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THE RESULTS OF THE SOIL SAMPLING ALONG THE DUCTLINE TRENCH ROUTE TO SUPPORT THE STATIC FREQUENCY CONVERTER STATION CONSTRUCTION PROJECT

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Queens, New York

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1.0 INTRODUCTION

The ductline route soil sampling to support the Static Frequency Converter Station (SFC) construction project at Sunnyside Yard, Queens, New York (Yard) was performed by Roux Associates, Inc. (Roux Associates) on September 14, 1994. The location of the Yard is shown in Figure 1. The work was completed in accordance with the January 6, 1994 (revised February 22, 1994) "Work Plan for Soil Sampling to Support the Static Frequency Converter Station Construction Project, Sunnyside Yard, Queens, New York" (Roux Associates, 1994).

The Work Plan was prepared in accordance with AMTRAK's September 1, 1993 "Static Frequency Converter Station AMTRAK/NJT Project at Sunnyside Yard Environmental Investigations - Statement of Work" (Amtrak, 1993). As requested in the Statement of Work, the Work Plan was designed to determine the nature and extent of hazardous materials within the project limit lines of the SFC and ductline route. This report is focused on the soil sampling for the ductline portion of the construction project, which was delayed pending determination of the final route, and is a supplement to the Roux Associates October 6, 1994 report titled "The Results of the Soil Sampling to Support the Static Frequency Converter Station Construction Project".

1.1 Project Description

The ductline construction will extend southwest from the SFC to the elevated Long Island Rail Road (LIRR) right-of-way where it will be located parallel to the main line tracks on the north side of the LIRR right-of-way. The ductline will continue westerly until it passes under the LIRR main line tracks in the vicinity of the Honeywell Street Bridge, and then it will continue westerly to Substation 44.

1.2 Objectives

The objective of the investigation was to characterize the environmental (i.e., soil quality) conditions of the soil to be excavated/removed within the limits of the ductline construction project.

2.0 PREVIOUS INVESTIGATIONS

Previous work was performed in this area by Roux Associates (1990 and 1993). These investigations are discussed below.

Roux Associates investigated the ductline area during the Phase I and Phase II remedial investigations. As reported in the January 22, 1992 report titled "Phase I Remedial Investigation, Sunnyside Yard, Queens, New York" (Roux Associates, 1992), two soil borings (S-22 and S-84) were completed and sampled in this area. One soil sample was collected from each boring and both were analyzed for total petroleum hydrocarbons (TPH) and polychlorinated biphenyls (PCBs). In addition one sample, S-22 (0 to 2 feet), was analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, and metals. The analytical results for the samples analyzed from the ductline area are summarized below.

Phase I analytical results indicated TPH ranged in concentration from 1,145 milligrams per kilogram (or parts per million [ppm]) in S-22 (0 to 2 feet) to 15,370 ppm in S-84 (0 to 2 feet). PCBs ranged in concentration from not detected in S-84 to 0.435 ppm in S-22. The additional analyses performed on S-22 indicated the following:

- detections of VOCs consisting of toluene, carbon disulfide and methylene chloride;
- no detections of SVOCs (at elevated detection limits);
- no detections of pesticides; and
- arsenic and copper were the only metals detected above background (see Section 4.0).

Of the VOCs detected, methylene chloride is a common laboratory contaminant.

During the Phase II investigation, a confirmatory sample was collected from Soil Boring S-22 and analyzed for PCBs. The results of the confirmatory analysis indicated PCBs were detected at a concentration of 23 ppb (parts per billion) or 0.023 ppm.

3.0 METHODS OF INVESTIGATION

The ductline soil boring and sampling program, with the exception of Soil Boring FC-16 which was completed during the initial investigation period on April 4, 1994, was completed on September 14, 1994. The soil borings were completed by Land, Air, Water Environmental Services, Inc. of Center Moriches, New York under the supervision of Roux Associates and the soil sampling was performed by Roux Associates. All field work was completed in accordance with the scope of work outlined in the Work Plan. The analytical program was completed by IEA, Inc., Monroe, Connecticut.

The soil boring and sampling program, as initially proposed in the Work Plan, included 16 soil borings (FC-1 through FC-16) along the ductline route. Soil borings (FC-12 through FC-16) were completed before the ductline route was revised and sampling was temporarily postponed. Soil Boring FC-16 was the only initial boring that remained in the revised ductline route and the results of the soil sample from that boring are included in this report. The results of the initial soil sampling from Soil Borings FC-12 through FC-15 will not be discussed as they are located outside the final ductline route area and, therefore, are not representative of the soil to be excavated.

All downhole equipment was decontaminated between each soil boring location and each soil sample collected in accordance with the procedures described in the Work Plan. All soil sampling equipment (i.e., split-spoon samplers, spatulas, etc.) was cleaned prior to each use using a solution of non-phosphate laboratory grade detergent and potable water and a scrub brush. The sampling equipment was then rinsed with potable water followed by distilled water. A methanol rinse followed by a second distilled water rinse completed the decontamination procedure. Split-spoon samplers were then reassembled on clean plastic sheeting and sealed in plastic bags prior to sample collection.

Each soil boring was completed to a depth of 5 feet below land surface (bls) manually (i.e., post-hole digger and hand-driven split-spoon sampler).

Each soil sample was visually inspected and a log describing the subsurface conditions at each soil boring location was developed. Soil samples were also inspected in the field for any evidence of contamination (i.e., staining, presence of separate-phase petroleum and odors) and screened using a photoionization detector (PID). Soil boring logs are provided in Appendix A.

In accordance with the Work Plan, based upon the consistency of subsurface conditions encountered within and between the soil borings, and the lack of evidence of contamination, only the 0 to 2 feet bls interval samples from each soil boring were submitted for laboratory analysis. The analyses included the following:

- total petroleum hydrocarbons using a hydrocarbon scan (Modified United States Environmental Protection Agency [USEPA] Method 8015);
- polychlorinated biphenyls (USEPA Method 8080);
- pesticides (chlorinated herbicides and dioxins/furans) (USEPA Method 8150 and 8280, respectively);
- Target Compound List (TCL) volatile organic compounds (USEPA Method 8240);
- TCL semivolatile organic compounds (USEPA Method 8270);
- Target Analyte List (TAL) metals (USEPA Method Series 6000 and 7000); and
- Resource Conservation and Recovery Act (RCRA) characteristics (i.e, corrosivity, reactivity and ignitability) for disposal purposes.

A total of 16 soil samples were submitted to the laboratory for PCB and TPH analysis. In accordance with the Work Plan, to further characterize soil-quality conditions for disposal purposes, four of these samples (25 percent of the total) were analyzed for the additional parameters listed above. The soil-quality sampling and analytical program is summarized in Table 1.

Consistent with the Quality Assurance Project Plan (QAPP), a field blank for all analytes was collected during sampling and a trip blank for VOCs accompanied the VOC sample shipment. All samples submitted for laboratory analysis were placed in ice-filled coolers, protected from light and delivered to the laboratory via overnight carrier under chain of custody protocol. Chain of custody documentation is provided in Appendix B.

