Long Island Rail Road

Delineation Phase II
Site Assessment Investigation Report
Cedar Manor Substation: Site No. V00388-2

May 2010

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

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Helena E. Williams
President

Long Island Rail Road

May 20, 2010

Robert H. Filkins, Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A
625 Broadway, 11th Floor
Albany, NY 12233-7016

Re: LIRR Cedar Manor (NYSDEC VCA No. V00388-2)
Delineation Phase II Site Assessment Investigation Report

Dear Mr. Filkins:

Enclosed please find two copies of the Final Report entitled:

"Delineation Phase II Site Assessment Investigation Report
LIRR Cedar Manor Substation
(NYSDEC VCA No. V00388-2)"

Please be advised that the LIRR will be decommissioning the Cedar Manor Substation as part of an overall capital program system upgrade project. In addition, a Remedial Action Work Plan (RAWP) will be submitted to your Department subsequent to your approval of the proposed remedial actions presented in the enclosed document.

Please do not hesitate to contact me at (718) 558-3620 if you have any questions or comments.

Very truly yours,

Andrew Wilson, P.E.
Project Manager

AW/SET/kap,jmy
cc: Case Attorney (NYSDEC)
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METROPOLITAN TRANSPORTATION AUTHORITY

LONG ISLAND RAIL ROAD

DELINEATION PHASE II SITE ASSESSMENT FOR CEDAR MANOR SUBSTATION (V00388-2)

INVESTIGATION REPORT

Prepared for:

METROPOLITAN TRANSPORTATION AUTHORITY

LONG ISLAND RAIL ROAD

Prepared by:

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS

WOODBURY, NEW YORK 11797

MAY 2010

LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT FOR
CEDAR MANOR SUBSTATION
INVESTIGATION REPORT

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1.0 INTRODUCTION

This Investigation Report presents the results of the Delineation Phase II Site Assessment, conducted at the Long Island Rail Road (LIRR) Cedar Manor Substation which was completed in accordance with fully executed Voluntary Cleanup Agreement No. V00398-1.

The objectives of the Delineation Phase II Site Assessment included the following:

- Define the nature and extent of impacts to surface and subsurface soil;
- Determine if site-related contaminants have impacted groundwater quality;
- Identify potential impacts to human health and/or the environment associated with site-related contaminants; and
- Obtain sufficient data to determine the need for remedial action and to evaluate remedial alternatives that may be implemented as a final long-term remedy for the site.

Field activities and sampling procedures associated with the Delineation Phase II Site Assessment at the Cedar Manor Substation were completed in accordance with the NYSDEC-approved "Investigation Work Plan" dated June 2005.

The following subsections provide relevant project background information, including detailed descriptions of the Cedar Manor Substation site, as well as a summary of the findings of prior investigation work.

1.1 Project Background

The LIRR designed, constructed and operated substations from the early 1930's through 1951 that utilized mercury rectifiers. These rectifiers allowed the LIRR to receive 60-cycle, alternating current (AC) from local utilities and convert it to direct current (DC) for use as a source of electric power for its locomotives and electric passenger car fleet. The LIRR identified

20 substations located throughout Queens, Nassau and Suffolk Counties that once utilized mercury containing rectifiers, including the Cedar Manor Substation.

It is believed that during the early 1980s, the mercury rectifiers were taken out of service and physically removed from these LIRR substations and replaced with non-mercury containing solid state equipment. However, due to uncertainties surrounding the work practices that may have been employed when managing the operation and maintenance of these mercury rectifiers, the LIRR believed it necessary to conduct environmental assessments at these 20 electric substations to determine the potential effects that may have occurred to the surrounding environment.

Between 1999 and 2000, the LIRR conducted environmental assessments at the 20 electric substations previously utilizing mercury-containing rectifiers. The results of these assessments were documented in a report prepared by Dvirka and Bartilucci Consulting Engineers (D&B), entitled, "Site Assessment of 20 Substations for Mercury Contamination," dated December 2000. Based on the findings of that report, mercury was identified in soil at all 20 substations, including the Cedar Manor Substation, at concentrations above the New York State Department of Environmental Conservation's (NYSDEC's) recommended cleanup objectives (TAGM 4046). In order to further delineate and remediate impacted soil at the 20 substations, the LIRR has agreed to undertake and complete Delineation Phase II Site Assessments under the NYSDEC Voluntary Cleanup Program (VCP). In support of this VCP, the LIRR elected to conduct Delineation Phase II Site Assessment activities at the Cedar Manor Substation.

The report discusses the data generated as part of the Initial Site Assessment and Delineation Phase II Site Assessment activities conducted at the Cedar Manor Substation.

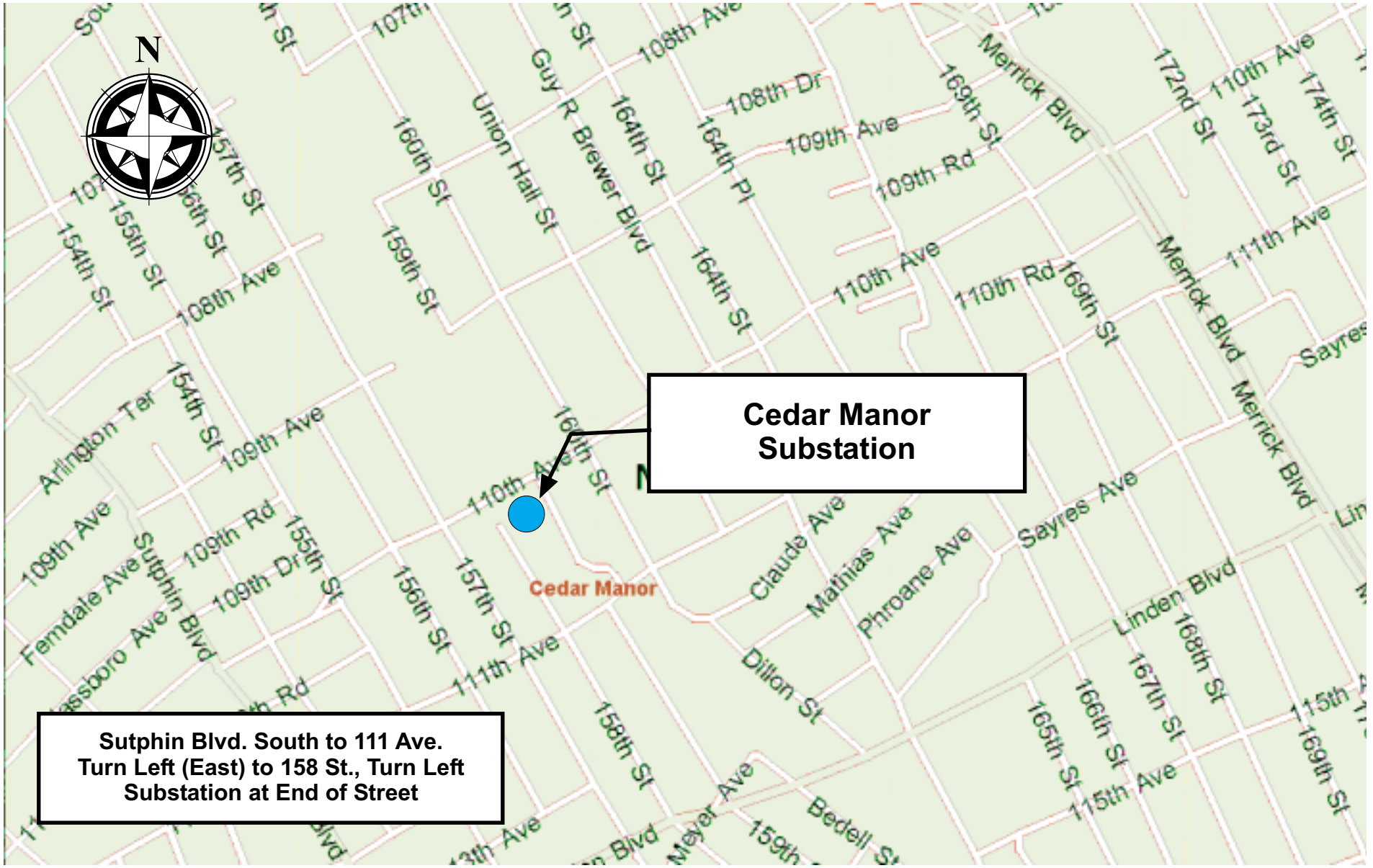
1.2 Site Description

The Cedar Manor substation site is located in Cedar Manor, Queens County, New York and depicted on **Figure 1-1**. The substation consists of an approximately 1,800 square foot one-story brick building shown on **Figure1-2**. An approximately 1,600 square foot transformer yard is located adjacent to the north of the substation building and is enclosed by a chain-link fence. The substation building and transformer yard is presently utilized to convert alternating current to direct current for the LIRR-Far Rockaway branch. There is also a 90 square foot Consolidated Edison transformer area located to the west of the substation. The land surrounding the substation and the transformer yard consists of residential areas.

The Cedar Manor substation is equipped with a basement, sanitary and water services and a utility trench system. The interior of the substation consists of two active solid-state rectifiers located over two pits that lead to the basement that once serviced mercury-containing rectifiers. The substation is also equipped with a water pipe trench with an earthen bottom located in the southwest corner of the substation. It should be noted that the Cedar Manor substation contains a bank of active lead-acid batteries located in a room along the west side of the substation to provide back-up electricity.

The initial site inspection identified two open grate dry wells located to the south of the substation, as well as a water meter pit with an earthen bottom located along the southwest corner of the substation. In addition, a roof drainage line was observed to discharge to surface soil along the east side of the substation. It should also be noted that a clean-out and vent was observed off the northwest corner of the substation.

According to LIRR representatives and available LIRR construction drawings, the Cedar Manor substation was expanded in approximately 1947. The original substation consisted of a rectifier pit and a water trough pit, which are thought to have been backfilled during the substation building expansion, and two new rectifiers were relocated over two new pits which lead to the basement. D&B targeted concrete corings and soil borings in the likely locations of the original rectifier and water trough pits based on a review of the drawings.



KRB/2229 (LIRR)/sitemaps.cdr(03/29/04)

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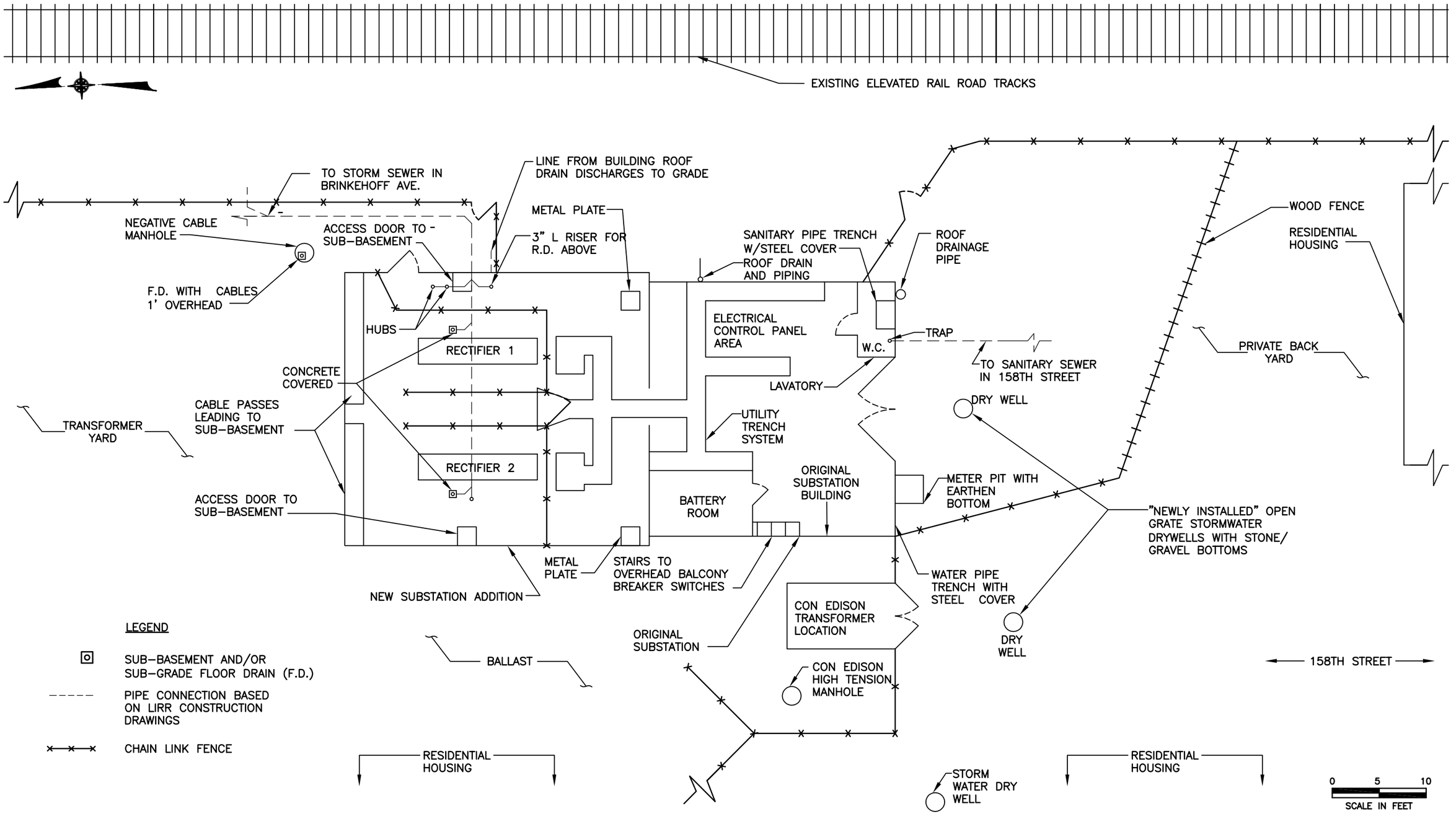
LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

SITE LOCATION MAP
CEDAR MANOR SUBSTATION (V00388-2)

NOT TO SCALE

FIGURE 1-1



SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

SITE PLAN
CEDAR MANOR SUBSTATION (V00388-2)

FIGURE 1-2

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It should be noted that, according to LIRR representatives, the Cedar Manor substation had been renovated in the last 10 to 15 years. Renovation activities included the installation of new storm water dry wells, the addition of ballast to the substation grounds and interior painting of the substation building.

1.3 Summary of Prior Investigations

The LIRR completed the Initial Site Assessment of the Cedar Manor Substation in 1999, as documented in the report entitled, "Site Assessment of 20 Substations for Mercury Contamination," dated December 2000. Investigation methods utilized during this Initial Site Assessment included a site inspection, mercury vapor measurements and drainage determinations. In addition, samples of various environmental media were collected at the site for laboratory analysis. These media included surface soil, subsurface soil and concrete cores. Analytical data generated from the Initial Site Assessment are presented in Appendix A of this report.

Additional details regarding the Initial Site Assessment of the Cedar Manor Substation are presented in the previously referenced report "Site Assessment of 20 Substations for Mercury Contamination." Note that the findings of the 2000 Initial Site Assessment were utilized as the basis for developing the investigation scope of work for the Delineation Phase II Site Assessment investigation. Below is a summary of the findings of the Initial Site Assessment of the Cedar Manor Substation.

Drainage Determination

According to available LIRR construction drawings, the existing Cedar Manor substation contains two floor drains in the basement that discharge to the storm sewer in Brinkehoff Avenue. D&B attempted to conduct flush and dye tests, however, the floor drains located in the basement were permanently concrete capped. As a result, the discharge point of these floor drains could not be verified in the field.

Sampling and Analysis

The following subsections describe the findings associated with surface soil, subsurface soil and concrete core samples collected from the Cedar Manor Substation during the completed previous investigations. All samples were analyzed for mercury. Samples collected during this phase of the investigation were compared to the TAGM 4046 Recommended Soil Cleanup Objectives (RSCOs); however, as of December 2006, the NYSDEC has mandated new cleanup objectives, and as such, all Initial Site Assessment data has been reevaluated and compared to the NYCRR Subpart 375 Soil Cleanup Objectives (SCOs) for industrial and residential sites. Therefore, all mercury concentration data associated with the soil samples collected from outside the fenced areas of the substation property are compared to the Residential Use SCOs and all soil samples collected from within the fenced areas are compared to the Industrial Use SCOs. Due to the need to compare the sample data to these two separate SCOs, the below discussion has accordingly been divided into two sections. Note that, as per the United States Environmental Protection Agency (USEPA), all soil samples collected from or associated with Underground Injection Control (UIC) structures will be compared to TAGM 4046. Sample locations are provided on Figure 2-1 in Section 2.0. Results for the mercury analysis are provided in Appendix A.

Surface Soil

Non-Fenced

One surface soil sample (CMSS-03) was collected in the non-fenced area of the Cedar Manor Substation. Mercury was not detected at concentrations exceeding the Residential SCO for mercury of 0.81 mg/kg in the collected surface soil sample.

Fenced Area

Three surface soil samples were collected from the fenced area of the Cedar Manor Substation. None of the samples collected from the fenced areas of the Cedar Manor Substation exhibited detectable concentrations of mercury in exceedance of the Industrial SCO for mercury of 5.7 mg/kg.

Subsurface Soil

Note that a total of two subsurface soil samples were collected in the fenced areas of the substation property during the Initial Site Assessment. Neither of the two collected samples exhibited detectable concentrations of mercury in exceedance of the Industrial SCO for mercury of 5.7 mg/kg.

Concrete

Five concrete core samples were collected from within the substation building. None of the five concrete core samples collected from the Cedar Manor substation exhibited detectable concentrations of mercury in exceedance of the Industrial SCO of 5.7 mg/kg.

