Chloride		10 U
O-Xylene		NA
Styrene		10 U
Tetrachloroethene		10 U
Toluene		8 J
trans-1,2-Dichloroethene		NA
trans-1,3-Dichloropropene		10 U
Trichloroethene		10 U
Trichlorofluoromethane		NA
Vinyl acetate		NA

Table A-3. Summary of Volatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Secondary Sewer System, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	MHW-1 / 2/9/1993 / MH-1
Vinyl chloride		10 U
Xylenes (total)		51

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-4. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Secondary Sewer System, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: Sample Date: Location:	MHW-1 2/9/1993 MH-1
1,2,4-Trichlorobenzene		10 U
1,2-Dichlorobenzene		10 U
1,2-Diphenylhydrazine		NA
1,3-Dichlorobenzene		10 U
1,4-Dichlorobenzene		10 U
2,2'-oxybis (1-chloropropane)		10 UJV
2,2'-oxybis (2-chloropropane)		NA
2,4,5-Trichlorophenol		25 U
2,4,6-Trichlorophenol		10 U
2,4-Dichlorophenol		10 U
2,4-Dimethylphenol		10 U
2,4-Dinitrophenol		10 U
2,4-Dinitrotoluene		10 U
2,6-Dinitrotoluene		10 U
2-Chloronaphthalene		10 U
2-Chlorophenol		10 U
2-Methylnaphthalene		1 J
2-Methylphenol		10 U
2-Nitroaniline		25 U
2-Nitrophenol		10 U
3,3'-Dichlorobenzidine		10 U
3-Nitroaniline		25 U
4,6-Dinitro-2-methylphenol		25 U
4-Bromophenyl phenyl ether		10 U
4-Chloro-3-methylphenol		10 U
4-Chloroaniline		10 UJV
4-Chlorophenyl phenyl ether		10 U
4-Methylphenol sodium salt		10 U
4-Nitroaniline		25 U
4-Nitrophenol		10 U
Acenaphthene		10 U
Acenaphthylene		10 U
Anthracene		10 U
Azobenzene		NA
Benzidine		NA
Benzo[a]anthracene		10 U
Benzo[a]pyrene		10 U
Benzo[b]fluoranthene		10 U
Benzo[g,h,i]perylene		10 U
Benzo[k]fluoranthene		10 U
Benzoic Acid		NA
Benzyl Alcohol		NA
Bis(2-chloroethoxy)methane		10 U
Bis(2-chloroethyl) ether		10 U
bis(2-Chloroisopropyl) ether		NA
Bis(2-ethylhexyl) phthalate		10 U
Butylbenzyl phthalate		10 U
Carbazole		NA

Table A-4. Summary of Semivolatile Organic Compound Concentrations in Sewer-Water Samples Collected in The Secondary Sewer System, Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date: / Location:	MHW-1 / 2/9/1993 / MH-1
Chrysene		10 U
Dibenzo[a,h]anthracene		10 U
Dibenzofuran		10 U
Diethyl phthalate		10 U
Dimethyl phthalate		10 U
Di-n-butyl phthalate		10 U
Di-n-octyl phthalate		10 U
Fluoranthene		10 U
Fluorene		10 U
Hexachlorobenzene		10 U
Hexachlorobutadiene		10 U
Hexachlorocyclopentadiene		10 U
Hexachloroethane		10 U
Indeno[1,2,3-cd]pyrene		10 U
Isophorone		10 U
Naphthalene		2 J
Nitrobenzene		10 U
n-Nitrosodimethylamine		NA
n-Nitrosodi-n-propylamine		10 U
n-Nitrosodiphenylamine		10 U
Pentachlorophenol		25 U
Phenanthrene		10 U
Phenol		10 U
Pyrene		10 U

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	MHW-2 2/9/1993 MH-2	CW-1 8/4/2003 MH-43	CW-1 COMP 8/4/2003 MH-43	EH-1 8/4/2003 EH-1	EH-1 COMP 8/4/2003 EH-1	EH-1 8/5/2003 EH-1
Aluminum		501	NA	NA	NA	NA	NA
Antimony		21.0 U	NA	NA	NA	NA	NA
Arsenic		2.8 B	NA	NA	NA	NA	NA
Barium		154 B	NA	NA	NA	NA	NA
Beryllium		1.0 U	NA	NA	NA	NA	NA
Cadmium		7.8	1.4 B	NA	10 U	NA	10 U
Calcium		8380	NA	NA	NA	NA	NA
Chromium		34	9.7 B	NA	10 U	NA	6.5 B
Chromium, Hexavalent		NA	NA	NA	NA	NA	NA
Cobalt		3.0 U	NA	NA	NA	NA	NA
Copper		94.5	182	NA	54.3	NA	165
Cyanide (Amenable)		NA	NA	NA	NA	NA	NA
Cyanide		NA	NA	10 U	NA	3 B	NA
Iron		15300	NA	NA	NA	NA	NA
Lead		21.6 S	54.3	NA	10 U	NA	25.6
Magnesium		2010 B	NA	NA	NA	NA	NA
Manganese		175	NA	NA	NA	NA	NA
Mercury		2.0 UV	0.2 U	NA	0.2 U	NA	0.2 U
Molybdenum		NA	20 U	NA	20 U	NA	10.6 B
Nickel		21.0 U	12.4	NA	10 U	NA	6.5 B
Potassium		2660 B	NA	NA	NA	NA	NA
Selenium		2.0 U	NA	NA	NA	NA	NA
Silver		3.0 U	6 U	NA	6 U	NA	6 U
Sodium		12800	NA	NA	NA	NA	NA
Thallium		2.0 U	NA	NA	NA	NA	NA
Vanadium		6.0 U	NA	NA	NA	NA	NA
Zinc		130	121	NA	12.2 B	NA	375

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	EH-1 COMP 8/5/2003 EH-1	EH-1 8/6/2003 EH-1	EH-1 COMP 8/6/2003 EH-1	CW-2 8/7/2003 MH-43	CW-2 COMP 8/7/2003 MH-43	CW-3 8/8/2003 MH-43
Aluminum		NA	NA	NA	NA	NA	NA
Antimony		NA	NA	NA	NA	NA	NA
Arsenic		NA	NA	NA	NA	NA	NA
Barium		NA	NA	NA	NA	NA	NA
Beryllium		NA	NA	NA	NA	NA	NA
Cadmium		NA	1.8 B	NA	4.6 B	NA	5.2 B
Calcium		NA	NA	NA	NA	NA	NA
Chromium		NA	12.3	NA	45.7	NA	32.2
Chromium, Hexavalent		NA	NA	NA	NA	NA	NA
Cobalt		NA	NA	NA	NA	NA	NA
Copper		NA	80.5	NA	419	NA	527
Cyanide (Amenable)		NA	NA	NA	NA	NA	NA
Cyanide		7.9 B	NA	9.9 B	NA	10 U	NA
Iron		NA	NA	NA	NA	NA	NA
Lead		NA	63.7	NA	57	NA	59.5
Magnesium		NA	NA	NA	NA	NA	NA
Manganese		NA	NA	NA	NA	NA	NA
Mercury		NA	0.2 U	NA	0.2 U	NA	0.2 U
Molybdenum		NA	10.5 B	NA	7.5 B	NA	6.8 B
Nickel		NA	15	NA	25.9	NA	26
Potassium		NA	NA	NA	NA	NA	NA
Selenium		NA	NA	NA	NA	NA	NA
Silver		NA	6 U	NA	6 U	NA	6 U
Sodium		NA	NA	NA	NA	NA	NA
Thallium		NA	NA	NA	NA	NA	NA
Vanadium		NA	NA	NA	NA	NA	NA
Zinc		NA	652	NA	267	NA	346

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	CW-3 COMP 8/8/2003 MH-43	12A-Composite 12/6/2004 MH-2	12B-Composite 12/7/2004 MH-2	12C-Composite 12/8/2004 MH-2	12D-Composite 12/9/2004 MH-2	06-05A 6/13/2005 MH-2
Aluminum		NA	NA	NA	NA	NA	NA
Antimony		NA	NA	NA	NA	NA	15 U
Arsenic		NA	NA	NA	NA	NA	7.5 U
Barium		NA	NA	NA	NA	NA	510
Beryllium		NA	NA	NA	NA	NA	4 U
Cadmium		NA	5 U	5 U	5 U	5 U	3.5 U
Calcium		NA	NA	NA	NA	NA	NA
Chromium		NA	25	28	29	34	66
Chromium, Hexavalent		NA	20 U	80 U	20 U	80 U	25 U
Cobalt		NA	NA	NA	NA	NA	NA
Copper		NA	140	410	130	210	290
Cyanide (Amenable)		NA	20 U	20 U	20 U	20 U	10 U
Cyanide		10 U	20 U	20 U	20 U	20 U	10 U
Iron		NA	NA	NA	NA	NA	NA
Lead		NA	14	19	10	9	40
Magnesium		NA	NA	NA	NA	NA	NA
Manganese		NA	NA	NA	NA	NA	NA
Mercury		NA	1 U	1 U	1 U	1 U	0.7 U
Molybdenum		NA	5 U	5 U	5 U	6	20 U
Nickel		NA	10 U	10	10 U	10	50 U
Potassium		NA	NA	NA	NA	NA	NA
Selenium		NA	NA	NA	NA	NA	40 U
Silver		NA	5 U	5 U	5 U	5 U	20 U
Sodium		NA	NA	NA	NA	NA	NA
Thallium		NA	NA	NA	NA	NA	10 U
Vanadium		NA	NA	NA	NA	NA	NA
Zinc		NA	160	320	150	190	350

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	06-05B 6/14/2005 MH-2	06-05C 6/15/2005 MH-2	06-05D 6/16/2005 MH-2	12-05 A (Comp) 12/16/2005 MH-2	12-05-B (Comp) 12/19/2005 MH-2	12-05C 12/20/2005 MH-2	12-05 D-COMP 12/21/2005 MH-2
Aluminum		NA	NA	NA	NA	NA	NA	NA
Antimony		15 U	15 U	15 U	6 U	6 U	6 U	6 U
Arsenic		7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U	7.5 U
Barium		380	340	240	160	200	63	150
Beryllium		4 U	4 U	4 U	4 U	4 U	4 U	4 U
Cadmium		3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
Calcium		NA	NA	NA	NA	NA	NA	NA
Chromium		50 U	50 U	50 U	50 U	50 U	50 U	50 U
Chromium, Hexavalent		25 U	25 U	25 U	25 U	25 U	25 U	25 U
Cobalt		NA	NA	NA	NA	NA	NA	NA
Copper		240	260	270	500	370	130	400
Cyanide (Amenable)		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyanide		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron		NA	NA	NA	NA	NA	NA	NA
Lead		32	16	20	75	31	5.9	42
Magnesium		NA	NA	NA	NA	NA	NA	NA
Manganese		NA	NA	NA	NA	NA	NA	NA
Mercury		0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
Molybdenum		NA	NA	20 U	20 U	20 U	20 U	20 U
Nickel		50 U	50 U	50 U	50 U	50 U	50 U	50 U
Potassium		NA	NA	NA	NA	NA	NA	NA
Selenium		40 U	40 U	40 U	40 U	40 U	40 U	40 U
Silver		20 U	20 U	20 U	20 U	20 U	20 U	20 U
Sodium		NA	NA	NA	NA	NA	NA	NA
Thallium		10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vanadium		NA	NA	NA	NA	NA	NA	NA
Zinc		320	190	180	420	310	70	190

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	6-06A (COMP) 6/12/2006 MH-2	6-06B COMP 6/13/2006 MH-2	6-06C Composite 6/14/2006 MH-2	6-06D COMPOSITE 6/15/2006 MH-2
Aluminum		NA	NA	NA	NA
Antimony		6 U	6 U	6 U	6 U
Arsenic		7.5 U	7.5 U	7.5 U	7.5 U
Barium		150	140	130	95
Beryllium		4 U	4 U	4 U	4 U
Cadmium		3.5 U	3.5 U	3.5 U	3.5 U
Calcium		NA	NA	NA	NA
Chromium		50 U	50 U	50 U	50 U
Chromium, Hexavalent		25 U	25 U	25 U	25 U
Cobalt		NA	NA	NA	NA
Copper		300	230	230	120
Cyanide (Amenable)		NA	NA	NA	NA
Cyanide		10	10 U	10 U	10 U
Iron		NA	NA	NA	NA
Lead		19	28	18	14
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		0.7 U	0.7 U	0.7 U	0.7 U
Molybdenum		20 U	20 U	20 U	20 U
Nickel		50 U	50 U	50 U	50 U
Potassium		NA	NA	NA	NA
Selenium		40 U	40 U	40 U	40 U
Silver		5 U	5 U	5 U	5 U
Sodium		NA	NA	NA	NA
Thallium		10 U	10 U	10 U	10 U
Vanadium		NA	NA	NA	NA
Zinc		210	160	160	110

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	10-06A 8:30-11:30 COMP 10/10/2006 MH-2	10-06B-600-900 COMP 10/11/2006 MH-2	10-06C 7:00-10:00 10/12/2006 MH-2
Aluminum		NA	NA	NA
Antimony		12 U	12 U	12 U
Arsenic		7.5 U	7.5 U	7.5 U
Barium		130	88	180
Beryllium		4 U	4 U	4 U
Cadmium		3.5 U	3.5 U	3.5 U
Calcium		NA	NA	NA
Chromium		50 U	50 U	50 U
Chromium, Hexavalent		25 U	25 U	25 U
Cobalt		NA	NA	NA
Copper		180	63	350
Cyanide (Amenable)		NA	NA	NA
Cyanide		10	10 U	10 U
Iron		NA	NA	NA
Lead		28	4 U	92
Magnesium		NA	NA	NA
Manganese		NA	NA	NA
Mercury		0.7 U	0.7 U	0.7 U
Molybdenum		20 U	20 U	20 U
Nickel		50 U	50 U	50 U
Potassium		NA	NA	NA
Selenium		40 U	40 U	40 U
Silver		20 U	20 U	20 U
Sodium		NA	NA	NA
Thallium		10 U	10 U	10 U
Vanadium		NA	NA	NA
Zinc		140	50 U	250

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date:	10-06D 6:30-9:30 COMP 10/13/2006 MH-2	6-07A (Field Comp) 6/25/2007 MH-2	6-07A (Lab Comp) 6/25/2007 MH-2	6-07B (Field Composite) 6/26/2007 MH-2
Aluminum		NA	NA	NA	NA
Antimony		12 U	12 U	NA	12 U
Arsenic		7.5 U	7.5 U	NA	7.5 U
Barium		240	95	NA	200
Beryllium		4 U	4 U	NA	4 U
Cadmium		3.5 U	3.5 U	NA	3.5 U
Calcium		NA	NA	NA	NA
Chromium		50 U	50 U	NA	50 U
Chromium, Hexavalent		25 U	25 U	NA	25 U
Cobalt		NA	NA	NA	NA
Copper		260	290	NA	300
Cyanide (Amenable)		NA	NA	NA	NA
Cyanide		10 U	NA	15	NA
Iron		NA	NA	NA	NA
Lead		72	17	NA	35
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		0.7 U	0 U D	NA	0.7 U
Molybdenum		20 U	20 U	NA	20 U
Nickel		50 U	50 U	NA	50 U
Potassium		NA	NA	NA	NA
Selenium		40 U	40 U	NA	40 U
Silver		20 U	20 U	NA	20 U
Sodium		NA	NA	NA	NA
Thallium		10 U	10 U	NA	10 U
Vanadium		NA	NA	NA	NA
Zinc		180	160	NA	200

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** **Sample Date:**	6-07B (Lab Composite) 6/26/2007 MH-2	6-07 C (Field Comp) 6/27/2007 MH-2	6-07 C (Lab Comp) 6/27/2007 MH-2	6-07 D (Field Comp) 6/28/2007 MH-2
Aluminum		NA	NA	NA	NA
Antimony		NA	12 U	NA	12 U
Arsenic		NA	7.5 U	NA	7.5 U
Barium		NA	190	NA	200
Beryllium		NA	4 U	NA	4 U
Cadmium		NA	3.5 U	NA	3.5 U
Calcium		NA	NA	NA	NA
Chromium		NA	50 U	NA	50 U
Chromium, Hexavalent		NA	25 U	NA	25 U
Cobalt		NA	NA	NA	NA
Copper		NA	230	NA	220
Cyanide (Amenable)		NA	NA	NA	NA
Cyanide		25	NA	10 U	NA
Iron		NA	NA	NA	NA
Lead		NA	30	NA	37
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		NA	0.7 U	NA	0.7 U
Molybdenum		NA	20 U	NA	20 U
Nickel		NA	50 U	NA	50 U
Potassium		NA	NA	NA	NA
Selenium		NA	40 U	NA	40 U
Silver		NA	20 U	NA	20 U
Sodium		NA	NA	NA	NA
Thallium		NA	10 U	NA	10 U
Vanadium		NA	NA	NA	NA
Zinc		NA	150	NA	180

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	6-07 D (Lab Comp) 6/28/2007 MH-2	12-07 A (Field Comp) 12/10/2007 MH-2	12-07 A (Lab Comp) 12/10/2007 MH-2	12-07B FIELD COMP 12/11/2007 MH-2
Aluminum		NA	NA	NA	NA
Antimony		NA	12 U	NA	12 U
Arsenic		NA	7.5 U	NA	7.5 U
Barium		NA	78	NA	140
Beryllium		NA	4 U	NA	4 U
Cadmium		NA	3.5 U	NA	3.5 U
Calcium		NA	NA	NA	NA
Chromium		NA	50 U	NA	50 U
Chromium, Hexavalent		NA	25 U	NA	25 U
Cobalt		NA	NA	NA	NA
Copper		NA	360	NA	470
Cyanide (Amenable)		NA	NA	NA	NA
Cyanide		10 U	NA	10 U	NA
Iron		NA	NA	NA	NA
Lead		NA	20	NA	26
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		NA	0.7 U	NA	0.7 U
Molybdenum		NA	20 U	NA	20 U
Nickel		NA	50 U	NA	50 U
Potassium		NA	NA	NA	NA
Selenium		NA	40 U	NA	40 U
Silver		NA	20 U	NA	20 U
Sodium		NA	NA	NA	NA
Thallium		NA	10 U	NA	10 U
Vanadium		NA	NA	NA	NA
Zinc		NA	240	NA	240

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date:	12-07B LAB COMP 12/11/2007 MH-2	12-07 C (Field Comp) 12/12/2007 MH-2	12-07 C (Lab Comp) 12/12/2007 MH-2	12-07D (Field Comp) 12/13/2007 MH-2
Aluminum		NA	NA	NA	NA
Antimony		NA	12 U	NA	12 U
Arsenic		NA	7.5 U	NA	7.5 U
Barium		NA	96	NA	71
Beryllium		NA	4 U	NA	4 U
Cadmium		NA	3.5 U	NA	3.5 U
Calcium		NA	NA	NA	NA
Chromium		NA	50 U	NA	50 U
Chromium, Hexavalent		NA	25 U	NA	25 U
Cobalt		NA	NA	NA	NA
Copper		NA	620	NA	120
Cyanide (Amenable)		NA	NA	NA	NA
Cyanide		10 U	NA	10 U	NA
Iron		NA	NA	NA	NA
Lead		NA	16	NA	7.8
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		NA	0.7 U	NA	0.7 U
Molybdenum		NA	20 U	NA	20 U
Nickel		NA	50 U	NA	50 U
Potassium		NA	NA	NA	NA
Selenium		NA	40 U	NA	40 U
Silver		NA	20 U	NA	20 U
Sodium		NA	NA	NA	NA
Thallium		NA	10 U	NA	10 U
Vanadium		NA	NA	NA	NA
Zinc		NA	200	NA	150

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	12-07D (Lab Comp) 12/13/2007 MH-2	4-08-A 9:00 Field comp 4/28/2008 MH-2	4-08-A 9:00-12:00 Lab comp 4/28/2008 MH-2	4-08 B (COMP) 4/29/2008 MH-2
Aluminum		NA	NA	NA	NA
Antimony		NA	12 U	NA	12 U
Arsenic		NA	7.5 U	NA	7.5 U
Barium		NA	160	NA	94
Beryllium		NA	4 U	NA	4 U
Cadmium		NA	3.5 U	NA	3.5 U
Calcium		NA	NA	NA	NA
Chromium		NA	50 U	NA	50 U
Chromium, Hexavalent		NA	25 U	NA	25 U
Cobalt		NA	NA	NA	NA
Copper		NA	300	NA	230
Cyanide (Amenable)		NA	NA	NA	NA
Cyanide		10	NA	10 U	NA
Iron		NA	NA	NA	NA
Lead		NA	48	NA	13
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		NA	0.7 U	NA	0.7 U
Molybdenum		NA	20 U	NA	20 U
Nickel		NA	50 U	NA	50 U
Potassium		NA	NA	NA	NA
Selenium		NA	40 U	NA	40 U
Silver		NA	20 U	NA	20 U
Sodium		NA	NA	NA	NA
Thallium		NA	10 U	NA	10 U
Vanadium		NA	NA	NA	NA
Zinc		NA	280	NA	170

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	4-08 B (LAB COMP) 4/29/2008 MH-2	4-08C FIELD COMPOSITE 4/30/2008 MH-2	4-08C-8:45-11:45 LAB COMP 4/30/2008 MH-2
Aluminum		NA	NA	NA
Antimony		NA	12 U	NA
Arsenic		NA	7.5 U	NA
Barium		NA	250	NA
Beryllium		NA	4 U	NA
Cadmium		NA	3.7	NA
Calcium		NA	NA	NA
Chromium		NA	50 U	NA
Chromium, Hexavalent		NA	25 U	NA
Cobalt		NA	NA	NA
Copper		NA	590	NA
Cyanide (Amenable)		NA	NA	NA
Cyanide		10 U	NA	10 U
Iron		NA	NA	NA
Lead		NA	60	NA
Magnesium		NA	NA	NA
Manganese		NA	NA	NA
Mercury		NA	0.7 U	NA
Molybdenum		NA	20 U	NA
Nickel		NA	50 U	NA
Potassium		NA	NA	NA
Selenium		NA	40 U	NA
Silver		NA	20 U	NA
Sodium		NA	NA	NA
Thallium		NA	10 U	NA
Vanadium		NA	NA	NA
Zinc		NA	320	NA

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	4-08D 9:00 Field Comp 5/1/2008 MH-2	4-08D 9:00-12:00 Lab Comp 5/1/2008 MH-2	11-08A Field Comp 11/10/2008 MH-2	11-08A Lab Comp 11/10/2008 MH-2
Aluminum		NA	NA	NA	NA
Antimony		12 U	NA	23	NA
Arsenic		7.5 U	NA	7.5 U	NA
Barium		190	NA	470	NA
Beryllium		4 U	NA	4 U	NA
Cadmium		3.5 U	NA	3.7	NA
Calcium		NA	NA	NA	NA
Chromium		50 U	NA	75	NA
Chromium, Hexavalent		25 U	NA	25 U	NA
Cobalt		NA	NA	NA	NA
Copper		470	NA	740	NA
Cyanide (Amenable)		NA	NA	NA	12
Cyanide		NA	10 U	NA	12
Iron		NA	NA	NA	NA
Lead		66	NA	270	NA
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		0.7 U	NA	0.7 U	NA
Molybdenum		20 U	NA	20 U	NA
Nickel		50 U	NA	50 U	NA
Potassium		NA	NA	NA	NA
Selenium		40 U	NA	40 U	NA
Silver		20 U	NA	20 U	NA
Sodium		NA	NA	NA	NA
Thallium		10 U	NA	10 U	NA
Vanadium		NA	NA	NA	NA
Zinc		270	NA	500	NA

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	11-08B Field Comp 11/11/2008 MH-2	11-08B Lab Comp 11/11/2008 MH-2	11-08C Field Comp 11/12/2008 MH-2	11-08C Lab Comp 11/12/2008 MH-2
Aluminum		NA	NA	NA	NA
Antimony		12 U	NA	14	NA
Arsenic		7.5 U	NA	7.5 U	NA
Barium		110	NA	310	NA
Beryllium		4 U	NA	4 U	NA
Cadmium		3.5 U	NA	3.5 U	NA
Calcium		NA	NA	NA	NA
Chromium		50 U	NA	50 U	NA
Chromium, Hexavalent		25 U	NA	25 U	NA
Cobalt		NA	NA	NA	NA
Copper		200	NA	420	NA
Cyanide (Amenable)		NA	10 U	NA	10 U
Cyanide		NA	10 U	NA	10 U
Iron		NA	NA	NA	NA
Lead		66	NA	130	NA
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		0.7 U	NA	0.7 U	NA
Molybdenum		20 U	NA	20 U	NA
Nickel		50 U	NA	50 U	NA
Potassium		NA	NA	NA	NA
Selenium		40 U	NA	40 U	NA
Silver		20 U	NA	20 U	NA
Sodium		NA	NA	NA	NA
Thallium		10 U	NA	10 U	NA
Vanadium		NA	NA	NA	NA
Zinc		160	NA	270	NA

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	11-08D Field Comp 11/13/2008 MH-2	11-08D Lab Comp 11/13/2008 MH-2	6209A-MH2 Field Comp 6/2/2009 MH-2	6209A-MH2 Lab Comp 6/2/2009 MH-2
Aluminum		NA	NA	NA	NA
Antimony		12 U	NA	12 U	NA
Arsenic		7.5 U	NA	7.5 U	NA
Barium		150	NA	100	NA
Beryllium		4 U	NA	4 U	NA
Cadmium		3.5 U	NA	3.5 U	NA
Calcium		NA	NA	NA	NA
Chromium		50 U	NA	50 U	NA
Chromium, Hexavalent		25 U	NA	25 U	NA
Cobalt		NA	NA	NA	NA
Copper		170	NA	160	NA
Cyanide (Amenable)		NA	10 U	NA	NA
Cyanide		NA	10 U	NA	10 U
Iron		NA	NA	NA	NA
Lead		36	NA	15	NA
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		0.7 U	NA	0.7 U	NA
Molybdenum		20 U	NA	20 U	NA
Nickel		50 U	NA	50 U	NA
Potassium		NA	NA	NA	NA
Selenium		40 U	NA	40 U	NA
Silver		20 U	NA	20 U	NA
Sodium		NA	NA	NA	NA
Thallium		10 U	NA	10 U	NA
Vanadium		NA	NA	NA	NA
Zinc		130	NA	110	NA

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	Sample Designation: / Sample Date:	6209B-MH2 Field Comp 6/3/2009 MH-2	6209B-MH2 Lab Comp 6/3/2009 MH-2	6209C-MH2 FIELD COMP 6/4/2009 MH-2
Aluminum		NA	NA	NA
Antimony		12 U	NA	12 U
Arsenic		7.5 U	NA	7.5 U
Barium		76	NA	100
Beryllium		4 U	NA	4 U
Cadmium		3.5 U	NA	3.5 U
Calcium		NA	NA	NA
Chromium		50 U	NA	50 U
Chromium, Hexavalent		25 U	NA	25 U
Cobalt		NA	NA	NA
Copper		140	NA	290
Cyanide (Amenable)		NA	NA	NA
Cyanide		NA	10 U	NA
Iron		NA	NA	NA
Lead		10	NA	24
Magnesium		NA	NA	NA
Manganese		NA	NA	NA
Mercury		0.7 U	NA	0.7 U
Molybdenum		20 U	NA	20 U
Nickel		50 U	NA	50 U
Potassium		NA	NA	NA
Selenium		40 U	NA	40 U
Silver		20 U	NA	20 U
Sodium		NA	NA	NA
Thallium		10 U	NA	10 U
Vanadium		NA	NA	NA
Zinc		93	NA	130

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:**	6209C-MH2 LAB COMP	6209D-MH2-Field Comp	6209D-MH2-Lab Comp	MH-10/27-FC
	Sample Date:	6/4/2009	6/5/2009	6/5/2009	10/27/2009
		MH-2	MH-2	MH-2	MH-2
Aluminum		NA	NA	NA	NA
Antimony		NA	12 U	NA	12 U
Arsenic		NA	7.5 U	NA	7.5 U
Barium		NA	120	NA	110
Beryllium		NA	4 U	NA	4 U
Cadmium		NA	3.5 U	NA	3.5 U
Calcium		NA	NA	NA	NA
Chromium		NA	50 U	NA	50 U
Chromium, Hexavalent		NA	25 U	NA	25 U
Cobalt		NA	NA	NA	NA
Copper		NA	210	NA	180
Cyanide (Amenable)		NA	NA	NA	NA
Cyanide		10 U	NA	10 U	NA
Iron		NA	NA	NA	NA
Lead		NA	35	NA	22
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		NA	0.7 U	NA	0.7 U
Molybdenum		NA	20 U	NA	20 U
Nickel		NA	50 U	NA	50 U
Potassium		NA	NA	NA	NA
Selenium		NA	40 U	NA	40 U
Silver		NA	20 U	NA	20 U
Sodium		NA	NA	NA	NA
Thallium		NA	10 U	NA	10 U
Vanadium		NA	NA	NA	NA
Zinc		NA	230	NA	150

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	MH-10/27-Lab comp 10/27/2009 MH-2	HS-10/28-Field Comp 10/28/2009 MH-2	MH-10/28-Field Comp 10/28/2009 MH-2	MH-10/28-Lab Comp 10/28/2009 MH-2
Aluminum		NA	NA	NA	NA
Antimony		NA	12 U	12 U	NA
Arsenic		NA	7.5 U	7.8	NA
Barium		NA	50 U	120	NA
Beryllium		NA	4 U	4 U	NA
Cadmium		NA	3.5 U	3.5 U	NA
Calcium		NA	NA	NA	NA
Chromium		NA	50 U	50 U	NA
Chromium, Hexavalent		NA	25 U	25 U	NA
Cobalt		NA	NA	NA	NA
Copper		NA	50 U	160	NA
Cyanide (Amenable)		NA	NA	NA	NA
Cyanide		10 U	NA	NA	10 U
Iron		NA	NA	NA	NA
Lead		NA	4 U	48	NA
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		NA	0.7 U	0.7 U	NA
Molybdenum		NA	20 U	20 U	NA
Nickel		NA	50 U	50 U	NA
Potassium		NA	NA	NA	NA
Selenium		NA	40 U	40 U	NA
Silver		NA	20 U	20 U	NA
Sodium		NA	NA	NA	NA
Thallium		NA	10 U	10 U	NA
Vanadium		NA	NA	NA	NA
Zinc		NA	75	140	NA

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-5. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Primary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:**	MH-10/29-Field Comp 10/29/2009 MH-2	MH-10/29-Lab Comp 10/29/2009 MH-2	MH-10/30 Field Comp 10/30/2009 MH-2	MH-10/30 Lab Comp 10/30/2009 MH-2
Aluminum		NA	NA	NA	NA
Antimony		12 U	NA	12 U	NA
Arsenic		7.5 U	NA	7.5 U	NA
Barium		50 U	NA	390	NA
Beryllium		4 U	NA	4 U	NA
Cadmium		3.5 U	NA	3.5 U	NA
Calcium		NA	NA	NA	NA
Chromium		50 U	NA	50 U	NA
Chromium, Hexavalent		25 U	NA	25 U	NA
Cobalt		NA	NA	NA	NA
Copper		50 U	NA	110	NA
Cyanide (Amenable)		NA	NA	NA	NA
Cyanide		NA	10 U	NA	10 U
Iron		NA	NA	NA	NA
Lead		4 U	NA	16	NA
Magnesium		NA	NA	NA	NA
Manganese		NA	NA	NA	NA
Mercury		0.7 U	NA	0.7 U	NA
Molybdenum		20 U	NA	20 U	NA
Nickel		50 U	NA	50 U	NA
Potassium		NA	NA	NA	NA
Selenium		40 U	NA	40 U	NA
Silver		20 U	NA	20 U	NA
Sodium		NA	NA	NA	NA
Thallium		10 U	NA	10 U	NA
Vanadium		NA	NA	NA	NA
Zinc		80	NA	85	NA

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
D – Comound as identified in an analysis at a secondary dilution factor
S – Reported value was determined by the method of standard additions (MSA)
DUP - Duplicate
NA - Compound was not analyzed by laboratory

Table A-6. Summary of Metal Concentrations in Sewer-Water Samples Collected in The Secondary Sewer System
Sunnyside Yard, Queens, New York

Parameter (Concentrations in µg/L)	**Sample Designation:** / **Sample Date:** / **Location:**	MHW-1 / 2/9/1993 / MH-1
Aluminum		131 B
Antimony		21.0 U
Arsenic		5.0 B
Barium		150 B
Beryllium		1.0 U
Cadmium		2.0 U
Calcium		52300
Chromium		7.6 B
Cobalt		3.0 U
Copper		50.6
Iron		33000
Lead		15.1
Magnesium		16000
Manganese		1670
Mercury		1.6 UV
Nickel		21.0 U
Potassium		4940 B
Selenium		2.0 U
Silver		3.0 U
Sodium		90000
Thallium		2.0 U
Vanadium		6.0 U
Zinc		75.5

µg/L -Micrograms per liter
J - Estimated Value
U - Compound was analyzed for but not detected
B – Indicates the analyte was found in the blank as well as the sample
V – Qualifier added and/or value altered during validation
DUP - Duplicate
NA - Compound was not analyzed by laboratory

APPENDIX B

Field Sampling Plan
(FSP)

May 13, 2010

FIELD SAMPLING PLAN FOR THE OPERABLE UNIT 5 (OU-5) REMEDIAL INVESTIGATION

Sunnyside Yard
Queens, New York

Prepared for

NATIONAL RAILROAD PASSENGER CORPORATION
Washington, D.C. 20002

ROUX ASSOCIATES, INC.

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TABLES

ATTACHMENTS

1.0 INTRODUCTION

On behalf of the National Railroad Passenger Corporation (Amtrak) and the New Jersey Transit Corporation (New Jersey Transit), Roux Associates, Inc. (Roux Associates) has developed a Work Plan for a Remedial Investigation (RI) to determine the nature and extent of potential environmental impacts present in Operable Unit 5 (OU-5) of the Sunnyside Yard, located in Queens, New York (Yard). Operable Unit 5 is defined as the sewer system located beneath the Yard. This Field Sampling Plan (FSP) was developed to describe in detail the methods and procedures to be followed by field personnel during the implementation of the fieldwork associated with the OU-5 RI. This FSP was developed in accordance with the New York State Department of Environmental Conservation (NYSDEC) draft Technical Guidance DER-10 – Technical Guidance for Site Investigation and Remediation (NYSDEC, 2009), all relevant NYSDEC Technical and Administrative Guidance Memoranda (TAGMs), as well as the United States Environmental Protection Agency (USEPA) guidelines for conducting CERCLA Remedial Investigations (USEPA, 1988).

As discussed in Section 2.0 of the OU-5 RI Work Plan, substantial previous work related to OU-5 has already been completed at the Yard by Roux Associates. Relevant findings from previous investigations related to OU-5 were summarized in the Work Plan, and were incorporated into the design of the OU-5 RI scope of work.

The goals of the OU-5 RI Work Plan are to provide a current evaluation of the accumulation of polychlorinated biphenyl (PCB) containing sewer sediment and sewer water within the Sewer System, develop an understanding of the flow patterns and inputs to the Sewer System and develop the data necessary to prepare a Feasibility Study (FS) for OU-5. Information contained in this FSP relates to sampling objectives, sampling locations, sampling frequencies, sample designations, sampling equipment, sample handling, sample analysis, and decontamination procedures.

2.0 SAMPLING OBJECTIVES

This FSP was developed based upon a detailed review of available information obtained during previous investigations and is designed to obtain the additional data necessary to achieve the objectives of the RI. This FSP describes in detail the sampling and data gathering methods to be used during implementation of the RI.

The scope of work discussed in the FSP includes three of the tasks described in the Work Plan. These tasks include:

- Task 1: Sewer System Mapping and Verification
- Task 2: Sewer Sediment and Sewer Water Sampling
- Task 3: Limited Sewer Camera Inspection

These tasks are discussed in detail in Section 4.0 of this FSP and a sampling summary table is presented in Table B-1.

PCB analysis for sewer sediment and sewer water samples generated as part of the OU-5 RI will be performed by a NYSDOH Environmental Laboratory Approval Program (ELAP) qualified laboratory. Sample results will be presented in a complete data package, providing all backup documentation to facilitate an independent data validation review. A discussion of the data quality objectives (DQOs) for the OU-5 RI is provided under separate cover in the Quality Assurance Project Plan (QAPP), which is included as Appendix C of the OU-5 RI Work Plan.

3.0 SAMPLE MEDIA, ANALYTICAL SUITES, LOCATIONS, AND FREQUENCY

A visual inspection of the Sewer System was proposed to verify the location of critical manholes, confirm downstream and upstream connections of manholes, and confirm accessibility of manholes previously identified to contain PCB-contaminated sediment and/or water. During the visual inspection additional sampling locations may be added depending on the conditions of the manhole at the time of the inspection, and will target sewers potentially impacted by ESA Project soil handling. Proposed locations for collection of sewer water and sewer sediment samples have been identified based upon the information collected during previous investigations as shown on Plate 3 in the OU-5 RI Work Plan. As specified in Section 3.3 of the OU-5 RI Work Plan, the need for a sewer camera inspection will be determined based on the results of the sewer water and sediment sampling task described under Task 2. If a camera survey is deemed necessary in any part of the Sewer System, Roux Associates will perform the survey in accordance with the scope of work included in the OU-5 RI Work Plan.

3.1 Sample Types and Analytical Suites

The sample media proposed for laboratory analysis during implementation of the OU-5 RI Work Plan are sewer sediment and sewer water. It is not expected that other sample medium samples will be collected. However, it may be determined that additional sample collection is warranted based on field observations made during the implementation of the OU-5 RI Work Plan.

Sewer water and sewer sediment samples collected during the course of the field investigation described in Task 2 of the OU-5 RI Work Plan will be analyzed in accordance with the specified NYSDEC Analytical Services Protocol (ASP) using the USEPA SW 846 methodology. The analytical suite for sewer water and sewer sediment includes only PCBs using the United States Environmental Protection Agency (USEPA) Method 8082. Sample results will be presented in ASP Category B deliverable package format and the data will be validated. All samples will be analyzed on a standard 14-day turnaround time.

3.2 Sample Location and Frequency

A total of 54 samples are proposed as part of the OU-5 RI scope of work for each sampling round to be conducted. An initial sewer water sampling round will be conducted during dry weather conditions. A second sewer water sampling round will be conducted during one wet weather event resulting in approximately 0.5 inches of rain in 24 hours. A third sewer water sampling round will be conducted immediately following the end of the wet weather event.

A sewer water sample and a sewer sediment sample will be collected from the manhole locations, and specific influent pipes entering the manhole, as indicated in the table below. Samples will be collected from each of the influent pipes entering the manhole. Filtered and unfiltered water samples will be collected for comparison.

