ENVIRONMENTAL CONSULTING & MANAGEMENT ROUX ASSOCIATES INC

1377 MOTOR PARKWAY ISLANDIA, NEW YORK 11788 TEL 516 232-2600 FAX 516 232-9898

May 19, 1998

Mr. Hari O. Agrawal, P.E. **Environmental Engineer** New York State Department of Environmental Conservation Hazardous Waste Remediation - Region 2 27-20 21st Street Long Island City, NY 11101

Results of Soil Samples Collected from Operable Unit 4, Re: Sunnyside Yard, Queens, New York

Dear Mr. Agrawal:

As specified in our November 21, 1997 letter to the New York State Department of Environmental Conservation (NYSDEC), Roux Associates, Inc. (Roux Associates), on behalf of Amtrak, completed a total of 38 soil borings (Plate 1) in Operable Unit 4 (OU-4) in conjunction with the High Speed Trainset Facility (HSTF) Service and Inspection (S&I) Building construction project at the Sunnyside Yard, Queens, New York (Yard). Samples were collected in accordance with the NYSDEC-approved August 6, 1997 document titled "General Sampling and Analysis Plan to Support High Speed Trainset Facility Activities in Operable Unit 4" (Plan) to characterize soil in the construction area, including in-situ characterization of the ballast interval. Additionally, as specified in the Plan, exceedances of the NYSDEC-recommended soil cleanup levels for the Yard (found only in the ballast interval) were delineated to a point where concentrations were below the respective cleanup level and the contaminated soil was excavated and disposed off site. This letter report is provided to the NYSDEC as a summary of the OU-4 sampling program and subsequent remedial action.

### **Methods of Investigation**

The soil characterization boring and sampling program was conducted on December 8 through 10, 1997 by Roux Associates personnel using hand tools (i.e., shovel and posthole digger). Further delineation of identified hot spot areas was conducted on January 12 and 22, 1998 and February 20, 1998. All downhole equipment was decontaminated prior to beginning each soil boring and between sampling intervals. In accordance with the Plan, characterization samples were analyzed for the three

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contaminants of concern at the Yard (i.e., polychlorinated biphenyls [PCBs], carcinogenic polycyclic aromatic hydrocarbons [cPAHs], and lead) and subsequent delineation samples were analyzed only for the contaminant which exceeded the NYSDEC-recommended soil cleanup level. The analytical program was completed by Industrial Corrosion Management, Inc. (ICM) laboratory Randolph, New Jersey, following 1995 NYSDEC Analytical Services Protocols.

### **Results and Discussion**

The analytical results are presented in Tables 1 through 3 and are summarized below. A data quality and usability report was completed and is included as Appendix A.

### Polychlorinated Biphenyls

The results of the PCB analyses are presented in Table 1. As shown in the table, PCB concentrations ranged from not detected to a high of 58,000 micrograms per kilogram  $(\mu g/kg)$  in the ballast interval [0 to 1-foot below land surface (bls)] at characterization sample location SS-22. Only the ballast interval at two sample locations, SS-19 and SS-22 (Plate 1), contained concentrations above the NYSDEC-recommended PCB soil cleanup level for the Yard of 25,000  $\mu g/kg$ . Both of these exceedances were subsequently delineated to locations where the PCB concentrations were below the respective soil cleanup level. The PCB-contaminated soil from these two locations (approximately 67 tons) was excavated on March 30, 1998 (Plate 1) and disposed at an approved hazardous waste landfill. Disposal manifests are included in Appendix B.

### Carcinogenic Polycyclic Aromatic Hydrocarbons

The results of the cPAH analyses are presented in Table 2. As shown in the table, concentrations of cPAHs ranged from not detected to a high of 22,320  $\mu$ g/kg, all below the NYSDEC-recommended cPAH soil cleanup for the Yard of 25,000  $\mu$ g/kg.

### Lead

The results of the lead analyses are presented in Table 3. As shown in the table, lead concentrations ranged from a low of 2 milligrams per kilogram (mg/kg) to a high of 3,590 mg/kg in the ballast interval sample at location SS-5 (Plate 1), which is the only exceedance of the NYSDEC-recommended lead soil cleanup for the Yard of 1,000 mg/kg. The exceedance was delineated to locations where the lead concentrations were below the respective soil cleanup level. The lead-contaminated soil (approximately 22 tons) was excavated on March 24, 1998 (Plate 1) and disposed on April 15, 1998 at an approved non-hazardous waste landfill. The disposal manifest is included in Appendix B.

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### **Summary and Conclusions**

In summary, the analytical results for soil characterization in the HSTF-related work area of OU-4 indicate only three locations where the NYSDEC-recommended soil cleanup levels for the Yard were exceeded. All three exceedances were delineated (Plate 1), and the contaminated soil was excavated and properly disposed offsite. A review of the analytical results, with respect to the Yard-specific soil cleanup levels for the contaminants of concern, indicates that the remaining material may either be left in place, or used as fill material elsewhere in the Yard.

If you have any questions or comments regarding this sampling event, please do not hesitate to call.

Sincerely,

ROUX ASSOCIATES, INC.

Harry Gregory V Project Hydrogeologist/Project Manager

Jesuph D.C.

Joseph D. Duminuco Principal Hydrogeologist

cc: R. Gardineer, P.E., NYSDEC

R. Rusinko, Esq., NYSDEC

R. Mohlenhoff, P.E., Amtrak

C. Warren, Esq., Robinson, Silverman, et al.

### ROUX ASSOCIATES, INC.

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NYSDEC	7 12/8/97	1-2 12/8/97	0-1 0-1 12/8/97	SS-3 1-2 12/8/97	SS-4 0-1 12/8/97	SS-4 1-2 12/8/97
Recommended Soil Cleanup Parameter Level (Concentrations in μg/kg) (μg/kg)						
Aroclor-1016 40 U 35 U	J 38 U	36 U	37 U	35 U	37 U	38 U
Aroclor-1221 40 U 35 U	J 38 U	36 U	37 U	35 U	37 U	38 U
Aroclor-1232 40 U 35 U 35 U	J 38 U	36 U	37 U	35 U 26 H	37 U	38 U
Aroclor-1242 40 U 35 I	0 38 U	0 05 11 75	0 / C 37 II	0 CC 35 II	0 / C 11 75	38 11
Aroclor-1254 40 U 35 U	J 38 U	36 U	2400	35 U	37 U	38 U
Aroclor-1260 400 180	2300	36 U	3300	290	360	38 U
Total Aroclors 25,000 400 180	2,300	0	5,700	290	360	0
μg/kg - Micrograms per kilogram U - Compound was analyzed for but not detected						

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S	iample Designation: mple Depth (ft bls): Sample Date:	SS-5 0-1 12/8/97	SS-5 1-2 12/8/97	SS-6 0-1 12/8/97	SS-6 1-2 12/8/97	SS-7 0-1 12/9/97	SS-7 1-2 12/9/97	SS-7DUP 0-1 12/9/97	SS-7DUP 1-2 12/9/97
Parameter (Concentrations in µg/kg)	NYSDEC Recommended Soil Cleanup Level (µg/kg)								
Aroclor-1016		39 U	37 U	39 U	40 U	37 U	35 U	38 U	33 U
Aroclor-1221		39 U	37 U	39 U	40 U	37 U	35 U	38 U	33 U
Aroclor-1232		39 U	37 U	39 U	40 U	37 U	35 U	38 U	33 U
Aroclor-1242		39 U	37 U	39 U	40 U	37 U	35 U	38 U	33 U
Aroclor-1248		39 U	37 U	39 U	40 U	37 U	35 U	38 U	33 U
Aroclor-1254		39 U	37 U	220	40 U	37 U	35 U	38 U	33 U
Aroclor-1260		640	37 U	200	42	3200	35 U	2500	33 U
Total Aroclors	25,000	640.	0	420	42	3,200	0	2,500	0
μg/kg - Micrograms I U - Compound w	oer kilogram as analvzed for								
but not detect J - Estimated val	ed								
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9/97 12/9/97 12/9/97 12/9
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12/9/97
Sample Date: NYSDEC Recommended Soil Cleanup Level (115/kg)
Parameter (Concentrations in μg/kg)

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		12/9/97	0-1 12/9/97	1-2 12/9/97	61-88 0-1 12/9/97	55-15 1-2 12/9/97
NYSUEC Recommended Soil Cleanup Parameter Level (Concentrations in μg/kg) (μg/kg)						
Aroclor-1016 46 U 35 U	41 U	35 U	35 U	35 U	39 U	37 U
Aroclor-1221 46 U 35 U	41 U	35 U	35 U	35 U	39 U	37 U
Aroclor-1232 46 U 35 U	41 U	35 U	35 U	35 U	39 U	37 U
Aroclor-1242 46 U 35 U	41 U	35 U	35 U	35 U	39 U	37 U
Aroclor-1248 46 U 35 U	41 U	35 U	35 U	35 U	39 U	37 U
Aroclor-1254 46 U 35 U 6	6300	110	75	35 U	2200	68
Aroclor-1260 5300 110 74	7400	140	200	35 U	2500	75
Total Aroclors 25,000 5,300 110 13,	13,700	250	275	0	4,700	143