Underground Injection Control (UIC) and Below Grade Structures

Dry Wells

One sample (CMSB-02 [8 to 10 feet]) was collected from the dry well located approximately 27 feet southwest of the substation building for mercury analysis. Dry well sample CMSB-02 (8 to 10) exhibited a mercury concentration of 2.7 mg/kg, in exceedance of the TAGM SCO for mercury of 0.10 mg/kg.

Two samples (CMSB-03 [8 to 10 feet and 12 to 14 feet]) were collected from the storm water dry well located approximately 14 feet off the southwest corner of the substation building.

Neither of the two collected samples exhibited detectable mercury concentrations in exceedance of the TAGM SCO of 0.10 mg/kg.

Two samples (CMSB-04 [8 to 10 feet and 12 to 14 feet]) were collected from the dry well located approximately 6 feet south of the substation front entrance doors for mercury analysis. Both collected samples exhibited mercury concentrations in exceedance of the TAGM SCO for mercury of 0.10 mg/kg. Dry well samples CMSB-04 (8 to 10 feet and 12 to 14 feet) exhibited mercury concentrations of 1.7 mg/kg and 7.6 mg/kg, respectively.

Water Meter Pit

Two samples (CMSB-05 [3.5 to 5.5 feet and 7.5 to 9.5 feet]) were collected from the water meter pit located adjacent to the southwest wall of the substation building. One of the two collected samples (CMSB-05 [3.5 to 5.5 feet]) exhibited a mercury concentration in exceedance of the Industrial SCO for mercury of 5.7 mg/kg at a concentration of 13.8 mg/kg. Note that, as this structure was not designed to accept waste fluids, samples collected from this structure have been compared to the Industrial Use SCOs.

West Rectifier

Two samples (CMSB-06 (0 to 2 feet and 4 to 6 feet]) were collected from the rectifier pit located in the western portion of the substation building for mercury analysis. Both collected samples exhibited detectable concentrations of mercury in exceedance of the TAGM SCO for mercury of 0.10 mg/kg. Subsurface soil samples CMSB-06 (0 to 2 feet and 4 to 6 feet) exhibited mercury concentrations of 1.6 mg/kg and 2.3 mg/kg, respectively.

East Rectifier

Two samples (CMSB-08 [0 to 2 feet and 4 to 6 feet]) were collected from the rectifier pit located in the eastern portion of the substation building for mercury analysis. One of the two

collected samples, CMSB-08 (0 to 2 feet) exhibited a mercury concentration of 0.19 mg/kg, slightly in exceedance of the TAGM SCO for mercury of 0.10 mg/kg.

Interior Sanitary Pipe Trench

Two samples (CMSB-09 (0 to 2 feet and 4 to 6 feet]) were collected from the interior sanitary pipe trench located in the southeast portion of the substation building. Neither of the collected samples exhibited detectable concentrations of mercury in exceedance of the Industrial SCO for mercury of 5.7 mg/kg. Sample CMSB-09 (0 to 2 feet and 4 to 6 feet) exhibited mercury concentrations of 1.9 mg/kg and 0.20 mg/kg, respectively. Note that, as this structure was not designed to accept waste fluids, samples collected from this structure have been compared to the Industrial Use SCOs.

Utility Trench Pit

One sample (CMSB-10 (0 to 2 feet]) was collected from the utility trench located in the center of the substation building for mercury analysis. Soil sample CMSB-10 (0 to 2 feet), at a mercury concentration of 3.0 mg/kg, did not exhibit a mercury concentration in exceedance of the Industrial SCO for mercury of 5.7 mg/kg. Note that, as this structure was not designed to accept waste fluids, samples collected from this structure have been compared to the Industrial Use SCOs.

2.0 INVESTIGATION METHODS

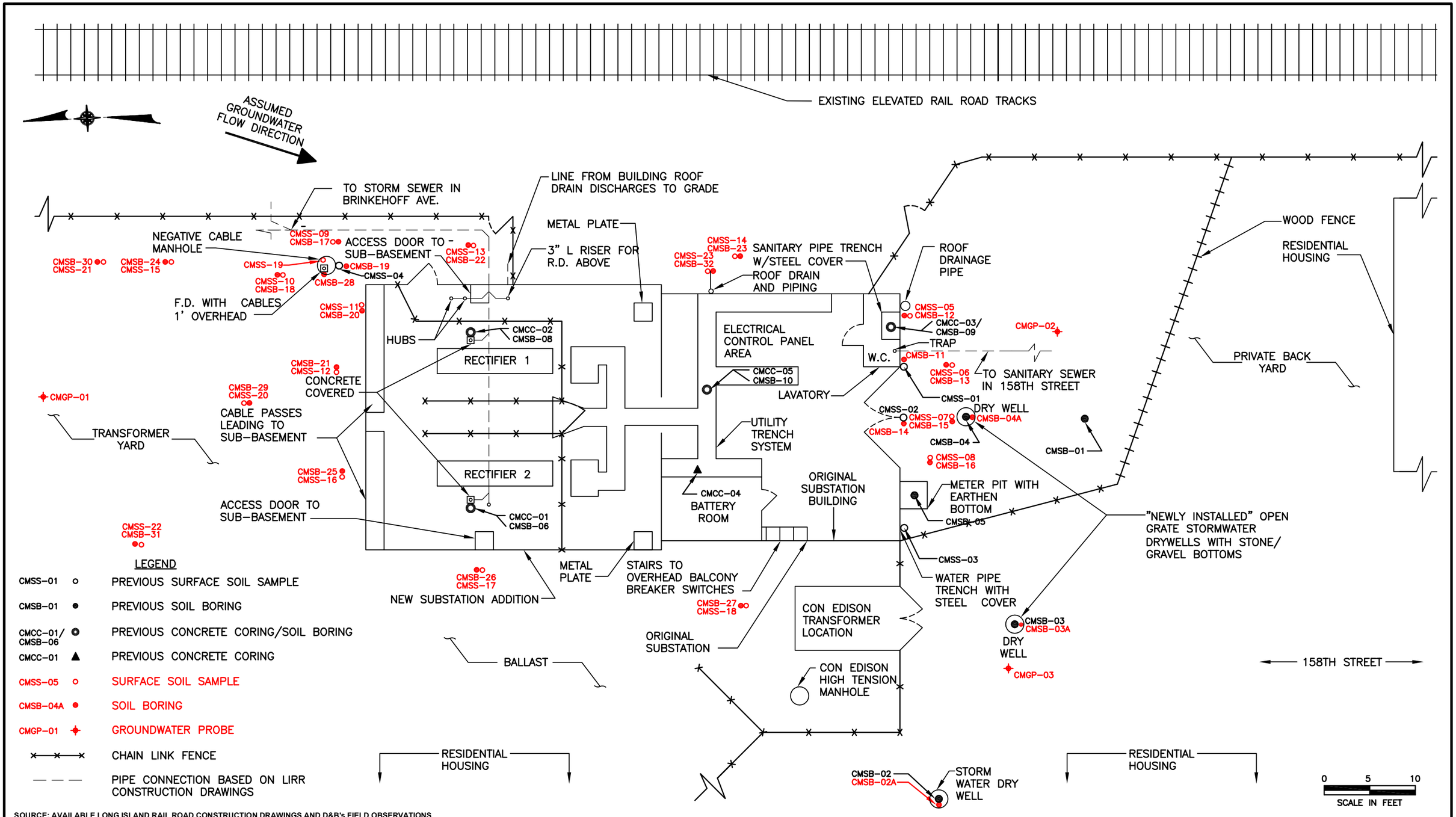
2.1 Introduction

This section provides a description of the field activities conducted at the Cedar Manor Substation site as part of the Delineation Phase II Site Assessment. The initial scope of work was completed in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved Work Plan, dated June 2005, in November 2005. Based on the results of this sampling, D&B provided the LIRR and the NYSDEC with a July 2006 Preliminary Evaluation as to the nature and extent of contamination along with recommendations for additional sampling and analysis. Based on the findings of the 2005 investigation, additional soil samples were collected in May 2008, March 2009 and May 2009, in areas exhibiting the greatest mercury concentrations. Note that the additionally proposed sampling locations were necessary to sufficiently define the identified elevated mercury concentrations in site soil and to develop an appropriate remedial plan for the substation. All additional sampling at the Cedar Manor Substation was completed by D&B in May of 2009.

Sample locations associated with the Delineation Phase II Site Assessment are depicted on **Figure 2-1**. **Figure 2-2** depicts the locations of the 2008 and 2009 additional delineation sample locations completed based on the results of the 2005 investigation. In addition, a sampling and analysis summary for the above listed investigation phases is provided on **Table 2-1**. Laboratory data generated as part of the Delineation Phase II Site Assessment is included in Appendix B.

2.2 Surface Soil Sampling

A total of 42 surface soil samples were collected at the Cedar Manor Substation as part of the Delineation Phase II Site Assessment. Surface soil samples were collected from a depth of 0 to 2 inches below ground surface. All samples were collected utilizing a dedicated polyethylene scoop and placed into laboratory-supplied glass bottles. Filled sample bottles were then placed into an ice-filled cooler for subsequent shipment to the analytical laboratory.



SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

SAMPLE LOCATION MAP
CEDAR MANOR SUBSTATION (V00388-2)

FIGURE 2-1

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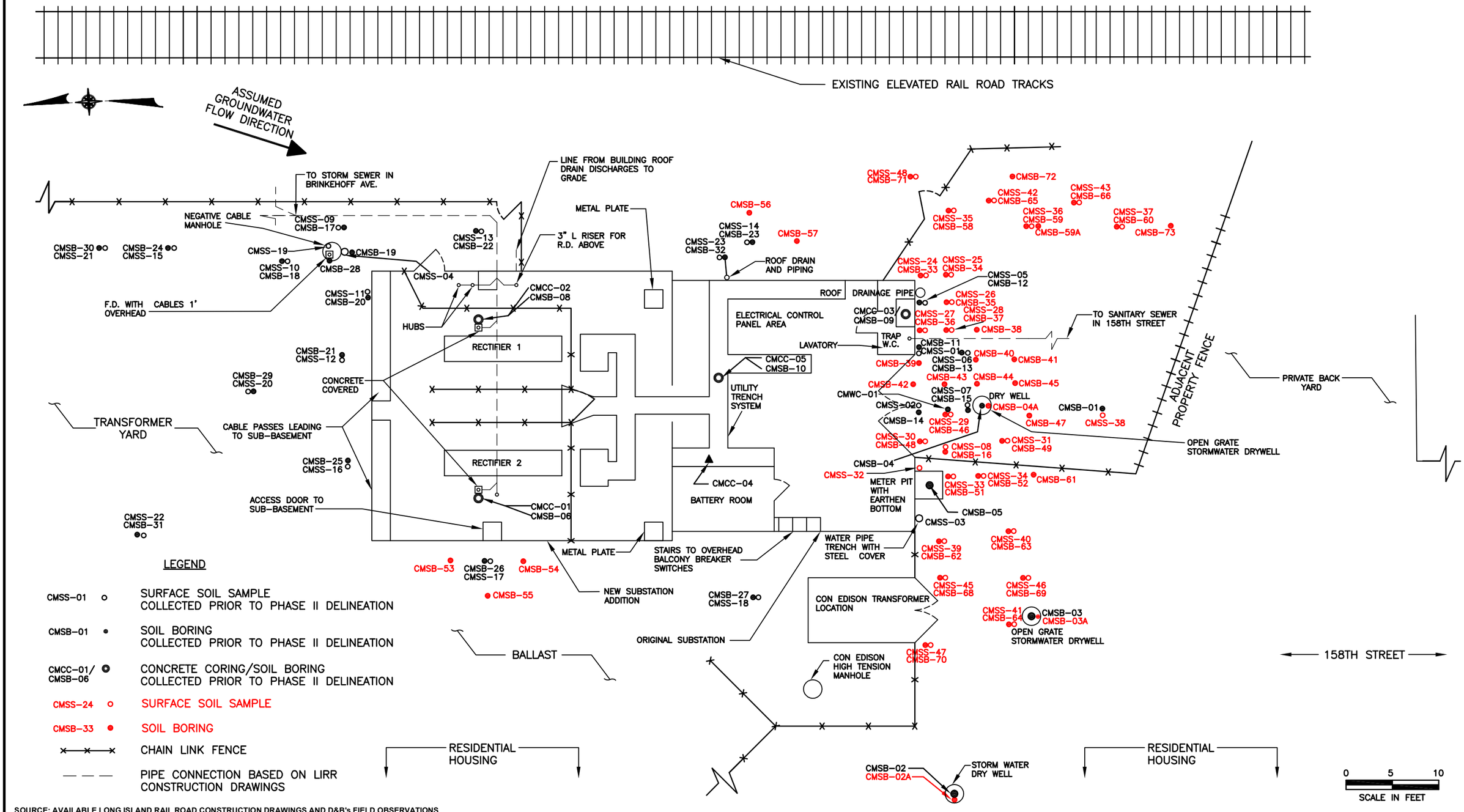

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LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

ADDITIONAL DELINEATION SAMPLE LOCATION MAP
CEDAR MANOR SUBSTATION (V00388-2)

FIGURE 2-2

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TABLE 2-1
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE ASSESSMENT - SEVENTEEN SUBSTATIONS
CEDAR MANOR (V00388-2) SUMMARY OF COMPLETED WORK

Location	Sample Designation	SURFACE SOIL SAMPLES**	SOIL PROBES/BORINGS			GROUNDWATER PROBES		Recommended Analyses								Comments
			No. of Probes	No. of Samples	Soil Sampling Interval	No. of Probes	Approximate Total Depth of Probes	Mercury	Arsenic	RCRA Metals	TAL Metals	PCBs	VOCs	SVOCs	USEPA UIC Constituents *	
South Side of Substation	CMSB-11	-	1	1	2-4' bgs	-	-	1	-	-	-	-	-	-	-	No deviations from original scope.
	CMSS-05 & 06 CMSB-12 & 13	2	2	4	2-8' bgs Cont. at CMSB-12 2-4' bgs at CMSB-13	-	-	6	-	-	-	-	-	-	-	No deviations from original scope.
	CMSB-14	-	1	1	2-4' bgs	-	-	1	-	-	-	-	-	-	-	No deviations from original scope.
	CMSS-07 & 08 CMSB-15 & 16	2	2	2	2-4' bgs	-	-	4	-	-	-	-	-	-	-	CMSS-08 and CMSB-16 were moved approximately 2' south due to refusal.
	CMSS-24 through 28 CMSB-33 through 41	5	9	21	1-2' bgs at CMSB-40, 1-2' and 2-4' bgs at CMSB-33 through 36 and 1-2' and 2-6' bgs Cont. at CMSB-37 through 39 and CMSB-41	-	-	26	-	-	-	-	-	-	-	-
	CMSS-29 through 32 CMSB-43 through 49	4	7	26	1-2' and 2-6' bgs Cont. at CMSB-45 through 47 and 1-2' and 2-8' bgs Cont at CMSB-43 & 44 and CMSB-48 & 49	-	-	30	-	-	-	-	-	-	-	-
	CMSS- 33 & 34 CMSB-51 & 52	2	2	2	1-2' bgs	-	-	4	-	-	-	-	-	-	-	-
	CMSS-35 through 46 CMSB-58 through 69	12	12	33	1-2' and 2-6' bgs Cont. at CMSB-58 through 60 and CMSB-62 through 69 4-8' bgs Cont. at CMSB-61 and 6-8' bgs at CMSB-59A	-	-	44	5	-	-	-	-	-	-	CMSS-35 through CMSS-37 and CMSS-39 through 40 were analyzed for arsenic.
	CMSS-47 & 48 CMSB-70 through 73	2	4	7	1-2' bgs at CMSB-70, 1-2' and 2-3' bgs at CMSB-71 and 1-2' and 2-4' bgs at CMSB-72 & 73	-	-	9	-	-	-	-	-	-	-	-
North Side of Substation	CMSS-09 through 12 CMSB-17 through 21	4	5	5	2-4' bgs	-	-	9	-	-	-	-	-	-	-	CMSS-09 and CMSB-17 were moved approximately 4' east due to utility obstructions. CMSS-10 and CMSB-18 were moved approximately 4' east due to utility obstructions.
East Side of Substation	CMSB 56 & 57	-	2	6	1-2' and 2-6' bgs Cont.	-	-	6	-	-	-	-	-	-	-	-
West Side of Substation	CMSB-53 through 55	-	3	9	1-2' and 2-6' bgs Cont.	-	-	9	-	-	-	-	-	-	-	-
Stormwater Dry Wells	CMSB-02A, 03A and 04A	-	3	11	10'-11' bgs. Cont. at CMSB-02A and 10'-20' bgs. at CMSB-03A and 04A	-	-	1	-	-	-	-	-	-	10	Soil boring CMSB-02A encountered refusal, due to an apparent solid bottom, at 1' below the dry well bottom in the storm water dry well. This drywell was sampled at a depth of 10' to 11', for mercury only, due to the apparent solid bottom. CMSB-03A was added and sampled for UIC constituents, in the dry well located approximately 15' southwest of the substation. CMSB-04A was sampled for UIC constituents.
Roof Drains	CMSS-23 CMSB-32	1	1	1	2-4' bgs	-	-	2	-	-	-	-	-	-	-	One roof drain was observed and sampled.
Groundwater	CMGP-01 through 03	-	-	-	-	3	14'	-	-	-	6***	-	3	-	-	CMGP-01 was moved north approximately 20', due to utility obstructions. CMGP-03 was moved northwest approximately 6', due to utility obstructions.
Potential Releases	CMSS-13 through 18 CMSB-22 through 27	6	6	6	2-4' bgs	-	-	12	-	-	-	-	-	-	-	CMSS-14 and CMSB-23 were moved approximately 4' south, due to utility obstructions. CMSS-15 and CMSB-24 were moved approximately 4' east, due to utility obstructions. CMSS-16 and CMSB-25 were moved approximately 5' south, due to utility obstructions.
Negative Cable Manhole	CMSS-19 CMSB-28	1	1	1	2-4' bgs	-	-	2	-	-	-	-	-	-	-	No deviations from original scope.
Transformers	CMSS-20 through 22 CMSB-29 through 31	3	3	6	0-4' bgs Cont.	-	-	-	-	9	-	9	-	9	-	No deviations from original scope.
		44	64	142	-	3	-	166		9	6	9	3	9	10	Totals

NOTES:
bgs: below ground surface.
Cont.: Continuous 2-foot soil sampling
-: Not Applicable
* USEPA UIC Constituents include VOCs by Method 8260b, RCRA Metals including Mercury by Methods 6010b/7471a, SVOCs by Method 8270c, PCBs by Method 8082, and TPHs by Method 8015b.
** Surface soil samples to be collected at 0-2" interval.
*** Filtered and Unfiltered Samples

All samples were screened utilizing a mercury vapor analyzer (MVA) for the presence of mercury vapor and a photoionization detector (PID) for the presence of volatile organic compounds (VOCs). In areas of the substation property where the ground surface was covered with railroad ballast, crushed stone or asphalt, this material was removed prior to collecting the surface soil sample, and returned when sampling was completed.