Manhole Designation	Samples Proposed
MH-2	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-55. • 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-41. • Sewer water flows will be measured.
MH-3	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-4. • Sewer water flows will be measured.
MH-5	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-8. • 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-11. • Sewer water flows will be measured.
MH-6	• 1 sewer water sample and 1 sewer sediment sample from the center of the manhole. • Sewer water flows will be measured.
MH-7	• 1 sewer water sample and 1 sewer sediment sample from the center of the manhole. • Sewer water flows will be measured.
MH-8	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-9. • Sewer water flows will be measured.

Manhole Designation	Samples Proposed
MH-37	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-36. • Sewer water flows will be measured.
MH-40	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-74. • 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-39 and MH-2. Flow from these manholes converges upstream of MH-40 and is directed to MH-40. • Sewer water flows will be measured.
MH-42	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-43. • Sewer water flows will be measured.
MH-45	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream CB-12. • 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream CB-13. • Sewer water flows will be measured.
MH-51	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-50. • Sewer water flows will be measured.
MH-52	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-51. • Sewer water flows will be measured.
MH-55	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-53. • Sewer water flows will be measured.
MH-69	• 1 sewer water sample and 1 sewer sediment sample from the influent pipe of sewer segment entering the manhole from upstream MH-68. • Sewer water flows will be measured.

4.0 FIELD INVESTIGATION PROCEDURES

This section provides a detailed discussion of the field procedures to be followed during the performance of each field task described above in Section 3.0 of this FSP. Proposed sampling locations were determined based upon the information collected during previous investigations and are shown on Plate 3 in the OU-5 RI Work Plan. As specified in Section 3.3 of the OU-5 RI Work Plan, a Sewer Camera Inspection consisting of evaluating specific locations between manholes will be completed as part of this scope of work, if determined necessary after results from Task 2 are received and evaluated. The exact frequency and location of this inspection has not yet been determined. For completeness, the procedures that will be used during the Sewer Camera Inspection and all pertinent equipment are included in this FSP.

Roux Associates' Standard Operating Procedures (SOPs) that are relevant to this scope of work are included in Attachment B-1 and will be referenced where applicable. Additional information regarding QA/QC protocols and methods may be found in the QAPP (Appendix C).

4.1 Task 1: Sewer System Mapping and Verification

Prior to the completion of the subsequent tasks, a comprehensive Sewer System field inspection will be required. This inspection will included the development of an inventory of the Sewer System elements (i.e., manhole and manhole inlet grate conditions, catch basins and catch basins inlet grate conditions). Roux Associates will confirm the accessibility of all the manholes selected for sampling under Task 2 and that are believed to still exist at the Yard as well as the new manholes not shown on existing Sewer System maps due recent modifications to the Sewer System within the Yard. Roux Associates will inspect the integrity of these visible Sewer System elements to ensure they are in suitable conditions and to verify the accuracy of Sewer System elements shown in Plate 1 of the OU-5 Work Plan. Note that the number of samples collected and/or sampling locations may be adjusted following completion of this task. The NYSDEC will be notified in advance if any changes to the sampling plan are necessary due to current conditions.

4.2 Task 2: Sewer Sediment and Sewer Water Sampling

To further characterize OU-5, 54 samples per round (excluding QA/QC samples) are proposed to be collected and submitted for PCB analysis.

4.2.1 Sample Designation

All sewer water samples will be identified by a MHW prefix (manhole-water), followed by the manhole number. An example is "MHW-2," which identifies a sewer water sample collected from manhole number two. Filtered sewer water samples will be identified with an F prefix preceding the manhole number. An example is "MHWF-2."

Sewer sediment samples will be identified by a MHS prefix (manhole-sediment), followed by the manhole number. An example is "MHS-2," which identifies a sewer sediment sample collected from manhole MH-2.

Multiple influent samples (sediment and water) will be identified by the diameter of the influent pipe. An example is "MHW-2(36)". If more than one influent pipe are of the same diameter, they will be identified by the compass direction at which they enter the manhole. An example is "MHW-2(36-N)".

Sewer water and sewer sediment samples will be collected from the selected sampling location for rounds 1, 2, and 3. To identify during which round a sample was taken, the letter R and the number of the sampling round will be added to the sample designation as a prefix preceding the letter M in the manhole designation. An example is "R1-MHW-2," which identifies a sewer water sample collected from manhole number two collected during round 1.

Field blanks will be identified by FB SED for blanks collected utilizing the sewer sediment collection device. Disposable tubing and filters will be utilized for all sewer water collection and filtering, precluding the necessity for the collection of sewer water field blanks.

4.2.2 Sampling Equipment and Sampling Tool Cleaning Procedures

Prior to Sewer System sampling, all tools used for sample collection will be cleaned in the following manner:

- Remove all loose material and soil;
- Wash thoroughly with detergent and tap water, utilizing a scrub brush;
- Rinse with tap water;

- Rinse with distilled or deionized water;
- Rinse with pesticide-grade methanol; and
- Rinse with distilled or deionized water.

4.2.3 Sewer Water Sample Collection Procedures

The sampling points (manholes) will be located and opened with a manhole opening tool (e.g., REED Manhole Tool). All manholes will be secured when sampling is completed and at any time the sampling crew leaves the area of the manhole.

Sewer water samples will be obtained using a peristaltic (or vacuum) pump and disposable tubing. The tubing will be lowered into the water, the pump activated, and the sample collected. Disposable gloves will be worn while handling the sampling apparatus. Care will be taken to prevent the tubing from coming into contact with the sewer walls or other surfaces that may affect the results.

The water samples selected for filtered/unfiltered sampling will be collected following the same procedure as the other water samples. The unfiltered portion will be placed directly in the appropriate, pre-labeled sample container. The filtration procedure will be as follows:

- Properly decontaminate the filtering apparatus.
- Place a clean (new) 0.45 micron pore-size filter in the funnel.
- Pass the water sample through the 0.45 micron filter into the flask. If the sample contains significant sediment, then pass it through a pre-filter before using the 0.45 micron filter. Apply a vacuum pump if needed to facilitate filtering.
- Transfer the filtered water sample to the appropriate, pre-labeled sample container.

All samples intended for laboratory analysis will be placed on ice and protected from light immediately after collection and during transport to the laboratory. All samples will be delivered to the laboratory no longer than 48 hours after collection.

4.2.4 Sewer Sediment Sample Collection Procedures

If sediment is present in sufficient quantities at the selected sewer sediment sampling location, a sample will be collected for analysis.

The samples will be obtained using a clean stainless steel sediment dredge and/or a clean stainless steel trowel as sediment quantity or manhole conditions (i.e., water flow, manhole dimensions) dictate. The sampling apparatus will be cleaned between uses at each location as outlined in Section 4.2.2.

Care will be taken to place only solids into the laboratory-supplied sample bottles. All samples intended for laboratory analysis will be placed on ice and protected from light immediately after collection and during transport to the laboratory. All samples will be delivered to the laboratory no longer than 48 hours after collection.

4.2.5 Flow Monitoring

Flow monitoring will consist of manually collecting flow rate data within the selected manholes as indicated in Section 3.0. Flow rates will be estimated by performing bucket, confetti, or similar type tests. It is anticipated that two rounds of tests may be necessary for each manhole in order to determine representative flow rates. Test rounds will be conducted to provide sufficient flow data within the drain lines during typically dry flow and wet flow conditions.

4.3 Task 3: Sewer Camera Inspection

A sewer camera inspection will be performed based on the results of the sewer water and sewer sediment sampling task (Task 2). If a camera survey is deemed necessary in any part of the Sewer System, Roux Associates will perform the survey in accordance with the scope of work included in the OU-5 RI Work Plan. Prior to completing camera survey activities, Roux Associates will submit a written notification to the NYSDEC, including a plan of the exact locations where the camera inspection would be performed. This task would be mainly designed to evaluate specific locations between manholes identified after results from Task 2 are received and evaluated.

A Closed Circuit Television (CCTV) inspection or television sewer inspection device includes, at a minimum, an aboveground receiver, and a skid-mounted camera for movement along a sewer.

In some instances, a TV inspection truck, equipped with a closed circuit television camera, color television monitor, and self-propelled crawler tractor are used to perform inspections in accordance with National Association of Sewer Service Companies (NASSCO) specifications. A closed circuit color mini camera specifically designed for the video inspection of three inch and larger diameter pipes and a Multi-Angle camera (MAC) are also mobilized as part of the CCTV equipments. Digital inspection equipment is often used to inspect sewers ranging in size from 12 inch through 48 inch diameters.

When pipe blockages occur and the inspection of an entire sewer section cannot be successfully performed from manhole to manhole or from catch basin to manhole, an attempt will be made to perform a reverse set up, by inserting the inspection equipment at the opposite end of the pipe through the closest manhole or catch basin downstream of the blockage, in order to complete the inspection. However, if a sewer segment presents such blockages that the CCTV equipment cannot access the line and inspection equipment cannot access the sewer segment of interest, combination vacuum and sewer cleaning equipment may be used from the most upstream to the most downstream access point in the sewer segment of interest.

Typically, combination vacuum and sewer cleaning equipment consists of a truck mounted vacuum blower capable of generating air flows of up to 4,500 cfm in combination with a high pressure water jetting pump capable of generating flows up to 80 to 125 gpm at pressures up to 2,500 psi (e.g., a Vactor Jet Rodder). The truck is equipped with a 1,800 gallon reservoir for water storage used in the sewer cleaning operations, and a debris box with a capacity of 9 CY where the vacuum removed materials are stored for offsite disposal at an approved disposal facility. Access of this equipment to affected manhole locations within the Yard may preclude this activity.

If the sewer segment of interest can be flushed clean, the CCTV inspection will be resumed to further evaluate the conditions of the sewer line and potential sewer sediment contributors or sources. The sewer segments that are flushed during this task, will be monitored and returning sediment from these removal locations will be tested for PCBs. The CCTV inspection will be used to determine the exact nature of sewer defects as they may be contributing PCB contamination in the Sewer System. Use of high-definition miniature color cameras will facilitate inspection of the interior of sewer pipes and inline connections that cannot be otherwise evaluated.

Existing inline connections will potentially explain the transport of flow and sediment through the Sewer System. Sewer line segments for which hydraulic restrictions are found could indicate the presence of a defect.

The CCTV inspection log would include: job/work assignment number, date of inspection, location and identification of sewer section televised, size and type of pipe, length of sewer section televised, locations of all in-line connections, locations of all structural problems encountered such as cracked or broken pipe, offset or open joints, protruding service connections, sags (including length and estimated depth), incidence of root intrusion, damaged pipe, leaking joints, presence of mud or other debris, misaligned pipe, bowed pipe sections, deflected pipe, pipe joints not fully seated, improperly installed gaskets, or other abnormalities such as breaks, leaking water (especially infiltration from groundwater), and general deteriorating conditions which may be present in the sewer potentially limiting its carrying capacity.

5.0 SAMPLE HANDLING

To ensure quality data acquisition and collection of representative samples, there are selective procedures to minimize sample degradation or contamination. These include procedures for preservation of the samples, as well as sample packaging and shipping procedures.

5.1 Field Sample Handling

A detailed discussion of the proposed number of samples to be collected during the implementation of the OU-5 RI, as well as the analyses to be performed, can be found in Section 3.0 of this FSP. Aroclor-specific data will be reported. The PCB analytical results will be reported at the Practical Quantitation Limit (PQL). PQLs and method detection limits, without dilution, for PCB analyses in water samples are as follows:

COMPOUND	METHOD DETECTION LIMIT (µg/L)
Aroclor – 1016	0.065
Aroclor – 1221	0.065
Aroclor – 1232	0.065
Aroclor – 1242	0.065
Aroclor – 1248	0.065
Aroclor – 1254	0.065
Aroclor – 1260	0.065
Aroclor – 1262	0.065
Aroclor – 1268	0.065

Refer to Table B-2 for preservation, holding times, and sample containers.

5.2 Sample Custody Documentation

The purpose of documenting sample custody is to ensure that the integrity and handling of the samples is not subject to question. Sample custody will be maintained from the point of sampling through the analysis (and return of unused sample portion, if applicable). Specific procedures regarding sample tracking from the field to the laboratory are described in Roux Associates' SOP for Sample Handling (Attachment B-1) and in the QAPP.

Each individual collecting samples is personally responsible for the care and custody of the samples. All sample labels should be pre-printed or filled out using waterproof ink. The technical staff will review all field activities with the Field Team Leader to determine whether proper custody procedures were followed during the fieldwork and to decide if additional samples are required.

All samples being shipped offsite for analysis must be accompanied by a properly completed chain of custody form. An example of a Roux Associates Chain of Custody form is provided in Attachment B-2. The sample designation and the number of samples will be listed on the chain of custody form. When transferring the possession of samples, individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person, to/from a secure storage area, and to the laboratory.

Samples will be packaged for shipment and dispatched to the appropriate laboratory for analysis with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and/or secured with strapping tape in at least two locations for shipment to the laboratory.

5.3 Sample Shipment

Sample packaging and shipping procedures are based upon USEPA specifications, as well as U.S. Department of Transportation (DOT) regulations. The procedures vary according to potential sample analytes, concentration, and matrix, and are designed to provide optimum protection for the samples and the public. Sample packaging and shipment must be performed using the general outline described below. Additional information regarding sample handling is provided in Roux Associates' SOP for Sample Handling (Attachment B-1). For this project, most samples will be picked up onsite by the laboratory courier. In the event that the courier is unable to pick up samples, the procedures for shipment of samples via an overnight courier are included below.

All samples will be shipped within 24 hours of collection and will be preserved appropriately from the time of sample collection. A description of the sample packing and shipping procedures is presented below:

1. Prepare cooler(s) for shipment.
   - Tape drain(s) of cooler shut;
   - Affix "This Side Up" arrow labels and "Fragile" labels on each cooler; and
   - Place mailing label with laboratory address on top of cooler(s).
2. Arrange sample containers in groups by sample number.
3. Ensure that all bottle labels are completed correctly. Place clear tape over bottle labels to prevent moisture accumulation from causing the label to peel off.
4. Arrange containers in front of assigned coolers.
5. Place appropriate packaging material at the bottom of the cooler to act as a cushion for the sample containers.
6. Arrange containers in the cooler so that they are not in contact with the cooler or other samples.
7. Fill remaining spaces with packaging material.
8. Ensure all containers are firmly packed in packaging material.
9. If ice is required to preserve the samples, ice cubes should be repackaged in Zip-lock™ bags and placed on top of the packaging material.
10. Sign chain of custody form (or obtain signature) and indicate the time and date it was relinquished to courier, as appropriate.
11. Separate chain of custody forms. Seal proper copies within a large Zip-lock™ bag and tape to inside cover of cooler. Retain copies of all forms.
12. Close lid and latch.
13. Secure each cooler using custody seals (see example in Attachment B-2).
14. Tape cooler shut on both ends.
15. Relinquish to applicable courier service. Retain air bill receipt and copy of chain-of-custody for project records (Note: All samples will be shipped for "NEXT A.M." delivery).

16. Telephone laboratory contact and provide with the following shipment information:
    - Sampler's name;
    - Project name;
    - Number of samples sent according to matrix and concentration; and
    - Airbill number.

6.0 SITE CONTROL PROCEDURES

Site control procedures have been developed to minimize both the risk of exposure to contamination and the spread of contamination during field activities at the Yard. In order to accomplish this objective, the FSP addresses three main considerations:

- the establishment of discrete work zones in the investigative area;
- the decontamination of field equipment; and
- the disposal of all investigation-derived waste.

All personnel who come into designated work areas, including contractors and observers, will be required to adhere strictly to the conditions imposed herein and to the provisions of the Site-specific Health and Safety Plan (HASP), which is Appendix D of the OU-5 RI Work Plan. Additionally, all personnel working on-site must have successfully completed the Amtrak Contractor Employee Safety Program course and have a valid Amtrak identification card.

6.1 Fieldwork Zones

Fieldwork zones will be limited to areas where sewer water and sediment sampling is being conducted. Access to these areas will be limited in accordance with the HASP. Control of work zone access will be the responsibility of the individual designated as Site Health and Safety Manager. At the completion of each working day, all loose equipment (e.g., sampling equipment, coolers, etc.) will be secured. Heavy equipment will remain onsite within an established, secured zone.

6.2 Decontamination

To avoid the spread of contamination, all reusable sampling equipment will be decontaminated at the manhole location after each sample is collected. All water generated as a result of decontamination activities will be returned to the manhole prior to moving to the next location. Detailed procedures for the decontamination of field and sampling equipment are included in the attached Roux Associates' SOPs (Attachment B-1).

6.3 Waste Handling and Disposal

All waste materials generated during the OU-5 RI work will be consolidated and stored in appropriate bulk containers and temporarily staged at an investigation-derived-waste storage area within the Yard limits. Any full or partially filled drums will be appropriately labeled and, after the completion of the OU-5 RI fieldwork, Roux Associates will coordinate waste characterization and disposal by the appropriate means.

7.0 REFERENCES

Roux Associates, 1993. Work Plan for the Additional Investigation of the Sewer System, Sunnyside Yard, Queens, New York. June 17, 1993; revised August 10, 1993.

NYSDEC, 2009. Draft DER-10. Technical Guidance for Site Investigation and Remediation. November 2009.

USEPA, 1988. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA. Office of Emergency and Remedial Response, EPA/540/G-89/004.

**Table B-1. OU-5 Remedial Investigation Field and Quality Control Sampling Summary
Sunnyside Yard, Queens, New York**

Sample Medium	Target Analytes	Analysis Method	Field Samples	Replicates[1]	Field Blanks[2]	No. of Samples per Round	Total No. of Samples
Sewer Water	PCBs	USEPA SW-8 Method 8082	18 (Unfiltered) 18 (Filtered)	2 (Unfiltered) 2 (Filtered)	0	40	120
Sewer Sediment	PCBs	USEPA SW-8 Method 8082	18	2	2	22	66

[1] Based on 1 per 10 samples

[2] Based on 1 per day. Field blanks are not proposed for Sewer Water Sampling, since only new, disposable sampling equipment will be utilized.

Table B-2. OU-5 Remedial Investigation Sample Containers, Preservation, and Holding Times
Sunnyside Yard, Queens, New York

Sample Medium	Target Analyte	Bottle Type	Preservation [a]	Holding Time [b]
Sewer Water	PCBs	1-Liter Glass Amber withTeflon Lined Lid	Cool to 4°C	5 days to extract; 40 days for analysis
Sewer Sediment	PCBs	8-oz Glass Amber with Teflon Lined Lid	Cool to 4°C	5 days to extract; 40 days for analysis

[a] All samples to be preserved immediately after collection and during transport.

[b] Days from date of sample collection

°C – Degrees Celsius

ATTACHMENT B-1

Roux Associates'
Standard Operating Procedures

Date: May 5, 2000

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to provide procedures and standards for record keeping and maintenance, for all field activities conducted by Roux Associates, Inc. (Roux Associates).

Strict quality assurance/quality control (QA/QC) is necessary to properly and accurately document and preserve all project-related information. Quality assurance is implemented to corroborate that quality control procedures are followed. Quality control provides a means to monitor investigation activities (e.g., sampling and laboratory performance) as a check on the quality of the data.

Valid data and information are integral to all aspects of Roux Associates' field activities. These aspects include, but are not necessarily limited to, activities that involve: drilling; sediment, sludge, and soil sampling (lithologic, and soil-quality and analysis); well construction and development; aquifer testing and analysis; water-quality sampling and analysis (surface water and ground water); free-product sampling and analysis; air-quality sampling and analysis; geophysical testing; demolition activities; waste removal operations; engineering installations; etc. The data will be confirmed by QA/QC methods established and set forth in the work plan/scope of work. Without checks on the field and analytical procedures, the potential exists for contradictory results, and associated incomplete or incorrect results from the interpretation of potentially questionable data.

Documentation will be entered in the field notebook and must be transcribed with extreme care, in a clear and concise manner, as the information recorded will become part of the permanent legal record. Because field notes are the legal record of site activities, they must be taken in a standard and consistent manner. If abbreviations are used, then they must first be spelled out for clarity (i.e., to avoid ambiguity and misunderstanding). All entries must be dated and initialed, and the time (military time) of the entry included. Field notebooks and forms must be assigned to an individual project and properly identified (i.e., client name, project number, location and name of site, individual recording information, dates, times, etc.). Change of possession of field notebooks or forms must be documented with the date and time, and initialed by both individuals. Following each day's entries, the field notebook or form must be photocopied in the event that the original documentation is lost or stolen. All field notebooks must have the company name and address legibly printed in indelible ink along with the message "If found, then please forward to Roux Associates, Inc. at the above address - REWARD OFFERED."

Information must be recorded while onsite because it may be difficult to recall details at a later date. Furthermore, information must be documented immediately as it provides unbiased information which will be used for writing the report when the field activities are completed. Project-related documentation is an irreplaceable, important record for other individuals who may become involved in the project, and provides the project manager with a complete history of project-related activities. Written information must be accompanied by maps, sketches, and photographs where appropriate, especially if these supplemental sources of information assist in the documentation process. A new page must be used in the field notebook for each new day's entries (i.e., unused portions of a previous page must have an "X" placed through it). The end of the day's records must be initialed and dated.

As part of record keeping and QA/QC activities, state and federal regulatory agencies should be contacted to check if special or different protocols are required and/or if particular or unconventional methods are required for the given field activity. Thus, the record keeping and QA/QC activities implemented by Roux Associates are based on technically sound standard practices and incorporate Roux Associates own, extensive experience in conducting hydrogeologic field activities.

2.0 MATERIALS

In order to track investigation activities, specific materials are required. These materials include the following:

a. A bound, waterproof field notebook.

b. Appropriate Roux Associates' forms (e.g., daily log, geologic log, monitoring well construction log, well sampling data form, location sketch, chain of custody, telephone conversation record, meeting notes, etc.).

c. Appropriate labels (e.g., sample, Roux Associates' Custody Seal, etc.)

d. Work plan/scope of work.

e. Health and safety plan (HASP).

f. Appropriate Roux Associates' SOPs.

g. Black pens, and indelible markers.

h. Camera and film.

3.0 DOCUMENTATION

3.1 Before the Roux Associates personnel leave the field, they must ensure that their field notes include comprehensive descriptions of the hydrogeologic conditions, and all investigation-related activities and results (onsite and offsite). This will safeguard against the inability to reconstruct and comprehend all aspects of the field investigation after its completion, and will serve to facilitate the writing of an accurate report. Properly documented information provides the QA/QC tracking (back-up) required for all Roux Associates' projects. General types of information that must be recorded (where pertinent to the investigation being conducted) include, but may not necessarily be limited to, the following:

a. List of Roux Associates personnel on site.

b. Name, date, and time of arrival on site by Roux Associates personnel, including temporary departures from, and returns to, the site during the work day.

c. Client and project number.

d. Name and location of study area.

e. Date and time of arrival on site by non-Roux Associates personnel (names and affiliation) and equipment (e.g., subcontractors and facility personnel, and drilling equipment, respectively, etc.), including temporary departures from, and returns to, the site during the work day, and departure at the end of the work day.

f. List of non-Roux Associates personnel on site.

g. Weather conditions at the beginning of the day as well as any changes in weather that occur during the working day.

h. Health and safety procedures including level of protection, monitoring of vital signs, frequency of air monitoring, and any change (i.e., downgrade or upgrade) in the level of protection for Roux Associates and other on-site personnel (e.g., subcontractors, facility personnel, etc.).

i. Health and safety procedures not in compliance with the HASP (for all on-site personnel).

j. Site reconnaissance information (e.g., topographic features, geologic features, surface-water bodies, seeps, areas of apparent contamination, facility/plant structures, etc.).

k. Air monitoring results (i.e., photoionization detector [PID], etc. measurements).

l. Task designation and work progress.

m. Work-related and site-related discussions with subcontractors, regulatory agency personnel, plant personnel, the general public, and Roux Associates personnel.

n. Delays, unusual situations, problems and accidents.

o. Field work not conducted in accordance with the work plan/scope of work, and rationale and justification for any change(s) in field procedures including discussions with personnel regarding the change(s) and who authorized the change(s).

p. QA/QC procedures not conducted in accordance with the QA/QC procedures established in the work plan/scope of work and rationale and justification for any change(s) in QA/QC procedures including discussions with personnel regarding the change(s) and who authorized the change(s).

q. Equipment and instrument problems.

r. Decontamination and calibration procedures.

s. Activities in and around the site and work area by any and all on-site personnel which may impact field activities.

t. Sketches, maps, and/or photographs (with dates and times) of the site, structures, equipment, etc. that would facilitate explanations of site conditions.

u. Contamination evidenced as a result of work-related activities (e.g., visible contaminants [sheen] in drilling fluids or on drilling equipment; sheen on, or staining of, sediments; color of, or separate [nonaqueous] phase on, water from borehole or well; vapors or odors emanating from a borehole or well; etc.); make all observations as objectively as possible (e.g., grey-blue, oil-like sheen; black and orange, rust-like stain; fuel-like odor; etc.) and avoid using nontechnical or negative-sounding terms (e.g., slimy, goopy, foul-smelling).

v. Date and time of final departure from the site of all personnel at the end of the work day.

3.2 In addition to the general types of information that must be recorded (as presented in Section 3.1), task-specific information must also be properly documented. Task-specific information which is required is provided in each respective task-oriented SOP, and the documentation procedures outlined in each SOP must be followed.

END OF PROCEDURE

Date: May 5, 2000

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish guidelines for sample handling which will allow consistent and accurate results. Valid chemistry data are integral to investigations that characterize media-quality conditions. Thus, this SOP is designed to ensure that once samples are collected, they are preserved, packed and delivered in a manner which will maintain sample integrity to as great an extent as possible. The procedures outlined are applicable to most sampling events and any required modifications must be clearly described in the work plan.

2.0 CONSIDERATIONS

Sample containers, sampling equipment decontamination, quality assurance/quality control (QA/QC), sample preservation, and sample handling are all components of this SOP.

2.1 Sample Containers

Prior to collection of a sample, considerations must be given to the type of container that will be used to store and transport the sample. The type and number of containers selected is usually based on factors such as sample matrix, potential contaminants to be encountered, analytical methods requested, and the laboratory's internal quality assurance requirements. In most cases, the overriding considerations will be the analytical methodology, or the state or federal regulatory requirements because these regulations generally encompass the other factors. The sample container selected is usually based on some combination of the following criteria:

a. Reactivity of Container Material with Sample

Choosing the proper composition of sample containers will help to ensure that the chemical and physical integrity of the sample is maintained. For sampling potentially hazardous material, glass is the recommended container type because it is chemically inert to most substances. Plastic containers are not recommended for most hazardous wastes because the potential exists for contaminants to adsorb to the surface of the plastic or for the plasticizer to leach into the sample.

In some instances, however, the sample characteristics or analytes of interest may dictate that plastic containers be used instead of glass. Because some metals species will adhere to the sides of the glass containers in an aqueous matrix, plastic bottles (e.g., nalgene) must be used for samples collected for metals analysis. A separate, plastic container should accompany glass containers if metals analysis is to be performed along with other analyses. Likewise, other sample characteristics may dictate that glass cannot be used. For example, in the case of a strong alkali waste or hydrofluoric solution, plastic containers may be more suitable because glass containers may be etched by these compounds and create adsorptive sites on the container's surface.

b. Volume of the Container

The volume of sample to be collected will be dictated by the analysis being performed and the sample matrix. The laboratory must supply bottles of sufficient volume to perform the required analysis. In most cases, the methodology dictates the volume of sample material required to complete the analysis. However, individual laboratories may provide larger volume containers for various analytes to ensure sufficient quantities for duplicates or other QC checks.

To facilitate transfer of the sample from the sampler into the container and to minimize spillage and sample disturbance, wide-mouth containers are recommended. Aqueous volatile organic samples must be placed into 40-milliliter (ml) glass vials with polytetrafluoroethylene (PTFE) (e.g., TeflonTM) septums. Non-aqueous volatile organic samples should be collected in the same type of vials or in 4-ounce (oz) wide-mouth jars provided by the laboratory. These jars should have PTFE-lined screw caps.

c. Color of Container

Whenever possible, amber glass containers should be used to prevent photodegradation of the sample, except when samples are being collected for metals analysis. If amber containers are not available, then containers holding samples should be protected from light (i.e., place in cooler with ice immediately after filling).

d. Container Closures

Container closures must screw on and off the containers and form a leak-proof seal. Container caps must not be removed until the container is ready to be filled with the sample, and the container cap must be replaced (securely) immediately after filling it. Closures should be constructed of a material which is inert with respect to the sampled material, such as PTFE (e.g., TeflonTM). Alternately, the closure may be separated from the sample by a closure liner that is inert to the sample material such as PTFE sheeting. If soil or sediment samples are being collected, the threads of the container must be wiped clean with a dedicated paper towel or cloth so the cap can be threaded properly.

e. Decontamination of Sample Containers

Sample containers must be laboratory cleaned by the laboratory performing the analysis. The cleaning procedure is dictated by the specific analysis to be performed on the sample. Sample containers must be carefully examined to ensure that all containers appear clean. Do not mistake the preservative as unwanted residue. The bottles should not be field cleaned. If there is any question regarding the integrity of the bottle, then the laboratory must be contacted immediately and the bottle(s) replaced.

f. Sample Bottle Storage and Transport

No matter where the sample bottles are, whether at the laboratory waiting to be packed for shipment or in the field waiting to be filled with sample, care must be taken to avoid contamination. Sample shuttles or coolers, and sample bottles must be stored and transported in clean environments. Sample bottles and clean sampling equipment must never be stored near solvents, gasoline, or other equipment that is a potential source of cross-contamination. When under chain of custody, sample bottles must be secured in locked vehicles, and custody sealed in shuttles or in the presence of authorized personnel. Information which documents that proper storage and transport procedures have been followed must be included in the field notebook and on appropriate field forms.

2.2 Decontamination of Sampling Equipment

Proper decontamination of all re-usable sampling equipment is critical for all sampling episodes. The SOP for Decontamination of Field Equipment and SOPs for method-specific or instrument-specific tasks must also be referred to for guidance for decontamination of various types of equipment.

2.3 Quality Assurance/Quality Control Samples

QA/QC samples are intended to provide control over the proper collection and tracking of environmental measurements, and subsequent review, interpretation and validation of generated analytical data. The SOPs for Collection of Quality Control Samples, for Evaluation and Validation of Data, and for Field Record Keeping and Quality Assurance/Quality Control must be referred to for detailed guidance regarding these respective procedures. SOPs for method-specific or instrument-specific tasks must also be referred to for guidance for QA/QC procedures.

2.4 Sample Preservation Requirements

Certain analytical methodologies for specific analytes require chemical additives in order to stabilize and maintain sample integrity. Generally, this is accomplished under the following two scenarios:

a. Sample bottles are preserved at the laboratory prior to shipment into the field.

b. Preservatives are added in the field immediately after the samples are collected.

Many laboratories provide pre-preserved bottles as a matter of convenience and to help ensure that samples will be preserved immediately upon collection. A problem associated with this method arises if not enough sample could be collected, resulting in too much preservative in the sample. More commonly encountered problems with this method include the possibility of insufficient preservative provided to achieve the desired pH level or the need for additional preservation due to chemical reactions caused by the addition of sample liquids to pre-preserved bottles. The use of pre-preserved bottles is acceptable; however, field sampling teams must always be prepared to add additional preservatives to samples if the aforementioned situations occur. Furthermore, care must be exercised not to overfill sample bottles containing preservatives to prevent the sample and preservative from spilling and therefore diluting the preservative (i.e., not having enough preservative for the volume of sample).

When samples are preserved after collection, special care must be taken. The transportation and handling of concentrated acids in the field requires additional preparation and adherence to appropriate preservation procedures. All preservation acids used in the field should be trace-metal or higher-grade.

2.5 Sample Handling

After the proper sample bottles have been received under chain-of-custody, properly decontaminated equipment has been used to collect the sample, and appropriate preservatives have been added to maintain sample integrity, the final step for the field personnel is checking the sample bottles prior to proper packing and delivery of the samples to the laboratory.

All samples should be organized and the labels checked for accuracy. The caps should be checked for tightness and any 40-ml volatile organic compound (VOC) bottles must be checked for bubbles. Each sample bottle must be placed in an individual "zip-lock" bag to protect the label, and placed on ice. The bottles must be carefully packed to prevent breakage during transport. When several bottles have been collected for an individual sample, they should not be placed adjacent to each other in the cooler to prevent possible breakage of all bottles for a given sample. If there are any samples which are known or suspected to be highly contaminated, these should be placed in an individual cooler under separate chain-of-custody to prevent possible cross contamination. Sufficient ice (wet or blue packs) should be placed in the cooler to maintain the temperature at 4 degrees Celsius (°C) until delivery at the laboratory. Consult the work plan to determine if a particular ice is specified as the preservation for transportation (e.g., the United States Environmental Protection Agency does not like the use of blue packs because they claim that the samples will not hold at 4°C). If additional coolers are required, then they should be purchased. The chain-of-custody form should be properly completed, placed in a "zip-lock" bag, and placed in the cooler. One copy must be maintained for the project files. The cooler should be sealed with packing tape and a custody seal. The custody seal number should be noted in the field book. Samples collected from Monday through Friday will be delivered to the laboratory within 24 hours of collection. If Saturday delivery is not available, samples collected on Friday must be delivered by Monday morning. Check the work plan to determine if certain analytes require a shorter delivery time. If overnight mail is utilized, then the shipping bill must be maintained for the files and the laboratory must be called the following day to confirm receipt.

3.0 EQUIPMENT AND MATERIALS

3.1 General equipment and materials may include, but not necessarily be limited to, the following:

a. Sample bottles of proper size and type with labels.

b. Cooler with ice (wet or blue pack).

c. Field notebook, appropriate field form(s), chain-of-custody form(s), custody seals.

d. Black pen and indelible marker.

e. Packing tape, "bubble wrap", and "zip-lock" bags.

f. Overnight (express) mail forms and laboratory address.

g. Health and safety plan (HASP).

h. Work plan/scope of work.

i. Pertinent SOPs for specified tasks and their respective equipment and materials.

3.2 Preservatives for specific samples/analytes as specified by the laboratory. Preservatives must be stored in secure, spillproof glass containers with their content, concentration, and date of preparation and expiration clearly labeled.

3.3 Miscellaneous equipment and materials including, but not necessarily limited to, the following:

a. Graduated pipettes.

b. Pipette bulbs.

c. Litmus paper.

d. Glass stirring rods.

e. Protective goggles.

f. Disposable gloves.

g. Lab apron.

h. First aid kit.

i. Portable eye wash station.

j. Water supply for immediate flushing of spillage, if appropriate.

k. Shovel and container for immediate containerization of spillage-impacted soils, if appropriate.

4.0 PROCEDURE

4.1 Examine all bottles and verify that they are clean and of the proper type, number, and volume for the sampling to be conducted.

4.2 Label bottles carefully and clearly with project name and number, site location, sample identification, date, time, and the sampler's initials using an indelible marker.

4.3 Collect samples in the proper manner (refer to specific sampling SOPs).

4.4 Conduct preservation activities as required after each sample has been collected. Field preservation must be done immediately and must not be done later than 30 minutes after sample collection.

4.5 Conduct QC sampling, as required.

4.6 Seal each container carefully and place in an individual "zip lock" bag.

4.7 Organize and carefully pack all samples in the cooler immediately after collection (e.g., bubble wrap). Insulate samples so that breakage will not occur.

4.8 Complete and place the chain-of-custody form in the cooler after all samples have been collected. Maintain one copy for the project file. If the cooler is to be transferred several times prior to shipment or delivery to the laboratory, it may be easier to tape the chain-of-custody to the exterior of the sealed cooler. When exceptionally hazardous samples are known or suspected to be present, this should be identified on the chain-of-custody as a courtesy to the laboratory personnel.

4.9 Add additional ice as necessary to ensure that it will last until receipt by the laboratory.

4.10 Seal the cooler with packing tape and a custody seal. Record the number of the custody seal in the field notebook and on the field form. If there are any exceptionally hazardous samples, then shipping regulations should be examined to ensure that the sample containers and coolers are in compliance and properly labeled.

4.11 Samples collected from Monday through Friday will be delivered to the laboratory within 24 hours of collection. If Saturday delivery is not available, samples collected on Friday must be delivered by Monday morning. Check the work plan to determine if certain analytes require a shorter delivery time.

4.12 Maintain the shipping bill for the project files if overnight mail is utilized and call the laboratory the following day to confirm receipt.

END OF PROCEDURE

Date: May 5, 2000

1.0 PURPOSE

The purpose of this standard operating procedure (SOP) is to establish guidelines for the field filtration of groundwater samples for dissolved metals analysis prior to sample preservation. Filtering is implemented when the water sample contains suspended fine-grained materials (fines) that cannot be prohibited from entering the water sample by well development or well design. However, as fines are not always distinctly visible in the water sample, all water samples to be analyzed for dissolved metals will undergo filtration. Groundwater samples from bedrock formations to be analyzed for dissolved metals must also be filtered.

It should be noted that filtration of groundwater for metals analysis has been a standard practice with the United States Geological Survey (USGS) for many years. However, it should also be noted that certain regulatory agencies insist that groundwater samples for metals analysis are not filtered. In this case, the analytical results are actually representative of total metals (i.e., dissolved and suspended). Nevertheless, in order to quantify the concentrations of dissolved metals in groundwater, filtration will be employed.

Within this framework, filtration refers to the filtering of water either directly or at the end of a filtration series through a 0.45 micrometer (micron) membrane filter. The presence of a large quantity of fines may require the prefiltering of the sample with a larger-size membrane filter prior to the 0.45 micron filter to avoid clogging the 0.45 micron filter and using an exorbitant amount of time to filter the sample.

Filtration must be done as soon as possible after a water sample is collected, preferably at the same time that the water is produced. If there is a delay between the time that the water sample is collected and the time that filtration occurs, then the time lag and reason for the delay must be documented. The filtering equipment and membrane must be suitable for the intended analysis. Where permitted by regulatory agencies, disposable in-line filters and disposable funnel-type filters may be used. Depending upon the sampling needs, sterile disposable filtering devices may be preferable since they eliminate the need for field decontamination. Materials known to adversely affect the analytical procedure must not be used. The site sampling and analysis plan (SAP) must be referred to for these and other site specific filtration conditions.

In the event that surface water is being analyzed for dissolved metals, the filtration process described below is also used.

2.0 MATERIALS AND EQUIPMENT

To field filter groundwater samples, specific equipment and materials are required. The equipment and materials listed below may be needed in addition to the materials and equipment listed in various sampling SOPs.

a. Non-phosphate, laboratory-grade detergent.

b. Distilled/Deionized water.

c. Potable water.

d. Field forms (e.g., daily log, sampling, etc.) and field notebook.

e. Filtration apparatus (e.g., disposable plastic filtering apparatus, disposable in-line filters, Gelman apparatus, Buchner funnel, etc.), filters, prefilters.

f. Plasticware (e.g., premeasured buckets, beakers, flasks, funnels).

g. Teflon™ tape.

h. Vacuum pump (e.g., hand-operated or electric).

i. Appropriate tubing and fittings.

j. Disposable gloves.

k. Sample jars with appropriate preservative (e.g., nitric acid) and labels.