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	Sample Designation: Sample Depth (ft bls): Sample Date:	SS-16 0-1 12/9/97	SS-16 1-2 12/9/97	SS-17 0-1 12/9/97	SS-17 1-2 12/9/97	SS-18 0-1 12/9/97	SS-18 1-2 12/9/97	SS-19 0-1 12/9/97	SS-19 1-2 12/9/97
Parameter (Concentrations in μg/kg	NYSDEC Recommended Soil Cleanup Level (µg/kg)								
Aroclor-1016		36 U	34 U	39 U	35 U	36 U	35 U	39 U	36 U
Aroclor-1221		36 U	34 U	39 U	35 U	36 U	35 U	39 U	36 U
Aroclor-1232		36 U	34 U	1 39 U	35 U	36 U	35 U	39 U	36 U
Aroclor-1242		36 U	34 U	39 U	35 U	36 U	35 U	39 U	36 U
Aroclor-1248		36 U	34 U	39 U	35 U	36 U	35 U	39 U	36 U
Aroclor-1254		36 U	34 U	39 U	35 U	36 U	35 U	14000	36 U
Aroclor-1260		1300	34 U	5400	53	180	76	23000	57
Total Aroclors	25,000	1,300	0	5,400	53	180	76	37,000	57

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		1/22/98	0-1 12/9/97	1-2 12/9/97	SS-21 0-1 12/9/97	1-2 12/9/97
37 U	39 U	39 U	40 U	36 U	39 U	33 U
37 U	39 U	39 U	40 U	36 U	39 U	33 U
37 U	39 U	39 U	40 U	36 U	39 U	33 U
37 U	39 U	39 U	40 U	36 U	39 U	33 U
37 U	39 U	39 U	40 U	36 U	39 U	33 U
3900	9200	4600	40 U	36 U	39 U	33 U
5600 7	7000	7400	540	36 U	750	33 U
9,500 16	6,200	12,000	540	0	750	0
9,500 16	6,200		12,000	12,000 540	12,000 540 0	12,000 540 0 750

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**ROUX ASSOCIATES, INC.** 

Table 1. Summary of Polychlorinated Biphenyl Compound Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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Sar	nple Designation: ple Depth (ft bls): Sample Date:	SS-22 0-1 12/9/97	SS-22 1-2 12/9/97	SS-22E15 0-1 1/22/98	SS-22E30 0-1 1/22/98	SS-22W15 0-1 1/22/98	SS-22W30 0-1 1/22/98	SS-22W40 0-1 2/20/98	SS-23 0-1 12/10/97
Parameter (Concentrations in μg/kg)	NYSDEC Recommended Soil Cleanup Level (µg/kg)								
Aroclor-1016		40 U	36 U	38 U	36 U	39 U	37 U	40 U	37 U
Aroclor-1221		40 U	36 U	38 U	36 U	39 U	37 U	40 U	37 U
Aroclor-1232		40 U	36 U	38 U	36 U	39 U	37 U	40 U	37 U
Aroclor-1242		40 U	36 U	38 U	36 U	39 U	37 U	40 U	37 U
Aroclor-1248		40 U	36 U	38 U	36 U	39 U	37 U	40 U	37 U
Aroclor-1254		25000	36 U	11000	6700	3500	0096	1100	190
Aroclor-1260		33000	610	18000	11000	6200	17000	2100	1600
Total Aroclors	25,000	58,000	610	29,000	17,700	9,700	26,600	3,200	2,390

μg/kg - Micrograms per kilogram U - Compound was analyzed for

but not detected

J - Estimated value

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	Sample Designation: Sample Depth (ft bls): Sample Date:	SS-23 1-2 12/10/97	SS-24 0-1 12/9/97	SS-24 1-2 12/9/97	SS-25 0-1 12/10/97	SS-25 1-2 12/10/97	SS-26 0-1 12/10/97	SS-26 1-2 12/10/97	SS-27 0-1 12/10/97	SS-27 1-2 12/10/97
Parameter (Concentrations in µ	NYSDEC Recommended Soil Cleanup Level ig/kg) (µg/kg)									
Aroclor-1016		36 U	40 U	33 U	40 U	37 U	38 U	38 U	37 U	38 U
Aroclor-1221		36 U	40 U	33 U	40 U	37 U	38 U	38 U	37 U	38 U
Aroclor-1232		. 36 U	40 U	33 U	40 U	37 U	38 U	38 U	37 U	38 U
Aroclor-1242		36 U	40 U	33 U	40 U	37 U	38 U	38 U	37 U	38 U
Aroclor-1248		36 U	40 U	33 U	40 U	37 U	38 U	38 U	37 U	38 U
Aroclor-1254		36 U	0006	33 U	1900	37 U	5000	330	37 U	38 U
Aroclor-1260		41	13000	33 U	2800	37 U	5500	440	290	38 U
Total Aroclors	25,000	41	22,000	0	4,700	0	10,500	770	290	0
μg/kg - Micro U - Comp	grams per kilogram ound was analyzed for									

Table 1. Summary of Polychlorinated Biphenyl Compound Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

J - Estimated value

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	Sample Designation: Sample Depth (ft bls): Sample Date:	SS-28 0-1 12/10/97	SS-28 1-2 12/10/97	SS-29 0-1 12/10/97	SS-29 1-2 12/10/97	SS-30 0-1 12/10/97	SS-30 1-2 12/10/97	SS-31 0-1 12/10/97	SS-31 1-2 12/10/97
Parameter (Concentrations in μg/kg	NYSDEC Recommended Soil Cleanup Level ) (µg/kg)								
Aroclor-1016		36 U	38 U	41 U	38 U	40 U	36 U	41 U	36 U
Aroclor-1221		36 U	38 U	41 U	38 U	40 U	36 U	41 U	36 U
Aroclor-1232		36 U	38 U	41 U	38 U	40 U	36 U	41 U	36 U
Aroclor-1242		36 U	38 U	41 U	38 U	40 U	36 U	41 U	36 U
Aroclor-1248		36 U	38 U	41 U	38 U	40 U	36 U	41 U	36 U
Aroclor-1254		290	38 U	41 U	38 U	40 U	36 U	720	36 U
Aroclor-1260		410	38 U	310	73	10000	32 J	3600	100
Total Aroclors	25,000	700	0	310	73	10,000	32 J	4,320	100
µg/kg - Microgram U - Compound but not dete J - Estimated v	s per kilogram was analyzed for scted alue						· · · · · · · · · · · · · · · · · · ·		
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	Sample Designation: Sample Depth (ft bls): Sample Date:	SS-32 0-1 12/10/97	SS-32 1-2 12/10/97	SS-33 0-1 12/10/97	SS-33 1-2 12/10/97	SS-34 0-1 12/10/97	SS-34 1-2 12/10/97	SS-35 0-1 12/10/97	SS-35 1-2 12/10/97
Parameter (Concentrations in µg/kg	NYSDEC Recommended Soil Cleanup Level (µg/kg)								
Aroclor-1016		40 U	36 U	41 U	36 U	400 U	35 U	39 U	37 U
Aroclor-1221		40 U	36.U	41 U	36 U	400 U	35 U	39 U	37 U
Aroclor-1232 Aroclor-1242		40 U 40 U	36 U 36 U	41 U 41 U	36 U 36 U	400 U 400 U	35 U 35 U	39 U 39 II	37 U 37 U
Aroclor-1248		40 U	36 U	41 U	36 U	400 U	35 U	39 U	37 U
Aroclor-1254		490	36 U	700	36 U	400 U	35 U	39 U	37 U
Aroclor-1260		3000	36 U	2600	11	11000	70	330	24 J
Total Aroclors	25,000	3,490	0	3,300	11	11,000	70	330	24 J
μg/kg - Microgram U - Compound	s per kilogram was analyzed for								
but not det J - Estimated	ected value								