4.0 DISCUSSION OF RESULTS

The results of the laboratory analyses of soil samples are summarized in Tables 2 through 7 and are discussed below. Although the recommended soil cleanup objectives (RSCOs) published in the January 24, 1994 NYSDEC Technical and Administrative Guidance Memo (TAGM) (NYSDEC, 1994) are considered to be overly protective for an active industrial facility located in an urban area, they will be used as basis for comparison of VOC, SVOC (excluding polycyclic aromatic hydrocarbons [PAHs]), and PCB detections in this report to determine if excavated soil can be used as backfill. The RSCOs are being considered because a comprehensive health-based risk assessment for the Yard is not yet completed, and the construction schedule cannot be delayed until completion of the risk assessment. In addition to its urban setting, most of the Yard is underlain by fill material.

Because very limited sampling took place along the LIRR right-of-way during the remedial investigation, there was insufficient data to develop site-specific background concentrations for metals in this area. Metals and PAHs occur naturally in soil and PAHs are produced from incomplete combustion processes, and are, therefore, present throughout the environment (ATSDR, 1993). PAHs commonly occur in fill material containing cinders and asphaltic material, including treated railroad ties. In the absence of site-specific background levels for metals and PAHs, the following sources were used for comparison to determine if excavated material can be used as backfill.

- Agency for Toxic Substances and Disease Registry (ATSDR), Toxicological Profile for PAHs Update, October 1993.
- United States Geological Survey (USGS) database from USGS Professional Paper 1270, Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States, 1984.

Concentrations of PAHs detected at the Yard were compared to the urban soil concentrations in Table 5-2 of the October 1993 ATSDR document titled "Background Soil Concentrations of PAHs." ATSDR did not present a background level for dibenz(a,h)anthracene. Therefore, the RSCO method detection limit (MDL), which is 20 ppb, was used for comparison. Concentrations of metals detected at the Yard were compared to the results of 22 samples collected as part of the USGS study, which was designed to determine background metals concentrations across the United States. The

sample results considered in this report were collected within a "box" that is ±2 degrees from the Yard (i.e., samples with latitudes between 38.75 to 42.75 and longitudes between 71.93 to 75.93). A 1 degree search was considered, however, it resulted in only five samples for comparison.

The results of the TPH analyses were compared to Yard background TPH levels since no New York State or Federal action levels are available. As discussed in the January 22, 1992 report titled "Phase I Remedial Investigation, Sunnyside Yard, Queens, New York" (Roux Associates, 1992), TPH concentrations in excess of 500 ppm at the Yard were considered indicative of a potential hydrocarbon impact and concentrations less than 500 ppm were considered to be background at an industrial area underlain by fill material.

Since there is no RSCO for polychlorinated dibenzodioxins (PCDDs), the concentrations detected along the ductline route were compared to the industrial risk-based concentration (RBC) tables compiled by the USEPA Region III office (USEPA, 1994a). The RBC table reports concentrations in soil that would result in a 1E-6 incremental lifetime cancer risk under an upperbound conservative industrial exposure scenario.

4.1 Ductline Construction Area

Sixteen soil samples were collected along the ductline route from the 0 to 2 feet bls sample interval. All 16 soil samples were analyzed for PCBs and TPH. Additionally, four samples (i.e., FC-4, FC-5, FC-8 and FC-11) were analyzed for VOCs, SVOCs, pesticides, metals and RCRA characteristics. No PID readings were detected above background levels. Detections of concentrations above background, the RSCOs, or the RBC are shown in Plate 1.

TPH (reported as No. 2 fuel oil) was detected in one sample, FC-16, at a concentration of 56 ppm, which is below Yard background levels (Table 2). PCBs (Aroclors 1254 and 1260) were detected in 15 of the 16 samples analyzed. PCB concentrations ranged from 25 ppb (0.025 ppm) in sample FC-3 to 6,400 ppb (6.4 ppm) in sample FC-9 (Table 3). With the exception of FC-9, all samples are below the RSCO (1 ppm) for surficial soil.

No VOCs or SVOCs (excluding PAHs) were detected above the RSCOs (Tables 4 and 5, respectively). The PAHs chrysene (in sample FC-5) and benzo(a)pyrene (in samples FC-4, FC-5, and FC-11) were detected at concentrations above background levels. Dibenzo(a,h)anthracene was detected above the MDL in samples FC-4, FC-5, and FC-11.

Copper and lead were detected in samples FC-4, FC-5, FC-8 and FC-11; zinc in samples FC-4 and FC-5; and arsenic in samples FC-8 and FC-11 at concentrations above background levels (Table 6).

No chlorinated herbicide or polychlorinated dibenzofuran (PCDF) compounds were detected. The PCDD compound heptachlorinated dibenzo-p-dioxin (H_pCDD) was detected in samples FC-4 and FC-11 and octachlorinated dibenzo-p-dioxin (OCDD) was detected in samples FC-4, FC-5, FC-8, and FC-11 (Table 7).

PCDDs have been found throughout the world in soil, air, sediment, and agricultural food products. The highest levels are found in soils, sediments and biota; very low levels are found in water and air. This is not unexpected considering the numerous sources that emit these compounds into the atmosphere in industrialized areas, and the overall resistance of these compounds to biotic and abiotic transformation (USEPA, 1994b).

The environmental fate and distribution of PCDDs is not yet understood, however, they are primarily associated with particulate and organic matter because of their high lipophilicity and low water solubility. They exhibit little potential for significant leaching or volatilization once sorbed to particulate matter (USEPA, 1994b).

The most widely studied of the dioxin compounds is 2,3,7,8-tetrachlorinated dibenzo-p-dioxin (TCDD). This compound, commonly referred to as dioxin, is frequently used as the reference compound for all chemicals represented by this class of compounds. By international convention, PCDD compounds with chlorines substituted in the 2, 3, 7, and 8 positions have been assigned toxicity equivalence factors (TEFs) that are estimates of the toxicity of the dioxin-like compounds relative to the toxicity of TCDD (USEPA, 1989,

1994b). The TEFs for H_pCDD and OCDD are 0.01 and 0.001, respectively. To derive TCDD equivalents, the reported concentration of a 2,3,7,8-PCDD is multiplied by the TEF for that congener.

The industrial RBC for TCDD is 0.018 μg/kg (USEPA, 1994a). As shown in Table 7, the TCDD equivalents for all samples are well below this concentration. A significant additional margin of safety can be assumed because in the generic industrial exposure scenario, frequent exposure to soils is anticipated. The ductline route (sampling locations during this investigation) will not be visited on a routine basis, therefore, the frequency of exposure, one factor that impacts potential risk associated with carcinogenic chemicals, is significantly reduced.

4.2 Summary

A review of the analytical results indicates the following:

- no TPHs were detected above the Yard background level;
- no VOCs or SVOCs (excluding PAHs) were detected above the RSCOs;
- no chlorinated herbicides or PCDF compounds were detected;
- no PCDDs were detected above the industrial RBC;
- PCBs were detected above the RSCO in only one borehole;
- metals were detected above background levels in four boreholes; and
- PAHs were detected above background levels in three boreholes.

As presented in the Work Plan, a remediation plan will be developed, based upon the analytical results, to address the handling, storage, and final disposition of soil excavated from the ductline route for the SFC station construction.