3.0 DECONTAMINATION

3.1 Decontamination is not necessary if sterile, disposable plastic filtering equipment is utilized. If applicable, it may be useful to collect a distilled water field blank through a representative disposable filter to demonstrate proper "decontamination." If re-usable filtering equipment is being used, the following is the minimum decontamination procedure:

a. Wear disposable gloves while cleaning filtering equipment to avoid contamination and change gloves as needed.

b. Prepare a non-phosphate, laboratory-grade detergent solution and distilled or deionized water in a bucket.

c. Remove vacuum tubing from flask.

d. Remove filter membrane from funnel.

e. Disassemble filtering apparatus (flask and funnel) and scrub each piece of equipment with a brush and solution.

f. Rinse with potable water.

g. Rinse with copious amounts of distilled or deionized water.

h. Allow to dry and wrap equipment with a suitable material (e.g., clean plastic bag) in preparation for the next use.

3.2 The decontamination procedure must consider regulatory agency(ies) specifications which must be provided in the site SAP, and may include decontamination variations such as nitric acid rinses, acetone rinses, etc.

4.0 PROCEDURE

4.1. Ensure that the filtering equipment is disposable and dedicated or is properly decontaminated before each use.

4.2. Assemble the filtering apparatus (funnel and flask), and connect the vacuum pump in case it is needed to augment gravity filtration.

4.3. Place a clean (new) 0.45-micron pore-size filter in the funnel. Use larger, pore-size filters if prefiltering is required (i.e., if significant suspended sediment is present that would quickly clog the 0.45-micron filter and prevent continuous filtration or result in excessive time for filtration).

4.4. Obtain the water sample using an appropriate, decontaminated sample-collection device (e.g., bailer, pump).

4.5. Pass the unpreserved water sample through the 0.45 micron filter into the flask. If the sample contains significant sediment, then pass it through a prefilter before using the 0.45 micron filter. Apply a vacuum using the vacuum pump if needed to facilitate filtering.

4.6. Transfer the filtered water sample to the appropriate, prelabeled sample container containing the preservative (e.g., nitric acid) being careful not to overfill the container and dilute the preservative.

4.7. Follow standard operating procedures for sample documentation, shipping, and tracking (i.e., record keeping).

4.8. Decontaminate all reusable filtering (and sampling) equipment that came in contact with the water sample. Properly disposal of all non-reusable equipment in a manner appropriate with site conditions.

END OF PROCEDURE

Date: May 5, 2000

1.0 PURPOSE

The purpose for this standard operating procedure (SOP) is to establish the guidelines for decontamination of all field equipment potentially exposed to contamination during drilling, and soil and water sampling. The objective of decontamination is to ensure that all drilling, and soil-sampling and water-sampling equipment is decontaminated (free of potential contaminants): 1) prior to being brought onsite to avoid the introduction of potential contaminants to the site; 2) between drilling and sampling events/activities onsite to eliminate the potential for cross-contamination between boreholes and/or wells; and 3) prior to the removal of equipment from the site to prevent the transportation of potentially contaminated equipment offsite.

In considering decontamination procedures, state and federal regulatory agency requirements must be considered because of potential variability between state and federal requirements and because of variability in the requirements of individual states. Decontamination procedures must be in compliance with state and/or federal protocols in order that regulatory agency(ies) scrutiny of the procedures and data collected do not result in non acceptance (invalidation) of the work undertaken and data collected.

2.0 PROCEDURE FOR DRILLING EQUIPMENT

The following is a minimum decontamination procedure for drilling equipment. Drilling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

2.1 The rig and all associated equipment should be properly decontaminated by the contractor before arriving at the test site.

2.2 The augers, drilling casings, rods, samplers, tools, rig, and any piece of equipment that can come in contact (directly or indirectly) with the soil, will be steam cleaned onsite prior to set up for drilling to ensure proper decontamination.

2.3 The same steam cleaning procedures will be followed between boreholes (at a fixed on-site location[s], if appropriate) and before leaving the site at the end of the study.

2.4 All on-site steam cleaning (decontamination) activities will be monitored and documented by a member(s) of the staff of Roux Associates, Inc.

2.5 If drilling activities are conducted in the presence of thick, sticky oils (e.g., PCBs) which coat drilling equipment, then special decontamination procedures may have to be utilized before steam cleaning (e.g., hexane scrub and wash).

2.6 Containment of decontamination fluids may be necessary (e.g., rinseate from steam cleaning) or will be required (e.g., hexane), and disposal must be in accordance with state and/or federal procedures.

3.0 PROCEDURE FOR SOIL-SAMPLING EQUIPMENT

The following is a minimum decontamination procedure for soil-sampling equipment (e.g., split spoons, stainless-steel spatulas). Soil-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

3.1 Wear disposable gloves while cleaning equipment to avoid cross-contamination and change gloves as needed.

3.2 Steam clean the sampler or rinse with potable water. If soil-sampling activities are conducted in the presence of thick, sticky oils (e.g., PCBs) which coat sampling equipment, then special decontamination procedures may have to be utilized before steam cleaning and washing in detergent solution (e.g., hexane scrub and wash).

3.3 Prepare a non-phosphate, laboratory-grade detergent solution and distilled or potable water in a clean bucket.

3.4 Disassemble the sampler, as necessary and immerse all parts and other sampling equipment in the solution.

3.5 Scrub all equipment in the bucket with a brush to remove any adhering particles.

3.6 Rinse all equipment with copious amounts of potable water followed by distilled or deionized water.

3.7 Place clean equipment on a clean plastic sheet (e.g., polyethylene)

3.8 Reassemble the cleaned sampler, as necessary.

3.9 Transfer the sampler to the driller (or helper) making sure that this individual is also wearing clean gloves, or wrap the equipment with a suitable material (e.g., plastic bag, aluminum foil.

As part of the decontamination procedure for soil-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid, acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

4.0 PROCEDURE FOR WATER-SAMPLING EQUIPMENT

The following is a decontamination procedure for water-sampling equipment (e.g., bailers, pumps). Water-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

4.1 Decontamination procedures for bailers follow:

a. Wear disposable gloves while cleaning bailer to avoid cross-contamination and change gloves as needed.

b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a bucket.

c. Disassemble bailer (if applicable) and discard cord in an appropriate manner, and scrub each part of the bailer with a brush and solution.

d. Rinse with potable water and reassemble bailer.

e. Rinse with copious amounts of distilled or deionized water.

f. Air dry.

g. Wrap equipment with a suitable material (e.g., clean plastic bag, aluminum foil).

h. Rinse bailer at least three times with distilled or deionized water before use.

4.2 Decontamination procedures for pumps follow:

a. Wear disposable gloves while cleaning pump to avoid cross-contamination and change gloves as needed.

b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a clean bucket, clean garbage can, or clean 55-gallon drum.

c. Flush the pump and discharge hose (if not disposable) with the detergent solution, and discard disposable tubing and/or cord in an appropriate manner.

d. Flush the pump and discharge hose (if not disposable) with potable water.

e. Place the pump on clear plastic sheeting.

f. Wipe any pump-related equipment (e.g., electrical lines, cables, discharge hose) that entered the well with a clean cloth and detergent solution, and rinse or wipe with a clean cloth and potable water.

g. Air dry.

h. Wrap equipment with a suitable material (e.g., clean plastic bag).

As part of the decontamination procedure for water-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid, acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

ATTACHMENT B-2

Field Forms

Sewer Manhole Observation Form
Amtrak - OU-5
Sunnyside Yard, Queens, New York

Diagram

N

Designation: ______________________

Location: ______________________

GPS: ______________________

Photo File: ______________________

Weather: ______________________

Construction

Cover type: ______________________

Cover diameter: ______________________

Depth of sewer: ______________________

Modifications: ______________________

____

Piping:

Number	Diameter	Direction

Sediment

Location: ______________________

Description: ______________________

Amount: ______________________

Size: ______________________

Flow

Velocity: ______________________

Direction: ______________________

Volume: ______________________

Comments: ______________________

____

____

____

____

ROUX

CHAIN OF CUSTODY

№ 11903 Y

ROUX ASSOCIATES, INC.
Environmental Consulting & Management
209 SHAFTER STREET
ISLANDIA, NEW YORK 11749-5074
(631) 232-2600 FAX: (631) 232-9898

ANALYSES

PAGE OF

PROJECT NAME

PROJECT NUMBER

PROJECT LOCATION

PROJECT MANAGER

SAMPLER(S)

SAMPLE DESIGNATION / LOCATION	DATE COLLECTED	TIME COLLECTED	SAMPLE MATRIX						TOTAL BOTTLES	NOTES

RELINQUISHED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N
RELINQUISHED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N

DELIVERY METHOD

ANALYTICAL LABORATORY

COMMENTS

CUSTODY SEAL

DATE ______________________________

SIGNATURE __________________________

ROUX

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631-232-2600

APPENDIX C

Quality Assurance Project Plan
(QAPP)

May 13, 2010

QUALITY ASSURANCE PROJECT PLAN FOR THE OPERABLE UNIT 5 (OU-5) REMEDIAL INVESTIGATION

Sunnyside Yard
Queens, New York

Prepared for

NATIONAL RAILROAD PASSENGER CORPORATION
Washington, D.C. 20002

ROUX ASSOCIATES, INC.

Environmental Consulting & Management

ROUX

209 Shafter Street, Islandia, New York 11749 ♦ 631-232-2600

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TABLE

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been prepared by Roux Associates, Inc. (Roux Associates) to describe the measures that will be taken to ensure that the data generated during performance of the Operable Unit 5 (OU-5) Remedial Investigation (RI) at the Amtrak's Sunnyside Yard, located in Queens, New York (Yard) are of quality sufficient to meet project-specific data quality objectives (DQOs). This QAPP presents the objectives, organization, and specific quality assurance (QA) and quality control (QC) activities associated with the Field Sampling Plan (FSP), which is provided in Appendix B of the OU-5 RI Work Plan. This QAPP was prepared in accordance with the guidance provided in the New York State Department of Environmental Conservation (NYSDEC) draft Technical Guidance DER-10 - Technical Guidance for Site Investigation and Remediation (NYSDEC, 2009), and the United States Environmental Protection Agency (USEPA) Guidance for the Data Quality Objectives Process (EPA QA/G-4) (USEPA, 2000).

The primary objective of the QAPP is to provide a project specific "blueprint" for obtaining the type and quality of environmental data needed to accurately reflect the actual environmental conditions in OU-5. Deviations from expected conditions will be noted, and appropriate corrective measures will be taken to maintain quality in the sample collection and analysis program.

Detailed discussions of sampling, decontamination, and sample handling procedures are provided in the FSP (Appendix B of the RI Work Plan).

2.0 PROJECT OBJECTIVES AND SCOPE

As described in the OU-5 RI Work Plan and the FSP (provided in Appendix B), the objectives of the OU-5 RI can be summarized as follows: provide a current evaluation of the accumulation of polychlorinated biphenyl (PCB) containing sewer sediment and sewer water within the Sewer System; develop an understanding of the flow patterns and inputs to the Sewer System; and develop the data necessary to prepare a Feasibility Study (FS) for OU-5 and develop a final remedy for this Operable Unit. Field investigation activities to be completed during the implementation of the OU-5 RI scope of work include the following tasks:

- Task 1: Sewer System Mapping and Verification
- Task 2: Sewer Sediment and Sewer Water Sampling
- Task 3: Sewer Camera Inspection

Based on the design of the OU-5 RI scope of work, it is expected that the collection of samples for laboratory analysis will be completed as part of Task 2 only. As part of this task, the collection of sewer sediment and sewer water samples for laboratory analysis is proposed. A detailed description of the sampling procedures and methods to be followed for each task is provided in the FSP (Appendix B). A brief overview of the proposed sampling elements of the RI scope of work is provided below.

<u>Sewer Sediment Sampling</u>:

The collection of 18 sewer sediment samples per round is proposed from all the selected Sewer System manholes. Sewer sediment samples will be collected and analyzed for PCBs following NYSDEC Analytical Services Protocol (ASP) procedures using USEPA Method 8082.

<u>Sewer Water Sampling:</u>

The collection of 18 unfiltered and 18 filtered sewer waster samples per round is proposed from all the selected Sewer System manholes. Sewer water samples will be collected and analyzed for PCBs following NYSDEC ASP procedures using USEPA Method 8082.

3.0 PROJECT ORGANIZATION

The overall management structure and a general summary of the responsibilities of project team members are presented below.

3.1 Project Manager

The Project Manager is responsible for defining project objectives, and bears ultimate responsibility for the successful completion of the investigation. This individual will provide overall management for the implementation of the RI scope of work and will coordinate all field activities. The Project Manager is also responsible for data review/interpretation and report preparation. Activities of the Project Manager are supported by the Project Quality Assurance Officer.

3.2 Field Team Leader

The Field Team Leader bears the responsibility for the successful execution of the field program, as scoped in the OU-5 RI Work Plan and the FSP. The Field Team Leader will direct the activities of all technical staff in the field (hydrogeologists and technicians, etc.), as well as all subcontractors (surveyors, etc.). In addition, the Field Team Leader will also assist in the interpretation of data and in report preparation. The Field Team Leader reports to the Project Manager.

3.3 Laboratory Project Manager

The Laboratory Project Manager is responsible for sample container preparation, sample custody in the laboratory, and completion of the required analysis through oversight of the laboratory staff. The Laboratory Project Manager will ensure that quality assurance procedures are followed and that an acceptable laboratory report is prepared and submitted. The Laboratory Project Manager reports to the Project Manager or Field Team Leader.

3.4 Quality Assurance Officer

The Quality Assurance Officer (QAO) is responsible for conducting reviews, inspections, and audits to ensure that the data collection is conducted in accordance with the FSP and QAPP. The QAO's responsibilities range from ensuring effective field equipment decontamination procedures and proper sample collection, to the review of all laboratory analytical data for completeness and usefulness. The QAO reports to the Project Manager or the Field Team Leader.

3.5 Field Technical Staff

Field technical staff consists of hydrogeologists, geologists, engineers, Geoprobe operators, and technicians who will perform sewer water and sewer sediment sampling activities. The field technical staff will also be responsible for the preparation of any required field documentation. The field technical staff reports to the Field Team Leader.

4.0 QUALITY ASSURANCE/QUALITY CONTROL

The primary intended use for the RI data is to further characterize OU-5, specifically, PCB containing sewer sediment and sewer water, to determine if remediation is required at this operable unit. The primary DQO of the sewer sampling program, therefore, is that data be accurate and precise, and hence representative of the actual site conditions. Accuracy refers to the ability of the laboratory to obtain a true value (i.e., compared to a standard), and is assessed through the use of laboratory QC samples, including laboratory control samples. Precision refers to the ability to replicate a value, and is assessed through both field and laboratory duplicate samples.

Sensitivity is also a critical issue in generating representative data. Laboratory equipment must be of sufficient sensitivity to detect target compounds and analytes at levels below NYSDEC standards and guidelines whenever possible. Equipment sensitivity can be decreased by field or laboratory contamination of samples. Assessment of instrument sensitivity is performed through the analysis of reagent blanks, near-detection-limit standards, and response factors. Potential field and/or laboratory contamination is assessed through use of equipment rinse blanks (also called "field blanks").

Field sample collection procedures will be monitored through the use of the blind field replicates and field blanks. A total of one blind field replicate per day will be collected for the purposes of validating the precision of the water sampling technique.

Prior to any sampling, field blanks will be collected from a dedicated cleaned water and sewer sediment sampling apparatus from the final rinse of deionized/distilled water. The analytical laboratory will supply the deionized/distilled water.

All field data will be recorded in the field sampler's bound notebook. This data will include: weather conditions, conditions of the sewer at each location, flow velocity where measured, and the sequence in which the samples were collected.

Table B-1 lists the field and laboratory QC samples that will be analyzed to assess data accuracy and precision, as well as to determine if equipment sensitivity has been compromised.

5.0 REFERENCES

NYSDEC, 2009. Draft DER-10. Technical Guidance for Site Investigation and Remediation. November 2009.

USEPA, 2000. Guidance for the Data Quality Objective Process (EPA QA/G-4). August 2000.

Table C-1. OU-5 Remedial Investigation Field and Laboratory QC Summary
Sunnyside Yard, Queens, New York

QC Check Type	Minimum Frequency	Use
Field QC (Provided to the Laboratory byField Technical Staff)		
• Duplicate	1 per sample delivery group	Precision
• Equipment Rinse blank	1 per day (for sewer sediment samples only)	Sensitivity
Laboratory QC		
• Laboratory Control Sample	1 per sample delivery group	Accuracy
• Laboratory Duplicate	1 per sample delivery group	Precision

APPENDIX D

Health and Safety Plan
(HASP)

May 13, 2010

HEALTH AND SAFETY PLAN FOR THE OPERABLE UNIT 5 (OU-5) REMEDIAL INVESTIGATION

Sunnyside Yard
Queens, New York

Prepared for

NATIONAL RAILROAD PASSENGER CORPORATION
Washington, D.C. 20002

ROUX ASSOCIATES, INC.

Environmental Consulting & Management

ROUX *209 Shafter Street, Islandia, New York 11749 ♦ 631-232-2600*

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1.0 INTRODUCTION

This project-specific Health and Safety Plan (HASP) has been prepared in accordance with 29 CFR 1910.120 Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) training, Department of Transportation Roadway Worker Protection training, and Roux Associates, Inc. (Roux Associates) Standard Operating Procedures (SOPs). It addresses all activities associated with the implementation of the Operable Unit 5 (OU-5) Remedial Investigation (RI) scope of work (Work) at the Sunnyside Yard, Queens, New York (Yard) and will be implemented by the designated Site Health and Safety Officer (SHSO) during Work at the Yard. The HASP attempts to identify all potential hazards at the Yard, however, Yard conditions are dynamic and new hazards may appear constantly. Personnel must remain alert to existing and potential hazards as Yard conditions change and protect themselves accordingly.

Compliance with this HASP is required of all Roux Associates employees, Subcontractor personnel, and third parties who enter the Yard. Assistance in implementing this HASP can be obtained from the Roux Associates Office Health and Safety Manager (OHSM). The content of this HASP may change or undergo revision based upon additional information made available to health and safety personnel, monitoring results, or changes in the technical scope of Work. Any changes proposed must be reviewed and approved by the Roux Associates OHSM or his/her designee, and with the SHSO implementing the changes to the HASP.

Responsibility	Name	Telephone Number
Project Principal	Joe Duminuco	(631) 232-2600 (work)
Project Manager	Harry Gregory	(631) 232-2600 (work) (631) 445-0961 (cell)
Site Health and Safety Officer	Harry Gregory	(631) 232-2600 (work) (631) 445-0961 (cell)
Office Health and Safety Manager	Joseph Gentile, CIH	(856) 423-8800 (work) (610) 844-6911 (cell)

Upon entering the Yard, all visitors involved with the OU-5 RI work (e.g., Roux employees, subcontractors, etc.) are required to sign in with the SHSO. All visitors entering the Contamination Reduction Zone (CRZ) (defined in Section 8.1.2), the Contamination Reduction Corridor (CRC) (defined in Section 8.1.2), or the Exclusion Zone (EZ) (defined in Section 8.1.1) will be required to read and comply with the provisions of this HASP. Visitors will also be required to comply with all applicable OSHA requirements such as training, medical monitoring, and respiratory protection. In the event that a visitor does not adhere to the provisions of this HASP, the visitor will be required to leave the Work Area.

1.1 Scope of Work

As stated above, this HASP is specifically designed for the implementation of field activities associated with the OU-5 RI. The proposed scope of work for the OU-5 RI includes, but is not limited to the following tasks:

- Task 1: Sewer System Mapping and Verification
- Task 2: Sewer Sediment and Sewer Water Sampling
- Task 3: Targeted Sewer Camera Inspection

A detailed description of the proposed scope of work and methodology can be found in the OU-5 RI Work Plan and the OU-5 RI Field Sampling Plan (FSP).

1.2 Emergency Phone Numbers

Multiple emergency services may be obtained from 911 including the New York City Police Department (NYPD) and New York City Fire Department (FDNY). More specific numbers for local services are listed below.

Type	Name	Telephone Numbers
Police	Amtrak Police	(800) 331-0008
Hospital (Figure 1 – Map)	Mount Sinai Hospital of Queens 25-10 30th Avenue Long Island City, Queens, NewYork 11102	(718) 932-1000
Ambulance		911

Type	Name	Telephone Numbers
Hazardous Material Emergency Response		911
National Response Center Release or Spill)		(800) 424-8802
Poison Control Center		(800) 222-1222
Penn Station Control Center		(212) 630-6308 (212) 630-6309
Center for Disease Control		(770) 385-3386
NYSDEC Emergency Spill Response		(800) 457-7362
Project Manager	Harry Gregory	Work: (631) 232-2600 Cell: (631) 445-0961
Site Health and Safety Officer	Harry Gregory	Work: (631) 232-2600 Cell: (631) 445-0961
Amtrak Contact	Richard Mohlenhoff	Work: (212) 630-7249 Cell: (917) 692-2127

(Additional emergency information is provided in Section 13)

1.3 Directions to Mount Sinai Hospital of Queens

From 42nd Place:

- Make a left onto Northern Boulevard.
- Turn right onto Steinway Street.
- Turn left onto 30th Avenue.
- The hospital is located at Crescent Street and 30th Avenue.

From 39th Bridge Ramp:

- Make a right onto 39th Street.
- Continue through traffic intersection at Northern Boulevard onto Steinway Street.
- Turn left onto 30th Avenue.
- The hospital is located at Crescent Street and 30th Avenue.

1.4 Emergency Equipment List

The following equipment will maintained on-site for use in the event of an emergency.

- First Aid Kits
- ABC Fire Extinguisher
- Air Horns
- Eye Wash
- Two Way Radio Communication

2.0 HEALTH AND SAFETY PERSONNEL DESIGNATIONS

This section briefly describes all site personnel and their health and safety responsibilities for the Yard investigation activities. All personnel are responsible for ensuring compliance with the HASP.

2.1 Office Health and Safety Manager

The OHSM serves in assuring that the policies and procedures of the HASP are implemented by the SHSO. The OHSM provides guidance regarding the appropriate monitoring and safety equipment and other resources necessary to implement the HASP. The OHSM is responsible for the development of new safety protocols or procedures that may be required due to unexpected safety issues that may arise during the implementation of the scope of work. The OHSM ensures that all Roux Associates personnel and Subcontractors designated to Work onsite are qualified according to applicable EPA, OSHA, and state requirements. The OHSM for work related to OU-5 at Sunnyside Yard is Joseph Gentile, CIH.

2.2 Site Health and Safety Officer

The SHSO will be onsite during intrusive field operations and will conduct and document an initial onsite health and safety tailgate meeting prior to Roux Associates personnel and/or Subcontractors commencing Work. On a project-specific basis, routine activities such as groundwater sampling and gauging may be performed when the SHSO is not onsite. The SHSO is responsible for health and safety activities and has the authority to make related decisions. The determination of hazard levels will be made by the SHSO, and he/she will ensure that the field crew utilizes proper personal protective equipment (PPE). The SHSO shall ensure that monitoring instruments are calibrated daily or as suggested by the manufacturer's instructions. The SHSO will complete and maintain Accident/Incident Report Forms and notify the Project Manager (PM) or Project Principal of all accidents/incidents, who will then communicate to the designated representative the following at the end of the day: end of day tasks completed, next day's planned activities, third party issues, change of plans, change in level of PPE.

The SHSO has stop-work authorization that will be executed upon determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation, such as detrimental weather conditions. Authorization to proceed with Work will be issued by the OHSM in consultation with the Project Principal or designee (i.e., the PM). The SHSO or Project Principal will contact emergency facilities and personnel when appropriate. The SHSO is responsible for submitting and maintaining health and safety field log books, daily safety logs, training logs, and weekly safety reports. Alternate SHSOs may be designated by the SHSO, if required, but must be pre-qualified and approved by the OHSM. The SHSO is responsible for ensuring that a duplicate office copy of this HASP is placed in the central project files. The SHSO for work related to OU-5 at Sunnyside Yard is Harry Gregory; however, the SHSO may vary based upon the task to be completed and the personnel assigned to do the Work.

2.3 Project Principal

The Project Principal is responsible for defining the overall project objectives (field and office related activities), determining chain-of-command, evaluating program outcome, and serving as the final technical review of deliverables. For Roux Associates, the Project Principal is ultimately responsible for overall Yard activities including health and safety issues. The Project Principal also ensures that adequate resources are provided to the field staff to carry out their responsibilities in a safe and efficient manner. The day-to-day management of health and safety issues is the responsibility of the PM. The SHSO, OHSM, PM, and Project Principal shall consult and make an agreeable determination should Yard information or unforeseen circumstances indicate that a change in field procedures may be warranted. Changes to the HASP must be made by formal addendum and approved by the Project Principal, PM, OHSM, and SHSO. The Project Principal is responsible for ensuring that all required signatures are in place prior to implementing fieldwork. The Project Principal for all work conducted by Roux Associates at Sunnyside Yard is Joe Duminuco.

2.4 Project Manager

The PM is responsible for day-to-day activities associated with the project, including health and safety. The PM ensures that fieldwork is scheduled with adequate personnel and equipment resources to complete the job safely, adequate telephone communication between field crews and emergency response personnel is maintained, and field personnel are adequately trained and qualified to Work at the Yard. The PM must ensure that the HASP addresses the hazards associated with each phase of the project and is appropriate for the current specified scope of Work. The PM for work conducted by Roux Associates at Sunnyside Yard is Harry Gregory.

2.5 Field Crew Personnel

All field crew personnel are responsible for reporting unsafe or potentially hazardous conditions to the SHSO. All field personnel (including the above listed personnel) are responsible for understanding and complying with the rules, regulations, and procedures set forth in this HASP as well as any instituted revisions. This includes maintaining knowledge of the information, instructions, and emergency response actions contained in this HASP. The field crew personnel must also prevent unauthorized personnel from entering the work site.

3.0 YARD HISTORY AND PHYSICAL DESCRIPTION

The National Railroad Passenger Corporation (Amtrak) owns property known as Sunnyside Yard (Yard) located in an urban area at 39-29 Honeywell Street in northeastern Queens County, New York. The East River is located approximately one mile to the west of the Yard. Land use immediately adjacent to the Yard is almost exclusively mixed commercial and light industrial, with surrounding residential areas located primarily to the south and east. Sunnyside Yard is a Class 2 Site, No. DEC 2-41-006, listed in the NYSDEC's Registry of Inactive Hazardous Waste Disposal Sites. As a result of the listing for the entire Yard, Amtrak, New Jersey Transit Corporation (NJTC), and the NYSDEC entered into an Order on Consent (OOC) Index #W2-0081-87-6 effective October 1989.

The Pennsylvania Tunnel and Terminal Company, a subsidiary of the Pennsylvania Railroad (later known as the Penn Central Transportation Company), constructed the terminal in the early 1900s. On April 1, 1976, the Consolidated Rail Corporation (CONRAIL) acquired the Yard, and on the same day conveyed it to Amtrak. The Yard functions primarily as a maintenance facility for electric locomotives and railroad cars for both Amtrak and NJTC.

As a result of several investigations performed in accordance with the OOC, areas of the Yard were identified where levels of contamination require additional investigation, and/or remedial efforts. With the NYSDEC's concurrence, to accommodate the High Speed Trainset Facility (HSTF) Service and Inspection (S&I) Building construction schedule and still address additional investigation and remedial efforts Yard-wide in a timely and orderly manner, the Yard has been subdivided into six operable units described as follows:

- OU-1: Soil above the water table within the footprint of the HSTF S&I Building. A Record of Decision (ROD) was issued for OU-1 in August 1997, and the remedial work was completed in April 1998.
- OU-2: Soil above the water table within the footprint of the HSTF S&I Building ancillary structures. A No Further Action ROD was issued for OU-2 in November 1997.
- OU-3: Soil and separate phase petroleum hydrocarbon accumulation above the water table and soil below the water table within 8 acres in the north central portion of the Yard. A ROD was issued for OU-3 in March 2007. Partial remediation has been performed. Remediation will resume upon issuance of a revised OOC.

- OU-4: Consists of the soil above the water table (unsaturated zone) at the Yard, excluding the areas defined as OU-1, OU-2, and OU-3. OU-4 comprises 120 of the total 133 acres of the Yard. A ROD was issued for OU-4 in March 2009. Remediation will commence upon issuance of a revised OOC and remedial action work plan (RAWP) approval.

- OU-5: Designated as the sewer systems beneath the Yard.

- OU-6: Saturated soil and the groundwater beneath the Yard. A No Action ROD was issued for OU-6 in March 2010.

4.0 PREVIOUS INVESTIGATIONS

In accordance with the Order on Consent, several investigations (including soil and groundwater components) have since been performed at the Yard. In 1989, Amtrak retained Roux Associates to perform a Phase I RI, which included a groundwater investigation. The Phase I RI results were reported to the NYSDEC and accepted as final on January 22, 1992. A Phase II and Phase II Addendum RI (and associated work) have been performed by Roux Associates since acceptance of the Phase I RI report. The results of the Phase II and Phase II Addendum RIs (and associated work) were submitted to the NYSDEC in a February 15, 1995 document titled "Phase II Remedial Investigation."

Investigations containing a sewer water and sewer sediment component that have been completed since the submittal of the Phase II RI report have included implementation of sampling programs as well as sediment removal programs and visual inspections.

A comprehensive discussion of the results of previous OU-5 investigations, from the Phase II RI investigation through to the current date, is provided in the OU-5 RI Work Plan.

5.0 WASTE DESCRIPTION AND CHARACTERIZATION

The following information is presented to identify the types of materials that may be encountered at the Yard.

5.1 Potential Compounds of Concern

Investigation results indicate that semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and petroleum hydrocarbons may be present in soil at the Yard. The NYSDEC set forth compounds of concern (COCs) in soil for the Yard including PCBs; seven specific polycyclic aromatic hydrocarbons that the NYSDEC considers carcinogenic (cPAHs), including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene; and lead. Previous sewer investigations indicate that PCBs may be present in sewer water and sediment. A summary of toxicological data for potential compounds that may be encountered in sewer water and sediment is provided in Table D1. The toxicological data summary provides information such as the chemical's exposure limits, routes of exposure, toxic properties, target organs, and physical/chemical properties.

5.2 Waste Types, Characteristics, and Containment

Wastes may be encountered or generated during Yard activities. These wastes are anticipated to be characterized as follows:

- Waste Types

Liquid	☒	Solid	☒	Gas	☐
Sludge	☐	Semi-Solid	☐	Other (describe)________	

- Waste Characteristics

Corrosive	☐	Toxic	☐	Flammable	☐
Volatile	☒	Carcinogen	☒	Radioactive	☐

Reactive ☐ Other (describe) Purge water, development water, soil cuttings ☐

- Waste Containment

Pond	☐	Process Vessel	☐	Tank	☐
Lagoon	☐	Piping	☐	Lab	☐
Lake	☐	Drum	☒	Other	☐
Tank Car	☐	Soil Stockpile	☐	Describe: ______________	

For purposes of this HASP, toxic chemicals are those materials as defined by OSHA in 29 CFR 1910.1200, Appendix A. In general, OSHA defines toxicity on the basis of median lethal dose (LD50) or median lethal concentration (LC50) based upon the effects of the chemical in laboratory studies. A chemical is considered a carcinogen, as defined by OSHA in 29 CFR 1910.1200 Appendix A, if "(a) It has been evaluated by the International Agency for Research on Cancer (IARC) and was found to be a carcinogen or potential carcinogen; (b) It is listed as a carcinogen or a potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or (c) It is regulated by OSHA as a carcinogen."

6.0 HAZARD ASSESSMENT

The potential to encounter chemical hazards is dependent upon the Work activity performed (intrusive versus non-intrusive), the duration, and the location of the Work activity. Such hazards could include inhalation and/or skin contact with chemicals or gases that could cause dermatitis, skin burns, or asphyxiation.

Prior to the beginning of each new phase of work, a job safety analysis will be prepared by the SHSO with assistance from the OHSM. The analysis will address the hazards for each activity performed in the phase and will present the procedures and safeguards necessary to eliminate the hazards or reduce the risk. The Job Safety Analysis for sewer sampling is located in Attachment D-1.

6.1 Chemical Hazards

Investigation results identified PCBs to be the COC present in OU-5. Exposure to sewer gases is also a potential chemical hazard. The potential for personnel and subcontractors to come in contact with chemical hazards may occur during the following tasks:

- Sewer water and sediment sampling activities; and
- Decontamination activities.

The compounds listed in Table 1 may pose a potential exposure hazard through ingestion, inhalation, skin absorption, or a combination of these routes. Exposures will be controlled through the use of proper PPE.

6.2 Physical Hazards

A variety of physical hazards may be present during Yard-related investigation activities. These hazards include, but are not limited to, typical construction activities: operation of heavy equipment; physical strain from lifting manhole covers, motor vehicle traffic; use of power and hand tools; crushing of fingers, toes, or limbs; slip, trip, and fall hazards associated with uneven terrain, obstacles, and slippery or icy surfaces; sharp edges; broken glass; exposed nails; rusty metal; pinch points; skin burns; overhead hazards; head injuries caused by falling objects; airborne particulate hazards; loss of one's hearing and/or eyesight, heat/cold stress, and sun exposure. The referenced hazards are not unique and are generally familiar to most hazardous waste site workers at construction sites. These hazards can be significantly reduced if all workers wear fluorescent vests furnished with reflective stripes, hard hats, and safety glasses or face shields, and proper protective footwear at all times while working onsite. General housekeeping should be performed to reduce slip, trip, and fall hazards. Task specific safety requirements for each phase will be covered during safety briefings.

6.2.1 Noise

Noise is a potential hazard associated with the operation of heavy equipment (e.g., drill rigs), power tools, pumps, and generators. Personnel with 8-hour time weighted average (TWA) exposures exceeding 85 dB-A must be included in a hearing conservation program in accordance with 29 CFR 1910.95 and 1926.52. It is mandated that employees working around heavy equipment or using power tools that dispense noise levels exceeding 90 dB-A are to wear hearing protection consisting of earplugs or protective ear muffs or are to maintain set-backs from high noise equipment as warranted.

6.2.2 Heat/Cold Stress and Sun Exposure

Heat and cold stress are significant potential hazards associated with heavy physical activity and/or the use of PPE. Heat and cold stress symptoms, prevention, and treatment are described in Roux Associates' Standard Operating Procedure for Heat and Cold Stress, provided in Attachment D-2.

6.3 Biological Hazards

Biological hazards having the potential to cause adverse health effects that will be found within the Yard when performing the scope of work for OU-5 RI is the existence of sewage and coming into contact with sewage and associated waste within the sewer system to be evaluated. Other biological hazards include, but are not limited to, potentially rabid stray or wild animal bites, ticks or other insect bites, bee and wasp stings, and bloodborne pathogens.

Other biological hazards include poison ivy, poison oak, and poison sumac. If exposed to these plants, wash skin thoroughly with soap and water. Wearing long plants and sleeves when in a wooded area can minimize contact with poisonous plants.

6.3.1 Insect Stings

Stings from insects are often painful, may cause swelling, and can be fatal if a severe allergic reaction such as anaphylactic shock occurs. If a sting occurs, the stinger should be scraped out of the skin, opposite of the sting direction. The area should be washed with soap and water, followed by an ice pack. Personnel allergic to bee and/or wasp stings shall provide medicine and antidotes to treat allergic reactions immediately as prescribed by their personal physician, or if the victim has a history of allergic reaction, he/she should be taken to the nearest medical facility. If the victim experiences a severe reaction, a constricting band should be placed between the sting and the heart. The bitten area should be kept below the heart if possible. A physician should be contacted immediately for further instructions.

Ticks may carry Lyme disease and/or Rocky Mountain spotted fever. Personnel shall examine themselves for ticks during and following fieldwork. Insecticides containing DEET may be an effective tick repellent.

6.3.2 Bloodborne Pathogens

The majority of the occupational tasks onsite will not involve a significant risk of exposure to blood, blood components, or body fluids. The highest risk of acquiring any bloodborne pathogen for employees onsite will be following an injury. When administering first aid care, there are potential hazards associated with bloodborne pathogens that cause diseases such as Human Immunodeficiency Virus (HIV), Hepatitis B (HBV), Hepatitis A (HAV), Hepatitis C (HCV), or the Herpes Simplex Virus (HSV). An employee who has not received the appropriate certification should never execute first aid and/or CPR.

In order to minimize any potential pathogen exposure, all employees should use the hand washing facilities on a regular basis. The decontamination area will provide an adequate supply of water, soap, and single use towels for hand washing. Additionally, the following universal precautions should be followed to prevent further potential risk:

- Direct skin or mucous membrane contact with blood should be avoided.
- Open skin cuts or sores should be covered to prevent contamination from infectious agents.
- Body parts should be washed immediately after contact with blood or body fluids that might contain blood, even when gloves or other barriers have been used.

- Gloves and disposable materials used to clean spilled blood shall be properly disposed of in an approved hazardous waste container.
- First aid responders shall wear latex or thin mil nitrile gloves when performing any procedure risking contact with blood or body substances.
- Safety glasses will be worn to protect the eyes from splashing or aerosolization of body fluids.
- A CPR mask will be worn when performing CPR to avoid mouth-to-mouth contact.
- Work gloves will be worn to minimize the risk of injury to the hands and fingers when working on all equipment with sharp or rough edges.
- Never pick up broken glass or possible contaminated material with your unprotected hands.

6.4 Electrical Hazards

Portable pumps, generators, and other power tools require proper grounding and/or a ground fault circuit interrupter (GFCI) before operation. Personnel should never attempt to move an operating pump or generator.

Personnel must also use extreme caution near overhead catenary systems, overhead and underground utility lines, and electrical lines as they may be charged.

6.5 Flammability/Explosive Hazards

A variety of highly flammable/explosive materials are stored at the Yard. Prior to performing activities near potentially flammable/explosive materials (i.e., within storage areas), all applicable sections of the HASP procedures specific to these areas need to be thoroughly understood and adhered to. Any questions or concerns should be directed to the SHSO or the Roux Associates PM.

6.6 Lockout/Tagout

Roux Associates and all Yard Contractors/Subcontractors will develop a lockout/tagout plan in the event of the repair of electrical, pneumatic, hydraulic, or mechanical systems per OSHA requirements under 29 CFR 1910.147.

6.7 Track Safety

All employees assigned to Work at the Yard must attend the Amtrak Contractor Employee Safety Program Course (CSG-101), which includes Roadway Worker Protection for compliance with 49 CFR Part 214. In addition, all employees will display the Amtrak Contractor Employee Safety Trained Badge.