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NYSDEC Recommended Soil Cleanup Farameter         NYSDEC Recommended Soil Cleanup Level           Parameter         Level (µg/kg)         Soil Cleanup (µg/kg)         Soil Cleanup (µg/kg)         Soil Cleanup (µg/kg)         Soil Cleanup (µg/kg)           Arcolor-1016         38 U         35 U         41 U         37 U         39 U         37 U         37 U           Arcolor-1221         38 U         35 U         41 U         37 U         39 U         37 U         37 U           Arcolor-1232         38 U         35 U         41 U         37 U         39 U         37 U         37 U           Arcolor-1232         38 U         35 U         41 U         37 U         39 U         37 U         37 U           Arcolor-1232         38 U         35 U         41 U         37 U         39 U         37 U         37 U           Arcolor-1260         35 U         680         35 U         30 U         37 U         37 U           Arcolor-1260         250         35 U         680         39 U         37 U         37 U           Arcolor-1261         2500         1,37 U         39 U         37 U         37 U         37 U           Arcolor-1260         250         10         680		Sample Designation: Sample Depth (ft bls): Sample Date:	SS-36 0-1 12/10/97	SS-36 1-2 12/10/97	SS-37 0-1 12/10/97	SS-37 1-2 12/10/97	SS-37DUP 0-1 12/10/97	SS-37DUP 1-2 12/10/97	SS-38 0-1 12/10/97	SS-38 1-2 12/10/97
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Parameter (Concentrations in μg/h	NYSDEC Recommended Soil Cleanup Level :g) (μg/kg)								
Aroclor-122138 U35 U41 U37 U37 U37 U37 UAroclor-123238 U35 U41 U37 U37 U37 U37 UAroclor-124238 U35 U41 U37 U37 U37 UAroclor-124838 O39 O14013 O16039 OAroclor-125485035 U68033 O27 O34 O12 OAroclor-12605201,37 O01,07 O47 O40 O50 O1,59 OTotal Aroclors25,0001,37 O01,07 O47 O40 O50 O1,59 O $\mu g/kg$ Micrograms per kilogramU - Compound was analyzed for10 C1,07 O47 O40 O50 O1,59 O	Aroclor-1016		38 U	35 U	41 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1232 $38 U$ $35 U$ $41 U$ $37 U$ <t< td=""><td>Aroclor-1221</td><td></td><td>38 U</td><td>35 U</td><td>41 U</td><td>37 U</td><td>39 U</td><td>37 U</td><td>37 U</td><td>36 U</td></t<>	Aroclor-1221		38 U	35 U	41 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1242       38 U       35 U       41 U       37 U <td>Aroclor-1232</td> <td></td> <td>38 U</td> <td>35 U</td> <td>. 41 U</td> <td>37 U</td> <td>39 U</td> <td>37 U</td> <td>37 U</td> <td>36 U</td>	Aroclor-1232		38 U	35 U	. 41 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1248       38 U       35 U       41 U       37 U       390         Aroclor-1260       520       35 U       680       330       270       340       1200         Total Aroclors       25,000       1,370       0       1,070       470       400       500       1,590         µg/kg - Micrograms per kilogram       U - Compound was analyzed for but not detected       1,070       470       400       500       1,590	Aroclor-1242		38 U	35 U	41 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1254       850       35 U       390       140       130       160       390         Aroclor-1260       520       35 U       680       330       270       340       1200         Total Aroclors       25,000       1,370       0       1,070       470       400       500       1,590 $\mu g/kg$ - Micrograms per kilogram       U - Compound was analyzed for but not detected       0       1,070       470       400       500       1,590	Aroclor-1248	-	38 U	35 U	41 U	37 U	39 U	37 U	37 U	36 U
Aroclor-1260       520       35 U       680       330       270       340       1200         Total Aroclors       25,000       1,370       0       1,070       470       400       500       1,590         µg/kg - Micrograms per kilogram       U - Compound was analyzed for but not detected       0       1,070       470       400       500       1,590	Aroclor-1254		850	35 U	390	140	130	160	390	110
Total Aroclors         25,000         1,370         0         1,070         470         400         500         1,590           μg/kg - Micrograms per kilogram         U - Compound was analyzed for but not detected         1,070         470         400         500         1,590	Aroclor-1260		520	35 U	680	330	270	340	1200	280
μg/kg - Micrograms per kilogram U - Compound was analyzed for but not detected	Total Aroclors	25,000	1,370	0	1,070	470	400	500	1,590	390
U - Compound was analyzed for but not detected	ug/kg - Microgra	ms per kilogram								
	U - Compour but not de	id was analyzed for stected								

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Table 1. Summary of Polychlorinated Biphenyl Compound Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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NYSDEC- Recommended Soil Cleanup (Concentrations in µg/kg)         NYSDEC- Recommended Soil Cleanup Level           Parameter         Level           Concentrations in µg/kg)         Level           Benzo(a)anthracene         620         63 J         700         360 U         640         29 J           Benzo(a)pyrene         780         73 J         740         360 U         690         350 U           Benzo(a)pyrene         170 J         1600         44 J         1900         100 J           Benzo(a)pyrene         170 J         360 U         360 U         360 U         360 U         360 U         360 U         350 U           Benzo(a)pyrene         170 J         1600         170 J         360 U         360 U         350 U           Dibenzo(a,h)anthracene         160 J         360 U         120 J         360 U         20 J         350 U           Indeno(1, 2, 3-cd)pyrene         870         40 J         510         360 U         20 J         350 U	0 360 U 640 29 J 0 360 U 690 350 U		
Benzo(a)Benzo(a) $(3 \ J)$ $700$ $360 \ U$ $640$ $29 \ J$ Benzo(a)Benzo(a) $73 \ J$ $740$ $360 \ U$ $640$ $29 \ J$ Benzo(b) $73 \ J$ $740$ $360 \ U$ $690$ $350 \ U$ Benzo(b) $170 \ J$ $1600$ $44 \ J$ $1900$ $100 \ J$ Benzo(k) $170 \ J$ $1600$ $44 \ J$ $1900$ $100 \ J$ Benzo(k) $100 \ J$ $380 \ U$ $360 \ U$ $370 \ U$ $350 \ U$ Benzo(k) $70 \ J$ $800$ $18 \ J$ $830$ $40 \ J$ Chrysene $150 \ J$ $350 \ U$ $120 \ J$ $360 \ U$ $220 \ J$ Dibenzo(a,h) $360 \ U$ $220 \ J$ $350 \ U$ $220 \ J$ $350 \ U$ Indeno(1,2,3-cd) $960 \ U$ $1000$ $22 \ J$ $350 \ U$ Indeno(1,2,3-cd) $960 \ U$ $1000$ $22 \ J$ $350 \ U$	0 360 U 640 29 J 0 360 U 690 350 U		
Benzo(a)pyrene78073740 $360$ U $690$ $350$ UBenzo(b)fluoranthene1800170 J $1600$ 44 J1900100 JBenzo(k)fluoranthene400 U $350$ U $380$ U $360$ U $370$ U $350$ UChrysene71070 J $800$ 18 J $830$ $40$ JDibenzo(a,h)anthracene150 J $350$ U $120$ J $360$ U $220$ J $350$ UIdeno(1,2,3-cd)pyrene870 $40$ J $510$ $360$ U $1000$ $22$ J	0 360 U 690 350 U	110 J 3	380 U 490
Benzo(b)fluoranthene1800170 J160044 J1900100 JBenzo(k)fluoranthene $400 U$ $350 U$ $380 U$ $360 U$ $370 U$ $350 U$ Chrysene $710$ $70 J$ $800$ $18 J$ $830$ $40 J$ Dibenzo(a,h)anthracene $150 J$ $350 U$ $120 J$ $360 U$ $220 J$ $350 U$ Indeno(1,2,3-cd)pyrene $870$ $40 J$ $510$ $360 U$ $1000$ $22 J$		110 J 3	380 U 290
Benzo(k)fluoranthene       400 U       350 U       360 U       370 U       350 U         Chrysene       710       70 J       800       18 J       830       40 J         Chrysene       150 J       360 U       18 J       830       40 J         Dibenzo(a,h)anthracene       150 J       360 U       220 J       350 U         Indeno(1,2,3-cd)pyrene       870       40 J       510       360 U       1000       22 J	0 44 J 1900 100 J	370	23 J 1900
Chrysene         710         70 J         800         18 J         830         40 J           Dibenzo(a,h)anthracene         150 J         350 U         120 J         360 U         220 J         350 U           Indeno(1,2,3-cd)pyrene         870         40 J         510         360 U         1000         22 J	0 U 360 U 370 U 350 U	370 U 3	380 U 390
Dibenzo(a,h)anthracene         150 J         350 U         120 J         360 U         220 J         350 U           Indeno(1,2,3-cd)pyrene         870         40 J         510         360 U         1000         22 J	0 18 J 830 40 J	160 J 3	380 U 780
Indeno(1,2,3-cd)pyrene 870 40 J 510 360 U 1000 22 J	0 J 360 U 220 J 350 U	370 U 3	380 U 91
	0 360 U 1000 22 J	86 J 3	380 U 470
Total cPAHs 25,000 4,930 J 416 J 2,870 J 62 J 5,280 J 191 J	0 J 62 J 5,280 J 191 J	1,206 J	23 J 4,321

ROUX ASSOCIATES, INC.

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Table 2. Summary of Carcinogenic Polycyclic Arc Queens, New York.	omatic Hydr	ocarbon Com	pound Concer	itrations Deter	cted in Soil S	amples Collec	ted in OU-4, S	sunnyside Yar	-
Sample Designation: Sample depth (ft bls): Sample Date:	SS-5 1-2 12/8/97	SS-6 0-1 12/8/97	SS-6 1-2 12/8/97	SS-7 0-1 12/9/97	SS-7 1-2 12/9/97	SS-7DUP 0-1 12/9/97	SS-7DUP 1-2 12/9/97	SS-8 0-1 12/9/97	SS-8 1-2 12/9/97
NYSDEC - Recommended Soil Cleanup Parameter (Concentrations in μg/kg) (μg/kg)									
Benzo(a)anthracene	23 J	48 J	36 J	069	360 U	1500	370 U	480	38 J
Benzo(a)pyrene	370 U	390 U	400 U	1200	360 U	1500	370 U	470	С 06
Benzo(b)fluoranthene	52 J	180 J	80 J	2000	360 U	2400	370 U	1600	160 J
Benzo(k)fluoranthene	370 U	390 U	400 U	370 U	360 U	380 U	20 J	370 U	160 J
Chrysene	23 J	11 002	11 UUV	96U 150 I	360 U 360 U	1600 210 I	370 U 370 U	010 140 1	L 95
Uluelizu(a,ii)alililiaceile Indeno(1-3-2-od)nyrrono	0.076			I OCE	360 11	450	370 11	1 00E	I DE
Indeno(1,2,3-ca)pyrene		r nn	0 000	r 070		00+		r 000	
Total cPAHs 25,000	98 J	369 J	143 J	5,320 J	0	7,660 J	20 J	3,600 J	564 J
μg/kg - Micrograms per kilogram θ μις Εροι μοίουν Ισμή αυτέροο									
It Dis - Feet verow land suitace									
for but not detected						•			•
J - Estimated value									
D - Sample reanalyzed due to one or more									
compounds having concentrations above									
the calibration range; compound(s) reported at higher dilution and designated D.									
DUP - Duplicate sample									-
ROUX ASSOCIATES, INC.			Page 2 of 9	•				AM055:	2Y04.176/T2