2.3 Subsurface Soil Sampling

A total of 130 subsurface soil samples were collected at the Cedar Manor Substation as part of the Delineation Phase II Site Assessment. All subsurface soil borings were hand-cleared to a depth of five feet below ground surface in order to avoid impacting any underground utilities. In general, subsurface soil samples collected from less than five feet below ground surface were collected using a decontaminated hand auger and/or post hole digger, and subsurface soil borings collected from more than five feet below ground surface were collected using direct push (Geoprobe®) sampling techniques with a decontaminated probe sampler. The samples were screened for mercury vapor, utilizing a MVA, and for VOCs, utilizing a PID; inspected for staining, discoloration; checked for odors; and logged by a geologist in a dedicated field logbook. Boring logs are provided in Appendix C.

Before commencement of soil probing, all "down-hole" probing equipment (i.e., macro-core samplers, probe rods, etc.) was decontaminated using a steam cleaner/pressure washer and/or Alconox and water prior to use. Soil probe samplers were also decontaminated between each use by thoroughly washing with Alconox and water, using a brush to remove particulate matter or surface film, followed by a thorough rinsing with tap water.

In addition to monitoring VOC and mercury vapor concentrations in the collected soil samples, an MVA and a PID were used to monitor mercury vapor and VOCs, respectively, in the breathing zone and at the probe holes and boreholes. The PID was calibrated on at least a daily basis, using isobutylene gas at a concentration of 100 parts per million (ppm) in air. The MVA was factory-calibrated as per the manufacture's specifications.

Upon completion of the soil probes, recovered sample material which was not retained for laboratory analysis was returned to the borehole from which it came. The remainder of the borehole was filled with clean sand, bentonite pellets and/or concrete, where appropriate. All probe holes were restored to grade with the same material that was originally in place.

2.4 Groundwater Probe Installations and Sampling

Three groundwater probes, consisting of one probe located upgradient of the substation building, and two probes located downgradient of the substation building were advanced and groundwater samples were collected from these locations. The groundwater samples were collected by driving decontaminated probe rods to the designated sample depth and inserting dedicated polyethylene tubing and a decontaminated stainless steel check valve into the rod assembly. The check valve and tubing were then manually oscillated to purge approximately two to three gallons of groundwater prior to sample collection. Each groundwater sample, upon retrieval, was analyzed in the field for pH, conductivity, dissolved oxygen, turbidity, and temperature. Groundwater samples were then collected from the tubing/check valve assembly into laboratory-supplied glass bottles. Any evidence of odors, sheens or the presence of free product was noted. All observations and results were logged in the project field books.

Upon completion, each probe hole was backfilled with clean sand and/or bentonite pellets. All probe holes were restored to grade with the same material that was originally in place.

2.5 Underground Injection Control (UIC) and Below Grade Structures

Four below grade structures were investigated for Underground Injection Control (UIC) applicability as part of the Delineation Phase II Site Assessment. The structures investigated included three dry wells, with one located approximately 27 feet southwest of the substation building, one located approximately 14 feet off the southwest corner of the substation building, and one located approximately 6 feet south of the substation building. In addition, the negative

cable manhole located approximately 5 feet off the northeast corner of the substation building was investigated. The investigations were conducted as follows:

Dry Wells

As detailed in Section 1.3, mercury was detected in exceedance of its TAGM SCO of 0.10 mg/kg in the storm water dry well located approximately 27 feet southwest of the substation building during the 1999 Initial Investigation. Due to this exceedance, further investigation of this structure was conducted as part of the Delineation Phase II Site Assessment. Soil boring (CMSB-02A) was advanced in the storm water dry well and one sample was collected from 10 to 11 feet (where refusal was encountered) below ground surface for mercury analysis, and compared to the TAGM SCO. Note that, based on visual inspection, this structure is not connected to the substation building by any piping.

As detailed in Section 1.3, two subsurface soil samples were collected from the dry well located approximately 14 feet off the southwest corner of the substation building during the 1999 Initial Investigation. Note that both collected soil samples exhibited mercury concentrations below the TAGM SCO for mercury of 0.10 mg/kg. However, in order to ensure UIC compliance, soil boring (CMSB-03A) was advanced in the dry well as part of the Delineation Phase II Site Assessment and five samples were collected in continuous 2-foot intervals from 10 feet to a maximum of 20 feet below ground surface for mercury, RCRA metals, VOCs, SVOCs, PCBs and TPH analysis and compared to the TAGM SCOs.

As detailed in Section 1.3, mercury was detected in exceedance of its TAGM SCO of 0.10 mg/kg in the dry well located approximately 6 feet south of the substation building during the 1999 Initial Investigation. Due to this exceedance, further investigation of the dry well was conducted as part of the Delineation Phase II Site Assessment. Soil boring (CMSB-04A) was advanced in the dry well and five samples were collected in continuous 2-foot intervals from 10 feet to a maximum of 20 feet below ground surface for mercury, RCRA metals, VOCs, SVOCs, PCBs and TPH analysis and compared to the TAGM SCOs.

Negative Cable Manhole

The negative cable manhole located approximately 5 feet off the northeast corner of the substation building was visually inspected for the presence of a solid bottom during the Delineation Phase II Site Assessment. One manhole surface soil sample (CMSS-19) and one subsurface soil sample (CMSB-28 (2 to 4 feet) were collected from a storm water drain identified in this structure for UIC parameter analysis. However, note that as this structure was not designed to accept waste fluids, this structure is not a UIC structure. As such, all samples collected from the negative cable manhole have been compared to the Industrial SCOs.

2.6 Air Sampling

As discussed above, a Jerome MVA was utilized to screen all surface and subsurface soil samples for the presence of mercury vapor, and a PID was utilized to screen all surface and subsurface soil samples for the presence of VOCs. The mercury vapor and VOC results for subsurface soil are summarized on the boring logs provided in Appendix C.

3.0 FINDINGS

The findings from the Initial Site Assessment conducted in 1999, were the basis for the sample locations chosen for the "Delineation Phase II Site Assessment," completed in October 2005, and further delineation activities completed in May 2008, March 2009 and May 2009.

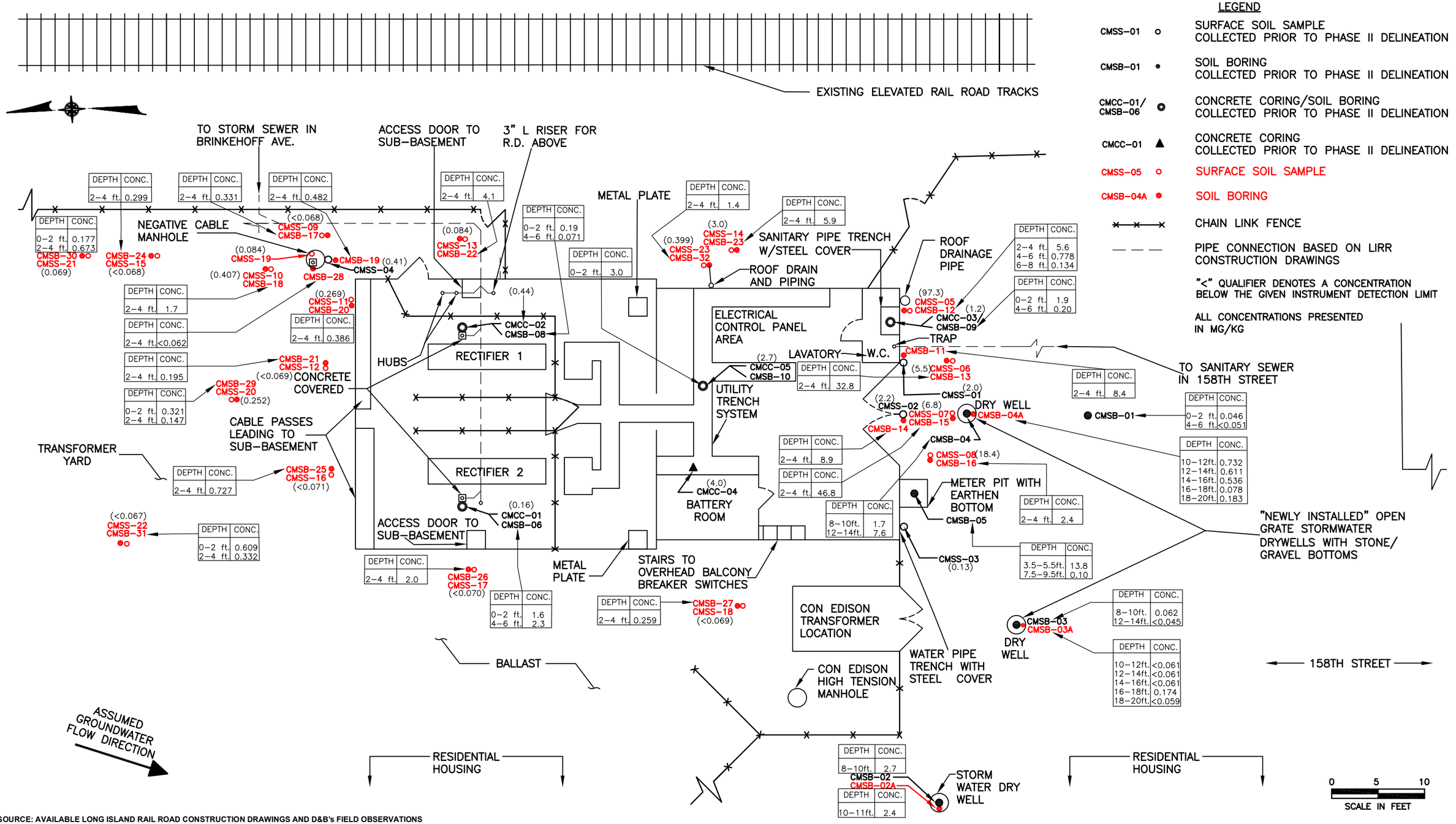
Surface and subsurface soil sample results are compared to the New York State Department of Environmental Conservation (NYSDEC) 6 NYCRR Subpart 375 Soil Cleanup Objectives (SCOs) for Industrial (fenced areas) and Residential (non-fenced areas) sites. Soil samples collected from Underground Injection Control (UIC) features are compared to the Technical and Administrative Guidance Memorandum (TAGM) 4046 SCOs. Groundwater sample results are compared to the Class GA Groundwater Standards/Guidance Values listed in NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1. Analytical results from the Delineation Phase II Site Assessment are summarized in Appendix B. Boring logs generated from the advancement of subsurface soil borings are provided in Appendix C. A concentration map, provided as **Figure 3-1**, depicts the site-wide mercury concentration data generated from the Initial Site Assessment and the 2005 Delineation Phase II Site Assessment at the Cedar Manor Substation. **Figure 3-2** depicts mercury concentration data generated from the 2008 and 2009 additional delineation samples collected during the Delineation Phase II Site Assessment. The additional delineation soil samples were collected in areas where the greatest mercury concentrations were detected, primarily to the south of the substation building.

Below is a discussion of the evaluation of data generated as part of the Delineation Phase II Site Assessment at the Cedar Manor Substation.

3.1 Surface Soil

Metals

A total of 42 surface soil samples were collected for mercury analysis as part of the Delineation Phase II Site Assessment: nine collected from the non-fenced substation area,



SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

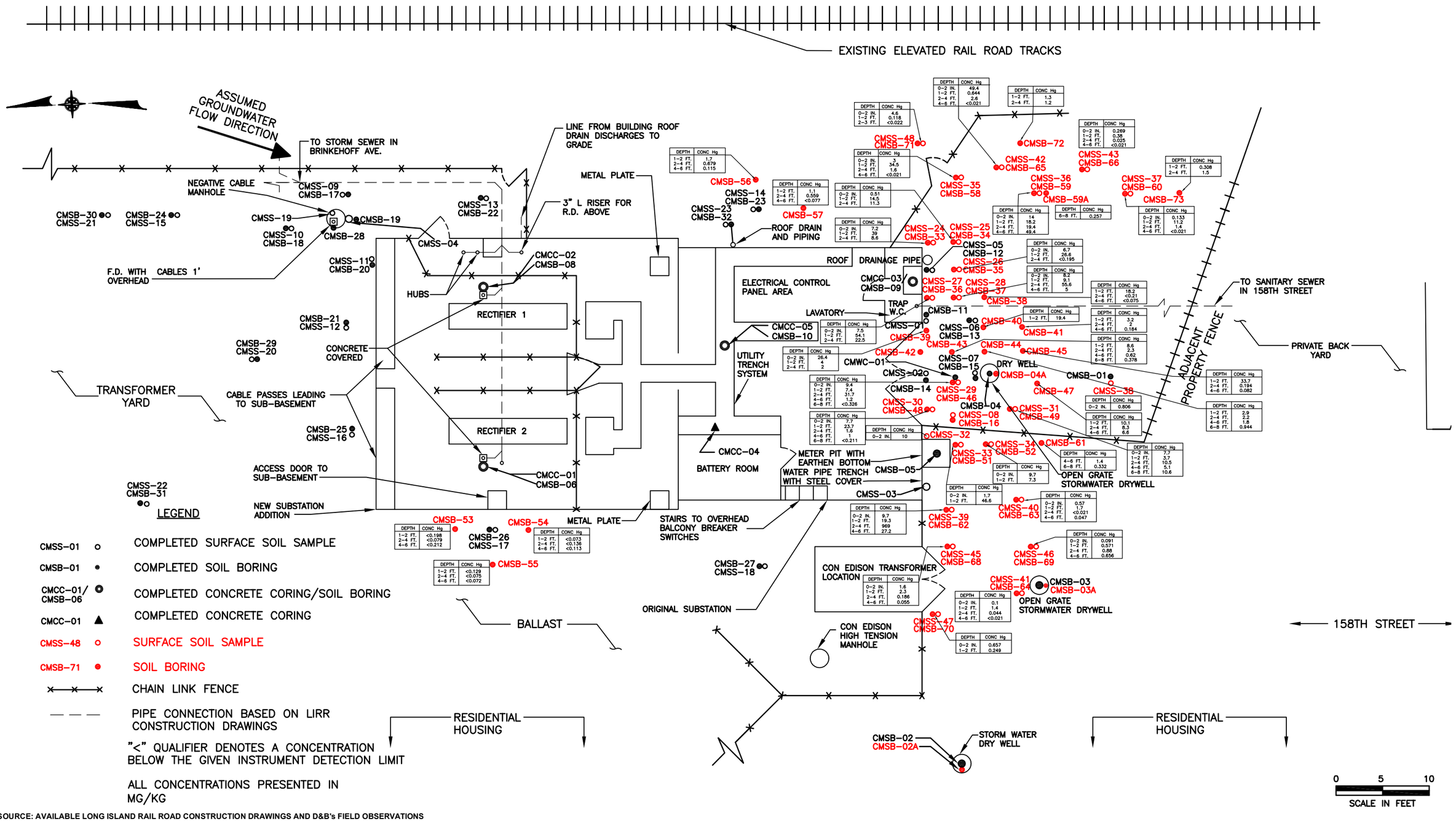
Dvirka and Bartilucci CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

MERCURY CONCENTRATION MAP
CEDAR MANOR SUBSTATION (V00388-2)

FIGURE 3-1

F:\2229\CEDAR MANOR\2229-Fig 3-1.dwg, LOCATION, 10/19/2009 1:51:39 PM, dbcadd



SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

Dvirka and Bartilucci CONSULTING ENGINEERS
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ADDITIONAL DELINEATION SAMPLING MERCURY CONCENTRATION MAP
CEDAR MANOR SUBSTATION (V00388-2)

FIGURE 3-2

F:\2801\dwg\CEDAR MANOR\2801-Cedar Fig 3-2 Conc Map.dwg, LOCATION, 10/19/2009 1:52:24 PM, dbcadd

and 33 collected from the fenced substation area. All mercury concentration data associated with the surface soil samples collected from the non-fenced areas are summarized on Table 1 (Residential Use SCO) and soil samples collected from the fenced areas are summarized on Table 2 (Industrial Use SCO), provided in Appendix B. Due to the need to compare the sample data to these two separate SCOs, the below discussion has accordingly been divided into two sections, as follows:

Non-Fenced Area

Of the 9 surface soil samples collected in the non-fenced areas of the Cedar Manor Substation, five samples exhibited a detectable concentration of mercury in exceedance of the Residential SCO of 0.81 mg/kg, ranging in concentration from 1.6 mg/kg to a maximum of 10.0 mg/kg. The maximum mercury concentration was detected in surface soil sample CMSS-32, collected adjacent to the south wall of the substation building.