Respectfully Submitted,

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TABLES

Table 1. Summary of Soil-Quality Sampling, Ductline Route, Sunnyside Yard, Queens, New York

Soil Boring Designation	Sample Depth Interval (feet below land surface)	Analytical Parameters
FC-1	0-2	PCB/TPH
FC-2	0-2	PCB/TPH
FC-3	0-2	PCB/TPH
FC-4	0-2	PCB/TPH/VOC/SVOC/Metals/Pesticides
FC-5	0-2	PCB/TPH/VOC/SVOC/Metals/Pesticides
FC-6	0-2	PCB/TPH
FC-7	0-2	PCB/TPH
FC-8	0-2	PCB/TPH/VOC/SVOC/Metals/Pesticides
FC-9	0-2	PCB/TPH
FC-10	0-2	PCB/TPH
FC-11	0-2	PCB/TPH/VOC/SVOC/Metals/Pesticides
FC-12	0-2	PCB/TPH
FC-13	0-2	PCB/TPH
FC-14	0-2	PCB/TPH
FC-15	0-2	PCB/TPH
FC-16	0-2	PCB/TPH

WHERE ARE THE RESULTS

PCB - Polychlorinated Biphenyl
TPH - Total Petroleum Hydrocarbon
VOC - Volatile Organic Compound
SVOC - Semivolatile Organic Compound
Pesticides - Chlorinated Herbicides and Dioxins/Furans

Table 2. Summary of Total Petroleum Hydrocarbon Compound Concentrations Detected in Soil Samples, Sunnyside Yard, Queens, New York.

Sample Designation	Sample Depth (ft bls)	Sample Date	Gasoline	Kerosene	Diesel	#2 Fuel Oil	#4 Fuel Oil	#6 Fuel Oil	Varsol
					(Concentrations in mg/kg)				
FC-1	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-2	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-3	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-4	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-5	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-6	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-7	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-8	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-9	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-10	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-11	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-12	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-13	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-14	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-15	0 - 2	9/14/94	U	U	U	U	U	U	U
FC-16	0 - 2	4/4/94	U	U	NA	56	NA	NA	U

ft bls - Feet below land surface
mg/kg - Milligrams per kilogram
U - Indicates analyte result less than quantitation limit.
NA - Not analyzed

Table 3. Summary of Polychlorinated Biphenyl Compound Concentrations Detected in Soil Samples, Sunnyside Yard, Queens, New York.

Sample Designation:	FC-1	FC-2	FC-3	FC-4	FC-5	FC-6
Sample Depth (ft bls):	0-2	0-2	0-2	0-2	0-2	0-2
Sample Date:	9/14/94	9/14/94	9/14/94	9/14/94	9/14/94	9/14/94
Polychlorinated Biphenyl Compounds (Concentrations in ug/kg)						
Aroclor-1016	33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1221	67 U	67 U	67 U	67 U	67 U	67 U
Aroclor-1232	33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1242	33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1248	33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1254	81	44	11 J	52	110	29 J
Aroclor-1260	120	47	25 J	63	140	34 J

Sample Designation:	FC-7	FC-8	FC-9	FC-10	FC-11	FC-12
Sample Depth (ft bls):	0-2	0-2	0-2	0-2	0-2	0-2
Sample Date:	9/14/94	9/14/94	9/14/94	9/14/94	9/14/94	9/14/94
Polychlorinated Biphenyl Compounds (Concentrations in ug/kg)						
Aroclor-1016	33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1221	67 U	67 U	67 U	67 U	67 U	67 U
Aroclor-1232	33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1242	33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1248	33 U	33 U	33 U	33 U	33 U	33 U
Aroclor-1254	68	180	2,800	400	83	10 J
Aroclor-1260	89	270	3,600	500	110	15 J

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Sample Designation:	FC-13	FC-14	FC-15	FC-16
Sample Depth (ft bls):	0-2	0-2	0-2	0-2
Sample Date:	9/14/94	9/14/94	9/14/94	4/4/94
Polychlorinated Biphenyl Compounds (Concentrations in ug/kg)				
Aroclor-1016	33 U	33 U	33 U	33 U
Aroclor-1221	67 U	67 U	67 U	67 U
Aroclor-1232	33 U	33 U	33 U	33 U
Aroclor-1242	33 U	33 U	33 U	33 U
Aroclor-1248	33 U	33 U	33 U	33 U
Aroclor-1254	33 U	260	52	170
Aroclor-1260	33 U	120	51	260

ft bls - Feet below land surface
ug/kg - Micrograms per kilogram.
U - Indicates that the compound was analyzed for but not detected.
J - Estimated value

Table 4. Summary of Volatile Organic Compound Concentrations Detected in Soil Samples, Sunnyside Yard, Queens, New York.

Sample Designation:	FC-4	FC-5	FC-8	FC-11
Sample Depth (ft bls):	0-2	0-2	0-2	0-2
Sample Date:	9/14/94	9/14/94	9/14/94	9/14/94
Volatile Organic Compounds (Concentrations in ug/kg)				
Chloromethane	10 U	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U
Vinyl Chloride	10 U	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U	10 U
Methylene Chloride	5 U	5 U	5 U	3 J
Acetone	32 UV	14 UV	15 UV	10 U
Carbon Disulfide	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)	5 U	5 U	5 U	5 U
Chloroform	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5 U	5 U	5 U	5 U
2-Butanone	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5 U	5 U	5 U	5 U
Carbon Tetrachloride	5 U	5 U	5 U	5 U
Vinyl Acetate	10 U	10 U	10 U	10 U
Bromodichloromethane	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	5 U	5 U	5 U	5 U
Trichloroethene	5 U	5 U	3 J	5 U
Dibromochloromethane	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5 U	5 U	5 U	5 U
Benzene	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	5 U	5 U	5 U	5 U
Bromoform	5 U	5 U	5 U	5 U
4-Methyl-2-Pentanone	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U
Tetrachloroethene	5 U	5 U	5 J	5 U
1,1,2,2-Tetrachloroethane	5 U	5 U	5 U	5 U
Toluene	3 J	2 J	3 J	5 U
Chlorobenzene	5 U	5 U	5 U	5 U
Ethylbenzene	5 U	5 U	5 U	5 U
Styrene	5 U	5 U	5 U	5 U
Xylene (total)	5 U	5 U	5 U	5 U

ft bls - Feet below land surface
ug/kg - Micrograms per kilogram.
U - Indicates that the compound was analyzed for but not detected.
J - Estimated value
V - Qualifier added and/or value altered during validation.

Table 5. Summary of Semivolatile Organic Compound Concentrations Detected in Soil Samples, Sunnyside Yard, Queens, New York.