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	Sample Sample	e Designation: depth (ft bls): Sample Date:	SS-9 0-1 12/9/97	SS-9 1-2 12/9/97	SS-10 0-1 12/9/97	SS-10 1-2 12/9/97	SS-11 0-1 12/9/97	SS-11 1-2 12/9/97	SS-12 0-1 12/9/97	SS-12 1-2 12/9/97	SS-13 0-1 12/9/97
Parameter (Concentrations in μg/kg)	S S	NYSDEC - ecommended ioil Cleanup Level (µg/kg)						· · ·			
Benzo(a)anthracene Benzo(a)nvrene			270 J 260 J	110 J 110 J	960 860	64 J 120 J	2000 3200	67 J 130 J	600 550	81 J 23 J	1600 2400
Benzo(b)fluoranthene			1200	500	2000	230 J	3200	230 J	2700	300 J	2400
Benzo(k)fluoranthene			370 U	360 U	1800	380 U	2500	360 U	460 U	350 U	<b>2800</b>
Cnrysene Dibenzo(a,h)anthracene			000 187	t 061 46 J	1400 260 J	27 J	680 680	37 J	200 J	L 021 L 91	370 J
Indeno(1,2,3-cd)pyrene			170 J	110 J	560	f 09	1400	72 J	440 J	41 J	920
Total c	PAHs	25,000	2,358 J	1,026 J	7,840 J	611 J	15,380	633 J	5,420 J	584 J	7,170 J
μg/kg - Micrograms per ft bls - Feet below land	kilogram surface										
U - Compound was for but not detec	analyzed ted										
J - Estimated value											
<ul> <li>D - Sample reanaly; compounds hav;</li> </ul>	ted due to or ng concentri	te or more ations above									
the calibration r	ange; compo	und(s) reported									
at higher dilutic DUP - Duplicate sampl	n and desigr e	lated D.							:		

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Table 2. Summary of Carcinogenic Polycyclic Aromatic Hydrocarbon Compound Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

	Sample Sample	e Designation: depth (ft bls): Sample Date:	SS-13 1-2 12/9/97	SS-14 0-1 12/9/97	SS-14 1-2 12/9/97	SS-15 0-1 12/9/97	SS-15 1-2 12/9/97	SS-16 0-1 12/9/97	SS-16 1-2 12/9/97	SS-17 0-1 12/9/97	SS-17 1-2 12/9/97
Parameter (Concentrations in μg/kg)	~ ~ v	NYSDEC - ecommended Soil Cleanup Level (μg/kg)									
Benzo(a)anthracene			L 79	f 06	350 U	740	52 J	260 J	340 U	1200	29 J
Benzo(a)pyrene			180 J	74 J	350 U	1500	64 J	210 J	340 U	2900	27 J
Benzo(b)fluoranthene			330 J	260 J	350 U	1600	220 J	68 J	340 U	3000	L 001
Benzo(k)fluoranthene			330 J	350 U	350 U	390 U	370 U	360 U	340 U	2200	350 U
Chrysene			130 J	120 J	350 U	1000	80 J	530	340 U	1900	57 J.
Dibenzo(a,h)anthracene			42 J	30 J	350 U	l 001	24 J	72 J	340 U	370 J	18 J
Indeno(1,2,3-cd)pyrene			110 J	59 J	350 U	400	48 J	160 J	340 U	810	39 J
Total cP	PAHs	25,000	l,219 J	633 J	0	4,430 J	488 J	1,300 J	0	10,480 J	360 J

μg/kg - Micrograms per kilogram

ft bls - Feet below land surface

U - Compound was analyzed for but not detected

J - Estimated value

 D - Sample reanalyzed due to one or more compounds having concentrations above the calibration range; compound(s) reported at higher dilution and designated D.
 DUP - Duplicate sample

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Table 2. Summary of Carcinogenic Polycy. Queens, New York.	clic Aro	matic Hydro	carbon Com	oound Concen	trations Detec	ted in Soil Sar	nples Collecte	ed in OU-4, Su	nnyside Yard	
Sample Designa Sample depth (ft Sample L	ıtion: bls): Date:	SS-18 0-1 12/9/97	SS-18 1-2 12/9/97	SS-19 0-1 12/9/97	SS-19 1-2 12/9/97	SS-20 0-1 12/9/97	SS-20 1-2 12/9/97	SS-21 0-1 12/9/97	SS-21 1-2 12/9/97	SS-22 0-1 12/9/97
NYSDEC Recomment Soil Clean Parameter Level (Concentrations in μg/kg) (μg/kg)	- ded up									
Benzo(a)anthracene Benzo(a)pvrene		210 J 190 J	92 J 220 J	1200 720	<b>51 J</b> 360 U	770 770	<b>64 J</b> 360 U	440 1200	<b>360 U</b>	1100 950
Benzo(b)fluoranthene		870	490	2900	110 J	2200	140 J	1700	64 J	2800
Benzo(k)fluoranthene Chrysene		360 U 280 J	350 U 140 J	2400 1600	59 J 54 J	1300	91 J 1 29	660 870	35 J 46 J	2100
Dibenzo(a,h)anthracene		r 62	44 J	420	360 U	540	360 U	320 J	360 U	780
Indeno(1,2,3-cd)pyrene		150 J	83 J	930	130 J	1400	62 J	860	360 U	2200
Total cPAHs 25,000		l,779 J	1,069 J	10,170	404 J	8,290	449 J	6,050 J	175 J	11,930
<ul> <li>µg/kg - Micrograms per kilogram</li> <li>µg/kg - Micrograms per kilogram</li> <li>ft bls - Feet below land surface</li> <li>U - Compound was analyzed</li> <li>for but not detected</li> <li>J - Estimated value</li> <li>J - Estimated value</li> <li>J - Estimated value</li> <li>J - Sample reanalyzed due to one or more</li> <li>compounds having concentrations abov</li> <li>the calibration range; compound(s) repo</li> <li>at higher dilution and designated D.</li> <li>DUP - Duplicate sample</li> </ul>	ve .									
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San Sam	mple Designation: 1ple depth (ft bls): Sample Date:	SS-22 1-2 12/9/97	SS-23 0-1 12/10/97	SS-23 1-2 12/10/97	SS-24 0-1 12/9/97	SS-24 1-2 12/9/97	SS-25 0-1 12/10/97	SS-25 1-2 12/10/97	SS-26 0-1 12/10/97	SS-26 1-2 12/10/97
Parameter (Concentrations in μg/kg)	NYSDEC - Recommended Soil Cleanup Level (µg/kg)									
Benzo(a)anthracene		100 J	250 J	l 60 J	1600	380 U	1300	370 U	450	380 U
Benzo(a)pyrene		360 U	480	140	1500	380 U	1400	370 U	480	54 J
Benzo(b)fluoranthene		550	1100	360 J	3000	380 U	2900	370 U	1800	6 99 ·
Benzo(k)fluoranthene		260 J	370 U	55	2600	380 U	3100	370 U	380 U	380 U
Chrysene		210 J	480	L 061	2900	380 U	1700	370 U	670	29 J
Dibenzo(a,h)anthracene		360 U	68 J	31 J	1100	380 U	370 J	370 U	130 J	380 U
Indeno(1,2,3-cd)pyrene		250 J	140 J	60	3000	380 U	750	370 U	270 J	24 J
Total cPAHs	25,000	1,370 J	2,518 J	741 J	15,700	0	11,520 J	0	3,800 J	173 J
μg/kg - Micrograms per kilogra	Ш									
ft bis - Feet below land surface										
U - Compound was analyze	Q									
for but not detected										
U - Sample reanalyzed due	to one or more									
compounds naving cond the calibration range: co	centrations above									
at higher dilution and de	ssignated D.									
DUP - Duplicate sample										
adume analida d										
ROUX ASSOCIATES, INC				Page 6 of 9	_				AM05552	Y04.176/T2