Fenced Area

Of the 33 surface soil samples collected in the fenced area of the Cedar Manor Substation, 12 samples exhibited detectable concentrations of mercury in exceedance of the Industrial SCO of 5.7 mg/kg, ranging in concentration from 6.7 mg/kg to a maximum concentration of 97.3 mg/kg. The maximum mercury concentration was detected in surface soil sample CMSS-05, collected adjacent to the southeast corner of the substation building.

In addition to mercury, three surface soil samples were selected for full Resource Conservation and Recovery Act (RCRA) metals. All RCRA metals data associated with the surface soil samples are summarized in Table 3, provided in Appendix B. Four RCRA metals, in addition to mercury, were detected in both of the collected surface soil samples including: arsenic, barium, chromium and lead. However, no RCRA metal was detected at concentrations exceeding the Industrial SCOs in any surface soil sample.

Semivolatile Organic Compounds

Three surface soil samples were analyzed for semivolatile organic compounds (SVOCs). All SVOC data associated with the surface soil samples are summarized in Table 4, provided in Appendix B. SVOCs were not detected at concentrations exceeding their respective Industrial SCOs in any of the three collected surface soil samples.

Polychlorinated Biphenyls

Three surface soil samples were selected for polychlorinated biphenyls (PCBs) analysis. All PCB concentration data associated with the surface soil samples are summarized in Table 5, provided in Appendix B. PCBs were not found at detectable concentrations in any of the three collected surface soil samples.

3.2 Subsurface Soil

Metals

A total of 130 subsurface soil samples were collected for mercury analysis as part of the Delineation Phase II Site Assessment: 20 collected from the non-fenced substation areas, and 110 collected from the fenced substation areas. All mercury concentration data associated with the subsurface soil samples collected from outside the fenced areas are summarized on Table 6 (Residential Use SCO) and soil samples collected from within the fenced areas are summarized on Table 7 (Industrial Use SCO), provided in Appendix B. Due to the need to compare the sample data to these two separate SCOs, the below discussion has accordingly been divided into two sections, as follows:

Non-Fenced Area

Ten of the 20 subsurface soil samples collected in the non-fenced areas of the Cedar Manor Substation exhibited concentrations of mercury in exceedance of the Residential SCO of

0.81 mg/kg, ranging in concentration from 0.88 mg/kg to a maximum of 969 mg/kg. The maximum mercury concentration was detected in surface soil sample CMSB-62 (2 to 4 feet), collected approximately 2 feet off the southwest corner of the substation building.

Fenced Area

Of the 110 subsurface soil samples collected in the fenced areas of the Cedar Manor Substation, 32 samples exhibited a concentration of mercury in exceedance of the Industrial SCO of 5.7 mg/kg, ranging in concentration from 5.9 mg/kg to a maximum of 55.6 mg/kg. The maximum mercury concentration was detected at CMSB-37 (2 to 4 feet), collected approximately 7 feet south of the substation building.

In addition to mercury, 6 subsurface soil samples were analyzed for full RCRA metals. All RCRA metals data associated with the subsurface soil samples are summarized on Table 8, provided in Appendix B. Four RCRA metals, in addition to mercury, were detected in all of the collected subsurface soil samples, including: arsenic, barium, chromium and lead. However, no RCRA metal was detected at concentrations exceeding the Industrial SCOs in any subsurface soil sample.

Semivolatile Organic Compounds

Six subsurface soil samples were analyzed for SVOCs. All SVOC data associated with the subsurface soil samples are summarized in Table 9, included in Appendix B. One or more of several SVOCs were detected in all four collected subsurface soil samples, including acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k) fluoranthene, biphenyl, bis(2-ethylhexyl)phthalate, chrysene, dibenzofuran, di-n-butyl phthalate, fluoranthene, fluorene, 2-methylnaphthalene, naphthalene, phenanthrene and pyrene. However, SVOCs were not detected at concentrations exceeding their respective Industrial SCOs in any of the collected subsurface soil samples.

Polychlorinated Biphenyls

Six subsurface soil samples were analyzed for PCBs. All PCB concentration data associated with the subsurface soil samples are summarized in Table 10, included in Appendix B. PCBs were not detected at concentrations exceeding their respective Industrial SCO in any subsurface soil sample.

3.3 Groundwater

A total of three groundwater samples were collected for chemical analysis from the site using a Geoprobe groundwater point sampler. All samples were analyzed for TAL metals (including mercury) and VOCs. All TAL metals concentration data associated with the groundwater samples are summarized in Table 11, included in Appendix B. Due to the highly turbid nature of the groundwater samples, all samples collected for metals analysis included filtered and unfiltered samples.

Metals

Mercury, at a concentration of 0.77 ug/l, was detected in unfiltered groundwater sample CMGP-01 at a concentration slightly exceeding its Class GA Standard for mercury of 0.7 ug/l. Mercury was not detected in any of the remaining filtered or unfiltered groundwater samples. Several other metals including antimony, chromium, iron, lead, manganese, sodium, and thallium were detected above their respective Class GA Standards, in one or more unfiltered groundwater sample. However, these same metals were generally either not detected, or detected at lower concentrations in the filtered samples. Due to the high turbidity of the groundwater samples collected using Geoprobe equipment, the metals data associated with the unfiltered samples will be biased high. Therefore, the filtered samples will more closely represent true metal concentrations in groundwater.

In one or more of the filtered groundwater samples, antimony, iron, manganese, sodium and thallium exceeded their respective Class GA Standards. Although these contaminants were

detected at concentrations above their respective Class GA Standards in one or more of the filtered groundwater samples, these are not contaminants typically associated with substation operations.

Volatile Organics

All VOC concentration data associated with the groundwater samples are summarized in Table 12, included in Appendix B. VOCs were not detected at concentrations above the Class GA Standards in any groundwater sample.

3.4 Underground Injection Control (UIC) and Below Grade Structures

As described in Section 2.5, four below grade structures were investigated for Underground Injection Control (UIC) applicability as part of the Delineation Phase II Site Assessment, including a dry well located approximately 27 feet southwest of the substation building, a dry well located approximately 14 feet off the southwest corner of the substation building, a dry well located 6 feet south of the substation building, and a negative cable manhole located approximately 5 feet off the northeast corner of the substation building. All analytical data associated with these structures are summarized on Tables 13 through 19, provided in Appendix B. The investigations were conducted as follows:

Dry Wells

One soil boring (CMSB-02A) was advanced in the storm water dry well located approximately 27 feet southwest of the substation building, where one soil sample was collected for mercury analysis from 10 to 11 feet below ground surface and compared to the TAGM SCO. All analytical data associated with this structure is summarized on Table 13, provided in Appendix B. Note that refusal was encountered at depth of 11 feet below ground surface. The sample collected from the storm water dry well exhibited a mercury concentration of 2.4 mg/kg, in exceedance of the TAGM SCO for mercury of 0.10 mg/kg. Note that, based on visual inspection, this dry well is not connected to the substation building by any piping.

One soil boring (CMSB-03A) was advanced in the dry well located approximately 14 feet off the southwest corner of the substation building. Five soil samples were collected in continuous 2-foot intervals from 10 feet to a maximum of 20 feet below ground surface for UIC parameter analysis and compared to the TAGM SCOs. All concentration data associated with this structure is summarized on Tables 13 through 18, provided in Appendix B. One of the five collected samples, CMSB-03A (16 to 18 feet), exhibited a mercury concentration of 0.174 mg/kg, in slight exceedance of the TAGM SCO for mercury of 0.10 mg/kg. No other analytes were detected at concentrations exceeding their respective SCOs in any collected soil sample.

One soil boring (CMSB-04A) was advanced inside the dry well located approximately 6 feet south of the substation building. Five soil samples were collected in continuous 2-foot intervals from 10 feet to a maximum of 20 feet below ground surface for UIC parameter analysis and compared to the TAGM SCOs. All concentration data associated with this structure is summarized on Tables 13 through 18, provided in Appendix B. Mercury was detected in exceedance of the TAGM SCO of 0.1 mg/kg in four of the five samples collected from the dry well structure, ranging in concentration from 0.183 mg/kg to a maximum of 0.732 mg/kg. The maximum mercury concentration was detected in CMSB-04A (10 to 12 feet). No other analytes were detected at concentrations exceeding their respective TAGM SCOs in any collected soil sample.

Negative Cable Manhole

One soil boring was advanced inside the negative cable manhole located approximately 5 feet off the northwest corner of the substation building. As this structure was not designed to accept waste fluids, this structure is not a UIC structure. One surface soil sample (CMSS-19) and one subsurface soil sample (CMSB-28: collected from a depth of 2 to 4 feet below the manhole bottom) were collected for mercury analysis and compared to the Industrial Use SCO for mercury of 5.7 mg/kg. All mercury concentration data associated with the negative cable manhole samples is summarized on Table 19, provided in Appendix B. Mercury was not

detected at concentrations exceeding its Industrial SCO of 5.7 mg/kg in either of the collected surface or subsurface soil samples.

3.5 Waste Characterization

A total of two soil samples were collected adjacent to the swing-out doors to the south of the substation building for waste characterization analysis as part of the May 2008 sampling event, in order to "pre-characterize" site soil surrounding the substation building. Sample locations were selected in the field and are depicted on Figure 2-2. All waste characterization samples were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals (including mercury), TCLP SVOCs, TCLP VOCs and RCRA waste characteristics (ignitability, reactivity, etc.). Analytical data have been compared to RCRA hazardous waste criteria. All waste characterization data are presented in Tables 20 and 21, provided in Appendix B. Several metals were detected including barium, lead and mercury; however, no analyte was detected at concentrations exceeding the RCRA waste criteria in either of the two collected waste characterization samples.

3.6 Data Usability Summary Report (DUSR)

Surface, subsurface and waste characterization soil samples were collected as part of the Phase II Delineation Site Assessment conducted at the LIRR Cedar Manor Substation, and completed between October 2005, May 2008 and March 2009. The soil samples were primarily analyzed for mercury. Waste characterization samples were analyzed for TCLP metals (including mercury), TCLP SVOCs, TCLP VOCs, RCRA waste characteristics (ignitability, reactivity, etc.), RCRA metals and TCLP pesticides/herbicides.

All soil samples were analyzed by Chemtech, Mountainside, New Jersey. All soil samples were analyzed in accordance with the USEPA SW-846 methods as stipulated in the work plan. The data packages submitted by Chemtech have been reviewed by Ms. Donna Brown, D&B's Quality Assurance/Quality Control Officer. A copy of D&B's data validator resume is provided in Appendix D.

The data packages have been reviewed for completeness and compliance with NYSDEC QA/QC requirements, as well as the requirements for development of Data Usability Summary Reports as listed in Appendix 2B of the Draft DER-10 Technical Guidance for Site Investigations and Remediation dated December 2002. Each data package was reviewed for the following:

- Was a NYSDEC Category B deliverable data package submitted?
- Have all holding times been met?
- Does all QA/C data fall within QA/QC limits and specifications?
- Were appropriate methods followed?
- Does the raw data conform to that reported on the data summary sheets?
- Have the correct data qualifiers been utilized?

NYSDEC ASP Category B deliverable packages have been submitted for all sample delivery groups (SDG) T5228, T5364, T5365, T5376, Z2686, Z2687, Z2688, Z2689, Z2690, A1857, A1864, A1867, A2144 and A2869. The findings of the data review process are summarized below.

All samples were analyzed within the method-specified holding times. The calibrations, surrogate recoveries, internal standard areas, laboratory duplicate and spike recoveries were within QC limits, except for the following:

- In SDG T5228: The serial dilution check sample %D was above QC limits for mercury and were qualified as estimated (J/JU) in all samples.
- In SDG T5364: The serial dilution check sample %D was above QC limits and %R was below QC limits of 80% for mercury and were qualified as estimated (J) in CMSB-21(2-4) and CMSB-20(2-4).
- In SDG T5365: Dilutions were reported for CMSB-30(2-4) for SVOCs. 1,1-Biphenyl was qualified as non-detect (U) in all samples. SVOCs were qualified as estimated (J/UJ) due to laboratory control samples %R, internal areas, MS/MSD

%R and RPDs being outside QC limits. Aroclor 1260 was qualified as estimated (J) in CMSB-30(0-2) due to MS/MSD %R and RPDs being outside QC limits. Numerous metals were qualified as estimated (J/UJ) due to matrix spike being below QC limits or %Ds were above QC limits in the serial dilution.

- In SDG T5376: 2-Nitroaniline was qualified as estimated (UJ) due to laboratory control sample %R below QC limits. SVOCs were qualified as estimated (J/UJ) due to surrogates below QC limits in CMSB-03A(14-16). TPH was qualified as estimated (J) due to surrogates below QC limits in CMSB-03A(16-18). Numerous metals were qualified as estimated (J/UJ) due to matrix spike being above QC limits or %Ds were above QC limits in the serial dilution.

- In SDG Z2686: 1,1-Dichloroethene, vinyl chloride, and several SVOCs in CMWC-01(3) were qualified as estimated (UJ) due to %R below QC limits in the laboratory control sample or %D being above QC limits in the continuing calibration.

- In SDG Z2687: Carbon tetrachloride and several SVOCs in CMWC-01(2-4) were qualified as estimated (UJ) due to %R below QC limits in the laboratory control sample or %D being above QC limits in the continuing calibration. Mercury was qualified as non-detect (U) in CMSB-46(6-8), CMSB-38(2-4) and CMSB-35(2-4). Mercury was qualified as estimated (J/UJ) due to the %Ds being above QC limits in the serial dilution.

- In SDG Z2688: Mercury was qualified as estimated (J) due to matrix spike being above QC limits.

- In SDG Z2689: Mercury was qualified as non-detect (U) in CMSB-48(6-8), CMSB-53(1-2), CMSB-53(4-6), CMSB-54(2-4), CMSB-54(4-6) and CMSB-51(1-2). Mercury was qualified as estimated (J/UJ) due to the %Ds being above QC limits in the serial dilution.

- In SDG A1857: Mercury was qualified as estimated (J/UJ) due %R above QC limits in the laboratory control sample and %Ds were above QC limits in the serial dilution.

No other problems were found with the sample results. All results have been deemed valid and usable, as qualified above, for environmental assessment purposes.

4.0 FISH AND WILDLIFE RESOURCES IMPACT ANALYSIS

4.1 Ecology

This section provides an overall habitat-based assessment of the LIRR Cedar Manor Substation. This assessment conforms to the guidelines contained in Step IIA of the NYSDEC Technical and Administrative Guidance Memorandum entitled, "A Fish and Wildlife Impact Analysis for Inactive Hazardous Waste Sites (October, 1994)." The purpose of this section is to provide a description of the existing ecology of the site, including site specific descriptions of major habitat types with associated wildlife populations, the identification of other significant on-site wildlife resources and provide an evaluation of potential impacts to these resources. The information contained in this section was obtained during the Delineation Phase II Site Assessment and supplemented with data from outside sources, including the NYSDEC, U.S. Fish and Wildlife Service, and New York State Historic Preservation Officer. The field survey for this assessment was conducted during February of 2006.

4.1.1 Major Habitat Types

The Cedar Manor Substation is surrounded by roadways, the railway trestle, and residential/commercial facilities and is located at the northern end of 158th Street. An elevated railroad embankment is immediately to the east, a drop down to 110th Avenue is to the north, and residential development is to the south and west. The transformer yard and substation property surrounding the substation building is largely covered in bluestone and loamy sand with common grasses and vegetation on the south and east sides of the building. Storm water collection drains are on the south side of the building at the end of 158th Street.

A list of vegetative species observed on the substation sites is provided in **Table 4-1**.

Table 4-1

CEDAR MANOR VEGETATIVE SPECIES OBSERVED AT THE SUBSTATION SITE

Common Name	Scientific Name
Herbaceous Plants	
Common ragweed	Ambrosia artemisiifolia
Common lambsquarters	Chenopodium album
Daisy	Chrysanthemum sp.
Chickory	Cichorium intybus
Crown vetch	Coronilla varia
Crabgrass	Digitaria sp.
Butter and eggs	Linaria vulgaris
Yellow woodsorrel	Oxalis stricta
Fall panicum	Panicum dichotomiflorum
Common reed grass	Phragmites communis
Ground cherry	Physalis heterophylla
Pokeweed	Phytolacca americana
Broadleaf plantain	Plantago major
Smartweed, Knotweed	Polygonum sp.
Nightshade	Solanum dulcamara
Common goldenrod	Solidago juncea
Early flowering goldenrod	Solidago nemoralis
Stiff goldenrod	Solidago rigida
Common mullein	Verbascum thapsus
Vetch	Vicia sp.
Shrubs and Vines	
Japanese honeysuckle	Lonicera japonica
Virginia creeper	Parthenocissus quinquefolia
Poison ivy	Rhus radicans
Multiflora rose	Rosa multiflora
Catbrier	Smilax rotundifolia
Trees	
Red maple	Acer rubrum
Flowering dogwood	Cornus florida
White pine	Pinus strobus
Black cherry	Prunus serotina
White oak	Quercus alba
Black oak	Quercus velutina
Black locust	Robinia pseudoacacia

4.1.2 Wetlands

There are no wetlands located on f the Cedar Manor substation property.

4.1.3 Mammals

The Cedar Manor Substation is somewhat isolated from large tracks of undeveloped land due to its location within residential and commercial areas. This isolation limits the species of mammals that would inhabit the site to those that are tolerant of human presence and with limited home ranges. It is likely that only small mammals inhabit the areas because of the numerous manmade barriers which would act as deterrents and prohibit larger mammal movement.