As part of Amtrak's compliance efforts, each employee must understand the following:

- a job briefing with an Amtrak representative is required prior to commencing Work;
- never foul any track without protection provided by Amtrak;
- immediately clear tracks upon signal from watchman;
- never return to tracks until clear signal is given by watchman; and
- follow all Amtrak on-track safety rules and instructions.

The two most common dangers involved with working on or about railroad tracks are moving trains and electrical power lines. The following procedures must be followed.

- Clear the tracks when a train approaches from either direction. A gang watchman will signal that a train is approaching by blowing a whistle or air horn, and by raising a black and white signal disc overhead.
- To avoid the dangers from electrical hazards, stay at least 15 feet away from any energized line. Do not approach closer than 15 feet to an electrical wire unless a class A employee tells you it is de-energized and properly grounded.

A copy of the Contractor Safety Course booklet and New York Division Supplement is included as Attachment D-3. Amtrak provides Contractor Responsibilities for conducting Work and handling equipment and materials to prevent any part of the equipment from fouling an operating track or wire line without written permission. The Contractor Responsibility is also included as Attachment D-3.

7.0 TRAINING REQUIREMENTS

The Hazardous Waste Operations and Emergency Response Rule (29 CFR 1910.120) requires that all personnel be trained to recognize onsite hazards, the provisions of this HASP, and the responsible personnel. This section discusses the means to meet these requirements.

7.1 Basic Training

In accordance with Roux Associates' corporate policies, and pursuant to OSHA 29 CFR 1910.120(e), hazardous waste site workers shall, at the time of the job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations. As a minimum, the training shall have consisted of instruction in the topics outlined in the above reference. Personnel who have not met the requirements for initial training will not be allowed to perform any Yard activities in which they may be exposed to hazards (chemical or physical).

In addition to the required initial training, each employee shall have received 3 days of directly supervised on-the-job training. This training will address the duties the employees are expected to perform.

The SHSO has the responsibility of ensuring that personnel assigned to this project comply with these requirements. Written certification of completion of the required training will be provided to the PM, and training records will be maintained by the SHSO onsite and as described in Section 7.5.

Additionally, all employees will have successfully completed the Amtrak Contractor Employee Safety Program course prior to working at the Yard.

7.1.1 Subcontractor Training

All Subcontractor personnel working at the Yard shall have completed the 40-hour training requirement and meet the medical surveillance requirements found in Attachment D-4. Subcontractor training shall be performed in accordance with 29 CFR 1910.120 and HASP specifications. In certain unique situations (i.e., mechanical failure of equipment), a non-trained individual performing emergency repairs may be allowed, at the discretion of the SHSO, to perform repairs when no intrusive activities are being performed and provisions have been made to mitigate potential exposure.

7.2 Annual Eight-Hour Refresher Training

Annual 8-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualifications for fieldwork. The following topics will be reviewed: toxicology; respiratory protection, including air purifying devices and self-contained breathing apparatus (SCBA); medical surveillance; decontamination procedures; and personnel protective clothing. Additional topics may be added as deemed necessary.

7.3 Yard-Specific Training

Health and safety related training that will specifically address the activities, procedures, monitoring, and equipment for the Yard operations will be provided to all Yard personnel and visitors by the SHSO. It will include Yard and facility layout, hazards, first aid equipment locations, and emergency services at the Yard, and will detail all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and to reinforce their responsibilities regarding safety and operations for their particular activity. Yard-specific training will be documented and kept as part of the project records.

7.4 Safety Briefings

Daily safety briefings will be conducted by the SHSO each morning to discuss potential safety concerns for the upcoming activities. Safety briefings will also be provided when new operations are to be conducted (e.g., sampling, sewer inspection), when changes in Work practices must be implemented due to new information made available, and before Work begins at each location. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety audits. Records of safety briefings will be kept as part of the project records.

7.5 Record Keeping Requirements

All record keeping requirements mandated by OSHA 29 CFR 1910.120 will be strictly followed. Specifically, all personnel training records, injury/incident reports, medical examination records, and exposure monitoring records will be maintained by Roux Associates for a period of at least thirty years after the employment termination date of each Roux Associates' employee. Pertinent health and safety training and medical certifications will be kept onsite during the field operations. The SHSO shall maintain a daily written log of all health and safety monitoring activities, and monitoring results shall become part of the project records.

Each Subcontractor will maintain the above-mentioned records for his/her employees.

7.6 First Aid and CPR

The SHSO will identify individuals having first aid and CPR training in order to ensure that emergency medical treatment is available during field activities. The training will be consistent with the requirements of the American Red Cross Association. Certification and appropriate training documentation will be kept with the Yard personnel records.

8.0 ZONES, PROTECTION, AND COMMUNICATION

8.1 Yard Zones

If hazardous materials are encountered, a four-zone approach will be employed in order to prevent the spread of contamination from the disturbed areas onsite. The four zones include: the EZ, the CRZ, the CRC, and the Support Zone (SZ). A clearly marked delineation between the SZ and the remaining three zones will be maintained using orange cones and/or caution tape.

8.1.1 Exclusion Zone

The EZ is the area where contamination exists and where Work will be conducted (i.e., location of drilling or sampling). This zone will be clearly delineated by from the CRZ, CRC, and SZ. When appropriate, no personnel shall Work in the EZ without a buddy. All workers within the EZ shall wear the proper PPE (see Section 8.2.2). No unauthorized persons will be allowed in the EZ during Yard activities.

No personnel are allowed in the EZ without:

- a buddy (when appropriate);
- the proper PPE;
- medical authorization; and
- training certification.

8.1.2 Contamination Reduction Zone

A CRZ will be established between the EZ and the SZ. The CRZ will contain the CRC and will provide an area for full personnel and portable equipment decontamination (Section 11.2). No personnel are allowed in the CRZ without:

- a buddy (when appropriate);
- the proper PPE;
- medical authorization; and
- training certification.

8.1.3 Support Zone

The SZ is considered the uncontaminated area that will be the field support area for Yard operations. The SZ will be located upwind of Yard operations, if possible, and may be used as a potential evacuation point. Meteorological conditions will be observed and noted from this zone, as well as those factors pertinent to heat and cold stress. No potentially contaminated personnel or materials are allowed in this zone except appropriately packaged/decontaminated and labeled samples or drummed wastes. The SZ will contain safety and emergency equipment such as first aid equipment (bandages, blankets, eye wash) and containment equipment (adsorbent, fire extinguisher).

8.1.4 Buddy System

Select field activities conducted in contaminated, hazardous, and/or remote areas of the Yard may require the use of the buddy system. Prior to commencing with field tasks in a potentially hazardous area, the need for using the buddy system should be evaluated. If required, a buddy should be able to:

- provide his/her partner with assistance;
- observe his/her partner for signs of chemical or heat/cold exposure;
- periodically check the integrity of his/her partner's protective clothing; and
- notify the SHSO or others if emergency help is needed.

8.2 Personal Protection

This section describes the required levels of protection for personnel during all field activities performed at the Yard.

8.2.1 General

The level of protection to be worn by field personnel and visitors will be defined and controlled by the SHSO with approval of the OHSM. Levels of protection may be upgraded at the discretion of the SHSO, in conjunction with the OHSM. Where more than one hazard area is indicated, further definition shall be provided by review of Yard hazards, conditions, and operational requirements and by monitoring at the particular operation being conducted.

During all intrusive activities, continuous monitoring will be performed using a photoionization detector (PID). Protection may be upgraded or downgraded by the SHSO in conjunction with the OHSM based upon the PID instrument results. Sampling activities will require continuous monitoring to ensure that exposure levels are below the required action levels.

8.2.2 Personal Protective Equipment Specifications

The three levels of protective equipment discussed below include Level D, Level C, and Level B PPE. The minimum level of PPE for entry into the Yard is Level D. Tasks requiring Level C, or Level B PPE are not anticipated as part of the OU-5 RI scope of work, but are discussed below for completeness of this section.

Level D Protection

1. Personal protective equipment
   - Cotton coveralls
   - Hardhat
   - Safety glasses or chemical splash goggles
   - Fluorescent traffic safety vest with reflective stripes
   - Inner work boots: leather or chemical-resistant, steel toe and shank
   - Outer boots: chemical-resistant (disposable*)
   - Outer gloves: cotton, leather, neoprene, or nitrile (as required)
   - Hearing protection (as required)
   - Escape mask*

* Optional

2. Criteria for selection
   - PID instrument (i.e., Photovac, MiniRae 2000) readings in the breathing zone (BZ) are less than five times the background level or less than 5 ppm if the background level is 0 ppm. Work functions preclude splashes, immersion, or potential for unexpected inhalation of any chemicals.

NOTE: Modifications of Level D will be used to increase the level of skin protection during activities that increase the degree of contact with chemical hazards. These modifications include the use of chemical resistant coveralls (i.e., tyvek) and chemical-resistant inner gloves (i.e., latex or nitrile, doubled as required).

Level C Protection

1. Personal protective equipment

    - Full face (or half-face if approved by the SHSO), air-purifying, HEPA cartridge-equipped respirator (Mine Safety and Health Administration [MSHA]/National Institute for Occupational Safety and Health [NIOSH] approved)

    - Chemical-resistant clothing (coveralls; hooded, one or two-piece chemical splash suit; chemical-resistant hood and apron; or disposable chemical-resistant coveralls)

    - Cotton or synthetic coveralls*

    - Hardhat (face shield*)

    - Safety glasses or chemical splash goggles (if half-face respirator is utilized)

    - Inner work boots: chemical-resistant, steel toe and shank

    - Outer boots: chemical-resistant (disposable*)

    - Outer gloves: chemical-resistant nitriles

    - Inner gloves: chemical-resistant latex (as required)

    - Hearing protection (as required)

    - Escape mask*

    - 2-Way radio communication (intrinsically safe)*

*Optional

2. Criteria for selection

    - Airborne hazards are known to be present but are unlikely to exceed protection factors provided by air purifying respirators.

    - Continuous total vapor readings register between 5 ppm and 25 ppm on PID instruments (i.e., Photovac, MiniRae 2000).

- Measured air concentrations of identified substances (organic vapors) will be reduced by the respirator to, at, or below the substance's permissible exposure limit (PEL), and the concentration is within the service limit of the canister.

- Atmospheric contaminant concentrations do not exceed Immediately Dangerous to Life and Health (IDLH) levels.

- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of skin left unprotected by chemical-resistant clothing.

- Job functions have been determined not to require a SCBA.

NOTES:

1. Benzene may also be monitored initially and periodically in the BZ utilizing activated charcoal sampling devices.

2. Modifications of Level C will be used to increase or decrease the level of skin protection during activities that increase or preclude, respectively, the degree of contact with chemical hazards. Any modifications to Level C PPE will require approval of the SHSO and PM.

Level B Protection

1. Personal Protection Equipment

   - Positive pressure, full-face, SCBA or positive pressure, supplied air respirator with escape SCBA (MSHA/NIOSH approved)

   - Chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; hooded, two-piece chemical splash suit; or disposable chemical-resistant coveralls)

   - Cotton or synthetic coveralls

   - Hardhat (face shield*)

   - Inner work boots: chemical-resistant, steel toe and shank

   - Outer boots: chemical-resistant (disposable*)

   - Outer gloves: chemical-resistant nitriles

   - Inner gloves: chemical-resistant latex

   - Hearing protection (as required)

   - 2-Way radio communication (intrinsically safe)

*Optional

2. Criteria for Selection

   Meeting any one of these criteria warrants the use of Level B protection:

   - Airborne hazards are known to be present but are not identified or quantified.

   - PID instrument (i.e., Photovac, MiniRae 2000) readings in the BZ are greater than 25 ppm and less than 500 ppm.

   - The type(s) and atmospheric concentration(s) of toxic substance(s) have been identified and require the highest level of respiratory protection, but a lower level of skin and eye protection. These would be atmospheres:

     - with concentrations IDLH

     or

     - exceeding limits of protection afforded by a full face, air-purifying mask

     or

     - containing substances requiring air-supplied equipment, but substances and/or concentrations do not represent a serious skin hazard.

   - The atmosphere contains less than 19.5% oxygen.

   - Yard operations make it highly unlikely that the small, unprotected arc of the head or neck will be contacted by splashes of extremely hazardous substances.

   - Work is performed in an enclosed space.

8.3 Communication

While working in Level C/B respiratory protection, personnel may find that communication becomes a more difficult task and process to accomplish. Distance and space further complicate communication. In order to address this problem, electronic instruments, mechanical devices, or hand signals will be used as follows:

<u>Telephones</u> – Mobile telephones will be carried by all personnel for communication with emergency support services/facilities.

<u>Radios</u> – Two-way radios will be utilized onsite for communication between field personnel in areas where visual contact cannot be maintained and where hand signals cannot be employed.

<u>Hand Signals</u> – This communication method will be employed by members of the field team along with use of the buddy system. Signals become especially important when in the vicinity of heavy moving equipment and when using Level C/B respiratory equipment. The signals

shall be known by the entire field team before Yard operations commence, and will be reinforced and reviewed during Yard-specific training.

The following hand signals will be used, if needed:

Signal	Meaning
Hand gripping throat	Out of air; can't breathe
Grip partner's wrist	Leave area immediately, no debate
Hands on top of head	Need assistance
Thumbs up	Okay; I'm alright; I understand
Thumbs down	No; I’m not alright; unable to understand you

9.0 MONITORING PROCEDURES FOR YARD OPERATIONS

The SHSO will monitor wind direction and approximate temperature during all invasive site activities and record the data in a log book. Sewers will be screened using a multi-gas meter and photoionization detector (PID) prior to sampling.

An air monitoring program is important to the safety of onsite and offsite personnel. Ambient air monitoring and continuous air monitoring in the various Work areas during intrusive tasks will accompany Yard operations, as described in this HASP, or as mandated by the SHSO. Monitoring will be performed to verify the adequacy of respiratory protection and to document worker/community exposure. A preliminary survey, to establish background conditions in the immediate Work area, may be performed prior to the initiation of Yard Work. This survey will be conducted with the appropriate air monitoring instrument(s) as warranted by the field activity. Once this survey has been completed, any change in the type of PPE will be determined.

If ambient and continuous air monitoring during intrusive activities indicates the presence of potentially hazardous materials, appropriate measures will be initiated (i.e., upgrade in PPE). All monitoring instruments shall be operated by qualified personnel only and will be calibrated daily prior to use, or more often as necessary. No intrusive activity will be performed without the presence of the SHSO or a designated approved substitute and without personnel air monitoring.

9.1 Monitoring During Field Activities

<u>Intrusive Operations</u> – Continuous personnel BZ air monitoring will be performed by the SHSO during the conduct of all intrusive activities at the Yard (i.e., drilling, monitoring well installation). A PID and/or FID equipped organic vapor meter, and a particulate meter will be utilized to monitor the BZ. Real-time monitoring for all onsite activities will be accomplished as follows:

- Prior to the start of daily activities an upwind background reading will be taken and recorded.
- Monitoring of total VOCs in and around the Work zones.
- Monitoring for particulates in and around the Work zones.

The frequency of monitoring may be modified by the OHSM after consultation with the PM. The rationale for any modification must be documented in the HASP.

9.1.1 Action Levels

Air monitoring during all invasive Yard activities will be performed as appropriate and as specified in Section 9.1 to determine action levels for the upgrading of PPE requirements. Action levels are for known contaminants using direct reading instruments in the BZ for VOCs and particulates. The BZ will be determined by the SHSO, but is typically 4 to 5 feet above the Work area surface. Table 2 lists the acceptable ranges for each piece of monitoring equipment and the action levels for changes in respiratory protection. All air monitoring results will become part of the project records.

9.2 Personnel Monitoring Procedures

Personnel BZ samples, 8-hour, time-weighted average (TWA) sampling, may be conducted if sustained operations in Level C are required. The personnel BZ samples will be collected according to NIOSH analytical methods and analyzed by an American Industrial Hygiene Association (AIHA) certified laboratory.

9.2.1 Level D Intrusive Activities

Level D intrusive activities will initially include all intrusive Yard activities. These investigations/activities will begin utilizing Level D protection as described in Section 8.2.2, with upgrading as necessary to ensure adequate personnel protection.

The SHSO will monitor the BZ with a PID in continuous operating mode and with the alarm activated. The alarm will be set at 5 ppm above background, which is below the PEL for all constituents of concern, except benzene. If the PID indicates that the 5 ppm concentration above background has been exceeded, the SHSO will order cessation of the activity and the EZ will be cleared of all personnel until the PID indicates a reading of less than 5 ppm above background, or until the nature of the hazard has been more thoroughly evaluated.

Colorimetric indicator tubes will be used to establish the concentration of benzene. The indicator tubes may not be chemical-specific for these compounds but will be conservatively biased high, and the readings will be assumed to be benzene, which will enable the SHSO to make an immediate decision as to the appropriate level of protection. If any detections of benzene are noted based on the colorimetric indicator tube readings, the SHSO will order cessation of the activity until: 1) the benzene concentrations are non-detectable by the colorimetric indicator tubes; 2) all potentially exposed personnel have donned Level B respiratory protection as described in Section 8.2.2;; or 3) the nature of the hazard has been more thoroughly evaluated and it is determined that the measured compound(s) was not benzene.

9.2.2 Level C Intrusive Activities

Level C intrusive activities will initially include only those activities that require upgrading from Level D protection. Level C protection will be as described in Section 8.2.2, with upgrading, as necessary, to Level B to ensure adequate personnel protection. Downgrading to Level D protection will also be possible if monitoring demonstrates that no inhalation hazards exist for the activity.

The SHSO will monitor the BZ with a PID in continuous operating mode and with the alarm activated. The alarm will be set at 5 ppm above background, which is below the PEL for all constituents of concern, except benzene. If the PID indicates that the 5 ppm concentration above background has been exceeded, the SHSO will initiate measurements utilizing the colorimetric indicator tubes for benzene.

If the PID readings exceed 25 ppm total organic vapor or the colorimetric indicator tubes detect benzene, the SHSO will order cessation of the activity until: 1) the PID indicates a reading of less than 25 ppm and benzene concentrations are non-detectable based upon the colorimetric indicator tube readings; or 2) all potentially exposed personnel have donned Level B respiratory protection; or 3) the nature of the hazard has been more thoroughly evaluated and it is determined that the measured concentrations do not pose a potential exposure in excess of the PEL utilizing the Level C protection.

To confirm the adequacy of respiratory protection, personnel monitoring utilizing activated charcoal sampling devices may be performed to measure the airborne concentrations of benzene and possibly other organic compounds, as necessary, at the beginning of new activities and periodically during intrusive activities. These samples would be sent to an AIHA-accredited laboratory for analysis using the approved NIOSH analytical methods.

9.2.3 Level B Intrusive Activities

Level B intrusive activities will initially include only those activities that require upgrading from Level C or D, and only those activities required to bring Work to a safe stoppage. No Work utilizing Level B protection is currently planned, and this HASP will require amendment at such time as Level B Work becomes necessary, except for safe work stoppage activities.

When Level B protection is utilized, the SHSO will monitor the BZ with a PID in continuous operating mode and with the alarm activated. The alarm will be set at 500 ppm. If the PID indicates that the 500 ppm concentration is exceeded, the SHSO will order cessation of the activity until: 1) the PID readings are below 100 ppm; or 2) the nature of the hazard has been more thoroughly evaluated and it is determined that the measured concentrations do not pose a potential exposure in excess of the PEL utilizing the Level B protection.

To confirm the adequacy of respiratory protection, personnel monitoring utilizing activated charcoal sampling devices may be performed to measure the airborne concentrations of benzene and possibly other organic compounds, as necessary, whenever Level B protection is utilized. These samples would be sent to an AIHA-accredited laboratory for analysis using the approved NIOSH analytical methods.

9.3 Non-Intrusive Activities

Non-intrusive activities can result in exposure(s) to hazardous or toxic chemicals or physical agents at or above the PEL, or to flammable or oxygen deficient atmospheres. Based upon the current understanding of Yard conditions, personnel monitoring may be performed using colorimetric indicator tubes or activated charcoal sampling devices on the first day of non-intrusive activities, and periodically thereafter, if the PID readings indicate a more accurate assessment is warranted.

10.0 SAFETY CONSIDERATIONS FOR YARD OPERATIONS

10.1 General

In addition to the specific requirements of this HASP, common sense should be used at all times. In this section, non-monitoring safety-related procedures are described. The following general safety rules and practices will be in effect at the Yard.

- All open holes, trenches, and obstacles will be properly barricaded in accordance with local Yard needs and requirements. Proximity to traffic ways, both pedestrian and vehicular, and location of the open hole, trench, or obstacle will determine these needs.
- Smoking and ignition sources in the vicinity of potentially flammable or contaminated materials are strictly prohibited.
- Drilling, boring, use of cranes/drilling rigs, erection of towers, movement of vehicles and equipment, and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures including catenary wires, signs, lights, canopies, buildings and other structures or construction, and natural features such as trees, boulders, bodies of water, and terrain.
- When working in areas where flammable vapors may be present, particular care shall be exercised with tools and equipment that may be sources of ignition. All tools and equipment provided must be properly bonded and/or grounded.
- Approved and appropriate safety equipment (as specified in this HASP) such as eye protection, hard hats, foot protection, and respirators must be worn in areas where required. In addition, eye protection must be worn when sampling soil or water that may be contaminated.
- All Yard personnel may be called upon to use respirator protection in some situations. Fit testing will be necessary for all personnel using respirators. The criteria for facial hair will be determined by the SHSO. In general, the guideline is that facial hair cannot impede the fit of the respirator.
- No smoking, eating, chewing tobacco, gum chewing, or drinking will be allowed outside of the SZ.
- Contaminated tools and hands must be kept away from the face.
- Personnel must use personal hygiene safe guards (washing up) at the end of the shift.
- Each sample must be treated and handled as though it were contaminated.
- Personnel with long hair and/or loose-fitting clothing that could become entangled in power equipment must take adequate precautions.

- Horseplay is prohibited in the Work area.
- Work while under the influence of intoxicants, narcotics, or controlled substances is strictly prohibited.

10.2 Yard Walk-Throughs

Safety considerations during Yard walk-throughs precede all other field operations. The field team will maintain line of sight with each other at all times and regularly maintain communication with the SZ. Air monitoring will be performed as indicated in Section 9.0 and will be used to alert the walk-through team if a dangerous situation exists. Air monitoring will assist in prescribing levels of protection for future Yard operations, designating Yard layout, and identifying hazard areas, if any.

10.3 Vehicular Traffic Safety Procedures

A vehicular traffic area is any area where a vehicle may legally travel including, but not limited to, a roadway, roadway shoulder, driveway, or parking area. When performing activities on or adjacent to Yard roads, the following traffic safety procedures must be followed.

- Fluorescent vests and hard hats, as well as any other applicable PPE specified in this HASP, must be worn at all times.
- The worker's vehicle should be positioned, to the fullest extent possible, to form a barrier between the worker(s) and oncoming traffic. In addition, each Work vehicle will be equipped with a minimum of four high visibility traffic cones. All traffic cones will be placed as necessary to alert traffic of ongoing activities.
- In high volume traffic areas or areas with unpredictable traffic patterns, a traffic watchman or police detail should be utilized. The traffic watchman must be equipped with a warning flag and remain alert and focused on traffic conditions at all times. The need for a traffic watchman or police detail should be discussed with the PM and client prior to deployment.
- Notify the local police of the Work location, dates of Work, and the anticipated Work times when Work is to be conducted in a public roadway.
- Additional requirements of local transportation, highway, public safety, and police departments must also be followed when Work is performed in a public roadway. For example, double parking shall not be permitted.
- Anytime Work is initiated or there is a change in the type or location of Work, the SHSO should consider the potential traffic safety hazards. If appropriate, implement protective measures in addition to those described above.

- Workers should take care to avoid sudden movements across the road and should use caution when crossing the road.
- Daily safety briefings should include a discussion of traffic safety as it relates to the activities planned for that day.
- All Roux Associates' Subcontractors performing Work at the Yard must also adhere to the above safety procedures.

10.4 Construction Activities

A variety of physical hazards may be present during any construction-type project. Personnel should be aware of safety issues associated with: hot/cold Work such as welding, cutting and burning; heavy lifting; rough terrain; heavy equipment operation; ladders; scaffolding; excavating and trenching; underground and overhead utilities; electrical hazards; and the hazards associated with hand and power tools. These hazards are not unique and are generally familiar to most construction personnel.

10.4.1 Intrusive Operations

The SHSO will be present during all intrusive Work. Intrusive Work is defined as any Work being conducted in an area of known contamination that may disturb the impacted material and/or expose the worker to contaminants. The SHSO will ensure that appropriate monitoring, levels of protection, and safety procedures are followed. All personnel will keep a safe distance from the edge of the excavation and out of the swing radius of the excavation equipment.

The proximity of water, sewer, and electrical lines will be identified prior to intrusive operations. The possibility of the presence of underground conduits or vessels containing materials under pressure will also be investigated prior to intrusive operations. Properly sized containment systems will be utilized, and consideration of the potential volume of liquid or waste disposed during Yard operations will be discussed with the PM to minimize the quantity of stored aqueous materials. Emergency evacuation procedures and the location of safety equipment will be established prior to start-up operations. The use of protective clothing, especially hard hats, boots, and gloves, will be mandatory during excavation and other heavy equipment Work.

Equipment to be employed may include all of the mechanical equipment used on any major construction site. Typical machinery to be found includes pumps, compressors, generators, portable lighting systems, pneumatic tools (drum openers), hydraulic drum crushers, pug mills, forklifts, trucks, bulldozers, backhoes, and drill rigs. The equipment poses a serious hazard if not operated properly or if operators cannot see personnel near machinery.

Drilling crews are confronted with all of these heavy equipment hazards. They must be responsible for good housekeeping around the rig because of the rods, auger sections, rope, and hand tools used for the operation. Maintenance is a constant requirement. Overhead and buried utilities require special precautions because of electrical and natural gas hazards. Electrical storms may seek out a standing derrick. The hoist or cathead rope poses specific hazards; always use clean, dry, sound rope. Keep hands away from the test hammer. Hearing loss, while not an immediate danger, is considerable over time. Use hearing protection.

Proper containment and disposal practices will be followed in regard to the potential amount of waste generated during operations. The location of safety equipment and evacuation procedures will be established prior to initiation of operations according to this HASP. The use of hard hats, eye protection, fluorescent safety vests, ear protection, and steel-toed boots will be required during heavy equipment operations. Contaminated equipment will be placed on liner material when not in use, or when awaiting/during decontamination. Communication with the SZ will be regularly maintained.

10.4.2 Inspection

Each piece of potentially dangerous equipment (i.e., power tools) will be inspected for proper and safe operation prior to its use.

- All mechanical and rigging equipment will be inspected by the operators prior to beginning this Work effort, and at least daily thereafter to ensure proper operating capability. Defective equipment must be repaired or replaced prior to continued use/operation.
- Inspect all cables, sheaves, slings, chains, hooks, and eyes prior to use.
- Secure equipment firmly or be sure it is supported.
- Be sure all power lines are deactivated, removed, or at a safe distance.
- Always use proper loading for capacity at lifting radius.

- Keep all equipment lubricated and maintained.

- Employ signal persons whenever needed. Make certain that signals are understood and observed.

10.5 Operation and Maintenance Activities

Any personnel involved in sampling, testing, and operation and maintenance activities must be health and safety trained before being allowed to Work at the Yard. Verifications of compliance with 29 CFR 1910.120 must be provided to, and will be maintained by, the SHSO onsite as described in Section 7.5 of this HASP. The following Personal Protective Equipment shall be worn: hardhat, safety glass, fluorescent safety vest, hearing protection if necessary, and steel toe boots.

10.6 Overhead/Underground Power Lines

The positioning or operation of heavy equipment in the vicinity of utility services will not be initiated until the activities have been coordinated with the Yard Manager. As specified by Amtrak regulations, equipment and personnel will not come closer than 15 feet of catenary lines unless lines are de-energized and grounded. Additionally, excavation operations will not be initiated within 25 feet of the verified position of underground power lines.

10.7 Sampling

Sampling personnel must wear prescribed protective clothing, especially eye protection and chemical resistant gloves, when sampling soils and/or liquids. Sample bottles will be labeled prior to sampling to ease decontamination procedures. The sampling team must be aware of emergency evacuation procedures described in this HASP and the location of emergency equipment, including spill containment materials, prior to sampling. Contamination avoidance will be practiced at all times. In some situations, additional monitoring by the SHSO may be needed to confirm or establish the proper level of protection before the sampling team can proceed.

10.8 Sample Handling

Personnel responsible for the handling of samples will wear the level of protection described in Section 8.2.2. Samples will be identified according to their hazard and packaged to prevent spillage or breakage. Any unusual sample conditions will be noted. Laboratory personnel and all field personnel will be advised of sample hazard levels and the potential contaminants present. This can be accomplished by a phone call to the lab coordinator and/or inclusion of a written statement with the samples. It may be necessary for the SHSO to review safety procedures in handling Yard samples to assist or ensure that these practices are appropriate for the type of suspected contaminants in the sample.

10.9 Waste Disposal

Waste disposal operations will be monitored by the SHSO and performed under the appropriate level of personal protection described in Section 8.2.2. Personnel will wear the prescribed clothing, especially eye protection and chemical resistant gloves, when handling or drumming waste materials. Contamination avoidance will be practiced at all times.

10.10 Heavy Equipment Decontamination

Equipment will be dry decontaminated in the EZ first. This shall consist of the gross removal of the contaminated material from buckets, wheels, or blades using hand tools. If wet decontamination is required, the equipment will be taken to the designated decontamination pad. Personnel performing the decontamination of equipment shall use the prescribed level of protection. Initially, this task shall employ modified Level D protection as described in Section 8.2.2. The equipment decontamination shall be restricted to authorized personnel only. Special consideration will be given to wind speed and direction. Downwind areas are to be kept free of personnel to avoid unnecessary exposure to potential airborne contamination.

A steam cleaner or pressure washer may be used to decontaminate the drilling equipment. Personnel will exercise caution when using a steam cleaner. The high-pressure steam can cause severe burns. Protective gloves, face shields, hard hats, steel-toed boots, and Tyvek suits or rain gear may be worn when using steam cleaners.

10.11 Confined Space Entry

The scope of Work does not require Roux Associates personnel to enter confined spaces for this project. Any changes to the field activities that may necessitate confined space entry will be reported to the Project Principal and OHSM. No Roux Associates personnel are permitted to make a confined space entry. A confined space is defined as any space, depression, or enclosure that has limited opening for entry and egress; may have limited ventilation; may contain or produce life-threatening atmospheres due to oxygen deficiency, the presence of toxic, flammable, or corrosive contaminants; and which is not intended for continuous occupancy.

Examples of confined spaces prohibited from entry include, but are not limited to, storage tanks, ventilation and exhaust ducts, stacks, pits, basements, silos, vats, vaults, pipes, and any topped open space four or more feet deep that is not adequately ventilated.

10.12 Hot/Cold Welding

Roux Associates shall not perform welding unless specific clearance has been obtained from the PM and the Yard Manager. Any contractors or Roux Associates' personnel performing welding must adhere to the procedures outlined below.

Welding equipment shall be chosen for safe application to the Work and shall be installed properly. Employees designated to operate welding equipment shall be properly instructed and qualified to operate it. Mechanical ventilation shall be provided when welding or cutting:

- where there is less than 10,000 cubic feet per welder; and
- where the overhead height is less than 16 feet.

Proper shielding and eye protection shall be worn to prevent exposure of personnel to welding hazards. Proper precautions (isolating welding and cutting, removing fire hazards from vicinity, etc.) for fire prevention shall be taken in areas where welding or other "hot work" is being done.

10.12.1 Welding in Confined Spaces

The scope of Work does not require Roux Associates personnel to perform welding in a confined space for this project. Any changes to the field activities that may necessitate welding in a confined space will be reported to the Project Principal and OHSM. No Roux Associates personnel are permitted to Work in a confined space.

10.13 Control of Hazardous Energy (Lockout/Tagout)

Hazardous energy at the Yard will be controlled through the use of a lockout/tagout procedure developed in accordance with OSHA's lockout/tagout standard (29 CFR 1910.147). The purpose of lockout/tagout procedures is to minimize exposures to hazards from the unexpected energizing, startup, or release of residual or stored energy from equipment, machinery, or processes. Lockout/tagout procedures will be followed during the installation, servicing, and maintenance of machines or equipment that involve hazardous energy sources. Hazardous energy sources include any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy source that is capable of causing injury to personnel.

Lockout/tagout procedures require the placement of a lock and/or tag on an energy isolating device (a device that physically prevents the transmission or release of energy, such as manually operated electrical circuit breakers, disconnect switches, valves, and selector switches). After the energy isolation device is placed in the "off" or "safe" position, the lockout/tagout is placed on the energy isolation device to secure it in the "off" or "safe" position. This ensures that the equipment, machinery, or process is not capable of being operated while installation, servicing, or maintenance is taking place.

If it is determined that lockout/tagout procedures are required for any aspect of Yard Work, the following generic lockout/tagout procedures will be implemented. Note, these procedures will be tailored to the specific application of a lockout/tagout, when necessary. Presently, there are no known situations that would require the application of lockout/tagout procedures at the Yard.

1. Affected personnel and authorized personnel will receive lockout/tagout orientation training to become familiar with procedures to control hazardous energy. Affected personnel is defined as personnel whose job requires that they operate or use equipment, machinery, or processes on which servicing or maintenance is being performed under lockout/tagout, or whose job requires them to Work in an area in which such servicing or maintenance is being performed. Authorized personnel is defined as a qualified person to whom authority and responsibility to perform a specific lockout and/or tagout assignment has been given by the employer.

2. Before proceeding with the installation, maintenance, or servicing of any equipment, machinery, or process at the Yard for which lockout/tagout procedures apply, a survey will be made to locate and identify associated energy isolation devices.

3. Once the survey is complete, the authorized personnel will notify all affected personnel, including the SHSO, that a shutdown of the equipment or machine will occur.

4. Following notification, the equipment or machine, if operating, will be shut down by normal stopping procedures (i.e., depress stop button, open toggle switch, turn light switch off, etc.).

5. Once turned off, the energy isolating device (i.e., circuit breaker, disconnect switch, valve, etc.) will be operated in such a manner that the machine or equipment will be isolated from the energy source (electrical, mechanical, hydraulic, pneumatic, chemical, thermal, etc.).

6. The energy isolating device is then "locked out" by applying the lockout, padlock, and tag to the device. In some cases, a chain must be used (in combination with a padlock) to sufficiently "lockout" a device (i.e., steam valve, hydraulic valve, etc.).

7. The tag will be filled out by the authorized personnel indicating the personnel's name and the date and time of the lockout.

8. Once the energy-isolating device has been locked out and tagged, all potentially hazardous sources or residual energy will be purged or dissipated (i.e., grounding, bleeding, venting, lowering, etc.).

9. After ensuring that no personnel are exposed, the authorized personnel will operate the normal operating controls to make certain the equipment will not restart. The operating controls must be returned to the "off" or "neutral" position after the test.

10. Use a voltmeter to make sure that Work is not energized, if applicable.

11. Attach a "ground stick" of sufficient size to handle any possible fault current to all three phases of the source, if applicable.

12. Maintenance or servicing of the machine or equipment can be performed.

13. When the maintenance and/or service is completed, the Work area is to be inspected to ensure that all affected personnel are safely positioned and/or removed. In addition, remove all nonessential items from the equipment.

14. The lockout, padlock, and tag shall then be removed from the energy-isolating device by the authorized personnel who applied the lockout devices.

15. All personnel involved with the service or maintenance of the locked out equipment will place their assigned padlock to each and every lockout device and/or chain in such manner that if every other padlock were removed, the personnel would still have a padlock assuring that each and every source of energy is still "locked out." No personnel may affix the personal lockout/tagout device of another personnel.

16. If Work on a piece of equipment or machinery that is locked out carries over to the next shift, the authorized personnel may remove their lockout device, provided that the next authorized personnel applies their lockout device at the same time the previous authorized personnel removes their lock device.

10.14 Hazard Communication

Personnel working at the Yard have the right to know about the chemical hazards associated with hazardous materials used and stored onsite. This information will be readily available as required by OSHA's Hazard Communication Standard (29 CFR 1910.1200). This information will be communicated to personnel through the maintenance of a chemical inventory system, chemical labeling, material safety data sheets (MSDSs), and hazard communication training.

Chemicals imported to the Yard as part of our work will bear the original NYSDOT required labeling on the chemical's container. In addition, a new label will be affixed to the original container, if necessary, and to new containers to which the chemical is dispensed providing the chemical name and specific hazard warnings (i.e., flammability, health, reactivity). Hazard warnings will follow either the National Fire Protection Association (NFPA) format or the Hazardous Material Information System (HMIS) format. Both systems are easy to use and rely on numerically ranking hazards on a 0 to 4 scale. Most chemicals used onsite, which are subject to the Hazard Communication Standard, are related to sampling activities. These chemicals may include hexane, methanol, acetone, and nitric acid.

10.15 Automobile Safety

Motor vehicle safety and awareness is a very important aspect in the health and safety plan regarding the prevention of injuries. Deaths, injuries, and property damage can occur from careless and unsafe driving acts. The main rules for vehicle safety are being smart and driving defensively. Driving defensively means not only taking responsibility for yourself and your actions, but also being mindful of other vehicles and potential obstacles on the roadway.

The following are guidelines to help reduce your risk on the road:

- Secure each passenger before starting the engine. Lock all doors.
- Driving too fast or slow can increase the likelihood of collisions.
- Avoid an impaired driver by turning right at the next corner or exiting. If an oncoming car appears to cross into your lane, pull over, sound horn, and flash lights.
- Do not contest the "right of way" or try to race another car during a merge.
- Be aware of sudden traffic slowdowns due to security checkpoints and accidents.

- While driving, be cautious, aware, and responsible.

Before operating your vehicle, and on a regular basis, check the following:

- Does the driver have a valid driver’s license?
- Does the vehicle have valid inspection stickers, registration, and insurance information?
- Are the tires inflated to the right pressure?
- Is there an inflated spare?
- Are the lights and indicators working?
- Are the windshield wipers and washer fluid working?
- Are vehicle attachments (such as ladders) secured?
- Is the horn working?
- Is the license plate clean and visible?

Remember, commercial vehicles are prohibited from left lanes, HOV lanes, and many roadways. Always be aware and responsible.

10.16 Additional Safe Work Practices

Refer to the SHSO for specific concerns regarding each individual Yard-related task. The safety rules listed below must be strictly followed.

- Use the buddy system when required.
- Practice contamination avoidance, both on and offsite.
- Plan activities ahead of time.
- Do not climb over/under obstacles.
- Be alert to your own physical condition.
- Watch your co-workers for signs of fatigue, exposure, heat or cold stress, etc.
- Report all accidents, no matter how minor, immediately to the SHSO.
- Do not eat, drink, chew gum, apply cosmetics, or use tobacco products while working in the Yard (except in the SZ).