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Table 2. Summary of Carcin Queens, New York.	ogenic Polycyclic Ar	omatic Hydr	ocarbon Com	pound Concen	trations Deter	ted in Soil Sa	mples Collect	ted in OU-4, S	unnyside Yard	
San	mple Designation: 1ple depth (ft bls): Sample Date:	SS-27 0-1 12/10/97	SS-27 1-2 12/10/97	SS-28 0-1 12/10/97	SS-28 1-2 12/10/97	SS-29 0-1 12/10/97	SS-29 1-2 12/10/97	SS-30 0-1 12/10/97	SS-30 1-2 12/10/97	SS-31 0-1 12/10/97
Parameter (Concentrations in μg/kg)	NYSDEC - Recommended Soil Cleanup Level (µg/kg)									
Benzo(a)anthracene		78 J	380 U	400	380 U	430	45 J	1700	22 J	1400
Benzo(a)pyrene		120 J	380 U	730	380 U	410 J	42 J	530	42 J	1200
Benzo(b)fluoranthene		250 J	380 U	1600	380 U	1800	180 J	2700	78 J	2900
Benzo(k)fluoranthene		33 J	380 U	360 U	380 U	410 U	380 U	3200	350 U	2700
Chrysene		130 J	380 U	570	380 U	650	84 J	1900	31 J	1900
Dibenzo(a,h)anthracene		21 J	380 U	160 J	380 U	110 J	l 91	380 J	350 U	370 J
Indeno(1,2,3-cd)pyrene		42 J	380 U	310 J	380 U	230 J	39 J	890	25 J	800
Total cPAHs	25,000	674 J	0	3,770 J	0	3,630 J	409 J	11,300 J	l 981	11,270 J
μg/kg - Micrograms per kilogra ft bls - Feet below land surface	E									
U - Compound was analyze	ġ									
for but not detected										•
J - Estimated value										
Compounds having conc	centrations above									-
the calibration range; co	ompound(s) reported									
at nigner ununton and ut DUP - Duplicate sample	csignated D.									
ROUX ASSOCIA LES, INC				Page 7 of 9					AM05552	Y04.176/T2

- Xaccis, 140% -										
	Sample Designation: Sample depth (ft bls): Sample Date:	SS-31 1-2 12/10/97	SS-32 0-1 12/10/97	SS-32 1-2 12/10/97	SS-33 0-1 12/10/97	SS-33 1-2 12/10/97	SS-34 0-1 12/10/97	SS-34 1-2 12/10/97	SS-35 0-1 12/10/97	SS-35 1-2 12/10/97
Parameter (Concentrations in μg/kg)	NYSDEC - Recommended Soil Cleanup Level (μg/kg)									
Benzo(a)anthracene		l 17	1100	350 U	3900 JD	140 J	2300	75 J	250 J	370 U
Benzo(a)pyrene Benzo(b)fluoranthene		88 J 170 J	330 J 2200	350 U 350 U	2200 8600 D	170 J 350 J	2000 6600 D	L 80 L 001	250 J 750	370 U 370 U
Benzo(k)fluoranthene		350 U	2900	350 U	1000 JD	350 U	400 U	350 U	390 U	24 J
Chrysene		120 J	1300	350 U	5000 D	200 J	2600	100 J	310 J	370 U
Dibenzo(a,h)anthracene		20 J	340 J	350 U	520	39 J	450	25 J	76 J	370°U
Indeno(1,2,3-cd)pyrene		38 J	670	350 U	1100	74 J	880	48 J	150 J	370 U
Total cP.	AHs 25,000	507 J	8,840 J	0	22,320 D	973 J	14,830 D	536 J	1,786 J	24 J
μg/kg - Micrograms per k ft bls - Feet below land su	logram Irface									
U - Compound was an	alyzed									
for but not detecte	q									-
J - Estimated value										
D - Sample reanalyzed	l due to one or more r concentrations above									
the calibration ran	ge; compound(s) reported									
at higher dilution	and designated D.									
DUP - Duplicate sample										·
ROUX ASSOCIATES,	INC.			Page 8 of 9					AM05552	Y04.176/T2

	Sample Designation: Sample depth (ft bls): Sample Date:	SS-36 0-1 12/10/97	SS-36 1-2 12/10/97	SS-37 0-1 12/10/97	SS-37 1-2 12/10/97	SS-37DUP 0-1 12/10/97	SS-37DUP 1-2 12/10/97	SS-38 0-1 12/10/97	SS-38 1-2 12/10/97	
Parameter (Concentrations in μg/kg)	NYSDEC - Recommended Soil Cleanup Level (μg/kg)									
Benzo(a)anthracene		490	350 U	280 J	120 J	260 J	f 061	500	210 J	
Benzo(a)pyrene		120 J	350 U	260 J	110 J	240 J	200 J	500	f 0/	
Benzo(b)fluoranthene		1000	350 U	630	340 J	600	490	1300	550	
Benzo(k)fluoranthene		380 U	20 J	85 J	370 U	390 U	360 U	370 U	360 U	
Chrysene		490	350 U	340 J	160 J	300 J	240 J	530	240 J	
Dibenzo(a,h)anthracene		ſ //	350 U	66 J	28 J	60 J	39 J	120 J	55 J	
Indeno(1,2,3-cd)pyrene	·	150 J	350 U	130 J	58 J	120 J	80 J	250 J	120 J	
Total cF	AHs 25,000	2,327. J	20 J	1,706 J	816 J	1,580 J	1,239 J	3,200 J	1,245 J	
<ul> <li>μg/kg - Micrograms per I</li> <li>ft bls - Feet below land s</li> <li>U - Compound was a</li> <li>for but not detect</li> <li>J - Estimated value</li> <li>D - Sample reanalyze</li> <li>compounds havin</li> <li>the calibration ran</li> <li>at higher dilution</li> <li>DUP - Duplicate sample</li> </ul>	cilogram urface malyzed ed d due to one or more g concentrations above ige; compound(s) reported and designated D.			· · ·						

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NSDEC- Recommended meter solut Level neentrations in mykg) level neentrations in mykg level neentrations neen	S Sar	ample Designation: mple Depth (ft bls): Sample Date:	SS-1 0-1 12/8/97	SS-1 1-2 12/8/97	SS-2 0-1 12/8/97	SS-2 1-2 12/8/97	SS-3 0-1 12/8/97	SS-3 1-2 12/8/97	SS-4 0-1 12/8/97	SS-4 1-2 12/8/97
d 1,000 865 55 387 8 36 72.5 257 13 ng/kg- Milligrams per kilogram ft bis- Feet below land surface DUP- Duplicate sample	rameter oncentrations in mg/kg)	NYSDEC - Recommended Soil Cleanup Level (mg/kg)								
ngkg - Miligrams per kilogram ft bis - Fret below land surface DUP - Duplicate sample	pe	1,000	865	55	387	×	36	72.5	257	13
	ng/kg - Milligrams per kilc ft bls - Feet below land su DUP - Duplicate sample	ışram rface								
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Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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	Sample Designation: Sample Depth (ft bls): Sample Date:	SS-5 0-1 12/8/97	SS-5 1-2 12/8/97	SS-5A 0-1 12/8/97	SS-5B 0-1 12/8/97	SS-5C 0-1 12/8/97	SS-5D 0-1 12/8/97	SS-6 0-1 12/8/97	SS-6 1-2 12/8/97	
Parameter (Concentrations in mg/kg)	NYSDEC - Recommended Soil Cleanup Level (mg/kg)									
Lead	1,000	3,590	. 22	93	401	460	106	254	11.6	
mg/kg - Milligrams per ft bls - Feet below land DUP - Duplicate samp	kilogram   surface  e									
								4 - -		

Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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	Sample Designation: Sample Depth (ft bls): Sample Date:	SS-7 0-1 12/9/97	SS-7 1-2 12/9/97	SS-7DUP 0-1 12/9/97	SS-7DUP 1-2 12/9/97	SS-8 0-1 12/9/97	SS-8 1-2 12/9/97	SS-9 0-1 12/9/97	SS-9 1-2 12/97	
Parameter (Concentrations in mg/kg)	NYSDEC - Recommended Soil Cleanup Level (mg/kg)									
Lead	1,000	246	5.4	169	5.3	299	58	78	30	
mg/kg - Milligrams per ft bls - Feet below land DUP - Duplicate sampl	kilogram surface									•
										·
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Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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# ROUX ASSOCIATES, INC.

3 SS-13 1-2 37 12/9/97		55	
SS-1. 0-1 0-1		502	
SS-12 1-2 12/9/97		36	
SS-12 0-1 12/9/97		810	
SS-11 1-2 12/9/97		94.6	
SS-11 0-1 12/9/97		430	
SS-10 1-2 12/9/97		31.7	
SS-10 0-1 12/9/97		202	
Sample Designation: Sample Depth (ft bls): Sample Date:	NYSDEC - Recommended Soil Cleanup Level (mg/kg)	1,000	r kilogram nd surface ple
	'arameter Concentrations in mg/kg)	Jead	mg/kg - Milligrams pe ft bls - Feet below lar DUP - Duplicate sam

Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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					- - - - - - - - - - - - - - - - - - -				
S	Sample Designation: ample Depth (ft bls): Sample Date:	SS-14 0-1 12/9/97	SS-14 1-2 12/9/97	SS-14 0-1 12/9/97	SS-15 0-1 12/9/97	SS-15 1-2 12/9/97	SS-16 0-1 12/9/97	SS-16 1-2 12/9/97	SS-17 0-1 12/9/97
Parameter (Concentrations in mg/kg)	NYSDEC - Recommended Soil Cleanup Level (mg/kg)								
Lead	1,000	4	61	14	166	22.9	158	e	341
mg/kg - Milligrams per ki ft bls - Feet below land s DUP - Duplicate sample	logram urface								
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Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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SS-21 0-1 12/9/97		410
SS-20 1-2 12/9/97		10
SS-20 0-1 12/9/97		548
SS-19 1-2 12/9/97		4.8
SS-19 0-1 12/9/97		155
SS-18 1-2 12/9/97		21
SS-18 0-1 12/9/97		65
SS-17 1-2 12/9/97		28
Sample Designation: ample Depth (ft bls): Sample Date:	NYSDEC - Recommended Soil Cleanup Level (mg/kg)	1,000
Ø	Parameter (Concentrations in mg/kg)	Lead