The only mammal observed during the site walkover was the gray squirrel (Sciurus carolinensis). In addition, runways and scats were observed that would indicate the presence of Norway rats (Rattus norvegicus), white-footed mice (Peromyscus leucopus), house mice (Mus musculus), cottontail rabbits (Sylvilagus floridanus) and raccoons (Procyon lotor). Probable mammal inhabitants are listed in **Table 4-2**.

4.1.4 Birds

Birds were present and actively feeding in the railway right-of-way and a number of small trees and underbrush adjacent to the substation. Several ground foraging birds were observed on and near the substation grounds including finches (Carpodacus sp.), mockingbirds (Mimus polyglottus), starlings (Sturnus vulgaris) and American robins (Turdus migratorius).

The substation and immediately adjacent grounds and habitats provided no concentrated vegetation stands that would afford feeding opportunities to wintering waterfowl. A subset of the New York State Bird Atlas listing for Suffolk County, New York is presented in **Table 4-3**, providing species observed or expected to utilize the substation and surrounding area.

Table 4-2

MAMMALS LIKELY TO INHABIT
THE CEDAR MANOR SUBSTATION SITE

Common Name	Scientific Name
Eastern chipmunk	Tamias striatus
Gray Squirrel	Sciurus carolinensis
Cottontail rabbit	Sylvilagus floridanus
White-footed mouse	Peromyscus leucopus
House mouse	Mus musculus
Norway rat	Rattus norvegicus
Raccoon	Procyon lotor

Table 4-3

AVIFAUNA LIKELY TO INHABIT
THE CEDAR MANOR SUBSTATION AREA

Common Name	Scientific Name
Canada goose	Branta canadensis
Mallard	Anas platyrhynchos
Black duck	Anas rubripes
Red-tailed hawk	Buteo jamaicensis
Kestrel	Falco sparverius
Killdeer	Charadrius vociferus
Herring gull	Larus argentatus
Great black-backed gull	Larus marinus
Mourning dove	Zenaida macroura
Eastern kingbird	Tyrannus tyrannus
American crow	Corvus brachyrhynchos
Blue jay	Cyanocitta cristata
Black-capped chickadee	Parus atricapillus
Tufted titmouse	Parus bicolor
White-breasted nuthatch	Sitta carolinensis
Red-breasted nuthatch	Sitta canadensis
Brown creeper	Certhia americana
House wren	Troglodytes aedon
Winter wren	Troglodytes troglodytes
Carolina wren	Thryothorus ludovicianus
Gray catbird	Dumetella carolinensis
Northern mockingbird	Mimus polyglottos
Eastern bluebird	Stalia sialis
American robin	Turdus migratorius
Wood thrush	Hyocichla mustelina
Cedar waxwing	Bonbycilla cedrorum
Solitary vireo	Vireo solitarius
Yellow warbler	Dendroica petechia
Ovenbird	Seirus aurocapillus
Common yellowthroat	Geothlypis trichas
Common grackle	Quiscalus quiscula
European starling	Sturnus vulgaris
House sparrow	Passer domesticus
Northern cardinal	Cardinalis cardinalis
Brown-headed cowbird	Molothrus ater
House finch	Carpodacus mexicanus
Purple finch	Carpodacus purpureus
American goldfinch	Carduelis tristis
Chipping sparrow	Spizella passerina
Field sparrow	Spizella pusilla
Song sparrow	Melospiza melodia
White-throated sparrow	Zonotrichia albicollis

4.1.5 Fish

There is no standing water at the Cedar Manor Substation site; therefore, this site is not suitable to support any fish species.

4.1.6 Reptiles and Amphibians

Reptiles or amphibians were not observed at the Cedar Manor Substation site. The property contains small amounts of discarded construction and illegally dumped materials that would offer cover to snakes common to the area. Low vegetation likely provides habitat for common toad species. **Table 4-4** contains a list of reptiles and amphibians common to the area that could likely inhabit the site and/or surrounding areas.

4.1.7 Rare Species and Critical Habitats

Based on a review of the New York Natural Heritage files maintained at the NYSDEC Wildlife Resources Center, there are no rare species or critical habitats known to occur on or adjacent to the Cedar Manor Substation site. In addition, except for occasional transient individuals, no federally listed or proposed endangered or threatened species exist within a 2-mile radius of the site according to the U.S. Department of the Interior, Fish and Wildlife Service. **Table 4-5** provides a list of all federally listed and proposed threatened or endangered species in New York State.

4.1.8 Biological Associations Found in the Project Vicinity

The areas within a 2.5-mile radius surrounding the Cedar Manor Substation are centrally located within residentially/commercially developed areas with no environmentally sensitive habitats in the immediate area. A typical association of cover types with common dominant species is presented in **Table 4-6**. The biological associations observed are common for the evaluated areas.

Table 4-4

REPTILES AND AMPHIBIANS LIKELY TO INHABIT THE CEDAR MANOR SUBSTATION SITE

Common Name	Scientific Name
Box turtle	Terrapene carolina
Eastern garter snake	Thamnophis sirtalis
Eastern ribbon snake	Thamnophis sauritis
Fowler's toad	Bufo woodhousei fowleri

Table 4-5

FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED SPECIES IN NEW YORK STATE

Common Name	Scientific Name	Status	Distribution
Fishes			
Sturgeon, shortnose	Asipenser brevirostrum	E	Hudson River and other Atlantic coastal rivers
Reptiles			
Turtle, Northern bog	Clemmys muhlenbergii	T	Albany, Columbia, Dutchess, Genesee, Orange, Oswego, Putnam, Seneca, Ulster, Wayne, and Westchester Counties
Turtle, green	Chelonia mydas	T	Oceanic summer visitor coastal waters
Turtle, hawksbill	Eretmochelys imbricata	E	Oceanic summer visitor coastal waters
Turtle, leatherback	Dermochelys coriacea	E	Oceanic summer visitor coastal waters
Turtle, loggerhead	Caretta caretta	T	Oceanic summer visitor coastal waters
Turtle, Kemp's ridley	Lepidochelys kempii	E	Oceanic summer visitor coastal waters
Birds			
Eagle, bald	Haliaeetus leucocephalus	T	Entire state
Plover, piping	Charadrius melodus	E	Great Lakes Watershed
		T	Remainder of coastal New York
Curlew, Eskimo	Numenius borealis	E	Oceanic
Tern, roseate	Sterna dougallii dougallii	E	Southeastern coastal portions of state
Mammals			
Bat, Indiana	Myotis sodalis	E	Entire State
Whale, finback	Balaenoptera physalus	E	Oceanic
Whale, humpback	Megaptera novaeangliae	E	Oceanic
Whale, right	Eubalaena glacialis	E	Oceanic
Puma, Eastern	Puma concolor couguar	E	Entire State
Wolf, Gray	Canis lupus	E	Entire State
Lynx, Canada	Lynx canadensis	T	Entire State

Table 4-5 (continued)

FEDERALLY LISTED OR PROPOSED THREATENED OR ENDANGERED SPECIES IN NEW YORK STATE

Common Name	Scientific Name	Status	Distribution
Mollusks			
Snail, Chittenango ovate amber	Succinea chittenangoensis	T	Madison County
Mussel, dwarf wedge	Alasmidonta heterodon	E	Orange County - lower Neversink River
Insects			
Butterfly, Karner blue	Lycaeides melissa samuelis	E	Albany, Saratoga, Warren, and Schenectady Counties
Tiger beetle, Northeastern beach	Cicindela dorsalis dorsalis	T	Entire State
Beetle, American Burying	Nichrophorus americanus	E	Entire State
Plants			
Monkshood, northern wild	Aconitum noveboracense	T	Ulster, Sullivan, and Delaware Counties
Pogonia, small whorled	Isotria medeoloides	T	Entire State
Swamp pink	Helonias bullata	T	Staten Island - presumed extirpated
Gerardia, sandplain	Agalinis acuta	E	Nassau and Suffolk Counties
Fern, American hart's-tongue	Asplenium scolopendrium var. Americana	T	Onondaga and Madison Counties
Orchid, eastern prairie fringed	Platanthera leucophea	T	Not relocated in New York
Bulrush, northeastern	Scirpus ancistrochaetus	E	Not relocated in New York
Roseroot, Leedy's	Sedum integrifolium ssp. Leedyi	T	West shore of Seneca Lake
Amaranth, seabeach	Amaranthus pumilus	T	Atlantic coastal plain beaches
Chaffseed, American	Schwalbea americana	E	Nassau and Suffolk Counties

Table 4-6

FLORAL AND FAUNAL ASSOCIATIONS OBSERVED WITHIN 2.5 MILES OF THE CEDAR MANOR SUBSTATION SITE

Species	Grassland/ Field	Forested/ Grassland/ Field	Forested	Freshwater Wetlands/ Ponds	Estuarine Wetlands	Cultivated Lawn
Plants						
Common ragweed	X	X				
Daisy	X	X				
Crown vetch	X	X		X		
Fescue						X
Goldenrod	X	X		X		
Virginia creeper		X	X			X
Multiflora rose	X	X		X		
Red maple			X			X
Flowering Dogwood		X	X			X
Black locust		X	X			X
Animals						
Striped bass					X	
Gray Squirrel		X	X			X
Mice/voles/shrews	X	X	X	X		X
Black Duck					X	
Hawks	X	X	X	X		
Finches		X	X			X
Sparrows	X	X	X			X
Northern spring peeper				X		
Eastern garter snake	X	X		X		

4.1.9 Observations of Stress Potentially Related to Site Contaminants

Other than physically disturbed areas, there were no indications of visibly stressed vegetation that could be attributed to contaminants. Past disturbance and the localized nature of the contaminants in question, containment of overland runoff from ecologically sensitive areas, and retainment of overland runoff to on-site recharge and/or municipal storm/sanitary systems has minimized impacts on any local water bodies or other environmentally sensitive areas. Soil samples from all substations have shown that the majority of the mercury contamination was limited to areas near the south substation entrance door. Data gathered as part of various other investigations at LIRR substation sites where mercury contamination has been detected support a limited migration of mercury contamination to subsurface soil and infiltrating groundwater.

4.1.10 Habitat Values of Vegetative Zones Within the Project Site

The assessment of habitat value provides for assessments of primary functions, such as food chain production, specialized habitat and hydrologic interactions. As part of the analysis, cultural values concerning recreation, aesthetics or other special features must be taken into consideration.

The information gathered during the Delineation Phase II Site Assessment Fish and Wildlife Recourses Impact Analysis conducted in February 2006 can provide for a hierarchy of habitat values for the cover types found at the Cedar Manor Substation. It should be noted that this approach is highly subjective. Those functions assumed to be valuable in relative efficiency or importance are ranked as 3 (high), 2 (moderate), 1 (low) or 0 (non-existent). Specific factors and brief descriptions, which were utilized in the habitat value analysis of the site's qualitative evaluation, are as follows:

- Nutrient Transport Function - Transport of nutrients in detrital-based food chains is strongly dependent on the hydrologic characteristics of the particular ecosystem. For example, wetlands located in lower lying areas export more detrital material than do the higher marsh areas infrequently affected by creek/river overflow. Similarly, detrital transport in the riverine systems is dependent on the river flow regime, especially during periods of peak discharge. In contrast, very little detrital material is

exported from isolated ponds and marshes, except during periods of episodic overflow resulting from exceptionally high precipitation.

- Food Chain Support - This function refers to the secondary productivity values of consumer species that a particular ecosystem can support. Secondary productivity is an overall measure of the efficiency of the habitat in terms of nutrient to transfer higher trophic levels.

- Hydroperiod - This factor refers to the frequency of inundation either by river flow runoff or direct precipitation. Areas of good hydrologic linkage help maintain a regular interchange of nutrients and other materials necessary to support diverse flora and fauna.

- Elevational Location - From the above, it is apparent that hydrologic relationships will progressively deteriorate as the depth of flooding decreases. The weakest hydrologic linkages exist in those areas physically isolated from other areas in the system.

- Cultural Evaluation - This particular factor is difficult to assess in detail because of the number of socio-economic considerations, which may be involved. Hence, the evaluation in relation to local residential, commercial, or industrial development is largely left to the professional judgment of the project personnel on a specific case-by-case basis.

- Recreation - Recreation is a vital personal and social need, which provides opportunity for self-expression, physical exercise, and a change of pace from normal or routine activities. Outdoor recreation is a major leisure activity and is growing in national importance with a trend towards a higher standard of living. A significant portion of the total recreational output is water based or water related. As such, greater weight is given to those types of habitats.

- Socio-Economic - This factor pertains to benefits, which can be attributed directly to renewable resources, recreational enjoyment, or other features associated with a particular habitat.

- Aesthetics - Selected types of habitats are distinctive landscape features which can please the aesthetic sense through the intrinsic appreciation of natural beauty. Wetlands, or any other type of natural landscape, can also be offensive if their features have been adversely modified by incompatible human activities. Aesthetic value can be largely determined by the degree of visual diversity and contrast between the physical elements, such as landforms, water bodies, vegetation types and land use types.

- Food Chain Production - This factor determines the growth of vegetation in a habitat and influences the populations and secondary productivity of animals that feed on the plants, or that feed at high trophic levels in the community.

- Primary Productivity - Primary productivity is a measure of the stored food potential of the vegetation in excess of that used by the plants in metabolism. This determination provides an overall measure of the energy input directly available to the consumer species. It should be noted that the possible range of productivity values, both within and between particular environments, is extremely variable and dependent on a number of local conditions. For the present analysis, literature values for primary productivity as a function of biomass were utilized.

- Water Purification Factor - Through a variety of physical, biological, and chemical processes, some habitats function to naturally purify water by removing organic and mineral particulate matter from runoff and/or rivers and streams. For example, wetlands may be significant in minimizing some of the harmful effects of pollutants introduced into natural ecological systems by the activities of man. Thus, wetlands, especially when part of riverine or estuarine systems, can be an integral part of water quality and pollution control objectives.

Based upon the above factors, a qualitative analysis of the habitat values of the vegetative and aquatic communities are presented in **Table 4-7**. Based upon these results, the habitats surrounding the Cedar Manor Substation site is a moderately low value habitat. Habitat value is limited by the residential and commercial development surrounding the substation property, the lack of wetlands or other environmentally sensitive areas, lack of open undeveloped area, and the lack of recreational opportunities because of the constraints associated with an active electrical substation.

The one potential environmental impact associated with the substation would be contamination of local groundwater. As described in Section 4.1.9, soil sampling has demonstrated that mercury exhibits a limited migration and is concentrated to the surface and shallow subsurface soil from the believed point of discharge. Furthermore, groundwater sampling at the Cedar Manor Substation has demonstrated that groundwater has not been affected by the presence of mercury in on-site soil. Remediation through removal of contaminated soil should be accomplished with no demonstrated impact to local flora, fauna and associated habitats.

Table 4-7

QUALITATIVE HABITAT VALUE ANALYSIS WITHIN THE CEDAR MANOR SUBSTATION SITE

Evaluation Factor	Relative Efficiency
Food Chain Production	1
Primary Productivity	1
Nutrient Transport	0
Food Chain Support	1
Hydroperiod	1
Elevational Location	1
Cultural Location	2
Recreation	0
Socio-Economic	3
Aesthetics	1
Water Purification Factor	1
Totals	*12*

5.0 QUALITATIVE EXPOSURE ASSESSMENT

5.1 Introduction

The purpose of this exposure assessment is to determine how and when an individual may be exposed to contaminants of potential concern (COPCs) associated with the LIRR Cedar Manor Substation. A COPC is any chemical detected above the NYSDEC cleanup guidelines in a medium, which could produce adverse health effects under the right conditions of dose and exposure. For exposure to occur, there must be a complete "pathway of exposure" where a person can come into contact with contaminants of potential concern. For a pathway to be complete, there must be: (1) a source or medium containing the COPC; (2) a location where human contact could take place (i.e., an exposure point); and (3) a feasible means for the COPC to enter into the person's body. In the case of the LIRR substations, there would be two types of potential receptors, with personnel who work at the facilities considered on-site receptors and individuals who may live or be in close proximity to the substation properties considered off-site receptors. The person who could come into contact with the COPC at an exposure point is called a "receptor." The ways in which the COPC can enter the body are called "routes of exposure." Ingestion (by mouth), dermal (contact with skin) and inhalation (breathing into the lungs) are the routes of exposure considered in this and other human health risk assessments. Consistent with the New York State Department of Health (NYSDOH) and other regulatory agencies, this assessment considers both current and potential future exposures.

As with any exposure assessment, this assessment is not intended to predict disease outcome, but rather, is meant to be used as a tool to make decisions regarding the need for remediation or the institution of precautionary measures, such as limiting the affected area to noncommercial land uses. Given the available information and keeping the purpose of the assessment in mind, the following evaluation for the Cedar Manor Substation is qualitative in nature.

5.2 Properties, Fate and Transport of Mercury at the Cedar Manor Substation

Based on the results of the completed investigations of the Cedar Manor Substation, the COPC is mercury. The following is a summary of the fate and transport properties of mercury in surface and subsurface soil:

The mercury (Hg) found at the Cedar Manor substation is assumed to have entered the soil in the form of liquid elemental mercury that was utilized in mercury-containing rectifiers. Elemental mercury (Hg^0) is a heavy, silver-white metal with a specific gravity approximately 13.5 times that of water and is the only metal to exist in the liquid phase at room temperature. Hg^0 has a relatively high vapor pressure and is the most volatile of all metals. Overall, however, it is considered only slightly volatile when compared to most liquids. Hg^0 volatilizes into a colorless, odorless and tasteless gas.