Sample Designation:		FC-4	FC-5	FC-8	FC-11
Sample Depth (ft bls):		0-2	0-2	0-2	0-2
Sample Date:		9/14/94	9/14/94	9/14/94	9/14/94
Semivolatile Organic Compounds (Concentrations in ug/kg)	PAH Background Level				
Phenol	--	330 U	330 U	330 U	330 U
bis(2-Chloroethyl)ether	--	330 U	330 U	330 U	330 U
2-Chlorophenol	--	330 U	330 U	330 U	330 U
1,3-Dichlorobenzene	--	330 U	330 U	330 U	330 U
1,4-Dichlorobenzene	--	330 U	330 U	330 U	330 U
Benzyl alcohol	--	330 U	330 U	330 U	330 U
1,2-Dichlorobenzene	--	330 U	330 U	330 U	330 U
2-Methylphenol	--	330 U	330 U	330 U	330 U
bis(2-Chloroisopropyl)ether	--	330 U	330 U	330 U	330 U
4-Methylphenol	--	330 U	330 U	330 U	330 U
N-Nitroso-di-n-propylamine	--	330 U	330 U	330 U	330 U
Hexachloroethane	--	330 U	330 U	330 U	330 U
Nitrobenzene	--	330 U	330 U	330 U	330 U
Isophorone	--	330 U	330 U	330 U	330 U
2-Nitrophenol	--	330 U	330 U	330 U	330 U
2,4-Dimethylphenol	--	330 U	330 U	330 U	330 U
Benzoic acid	--	1600 U	110 J	290 J	84 J
bis(2-Chloroethoxy)methane	--	330 U	330 U	330 U	330 U
2,4-Dichlorophenol	--	330 U	330 U	330 U	330 U
1,2,4-Trichlorobenzene	--	330 U	330 U	330 U	330 U
Naphthalene	--	10 J	26 J	49 J	26 J
4-Chloroaniline	--	330 U	330 U	330 U	330 U
Hexachlorobutadiene	--	330 U	330 U	330 U	330 U
4-Chloro-3-Methylphenol	--	330 U	330 U	330 U	330 U
2-Methylnaphthalene	--	10 J	27 J	71 J	26 J
Hexachlorocyclopentadiene	--	330 U	330 U	330 U	330 U
2,4,6-Trichlorophenol	--	330 U	330 U	330 U	330 U
2,4,5-Trichlorophenol	--	1600 U	1600 U	1600 U	1600 U
2-Chloronaphthalene	--	330 U	330 U	330 U	330 U
2-Nitroaniline	--	1600 U	1600 U	1600 U	1600 U
Dimethylphthalate	--	330 U	330 U	330 U	330 U
Acenaphthylene	--	85 J	130 J	55 J	170 J
2,6-Dinitrotoluene	--	330 U	330 U	330 U	330 U
3-Nitroaniline	--	1600 U	1600 U	1600 U	1600 U
Acenaphthene	--	14 J	79 J	330 U	14 J
2,4-Dinitrophenol	--	1600 U	1600 U	1600 U	1600 U
4-Nitrophenol	--	1600 U	1600 U	1600 U	1600 U
Dibenzofuran	--	11 J	37 J	32 J	16 J
2,4-Dinitrotoluene	--	330 U	330 U	330 U	330 U
Diethylphthalate	--	9 J	330 U	10 J	330 U
4-Chlorophenyl-phenylether	--	330 U	330 U	330 U	330 U
Fluorene	--	18 J	76 J	11 J	20 J
4-Nitroaniline	--	1600 U	1600 U	1600 U	1600 U
4,6-Dinitro-2-methylphenol	--	1600 U	1600 U	1600 U	1600 U
N-Nitrosodiphenylamine (1)	--	330 U	330 U	330 U	330 U
4-Bromophenyl-phenylether	--	330 U	330 U	330 U	330 U
Hexachlorobenzene	--	330 U	330 U	330 U	330 U
Pentachlorophenol	--	1600 U	1600 U	1600 U	1600 U
Phenanthrene	--	300 J	620	200 J	180 J
Anthracene	--	84 J	210 J	86 J	150 J
Di-n-butylphthalate	--	37 JB	51 JB	36 JB	120 JB
Fluoranthene	166,000	530	1000	250 J	460
Pyrene	147,000	560	980	240 J	500
Butylbenzylphthalate	--	31 J	21 J	21 J	18 J
3,3'-Dichlorobenzidine	--	660 U	660 U	660 U	660 U
Benzo(a)anthracene	59,000	310 J	520	130 J	380
Chrysene	640	440	690	330 J	550
Bis(2-Ethylhexyl)phthalate	--	180 JB	170 JB	200 JB	170 JB
Di-n-octylphthalate	--	13 JB	28 JB	26 JB	48 JB
Benzo(b)fluoranthene	62,000	510	1500	540	1600
Benzo(k)fluoranthene	26,000	480	980	200 J	720
Benzo(a)pyrene	220	330 J	560	100 J	490
Indeno(1,2,3-cd)pyrene	61,000	81 J	180 J	330 U	200 J
Dibenz(a,h)anthracene	--	25 J	33 J	330 U	66 J
Benzo(g,h,i)perylene	47,000	81 J	200 J	330 U	230 J

Table 5. Summary of Semivolatile Organic Compound Concentrations Detected in Soil Samples, Sunnyside Yard, Queens, New York.

ft bls - Feet below land surface
ug/kg - Micrograms per kilogram
U - Indicates that the compound was analyzed for but not detected.
J - Estimated value.
B - Indicates the analyte was found in the blank as well as the sample.
PAH - Polycyclic Aromatic Hydrocarbons

NOTE: PAH background levels taken from Table 5-2 contained in document titled "Background Soil Concentrations of Polycyclic Aromatic Hydrocarbons (PAHs)" in United States Department of Health and Human Services Toxicological Profile for Polycyclic Aromatic Htdrocarbons.

Table 6. Summary of Metal Concentrations Detected in Soil Samples, Sunnyside Yard, Queens, New York.

Sample Designation:		FC-4	FC-5	FC-8	FC-11
Sample Depth (ft bls):		0-2	0-2	0-2	0-2
Sample Date:		9/14/94	9/14/94	9/14/94	9/14/94
Metals (Concentrations in mg/kg	2 Degree Background Level				
Aluminum	100,000	5150	3710	1690	5280
Antimony	--	12.3 U	12.6 U	13.7 U	13.3 U
Arsenic	16	3.7	13.4	45.6	20.7
Barium	--	54.1	85.5	77.9	58.4
Beryllium	--	1.0 U	1.0 U	1.9	1.6
Cadmium	no data	1.0 U	1.0 U	1.1 U	1.1 U
Calcium	14,300	1770	706	626	855
Chromium	100	12.5	16.7	11.9	19.8
Cobalt	--	10.2 U	10.5 U	11.4 U	11.1 U
Copper	70	123	424	138	393
Iron	70,000	11600	19900	33700	29400
Lead	50	107	345	90.6	344
Magnesium	--	2060	1040	228 U	1320
Manganese	2,000	265	287	36.5	285
Mercury	0.39	0.093 U	0.25	0.11 U	0.27
Nickel	30	12.0	17.0	13.7	23.6
Potassium	27,700	624	370	400	382
Selenium	--	1.0 U	1.0 U	1.9	1.2
Silver	--	2.0 U	2.1 U	2.3 U	2.2 U
Sodium	--	205 U	209 U	228 U	222 U
Thallium	--	2.0 U	2.1 U	2.3 U	2.2 U
Vanadium	--	17.5	48.2	37.6	33.6
Zinc	130	137	142	26.7	107

ft bls - Feet below land surface
mg/kg - Milligrams per kilogram
U - Indicates analyte result less than instrument detection limit (IDL).

NOTE: 2 degree background levels taken from database contained in the U.S. Geological Survey Professional Paper 1270 titled "Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States".