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Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

mg/kg - Milligrams per kilogram ft bls - Feet below land surface DUP - Duplicate sample Page 6 of 11

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NYDEC- Recommended Soil Cleamp Level (mg/kg) 1,000 1,3 3 18 39 165 6 145 6 266 266 266	Sa	iample Designation: mple Depth (ft bls): Sample Date:	SS-21 1-2 12/9/97	SS-22 0-1 12/9/97	SS-22 1-2 12/9/97	SS-23 0-1 12/10/97	SS-23 1-2 12/10/97	SS-24 0-1 12/9/97	SS-24 1-2 12/9/97	SS-25 0-1 12/10/97
1,000     17.3     318     39     165     61     145     6     266       3-     Milligrams per kilogram       3-     Milligrams per kilogram       3-     Milligrams per kilogram       3-     Pete below land surface       3-     Duplicate sample	er ıtrations in mg/kg)	NYSDEC - Recommended Soil Cleanup Level (mg/kg)								
<ul> <li>3 - Milligrams per kilogram</li> <li>5 - Feet below land surface</li> <li>3 - Duplicate sample</li> </ul>		1,000	17.3	318	39	165	61	145	9	266
	<ul> <li>g - Milligrams per kils</li> <li>s - Feet below land su</li> <li>P - Duplicate sample</li> </ul>	ogram rface								
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Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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	Sample Designation: Sample Depth (ft bls): Sample Date:	SS-25 1-2 12/10/97	SS-26 0-1 12/10/97	SS-26 1-2 12/10/97	SS-27 0-1 12/10/97	SS-27 1-2 12/10/97	SS-28 0-1 12/10/97	SS-28 1-2 12/10/97	SS-29 0-1 12/10/97
neter centrations in mg/kg)	NYSDEC - Recommended Soil Cleanup Level (mg/kg)								
	1,000	9	145	101	454	=	98.8	17	205
/kg - Milligrams pe bls - Feet below lar UP - Duplicate sam	r kilogram Id surface ple								
								• • •	• • •
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ROUX ASSOCIATES, INC.

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	Sample Designation: Sample Depth (ft bls): Sample Date:	SS-29 1-2 12/10/97	SS-30 0-1 12/10/97	SS-30 1-2 12/10/97	SS-31 0-1 12/10/97	SS-31 1-2 12/10/97	SS-32 0-1 12/10/97	SS-32 1-2 12/10/97	SS-33 0-1 12/10/97
n mg/kg)	NYSDEC - Recommended Soil Cleanup Level (mg/kg)								
	1,000	27	197	4	362	15.3	259	2	303
							1		

Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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mg/kg - Milligrams per kilogram ft bls - Feet below land surface DUP - Duplicate sample

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ROUX ASSOCIATES, INC.

Parameter       NYSDEC - Recommeded         Parameter       Recommeded         Soil Cleamp       Soil Cleamp         Concentrations in mg/kg)       Level         (mg/kg)       1,000       12       306       21.8       99.1       6       28       5         mg/kg - Miligrams per kilogram ft bls - Feet below land surface       DUP - Dublicate sample	NYSDEC- Recommended Soil Cleanup Level (Concentrations in mg/kg)       NYSDEC- Recommended Soil Cleanup (mg/kg)         Dead       Level (mg/kg)       Soil Cleanup (mg/kg)         Lead       1,000       12       306       21.8       99.1       6       28       5       24         mg/kg - Milligrams per kilogram ft bls - Feet below land surface DUP - Duplicate sample       1,000       12       306       21.8       99.1       6       28       5       24		Sample Designation: Sample Depth (ft bls): Sample Date:	SS-33 1-2 12/10/97	SS-34 0-1 12/10/97	SS-34 1-2 12/10/97	SS-35 0-1 12/10/97	SS-35 1-2 12/10/97	SS-36 0-1 12/10/97	SS-36 1-2 12/10/97	SS-37 0-1 12/10/9*
Concentrations in mg/kg)(mg/kg)Lead1,0001230621.899.16285mg/kg - Milligrams per kilogramft bls - Feet below land surfaceDUP - Dublicate sample	Concentrations in mg/kg)       (mg/kg)         Lead       1,000       12       306       21.8       99.1       6       28       5       24         mg/kg - Milligrams per kilogram ft bls - Feet below land surface DUP - Duplicate sample       1,000       12       306       21.8       99.1       6       28       5       24	Parameter	NYSDEC - Recommended Soil Cleanup Level								
Lead1,0001230621.899.16285mg/kg - Milligrams per kilogramft bls - Feet below land surfaceDUP - Dublicate sample	Lead1,0001230621.899.1628524.mg/kg - Milligrams per kilogram ft bls - Feet below land surface DUP - Duplicate sample10001230621.899.1628524.	(Concentrations in mg/kg)	(mg/kg)								
mg/kg - Milligrams per kilogram ft bls - Feet below land surface DUP - Duplicate sample	mg/kg - Milligrams per kilogram ft bls - Feet below land surface DUP - Duplicate sample	Lead	1,000	12	306	21.8	99.1	9	28	v	243
		mg/kg - Milligrams pe ft bls - Feet below lat DUP - Duplicate sam	r kilogram nd surface ple								

Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

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ROUX ASSOCIATES, INC.

Table 3. Summary of Lead Concentrations Detected in Soil Samples Collected in OU-4, Sunnyside Yard, Queens, New York.

	Sample Designation: Sample Depth (ft bls): Sample Date:	SS-37 1-2 12/10/97	SS-37DUP 0-1 12/10/97	SS-37DUP 1-2 12/10/97	SS-38 0-1 12/10/97	SS-38 1-2 12/10/97	
Parameter (Concentrations in mg/kg)	NYSDEC - Recommended Soil Cleanup Level (mg/kg)						
Lead	1,000	24	216	36	136	22	
mg/kg - Milligrams per ft bls - Feet below lan DUP - Duplicate sami	kilogram d surface ple						

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## **APPENDIX A**

Data Quality and Usability Report

ROUX ASSOCIATES, INC.

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### **Data Quality and Usability**

An evaluation of the overall quality and usability of the data generated by Industrial Corrosion Management, Inc. (ICM) of Randolph, New Jersey for Operable Unit 4 to support the High Speed Trainset construction at Sunnyside Yard, Queens, New York was completed. Thirty eight soil borings were sampled from each of three intervals (i.e., 0 to 1 foot, 1 to 2 feet, 2 to 3 feet) However, only seventy six samples were analyzed based on the delineation results (i.e., below the cleanup levels). The soil samples were analyzed for polycyclic aromatic hydrocarbons (PAHs) (New York State Department of Environmental Conservation [NYSDEC] Analytical Services Protocol [ASP] 95-2), polychlorinated biphenyls (PCBs) (NYSDEC ASP 95-3), and/or lead (USEPA Contract Laboratory Statement of Work). An additional nine samples were collected and analyzed for PCBs only for delineation.

### **1.0 DATA REVIEW**

The data review is presented by sampling parameter and evaluates the following criteria based on the laboratory documentation provided.

- Holding Times;
- GC/MS Instrument Performance Check;
- Initial Calibration;
- Continuing Calibration;
- Blanks;
- Surrogate Spikes;
- Matrix Spikes/Matrix Spike Duplicates/Matrix Spike Blanks;
- Sample Duplicates (inorganics);
- Laboratory Control Samples; and
- Internal Standards.

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Data were reviewed for laboratory precision, accuracy, and completeness in accordance with the National Functional Guidelines for Organic Data Review, and the National Functional Guidelines for Inorganic Data Review, as well as the Region II Standard Operating Procedures.

### 1.1 Polycyclic Aromatic Hydrocarbons

Holding times were met for all sample processing. Initial and continuing calibration standards were within the required limits. The matrix spike blanks were also within the recommended limits. Method blanks and instrument performance checks were compliant with the protocol requirements.

Sample matrix spikes and duplicates were performed on samples SS-6 (0-1), SS-7 (0-1), SS-17 (1-2), SS-23 (0-1), SS-24 (0-1), and SS-36 (0-1). All recoveries and duplicate correlation values were within recommended limits in all samples except SS-6(0-1). The percent recovery (140 percent) and relative percent difference (80 percent) for Acenaphthene were outside the QC limits in the matrix spike duplicate. [Note: The relative percent difference (RPD)for pyrene in SS-36 (0-1) and SS-7 (0-1) were reported outside control limits; however the calculations were incorrect. The RPDs are within the correct ranges.] No qualification is necessary based on the MS/MSD alone.