Mercury is a naturally occurring element that has been distributed throughout the environment by natural processes. Mercury exists in three possible oxidation states: elemental mercury (Hg^0), mercurous (Hg^{1+}), and mercuric (Hg^{2+} or Hg[II]). Atmospheric deposition to the surface from anthropogenic and natural air emissions is considered a major source of mercury in the environment and is primarily in the form of Hg(II), either during precipitation events or adsorbed onto airborne particulates. The mercurous and mercuric forms of mercury will complex and form numerous organic and inorganic compounds. Hg(II) is commonly found as mercuric sulfide (HgS), a stable inorganic species that is essentially insoluble in water and is therefore considered a major long-term sink for mercury in soil. Moderately soluble forms of Hg(II), such as mercuric chloride ($HgCl_2$), can potentially contaminate surface soil and groundwater. Both the mercurous and mercuric forms of mercury will adsorb to clay minerals, oxides and organic matter and tend not to leach. Methylmercury (MeHg) is the most widespread organic form of mercury in the environment and is formed from the methylation of inorganic mercury by bacteria in aquatic environments. Methylation is generally negligible in terrestrial soil.

Liquid elemental mercury has a tendency to form globules or beads and therefore is generally not uniformly distributed among soil particles. It will sink under the force of gravity and split up into available pore spaces. Despite this fact, Hg^0 is only slightly soluble in water and, therefore, is unlikely to leach into groundwater via infiltrating precipitation. In fact, spills of liquid mercury to shallow subsurface soil have been found to be persistent in this environment. Elemental mercury is assumed to be removed from unsaturated soil primarily through its potential to volatilize to the soil vapor and the outside air. Although liquid mercury is volatile, the process is not rapid and globules of Hg^0 may persist for a long time before completely volatilizing. In addition, mercury globules can become coated with a stable layer of insoluble HgS, especially in anaerobic conditions, and can remain inert for long periods of time. Mercury vapor released to the outdoor air will dissipate rapidly into the atmosphere.

5.3 General Substation Conditions

This section briefly describes the current and future conditions of the Cedar Manor Substation. The Cedar Manor Substation is actively used by the LIRR to convert alternating current (AC) to direct current (DC) for use in powering the LIRR's electric train fleet. As discussed in Section 1.1, the substation has been used for this purpose since 1948.

The Cedar Manor Substation is located in a residential area; however, the majority of the site is only accessible by authorized LIRR personnel and their subcontractors. In addition, the substation is not occupied by LIRR personnel on a continuous or full-time basis. Under normal operating conditions, access to the substation property only occurs when equipment requires monitoring, maintenance or repair. The substation building is locked at all times and all associated outside electrical equipment (i.e., transformers) are secured by a locked fence. In addition, the property surrounding the substation is bounded by fencing to the north and west and the majority of the south, and by an elevated track berm to the east, limiting public access to the property. Note that residential areas surround the substation building. The majority of the LIRR property immediately surrounding the substation building is covered by crushed stone and asphalt. The transformer yard, located to the north of the substation building is covered with approximately 2 inches of crushed stone. In addition, in April 2010, approximately 2 inches of

crushed stone was installed to the south of the substation building, where mercury was detected in exceedance of the Industrial SCOs in fenced areas and the Residential SCOs in areas of the substation property not currently fenced. Stone installation photos are provided in Appendix E.

The Cedar Manor substation is serviced by public water and on-site groundwater is not used for any purpose.

As part of the LIRR's overall system upgrade in response to increased ridership, the Cedar Manor Substation will be decommissioned as part of the LIRR next Capital Program. Note that new solid-state transformers have already been installed to the north of the existing substation building and all non-solid-state electrical transformers and equipment have been removed. Plans for the future site redevelopment are currently being finalized and will be incorporated into the upcoming RAWP. Tentatively, the existing substation building will remain and be used for storage. After decommissioning of the existing substation building, the LIRR will not be disturbing or excavating in the Cedar Manor Substation property for the foreseeable future.

While elevated mercury concentrations have been detected in surface and subsurface soil to the south and east of the substation building, the LIRR maintains strict control over conducting soil excavation activities within LIRR properties known to contain contaminants in order to avoid the excavation and handling of contaminated soil without undertaking appropriate health and safety measures. The LIRR Procedure/Instruction EE03-001, which defines the procedures that must be undertaken prior to conducting excavation activities at LIRR properties, is provided as Appendix F.

5.4 Surface and Subsurface Soil

Elevated concentrations of mercury were detected in surface and subsurface soil to the south of the substation building and in subsurface soil to the east of the substation building. The highest mercury concentrations were detected in subsurface soil located off the southwest corner of the substation building, with a maximum mercury concentration of 969 mg/kg. However,

these areas were covered with approximately 2 inches of crushed stone in April 2010; therefore, direct exposure to site contamination of LIRR workers (on-site receptors) who are required to periodically enter the site for equipment maintenance and repair, and off-site receptors is not expected. In addition, LIRR workers and subcontractors could be potentially exposed to this contaminant source during excavation activities as the result of dermal contact and inhalation of windblown dust. However, as discussed above, the LIRR has in place procedures to avoid the excavation and handling of contaminated soil without undertaking appropriate health and safety measures. As residential areas are located surrounding the substation building, it is also possible for the public to be exposed to site contamination via the inhalation of windblown dust particulates and via dermal contact in the event these areas become disturbed. However, as detailed in Section 3.1, elevated mercury concentrations were detected to the south and east of the substation building, where the majority of these areas are secured by a chain-link fence, limiting the potential of public access. In addition, these areas were covered with approximately 2 inches of crushed stone in April 2010, limiting the potential of site soil to become disturbed or airborne.

5.5 Groundwater

As discussed in Section 3.3, groundwater has not been adversely impacted by the presence of mercury in on-site soil. In addition, on-site groundwater is not used as a potable water source or for any other uses. Therefore, groundwater is not considered a potential exposure pathway.

5.6 Air

VOCs were not detected in site soil above their respective SCOs. As a result, inhalation of these contaminants released to the air through volatilization of contaminants from surface soil and subsurface soil does not represent a potential exposure pathway for on-site or off-site receptors. While the volatilization of mercury present in the surface and subsurface soil can occur, this process occurs at a very slow rate and inhalation of mercury vapor from on-site sources is not expected to be a significant exposure pathway. As discussed above, inhalation of

windblown dust of surface soil does represent a potential exposure pathway to on and off-site receptors upon soil disturbance. However, note that areas exhibiting mercury concentrations in exceedance of their respective Industrial and Residential SCOs area currently covered in approximately 2 inches of crushed stone, limiting the potential for soil in these areas to be disturbed or become airborne. In addition, as stated above, the LIRR has in place procedures to avoid the excavation and handling of contaminated soil without undertaking appropriate health and safety measures.

5.7 Future Use of the Cedar Manor Substation

As part of the LIRR's overall system upgrade in response to increased ridership, the Cedar Manor Substation will be decommissioned as part of the next LIRR Capital Program. Note that new solid-state transformers have already been installed to the north of the existing substation building and all non-solid-state electrical transformers and equipment have been removed. As part of the existing substation building decommissioning and site redevelopment, plans for the future site redevelopment are currently being finalized and will be incorporated into the upcoming RAWP. Tentatively, the existing substation building will remain and be used for storage. Subsequent to building abatement, a mercury vapor evaluation, consistent with the October 2006 New York State Department of Health (NYSDOH) Soil Vapor Intrusion Guidance (SVIG), will be performed within the substation building in order to determine whether there exists the potential for mercury vapor intrusion. Based on the mercury evaluation, abatement measures may be undertaken, if warranted, in order to mitigate this potential exposure pathway. All existing substation components will be removed and properly recycled. After decommissioning of the existing substation building, the LIRR will not be disturbing or excavating in the Cedar Manor Substation property for the foreseeable future. In addition, the LIRR intends to remediate the most significant mercury contamination by excavation and off-site disposal. Therefore, this planned site redevelopment will remove the most significant soil contamination, and as a result future exposure to mercury contamination at the Cedar Manor Substation site is not expected.

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6.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents a discussion of the conclusions and recommendations associated with the investigation of the Cedar Manor Substation. Note that the conclusions and recommendations presented take into consideration the findings of the Fish and Wildlife Resources Impact Analysis presented in Section 4.0, and the Qualitative Human Health Exposure Assessment presented in Section 5.0, as well as the intended future use of the Cedar Manor Substation site.

Upon receiving NYSDEC approval of the recommendations for site remediation presented in this investigation report, the LIRR intends to proceed with development of a Remedial Action Work Plan (RAWP) which will detail the selected remedial technologies that will be used to remediate the Cedar Manor Substation.

6.1 Nature and Extent of Contamination

Mercury was detected in surface and subsurface soil at the Cedar Manor Substation. The greatest mercury concentrations were detected in subsurface soil located south of the substation building, with a maximum mercury concentration of 969 mg/kg.

Groundwater has not been impacted by the presence of mercury in on-site soil.

Elevated concentrations of mercury were detected in surface and subsurface soil to the south of the substation building and subsurface soil to the east of the substation building, with the highest concentrations detected in subsurface soil located off the southwest corner of the substation building. However, these areas were covered with approximately 2 inches of crushed stone in April 2010. Therefore, direct exposure to site contamination of LIRR workers (on-site receptors) who are required to periodically enter the site for equipment maintenance and repair, and off-site receptors is possible. In addition, LIRR workers and subcontractors could be potentially exposed to this contaminant source during excavation activities as the result of dermal contact and inhalation of windblown dust. However, as discussed above, the LIRR has in

place procedures to avoid the excavation and handling of contaminated soil without undertaking appropriate health and safety measures. As residential areas surround the substation building, it is also possible for the public to be exposed to site contamination via windblown dust or dermal contact in the event that these areas are disturbed; however, as detailed in Section 3.1, the majority of areas exhibiting elevated mercury concentrations are secured by a chain-link fence or covered by crushed stone, limiting the potential of public access and exposure. In addition, all areas exhibiting mercury concentrations in exceedance of their respective Industrial and Residential SCOs are currently covered in approximately 2 inches of crushed stone limiting the potential of site soil to become disturbed or airborne.

6.2 Recommendations

As part of the LIRR's overall system upgrade in response to increased ridership, the Cedar Manor Substation will be decommissioned as part of the LIRR next Capital Program. Note that new solid-state transformers have already been installed to the north of the existing substation building and all non-solid-state electrical transformers and equipment have been removed. Plans for the future site redevelopment are currently being finalized and will be incorporated into the upcoming RAWP. Tentatively, the existing substation building will remain and be used for storage. After decommissioning of the existing substation building, the LIRR will not be disturbing or excavating in the Cedar Manor Substation property for the foreseeable future.

Subsequent to building abatement, a mercury vapor evaluation, consistent with the October 2006 New York State Department of Health (NYSDOH) Soil Vapor Intrusion Guidance (SVIG), will be performed within the substation building in order to determine whether there exists the potential for mercury vapor intrusion. Based on the mercury evaluation, abatement measures may be undertaken, if warranted, in order to mitigate this potential exposure pathway. All existing substation components will be removed and properly recycled. After decommissioning of the existing substation building, the LIRR will not be disturbing or excavating in the Cedar Manor Substation property for the foreseeable future. In addition, the LIRR intends to remediate the most significant mercury contamination by excavation and off-site

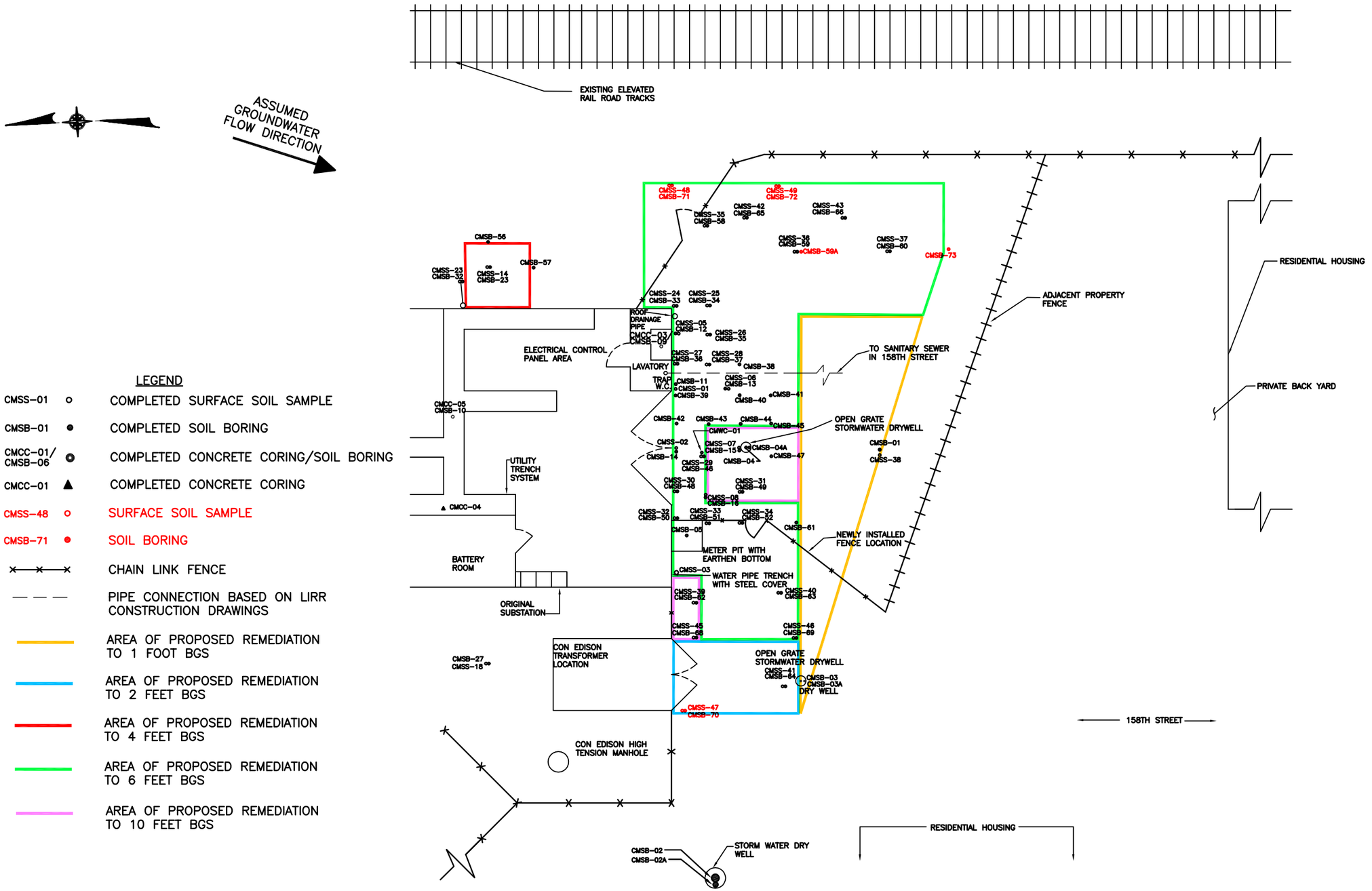
disposal. Therefore this planned site redevelopment will remove the most significant soil contamination, and as a result future exposure to mercury contamination at the Cedar Manor Substation site is not expected.

Site Soil

In order to remediate the highest mercury concentrations detected at the Cedar Manor Substation, the LIRR proposes to excavate soil to the south and east of the substation building to a depth ranging from 1 to 10 feet below ground surface, as depicted on **Figure 6-1**. Note that the terrain inclines south of the substation building, towards the adjacent residential property.

Due to the irregular distribution of mercury in site soil, the remedial excavations of soil exhibiting elevated mercury concentrations have been divided into one 1-foot excavation area, one 2-foot excavation area, one 4-foot excavation area, one 6-foot excavation area and two 10-foot excavation areas. The proposed 1-foot excavation is approximately 227 square feet in total area, and will require the excavation of approximately 9 cubic yards of soil. The proposed 2-foot excavation is approximately 85 square feet in total area, and will require the excavation of approximately 6 cubic yards of soil. The proposed 4-foot excavation area is approximately 39 square feet in total area, and will require the excavation of approximately 6 cubic yards of soil. The proposed 6-foot excavation area is approximately 664 square feet in total area, and will require the excavation of approximately 148 total cubic yards of soil. The proposed 10-foot excavation areas are approximately 77 square feet in total area and will require the excavation of approximately 29 cubic feet of soil. After removal of the soil, post excavation samples will be collected for mercury analysis in order to document the effectiveness of the remediation and any residual mercury remaining.

These areas are approximately 1,092 square feet in total area, and will require the excavation of a combined total of approximately 198 cubic yards of soil. After excavation, the remediated areas will be backfilled with certified clean fill in accordance with the Industrial Use SCOs, at a minimum. Note that, in addition to this site wide soil remediation, the LIRR intends



SOURCE: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS AND D&B's FIELD OBSERVATIONS

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

LONG ISLAND RAIL ROAD
DELINEATION PHASE II SITE ASSESSMENT

PROPOSED AREAS OF REMEDIATION MAP
CEDAR MANOR SUBSTATION (V00388-2)

FIGURE 6-1

F:\28011\dwg\CED\AR MANOR\28011-CM-Fig 5-1 rev.dwg, Exc Lim, 10/19/2009 1:50:44 PM, dbcadd

to close and remediate soil associated with two of the three dry wells located to the south of the substation building and the water meter pit located adjacent to the southwest corner of the substation building, as described below.

Underground Injection Control (UIC) and Below Grade Structures

Dry Wells

Due to an elevated mercury concentration (2.4 mg/kg, exceeding the TAGM SCO of 0.1 mg/kg) detected in the storm water dry well located approximately 27 feet southwest of the substation building, the LIRR recommends that all sediment accumulated within this structure be removed to the structure's solid bottom. It is anticipated that this storm water dry well contains approximately 3 to 4 cubic feet of sediment based on an anticipated 8-foot diameter dry well structure. As all sediment is recommended to be removed from this structure, the collection of post-remediation soil samples will not be possible. In addition, it is recommended that this structure remain in place in order to manage storm water runoff from 158th Street and the surrounding areas.