Table 7. Summary of Pesticide Compound Concentrations Detected in Soil Samples, Sunnyside Yard, Queens, New York.

Sample Designation:	FC-4	FC-5	FC-8	FC-11
Sample Depth (ft bls):	0-2	0-2	0-2	0-2
Sample Date:	9/16/94	9/16/94	9/16/94	9/16/94
Chlorinated Herbicides (Concentrations in ug/kg)				
2,4-D	20 U	20 U	20 U	20 U
Dalapon	40 U	40 U	40 U	40 U
2,4-DB	20 U	20 U	20 U	20 U
Dicamba	5.0 U	5.0 U	5.0 U	5.0 U
Dichloroprop	5.0 U	5.0 U	5.0 U	5.0 U
Dinoseb	5.0 U	5.0 U	5.0 U	5.0 U
MCPA	500 U	500 U	500 U	500 U
MCPP	5,000 U	5,000 U	5,000 U	5,000 U
Silvex	20 U	20 U	20 U	20 U
2,4,5-T	5.0 U	5.0 U	5.0 U	5.0 U

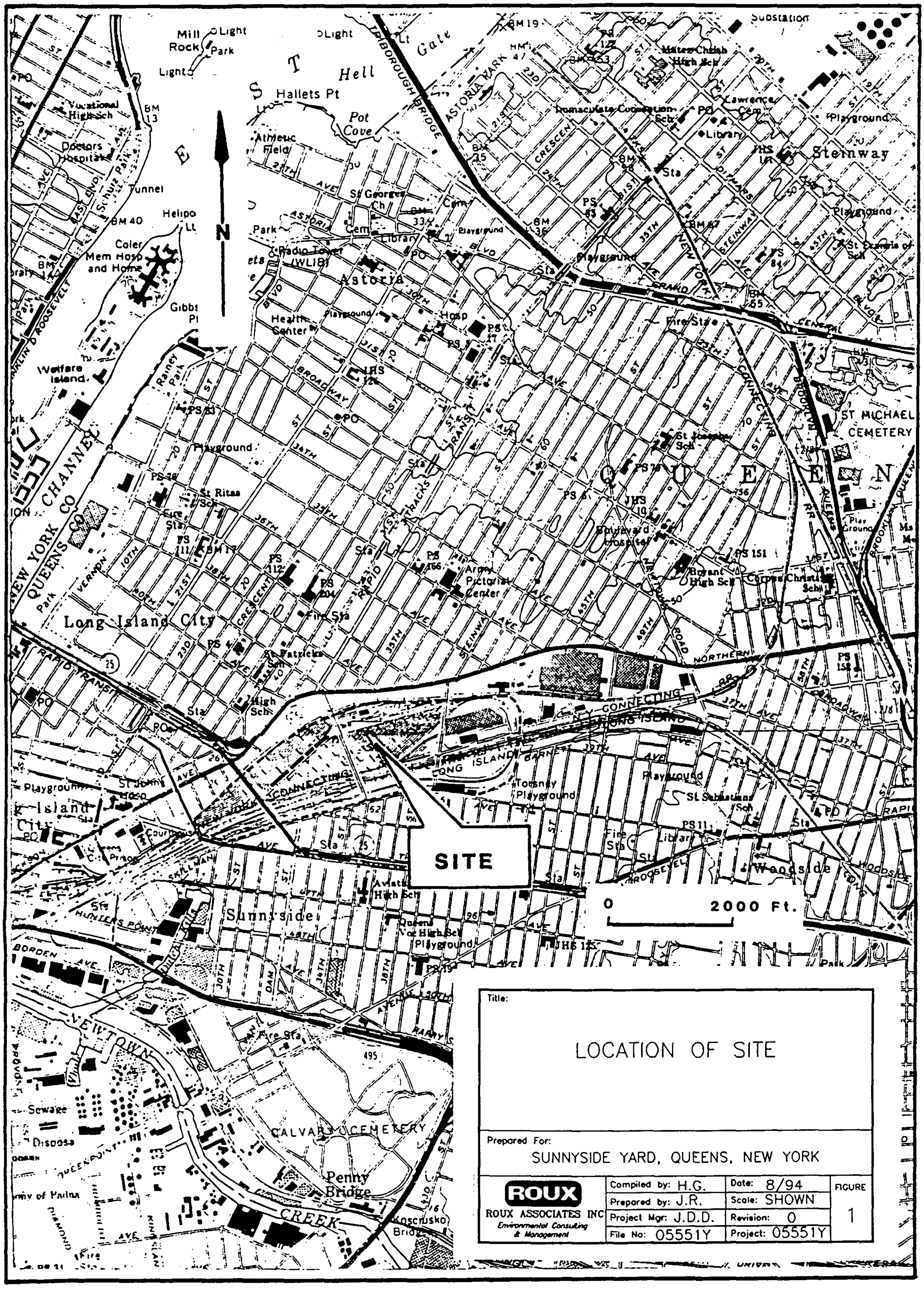
Sample Designation:	FC-4		FC-5	
Sample Depth (ft bls):	0-2	TCDD	0-2	TCDD
Sample Date:	9/16/94	Equivalent	9/16/94	Equivalent
Dioxans/Furans (Concentrations in ug/kg)				
2,3,7,8-TCDD	0.0704 U	--	0.0713 U	--
1,2,3,7,8-PeCDD	0.122 U	--	0.124 U	--
1,2,3,4,7,8-HxCDD	0.2 U	--	0.203 U	--
1,2,3,6,7,8-HxCDD	0.101 U	--	0.102 U	--
1,2,3,7,8,9-HxCDD	0.17 U	--	0.173 U	--
1,2,3,4,6,7,8-HpCDD	0.217	0.0022	0.207 U	--
1,2,3,4,6,7,8,9-OCDD	2.47	0.0025	0.62	0.0006
2,3,7,8-TCDF	0.0612 U	--	0.062 U	--
1,2,3,7,8-PeCDF	0.0958 U	--	0.0972 U	--
2,3,4,7,8-PeCDF	0.0999 U	--	0.101 U	--
1,2,3,4,7,8-HxCDF	0.112 U	--	0.114 U	--
1,2,3,6,7,8-HxCDF	0.0877 U	--	0.0889 U	--
2,3,4,6,7,8-HxCDF	0.162 U	--	0.164 U	--
1,2,3,7,8,9-HxCDF	0.209 U	--	0.212 U	--
1,2,3,4,6,7,8-HpCDF	0.167 U	--	0.17 U	--
1,2,3,4,6,7,8,9-HpCDF	0.179 U	--	0.182 U	--
1,2,3,4,6,7,8,9-OCDF	0.334 U	--	0.339 U	--