Sample Number	Compound (Surrogate)	% Recovery	<b>Control Limits</b>
SS-6 (0-1)	Nitrobenzene-d5	229	23-120
SS-6 (1-2)	Nitrobenzene-d5	852	23-120
SS-3 (0-1)RE	Terphenyl-d14	138	18-137
SS-1 (0-1) RE	Terphenyl-d14	141	18-137
SS-5 (0-1)RE	Terphenyl-d14	159	18-137
SS-6 (0-1)MS	Nitrobenzene-d5	185	23-120
SS-6 (0-1)MSD	2-Fluorobiphenyl	117	30-11
	2-Fluorophenol	152	525-121
	2,4,6-Tribromophenol	305	19-122
SS-11 (0-1)	Terphenyl-d14	146	18-137
SS-7 (0-1)MS	Terphenyl-d14	142	18-137
SS-11 (0-1)RE	Terphenyl-d14	138	18-137
SS-8 (0-1)RE	2,4,6-tribromophenol	13651	19-122

Surrogate recoveries were within the recommended limits with the exceptions noted below.

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Sample Number	Compound (Surrogate)	% Recovery	Control Limits
SS-24 (1-2)MS	2,4,6-tribromophenol	126	19 - 122
	Terphenyl-d14	143	18-137
SS-26 (1-2)	2,4,6-tribromophenol	132	19-122
SS-24 (1-2)	2,4,6-tribromophenol	127	19-122
	Terphenyl-d14	143	18-137
SS-23 (0-1)	2,4,6-tribromophenol	4990	19-122
SS-25 (0-1)	2,4,6-tribromophenol	5205	19-122
SS-26 (0-1)	2,4,6-tribromophenol	5562	19-122
SS-30 (0-1)	2,4,6-tribromophenol	6233	19-122
	Terphenyl-d14	154	18-137
SS-29 (0-1)	2,4,6-tribromophenol	6137	19-122
	Terphenyl-d14	151	18-137
SS-28 (0-1)	2,4,6-tribromophenol	8069	19-122
SS-25 (0-1)RE	2,4,6-tribromophenol	11546	19-122
SS-26 (0-1)RE	2,4,6-tribromophenol	11265	19-122
SS-29 (0-1)RE	2,4,6-tribromophenol	12955	19-122
SS-30 (0-1)RE	2,4,6-tribromophenol	284	19-122
	Terphenyl-d14	165	18-137
SS-31 (1-2)	2,4,6-Tribromophenol	5877	19-122
SS-33 (1-2)	2,4,6-Tribromophenol	6846	19-122
SS-34 (1-2)	2,4,6-Tribromophenol	5862	19-122
SS-35 (1-2)	2,4,6-Tribromophenol	6301	19-122
SS-31 (0-1)	2,4,6-Tribromophenol	5651	19-122
SS-36 (1-2)	2,4,6-Tribromophenol	289	19-122
SS-37 (0-1)	2,4,6-Tribromophenol	294	19-122
SS-37 (0-1)D	2,4,6-Tribromophenol	333	19-122
SS-38 (1-2)	2,4,6-Tribromophenol	300	
SS-37 (1-2)	2,4,6-Tribromophenol	294	19-122
SS-37 (1-2)D	2,4,6-tribromophenol	305	19-122
SS-38 (0-1)	2,4,6-tribromophenol	250	19-122
SS-36 (0-1)	2,4,6-tribromophenol	318	19-122
SS-33 (0-1)	2,4,6-tribromophenol	343	19-122
	Terphenyl-d14	155	18-137
SS-32 (0-1)	2,4,6-tribromophenol	334	19-122
	Terphenyl-d14	147	18-137
SS-35 (0-1)	2,4,6-tribromophenol	321	19-122
	Terphenyl-d14	141	18-137
SS-34 (0-1)	2,4,6-tribromophenol	269	19-122
	Terphenyl-d14	148	18-137
SS-32 (1-2)	2,4,6-tribromophenol	76650	19-122
SS-33 (0-1)DL	2,4,6-tribromophenol	14744	19-122
SS-34 (0-1)DL	2,4,6-tribromophenol	57214	19-122
SS-36 (0-1)MS	2,4,6-tribromophenol	73937	19-122

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Sample Number	Compound (Surrogate)	% Recovery	<b>Control Limits</b>
SS-36 (0-1)MSD	2,4,6-tribromophenol	67424	19-122
SS-31 (0-1)RE	2,4,6-tribromophenol	12513	19-122
SS-32 (0-1)RE	2,4,6-tribromophenol	15166	19-122
	Terphenyl-d14	176	18-137
SS-34 (0-1)RE	2,4,6-tribromophenol	13895	19-122
	Terphenyl-d14	176	18-137
SS-35 (0-1)RE	2,4,6-tribromophenol	10175	19-122
	Terphenyl-d14	170	18-137
SS-33 (0-1)RE	2,4,6-tribromophenol	1604	19-122
	Terphenyl-d14	206	18-137

Data are not qualified with respect to surrogate recovery unless two or more semivolatile surrogates within the same fraction are out of specification. As the acid extractable compounds are not required for this project, and no two base neutral surrogates are out of compliance, no action is required and the data are not qualified.

Standard area responses/retention times were within the recommended limits with the exceptions noted below.

Sample Number	Initial Analysis	Reanalysis
SS-7 (0-1)	chrysenes-d12/perylene-d12	perylene-d12
SS-7 (0-1)D	chrysene-d12/perylene-d12	perylene-d12/phenanthrene-d10
SS-9 (0-1)	chrysene-d12/perylene-d12	perylene-d12
SS-8 (0-1)	chrysene-d12/perylene-d12	perylene-d12
SS-11 (0-1)	chrysene-d12/perylene-d12	perylene-d12
SS-12 (0-1)	chrysene-d12/perylene-d12	perylene-d12
SS-7 (0-1)MSD	perylene-d12*	not reanalyzed (used as MSD)
SS-25 (0-1)	perylene-d12	perylene-d12
SS-26 (0-1)	perylene-d12	perylene-d12
SS-30 (0-1)	chrysene-d12/perylene-d12	perylene-d12*
SS-29 (0-1)	perylene-d12	perylene-d12
SS-13 (0-1)	chrysene-d12/perylene-d12	perylene-d12*
SS-15 (0-1)	chrysene-d12/perylene-d12	perylene-d12
SS-16 (0-1)	chrysene-d12/perylene-d12	perylene-d12
SS-17 (0-1)	chrysene-d12/perylene-d12	perylene-d12
SS-19 (0-1)	perylene-d12	perylene-d12
SS-6(0-1)	perylene-d12*	chrysene-d12/perylene-d12*
SS-6 (1-2)	perylene-d12	naphthalene-d8/acenapththene-d10
SS-5 (0-1)	perylene-d12	perylene-d12
SS-1 (0-1)	chrysene-d12/perylene-d12	chrysene-d12/perylene-d12

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Sample Number	Initial Analysis	Reanalysis
SS-2 (0-1)	chrysene-d12/perylene-d12	perylene-d12
SS-3 (0-1)	chrysene-d12/perylene-d12	perylene-d12
SS-31 (0-1)	perylene-d12	perylene-d12
SS-33 (0-1)	perylene-d12	perylene-d12
SS-32 (0-1)	perylene-d12	perylene-d12*
SS-35 (0-1)	perylene-d12	perylene-d12*
SS-34 (0-1)	perylene-d12	perylene-d12*
*also included elevated	standards for 1 4-dichlorobenzene	-d4 nanhthalene-d8 acenanhthene-d10

and/or phenanthrene-d10.

The semivolatile analysis of samples produced depressed responses for internal standards indicating a matrix effect. These samples were reanalyzed and produced the same depressed responses. Detected values for these samples should be qualified as estimated and reported detection limits for these samples should be considered estimated, possibly biased low.

### **1.2 Polychlorinated biphenyls**

Holding times were met for all sample processing. Method blank, initial and continuing calibration standards were compliant with protocol requirements. Sample matrix spikes and duplicates were performed on samples SS-23 (0-1), SS-16 (1-2), TTS-2, SS-20 (1-2), SS-5 (1-2) and SS-35 (1-2). All recoveries and duplicate correlation values were within recommended limits with the exceptions listed below.

Sample Number	Analyte	Percent Recovery MS/MSD	Control Limit
SS-23 (0-1)	Dieldrin	151/137	31-134
	Endrin	151	42-139
	4,4'-DDT	178/164	23-134
SS-16 (1-2)	gamma BHC	176/165	46-127
	Heptachlor	147/135	35-130
	Aldrin	159/147	34-132
	Dieldrin	168/158	31-134
	Endrin	197/188	42-139
	4,4'-DDT	194/179	23-134

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Sample Number	Analyte	Percent Recovery MS/MSD	Control Limit
TTS-2	Aldrin	189/137	34-132
	Dieldrin	189/184	31-134
	Endrin	184/184	42-139
	4,4'-DDT	395/368	23-134
SS-20 (1-2)	gamma BHC	122/128	46-127
	Endrin	139/142	42-139
SS-22 (0-1)	Aldrin	95/140	34-132
	Dieldrin	182/213	31-134
	Endrin	121/141	42-139
	4,4 <b>'-</b> DDT	141/172	23-134

No action is taken on the MS/MSD results alone, and pesticides are not constituents of concern; therefore, no qualification is necessary. Matrix spike blank and QC check standard recoveries were within the required range with the exception of the QA/QC samples for SS-16 (1-2) and SS-5 (1-2). The Aroclor 1260 recovery was 158 and 161, respectively which is outside the acceptable range (37-140).