Due to elevated mercury concentrations ranging from 0.183 mg/kg to 0.732 mg/kg detected in the dry well located approximately 6 feet south of the substation building, the LIRR recommends that the dry well cover and ring structures, and all soil located within the dry well be removed. In addition, it is recommended that soil be removed from beneath the dry well structure to a depth of 20 feet below ground surface, or as deep as is safely feasible. Note that the bottom of this structure is approximately 8 feet below grade. As such, and based on an anticipated 8-foot diameter dry well structure, it is estimated that approximately 12 cubic yards of soil will be removed from this structure. Following soil removal, all discharge pipes entering this structure will be capped with a concrete plug and one post-excavation soil sample will be collected for UIC parameter analysis.

Water Meter Pit

Due to elevated mercury concentrations detected in the water meter pit located adjacent to the southwest corner of the substation building, the LIRR recommends that soil be removed from this structure to a depth of 6 feet below ground surface. Note that, as this structure was not designed to accept waste fluids, samples collected from this structure have been compared to the Industrial Use SCOs. It is estimated that approximately 5 cubic feet of soil will be removed from this structure. Following soil removal, one post-excavation soil sample will be collected from this structure for mercury analysis.

As discussed previously, upon approval of the recommendations described above, the LIRR intends to proceed with the development of a RAWP which will fully detail the methods and procedures that will be employed by the LIRR in order to execute the above recommendations and to allow the LIRR to meet the planned schedule for the Cedar Manor Substation redevelopment. In addition, the RAWP will include provisions for a Community Air Monitoring Plan (CAMP) to be included in the Contractor Health and Safety Plan (CHASP) to be submitted by the remedial contractor to the LIRR and NYSDEC for review and approval. Note that, as will be stated in the RAWP, the CAMP will comply with the requirements of the New York State Department of Health (NYSDOH) Generic CAMP, which will also be included in the RAWP. It is anticipated that the remediation of the Cedar Manor Substation will be conducted in conjunction or immediately following the substation decommissioning.

In addition to the above-referenced site remediation, and in order to further protect the community and LIRR employees, the LIRR has elected to file a Declaration of Covenant and Restrictions for the Cedar Manor property, which will be provided in an upcoming Site Management Plan (SMP).

APPENDIX A

EXISTING INITIAL SITE ASSESSMENT ANALYTICAL DATA

TABLE D-16A

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - CEDAR MANOR-A08
MERCURY

LOCATION	South of Substation Front Doors		Southwest Storm Water Dry Well	Dry Well off Southwest Corner of Substation		Dry Well South of Substation Front Doors		
SAMPLE ID	CMSB-01	CMSB-01	CMSB-02	CMSB-03	CMSB-03	CMSB-04	Instrument	Eastern USA
SAMPLE DEPTH (ft.)	0-2	4-6	8-10	8-10	12-14	8-10	Detection	Background
DATE OF COLLECTION	12/21/99	12/21/99	12/21/99	12/21/99	12/21/99	12/21/99	Limits	Levels[1]
PERCENT SOLIDS	98	99	84	97	97	84		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	0.046 B	0.051 U	2.7	0.062 B	0.045 U	1.7	0.1	0.001-0.2

NOTES:

[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:

U: Constituent analyzed for but not detected.
B: Constituent concentration is less than the CRDL, but greater than the IDL.

TABLE D-16A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - CEDAR MANOR-A08
MERCURY

LOCATION	Dry Well South of Substation	Southwest Exterior Meter Pit		West Rectifier 2 Sub-Basement		East Rectifier 1 Sub-Basement		
SAMPLE ID	CMSB-04	CMSB-05	CMSB-05	CMSB-06	CMSB-06	CMSB-08	Instrument Detection Limits	Eastern USA Background Levels[1]
SAMPLE DEPTH (ft.)	12-14	3.5-5.5	7.5-9.5	0-2	4-6	0-2		
DATE OF COLLECTION	12/21/99	12/21/99	12/21/99	12/21/99	12/21/99	12/22/99		
PERCENT SOLIDS	23	93	86	93	94	91		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Mercury	7.6	13.8	0.10 B	1.6	2.3	0.19	0.1	0.001-0.2

NOTES:

[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

QUALIFIERS:

U: Constituent analyzed for but not detected.

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

TABLE D-16A (continued)

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SOIL BORING SAMPLING RESULTS - CEDAR MANOR-A08
MERCURY

LOCATION	East Rectifier 1 Sub-Basement	Southeast Interior Sanitary Pipe Trench		Central/South-Central Utility Trench in Original Substation			Instrument Detection Limits	Eastern USA Background Levels[1]
SAMPLE ID	CMSB-08	CMSB-09	CMSB-09	CMSB-10	CMFB-02			
SAMPLE DEPTH (ft.)	4-6	0-2	4-6	0-2	----			
DATE OF COLLECTION	12/22/99	12/21/99	12/21/99	12/21/99	12/21/99			
PERCENT SOLIDS	98	89	96	94	----			
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)		(ug/L)	(mg/kg)
Mercury	0.071 B	1.9	0.20	3	0.14 U		0.1	0.001-0.2

NOTES:

[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

----: Not applicable.

QUALIFIERS:

U: Constituent analyzed for but not detected.

TABLE D-16B

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
SURFACE SOIL SAMPLING RESULTS - CEDAR MANOR-G07
MERCURY

LOCATION	East of Front Entrance Doors	South of Front Entrance Doors	Southwest Corner of Substation	Northeast Corner of Substation				
SAMPLE ID	CMSS-01	CMSS-02	CMSS-03	CMSS-04			Instrument Detection Limits	Eastern USA Background Levels[1]
SAMPLE DEPTH (in.)	0-6	0-6	0-6	0-6				
DATE OF COLLECTION	12/21/99	12/21/99	12/21/99	12/21/99				
PERCENT SOLIDS	63	89	95	91				
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)			(ug/L)	(mg/kg)
Mercury	2	2.2	0.13	0.41			0.1	0.001 - 0.2

NOTES:

[1] Background level for mercury provided in NYSDEC TAGM 4046 Appendix A.

TABLE D-16C

LONG ISLAND RAIL ROAD SUBSTATION INVESTIGATION
CONCRETE CORE SAMPLING RESULTS - CEDAR MANOR-A08
MERCURY

LOCATION	West Sub-Basement	East Sub-Basement	Southeast Corner Sanitary Pipe Trench	West/South west Utility Trench in Substation	Central/South-Central Utility Trench in Original Substation		
SAMPLE ID	CMCC-01	CMCC-02	CMCC-03	CMCC-04	CMCC-05	CMFB-01	Instrument Detection Limits
DATE OF COLLECTION	12/21/99	12/22/99	12/22/99	12/22/99	12/22/99	12/22/99	
PERCENT SOLIDS	97	91	87	99	98	----	
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(ug/L)
Mercury	0.16	0.44	1.2	4	2.7	0.14 U	0.1

NOTES:
----: Not applicable.

QUALIFIERS:
U: Constituent analyzed for but not detected.

APPENDIX B

DATA QUALIFIERS/
DELINEATION PHASE II ANALYTICAL DATA

Data Flag/Qualifiers:

U Not Detected. This compound was analyzed-for but not detected. For Organics analysis the reporting limit (lowest standard concentration) is the value listed. For Inorganics analysis, the value listed is the detection limit. For Inorganics analyzed using SW-846 methods, the detection limit is the Method Detection Limit, for Inorganics analyzed using EPA CLP and NY ASP CLP methods, the detection limit is the Instrument Detection Limit.

J For Organics analysis, this flag indicates an estimated value due to either
- the compound was detected below the reporting limit, or
- estimated concentration for Tentatively Identified Compound

B For Organic analyses, this flag indicates the compound was also detected in the associated Method Blank. The B flag has an alternative meaning for Inorganics analyses, indicating a "trace" concentration below the reporting limit and equal to or above the detection limit.

D For Organics analysis, this flag indicates the compound concentration was obtained from a diluted analysis

E For Organics analysis, this flag indicates the compound concentration exceeded the Calibration Range. The E flag has an alternative meaning for Inorganics analyses, indicating an estimated concentration due to the presence of interferences, as determined by the serial dilution analysis.

P This flag is used for Pesticides/PCB/Herbicide compound when there is a greater than 40% difference for detected concentration between the two GC columns used for Primary and Confirmation analyses. This difference typically indicates an interference, causing one value to be unusually high. The **lower** of the two values is reported in the Analysis Report.

A Used to flag Semivolatile Organic Tentatively Identified Compound library search results for compounds identified as aldol condensation byproducts.

N Used to flag results for Volatile and Semivolatile Organics analysis Tentatively Identified Compounds where an analyte has passed the identification criteria, and is considered to be positively identified. For Inorganics analysis the N flag indicates the matrix spike recovery falls outside of the control limit.

* For Inorganics analysis the * flag indicates Relative Percent Difference for duplicate analyses is outside of the control limit.

Date: 08/20/2009

TABLE 1

LONG ISLAND RAIL ROAD - 17 SUBSTATIONS

CEDAR MANOR SUBSTATION

SURFACE SOIL SAMPLE RESULTS

RESIDENTIAL USE SOIL CLEANUP OBJECTIVES

MERCURY

PERIOD: From 05/01/2008 thru 05/20/2009 - Inclusive

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSS-32 CMSS-32 05/01/2008	CMSS-33 CMSS-33 05/01/2008	CMSS-34 CMSS-34 05/01/2008	CMSS-39 CMSS-39 03/12/2009	CMSS-40 CMSS-40 03/12/2009
Mercury	(mg/kg)	0.81	10.000D	1.7D	9.7D	9.7D	0.570D

mg/kg: milligrams per kilogram

TABLE 1
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
RESIDENTIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 05/01/2008 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSS-41 CMSS-41 03/12/2009	CMSS-45 CMSS-45 03/12/2009	CMSS-46 CMSS-46 03/12/2009	CMSS-47 CMSS-47 05/20/2009
Mercury	(mg/kg)	0.81	0.100DJ	1.6D	0.091DJ	0.657D

mg/kg: milligrams per kilogram

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/13/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-05 CMSS-05 10/13/2005	CMSS-06 CMSS-06 10/13/2005	CMSS-07 CMSS-07 10/13/2005	CMSS-08 CMSS-08 10/13/2005	CMSS-09 CMSS-09 10/13/2005
Mercury	(mg/kg)	5.7	97.300DJ	5.5DJ	6.8DJ	18.400DJ	0.068UJ

mg/kg: milligrams per kilogram

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/13/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-10 CMSS-10 10/13/2005	CMSS-11 CMSS-11 10/13/2005	CMSS-12 CMSS-12 10/13/2005	CMSS-13 CMSS-13 10/13/2005	CMSS-14 CMSS-14 10/19/2005
Mercury	(mg/kg)	5.7	0.407DJ	0.269DJ	0.069UJ	0.084DJ	3.0D

mg/kg: milligrams per kilogram

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/13/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-15 CMSS-15 10/13/2005	CMSS-16 CMSS-16 10/13/2005	CMSS-17 CMSS-17 10/13/2005	CMSS-18 CMSS-18 10/13/2005	CMSS-20 CMSS-20 10/19/2005
Mercury	(mg/kg)	5.7	0.068UJ	0.071UJ	0.070UJ	0.069UJ	0.252DJ

mg/kg: milligrams per kilogram

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/13/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-21 CMSS-21 10/19/2005	CMSS-22 CMSS-22 10/19/2005	CMSS-23 CMSS-23 10/19/2005	CMSS-24 CMSS-24 05/01/2008	CMSS-25 CMSS-25 05/01/2008
Mercury	(mg/kg)	5.7	0.069DJ	0.067U	0.399D	7.2D	0.510

mg/kg: milligrams per kilogram

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/13/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-26 CMSS-26 05/01/2008	CMSS-27 CMSS-27 05/01/2008	CMSS-28 CMSS-28 05/01/2008	CMSS-29 CMSS-29 05/01/2008	CMSS-30 CMSS-30 05/01/2008
Mercury	(mg/kg)	5.7	6.7D	7.5D	6.2D	9.4D	7.7D

mg/kg: milligrams per kilogram

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/13/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-31 CMSS-31 05/01/2008	CMSS-35 CMSS-35 03/12/2009	CMSS-36 CMSS-36 03/12/2009	CMSS-37 CMSS-37 03/12/2009	CMSS-38 CMSS-38 03/12/2009
Mercury	(mg/kg)	5.7	7.7D	3.0D	14.000D	0.133D	0.806D

mg/kg: milligrams per kilogram

TABLE 2
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/13/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-42 CMSS-42 03/12/2009	CMSS-43 CMSS-43 03/12/2009	CMSS-48 CMSS-48 05/20/2009
Mercury	(mg/kg)	5.7	49.400D	0.269D	4.6D

mg/kg: milligrams per kilogram

TABLE 3
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
RCRA METALS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-20 CMSS-20 10/19/2005	CMSS-21 CMSS-21 10/19/2005	CMSS-22 CMSS-22 10/19/2005
Arsenic	(mg/kg)	16	3.410	2.680	3.710
Barium	(mg/kg)	10000	44.2J	31.7J	36.9J
Cadmium	(mg/kg)	60	0.038U	0.037U	0.038U
Chromium	(mg/kg)	6800	11.8J	7.660J	5.240J
Lead	(mg/kg)	3900	97.3J	20.0J	28.1J
Selenium	(mg/kg)	6800	0.391U	0.380U	0.391U
Silver	(mg/kg)	6800	0.090UJ	0.088UJ	0.091UJ

mg/kg: milligrams per kilogram

TABLE 4
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-20 CMSS-20 10/19/2005	CMSS-21 CMSS-21 10/19/2005	CMSS-22 CMSS-22 10/19/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)		120U	120U	240U
2,4,5-Trichlorophenol	(ug/kg)		110U	110U	230U
2,4,6-Trichlorophenol	(ug/kg)		110U	110U	220U
2,4-Dichlorophenol	(ug/kg)		140U	140U	280U
2,4-Dimethylphenol	(ug/kg)		120U	120U	240U
2,4-Dinitrophenol	(ug/kg)		640U	630U	1300U
2,4-Dinitrotoluene	(ug/kg)		110U	110U	220U
2,6-Dinitrotoluene	(ug/kg)		110U	100U	210U
2-Chloronaphthalene	(ug/kg)		120U	120U	250U
2-Chlorophenol	(ug/kg)		120U	120U	240U
2-Methylnaphthalene	(ug/kg)		520J	120U	250U
3,3-Dichlorobenzidine	(ug/kg)		130U	130U	250U
4,6-Dinitro-o-cresol	(ug/kg)		140U	140U	290U
4-Bromofluorobenzene	(ug/kg)		110U	110U	220U
4-Chlorophenylphenyl ether	(ug/kg)		120U	120U	240U
Acenaphthene	(ug/kg)	1000000	130U	130U	270U
Acenaphthylene	(ug/kg)	1000000	120U	120U	240U

ug/kg: micrograms per kilogram

TABLE 4
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-20 CMSS-20 10/19/2005	CMSS-21 CMSS-21 10/19/2005	CMSS-22 CMSS-22 10/19/2005
Acetophenone	(ug/kg)		110U	110U	220U
Anthracene	(ug/kg)	1000000	480J	440J	940J
Atrazine	(ug/kg)		110U	110U	230U
Benzaldehyde	(ug/kg)		150U	150U	310U
Benzo(a)anthracene	(ug/kg)	11000	180J	100U	270J
Benzo(a)pyrene	(ug/kg)	1100	140J	120UJ	240UJ
Benzo(b)fluoranthene	(ug/kg)	11000	240J	110J	380J
Benzo(ghi)perylene	(ug/kg)	1000000	120UJ	120UJ	250UJ
Benzo(k)fluoranthene	(ug/kg)	110000	160UJ	160UJ	330UJ
Biphenyl	(ug/kg)		460U	450U	900U
Bis(2-chloroethoxy)methane	(ug/kg)		120U	120U	240U
Bis(2-chloroethyl)ether	(ug/kg)		120U	120U	240U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)		700J	730J	1400J
Butyl benzyl phthalate	(ug/kg)		120U	120U	240U
Caprolactam	(ug/kg)		120UJ	120UJ	240UJ
Carbazole	(ug/kg)		230J	110U	230U
Chrysene	(ug/kg)	110000	480J	380J	860J

ug/kg: micrograms per kilogram

TABLE 4
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-20 CMSS-20 10/19/2005	CMSS-21 CMSS-21 10/19/2005	CMSS-22 CMSS-22 10/19/2005
Dibenzo(a,h)anthracene	(ug/kg)	1100	93UJ	92UJ	190UJ
Dibenzofuran	(ug/kg)	1000000	190J	120U	370J
Diethyl phthalate	(ug/kg)		130U	130U	260U
Dimethyl phthalate	(ug/kg)		120U	120U	240U
Di-n-butyl phthalate	(ug/kg)		470J	470J	230U
Di-n-octyl phthalate	(ug/kg)		130UJ	120UJ	250UJ
Fluoranthene	(ug/kg)	1000000	670J	550J	1300J
Fluorene	(ug/kg)	1000000	390J	120U	780J
Hexachlorobenzene	(ug/kg)	12000	120U	120U	240U
Hexachlorobutadiene	(ug/kg)		110U	110U	230U
Hexachlorocyclopentadiene	(ug/kg)		120U	120U	240U
Hexachloroethane	(ug/kg)		130U	120U	250U
Indeno(1,2,3-cd)pyrene	(ug/kg)	11000	95UJ	93UJ	190UJ
Isophorone	(ug/kg)		110U	110U	220U
m-Nitroaniline	(ug/kg)		97U	96U	190U
Naphthalene	(ug/kg)	1000000	130U	130U	250U
Nitrobenzene	(ug/kg)		160U	160U	330U