- Be aware of traffic, heavy equipment, and other obstacles around you.
- Do not Work onsite while under the influence of drugs or alcohol, including prescription drugs that may cause drowsiness.
- Copies of this HASP shall be readily accessible at all times.
- Note wind direction. Personnel shall remain upwind wherever possible during onsite activities.
- READ AND SIGN YOUR HEALTH AND SAFETY PLAN BEFORE ENGAGING IN YARD ACTIVITIES.
- Hands must be washed thoroughly upon leaving the Work Zone or before eating, drinking, or any other activities.
- Contaminated protective equipment shall not be removed from the Yard until it has been decontaminated and properly packaged and labeled.
- Portable eyewash stations shall be located in the decontamination staging area in the SZ.
- No facial hair, which impedes the satisfactory fit of respiratory equipment, will be allowed on personnel that may be required to wear respiratory protective equipment.
- An emergency first aid kit and fire extinguisher shall be onsite in the SZ at all times.
- All respiratory protection selected to be used onsite shall meet NIOSH/MSHA requirements for the existing contaminants.
- Any skin contact with surface and groundwater shall be avoided.
- No contact lenses may be worn in the Work Zone or CRZ.

A work/rest regimen will be initiated when ambient temperatures and protective clothing cause a stressful situation. Work will not be conducted without adequate light or without supervision. Safety briefings may be held prior to beginning each task.

11.0 DECONTAMINATION PROCEDURES

A steam cleaner may be utilized to decontaminate the equipment. Personnel should exercise caution when using a steam cleaner. The high pressure steam can cause severe burns. Protective gloves, face shields, hard hats, steel-toed boots, and Tyvek suits or rain gear will be worn when using steam cleaners.

11.1 Contamination Prevention

Adequate contamination prevention should minimize worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include the following:

<u>Personnel</u>

- Do not walk through areas of obvious or known contamination;
- Do not handle contaminated materials directly;
- Make sure all PPE has no cuts or tears prior to donning;
- Fasten all closures on suits, covering with tape if necessary;
- Take particular care to protect against any skin injuries;
- Stay upwind of airborne contaminants;
- Do not carry cigarettes, gum, etc. into contaminated areas; and
- Use disposables to cover non-disposables when contact is probable.

<u>Sampling/Monitoring</u>

- When required by the SHSO, cover instruments with clear plastic, leaving openings for sampling and exhaust ports; and
- Bag sample containers prior to the placement of sample material.

<u>Heavy Equipment</u>

- Care should be taken to limit the amount of contamination that comes in contact with heavy equipment (i.e., tires, augers, etc.);
- If contaminated tools are to be placed on non-contaminated equipment for transport to the decontamination pad, plastic should be used to keep the equipment clean; and
- Excavated soils should be contained and kept out of the way of workers.

11.2 Decontamination

All personnel and equipment shall be thoroughly decontaminated. Safety briefings shall explain the decontamination procedures for the various levels of protection. A field wash for equipment and PPE shall be set up and maintained for all persons exiting the EZ. The system will include a gross wash and rinse for all disposable clothing and boots worn in the EZ. As necessary, equipment and facilities will be available for personnel to wash their hands, arms, neck, and face before entering the SZ.

Heavy equipment will be decontaminated at the decontamination pad and inspected by the SHSO and/or designated individual before it leaves the Yard. The decontamination pad will provide for the containment of all wastewater from the decontamination process. Respirators, airlines, and any other PPE that comes in contact with contaminated materials shall pass through a field wash on the decontamination pad and a final, thorough decontamination at the end of the day.

Sampling equipment will be decontaminated through the following steps:

- Fresh water rinse;
- Non-phosphorus detergent wash;
- Fresh water rinse;
- Distilled water rinse;
- Acetone rinse; and
- Distilled water rinse.

11.3 Decontamination During Medical Emergencies

If emergency, life-saving first aid and/or medical treatment are required, normal decontamination procedures may need to be abbreviated or omitted. The SHSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment, or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed, a plastic barrier between the individual and clean surfaces should be used to help prevent contaminating the inside of ambulances and/or medical personnel. Outer garments are then removed at the medical facility. No attempt will be made to wash or rinse the victim, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material, which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems (ambulatory) or injuries, the normal decontamination procedures will be followed. Note that heat stroke requires prompt treatment to prevent irreversible damage or death. Protective clothing must be promptly removed. Less serious forms of heat stress also require prompt attention and removal of protective clothing immediately. Unless the victim is obviously contaminated, decontamination should be omitted or minimized and treatment begun immediately.

12.0 DISPOSAL PROCEDURES

A system for segregating all waste will be developed by the SHSO. All waste disposal operations conducted by Roux Associates will be monitored by the SHSO and carried out under the appropriate level of personal protection.

All discarded materials, waste materials, or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left at the Yard. All potentially contaminated materials (i.e., clothing, gloves, etc.) will be bagged or drummed, as necessary, labeled, and segregated for disposal. All contaminated materials shall be disposed of in accordance with appropriate regulations. All non-contaminated materials shall be collected and bagged for appropriate disposal as domestic waste.

Decontamination water shall be collected in 55-gallon drums and transported to an approved, permitted offsite disposal facility or discharged to the onsite combined sewer if the water meets the discharge criteria of the NYCDEP. A NYCDEP discharge permit will be secured prior to any discharge.

13.0 EMERGENCY PLAN

As a result of the hazards onsite and the conditions under which operations are conducted, the possibility of an emergency exists. An emergency plan is required by OSHA 29 CFR 1910.120 to be available for use at all times during Yard Work and is included below. A copy of this plan shall be posted in the SZ at each Work area. Should an emergency situation occur, the emergency plan shall be known by all field personnel prior to the start of Work. The plan provides the phone numbers for the fire, police, ambulance, hospital, poison control centers, and directions to the hospital from the Yard.

Various individual Yard characteristics will determine preliminary actions taken to ensure that this emergency plan is successfully implemented in the event of an emergency. Careful consideration must be given to the proximity of neighborhood housing or places of employment, and to the relative possibility of Yard release of vapors that could affect the surrounding community.

13.1 Yard Emergency Coordinator(s)

The SHSO shall act as the Yard Emergency Coordinator to make contact with the local fire, police, and other emergency units prior to beginning Work onsite. In these contacts, the SHSO will inform the emergency units about the nature and duration of Work expected at the Yard and the type of contaminants and possible health or safety effects of emergencies involving these contaminants. At this time, the SHSO and the emergency response units shall make necessary arrangements to be prepared for any emergencies that could occur.

The SHSO or designee shall implement this emergency plan whenever conditions at the Yard warrant such action. The coordinator(s) will be responsible for the coordination of the evacuation, emergency treatment, emergency transport of Yard personnel as necessary, and notification of emergency response units and the appropriate management staff.

During an emergency, the SHSO will perform air monitoring as needed, as well as lend assistance and provide health and safety information to the responding emergency personnel. Non-essential personnel will be kept away from the incident until the appropriate emergency resources arrive. At that time, the responders will take control of the incident. Yard personnel may be asked to lend assistance to emergency personnel during evacuations, help with the injured, etc.

13.2 Evacuation

Evacuation procedures will be discussed prior to the start of Work and periodically during safety meetings. In the event of an emergency situation, such as fire, explosion, significant release of particulates, etc., an air horn or other appropriate device will be sounded by the SHSO for approximately ten seconds indicating the initiation of evacuation procedures. All persons in both the restricted and non-restricted areas will evacuate and assemble near the SZ or other safe area as identified in advance by the SHSO. Under no circumstances will incoming personnel or visitors be allowed to proceed into the evacuated area once the emergency signal has been given. The SHSO must see that access for emergency equipment is provided and that all combustible apparatuses have been shutdown once the alarm has been sounded. Once the safety of all personnel is established, the fire department and other emergency response groups will be notified by telephone of the emergency. The hospital route will be posted onsite (Figure 1). Any other evacuation routes will be specified by the appropriate emergency personnel.

13.3 Potential/Actual Fire or Explosion

If the potential for a fire exists or if an actual fire or explosion occurs, the following procedure will be implemented:

- immediately evacuate the Work Zone as described above (Section 13.2); and
- notify fire department and security.

13.4 Environmental Incident (Release or Spread of Contamination)

The SHSO shall instruct a person onsite to immediately contact police and fire authorities to inform them of the possible or immediate need for a nearby evacuation. If a significant release (above the reportable quantity as described in 40 CFR 302) has occurred, the National Response Center and other appropriate groups should be contacted. Those groups will alert National or Regional Response Teams as necessary. The personnel listed below shall be notified as necessary.

Type	Name	Telephone Number
Fire Department		911
Hazardous Material Emergency Response		911
Police	Amtrak Police	(212) 630-7113

Type	Name	Telephone Number
Ambulance		911
Poison Control Center		(800) 222-1222
Hospital (Figure 1 – Map)	Mount Sinai Hospital of Queens 25-10 30th Avenue Long Island City, Queens New York 11102	(718) 932-1000
Penn Station Control Center		(212) 630-6308 (212) 630-6309
Center for Disease Control		(770) 385-3386
NYSDEC Emergency Spill Response		(800) 457-7362
National Response Center (Release or Spill)		(800) 424-8802
Site Health and Safety Officer	Harry Gregory	Work: (631) 232-2600 Cell: (631) 445-0961
Office Health and Safety Manager	Joseph Gentile, CIH	Work: (856) 423-8800 Cell: (610) 844-6911
Project Manager	Harry Gregory	Work: (631) 232-2600 Cell: (631) 445-0961

13.5 Personnel Injury

Emergency first aid shall be applied onsite as warranted to stabilize the patient. If necessary, the individual shall be decontaminated and transported to the nearest hospital (Figure 1). The SHSO will supply medical data sheets to medical personnel and complete the accident report in accordance with Section 13.6 of this HASP.

13.6 Accident/Incident Reporting

As soon as first aid and/or emergency response needs have been met, the Project Principal, PM, SHSO, and OHSM are to be contacted by telephone: (Direct contact, no phone messages).

If the injured worker is not a Roux Associates employee, his/her employer should be contacted.

Written confirmation of verbal reports are to be submitted within 24 hours. The report forms titled "Accident Report" and “Accident Investigation Report” (Attachment D-5 and Attachment D-6 respectively) are to be used for this purpose. All representatives contacted by telephone are to receive a copy of this report. If the employee involved is not a Roux Associates employee, his/her employer shall receive a copy of the report.

For reporting purposes, the term accident refers to fatalities, lost time injuries, spill or exposure to hazardous materials (radioactive, toxic, explosive, or flammable materials), fire, explosion, property damage, or potential occurrence of the above.

Any information released from the health care provider, which is not deemed confidential patient information, is to be attached to the appropriate form. Any medical information, which is released by patient consent, is to be filed in the individual's medical record and treated as confidential.

13.7 Overt Personnel Exposure

If an overt exposure to toxic materials should occur, the exposed person shall be treated onsite as follows.

Skin Contact:	Wash/rinse the affected area thoroughly with copious amounts of soap and water, then provide appropriate medical attention. An eyewash and/or emergency shower or drench system will be provided onsite at the CRZ and/or SZ as appropriate. Eyes should be rinsed for at least fifteen (15) minutes upon chemical contamination.
Inhalation:	Move to fresh air and/or, if necessary, decontaminate and transport to the hospital.
Ingestion:	Decontaminate and transport to the emergency medical facility.
Puncture Wound or Laceration:	Decontaminate and transport to the emergency medical facility. The SHSO will provide medical data sheets to medical personnel as requested.

13.8 Adverse Weather Conditions

In the event of adverse weather conditions, the SHSO will determine if Work can continue without sacrificing the health and safety of any field workers. Some of the items to be considered prior to determining if Work should continue are:

- heavy rainfall or other treacherous weather-related conditions;

- potential for heat stress and heat-related injuries;
- potential for cold stress and cold-related injuries;
- limited visibility;
- potential for electrical storms;
- potential for malfunction of health and safety monitoring equipment or gear; and
- potential for accidents.

Yard activities will be limited to daylight hours and acceptable weather conditions. Inclement working conditions include heavy rain, fog, high winds, and lightning. Observe daily weather reports and evacuate if necessary in case of inclement weather conditions.

14.0 AUTHORIZATIONS

Personnel authorized to enter the Work area and perform work while operations are being conducted must be approved by the SHSO and the PM. This document will be completed when the Subcontractors have assigned trained personnel for this Project. Authorization will require completion of appropriate training courses, medical examination requirements as specified by OSHA 29 CFR 1910.120, and review and sign-off of this HASP.

The following Roux Associates personnel are authorized to perform Work onsite:

1. Joseph Duminuco
2. Harry Gregory
3. Rob Kovacs
4. Charlie McGuckin
5. Jessica Diminich
6.
7.
8.
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26.

Other personnel authorized to enter the Work area are:

1. Amtrak Employees
2. Drilling Contractors
3. Waste Disposal Contractors
4. Surveyors
5. LIRR Employees
6. NYSDEC Representatives
7. NYSDOH Representatives
8. NJTC Representatives
9. Legal counsel for Amtrak and NJTC

15.0 FIELD TEAM REVIEW

Each person entering the Yard and each field member shall sign this section after project-specific training is completed and before being permitted to Work onsite.

I have read and understand this project-specific Health and Safety Plan. I will comply with the provisions contained therein.

Site/Project: OU-5 Remedial Investigation - Sunnyside Yard, Queens, New York

Name Printed	Signature	Date

Table D-1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Operable Unit 5, Sunnyside Yard, Queens, New York

Compound	CAS#	TLV (mg/m^3)	IDLH (ppm)	PEL (mg/m^3)	Routes of Exposure	Toxic Properties	Target Organs	Physical/ Chemical Properties
Trichloroethene	79-01-6	270 50 ppm	None	270 50 ppm	Dermal inhalation ingestion	CNS depression Sensory irritant Kidney damage Liver damage Heart damage	CNS skin eyes kidney liver CVS	Liquid BP = 189°F flammable LEL = 12.5% UEL = 90%
Toluene	108-88-3	375 100 ppm	2,000	375 100 ppm	Dermal inhalation ingestion	CNS depression Liver damage Kidney damage Defatting of skin	CNS liver kidney skin	Liquid benzene odor BP = 232°F flammable LEL = 1.2% UEL = 7.1%
1,2-Dichloroethene	540-59-0	790 200 ppm	4,000	790 200 ppm	Dermal ingestion inhalation	CNS depressant Epigastric cramps Sensory irritant Dermatitis	CNS stomach skin	Colorless liquid BP = 118-140°F LEL = 9.7% UEL = 12.8%
Petroleum hydrocarbons (Petroleum distilled)	8002-05-9	1,600 400 ppm	10,000	1,600 400 ppm	Dermal inhalation ingestion	CNS depressant Respiratory irritant Dried/cracked skin	CNS respiratory tract skin	Colorless liquid BP = 86-460°F UEL = 5.9% LEL = 1.1% Flammable
Chromium	7440-47-3	0.5	None	1	Dermal inhalation ingestion	Decreased pulmonary function Sensory irritant	lung skin eyes	Steel gray metal

NOTES:
TLV - Threshold Limit Value
mg/m^3 - milligrams per cubic meter
IDLH - Immediately dangerous to life or health
ppm - parts per million
PEL - Permissible Exposure Limit
CNS - Central Nervous System
CVS - Cardiovascular System
GI – Gastrointestinal
BP - Boiling Point
LEL - Lower Explosive Limit
UEL - Upper Explosive Limit
°C - degrees Celcius
°F - degrees Fahrenheit

Table D-1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Operable Unit 5, Sunnyside Yard, Queens, New York

Compound	CAS#	TLV (mg/m^3)	IDLH (ppm)	PEL (mg/m^3)	Routes of Exposure	Toxic Properties	Target Organs	Physical/ Chemical Properties
Arsenic	7440-38-2	0.2	None	0.5 organic 0.01 - inorganic	Dermal inhalation ingestion	Sensory irritant Lung & skin cancer Aplastic anemia Numbness	skin eyes lungs blood peripheral nervous system	Silver gray - tin white BP = sublimes
Lead	7439-92-1	0.15	700	0.2	Dermal inhalation ingestion	Abdominal pain CNS depressant Anemia Nephropathy Reproductive effects	GI tract CNS blood kidneys	Metal - soft gray BP = 3,164°F
Zinc	7440-66-6	10	None	10	Dermal inhalation ingestion	Skin irritant Cough	skin lungs	Bluish-white metallic element BP = 908°F
Copper (dusts and mists)	7440-50-8	1	None	1	Dermal inhalation ingestion	Sensory irritant GI irritation CNS depressant	skin eyes GI tract CNS	Reddish metal BP = 4,730°F Powdered form may ignite
Aroclor 1254	11097-69-1	0.5 (Skin)	None	0.5 (Skin)	Dermal inhalation ingestion	Eye, skin irritation Acne form dermatitis Potential carcinogen	skin eyes liver	Colorless to pale yellow mild hydrocarbon odor nonflammable

NOTES:

TLV - Threshold Limit Value
mg/m^3 - milligrams per cubic meter
IDLH - Immediately dangerous to life or health
ppm - parts per million
PEL - Permissible Exposure Limit
CNS - Central Nervous System
CVS - Cardiovascular System
GI – Gastrointestinal
BP - Boiling Point
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Table D-1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Operable Unit 5, Sunnyside Yard, Queens, New York

Compound	CAS#	TLV (mg/m^3)	IDLH (ppm)	PEL (mg/m^3)	Routes of Exposure	Toxic Properties	Target Organs	Physical/ Chemical Properties
Chrysene	218-01-9	0.1	None	0.2	Dermal	Mutagen Carcinogen	NA	White crystals
Aroclor 1260	11096-82-5	0.001	None	None	Dermal inhalation ingestion	Liver damage Nausea Abdominal pain	liver skin	Colorless Mild hydrocarbon odor
Benzo(a)pyrene	50-32-8	None	None	None	Dermal inhalation ingestion	Teratogen carcinogen	Reproductive lung skin	Yellowish needles; BP = 312°F
Manganese	7439-96-5	1.0 fume	10,000	5.0	Inhalation ingestion	Metal fume fever Apathy Anorexia Insomnia Headaches	Resp. system CNS blood kidneys	Lustrous, brittle, silvery solid BP = 3,564°F

NOTES:

TLV - Threshold Limit Value
mg/m^3 - milligrams per cubic meter
IDLH - Immediately dangerous to life or health
ppm - parts per million
PEL - Permissible Exposure Limit
CNS - Central Nervous System
CVS - Cardiovascular System
GI – Gastrointestinal
BP - Boiling Point
LEL - Lower Explosive Limit
UEL - Upper Explosive Limit
°C - degrees Celcius
°F - degrees Fahrenheit

Table D-1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at Operable Unit 5, Sunnyside Yard, Queens, New York

References

Guide to Occupational Exposure Values. 1990. American Conference of Governmental Industrial Hygienists.

Proctor, N.H., J.P. Hughes and M.L. Fischman. 1989. Chemical Hazards of the Workplace. Van Nostrand Reinhold. New York.

Sax, N. 1987. Hawley's Condensed Chemical Dictionary. 11th Edition Van Nostrand and Reinhold Company.

Sax, N.I. and R.J. Lewis. 1989. Dangerous Properties of Industrial Materials. 7th Edition. Van Nostrand Reinhold. New York.

U.S. Department of Labor. 1990. OSHA Regulated Hazardous Substances, Industrial Exposure and Control Technologies Government Institutes, Inc.

TABLE D-2

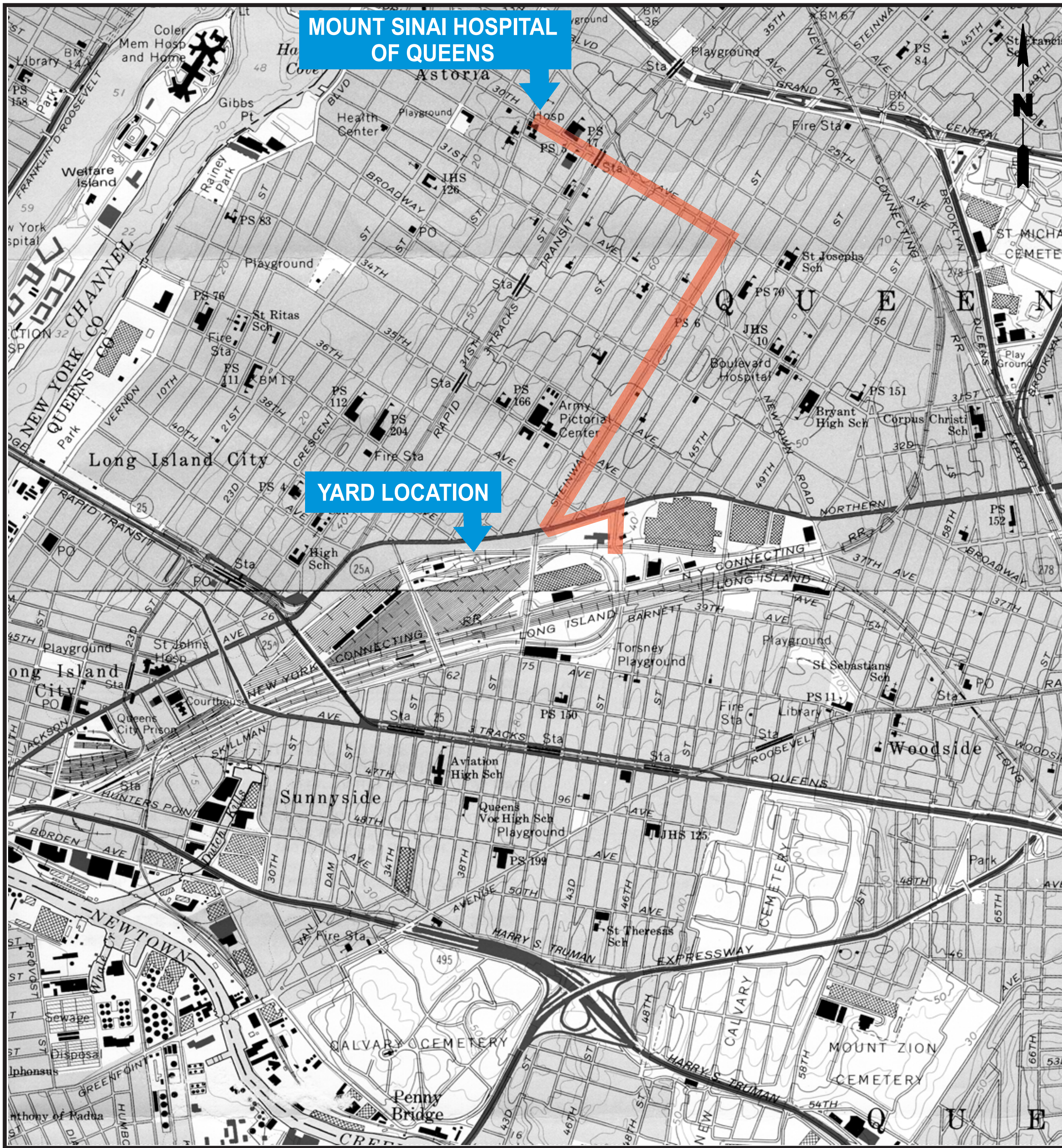
ACTION LEVELS FOR WORKER BREATHING ZONE

Instrument	Action Level *	Level of Respiratory Protection/Action
PID	0 to <5 ppm (one minute sustained)	Level D *
PID	>5 to <50 ppm (one minute sustained)	Utilize APR (Level C)
PID	>50 to <100 ppm (one minute sustained)	Level B
PID	>100ppm	Stop work** (ventilate, apply foam)
CGI/H_2S Meter	<5%	Level D
CGI/H_2S Meter	>5% to <25%	Level B
CGI/H_2S Meter	>25%	Stop work**
CGI/CO Meter	>25%	Level B
CGI/CO Meter	>50%	Stop work**(ventilate area)
CGI/O_2 Meter	<10% LEL, in excavation 19.5% oxygen – 23.5%	Level D Level D
CGI/O_2 Meter	>10% LEL, in excavation >23.5% oxygen	Allow to vent, apply foam** Stop work, Oxygen Enriched ATM.**
Dust Monitor	0 – 1.0 mg/m^3, 5-minutes average	Level D
Dust Monitor	>1.0 to 50 mg/m^3, 5-minutes	Level D – Institute dust suppression measures
Dust Monitor	>50 mg/m^3, 5-minute ave.	Level C – Institute dust suppression measures

Note: Action levels are based on above background levels.

* Instrument readings will be taken in the breathing zone (BZ) of the workers, unless otherwise indicated.

** Suspend work in immediate area. Conduct air monitoring periodically to determine when work can continue. Implement mitigative measures.



EMERGENCY ROUTE DIRECTIONS TO MOUNT SINAI HOSPITAL OF QUEENS:

- FROM 42nd PLACE MAKE A LEFT ONTO NORTHERN BOULEVARD.
- TURN RIGHT ONTO STEINWAY STREET.
- TURN LEFT ONTO 30th AVENUE.
- THE HOSPITAL IS LOCATED AT CRESCENT STREET AND 30TH AVENUE.

0 2000'

Title:

ROUTE FROM SUNNYSIDE YARD TO MOUNT SINAI HOSPITAL

SUNNYSIDE YARD
39-29 HONEYWELL STREET
QUEENS, NEW YORK

Prepared for:

AMTRAK

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: J.P.	Date: 12MAY10	FIGURE
Prepared by: J.A.D.	Scale: 1"=2000'	D-1
Project Mgr.: H.G.	Office: NY	
File No.: AM5011909.CDR	Project No.: 05550Y05	

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ATTACHMENT D-1

Job Safety Analysis Sheets

JOB SAFETY ANALYSIS	Ctrl No	DATE 04/29/2010	☒ NEW ☐ REVISED	PAGE 1 of 2

JSA TYPE CATEGORY	WORK TYPE	WORK ACTIVITY (Description)	
Site Specific **Site: Amtrak Sunnyside Yard**	**Sampling**	**Sewer Sampling**	
DEVELOPMENT TEAM	**POSITION / TITLE**	**REVIEWED BY:**	**POSITION / TITLE**
Harry Gregory	Project Manager/SHSO	Joe Duminuco	Project Principal
Jennifer Parisi	Senior Engineer	Supy Singh	OHSO

REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

☒ REFLECTIVE VEST ☒ HARD HAT ☐ LIFELINE / BODY HARNESS ☒ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☐ HEARING PROTECTION ☒ SAFETY SHOES Composite toe or steel toe boots/shoes	☐ AIR PURIFYING RESPIRATOR ☐ SUPPLIED RESPIRATOR ☐ PPE CLOTHING Wet weather gear	☒ GLOVES Leather, Nitrile and cut resistant ☐ OTHER _____

REQUIRED AND / OR RECOMMENDED EQUIPMENT

Multi-gas meter and calibration gases, manhole lifting tools, sampling equipment, safety cones, caution tape, assistant to secure work area

[1]JOB STEPS	[2]POTENTIAL HAZARDS	[3]CRITICAL ACTIONS
1. Secure work area.	1a. CONTACT: Traffic (sampling locations maybe in parking lots or along roadways).	1a. Ensure work area is secure and inform others of work activity. 1a. Establish a work zone using traffic cones, utilize a flagperson when needed, and secure the work area. 1a. Be aware of oncoming traffic.
	1b. EXERTION: Physical Strain.	1b. Do not strain the body to move traffic cones into place, use a second person if necessary.
	1c. FALL:Slip/trip hazards	1c. Watch for potential hazards while walking to the sampling locations. 1c. Tools will be staged in a convenient, stable, and orderly manner.
2. Collect screening data utilizing the multi-gas meter and PID.	2a. EXPOSURE: Calibration and sewer vapor may be noxious.	2a. Calibrate and use multi-gas meter to monitor the manhole. 2a. Avoid prolonged exposure to calibration gas and vapors from the sewer. 2a. Stay upwind of sample point to avoid any vapors. 2a. No manhole lid is to be opened if LEL concentrations in initial readings are greater than 5% on field meter. Contact the Project Manager in the event of these readings.
	2b. CONTACT: Traffic (sampling locations may be in parking lots or along roadways).	2b. Establish a work zone using traffic cones, utilize a flagperson when needed, and secure the work area. 2b. Be aware of oncoming traffic.
	2c. CONTACT: Potential for pinched fingers or foot injury when moving manhole cover.	2c. Be sure to use only proper manhole lifting tools

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

[2] A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

[1]JOB STEPS	[2]POTENTIAL HAZARDS	[3]CRITICAL ACTIONS
3. If LEL concentrations are <5% manhole lid is to be opened and samples collected. Insert multi-gas meter at arms length into the manhole. Collect sewer sediment and water samples Collect flow measurements	3a. EXPOSURE: Sewer gas may be noxious. PCBs may be present in sewer water and sediment 3b. EXERTION: Physical Strain 3c. CAUGHT: Potential for pinched fingers when moving manhole cover. 3d. CONTACT: Traffic (sampling locations may be in parking lots or along roadways). 3e. FALL: Potential to fall into manhole	3a. Stay upwind of sample point to avoid vapors. 3a. If LEL concentrations in readings are greater than 5% on field meter contact the Project Manager. 3a. Personnel that handle sewer water and sediment samples are required to wear chemically-resistant (i.e., nitrile or latex) and cut-resistant gloves when handling glassware. 3b. Use arms and legs to lift and/or move manhole cover, do not use the back. 3c. Do not use fingers/hands to lift and/or move the manhole. 3c. Utilize crowbars or manhole hooks to lift manhole covers. If you have never completed such a task have someone instruct you. 3d. Establish a work zone using traffic cones, utilize a flagperson when needed, and secure the work area. 3d. Be aware of oncoming traffic. 3e. Concentrate on task at hand and kneel a safe distance from manhole, secure multi-gas meter to person using wrist strap. 3e. Secure area throughout sampling activity to prevent other onsite workers from falling into manhole. 3e. Sewer manhole cover should be placed away for the immediate work area.
4. Site cleanup Decontaminate equipment	4a. EXPOSURE: Sewer gas may be noxious. PCBs may be present in sewer water and sediment 4b. EXPOSURE: Chemicals in cleaning solution 4c. EXERTION: Physical Strain. 4d. CAUGHT: Potential for pinched fingers when moving manhole cover. 4e. CONTACT: Traffic (sampling locations maybe in parking lots or along streets). 4f. FALL: Potential to fall into manhole	4a. Stay upwind of sample point to avoid vapors. 4a. If LEL concentrations in readings are greater than 5% on field meter contact the Project Manager. 4b. Wear chemical-resistant (i.e., nitrile or latex) disposable gloves and safety glasses. 4c. Use arms and legs to lift and/or move manhole cover, do not use the back. 4d. Do not use fingers/hands to lift and/or move the manhole. 4d. Utilize crowbars or manhole hooks to lift manhole covers. If you have never completed such a task have someone instruct you. 4e. Establish a work zone using traffic cones, utilize a flagperson when needed, and secure the work area. 4e. Be aware of oncoming traffic. 4f. Concentrate on task at hand and ensure manhole cover is secured properly. 4f. Secure area throughout sampling activity to prevent other onsite workers from falling into manhole. 4f. Sewer manhole cover should be placed away for the immediate work area.

[1] Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

[2] A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

[3] Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

ATTACHMENT D-2

Heat and Cold Stress
Standard Operating Procedure

Heat Stress

Heat stress is a significant potential hazard and can be associated with heavy physical activity and/or the use of personal protective equipment (PPE) in hot weather environments.

Heat cramps are brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body resulting in painful muscle cramps. The signs and symptoms of heat cramps are as follows:

- severe muscle cramps, usually in the legs and abdomen;
- exhaustion, often to the point of collapse; and
- dizziness or periods of faintness.

First aid treatment includes moving to a shaded area, rest, and fluid intake. Normally, the individual should recover within one-half hour. If the individual has not recovered within 30 minutes and the temperature has not decreased, the individual should be transported to a hospital for medical attention.

Heat exhaustion may occur in a healthy individual who has been exposed to excessive heat. The circulatory system of the individual fails as blood collects near the skin in an effort to rid the body of excess heat. The signs and symptoms of heat exhaustion are as follows:

- rapid and shallow breathing;
- weak pulse;
- cold and clammy skin with heavy perspiration;
- skin appears pale;
- fatigue and weakness;
- dizziness; and
- elevated body temperature.

First aid treatment includes cooling the victim, elevating the feet, and replacing fluids and electrolytes. If the individual has not recovered within 30 minutes and the temperature has not decreased, the individual should be transported to the hospital for medical attention.

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a **MEDICAL EMERGENCY**, requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- dry, hot, red skin;
- body temperature approaching or above 105°F;
- large (dilated) pupils; and
- loss of consciousness - the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to a medical facility.

Heat stress (heat cramps, heat exhaustion, and heat stroke) is a significant hazard if any type of protective equipment (semi-permeable or impermeable) which prevents evaporative cooling is worn in hot weather environments. Local weather conditions may require restricted work schedules in order to adequately protect personnel. The use of work/rest cycles (including working in the cooler periods of the day or evening) and training on the signs and symptoms of heat stress should help prevent heat-related illnesses from occurring. Work/rest cycles will depend on the work load required to perform each task, type of protective equipment, temperature, and humidity. In general, when the temperature exceeds 88°F, a 15 minute rest cycle will be initiated once every two hours. In addition, potable water and fluids containing electrolytes (e.g., Gatorade) will be available to replace lost body fluids.

Cold Stress

Cold stress is a danger at low temperatures and when the wind-chill factor is low. Prevention of cold-related illnesses is a function of whole-body protection. Adequate insulating clothing must be used when the air temperature is below 40°F. In addition, reduced work periods followed by rest in a warm area may be necessary in extreme conditions. Training on the signs and symptoms of cold stress should prevent cold-related illnesses from occurring. The signs and symptoms of cold stress include the following:

- severe shivering;
- abnormal behavior;
- slowing of body movement;
- weakness;
- stumbling or repeated falling;
- inability to walk;
- collapse; and/or
- unconsciousness.

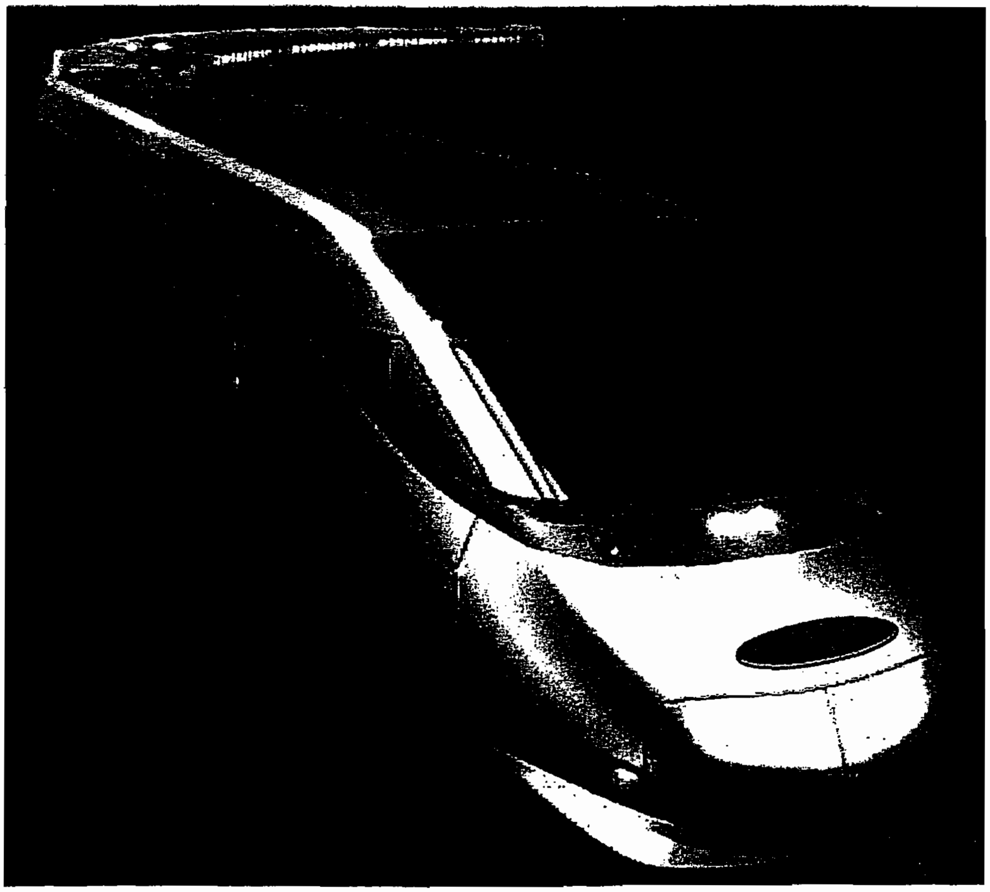
First aid requires removing the victim from the cold environment and seeking medical attention immediately. Also, prevent further body heat loss by covering the victim lightly with blankets. Do not cover the victim's face. If the victim is still conscious, administer hot drinks, and encourage activity, such as walking wrapped in a blanket.

ATTACHMENT D-3

Amtrak Contractor Employee Safety Program

CONTRACTOR / LESSEE /AGENCY EMPLOYEE SAFETY

For Contractors Working On Or About The Right-Of-Way



COURSE HANDOUT

COURSE NUMBER – CSG-106

December 27, 2001

Contractor / Lessee / Agency Employee Safety

Senior Project Manager, Chief Engineer, or Duly Authorized Representative -

NAME : ______________________________

TELEPHONE : _________________________

Local Safety Department Representative -

NAME : ______________________________

TELEPHONE : _________________________

Other –

NAME : ______________________________

TELEPHONE : _________________________

Other –

NAME : ______________________________

TELEPHONE : _________________________

AMTRAK Police –

TELEPHONE : 1-800-331-0008 (24 hour)

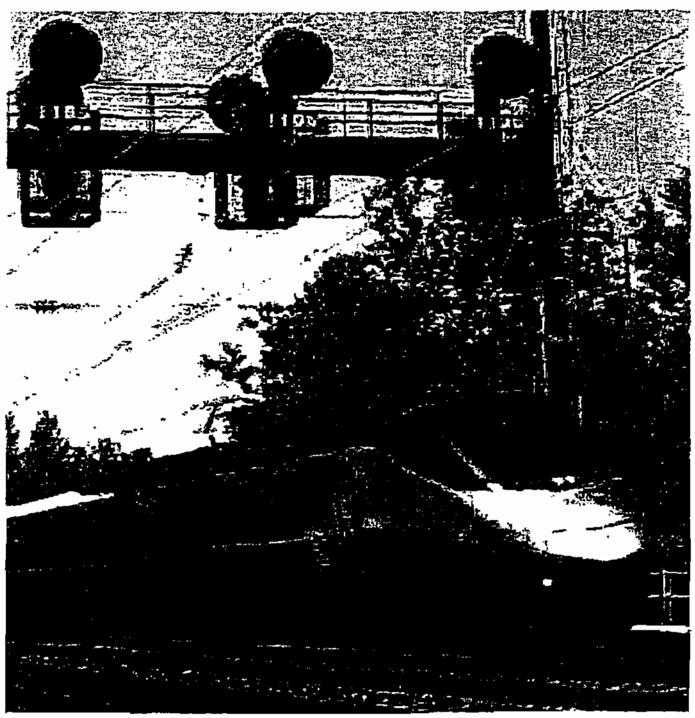
AMTRAK, Engineering Employee Services
30th Street Station - 3 North, Box 1
Philadelphia, PA 19104

ATS : 728-1553
Commercial :215-349-1553

DANGER! DANGER! DANGER!