Sample Designation:	FC-8		FC-11	
Sample Depth (ft bls):	0-2	TCDD	0-2	TCDD
Sample Date:	9/16/94	Equivalent	9/16/94	Equivalent
Dioxans/Furans (Concentrations in ug/kg)				
2,3,7,8-TCDD	0.0776 U	--	0.0753 U	--
1,2,3,7,8-PeCDD	0.135 U	--	0.131 U	--
1,2,3,4,7,8-HxCDD	0.22 U	--	0.214 U	--
1,2,3,6,7,8-HxCDD	0.111 U	--	0.108 U	--
1,2,3,7,8,9-HxCDD	0.188 U	--	0.182 U	--
1,2,3,4,6,7,8-HpCDD	0.225 U	--	0.696	0.0070
1,2,3,4,6,7,8,9-OCDD	0.701	0.0007	2.29	0.0023
2,3,7,8-TCDF	0.0674 U	--	0.0655 U	--
1,2,3,7,8-PeCDF	0.106 U	--	0.103 U	--
2,3,4,7,8-PeCDF	0.11 U	--	0.107 U	--
1,2,3,4,7,8-HxCDF	0.124 U	--	0.12 U	--
1,2,3,6,7,8-HxCDF	0.0967 U	--	0.0939 U	--
2,3,4,6,7,8-HxCDF	0.179 U	--	0.174 U	--
1,2,3,7,8,9-HxCDF	0.23 U	--	0.224 U	--
1,2,3,4,6,7,8-HpCDF	0.184 U	--	0.179 U	--
1,2,3,4,6,7,8,9-HpCDF	0.198 U	--	0.192 U	--
1,2,3,4,6,7,8,9-OCDF	0.369 U	--	0.358 U	--

ft bls - Feet below land surface
ug/kg - Micrograms per kilogram.
U - Indicates that the compound was analyzed for but not detected.
J - Estimated value

NOTE: Toxicity equivalence factors used to derive TCDD equivalents. USEPA 1994b.

FIGURES



Title:

LOCATION OF SITE

Prepared For:

SUNNYSIDE YARD, QUEENS, NEW YORK

ROUX ASSOCIATES INC Environmental Consulting & Management	Compiled by: H.G.	Date: 8/94	FIGURE
	Prepared by: J.R.	Scale: SHOWN	1
	Project Mgr: J.D.D.	Revision: 0	
	File No: 05551Y	Project: 05551Y	

APPENDICES

APPENDIX A

APPENDIX A

Soil Boring Logs

ENVIRONMENTAL CONSULTING & MANAGEMENT

ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-1
Location
M.P. Elevation
Drilling Started 15:20 Ended 15:30
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Dark brown fine SAND and silt, trace cobbles; dry.
							Orange-brown medium SAND, trace cobbles; moist.
						2	Color change to pinkish red-brown
						4	Bottom of Boring 5'bls.
							Sample collected 0-2' composite for PCB/TPH.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT

ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-2
Location
M.P. Elevation
Drilling Started 15:05 Ended 15:15
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Dark brown fine SAND and silt, trace cobbles, Dry.
							Red-brown medium SAND, trace cobbles; moist.
						2	
						4	
							Bottom of Boring 5'bls.
							Sample collected 0-2' composite for PCB/TPH.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-3
Location
M.P. Elevation
Drilling Started 14:48 Ended 15:00
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA
Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER
Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Light orange-brown fine SAND and silt, trace cobbles.
						2	Red-brown medium SAND, trace cobbles.
						4	Bottom of Boring 5'bls. Sample collected 0-2' composite for PCB/TPH.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-4
Location
M.P. Elevation
Drilling Started 14:35 Ended 14:45
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Light orange-brown fine SAND and silt, trace cobbles; dry.
						2	Pinkish red-brown medium to coarse SAND, trace cobbles; dry.
						4	Bottom of boring 5'bls. Sample collected 0-2' composite for PCB/TPH, Herbicides, Dioxins, SVOC, VOC, Metals RCRA.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT

ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-5
Location
M.P. Elevation
Drilling Started 13:35 Ended 13:45
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Dark grey-brown fine to medium SAND and silt, trace cobbles.
						2	Pinkish red-brown medium to coarse SAND, trace cobbles.
						4	Bottom of Boring 5'bls. Samples collected 0-2' composite for PCB, TPH, Herbicides, Dioxins, RCRA, Metals, SVOC, VOC.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-6
Location
M.P. Elevation
Drilling Started 13:10 Ended 13:30
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Brown fine SAND and silt, trace cobbles.
						2	Orange-brown fine SAND and silt, trace cobbles.
						4	Bottom of Boring 5'bls. Sample collected 0-2' composite for PCB/TPH.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-7
Location
M.P. Elevation
Drilling Started 12:45 Ended 13:00
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Black to dark grey fine to medium SAND, trace cobbles, trace silt; dry; cinders.
						2	Brown to orange-brown medium to coarse SAND, trace cobbles interbedded with above.
						4	Bottom of Boring 5'bls. Sample collected 0-2' composite for PCB.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-8
Location
M.P. Elevation
Drilling Started 12:20 Ended 12:40
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Black to dark grey fine to medium SAND and silt, trace cobbles; dry; cinders.
						2	
						4	Black to dark grey fine to medium SAND and silt, trace cobbles; dry; cinders. Interbedded with orange-brown Fine to medium SAND and silt, trace cobbles. Bottom of Boring at 5'bls. Samples collected 0-2' composite for PCB, TPH, Herbicides, Dioxins, SVOC, VOC, Metal, Dioxins, RCRA.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-9
Location
M.P. Elevation
Drilling Started 11:55 Ended 12:10
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA
Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER
Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Grey to black fine SAND and silt, trace cobbles; dry; cinders.
						2	Orange-brown fine SAND and silt, trace cobbles.
						4	Bottom of Boring at 5'bls. Sample collected 0-2' composite for PCB/TPH.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT

ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-10
Location
M.P. Elevation
Drilling Started 11:00 Ended 11:40
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Dark brown to black silt and fine SAND, some cobbles; dry; cinders.
						2	Pinkish-red-brown medium to coarse SAND, some cobbles; dry.
						4	Grades to pinkish red-brown fine to medium SAND, trace cobbles; dry.
						6	Bottom of Boring at 5'bls. Sample collected 0-2' composite for PCB/TPH.
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-11
Location
M.P. Elevation
Drilling Started 10:27 Ended 10:50
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Dark brown to black and fine to medium SAND, trace cobbles; damp; cinders.
						2	Orange-brown SAND and silt, some medium gravel; damp.
						4	Red-brown fine to medium SAND.
						6	Bottom of Boring at 5'bls. Samples collected 0-2' composite for PCB/TPH; Herbicides, Dioxins, SVOC, VOC, Metals, RCRA.
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-12
Location
M.P. Elevation
Drilling Started 10:00 Ended 10:25
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Brown to orange-brown SAND and silt; damp.
						2	Brown to orange-brown SAND and silt; damp.
						4	Bottom of Boring at 5'bls. Sample collected 0-2' composite for PCB/TPH.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-13
Location
M.P. Elevation
Drilling Started 09:30 Ended 10:00
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Grey grading to light orange brown silt and fine SAND, some medium to coarse gravel, trace cobbles; dry.
						2	Grey grading to light orange brown silt and fine SAND, some medium to coarse gravel, trace cobbles; dry.
						4	Bottom of Boring at 5'bls. Sample collected 0-2' composite for PCB/TPH.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-14
Location
M.P. Elevation
Drilling Started 09:00 Ended 09:35
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Brown fine to medium SAND and silt, trace cobbles; dry. Orange brown to brown medium to coarse SAND, trace cobbles; damp.
						2	
						4	Bottom of Boring at 5'bls. Sample collected composite 0-2' for PCB/TPH.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT

ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 09/14/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By A. Farrell
Well/Boring No. FC-15
Location
M.P. Elevation
Drilling Started 08:50 Ended 09:15
Driller Land, Air, Water
Type of Rig Hand Boring

WELL DATA

Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER

Type HAND
Hammer lb.
Fall in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0				GRAB SAMPLE		0	Grey-brown silt and fine SAND; organics; dry sample for PCB/TPH. Grades to light orange brown Pinkish-red-brown medium SAND, trace fine gravel interbedded with orange-brown sand and silt.
						2	
						4	Bottom of Boring at 5'bls. Sample collected 0-2' composite for PCB/TPH.
						6	
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES, INC.