Sample	Compound	% Recovery	Control Limits
SS-7-12	Tetrachloro-m-xylene (TCX)	561	30-150
SS-7-12D	TCX	351	30-150
SS-9 (0-1)	TCX	342	30-150
SS-9 (1-2)	TCX	635	30-150
SS-8 (1-2)	TCX	427	30-150
SS-10 (1-2)	TCX	349	30-150
SS-11 (1-2)	TCX	519	30-150
SS-12 (1-2)	TCX/DCB	630/154	30-150
SS-7 (0-1)	TCX	525	30-150
SS-7 (0-1) D	TCX	314	30-150
SS-8 (0-1)	TCX/DCB	682/167	30-150
SS-10 (0-1)	TCX	609	30-150
SS-11 (0-1)	TCX	391/226*	30-150
SS-12 (0-1)	TCX/DCB	342/207	30-150
SS-7 (0-1) DL	TCX/DCB	443/164	30-150
SS-7D (0-1) DL	TCX/DCB	274/167	30-150
SS-8 (0-1) DL	TCX	631	30-150
	DCB	210/155*	

Surrogate standard recoveries met protocol requirements with the exceptions provided.

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Sample	Compound	% Recovery	Control Limits
SS-11 (0-1) DL	TCX	350	30-150
	DCB	268/375*	
SS-10 (0-1) DL	TCX	534	30-150
SS-12 (0-1) DL	тсх	317	30-150
	DCB	281/327*	
Blank Spike	TCX	324	30-150
SS-25 (1-2)	TCX	29	30-150
SS-27 (0-1)	TCX	24/19*	30-150
SS-29 (0-1)	TCX	163/159*	30-150
	DCB	177/169*	
SS-29 (1-2)	TCX	155/151*	30-150
SS-25 (0-1)	DCB	157/156*	30-150
SS-26 (0-1)	DCB	163	30-150
SS-28 (0-1)	DCB	155	30-150
SS-25 (0-1) DL	DCB	173	30-150
SS-30 (0-1)	DCB	179	30-150
SS-23 (MS)	TCX	169/169*	30-150
	DCB	178/172*	
SS-23 (MSD)	TCX	169/163*	30-150
	DCB	192/169*	
SS-13 (1-2)	TCX	157/156*	30-150
SS-14 (1-2)	TCX	151/152*	30-150
SS-18 (0-1)	TCX	151	30-150
SS-13 (0-1) DL	TCX	168	30-150
	DCB	269/223*	
SS-15 (0-1) DL	TCX	169	30-150
	DCB	204/162*	
SS-16 (0-1) DL	TCX	151	30-150
	DCB	159	
SS-17 (0-1) DL	TCX	204/158*	30-150
	DCB	347/319*	
SS-19 (0-1) DL	DCB	757	30-150
SS-15 (0-1)	TCX	171/167*	30-150
···	DCB	166/177*	
SS-16 (0-1)	DCB	179/173*	30-150
SS-13 (0-1)	DCB	210/235*	30-150
SS-17 (0-1)	TCX	174/173*	30-150
	DCB	280/341*	
SS-19 (0-1)	TCX	153/153*	30-150
	DCB	208/235*	
SS-22 E 15	DCB	159/179	30-150
SS-22 E 30	DCB	218/200	30-150
SS-19 W 30 DL	DCB	153	30-150

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Sample	Compound	% Recovery	Control Limits
SS-22 W 30 DL	DCB	195	30-150
SS-22 E 15 DL	DCB	201/198	30-150
SS-22 E 30 DL	DCB	217/202	30-150
PBLK	тсх	264/297*	30-150
	DCB	229/236*	
SS-20 (0-1)	TCX	225/208	30-150
· · ·	DCB	189	
SS-22 (0-1)	ТСХ	448/572	30-150
	DCB	460	
SS-24 (0-1)	TCX	625/513*	30-150
	DCB	417/197*	
SS-22 (0-1) DL	TCX	500	30-150
	DCB	442	
SS-24 (0-1) DL	TCX	661/158*	30-150
_	DCB	637	
Blank Spike	TCX	339	30-150
QA/QC	TCX	730/166*	30-150
	DCB	158	
SS-1 (0-1)	TCX	13	30-150
	DCB	26/18*	
SS-3 (0-1) DL	DCB	160/174*	30-150
SS-2 (0-1) DL	DCB	156	30-150
SS-3 (0-1) DL	DCB	200/173*	30-150
SS-38 (1-2)	TCX	21	30-150
SS-35 (2-3)	TCX	2/2*	30-150
	DCB	13/12*	
SS-33 (1-2)	TCX	28	30-150
SS-34 (1-2)	TCX	5/5*	30-150
SS-35 (0-1)	TCX	17/16	30-150
SS-31 (0-1)	DCB	247/260	30-150
SS-32 (0-1)	DCB	308/242*	30-150
SS-33 (0-1)	DCB	234/286*	30-150
SS-31 (0-1) DL	DCB	355/283	30-150
SS-34 (0-1)	TCX	164	30-150
	DCB	509/0*	
SS-32 (0-1) DL	DCB	497/287	30-150
SS-33 (0-1) DL	DCB	453/429*	30-150
SS-34 (0-1) DL	TCX	186	30-150
	DCB	547/154*	
*Both columns		· · · · · · · · · · · · · · · · · · ·	

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The high recoveries of these surrogates indicates a high bias due to co-eluting interferences. All detected PCBs are qualified as estimated; nondetects are not qualified. All retention times were within the control limits.

### 1.3 Lead

Holding times, calibration criteria, method blanks, laboratory control samples, and sample duplicates were compliant with protocol requirements. Matrix spike recoveries met protocol requirements with the following exceptions:

Sample Number	Percent Recovery	Relative Percent Difference	Control Limits
SS-12 (1-2)	1078.4	2.1	75-125
SS-14 (0-1)	431.5	29	75-125
SS-30 (0-1)	40.2	0.8	75-125
SS-37 (0-1)	48.2	1.4	75-125
SS-38 (0-1)	71.5	1.5	75-125

In accordance with the Region II SOWs, the spike recovery limits do not apply when sample concentrations exceed the spike concentration by a factor of four or greater. Data shall be reported unflagged even when the percent recovery does not meet acceptance criteria.

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### 2.0 OVERALL DATA QUALITY/USABILITY ASSESSMENT

Based upon the evaluation of the data, and a review of laboratory and field QA/QC, the chemical data generated have generally met the data quality objectives established for the sampling.

### 2.1 Precision

The overall precision review was based upon laboratory samples. A review of laboratory duplicate samples, as measured by the sample duplicates SS-7 (0-1), SS-7 (1-2), SS-37 (0-1), and SS-37 (1-2), and MS/MSD results demonstrates adequate reproduction of all sample results when detectable concentrations of analytes were present. Only one field duplicate sample (SS-37 [0-1]) exceeded 50 percent difference for Aroclor 1254 (66.7%) and Aroclor 1260 (60%). However, no qualification is required.

### 2.2 Accuracy

The accuracy of the chemical data generated was reviewed based on the results for holding times, laboratory control samples, calibration criteria, spiked samples, and surrogate standards. Based upon this review, the accuracy of the chemical analyses is acceptable.

### 2.3 Completeness

The data completeness as measured by the percentage of overall usable data is considered acceptable based on the data review.

W/AM05552Y04.176/APA

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# **APPENDIX B**

# Disposal Manifests

ROUX ASSOCIATES, INC.

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APPROVAL NUMBER:	MANIFEST NUMBER:	34533
CLEAN EARTH	OF NEW CASTLE, INC.	
94 Pyles Lane New Castle, De Ph: 302.427.6633 An Equal Opp	P.O. Box 1049 laware 19720-1049     Fax: 302.427.6634 portunity Employer	94
(TYPE OR PRINT CLEARLY) Non-Hazardous	s Material Manifest	
GENERATOR'S NAME ADDRESORP.	GENERATOR'S SITE ADDRESS:	
400 WEST 31ST ST., 5TH FLOOR	39-29 HONEYWELL ST.	
HEW YORK, NY 10001	LONG ISLAND CITY, NY 111	01
212-630-6215		
GENERATOR'S PHONE: (212) 630-6215		
DESCRIPTION OF MATERIAL:	22	
Non DOT Regulated - RCRA Non-Hazardous Petroleum Hydrocarbon Contaminated Soil	Quantity (estimated per truck)	
I hereby certify that the above described materials is not contaminated by PCB as defined by 40 CFR Part 761. described in the application for treatment provided to Clean listed above. It is property classified and packaged for trans	a hazardous waste as defined by 40 CFR Additionally it is the same material which Earth of New Castle, Inc. which resulted in the sportation in accordance with applicable regul	Part 261 nor is it was analyzed and le approval number ations.
Name: Augustine Juliano	Title: Sr. Project Engineer	c
Signature:	4/15/98 Date:	K
TRANSPORTER		
Company: tab Nab	Phone Number:	
Address:		
Driver:	DE SW Haulers Permit #	070
I/hereby certify that the above named m	aterial was picked up at the site listed above	
Driver Signature:	Date:	-98
DESTINATION	······································	
I hereby certify that the above named material was delivere at Pyles Lane, New Castle, Delaware.	d without incident to the Clean Earth of New	Castle, Inc. facility
	Date:/1\$/	96
I hereby certify that the above named material has been acc	epted at Clean Earth of New Castle, Inc.	
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Gross Weight:	87940 15 02:09 PM 04/19	/98
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