Two Of The Biggest Dangers Involved With Working About Railroad Tracks

MOVING TRAINS
&
ELECTRIC POWER LINES



Amtrak ®
December 27, 2001

CONTRACTOR / LESSEE / AGENCY EMPLOYEE SAFETY
COURSE GOALS

The goal of this course is your safety, the safety of your co-workers, and the safety of everyone on AMTRAK property, including guests on our trains.

To reach this goal, your company must have submitted, and have had approved, a **Site Specific Safety Work Plan**. This Plan will describe the work you will be doing, the hazards that are present in the work, and how you, your co-workers, and everyone else on AMTRAK property will be protected from these hazards. The Senior Project Manager or Project Engineer, and the local Safety Department Representative will approve this plan. If your job meets the Federal Railroad Administration (FRA) criteria (49CFR214) for **Roadway Worker**, you **must complete** an approved Roadway Worker Protection **course** prior to starting work.

The training you receive will:

1. Emphasize the importance of the **Site Specific Work Plan and** the rules and work practices that you must follow while working on AMTRAK property.

2. Stress the importance of using Personal Protective Equipment (PPE) that is required while working on Amtrak property.

3. Familiarize you with the hazards involved in working on or near track over which trains move.

4. Stress the importance of maintaining a safe environment that protects AMTRAK "Guests" and individuals working on the property.

BASIC RULES AND GUIDELINES

1. To access AMTRAK property, an AMTRAK Senior Project Manager/or Chief Engineers Duly Authorized Representative must approve a contractor/lessee/agency.

2. All activities must be coordinated with the Senior Project Manager/Chief Engineers, Duly Authorized Representative.

3. The Senior Project Manager must arrange for appropriate track outages and protection.

4. You must report any unsafe or hazardous conditions to your supervisor and to the AMTRAK representative so that corrective actions can be taken.

5. While on AMTRAK property, you will have on your person the AMTRAK PHOTO ID badge, indicating you have received this training.

6. The color orange will be used only to designate the presence of workers. It will not be used on barriers or fencing materials on or along the right-of-way.

7. Before starting any work, you must participate in a documented job briefing with the employee in charge, at your location.

8. You may not possess, consume, or be under the influence of intoxicants, narcotics or other mood altering substances, including medication while performing work on AMTRAK property.

9. Horse play, fighting, practical jokes, scuffling, or wrestling will not be tolerated.

FAILURE TO COMPLY WITH THESE RULES WILL RESULT IN YOUR IMMEDIATE EXPULSION FROM AMTRAK PROPERTY.

CLOTHING AND PERSONAL PROTECTIVE EQUIPMENT

AMTRAK complies with all OSHA Personal Protective Equipment (PPE) Regulations

Your clothing must fit well and not be so loose that it would be easily snagged or become a hazard.

Normal PPE for working on AMTRAK property will be a hard hat, safety glasses, reflective vests and proper footwear and must be used as appropriate to the work being done.

Other PPE requirements, such as goggles, face shields, safety belts, safety harnesses, respirators, and hearing protection will be determined by your Site Specific Safety Work Plan and provided by your employer.

Your shoes must be at least six inches high, preferably leather, and completely laced, buckled, zipped or otherwise fastened. The shoe must have a defined heel with preferably steel or composite toe.

Do not wear shoes with loose, thin, cracked, rippled, or wedged-type soles.

Do not wear shoes with a metal plate or cleat on the sole or heel. **Do not** allow shoelaces to dangle far enough to become a hazard.

Do not wear sandals, open toe, canvas, athletic type, or shoes that cannot be fastened.

Specific footwear required by law must be addressed in your Site Specific Safety Work Plan.

NOTE: You or your co-workers will not be permitted on AMTRAK property if you are not utilizing the proper Personal Protective Equipment.

BASIC TERMINOLOGY

CLEARANCE POINTS - A point **25 feet from the centerline of outside track** for employees and standing equipment or **15 feet from overhead catenary systems.**

CLASS "A" EMPLOYEE - An AMTRAK Electrical Traction (ET) Department Employee qualified to provide protection from electrical hazards.

CONTRACTOR - A person, persons, or company that have entered into a contract with AMTRAK to perform work on AMTRAK property or AMTRAK equipment, including any sub-contractors, lessees or agencies.

FLAGMAN (New England Division only) - An AMTRAK Train Service employee qualified to protect contractor employees against the movement of trains and to obtain the use of track. The flagman is qualified on the "Rules for Conducting Transportation" and qualified on the physical characteristics of the portion of the railroad involved.

FOUL TIME - A method of establishing working limits through exclusive track occupancy. No trains will operate within a specific segment of track during a specific time period.

GANG WATCHMAN - A person assigned to signal others of the approach of a train. Only a Qualified AMTRAK Employee may perform this function.

HOT RAIL - Expression used to indicate train movement.

JOB BRIEFING - A formal, documented discussion, conducted by the Amtrak representative on site, with each work group or gang, on all safety aspects of the job to be performed. A Job Briefing will be conducted at the beginning of each shift, prior to the start of any task and whenever the conditions of a job may change.

LESSEE - A person, persons, or company that has leased AMTRAK property for their use, to include any sub-contractors or lessees.

OPERATING or LIVE TRACK - Track over which trains may move.

QUALIFIED AMTRAK EMPLOYEE - An AMTRAK employee, such as a foreman or conductor, qualified to remove track from service.

RAILROAD BRIDGE WORKER - Any employee of a railroad (or a contractor) responsible for the construction, inspection, testing or maintenance of a bridge whose assigned duties to be performed on the bridge include inspection, testing, maintenance, repair, construction, or re-construction of the structural member, operating mechanisms and water traffic control systems, or train control systems integral to that bridge (Ref. FRA Bridgeworker Safety Guide).

RIGHT-OF-WAY - The limits of railroad property ownership on either side of tracks.

ROADWAY WORKER - Any employee of a railroad, or of a **contractor** to a railroad, whose duties include inspection, construction, maintenance, or repair of railroad track, bridges, roadway, signal and communication systems, electric traction systems, roadway facilities or roadway maintenance machinery on or near track with the potential of fouling a track, and flagman and watchmen/lookouts.

THIRD PARTY CONTRACTOR WORKER – A contractor whose employees are performing work for utility companies, i.e., overhead power lines, underground pipe jacking, etc. or for public works projects such as overhead highway bridge reconstruction.

USE OF TRACK – Obtaining permission from proper authority for track occupancy (Track out of service / fouling time).

WORKING LIMITS – A segment of track with definite boundaries established in accordance with this rule, upon which trains and engines may move only as authorized by the roadway worker having control over that defined segment of track. Working limits may be established through "exclusive track occupancy", "inaccessible track", or "foul time."

CONTRACTOR/LESSEE RESPONSIBILITIES

Contractors/Lessees are responsible for providing the AMTRAK Senior Project Manager/Chief Engineers Duly Authorized Representative and the local Safety Representative with a **Site Specific Safety Work Plan** that, as a minimum - **1**. Defines the job, **2**. Lists the hazards present in the job, **3**. Lists the controls that will be used to mitigate the hazards. The list of controls will include the specific PPE and employee training requirements.

The contractor's/lessee's workers will attend the Contractor / Lessee / Agency Safety Training prior to commencing work and upon successful completion they will receive their AMTRAK PHOTO ID which must be on their person at all times when on AMTRAK property. The ID will be issued at the end of the safety training. The photo ID is valid for one year from date of issue.

The contractor's / lessee's / agency's equipment operators will be qualified on their equipment and will provide the Senior Project Manager/Chief Engineers Duly Authorized Representative a copy of their qualification certificate, and the current/updated inspection record for the equipment.

NOTE: Cranes and other heavy equipment must be inspected prior to arriving on AMTRAK property. A photo copy of the crane inspection will be kept on the crane at all times.

The contractor / lessee / agency will conduct a documented Job Briefing at the start of each work shift. The Job Briefing will be conducted by the contractor supervisor / foreman or with a qualified AMTRAK employee when appropriate.

Those contractors/lessees/agencies who meet the requirements of a Roadway Worker, will not foul any track unless they have permission from the qualified AMTRAK employee in charge at the job site who will ensure it is safe to work on or near the tracks.

Construction material will not be placed or stored within **25 feet** of the centerline of the track.

If needed, the contractor/lessee/agency will provide and install an approved barrier when the work will have the opportunity to put debris or equipment within **25 feet** of the **centerline of the track** or **15 feet** from **the overhead catenary system**.

It is the contractor's/lessee's responsibility to monitor and enforce the applicable OSHA, EPA, FRA and all other federally required regulations and safe work practices.

Subcontractors/sub-lessees will adhere to the same AMTRAK Safety requirements as the primary Contractor/Lessee.

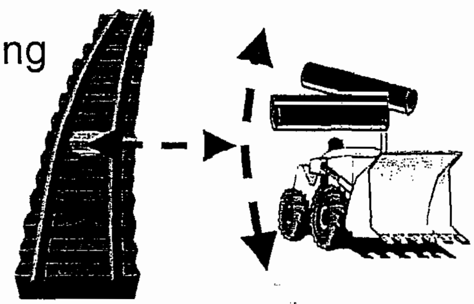
Contractor/lessee/agency employees will become familiar with placement of Watchmen to understand the importance of safety around the tracks. This can be accomplished through the job safety briefings.

GENERAL SAFETY POINTS

1. The safety of Amtrak's passengers ("Guests") is of the highest priority and this must influence all aspects of the job being performed.

2. Expect movement at any time, on any track, in any direction.

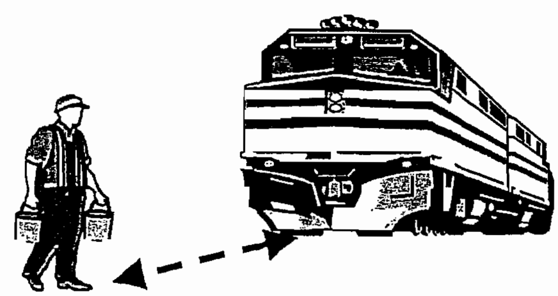
3. Remain further than **25 feet** from operating tracks unless you have permission from the Senior Project Manager/qualified AMTRAK employee in charge.



25 Feet from track

4. When around trains, you must not rely on others to notify you of the approach of a train.

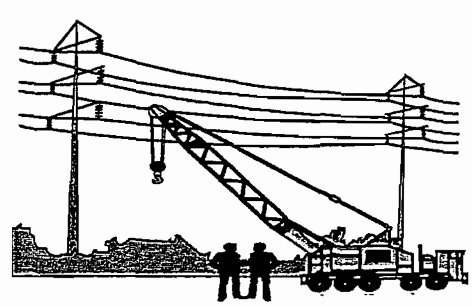
5. Stay **15 feet** from the front or back of standing equipment or trains.



15 Feet from either end of equipment

6. Do not cross, step, sit on, or foul a track(s). Tracks and rails provide poor footing.

7. There may be high voltage electric lines nearby or underfoot. Stay at least **15 feet** from these wires and expect them to be energized at all times. *Note: Grounds for Equipment may be required.*



15 feet from all wires – EXPECT THEM TO BE ENERGIZED

GANG WATCHMAN/FLAGMAN REQUIREMENTS

An AMTRAK Employee In Charge, Watchman or Flagman is required when a contractor/lessee is inspecting, constructing, maintaining, or repairing a railroad track, bridges, roadway, signal & communication systems, electric traction systems, roadway facilities or roadway maintenance machinery within **25 feet** of operating track or within **15 feet** of the overhead catenary system. A protective barrier may be erected to reduce the distance, if approved by the Senior Project Manager/Chief Engineers Duly Authorized Representative and the local Safety Representative. An Advance Gang Watchman/Flagman will be assigned when the watchman positioned with the gang has a restricted view of approaching trains.

The AMTRAK employee responsible for contractor/lessee protection will conduct a Job briefing at the start of each work shift with all employees, contractor and AMTRAK.

An AMTRAK Gang Watchman/Flagman will signal that a train is approaching by blowing a whistle or air horn. They will also raise an orange disc with a large white "W" on it overhead. The Gang Watchman/Flagman will warn the work crew in time for the crew to be clear of the tracks at least **15 seconds** before the train reaches the point of work. You must know where to clear when the train approaches. You must clear all tracks to a predetermined location after receiving the warning from the Gang Watchman/Flagman. When it is safe to resume work, the Gang Watchman/Flagman will signal the crew by holding the orange disc at arm's length toward the point of work.

The Gang Watchman/Flagman will give their total attention to watching for trains and warning employees. They will not perform any other duties, even momentarily. They will not leave their post until protection is unnecessary or another Gang Watchman/Flagman is on the job. In general, the individual providing watchman protection rotates every 4 hours

If anything blocks the watchman's view of trains in either direction or if something interferes with his duty, even momentarily, the watchman will signal the work crew to clear the tracks.

REMOVING TRACKS FROM SERVICE

There are five occasions when the contractor/lessee/agency who is inspecting, constructing, maintaining, or repairing a railroad track, bridges, roadway, signal & communication systems, electric traction systems, roadway facilities or roadway maintenance machinery must obtain fouling time; or, when requesting a track and/or power to be removed from service.

1. When any machinery/equipment occupies the traffic envelope or is within **25 feet** of the outside tracks centerline unless other arrangements have been authorized by the Senior Project Manager/Chief Engineers duly Authorized Representative

2. When any unsecured construction materials (not fenced in, not tied down, not properly locked, etc.) are stored within **25 feet** of the centerline of any track.

3. When boom-equipped construction machinery is used in an area where the boom, loads, leads, etc., have the potential to accidentally swing or fall into the traffic envelope or affect the electrical power lines. **NOTE:** All boom-equipped machinery must be properly grounded, shunted and AMTRAK approved when working near overhead lines. Contractor/lessee must supply an adequate length of grounding cable (4/0 copper with approved clamps) for each piece of equipment working near or adjacent to any overhead wire; and further, an AMTRAK Class "A" Lineman must be present.

4. When contractor activities might affect the stability of adjacent tracks. Maintenance of Way 1000 qualified employee must be present.

5. Any other conditions, circumstances, or situations that may present a danger to employees or the safe movement of trains.

NOTE: PRIOR TO COMMENCING WORK, YOU MUST HAVE A JOB BRIEFING WHICH IS DOCUMENTED AND PLACED ON FILE.

ELECTRICAL HAZARDS

In AMTRAK's Northeast Corridor, many trains are electrically powered. The source of this electricity can be either wires running over the track (catenary) or a "third rail" on the track. These and all electrical lines near the railroad are very dangerous and should be considered energized/live.

To avoid the hazards of these wires, there are several work practices that must be followed.

Persons other than railroad employees attempting to work closer than 15 feet to overhead wires or apparatus, must meet one of the following conditions:

1. Employee is qualified in the electrical trade and a work plan has been approved by the Chief Engineer Electric Traction or his designated representative.
2. Protective measures are taken to prevent persons or equipment from coming in contact with exposed energized overhead lines and apparatus, such as guarding, isolating, protective barriers, and material handling techniques. The Chief Engineer Electric Traction or his designated representative must approve the measures.
3. Protection by a Class "A" employee is provided.

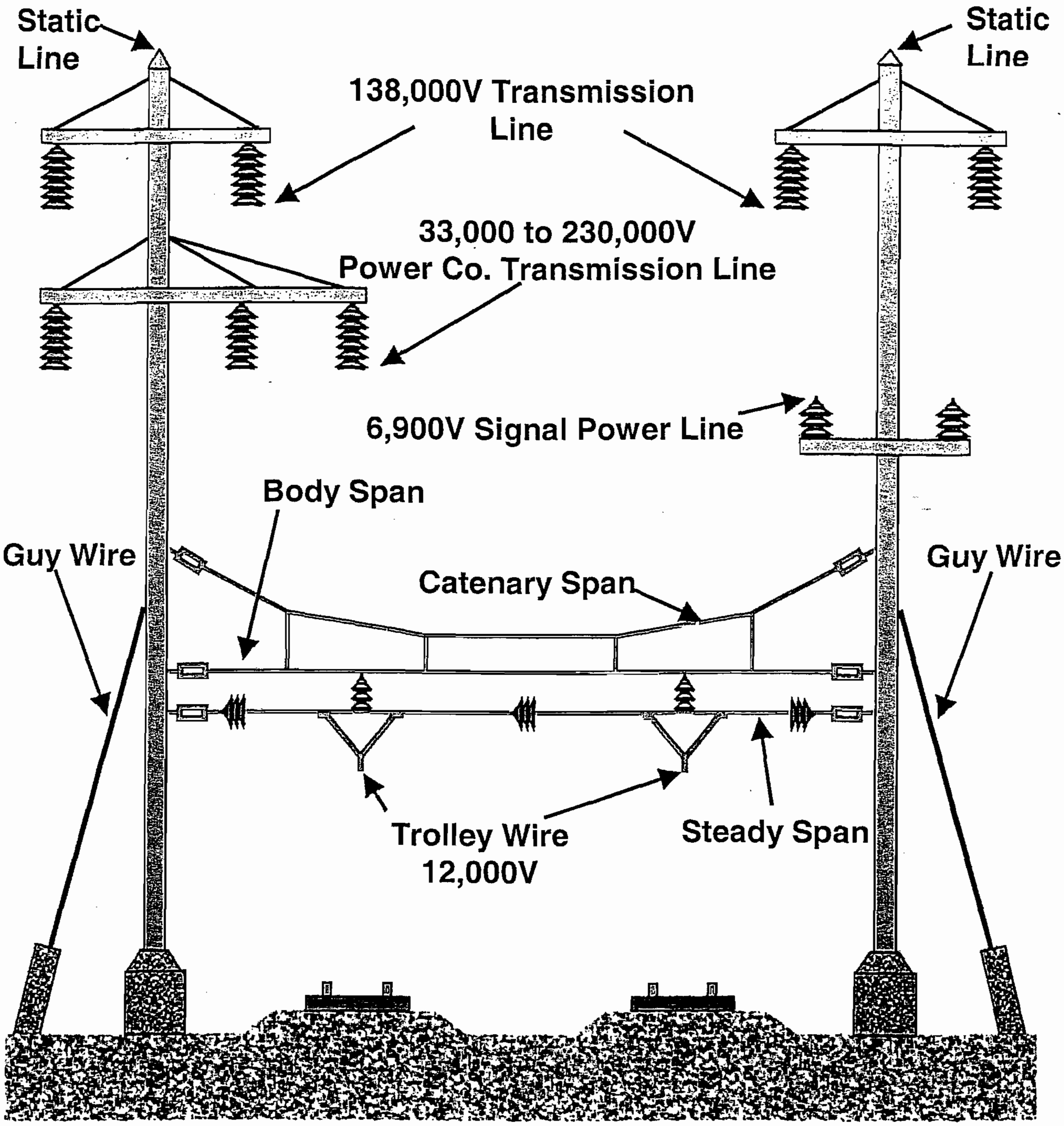
NOTE: Avoid all contact with third rail electrical equipment.

You must obey all instructions from the Class "A" employee. If you do not understand and FOLLOW the instructions, you will not be permitted to work or observe.

The electric power lines which run parallel to the tracks in the Northeast Corridor consist of a catenary system that has up to 25,000 volts. There is also a potential for 6,900 volts in the signal power line and buried commercial power lines, and up to 138, 000 volts in the transmission lines coming into substations. Any and all of these lines carry enough electrical power to kill or seriously injure you.

Southend Electrification Catenary

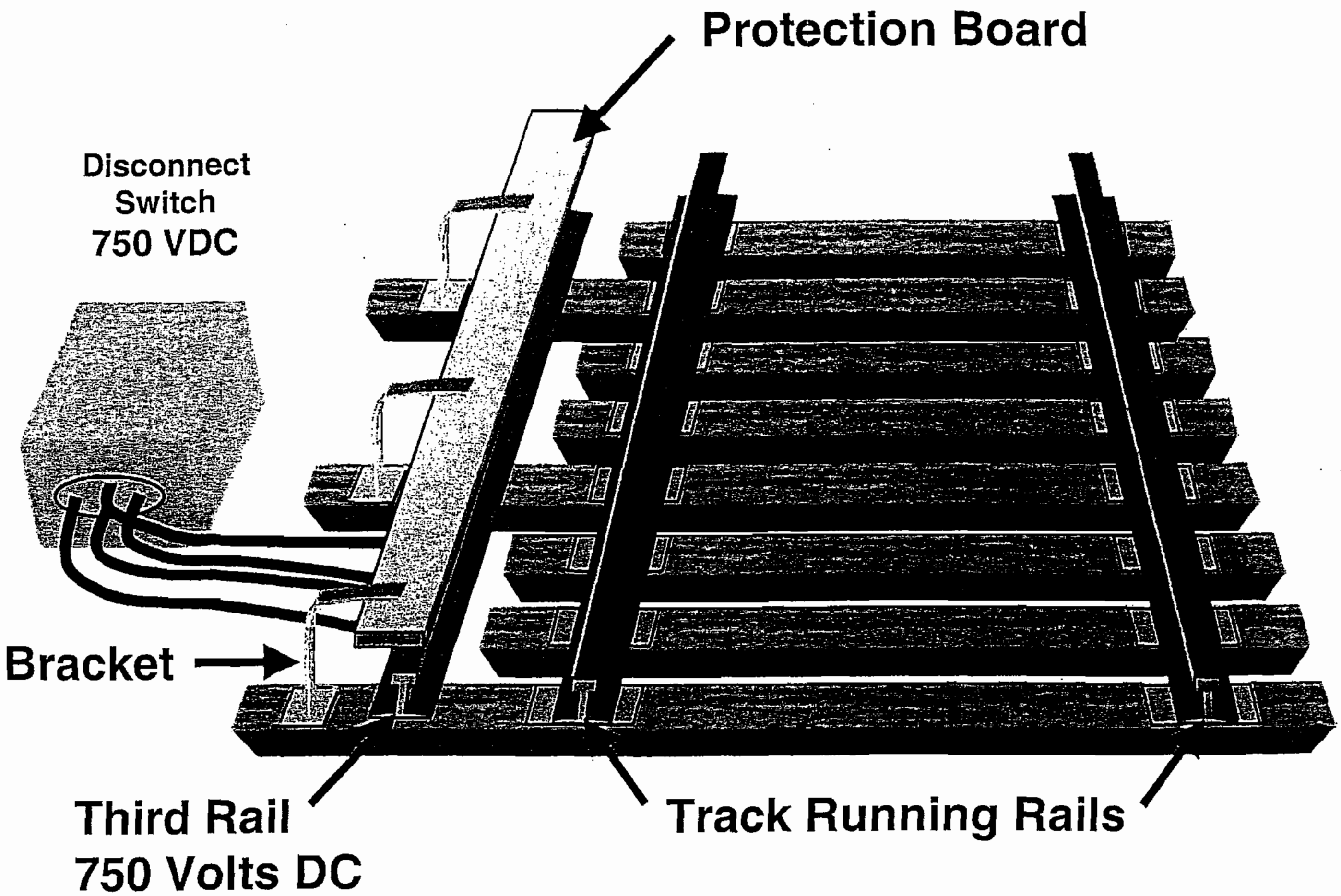
Washington DC to New Haven, CT



All components to be considered energized

Metropolitan Division Third Rail Electrification

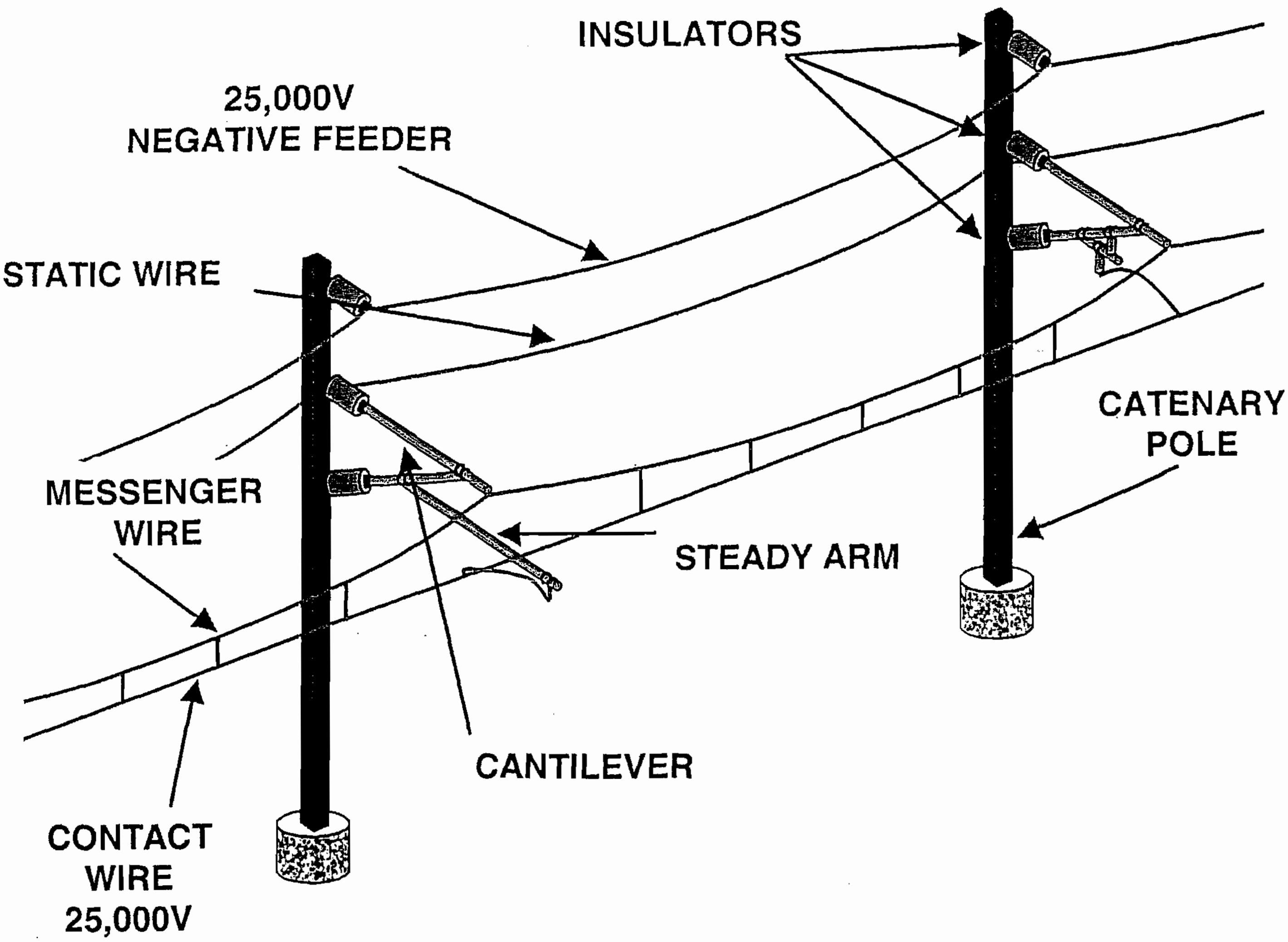
New York City Area



All components to be considered energized

Northend Electrification Constant Tension Catenary

New Haven, CT to Boston, MA



All components to be considered energized

WORKING ON DE-ENERGIZED LINES

When you must work within **15 feet** of electric lines, you must make certain that the lines are de-energized and properly grounded, unless you have written authority from the Office of the Chief Engineer of Electric Traction. When the wires are to be de-energized, each contractor tour of duty will start with the Class "A" employee conducting an/or participating in a Job Briefing. The contractor foreman and all employees working within **15 feet** of the electric lines (or **25 feet** of the track) will be instructed on how to avoid the dangers that may exist.

Before work can be started on or about power lines, an electrical clearance must be obtained by the Class "A" employee. All equipment must be de-energized and grounded. The Class "A" employee will then inform the contractor foreman about wires, equipment, and/or apparatus which are de-energized and the physical limits in which work can be done safely.

The contractor foreman must sign a standard clearance form. His/her signature indicates he/she fully understands the instructions given by the Class "A" employee and has accepted the responsibility of the job briefing to convey these same instructions to his/her gang.

Consideration must be given to the type of tools and equipment to be used. For example, ladders, measuring tapes, survey equipment, etc., must be constructed of non-conductive materials. If there is any doubt, the AMTRAK employee responsible for your protection must be consulted.

No work may be performed without the Class "A" employee being present. The work gang must stop work in the vicinity of the wires whenever the Class "A" employee leaves. Before leaving the work site, the Class "A" employee must make sure that everyone has moved a safe distance away from the wires. The Class "A" employee must also get the foreman's signature showing that he/she and the gang knows the Class "A" employee is leaving and that they will not resume work until advised to do so.

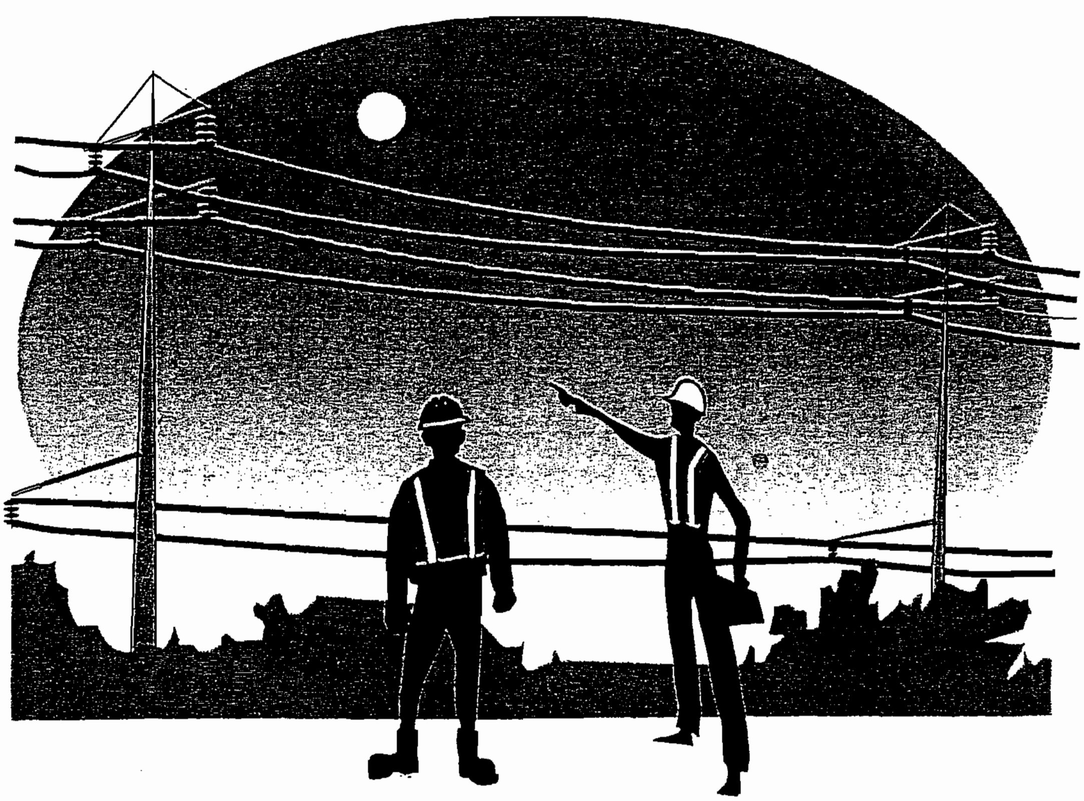
RE-ENERGIZED ELECTRIC LINES

When the electric lines, equipment, etc. are to be re-energized, you must move away at least **15 feet**.

When the clearances are to be released and the lines re-energized, the Class "A" employee will inform the contractor foreman. The foreman is responsible to notify each employee that the lines are going to be re-energized.

The Class "A" employee must be sure that everyone has moved a safe distance away from all wires before removing the grounding devices.

The Class "A" employee also will get the signature of the contractor foreman, showing that he and the work gang have been told the wires, etc., will be re-energized and that they will stay a safe distance until informed otherwise by the Class "A" employee.



REMEMBER

A SITE SPECIFIC SAFETY WORK PLAN
is required for all work.

The Senior Project Manager / Chief Engineers Duly Authorized Representative and the local Safety Department MUST approve the plan.

If your job meets the requirements of Roadway Worker, you must complete an approved Roadway Worker Protection Course PRIOR to starting work.

All Contract Employees must have on their person, their AMTRAK photo ID at all times. This photo ID is valid for one (1) year from the date of issue.

A documented Job Briefing will be conducted by the AMTRAK employee in charge prior to starting work.

ATTACHMENT D-4

Medical Surveillance Program

Medical Surveillance Program

Medical surveillance specifies any special medical monitoring and examination requirements as well as stipulates that personnel and subcontractors are required to pass the medical surveillance examination or equivalent for hazardous waste work required by 29 CFR 1910.120. As a minimum, the examination will include:

- complete medical and work histories;
- urinalysis;
- physical exam;
- vision and hearing exam;
- blood chemistry;
- pulmonary function test; and
- audiometry.

The examination will be annual, at a minimum, and upon termination of employment with the company. Additional medical testing may be required by the HSM in consultation with the company physician and the SSO if an overt exposure or accident occurs, or if other Site conditions warrant further medical surveillance.

EXHIBIT 3-II

OCCUPATIONAL MEDICAL QUESTIONNAIRE

CONFIDENTIAL

For Medical Use Only

Name ______________________ Date ______________________
(Last) (First) (Middle)
Company Organizational Unit ____________ Location ______________
Job Title ____________________ Years/Present Job ____________
Business Address ____
Description ____
____
____

Social Security No. __________ Date of Birth ______________
Home Address ____
Home Phone ______________ Business Phone ______________
Sex: Male ( ) Female ( )
Marital Single ( ) Married ( ) Divorced ( )
Separated ( ) Widowed ( )
Next to Kin: __________________ Relationship ______________

Ethnic Origin: Caucasian ( ) Black ( ) Hispanic ( )
Other ( ) Specify ____________________

Please check the applicable answer:

Have you ever been hospitalized? No ( ) Yes ( )
If yes, give details and dates: ______________________________
____

Have you ever had an operation(s)? No ( ) Yes ( )
If yes, give details and dates: ______________________________
____

Have you ever been a resident or traveled outside the United States? No ( ) Yes ( )
If yes, please list location (s) and date (s):______________________
____

Have you ever been ill while outside the United States or within 3 months after your return to this country? No ( ) Yes ( )
If yes, please give details and date (s): ____________________
____

EXHIBIT 3-II

OCCUPATIONAL MEDICAL QUESTIONNAIRE

CONFIDENTIAL

For Medical Use Only

Name ______________________________
(Last) (First) (Middle)

What is your approximate daily intake of the following?
Bottles of beer ___ Glass of wine ___ Ozs. of liquor ___

Do you use tobacco? No ( ) Yes ( )
If no, are you a former smoker No ( ) Yes ( )
If you have quit, how long ago did you quit? _____ years
How many years did/have you smoke(d)? _____ years
How much were/are you smoking? (i.e., number of cigarettes, "pipes, or cigars smoked per day) _______

Do you have any pets in your household? No ( ) Yes ( )
If yes, list type(s):

Did you serve in the military? No ( ) Yes ( )

Branch of Service ______________________________
Length of Service ______________________________
Specialty ______________________________

Were you exposed to any toxic agents while in the military? No ( ) Yes ( )
Agent(s): ______________________________
____

Please describe any special circumstances which could in any way expose you to potential job related injuries or symptoms. (Examples: pregnancy, special diets, borderline anemia, athletics, hobbies, use of pesticides, solvents, cleaning agents, etc.)
____
____

OCCUPATIONAL MEDICAL QUESTIONNAIRE

CONFIDENTIAL

For Medical Use Only

Name ______________________________
(Last) (First) (Middle)

Have you ever been exposed to any of the following agents?

Exposure	Present	Past
Inorganic Fluorides	( )	( )
Lead	( )	( )
Benzene	( )	( )
Coke Oven Emissions	( )	( )
Inorganic Arsenic	( )	( )
Methylene Chloride	( )	( )
Vinyl Chloride	( )	( )
Toluene Disocyanate	( )	( )
Excessive Noise	( )	( )
Nitrogen Oxides	( )	( )
Crystalline Silica	( )	( )
Nirtic Acid	( )	( )
Ammonia	( )	( )
Beryllium	( )	( )
Phosgene	( )	( )
Alkyl Chloride	( )	( )
Asbestos	( )	( )
Suspect or Known Carcinogens	( )	( )
Pesticides	( )	( )
Private Animals	( )	( )
Vibrating Tools	( )	( )
Radiation	( )	( )

Others (list)

____
____
____
____
____

<u>WORK HISTORY - TOXIC EXPOSURE</u>

(to be completed annually)

For each hazardous waste site or location of exposure off site, please provide the following information:

a) Name, location and/or types of hazardous waste sites (e.g., uncontrolled dumps, waste storage, chemical manufacturing, etc) or location of exposure to toxic material off site (e.g., chemistry lab).

b) Types of material to which you were exposed or potentially exposed (e.g., heavy metals, acids, solvents etc).

c) Duration of time spent at hazardous waste site or exposure to hazardous waste/toxic materials off site.

d) Protective equipment used (e.g., respirators, impervious suits etc).

Site #1 or off site location
a) ______
b) ______
c) ______
d) ______

Site #2 or off site location
a) ______
b) ______
c) ______
d) ______

Site #3 or off site location
a) ______
b) ______
c) ______
d) ______

Site #4 or off site location
a) ______
b) ______
c) ______
d) ______

Have you had, do you have or suspect you may have any of the following? Of so, please check the appropriate boxes. (You may check more than one box per item.)