GEOLOGIC LOG

Study No. 05551Y Date 04/04/94
Project AMTRAK SFC Ductline
Client AMTRAK, Sunnyside Yard
Page 1 of 1
Logged By J. Gerlach
Well/Boring No. FC-16
Location
M.P. Elevation
Drilling Started 13:00 Ended 13:20
Driller A.D.T.
Type of Rig

WELL DATA
Hole Diam. (in.)
Final Depth (ft.)
Casing Diam. (in.)
Casing Length (ft.)
Screen Setting (ft.)
Screen Slot & Type
Well Status

G-W READINGS (1)

Date	DTW MP (2)	Elev. W.S

SAMPLER
Type HAND
Hammer 140 lb.
Fall 30 in.

DEVELOPMENT

PID (ppm)	SAMPLE No.	Rec.	Depth	Blows 6	Strata Change & Gen. Desc.	Depth (ft)	SAMPLE DESCRIPTION(3)
0			0 - 0.5'			0	Brown fine Sand and Silt, trace Clay, roots(topsoil); damp.
			0.5 - 1'				
			1 - 5'		Fine SAND		Brown fine SAND with some Silt; damp.
						2	Light orange-brown fine SAND with trace cobbles and Silt; damp; no odor.
						4	Bottom of Boring at 5'.
						6	Collect one sample for PCB/TPH from 0 - 2'.
						8	
						10	
						12	
						14	
						16	
						18	

REMARKS (1) in feet relative to a common datum
(2) from top of PVC casing
(3) logged cuttings

APPENDIX B

APPENDIX B

Chain of Custody Forms

ROUX | **CHAIN OF CUSTODY** | **№ 01336 Y**

ROUX ASSOCIATES INC
Consulting Ground-Water Geologists & Engineers
775 PARK AVENUE, SUITE 255
HUNTINGTON, NEW YORK 11743
(516) 673-7200 FAX. (516) 673-7216

PAGE 1 OF 1

PROJECT NAME: AMTRAK
PROJECT NUMBER: 05557Y
PROJECT LOCATION: SUNNYSIDE YARD, QUEENS, NY
SAMPLER(S): JG

ANALYSES

SAMPLE DESIGNATION/LOCATION	DATE COLLECTED	TIME COLLECTED	SAMPLE MATRIX	USEPA METHOD 8080 PCBs / modified method 2015 TPH	USEPA method 8150&8280 Chlorinated Herbicides	USEPA method 8240 vol. / METHOD 8270 semi-vol. / metals/toxic metals	RCRA Ignitability, reactivity and corrosivity / Dioxin		TOTAL BOTTLES	NOTES
FC-16, 0 to 2 feet	4/4/94	13:15	soil	X					1	
~~FC-15, 0 to 2 feet~~	4/4/94	13:30	SOIL	X	X	X	X		3	
~~FC-14, 0 to 2 feet~~	4/4/94	14:00	SOIL	X	0	0	0 HJ		1	
~~FC-13, 0 to 2 feet~~	4/4/94	14:25	SOIL	X					1	
~~FC-12, 0 to 2 feet~~	4/4/94	15:00	SOIL	X					1	
FC-32 -5-7	"	1403	Soil	X						added - HJ

RELINQUISHED BY: (SAMPLER'S SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N
John B. Gerlach	ROUX	4/5/94	1700	Y					
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: AIRBILL # 1630816692

ANALYTICAL LABORATORY: IEA, Monroe, CT

COMMENTS: PCBs by Method 8080, not ASP.

ROUX

CHAIN OF CUSTODY

Ground-Water Consultants
ROUX ASSOCIATES INC

PROJECT NAME: Amtrak
PROJECT NUMBER: 055514
PROJECT LOCATION: Sunnyside Yard
SAMPLER(S): MJ AF

ANALYSES — PAGE 1 OF 1

SAMPLE DESIGNATION/LOCATION	DATE COLLECTED	TIME COLLECTED	SAMPLE MATRIX	VOC (8260)	SVOC (8270)	Dioxins (8280)	Herbicides (8150)	VOC (8240)	Metals (6000/7000)	TOTAL BOTTLES	PRESERVATION
MB	9/14/94	1620	H2O	X						3	ICE
FB					X					2	
MB						X				2	
FB							X			3	
FB								X		1	HNO3
TB	—	—					X			3	
FC 5	9/14/94	1340	Soil				X			2	
FC-4		1440		X	X	X	X	X		2	
FC-11		1035					X			2	
FC-8		1230					X			2	

RELINQUISHED BY: (SIGNATURE) / FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE) / FOR	DATE	TIME	SEAL INTACT Y OR N
SAMPLER'S	9/15/94	1600	Y				
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: FED EX

ANALYTICAL LABORATORY: TEA, Monroe, Ct.

COMMENTS: NOT ASP

ROUX

CHAIN OF COUSTODY

Ground-Water Consultants
ROUX ASSOCIATES INC

PROJECT NAME: Amtrak
PROJECT NUMBER: 05557Y
PROJECT LOCATION: Sunnyside Yd.
SAMPLER(S): HG, AF

ANALYSES — PAGE 1 OF 2

SAMPLE DESIGNATION/LOCATION	DATE COLLECTED	TIME COLLECTED	SAMPLE MATRIX	PCBs - TPH (8080) (Mod 8015)	Dioxin/furan 8290 Pesticides 8080	SVOC 8270, TAL metals [illegible]	RCRA		TOTAL BOTTLES	PRESERVATION
FC-15	9/14/94	0900	Sol	\					1	
FC-14	↓	0920	↓	X					1	
FC-13	↓	0935	↓	X					1	
FC-12	↓	1005	↓	X					1	
FC-11	↓	1035	↓	X	X	X			5	
FC-10	↓	1115	↓	X					1	
FC-9	↓	1200	↓	X					1	
FC-8	↓	1230	↓	X	X	X			5	
FC-7	↓	1255	↓	X					1	
FC-6	↓	1315	↓	X					1	

RELINQUISHED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N
SAMPLER'S: H. Gregory Rouse		9/15/94	1600	(Y)					

DELIVERY METHOD: FED EX

ANALYTICAL LABORATORY: TEA Monroe, Ct.

COMMENTS: Not ASP

ROUX

CHAIN OF CUSTODY

Ground-Water Consultants
ROUX ASSOCIATES INC

PROJECT NAME Amtrak

PROJECT NUMBER 05557Y

PROJECT LOCATION Sunnyside Yd.

SAMPLER(S) K.G. A.F.