	Never	Suspect	Prior	New
Unexpected weight gain	( )	( )	( )	( )
Unexpected weight loss	( )	( )	( )	( )
Unexpected weakness or Fatigue	( )	( )	( )	( )
Rashes	( )	( )	( )	( )
Hives	( )	( )	( )	( )
Scars	( )	( )	( )	( )
Skin eruptions	( )	( )	( )	( )
Skin Dryness	( )	( )	( )	( )
New growth of skin	( )	( )	( )	( )
skin growth that changes in size	( )	( )	( )	( )
Persistent itching	( )	( )	( )	( )
Dermatitis	( )	( )	( )	( )
Skin discoloration	( )	( )	( )	( )
Skin disease specify _________	( )	( )	( )	( )
Frequent or severe headaches	( )	( )	( )	( )
Head injuries	( )	( )	( )	( )
Glaucoma/cataracts	( )	( )	( )	( )
Eye inflammation	( )	( )	( )	( )
Blurred vision	( )	( )	( )	( )
Other eye trouble specify _________	( )	( )	( )	( )
Hearing problems	( )	( )	( )	( )
Discharge from ears	( )	( )	( )	( )
Noise in ears	( )	( )	( )	( )
Dizziness	( )	( )	( )	( )
Pain in ears	( )	( )	( )	( )
Perforated eardrums	( )	( )	( )	( )
other ear trouble specify _________	( )	( )	( )	( )
Discharge from nose	( )	( )	( )	( )
Sinus pain or trouble	( )	( )	( )	( )
Deviated septum	( )	( )	( )	( )
Nasal blockage/obstruction	( )	( )	( )	( )
Nose bleeds	( )	( )	( )	( )
Dental or gum problems	( )	( )	( )	( )

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WORK HISTORY - TOXIC EXPOSURE

	Never	Suspect	Prior	New
Swollen glands	( )	( )	( )	( )
Difficulties swallowing	( )	( )	( )	( )
Respiratory chest pain	( )	( )	( )	( )
Wheezing	( )	( )	( )	( )
Chronic cough	( )	( )	( )	( )
Bronchitis	( )	( )	( )	( )
Pneumonia	( )	( )	( )	( )
Tuberculosis	( )	( )	( )	( )
Sarcoidosis	( )	( )	( )	( )
Pleurisy	( )	( )	( )	( )
Other chest disease specify __________	( )	( )	( )	( )
Lung or breathing problems	( )	( )	( )	( )
Blood in sputum	( )	( )	( )	( )
Chest pains (cardiac)	( )	( )	( )	( )
Rheumatic fever	( )	( )	( )	( )
Rapid or irregular heart beat/rate	( )	( )	( )	( )
High blood pressure	( )	( )	( )	( )
Low blood pressure	( )	( )	( )	( )
Varicose veins	( )	( )	( )	( )
Blood clots in the heart or blood vessels	( )	( )	( )	( )
Heart murmur	( )	( )	( )	( )
Heart attack	( )	( )	( )	( )
Other heart condition specify ________	( )	( )	( )	( )
Stroke	( )	( )	( )	( )
Nausea	( )	( )	( )	( )
Vomiting	( )	( )	( )	( )
Ulcer stomach or duodenal	( )	( )	( )	( )
Hemorrhoids or piles	( )	( )	( )	( )
Rectal bleeding	( )	( )	( )	( )
Black stools/Blood in stool	( )	( )	( )	( )
Gallbadder problem/stones	( )	( )	( )	( )
Cirrhosis of the liver	( )	( )	( )	( )
Hepatitis	( )	( )	( )	( )
Jaundice	( )	( )	( )	( )
Other liver problems specify ________	( )	( )	( )	( )
Kidney stones/problems	( )	( )	( )	( )

WORK HISTORY - TOXIC EXPOSURE

	Never	Suspect	Prior	New
Frequent or painful urination	( )	( )	( )	( )
Inconvenience	( )	( )	( )	( )
Urinary infections	( )	( )	( )	( )
Blood in urine	( )	( )	( )	( )
Joint pain, stiffness or swelling	( )	( )	( )	( )
Cold or painful fingers	( )	( )	( )	( )
Edema (feet or leg swelling)	( )	( )	( )	( )
Arthritis	( )	( )	( )	( )
Gout	( )	( )	( )	( )
Back Pain	( )	( )	( )	( )
Chronic muscle pain or ache	( )	( )	( )	( )
Limitation of motor action	( )	( )	( )	( )
Broken bones	( )	( )	( )	( )
Fainting spells or unconsciousness	( )	( )	( )	( )
Seizure	( )	( )	( )	( )
Paralysis of any type	( )	( )	( )	( )
Tingling of hands or head	( )	( )	( )	( )
Difficulty sleeping	( )	( )	( )	( )
Thyroid gland problems	( )	( )	( )	( )
Heat or cold intolerance	( )	( )	( )	( )
Excessive sweating	( )	( )	( )	( )
Diabetes	( )	( )	( )	( )
Anemia	( )	( )	( )	( )
Past transfusions	( )	( )	( )	( )
Sickle cell disease or trait	( )	( )	( )	( )
Hernia or rupture	( )	( )	( )	( )
Allergies, asthma or hay fever	( )	( )	( )	( )
Tumor or cysts	( )	( )	( )	( )
Cancer	( )	( )	( )	( )
Polio	( )	( )	( )	( )
Leukemia	( )	( )	( )	( )
Malaria	( )	( )	( )	( )
Migraines	( )	( )	( )	( )
Mumps	( )	( )	( )	( )
Neuritis	( )	( )	( )	( )
Scarlet fever	( )	( )	( )	( )

Other health problems you want to discuss: ______________________________

____

____

FAMILY HISTORY

Indicate blood relatives that have ever had the following:

_______________Relationship to Me_______________

Disease	Mother	Father	Grand-Parents	Brother or Sister	Child
Anemia	( )	( )	( )	( )	( )
Arthritis	( )	( )	( )	( )	( )
Allergies, asthma, hay fever	( )	( )	( )	( )	( )
Bleeding Disorders	( )	( )	( )	( )	( )
Congenital Malformations	( )	( )	( )	( )	( )
Cancer	( )	( )	( )	( )	( )
Diabetes	( )	( )	( )	( )	( )
Emphysema	( )	( )	( )	( )	( )
Epilepsy	( )	( )	( )	( )	( )
Glaucoma	( )	( )	( )	( )	( )
Gout	( )	( )	( )	( )	( )
Heart Attack	( )	( )	( )	( )	( )
High Blood Pressure	( )	( )	( )	( )	( )
Kidney Disease	( )	( )	( )	( )	( )
Kidney Stones	( )	( )	( )	( )	( )
Gall Bladder Disease	( )	( )	( )	( )	( )
Sickle Cell Disease	( )	( )	( )	( )	( )
Stomach Ulcers	( )	( )	( )	( )	( )
Stroke	( )	( )	( )	( )	( )
Tuberculosis	( )	( )	( )	( )	

If either or both of your parents are deceased, list their age and cause of death:

____

____

List any illness or disease that "runs" in your family:

____

____

____

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MEDICATION HISTORY

Are you now taking or have you taken any of the following drugs within the past month?

( )	Antacids	( )	Digitalis
( )	Antibiotics	( )	Diuretic
( )	Anticoagulant	( )	Hormones
( )	Antidepressants	( )	Insulin or oral antidiabetic drug
( )	Antihistamines	( )	Laxatives
( )	Appetite depressants	( )	Morphine
( )	Aspirin	( )	Sleeping pills
( )	Birth control pills	( )	Sulfa preparations
( )	Benzedrine	( )	Thyroid
( )	Blood pressure medication	( )	Tranquilizers
( )	Cortisone or steroids	( )	Tylenol
( )	Codeine	( )	Vitamins

List any drugs you take regularly, both prescription and nonprescription:

____

____

Have you been on any special diet(s) in the past year? ________________
If yes, describe type: ______________________________

Are you allergic to any of the following?

( ) Pollens
( ) House dust
( ) Animal dander, feathers, or fur
( ) Drugs
( ) Vaccines
( ) Serum
( ) Metal, jewelry
( ) Foods
( ) Sunlight or cold
( ) Iodine dyes
( ) Other

If yes, please list or provide details:

____

____

____

____

IMMUNIZATION. VACCINES. ANTITOXINS, ETC.

Check if you have received any of the following.
Give approximate date(s) when last received, if known:

		Date(s)
( )	Tetanus	_____
( )	Poliomyelitis	_____
( )	Influenza	_____
( )	Typhoid	_____
( )	Diphtheria	_____
( )	Rabies	_____
( )	Rubella (German measles)	_____
( )	Measles (Rubeola or red measles)	_____
( )	BCG	_____
( )	Yellow fever	_____
( )	Small Pox	_____
( )	RhoGAM (Ph immune globulin	_____
( )	Immune serum globulin for hepatitis	_____
( )	Others (please list)	

____

____

( ) Mantoux, Patch Test, or other skin test for Tuberculosis. Give date and result of last test, if known.
Date: ________________
Result: ( ) Positive ( ) Negative

When you have finished this Medical and Occupational History form, hand it directly to the doctor or nurse, or, if mailed, mark envelope:

"To Be Opened By Medical Personnel Only."

The following to be signed by the applicant/employee:
I, the undersigned, hereby certify that all the information I have furnished on the medical/Occupational History Questionnaire is true and correct. I willingly submit to any required tests necessary to complete this examination.

____
Applicant's/Employee's Signature

Date____

EXHIBIT 3-III

Emergency Medical Survey

In the event of an emergency this form will accompany you to the medical facility should you require treatment. This form is voluntary.

1. Are you allergic to any medications Yes No

If yes, please explain____

____

____

2. Do you have a preexisting condition that emergency medical personnel should be aware Yes No

If yes, please explain____

____

____

3. Are you currently taking any medication Yes No

If yes, please explain____

____

____

4. Do you have any other medical condition that may assist medical personnel that may treat you Yes No

If yes, please explain____

____

____

This form will be used for emergency purposes only.

I, ________________________understand that this form is voluntary and any information will be used for emergency treatment purposes only.

_________________________________ __________

Signature **Date**

ATTACHMENT D-5

Accident Report

☐ **Roux Associates, Inc.** ☐ **Remedial Engineering, P.C.** ☐ **DOMANI Sustainability Consulting, LLC**
(Check applicable company name)

ACCIDENT REPORT

Joe Gentile, Corporate Health and Safety Manager
Cell: (610) 844-6911; Office: (856) 423-8800; Office FAX: (856) 423-3220; Home: (484) 373-0953

PART 1: ADMINISTRATIVE INFORMATION

Project #: ____________________
Project Name: ____________________
Project Location (street address/city/state)**:**
____
____

Client Corporate Name / Contact / Address / Phone #:
____
____
____
____
____

Immediate Verbal Notifications Given To:

Corporate Health & Safety	☐Yes	☐No
Office Health & Safety	☐Yes	☐No
Office Manager	☐Yes	☐No
Project Principal	☐Yes	☐No
Project Manager	☐Yes	☐No
Client Contact	☐Yes	☐No

ACCIDENT REPORT STATUS (time due):
☐ Initial (24 hr) ☐ Final (5-10 days)
Date: __________ Date: __________

Accident Report Delivered To:

Corporate Health & Safety	☐Yes	☐No
Office Health & Safety	☐Yes	☐No
Office Manager	☐Yes	☐No
Project Principal	☐Yes	☐No
Project Manager	☐Yes	☐No

REPORT TYPE: ☐ Loss ☐ Near Loss Estimated Costs: $

OSHA CASE # Assigned by Corporate Health & Safety as Applicable: ____________________

Corporate Health & Safety Confirmed Final Accident Report
☐Yes ☐No

DATE OF INCIDENT: ____________________

TIME INCIDENT OCCURRED: __________ ☐AM ☐PM

INCIDENT LOCATION – City, State, and Country (If outside U.S.A.)
____

INCIDENT TYPES: (Select most appropriate if Loss occurred.)
From lists below, please select the option that best categories the incident. When selecting an injury or illness, also indicate the severity level.

☐**INJURY** ☐**ILLNESS**

------------------------**Severity Level**----------------------------

☐Fatality ☐First Aid ☐Medical Treatment
☐Restricted Work ☐Lost Time

OTHER INCIDENT TYPES

☐Spill / Release
Material involved:__________
Quantity (U.S. Gallons): __________

☐Misdirected Waste ☐Consent Order ☐NOV
☐Property Damage ☐Exceedance
☐Motor Vehicle ☐Fine / Penalty

ACTIVITY TYPE (Check most appropriate one.)

☐Decommissioning ☐Geoprobe ☐Sampling
☐Demolition ☐Motor Vehicle ☐System Start-up
☐Dewatering ☐Operations/ Maintenance ☐Trenching
☐Drilling ☐AST/UST Removal
☐Excavation ☐Pump/Pilot Test ☐Other__________
☐Gauging ☐Rigging/Lifting

INJURY TYPE (Check all applicable.)

☐Abrasion ☐Occupational Illness
☐Amputation ☐Puncture
☐Burn ☐Rash
☐Cold/Heat Stress ☐Repetitive Motion
☐Inflammation ☐Sprain/Strain
☐Laceration ☐Other__________

BODY PART AFFECTED (Check all applicable.)

☐Respiratory ☐Shoulder ☐Face
☐Neck ☐Arm ☐Leg
☐Chest ☐Wrist ☐Knee
☐Abdomen ☐Hand/Fingers ☐Ankle
☐Groin ☐Eye ☐Foot/Toes
☐Back ☐Head ☐Other__________

I. PERSON(S) DIRECTLY / INDIRECTLY INVOLVED IN INCIDENT (Attach additional information as necessary/applicable.)

Name/Phone # of Each Person Directly/Indirectly Involved in Incident:	Designate: Roux/Remedial/Domani Emp Roux/Remedial/Domani Sub Client Employee Client Contractor Third Party	As applicable, Current Occupation; Yrs in Current Occupation; Current Position; and Yrs in Current Position:	As applicable, Employer Name; Address; and Phone #:	As applicable, Supervisor Name; and Phone #:
1)				
2)				
3)				
4)				

II. PERSONS INJURED IN INCIDENT (Attach additional information as necessary/applicable.)

Name/Phone # of Each Person Injured in Incident:	Designate: Roux/Remedial/Domani Emp Roux/Remedial/Domani Sub Client Employee Client Contractor Third Party	As applicable, Current Occupation; Yrs in Current Occupation; Current Position; and Yrs in Current Position:	As applicable, Employer Name; Address; and Phone #:	As applicable, Supervisor Name; and Phone #:	Description of Injury:
1)					
2)					
3)					

No One Gets Hurt!

III. PROPERTY DAMAGED IN INCIDENT (Attach additional information as necessary/applicable.)				
Property Damaged:	Property Location:	Owner Name, Address & Phone #:	Description of Damage:	Estimated Cost:
1)				$
2)				$
3)				$

IV. WITNESSES TO INCIDENT (Attach additional information as necessary/applicable.)		
Witness Name:	Address:	Phone #:
1)		
2)		
3)		

PART 2: WHAT HAPPENED AND INCIDENT DETAILS

PROVIDE FACTUAL DESCRIPTION OF INCIDENT (e.g., describe loss/near loss, injury, response/treatment).

I. AUTHORITIES/GOVERNMENTAL AGENCIES NOTIFIED (Attach additional information as necessary/applicable.)				
Authority/Agency Notified:	Name/Phone #/Fax # of Person Notified:	Address of Person Notified:	Date/Time of Notification:	Exact Information Reported/Provided:
1)				
2)				
3)				

II. PUBLIC RESPONSES TO INCIDENT (if applicable)				
1) Response/Inquiry By: (check one)	Entity Name:	Name/Phone # of Respondent/ Inquirer:	Address of Entity/Person:	Date/Time of Response/Inquiry:
☐Newspaper ☐Television ☐Community Group ☐Neighbors ☐Other ___________________				
Describe Response/Inquiry:				
Roux/Remedial/Domani Response:				
2) Response/Inquiry By: (check one)	Entity Name:	Name/Phone # of Respondent/ Inquirer:	Address of Entity/Person:	Date/Time of Response/Inquiry:
☐Newspaper ☐Television ☐Community Group ☐Neighbors ☐Other ___________________				
Describe Response/Inquiry:				
Roux/Remedial/Domani Response:				

(Check all that apply.) (Attach photos, drawings, etc. to help illustrate the incident.)
ATTACHED INFORMATION: ☐Photo ☐Sketches ☐Vehicle Acord Form ☐Police Report ☐Other

Name(s) of person(s) who prepared Initial and Final Report:	**Title(s):**	**Phone number(s):**

No One Gets Hurt!

ATTACHMENT D-6

Accident Investigation Report

Roux Associates, Inc./Remedial Engineering, P.C./DOMANI Sustainability Consulting, LLC

ACCIDENT INVESTIGATION REPORT

(March 2008)

Project #: **Project Name:** **Project Location:** **Accident Date:**

PART 3: INVESTIGATION TEAM ANALYSIS

CONCLUSION: WHY IT HAPPENED (LIST & NUMBER CAUSAL FACTORS AND CORRESPONDING ROOT CAUSES)

ROOT CAUSE(S) AND SOLUTION(S): HOW TO PREVENT INCIDENT FROM RECURRING

CAUSAL FACTOR	ROOT CAUSE		SOLUTION(S) [Must Match Root Cause(s)]		PERSON RESPONSIBLE	AGREED DUE DATE	ACTUAL COMPLETION DATE
			#	Solution(s)			
			1				
			2				
			3				
			4				
			5				
			6				

INVESTIGATION TEAM:

PRINT NAME	JOB POSITION	DATE	SIGNATURE

No One Gets Hurt!

ATTACHMENT D-7

Medical Data Sheet/Field Team Review

MEDICAL DATA SHEET/FIELD TEAM REVIEW

The information and signature you provide at the bottom of this form affirms that you understand and will comply with the HASP.

Site/Project____

Name____

Address____

Home Phone___________________________

Age_______________ Height _____________ Weight _______________

Emergency Contacts (List 2)
(1)____ Telephone:____________________________
(2)____ Telephone:____________________________

Allergies/Drug Sensitivity ____

Do you wear contacts?____

List any illness that was a result of known chemical-exposure.

____

____

Have you been hospitalized as a result of a known chemical exposure?

____

Date/Hospital/Length of Stay____

What medications are you presently using? ____

____

Medical Restrictions:____

Name Personal Physician:____Telephone:______________________

I have read and reviewed the Site-Specific Health & Safety Plan, understand the information contained therein and will comply with all provisions.

Name: ____

Signature:____

Date: ____

ATTACHMENT D-8

Daily Safety Logs

DATE: ____________

TAILGATE SAFETY MEETING

Project Manager: ____________ Project Name: ____________
Site Supervisor: ____________ Project Number: ____________
Safety Officer: ____________ Project Location: ____________
Type of Work to be Done: ____________

SITE SAFETY INFORMATION:

Weather: ____________
Chemical Hazards: ____________
Physical Hazards: ____________
Protective Clothing/Equipment: ____________
Exclusion Zone PPE Level(s): ____________
Location of Fire Extinguishers: ____________
Location of First Aid Kit(s): ____________
Evacuation Rally Assembly Area: ____________
Hospital: ____________ Phone: ____________
Hospital Address: ____________

*** Dial 9-1-1 & Notify supervisor, safety officer & project manager for emergency medical accidents/incidents**

ATTENDEES

Name Printed	Signature

Meeting Conducted By: ____________ ____________
Name Printed Signature

APPENDIX E

Citizen Participation Plan
(CPP)

May 13, 2010

CITIZEN PARTICIPATION PLAN FOR THE OPERABLE UNIT 5 (OU-5) REMEDIAL INVESTIGATION

Sunnyside Yard
Queens, New York

Prepared for

NATIONAL RAILROAD PASSENGER CORPORATION
Washington, D.C. 20002

ROUX ASSOCIATES, INC.

Environmental Consulting & Management

ROUX

209 Shafter Street, Islandia, New York 11749 ♦ 631-232-2600

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1.0 INTRODUCTION

This ***Citizen Participation Plan (CPP)***[1] was prepared for the National Railroad Passenger Corporation (Amtrak) and the New Jersey Transit Corporation (New Jersey Transit) by Roux Associates, Inc. (Roux Associates) for Amtrak's Sunnyside Yard, located in Queens, New York ***(Yard)***. A map showing the Yard location is provided in Figure E-1 and a Site Plan is provided in Figure E-2. Sunnyside Yard is actively used for the maintenance of rail passenger equipment that is operated by Amtrak and New Jersey Transit. Sunnyside Yard is listed as a Class II Site in the New York State Department of Environmental Conservation (NYSDEC) ***Registry*** of Inactive Hazardous Waste Disposal Sites (NYSDEC Site Code 241006). As a result of the listing, Amtrak, New Jersey Transit, and the NYSDEC entered into an ***Order on Consent*** Index #W2-0081-87-06 effective October 1989.

The NYSDEC, Amtrak, and New Jersey Transit are committed to informing and involving the ***public*** in all phases of work associated with environmental investigation and remediation at the Yard. As such, this CPP has been developed to provide a site-specific outline and guidance for ***citizen participation*** during the ***Remedial Investigation (RI)*** phase of work and, if necessary, based on the findings of the RI, the remedial alternative selection phase of work (Feasibility Study [FS]) associated with Operable Unit 5 (OU-5), which is comprised of the sewer system underneath the Yard.

A brief description of the Operable Units (i.e., OU-1 through OU-6) at the Yard, as well as a discussion of previous investigations conducted at the Yard associated with OU-5, is presented below in Section 2.3.

---

[1] - Key terms and acronyms shown in ***bold and italicized text*** are defined in the Glossary in Appendix E-1.

This CPP was prepared in accordance with the requirements and recommendations of Part 375 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) and the NYSDEC guidance document, DER-23 Citizens Participation Handbook for Remedial Programs (March 12, 2010). In accordance with these requirements and recommendations, this CPP will be evaluated periodically and may be amended based on changing issues of public concern or if substantial changes are encountered during the performance of key phases of work associated with OU-5.

Amtrak, New Jersey Transit, and the NYSDEC are committed to a citizen participation program as a part of the proposed investigation and remediation (if required) approach to address the potentially impacted sewer system at the Yard. Amtrak and New Jersey Transit understand that citizen participation promotes public understanding of the responsibilities, planning activities, and remedial activities associated with this process. Therefore, citizen participation provides Amtrak, New Jersey Transit, and the NYSDEC with an opportunity to gain public input to support a comprehensive remedial program, which is protective of both public health and the environment. Consequently, the public's suggestions about this CPP and the CPP program for the Yard are always welcome. Interested parties are encouraged to discuss their ideas and suggestions with the NYSDEC.

As indicated above, to provide the reader definitions of key terms and acronyms used throughout this CPP, a glossary of terms is provided in Attachment E-1.

2.0 YARD BACKGROUND

This Section presents a description of the Yard, a summary of the Yard history, and a summary of previous investigations.

2.1 Yard Description

The Yard is located in Sunnyside, New York and is identified as Block 214 and Lots 1 and 68 on the New York City Tax Map. A United States Geological Survey (USGS) topographical quadrangle map (Figure E-1) shows the Yard location. The Yard is situated on a 133-acre area bounded by the Metropolitan Transit Authority (MTA)/Long Island Rail Road (LIRR) property to the north, Skillman Avenue to the south, light industrial and commercial properties and 42nd Place to the east, and Thompson Avenue to the west (Figure E-2).

2.2 Yard History

The Pennsylvania Tunnel and Terminal Company, a subsidiary of the Pennsylvania Railroad, later known as the Penn Central Transportation Company, originally constructed Sunnyside 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. The MTA/LIRR currently owns a portion of the Yard along the northern boundary (including a portion of OU-3) and maintains rights of way through the Yard. The Yard originally operated as a storage and maintenance facility for railroad rolling stock.

2.3 Summary of Previous Investigations

A ***Phase II RI*** has been performed by Roux Associates since acceptance of the ***Phase I RI report***. The results of the Phase II RI were submitted to the NYSDEC in a February 15, 1995 document titled “Phase II Remedial Investigation,” (Roux Associates, 1995).

After submittal of the Phase II RI report, a portion of the Yard was designated by Amtrak as the site for the construction of the High Speed Trainset Facility (HSTF) Service and Inspection (S&I) Building. With the NYSDEC’s concurrence, the Yard was subdivided into six Operable Units to accommodate the HSTF S&I Building construction schedule and still address remedial efforts in a timely and orderly manner An Operable Unit (OU) represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release, or exposure pathway resulting from the site contamination. The focus of this Work Plan is OU-5, which is defined as the sewer systems beneath the Yard. The remaining operable units for the Yard are:

- OU-1: Soil above the water table within the footprint of the HSTF S&I Building. A ***Record of Decision (ROD)*** was issued for OU-1 in August 1997, and the remedial work was completed in April 1998.

- OU-2: Soil above the water table within the footprint of the HSTF S&I Building ancillary structures. A No Further Action ROD was issued for OU-2 in November 1997.

- OU-3: Soil and separate phase petroleum hydrocarbon accumulation above the water table and soil below the water table within 8 acres in the north central portion of the Yard. A ROD was issued for OU-3 in March 2007. Partial remediation has been performed. Remediation will resume upon issuance of a revised OOC.

- OU-4: Consists of the soil above the water table (unsaturated zone) at the Yard, excluding the areas defined as OU-1, OU-2, and OU-3. OU-4 comprises 120 of the total 133 acres of the Yard. A ROD was issued for OU-4 in March 2009. Remediation will commence upon issuance of a revised OOC and remedial action work plan (RAWP) approval.

- OU-6: Saturated soil and the groundwater beneath the Yard. A No Action ROD was issued for OU-6 in March 2010.

The Phase II RI was the first time the sewer system was considered to be a potential concern. The Phase II RI work plan dated August 5, 1992 (Roux Associates, 1992) was developed by Roux Associates and included the investigation for potential offsite migration of contaminants to determine if the sewer system beneath the Yard was acting as conduit for offsite migration of contaminants, sewer water samples, and sewer sediment samples were scheduled to be collected.

In 1993, the configuration of the Yard-wide sewer system was surveyed and discrepancies, between actual conditions and available sewer maps were found. The 1993 Work Plan (Roux Associates, 1993) was developed in a phased approach to allow a more rapid collection of data and determination of sources and due to differences found between actual conditions and information shown in the available sewer maps, a field survey was also conducted. The 1993 Work Plan scope of work consisted mainly of three tasks: sewer water and sewer sediment sampling; sediment removal; and sewer system monitoring.

The first step of the 1993 Work Plan was to identify manhole locations with visible sewer sediment. After identifying the locations with sewer sediment, a sampling program was implemented to determine if PCBs were present. Following the sampling program, locations with PCBs containing sewer sediment were recommended for sediment removal. After completion of the sampling program, the sewer system monitoring program was implemented. The sewer system monitoring program was designed to determine if PCBs were continually being introduced into the sewer system. The main objective was to determine if the contamination found resulted from historical events and associated residuals that might have remained in the sewer system or from current discharges from continuing sources.

The 1993 Work Plan was executed in April 1994 and results were presented in a report dated September 6, 1994 (Roux Associates, 1994) and in the Phase II RI Report, dated February 15, 1995 (Roux Associates, 1995).

In June through July 1996, 20 of the 23 proposed sediment removal locations were cleaned using a vacuum truck. Subsequent to sewer sediment removal, a visual inspection was performed during July and August 1996 to determine the presence of returning sewer sediment within those 20 sediment removal locations. If sewer sediment was found during the visual inspection at the sediment removal locations, a sediment sample was taken at that location and sent for PCBs analysis. If sediment was not present at the sewer sediment removal locations, a visual inspection was proposed to be performed. Results from the visual inspection, and results from the sampling of locations with returning sewer sediment were presented in a report dated November 1, 1996 (Roux Associates, 1996).

To further evaluate the sources of PCB-containing sediment to the Sewer System, an expanded investigation of the primary sewer system at the Yard was proposed in the November 1996 report. No further work was proposed for the secondary sewer system as PCBs were never detected in any sewer water sample collected throughout the secondary sewer system that were analyzed for PCBs from any previous investigation. The NYSDEC was informed of these findings and the subsequent expanded sewer system investigation was conducted only in the primary sewer system.

During the period of November 1996 to March 1997, an expanded sewer system investigation was performed focused on the primary sewer system and was documented in a summary report dated August 28, 1997 (Roux Associates, 1997). The main components of the expanded sewer system investigation included: investigation of manhole and catch basin interconnectivity, flow rate measurements to determine rate of deposition of sediment, and sewer sediment sampling to determine source of contamination and sediment migration patterns.

Delineation of PCB-containing sewer sediment accumulation areas within the primary sewer system was the main focus of the sampling events that took place during the expanded sewer system investigation. Selected manholes and catch basins within the primary sewer system were inspected for sediment accumulation. If sewer sediment were present, samples were taken and analyzed for PCBs. To serve as a sediment trap and facilitate sampling in manholes that did not have enough sediment, sandbags were used and removed after sampling collection was completed.

A preliminary OU-5 RI field survey consisting of a visual inspection of the sewer system and its components was conducted in June 2009. The presence of sediment within some manholes was confirmed. No other investigation by Roux Associates has taken place at the Yard in relation to OU-5 to date since June 2009. However, modifications to Yard functions and characteristics have occurred since June 2009, which have altered the sewer systems underneath the Yard.

3.0 PROJECT DESCRIPTION

As discussed in greater detail in the OU-5 RI Work Plan, the objectives of the proposed scope of work for the OU-5 RI are as follows:

- provide a current evaluation of the accumulation of PCB containing sewer sediment and sewer water within the Yard-wide sewer system;
- develop an understanding of the flow patterns and inputs to the sewer system; and
- develop the data necessary to prepare a FS for OU-5 and develop a final remedy for this Operable Unit.

To meet these objectives, the OU-5 RI scope of work will include the sewer system mapping and verification, a sampling program and a targeted sewer camera inspection. Following the completion of these tasks, a comprehensive final OU-5 RI report will be prepared. The final OU-5 RI report will provide results of the investigation and camera survey activities described above, as well as incorporate all previous data developed for the sewer system in the Yard to provide a description of current and previous conditions. The final OU-5 RI report will also recommend, if necessary, the evaluation of remedial alternatives as part of a Feasibility Study.

4.0 COMMUNITY ISSUES AND CITIZEN PARTICIPATION ACTIVITIES

This section of the CPP describes the specific citizen participation activities to be conducted during major elements of work associated with OU-5.

Citizen participation activities are planned to promote communication between the community surrounding the Yard, the NYSDEC, Amtrak, and New Jersey Transit. The citizen participation activities are intended to address the following questions:

- What concerns does the public have about OU-5?
- Who is interested in or affected by OU-5?
- What information does the public need to know about OU-5?
- What information can the public contribute about OU-5?

These four questions will be re-addressed at the beginning of each major phase of work associated with OU-5 to determine if the planned citizen participation activities detailed below are adequate to meet the needs of the community or if additional activities should be planned.

4.1 Remedial Investigation/Feasibility Study and Record of Decision Phase

In accordance with 6 NYCRR Part 375 public participation requirements, this CPP shall be prepared during this phase of the remedial program to describe citizen participation activities that are to be conducted during the remedial program for OU-5. Additional citizen participation activities may be completed for OU-5, if required.

Once the RI/FS has been completed and the ***Proposed Remedial Action Plan (PRAP)*** has been developed, the NYSDEC will prepare and send a ***fact sheet*** to the ***Contact List*** of Potentially Affected/Interested Parties (Section 6 and Table 1). The fact sheet will provide, at a minimum, information including:

- Basic fact sheet information
  - — A brief history of the Yard, a summary of the hazardous waste present, and why the NYSDEC is proposing to remediate the Operable Unit.
  - — Description of remaining CP activities that will be conducted, their general timing, and how they relate to remedial activities.

  - The location, days and hours of operation of the Yard's ***document repositories***, and the documents available for public reviewing.

  - Staff contacts and other ways people can obtain more information.

- Description of the OU-5 PRAP.

- Why the NYSDEC selected the proposed remedy.

- The start/end dates of the 30-day public comment period about the PRAP and how the public may provide comments.

- How to access the full PRAP document for review.

- The date, time, and location of a public meeting to be held by the NYSDEC to discuss the PRAP and seek public comments.

After the PRAP has been developed and has been placed in the document repository (See Section 5.0), the NYSDEC will establish and publicize a 30-day period for the public to comment on the draft proposal. A public meeting will be held approximately two weeks after the NYSDEC has initiated the public comment period to describe the PRAP and gather public comments. After the public comment period has been completed, the NYSDEC may edit the proposal and subsequently finalize the PRAP by issuing a written ROD. When the ROD is signed, the NYSDEC will prepare and send to the contact list another fact sheet. The fact sheet will provide, at a minimum, information including:

- Basic fact sheet information.

- Description of the remedy the NYSDEC has selected for OU-5.

- Discussion of any significant changes from the proposed remedy.

- Summary/response to significant public comment submitted during the comment period.

5.0 DOCUMENT REPOSITORIES AND LIST OF AVAILABLE DOCUMENTS

Two document repositories have been established to provide the public with convenient access to important project documents and other information. This information will include reports, data and other information gathered and developed during the course of each major element of work for the Yard, as well as fact sheets, public meeting announcements, the PRAP, and ROD.

NYSDEC Region 2 Office
One Hunter's Point Plaza
47-40 21st Street
Long Island City, New York 11101

Contact:	Shaun Bollers (718) 482-4608	
Hours:	Monday – Friday	9 am – 5 pm
	Saturday	Closed
	Sunday	Closed

Calling ahead to schedule an appointment is required.

Queens Public Library – Sunnyside Branch
43-06 Greenpoint Avenue
Long Island City, New York 11104

Contact:	Anne Bagnell (718) 784-3033	
Hours:	Monday	1 pm – 8 pm
	Tuesday	1 pm – 6 pm
	Wednesday	10 am – 6 pm
	Thursday	1 pm – 8 pm
	Friday	10 am – 6 pm
	Saturday	10 am – 5 pm
	Sunday	Closed

Documents that will be developed during the upcoming key phases of Work will be made available in the repositories.

6.0 POTENTIALLY AFFECTED/INTERESTED PUBLIC

A contact list of potentially affected/interested public has been developed to help the NYSDEC to keep the community informed about and involved during each key phase of work associated with OU-5. This list was compiled by the NYSDEC in 2010 as part of the public notification process associated with the OU-6 ROD at Sunnyside Yard. The individuals or organizations provided on this list will receive the mailings described in Section 4.1. The contact list is provided in Table E-1, and includes the following:

- State Officials and Agencies.
- Local Officials and Committees.
- Nearby Property Owners.

The contact list will be reviewed periodically and updated as appropriate.

7.0 REFERENCES

NYSDEC, 2010. Draft DER-23. Citizens Participation Handbook for Remedial Programs. March 12, 2010.

Roux Associates, Inc.; 1993. Work Plan for the Additional Investigation of the Sewer System, Sunnyside Yard, Queens, New York. June 17, 1993; revised August 10, 1993.

Roux Associates, Inc.; 1994. Results of Sewer Sampling Program and Oil/Water Separator Inspection and Evaluation, Sunnyside Yard, Queens, New York. September 6, 1994.

Roux Associates, Inc.; 1995. Phase II Remedial Investigation, Sunnyside Yard, Queens, New York. February 15, 1995.

Roux Associates, Inc.; 1996. Summary of the Results for the June-July 1996 Sewer Sampling Program and Recommended Scope of Work, Sunnyside Yard, Queens, New York. November 1, 1996.

Roux Associates, Inc.; 1997. Summary of the Results for the Expanded Sewer System Investigation, Sunnyside Yard, Queens, New York. August 28, 1997.

TABLE E-1

Project Contact List for OU-5 Remedial Investigation
Amtrak Sunnyside Yard
Queens, New York 11101
Site Code 241006

Note: Contacts identified in *underlined and italics font* are either NYSDEC or NYSDOH personnel, and will be provided electronic version of project correspondence via email (hard copies will not be sent to these contacts).