ANALYSES

SAMPLE DESIGNATION/LOCATION	DATE COLLECTED	TIME COLLECTED	SAMPLE MATRIX	PCB (8080) - TPH	Dioxins / Herbicides / SVOC / metals	RCRA			TOTAL BOTTLES	PRESERVATION
FC-5	9/14/94	1340	Soil	X	X	X			5	Ice
~~FC-4~~	~~[illegible]~~	~~1440~~	~~[illegible]~~	~~X~~	~~X~~	~~X~~			~~5~~	~~[illegible]~~
FC-3	↓	1455	↓	X					1	↓
FC-2	↓	1510	↓	X					1	↓
FC-1	↓	1530	↓	X					1	↓

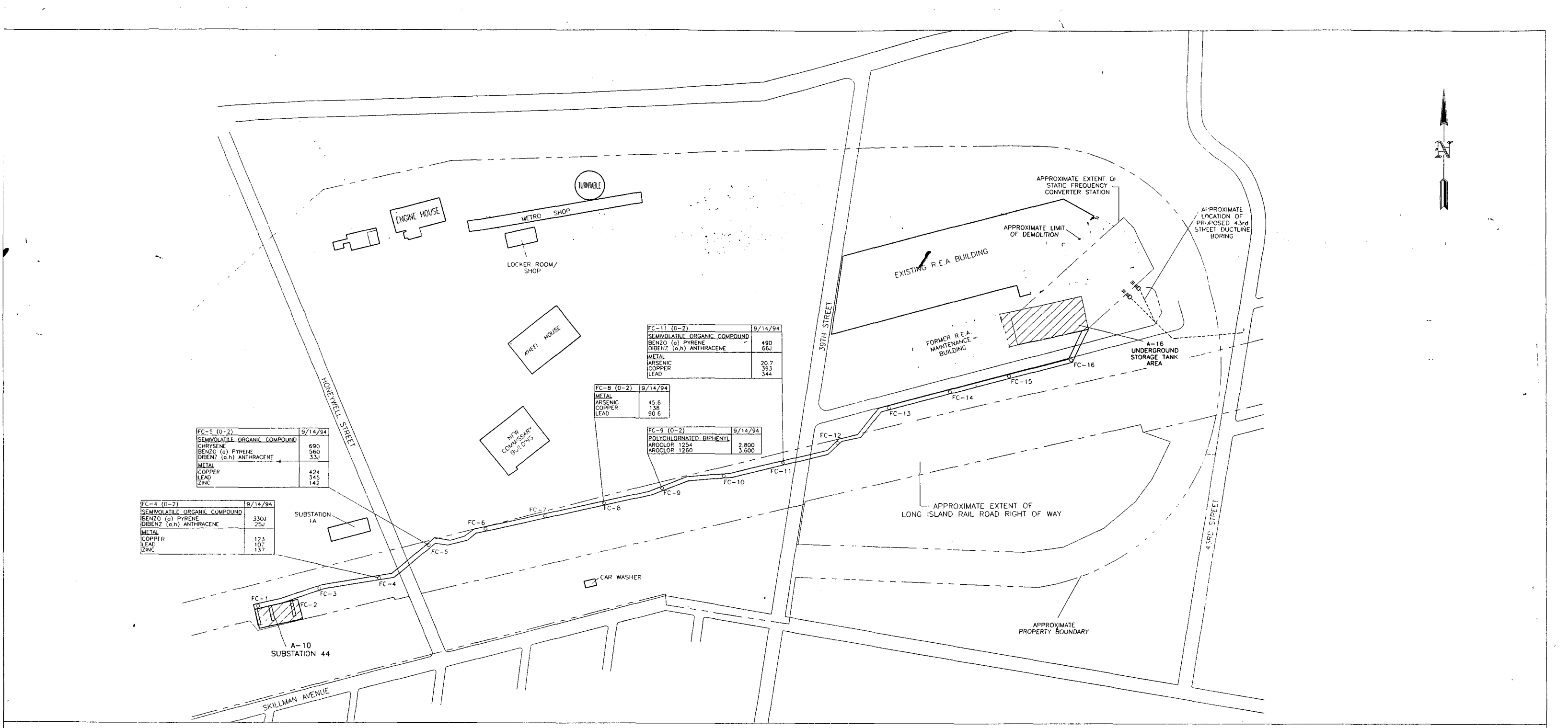
RELINQUISHED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N	RECEIVED BY: (SIGNATURE)	FOR	DATE	TIME	SEAL INTACT Y OR N
SAMPLER'S: K. Gregory	Roux	9/15/94	1600	Y					

DELIVERY METHOD Fed Ex

ANALYTICAL LABORATORY IEA Monroe, CT.

COMMENTS Not ASP

PLATES



FC-5 (0-2)	9/14/94
SEMIVOLATILE ORGANIC COMPOUND	
CHRYSENE	690
BENZO (a) PYRENE	560
DIBENZ (a,h) ANTHRACENE	33J
METAL	
COPPER	424
LEAD	345
ZINC	142

FC-4 (0-2)	9/14/94
SEMIVOLATILE ORGANIC COMPOUND	
BENZO (a) PYRENE	330J
DIBENZ (a,h) ANTHRACENE	25J
METAL	
COPPER	123
LEAD	107
ZINC	137

FC-11 (0-2)	9/14/94
SEMIVOLATILE ORGANIC COMPOUND	
BENZO (a) PYRENE	490
DIBENZ (a,h) ANTHRACENE	66J
METAL	
ARSENIC	20.7
COPPER	393
LEAD	344

FC-8 (0-2)	9/14/94
METAL	
ARSENIC	45.6
COPPER	138
LEAD	90.6

FC-9 (0-2)	9/14/94
POLYCHLORNATED BIPHENYL	
AROCLOR 1254	2,800
AROCLOR 1260	3,600

EXPLANATION

FC-1 o DUCTLINE ROUTE SOIL BORING LOCATION AND DESIGNATION

PROPOSED DUCTLINE TRENCH LOCATION

APPROXIMATE PROPERTY BOUNDARY

AREAS OF CONCERN

SAMPLE DESIGNATION
DEPTH INTERVAL (FEET BELOW LAND SURFACE)
SAMPLE DATE

FC-8 (0-2)	9/14/94
METAL	
ARSENIC	45.6
COPPER	138
LEAD	90.6

NOTES: POLYCHLORNATED BIPHENYL AND SEMIVOLATILE ORGANIC COMPOUNDS CONCENTRATIONS IN MICROGRAMS PER KILOGRAM (ug/kg)
METAL CONCENTRATIONS IN MILLIGRAMS PER KILOGRAM (mg/kg)
J - ESTIMATED VALUE

0 150 300 FEET

Title

CONCENTRATIONS OF POLYCHLORINATED BIPHENYLS, SEMIVOLATILE ORGANIC COMPOUNDS AND METALS DETECTED ABOVE BACKGROUND LEVELS - DUCTLINE ROUTE

Prepared For:
SUNNYSIDE YARD, QUEENS, NEW YORK

ROUX ASSOCIATES INC
Environmental Consulting & Management

Compiled by: H.G.	Date: 11/94	PLATE
Prepared by: G.M.	Scale: SHOWN	1
Project Mgr: J.D.D.	Revision: 0	
File No: 05551004	Project: 05551Y	