Queens Community Board 2
43-22 50th Street
Woodside, New York 11377

NEW YORK STATE SENATORS
Honorable George Onorato
New York State Senate
28-11 Astoria Blvd
Astoria, New York 11102

MEMBERS OF THE ASSEMBLY
Honorable Michael G. Dendekker
New York State Assembly
33-46 92nd Street, Suite 1
West Jackson Heights, New York 11372

Honorable Margaret Markey (D) (AD30)
New York State Assembly
55-19 69th Street
Maspeth, New York 11378

Honorable Catherine Nolan
NYS Assembly Member
41-02 Queens Blvd, Suite 2B
Sunnyside, New York 11104

QUEENS DISTRICT ATTORNEY
Honorable Richard Brown, Queens District Attorney
125-01 Queens Boulevard
Kew Gardens, New York 11415

MEMBERS OF CONGRESS
House of Representatives Washington, DC 20515

Honorable Joseph Crowley (D) (HR7)
Member of Congress
74-09 37th Avenue, Suite 306B
Jackson Heights, New York 11372

Honorable Carolyn B. Maloney (D) (HR14)
Member of Congress
1651 Third Avenue, Suite 311
New York, New York 10128

Honorable Carolyn B. Maloney
Attn: George Napalitano
28-11 Astoria Boulevard
Astoria, New York 11102

STATE COMPTROLLER
Thomas DiNapoli
Office of the State Comptroller
New York City Public Information Office
633 Third Avenue New York, New York 10017

STATE COMPTROLLER
A.E. Smith State Office Building
Albany, New York 12236

MAYOR OF THE CITY OF NEW YORK
Honorable Michael Bloomberg
Mayor of the City of New York
City Hall New York, New York 10007

ATTORNEY GENERAL
Honorable Andrew Cuomo
The State Capitol
Albany, New York 12224

QUEENS BOROUGH PRESIDENT
Honorable Helen Marshall
President of the Borough of Queens
120-55 Queens Blvd
Kew Gardens, New York 11424

CITY COUNCIL
Honorable Christine Quinn
City Council Speaker
City Hall, New York, New York 10007

Honorable Elizabeth Crowley, Council
District #30, Council Member
78-25 Metropolitan Avenue
Middle Village, New York 11379

Mr. Robert Kulikowski
New York City Office of Environmental Coordination
253 Broadway – 14th Floor
New York, New York 10007

Bob Cozzy, Director
Remedial Bureau 'B" Division of Environmental Remediation
New York State Department of Environmental Conservation
625 Broadway Albany, New York 12233

Rosalie R. Rusinko, Esquire
New York State Department of Environmental Conservation
100 Hillside Avenue
White Plains, New York 10603

J. Crua
NYS Department of Health
Bureau of Env. Exp. Inv. Center for Environmental Health
Flanigan Square
547 River Street
Troy, New York 12180

Christopher Doroski
NYS Department of Health Bureau of Env. Exp. Inv.
Center for Environmental Health
Flanigan Square
547 River Street
Troy, New York 12180

Jane O'Connell, Acting Chief
Superfund and Brownfield Cleanup Section, Region 2
NYS Dept of Environmental Conservation
2 47-40 21st Street
Long Island City, New York 11101

Shaun Bollers, Case Manager
Environmental Engineer, DER
NYS Department of Environmental Conservation
47-40 21st Street
Long Island City, New York 11101

Hon. Charles Schumer
U.S. Senator
757 Third Avenue Room 17-02
New York, New York 10017

Amanda Burden, Commissioner
New York City Department of Planning
22 Reade Street
New York, New York 10007

John Wuthenow
Office of Environmental Planning and Assessment
NYC Department of Environmental Protection
96-05 Horace Harding Expressway
Flushing, New York 11373

St. George Coptic Orthodox Church
3825 31st Street
Long Island City, New York 11101

Brazilian Missionary Church
3922 30th Street
Long Island City, New York 11101

Bayanihan Seventh Day Adventist
3949 29th Street
Long Island City, New York 11101

St. Patrick’s Religious Education
3937 28th Street
Long Island City, New York 11101

Brazilian Community St. Patrick’s Church
3938 29th Street
Long Island City, New York 11101

Evangel Church
3920 27th Street
Long Island City, New York 11101

Evangel Christian School
39-21 Crescent Street
Queens, New York 11101
Attn: Carolyn Marko, Principal

Oliver Wendell Holmes Jr. High School 204
36-41 28th Street
Long Island City, New York 11106
Attn: Yvonne Leimsider, Principal

Pentacostal Missionary Church
3611 33rd Street
Astoria, New York 11106

Jehovah’s Witnesses – Queens
3746 Crescent Street
Long Island City, New York 11101

Assembly of God – New York Portuguese
3922 30th Street
Long Island City, New York 11101

Dutch Kills Public School 112
2505 37th Avenue
Long Island City, New York 11101
Attn: Rafeal Campos, Principal

Aviation Career and Technical High School
45-30 36th Street
Long Island City, New York 11101
Attn: Eileen Taylor, Principal

Baccalaureate School – Global Education
34-12 36th Avenue
Long Island City, New York 11106
Attn: Kelly Joan Johnson, Principal

Propper Mfg. Co
3720 Skillman Avenue
Long Island City, New York 11101

JB Industries, Inc.
35-02 Skillman Avenue
Long Island City, New York 11101-2301

Gopal K. Beri
43-07 Barnett Avenue
Long Island City, New York 11104-2263

Gerald S Modica
43-05 Barnett Avenue
Long Island City, New York 11104-2101

New York Presbyterian
43-05 37th Avenue
Long Island City, New York 11101-1007

Robert Lowenherz
39-11 43rd Street
Long Island City, New York 11104-1407

Judith H Steele
39-05 43rd Street
Long Island City, New York 11104-1420

Klaus Lippold
39-24 Locust Street
Long Island City, New York 11104-2108

Merit Oil of New York, Inc.
39-04 Northern Boulevard
Long Island City, New York 11101-1618

Pathmark Stores, Inc
42-02 Northern Boulevard
Long Island City, New York 11101

43rd Street Realty Group
38-38 43rd Street
Long Island City, New York 11101

Moak Yang Presbyterian
40-05 Skillman Avenue
Long Island City, New York 11104-3203

Skillman Realty Co.
39-15 Skillman Avenue
Long Island City 11104

Argonaut Holdings Inc
39-10 43rd Street
Long Island City, New York 11101

Rebecca Yeung
3830 43rd Street
Long Island City, New York 11101-3202

Extra Space Storage
36-02 Northern Boulevard
Long Island City, New York 11101

Proper Mfg. Co.
36-04 Skillman Avenue
Long Island City, New York 11101-1701

Skillman Ave Corp
33-02 Skillman Avenue
Long Island City, New York 11101-2353

The Dormitory Authority
29-10 Thomson Avenue
Long Island City, New York 11101

Capitol Distributors
30-35 Thomson Avenue
Long Island City, New York 11101

3102 Queens Boulevard
31-10 Queens Boulevard
Long Island City, New York 11101

Techo Realty Development
43-18 Van Dam Street
Long Island City, New York 11101

33-00 Partners LLC
33-00 Northern Boulevard
Long Island City, New York 11101

33-24 Northern Blvd LLC or Current Resident
33-24 Northern Boulevard
Long Island City, New York 11101

Northern Real Estate or Current Resident
33-26 Northern Boulevard
Long Island City, New York 11101

107 West 38th Realties or Current Resident
33-28 Northern Boulevard
Long Island City, New York 11101

DJL Realty Company or Current Resident
34-18 Northern Boulevard
Long Island City, New York 11101

Northern 3502 Inc. or Current Resident
35-02 Northern Boulevard
Long Island City, New York 11101

SMP Real Estate LLC
37-02 Northern Boulevard
Long Island City, New York 11101

MTA/LIRR
40-08 Northern Boulevard
Long Island City, New York 11101

Universal Capital Corp
40-30 Northern Boulevard
Long Island City, New York 11101

God Bless WMCS Living
42-42 Northern Boulevard
Long Island City, New York 11101

Paul W. Degonzague
39-11A 43rd Street
Long Island City, New York 11104-2109

Alexander Hindenburg
39-09 43rd Street
Long Island City, New York 11104

Valdez Gilberto
39-07 A 43rd Street
Long Island City, New York 11704-2339

J. O'Brien
39-07 43rd Street
Long Island City, New York 11104

Michael Matura
38-32 43rd Street
Queens, New York 11101-3230

Ante & Tomislava Grga
38-40 43rd Street
Long Island City, New York 11103-1117

Sarah Rose Realty Corp
38-50 43rd Street
Long Island City, New York 11743-1609

Ive & Mate Matura
38-56 43rd Street
Long Island City, New York 11101-1538

Ive & Mate Matura
38-60 43rd Street
Long Island City, New York 11101-1538

Ive Matura
38-64 43rd Street
Long Island City, NewYork 11101-1538

Swingstell LLC
32-07 Van Dam Street
Long Island City, New York 11104

Accel Motors Inc.
30-02 Skillman Avenue
Long Island City, New York 11101-3037

Leemilts Petroleum Inc
43-10 Van Dam Street
Long Island City, New York 11590-5001

Lisa Johnson
38-02 Skillman Avenue
Long Island City, New York 11101

New York City Industrial
34-06 34th Street
Long Island City, New York 11101

Thomas Campaniello
32-34 43rd Avenue
Long Island City, New York 11101

MTA Capital Construction
Attn: Audrey Heffernan
2 Broadway, D8.13
New York, New York 10004

Hon. John C. Liu
Office of the Comptroller
Once Centre Street
New York, New York 10007

Hon. Bill De Blasio
Public Advocate
1 Centre Street, 15th Floor
New York, New York 10007

Hon. Jimmy Van Bramer
NYC City Councilmember District #26
47-01 Queens Boulevard, Suite 205
Queens, New York 11104

Hon. Daniel Dromm
NYC City Councilmember District #25
37-32 75th Street
Jackson Heights, New York 11372

Hon. Caswell Holloway
Commissioner
NYC Department of Environmental Protection
59-17 Junction Boulevard
Flushing, New York 11373

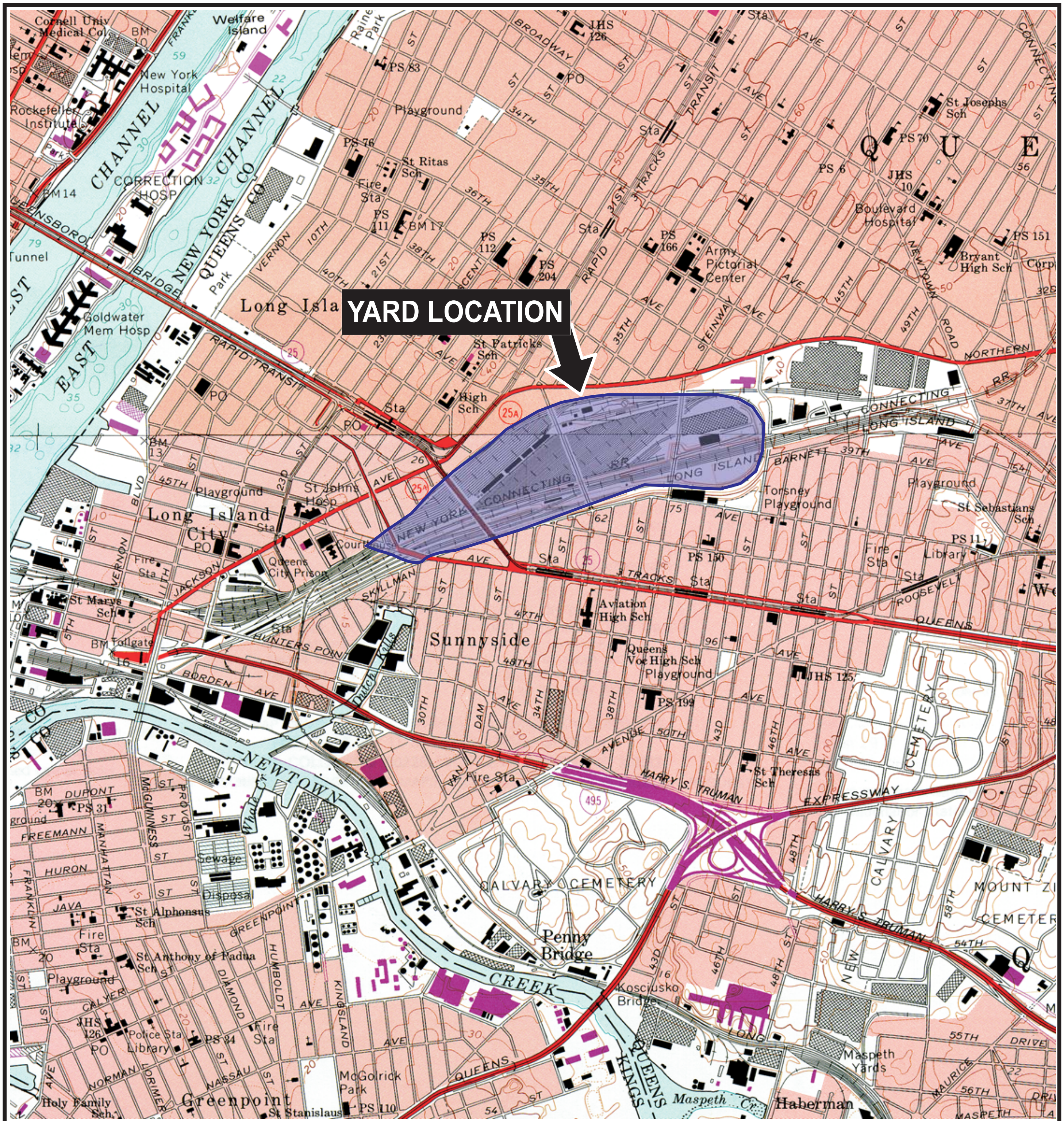
Hon. Kirsten Gillibrand
U.S. Senator
780 Third Avenue, Suite 2601
New York, New York 10017

County of Queens
Gloria D'Amico, County Clerk
88-11 Sutphin Boulevard, 1st Floor
Jamaica, New York 11439

MTA/LIRR – East Side Access
29-76 Northern Boulevard, 5th Floor
Long Island City, New York 11101
Attn: Garth Lawrence

Adam Meister
Fortune Brands, Inc.
520 Lake Cook Road
Deerfield, Illinois 60015-5611

Lew Wunderlich
MTA Capital Construction
2 Broadway, A16.53
New York, New York 10004



SOURCE:
CENTRAL PARK AND BROOKLYN, NEW YORK
QUADRANGLE 7.5 MINUTE SERIES (TOPOGRAPHIC)

QUADRANGLE LOCATION

N

0 2000'

Title:

LOCATION OF SITE

OPERABLE UNIT 5 REMEDIAL INVESTIGATION WORK PLAN
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared for:

AMTRAK

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: H.G.	Date: 12MAY10	FIGURE
Prepared by: J.A.D.	Scale: 1"=2000'	E-1
Project Mgr.: H.G.	Office: NY	
File No.: AM5011907.CDR	Project No.: 05550Y05	

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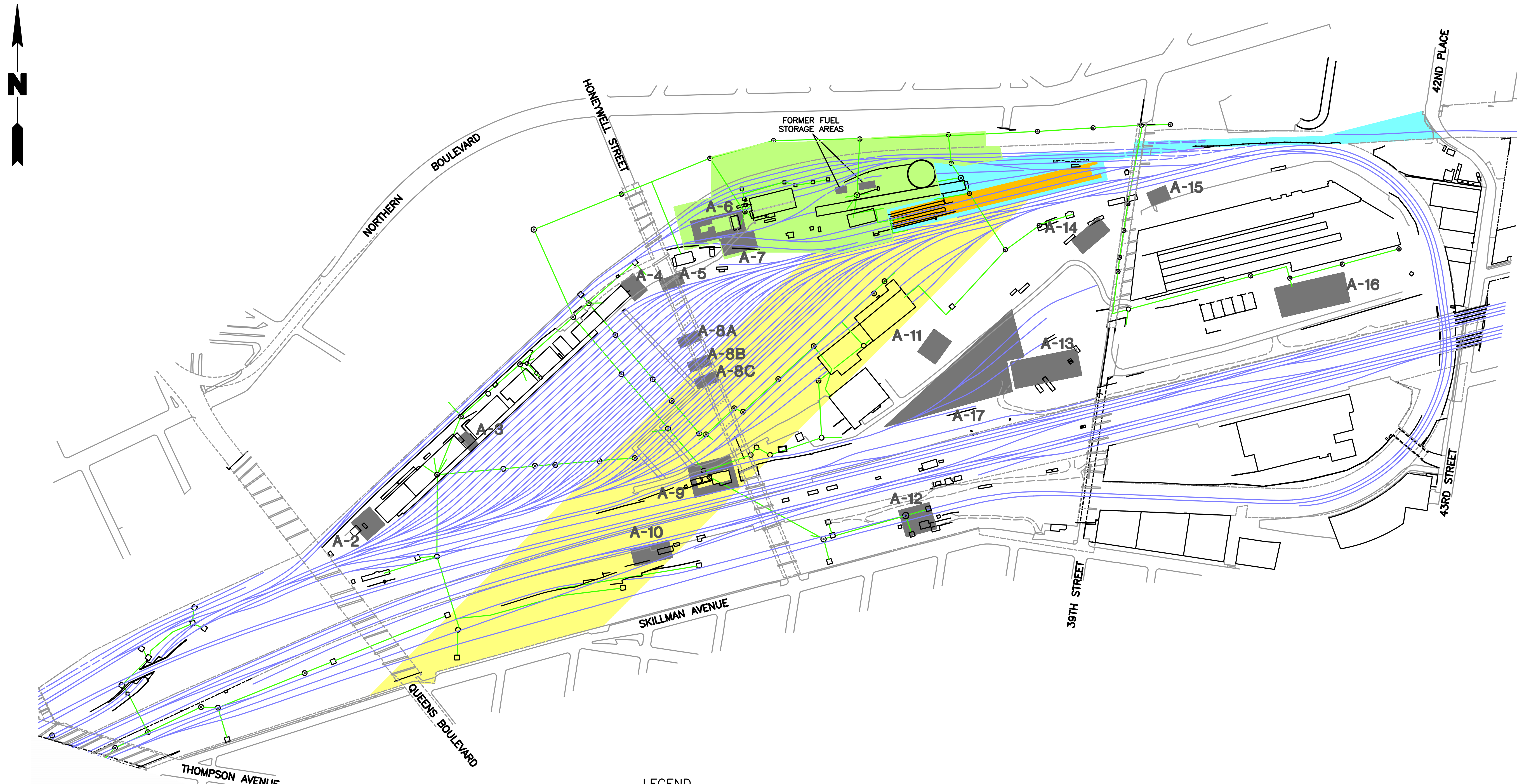

LEGEND

- LOCATION OF RAILROAD TRACK
- APPROXIMATE LOCATION OF SEWER
- GRATE COVER CATCH BASIN LOCATION
- SOLID COVER MANHOLE LOCATION
- GRATE COVER MANHOLE LOCATION
- A-2 LOCATION AND DESIGNATION OF PREVIOUSLY DETERMINED AREA OF CONCERN
- APPROXIMATE PROPERTY BOUNDARY

- OU–1
- OU–2
- OU–3
- OU–4
- OU–5

OU–6, GROUNDWATER BENEATH THE YARD (UNDERLIES ALL OTHER OU's)

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, GROUNDWATER BENEATH THE YARD (UNDERLIES ALL OTHER OU's)
3. RI – REMEDIAL INVESTIGATION
4. LIRR – LONG ISLAND RAIL ROAD

Title:

AMTRAK YARD LAYOUT

OPERABLE UNIT 5 REMEDIAL INVESTIGATION WORK PLAN
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For: AMTRAK

ROUX
ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: H.G.	Date: 12MAY10	FIGURE
Prepared by: J.A.D.	Scale: AS SHOWN	E-2
Project Mgr: H.G.	Office: NY	
File No: AM5011908	Project: 05550Y05	

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ATTACHMENT E-1

List of Acronyms and Glossary of Commonly Used Citizen Participation Terms

ATTACHMENT E-1

LIST OF ACRONYMS AND GLOSSARY OF COMMONLY USED CITIZEN PARTICIPATION TERMS

Citizen Participation (CP) – A process to inform and involve the interested/affected public in the decision-making process during identification, assessment, and remediation of inactive hazardous waste sites. This process helps to assure that the best decisions are made from environmental, human health, economic, social, and political perspectives.

Citizen Participation Plan (CPP) – A document that describes the site-specific community participation activities that will take place to complement the "technical" activities. It also provides site background and rationale for the selected community participation program at the site. A plan may be updated or altered as public interest or the technical aspects of the program change.

Contact List – Names, addresses and/or telephone numbers of individuals, groups, organizations and media interested and/or affected by an inactive hazardous waste site. The contact list is used to inform and involve the interested/affected public.

Document Repository – A location, typically a public building, near a particular site at which documents related to remedial and community participation activities at the site are available for public review. The document repository provides access to documents at times and a location convenient to the public.

Fact Sheet – A written discussion of the site's history, the status of the environmental study, or the remedial process. The fact sheet may be mailed to all or parts of the contact list, distributed at meetings, or sent on an "as requested" basis.

Feasibility Study (FS) – A process for developing, evaluating, and selecting remedial actions, using data gathered during the RI to: define objectives of the remedial program for the site and broadly develop remedial action alternatives; perform an initial screening of these alternatives; and perform a detailed analysis of a limited number of alternatives which remain after the initial screening stage.

Order on Consent – A legal and enforceable negotiated agreement between the NYSDEC and the potentially responsible party in which the potentially responsible party agrees to undertake investigation and remediation, if necessary, at the site. The Consent Order includes a description of the remedial actions to be taken and a schedule for implementation.

Phase I Remedial Investigation – Initial step in a Remedial Investigation to characterize hazardous substances present at the site.

Phase II Remedial Investigation – A Phase II investigation is performed when additional information is needed to fully characterize the site after completion of the Phase I.

Potentially Responsible Party (PRP) – Individuals, companies (e.g., site owners, operators, transporters, or generators of hazardous waste) who may be responsible for an inactive hazardous waste disposal site.

Proposed Remedial Action Plan (PRAP) – A public document prepared by the NYSDEC after the Feasibility Study which summarizes the remedial options for a site and proposes a specific remedial alternative for implementation.

Public – The universe of individuals, groups and organizations: a) affected (or potentially affected) by the site and/or its remedial program; b) interested in the site and/or its remediation; c) having information about the site and its history.

Public Consultation/Community Meeting – A scheduled gathering which may present study findings, discuss alternatives, respond to questions, and receive public comment.

Record of Decision (ROD) – A public document prepared by the NYSDEC following the selection of a remedy for a site. The ROD presents the rationale for the selected remedy and is prepared after a public comment period on the PRAP.

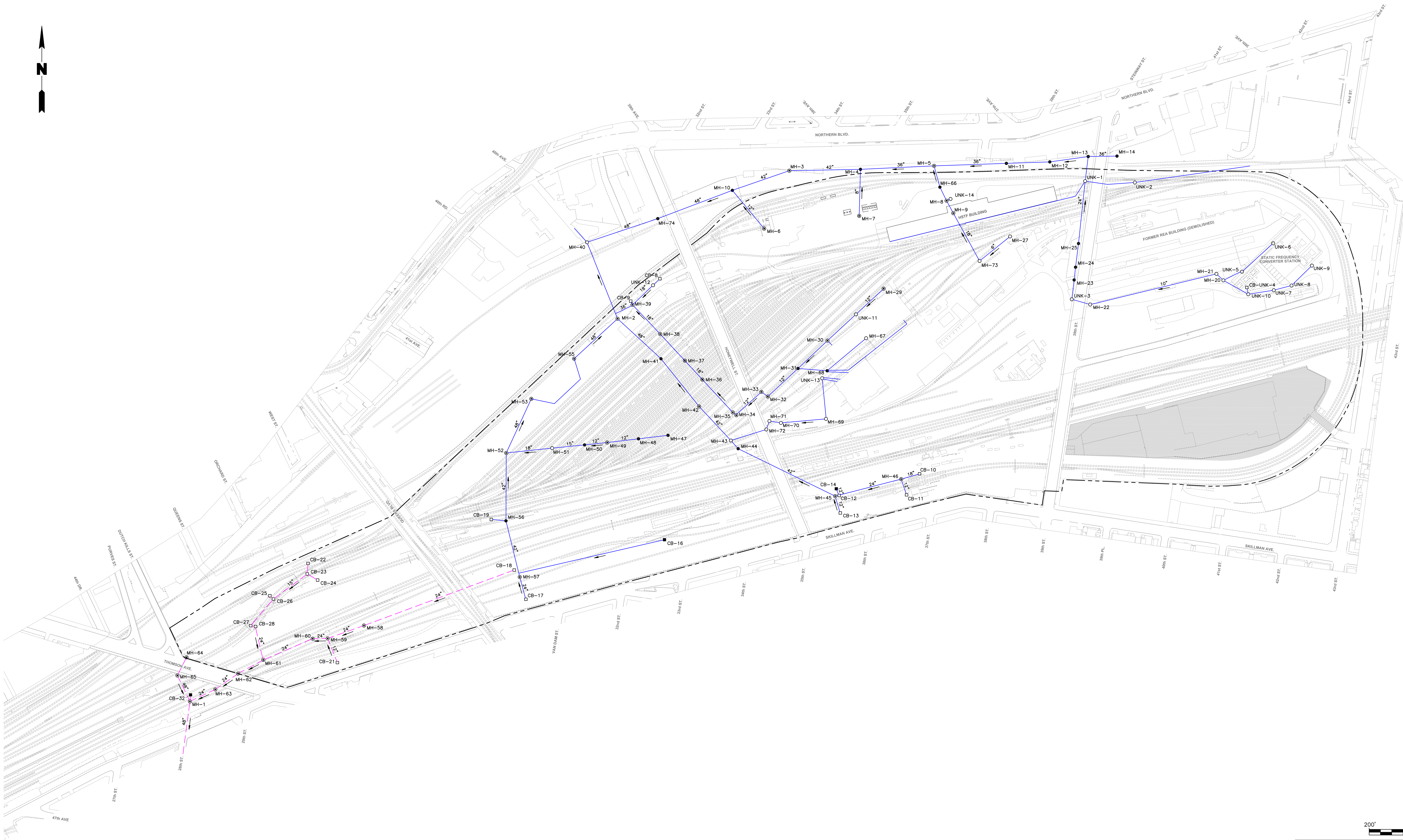
Registry – The NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State.

Remedial Design – Once a remedial action has been selected, technical plans and specifications for remedial construction at a site are developed, as specified in the ROD. Design documents are used to bid and construct the selected remedial action.

Remedial Investigation (RI) – A process to determine the nature and extent of contamination by collecting data and analyzing the site. It includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessary for, and proposed extent of, a remedial program for the site.

Responsiveness Summary – A summary and response to public questions and comments.

Yard – Sunnyside Rail Yard, located in Queens, New York.



200' 0 200'

LEGEND

	PRIMARY SEWER SYSTEM (COMBINED SEWER SYSTEM)
	SECONDARY SEWER SYSTEM (STORM SEWER SYSTEM)
	APPROXIMATE PROPERTY BOUNDARY
	PRIVATE PROPERTY NOT OWNED BY AMTRAK
UNK	MANHOLE LOCATED IN THE FIELD BUT NOT SHOWN IN AVAILABLE SEWER MAPS
MH-2	LOCATION AND DESIGNATION OF SEWER MANHOLE WITH GRATE COVER
MH-5	LOCATION AND DESIGNATION OF SEWER MANHOLE WITH SOLID COVER
MH-66	LOCATION AND DESIGNATION OF SEWER MANHOLE NOT LOCATED OR COMPLETELY BURIED
CB-18	LOCATION AND DESIGNATION OF CATCH BASIN
CB-14	LOCATION AND DESIGNATION OF CATCH BASIN NOT LOCATED OR COMPETELY BURIED

Title:

SEWER SYSTEM BASEMAP

OPERABLE UNIT 5 REMEDIAL INVESTIGATION WORK PLAN
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX ASSOCIATES, INC. *Environmental Consulting & Management*	Compiled by: L.O.	Date: 11MAY10	PLATE
	Prepared by: J.A.D.	Scale: AS SHOWN	1
	Project Mgr: H.G.	Office: NY	
	File No: AM5011901	Project: 05550Y05	

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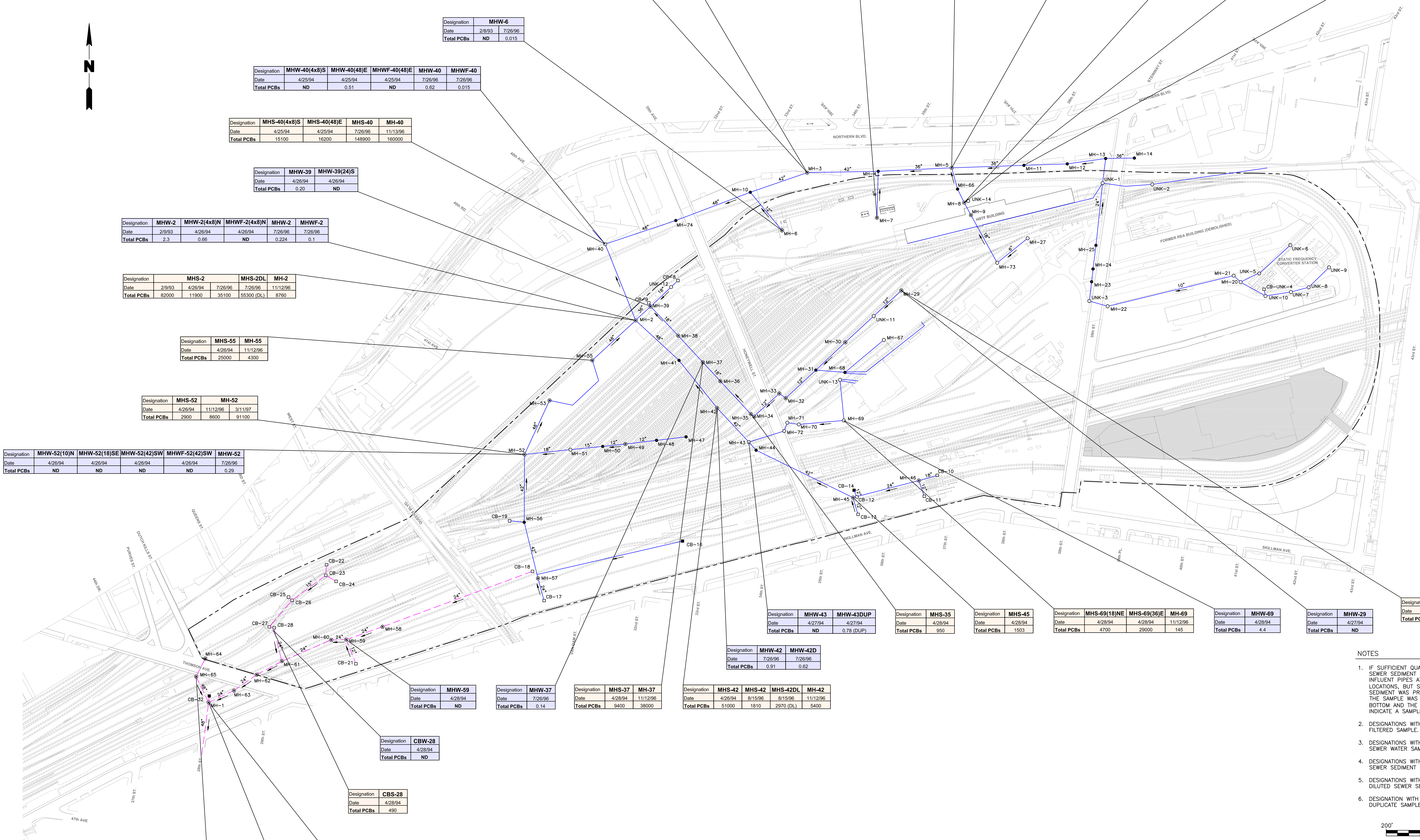

Designation	MHS-3	MH-3	MHS-3
Date	2/8/93	11/13/96	3/11/97
Total PCBs	54000	32500	1380

Designation	MHW-3		MHWF-3
Date	2/8/93	7/26/96	7/26/96
Total PCBs	**ND**	0.089	0.017

Designation	MHW-7
Date	2/8/93
Total PCBs	14.8

Designation	MH-5
Date	11/13/96
Total PCBs	18800

Designation	MHW-5	
Date	2/8/93	7/26/96
Total PCBs	**ND**	0.077

Designation	MHW-8
Date	2/9/93
Total PCBs	20.6

Designation	MHS-8DL	MH-8
Date	2/9/93	11/12/96
Total PCBs	4200 (DL)	140

Designation	MH-11
Date	3/11/97
Total PCBs	1000

Designation	MHW-6	
Date	2/8/93	7/26/96
Total PCBs	**ND**	0.015

Designation	MHW-40(4x8)S	MHW-40(48)E	MHWF-40(48)E	MHW-40	MHWF-40
Date	4/25/94	4/25/94	4/25/94	7/26/96	7/26/96
Total PCBs	**ND**	0.51	**ND**	0.62	0.015

Designation	MHS-40(4x8)S	MHS-40(48)E	MHS-40	MH-40
Date	4/25/94	4/25/94	7/26/96	11/13/96
Total PCBs	15100	16200	148900	160000

Designation	MHW-39	MHW-39(24)S
Date	4/26/94	4/26/94
Total PCBs	0.20	**ND**

Designation	MHW-2	MHW-2(4x8)N	MHWF-2(4x8)N	MHW-2	MHWF-2
Date	2/9/93	4/26/94	4/26/94	7/26/96	7/26/96
Total PCBs	2.3	0.66	**ND**	0.224	0.1

Designation	MHS-2			MHS-2DL	MH-2
Date	2/9/93	4/26/94	7/26/96	7/26/96	11/12/96
Total PCBs	82000	11900	35100	55300 (DL)	8760

Designation	MHS-55	MH-55
Date	4/26/94	11/12/96
Total PCBs	25000	4300

Designation	MHS-52	MH-52	
Date	4/26/94	11/12/96	3/11/97
Total PCBs	2900	8600	91100

Designation	MHW-52(10)N	MHW-52(18)SE	MHW-52(42)SW	MHWF-52(42)SW	MHW-52
Date	4/26/94	4/26/94	4/26/94	4/26/94	7/26/96
Total PCBs	**ND**	**ND**	**ND**	**ND**	0.29

Designation	MHW-43	MHW-43DUP
Date	4/27/94	4/27/94
Total PCBs	**ND**	0.78 (DUP)

Designation	MHS-35
Date	4/28/94
Total PCBs	950

Designation	MHS-45
Date	4/28/94
Total PCBs	1503

Designation	MHS-69(18)NE	MHS-69(36)E	MH-69
Date	4/28/94	4/28/94	11/12/96
Total PCBs	4700	29000	145

Designation	MHW-69
Date	4/28/94
Total PCBs	4.4

Designation	MHW-29
Date	4/27/94
Total PCBs	**ND**

Designation	MHS-29
Date	4/27/94
Total PCBs	170

Designation	MHW-42	MHW-42D
Date	7/26/96	7/26/96
Total PCBs	0.91	0.62

Designation	MHW-59
Date	4/28/94
Total PCBs	**ND**

Designation	MHW-37
Date	7/26/96
Total PCBs	0.14

Designation	MHS-37	MH-37
Date	4/28/94	11/12/96
Total PCBs	9400	38000

Designation	MHS-42	MHS-42	MHS-42DL	MH-42
Date	4/26/94	8/15/96	8/15/96	11/12/96
Total PCBs	51000	1810	2970 (DL)	5400

Designation	CBW-28
Date	4/28/94
Total PCBs	**ND**

Designation	CBS-28
Date	4/28/94
Total PCBs	490

Designation	MHS-1
Date	4/28/94
Total PCBs	3500

Designation	MHS-65
Date	4/28/94
Total PCBs	660

Designation	MHW-1	MHW-1	MHWF-1	MHW-1	MHWF-1
Date	2/9/93	4/28/94	4/28/94	8/15/96	8/15/96
Total PCBs	**ND**	**ND**	**ND**	**ND**	**ND**

NOTES

1. IF SUFFICIENT QUANTITIES OF SEWER WATER AND/OR SEWER SEDIMENT WERE NOT PRESENT IN THE INFLUENT PIPES AT MULTIPLE INFLUENT SAMPLING LOCATIONS, BUT SEWER WATER AND/OR SEWER SEDIMENT WAS PRESENT IN THE MANHOLE, THEN THE SAMPLE WAS COLLECTED FROM THE MANHOLE BOTTOM AND THE SAMPLE DESIGNATION DOESN'T INDICATE A SAMPLING LOCATION.
2. DESIGNATIONS WITH THE LETTER "F" INDICATE A FILTERED SAMPLE.
3. DESIGNATIONS WITH THE LETTER "W" INDICATE A SEWER WATER SAMPLE.
4. DESIGNATIONS WITH THE LETTER "S" INDICATE A SEWER SEDIMENT SAMPLE.
5. DESIGNATIONS WITH THE PREFIX "DL" INDICATE A DILUTED SEWER SEDIMENT SAMPLE.
6. DESIGNATION WITH THE PREFIX "DUP" INDICATE A DUPLICATE SAMPLE.

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LEGEND

- PRIMARY SEWER SYSTEM (COMBINED SEWER SYSTEM)
- SECONDARY SEWER SYSTEM (STORM SEWER SYSTEM)
- APPROXIMATE PROPERTY BOUNDARY
- PRIVATE PROPERTY NOT OWNED BY AMTRAK
- UNK — MANHOLE LOCATED IN THE FIELD BUT NOT SHOWN IN AVAILABLE SEWER MAPS
- MH-2 — LOCATION AND DESIGNATION OF SEWER MANHOLE WITH GRATE COVER
- MH-5 — LOCATION AND DESIGNATION OF SEWER MANHOLE WITH SOLID COVER
- MH-66 — LOCATION AND DESIGNATION OF SEWER MANHOLE NOT LOCATED OR COMPLETELY BURIED
- CB-18 — LOCATION AND DESIGNATION OF CATCH BASIN
- CB-14 — LOCATION AND DESIGNATION OF CATCH BASIN NOT LOCATED OR COMPETELY BURIED

Designation	MHS-1
Date	4/28/94
Total PCBs	3500

← TOTAL CONCENTRATION (µg/kg)

SEWER SEDIMENT

Designation	MHW-1	MHW-1	MHWF-1	MHW-1	MHWF-1
Date	2/9/93	4/28/94	4/28/94	8/15/96	8/15/96
Total PCBs	**ND**	**ND**	**ND**	**ND**	**ND**

← TOTAL CONCENTRATION (µg/L)

SEWER WATER

Title: **SUMMARY OF TOTAL PCBs DETECTED IN SEWER WATER AND SEDIMENT SAMPLES DURING PREVIOUS INVESTIGATIONS**

OPERABLE UNIT 5 REMEDIAL INVESTIGATION WORK PLAN
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For: AMTRAK

ROUX ROUX ASSOCIATES, INC. *Environmental Consulting & Management*	Compiled by: L.O.	Date: 12MAY10	PLATE
	Prepared by: J.A.D.	Scale: AS SHOWN	2
	Project Mgr: H.G.	Office: NY	
	File No: AM5011902	Project: 05550Y05	

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LEGEND

PRIMARY SEWER SYSTEM (COMBINED SEWER SYSTEM)	MH-2 LOCATION AND DESIGNATION OF SEWER MANHOLE WITH GRATE COVER
SECONDARY SEWER SYSTEM (STORM SEWER SYSTEM)	MH-5 LOCATION AND DESIGNATION OF SEWER MANHOLE WITH SOLID COVER
APPROXIMATE PROPERTY BOUNDARY	MH-66 LOCATION AND DESIGNATION OF SEWER MANHOLE NOT LOCATED OR COMPLETELY BURIED
PRIVATE PROPERTY NOT OWNED BY AMTRAK	CB-18 LOCATION AND DESIGNATION OF CATCH BASIN
MH-51 PROPOSED SAMPLE LOCATIONS IF ACCESSIBLE AT TIME OF INVESTIGATION	CB-14 LOCATION AND DESIGNATION OF CATCH BASIN NOT LOCATED OR COMPETELY BURIED
	UNK MANHOLE LOCATED IN THE FIELD BUT NOT PRESENT IN AVAILABLE SEWER MAPS

Title:

PROPOSED INVESTIGATION SAMPLING LOCATIONS

OPERABLE UNIT 5 REMEDIAL INVESTIGATION WORK PLAN
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX ASSOCIATES, INC. Environmental Consulting & Management	Compiled by: L.O.	Date: 11MAY10	PLATE
	Prepared by: J.A.D.	Scale: AS SHOWN	3
	Project Mgr: H.G.	Office: NY	
	File No: AM5011903	Project: 05550Y05	

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LEGEND

	PRIMARY SEWER SYSTEM (COMBINED SEWER SYSTEM)
	SECONDARY SEWER SYSTEM (STORM SEWER SYSTEM)
	APPROXIMATE PROPERTY BOUNDARY
	PROPOSED ESA MODIFICATIONS
	PIPE TO BE ABANDONED OR REMOVED AS PART OF ESA MODIFICATIONS
	PRIVATE PROPERTY NOT OWNED BY AMTRAK
MH-2	LOCATION AND DESIGNATION OF SEWER MANHOLE WITH GRATE COVER
MH-5	LOCATION AND DESIGNATION OF SEWER MANHOLE WITH SOLID COVER
MH-66	LOCATION AND DESIGNATION OF SEWER MANHOLE NOT LOCATED OR COMPLETELY BURIED
CB-18	LOCATION AND DESIGNATION OF CATCH BASIN
CB-14	LOCATION AND DESIGNATION OF CATCH BASIN NOT LOCATED OR COMPETELY BURIED
UNK	MANHOLE LOCATED IN THE FIELD BUT NOT SHOWN IN AVAILABLE SEWER MAPS

Title:

PROPOSED ESA MODIFICATIONS

OPERABLE UNIT 5 REMEDIAL INVESTIGATION WORK PLAN
SUNNYSIDE YARD, QUEENS, NEW YORK

Prepared For:

AMTRAK

ROUX ASSOCIATES, INC. Environmental Consulting & Management	Compiled by: L.O.	Date: 11MAY10	PLATE
	Prepared by: J.A.D.	Scale: AS SHOWN	4
	Project Mgr: H.G.	Office: NY	
	File No: AM5011904	Project: 05550Y05	

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