ug/kg: micrograms per kilogram

TABLE 4
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-20 CMSS-20 10/19/2005	CMSS-21 CMSS-21 10/19/2005	CMSS-22 CMSS-22 10/19/2005
N-Nitrosodiphenylamine	(ug/kg)		120U	120U	250U
N-Nitrosodipropylamine	(ug/kg)		120U	120U	250U
o-Cresol	(ug/kg)	1000000	120U	120U	250U
o-Nitroaniline	(ug/kg)		95U	93U	190U
o-Nitrophenol	(ug/kg)		110U	110U	230U
p-Chloroaniline	(ug/kg)		89U	87U	180U
p-Chloro-m-cresol	(ug/kg)		100U	100U	210U
PCP	(ug/kg)	55000	170U	170U	340U
p-Cresol	(ug/kg)	1000000	120U	120U	230U
Phenanthrene	(ug/kg)	1000000	550J	450J	1100J
Phenol	(ug/kg)	1000000	110U	110U	230U
p-Nitroaniline	(ug/kg)		130U	130U	250U
p-Nitrophenol	(ug/kg)		92UJ	91UJ	180UJ
Pyrene	(ug/kg)	1000000	350J	140J	600J
Total PAHs	(ug/kg)		3480	2070	6230
Total Semivolatile Organics	(ug/kg)		6050	3720	8900

ug/kg: micrograms per kilogram

TABLE 5
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSS-20 CMSS-20 10/19/2005	CMSS-21 CMSS-21 10/19/2005	CMSS-22 CMSS-22 10/19/2005
Aroclor 1016	(ug/kg)		2.9U	2.8U	2.9U
Aroclor 1221	(ug/kg)		4.5U	4.3U	4.5U
Aroclor 1232	(ug/kg)		6.7U	6.5U	6.7U
Aroclor 1242	(ug/kg)		5.9U	5.8U	5.9U
Aroclor 1248	(ug/kg)		2.9U	2.8U	2.9U
Aroclor 1254	(ug/kg)		1.9U	1.8U	1.9U
Aroclor 1260	(ug/kg)		4.8U	4.6U	4.8U
Total PCBs (surface soil)	(ug/kg)	25000	0	0	0

ug/kg: micrograms per kilogram

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
RESIDENTIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 05/01/2008 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-51 CMSB-51(1-2) 05/01/2008	CMSB-52 CMSB-52(1-2) 05/02/2008	CMSB-61 CMSB-61(4-6) 03/12/2009	CMSB-61 CMSB-61(6-8) 03/12/2009	CMSB-62 CMSB-62(2-4) 03/12/2009
Mercury	(mg/kg)	0.81	46.609JD	7.3JD	1.4DJ	0.332DJ	969DJ

mg/kg: milligrams per kilogram

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
RESIDENTIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 05/01/2008 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-62 CMSB-62(4-6) 03/12/2009	CMSB-62 CMSB-62(1-2) 03/12/2009	CMSB-63 CMSB-63(1-2) 03/12/2009	CMSB-63 CMSB-63(2-4) 03/12/2009	CMSB-63 CMSB-63(4-6) 03/12/2009
Mercury	(mg/kg)	0.81	27.200DJ	19.300DJ	1.7DJ	0.021UJ	0.047DJ

mg/kg: milligrams per kilogram

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
RESIDENTIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 05/01/2008 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-64 CMSB-64(4-6) 03/12/2009	CMSB-64 CMSB-64(1-2) 03/12/2009	CMSB-64 CMSB-64(2-4) 03/12/2009	CMSB-68 CMSB-68(1-2) 03/12/2009	CMSB-68 CMSB-68(2-4) 03/12/2009
Mercury	(mg/kg)	0.81	0.021UJ	1.4DJ	0.044DJ	2.3D	0.186D

mg/kg: milligrams per kilogram

TABLE 6
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
RESIDENTIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 05/01/2008 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-68 CMSB-68(4-6) 03/12/2009	CMSB-69 CMSB-69(1-2) 03/12/2009	CMSB-69 CMSB-69(2-4) 03/12/2009	CMSB-69 CMSB-69(4-6) 03/12/2009	CMSB-70 CMSB-70 (1-2) 05/20/2009
Mercury	(mg/kg)	0.81	0.055DJ	0.571D	0.880D	0.656D	0.249D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-11 CMSB-11(2-4) 10/19/2005	CMSB-12 CMSB-12(2-4) 10/19/2005	CMSB-12 CMSB-12(4-6) 10/19/2005	CMSB-12 CMSB-12(6-8) 10/19/2005	CMSB-13 CMSB-13(2-4) 10/19/2005
Mercury	(mg/kg)	0.81	8.4D	5.6D	0.778D	0.134D	32.800D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-14 CMSB-14(2-4) 10/19/2005	CMSB-15 CMSB-15(2-4) 10/19/2005	CMSB-16 CMSB-16(2-4) 10/19/2005	CMSB-17 CMSB-17(2-4) 10/19/2005	CMSB-18 CMSB-18-(2-4) 10/19/2005
Mercury	(mg/kg)	0.81	8.9D	46.800D	2.4D	0.331DJ	1.7DJ

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-19 CMSB-19(2-4) 10/19/2005	CMSB-20 CMSB-20(2-4) 10/19/2005	CMSB-21 CMSB-21(2-4) 10/19/2005	CMSB-22 CMSB-22(2-4) 10/19/2005	CMSB-23 CMSB-23(2-4) 10/19/2005
Mercury	(mg/kg)	0.81	0.482DJ	0.386DJ	0.195DJ	4.1JD	5.9D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-24 CMSB-24(2-4) 10/19/2005	CMSB-25 CMSB-25(2-4) 10/19/2005	CMSB-26 CMSB-26(2-4) 10/19/2005	CMSB-27 CMSB-27(2-4) 10/19/2005	CMSB-29 CMSB-29(0-2) 10/19/2005
Mercury	(mg/kg)	0.81	0.299DJ	0.727D	2.0D	0.259D	0.321DJ

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-29 CMSB-29(2-4) 10/19/2005	CMSB-30 CMSB-30(0-2) 10/19/2005	CMSB-30 CMSB-30(2-4) 10/19/2005	CMSB-31 CMSB-31(0-2) 10/19/2005	CMSB-31 CMSB-31(2-4) 10/19/2005
Mercury	(mg/kg)	0.81	0.147DJ	0.177DJ	0.673DJ	0.609DJ	0.332DJ

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-32 CMSB-32(2-4) 10/19/2005	CMSB-33 CMSB-33(1-2) 05/01/2008	CMSB-33 CMSB-33(2-4) 05/01/2008	CMSB-34 CMSB-34(1-2) 05/01/2008	CMSB-34 CMSB-34(2-4) 05/01/2008
Mercury	(mg/kg)	0.81	1.4D	39.000D	8.6D	14.500D	11.300D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-35 CMSB-35(1-2) 05/01/2008	CMSB-35 CMSB-35(2-4) 05/01/2008	CMSB-36 CMSB-36(1-2) 05/01/2008	CMSB-36 CMSB-36(2-4) 05/01/2008	CMSB-37 CMSB-37(1-2) 05/01/2008
Mercury	(mg/kg)	0.81	26.600DJ	0.195UJ	54.100DJ	22.500DJ	9.1D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-37 CMSB-37(2-4) 05/01/2008	CMSB-37 CMSB-37(4-6) 05/01/2008	CMSB-38 CMSB-38(1-2) 05/01/2008	CMSB-38 CMSB-38(2-4) 05/01/2008	CMSB-38 CMSB-38(4-6) 05/01/2008
Mercury	(mg/kg)	0.81	55.600DJ	5.0DJ	18.200DJ	0.213UJ	0.075UJ

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-39 CMSB-39(1-2) 05/01/2008	CMSB-39 CMSB-39(2-4) 05/01/2008	CMSB-39 CMSB-39(4-6) 05/01/2008	CMSB-40 CMSB-40(1-2) 05/01/2008	CMSB-41 CMSB-41(1-2) 05/01/2008
Mercury	(mg/kg)	0.81	26.400JD	4.0JD	2.0JD	19.400JD	3.2JD

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-41 CMSB-41(2-4) 05/01/2008	CMSB-41 CMSB-41(4-6) 05/01/2008	CMSB-43 CMSB-43(1-2) 05/02/2008	CMSB-43 CMSB-43(2-4) 05/02/2008	CMSB-43 CMSB-43(4-6) 05/02/2008
Mercury	(mg/kg)	0.81	2.0JD	0.184JD	8.6JD	2.3JD	0.620JD

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-43 CMSB-43(6-8) 05/02/2008	CMSB-44 CMSB-44(1-2) 05/02/2008	CMSB-44 CMSB-44(2-4) 05/02/2008	CMSB-44 CMSB-44(4-6) 05/02/2008	CMSB-44 CMSB-44(6-8) 05/02/2008
Mercury	(mg/kg)	0.81	0.378JD	2.9DJ	2.2DJ	1.8DJ	0.944DJ

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-45 CMSB-45(1-2) 05/01/2008	CMSB-45 CMSB-45(2-4) 05/01/2008	CMSB-45 CMSB-45(4-6) 05/01/2008	CMSB-46 CMSB-46(2-4) 05/01/2008	CMSB-46 CMSB-46(4-6) 05/01/2008
Mercury	(mg/kg)	0.81	33.700JD	0.194JD	0.082JD	31.700DJ	1.2DJ

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-46 CMSB-46(1-2) 05/01/2008	CMSB-46 CMSB-46(6-8) 05/01/2008	CMSB-47 CMSB-47(1-2) 05/01/2008	CMSB-47 CMSB-47(2-4) 05/01/2008	CMSB-47 CMSB-47(4-6) 05/01/2008
Mercury	(mg/kg)	0.81	7.4DJ	0.326UJ	10.100DJ	8.3DJ	6.6DJ

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-48 CMSB-48(1-2) 05/02/2008	CMSB-48 CMSB-48(2-4) 05/02/2008	CMSB-48 CMSB-48(4-6) 05/02/2008	CMSB-48 CMSB-48(6-8) 05/02/2008	CMSB-49 CMSB-49(1-2) 05/02/2008
Mercury	(mg/kg)	0.81	23.700DJ	1.6DJ	1.0DJ	0.211UJ	3.7JD

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-49 CMSB-49(2-4) 05/02/2008	CMSB-49 CMSB-49(4-6) 05/02/2008	CMSB-49 CMSB-49(6-8) 05/02/2008	CMSB-53 CMSB-53(1-2) 05/02/2008	CMSB-53 CMSB-53(2-4) 05/02/2008
Mercury	(mg/kg)	0.81	10.500JD	5.1DJ	10.600DJ	0.198UJ	0.079UJ

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-53 CMSB-53(4-6) 05/02/2008	CMSB-54 CMSB-54(1-2) 05/02/2008	CMSB-54 CMSB-54(2-4) 05/02/2008	CMSB-54 CMSB-54(4-6) 05/02/2008	CMSB-55 CMSB-55(1-2) 05/02/2008
Mercury	(mg/kg)	0.81	0.212UJ	0.073UJ	0.136UJ	0.113UJ	0.129UJ

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-55 CMSB-55(2-4) 05/02/2008	CMSB-55 CMSB-55(4-6) 05/02/2008	CMSB-56 CMSB-56(1-2) 05/02/2008	CMSB-56 CMSB-56(2-4) 05/02/2008	CMSB-56 CMSB-56(4-6) 05/02/2008
Mercury	(mg/kg)	0.81	0.075UJ	0.072UJ	1.7D	0.679D	0.115D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-57 CMSB-57(1-2) 05/02/2008	CMSB-57 CMSB-57(2-4) 05/02/2008	CMSB-57 CMSB-57(4-6) 05/02/2008	CMSB-58 CMSB-58(1-2) 03/12/2009	CMSB-58 CMSB-58(2-4) 03/12/2009
Mercury	(mg/kg)	0.81	1.1D	0.559D	0.077U	34.500D	1.6D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-58 CMSB-58(4-6) 03/12/2009	CMSB-59 CMSB-59(1-2) 03/12/2009	CMSB-59 CMSB-59(2-4) 03/12/2009	CMSB-59 CMSB-59(4-6) 03/12/2009	CMSB-59A CMSB-59A (6-8) 05/20/2009
Mercury	(mg/kg)	0.81	0.021U	18.200D	19.400D	49.400D	0.257D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-60 CMSB-60(1-2) 03/12/2009	CMSB-60 CMSB-60(2-4) 03/12/2009	CMSB-60 CMSB-60(4-6) 03/12/2009	CMSB-65 CMSB-65(1-2) 03/12/2009	CMSB-65 CMSB-65(2-4) 03/12/2009
Mercury	(mg/kg)	0.81	11.200D	1.4D	0.021U	0.644D	2.6D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-65 CMSB-65(4-6) 03/12/2009	CMSB-66 CMSB-66(1-2) 03/12/2009	CMSB-66 CMSB-66(2-4) 03/12/2009	CMSB-66 CMSB-66(4-6) 03/12/2009	CMSB-71 CMSB-71 (1-2) 05/20/2009
Mercury	(mg/kg)	0.81	0.021U	0.380D	0.025DJ	0.021U	0.118D

mg/kg: milligrams per kilogram

TABLE 7
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 05/20/2009 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Part 375 Residental SCOs	CMSB-71 CMSB-71 (2-3) 05/20/2009	CMSB-72 CMSB-72 (1-2) 05/20/2009	CMSB-72 CMSB-72 (2-4) 05/20/2009	CMSB-73 CMSB-73 (1-2) 05/20/2009	CMSB-73 CMSB-73 (2-4) 05/20/2009
Mercury	(mg/kg)	0.81	0.022U	1.3D	1.2D	0.308D	1.5D

mg/kg: milligrams per kilogram

TABLE 8
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
RCRA METALS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-29 CMSB-29(0-2) 10/19/2005	CMSB-29 CMSB-29(2-4) 10/19/2005	CMSB-30 CMSB-30(0-2) 10/19/2005	CMSB-30 CMSB-30(2-4) 10/19/2005	CMSB-31 CMSB-31(0-2) 10/19/2005
Arsenic	(mg/kg)	16	3.940	3.540	3.730	3.560	3.550
Barium	(mg/kg)	10000	52.2J	35.7J	52.4J	42.6J	46.5J
Cadmium	(mg/kg)	60	0.038U	0.038U	0.037U	0.037U	0.037U
Chromium	(mg/kg)	6800	14.6J	8.670J	10.2J	11.2J	8.600J
Lead	(mg/kg)	3900	96.3J	25.2J	48.7J	52.1J	33.8J
Selenium	(mg/kg)	6800	0.394U	0.392U	0.377U	0.383U	0.381U
Silver	(mg/kg)	6800	0.091UJ	0.091UJ	0.087UJ	0.089UJ	0.088UJ

mg/kg: milligrams per kilogram

TABLE 8
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
RCRA METALS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-31 CMSB-31(2-4) 10/19/2005
Arsenic	(mg/kg)	16	2.500
Barium	(mg/kg)	10000	57.4J
Cadmium	(mg/kg)	60	0.037U
Chromium	(mg/kg)	6800	10.5J$_n$
Lead	(mg/kg)	3900	24.8J
Selenium	(mg/kg)	6800	0.378U
Silver	(mg/kg)	6800	0.087UJ

mg/kg: milligrams per kilogram

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-29 CMSB-29(0-2) 10/19/2005	CMSB-29 CMSB-29(2-4) 10/19/2005	CMSB-30 CMSB-30(0-2) 10/19/2005	CMSB-30 CMSB-30(2-4) 10/19/2005	CMSB-31 CMSB-31(0-2) 10/19/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)		120U	61U	58U	120U	58U
2,4,5-Trichlorophenol	(ug/kg)		120U	58U	55U	110U	55U
2,4,6-Trichlorophenol	(ug/kg)		110U	56U	53U	110U	53U
2,4-Dichlorophenol	(ug/kg)		140U	70U	67U	140U	66U
2,4-Dimethylphenol	(ug/kg)		120U	60U	57U	120U	57U
2,4-Dinitrophenol	(ug/kg)		650U	330U	310U	630U	310U
2,4-Dinitrotoluene	(ug/kg)		110U	56U	53U	110U	53U
2,6-Dinitrotoluene	(ug/kg)		110U	54U	51U	100U	51U
2-Chloronaphthalene	(ug/kg)		130U	63U	60U	120U	60U
2-Chlorophenol	(ug/kg)		120U	61U	58U	120U	57U
2-Methylnaphthalene	(ug/kg)		130U	64U	60U	730J	60U
3,3-Dichlorobenzidine	(ug/kg)		130U	65U	62U	130U	61U
4,6-Dinitro-o-cresol	(ug/kg)		150U	74U	70U	140U	70U
4-Bromofluorobenzene	(ug/kg)		110U	57U	54U	110U	54U
4-Chlorophenylphenyl ether	(ug/kg)		120U	60U	57U	120U	57U
Acenaphthene	(ug/kg)	1000000	140U	68U	64U	2900	64U
Acenaphthylene	(ug/kg)	1000000	120U	62U	59U	120J	58U

ug/kg: micrograms per kilogram

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-29 CMSB-29(0-2) 10/19/2005	CMSB-29 CMSB-29(2-4) 10/19/2005	CMSB-30 CMSB-30(0-2) 10/19/2005	CMSB-30 CMSB-30(2-4) 10/19/2005	CMSB-31 CMSB-31(0-2) 10/19/2005
Acetophenone	(ug/kg)		110U	56U	53U	110U	52U
Anthracene	(ug/kg)	1000000	480J	240J	230J	4200	230J
Atrazine	(ug/kg)		120U	58U	55U	110U	55U
Benzaldehyde	(ug/kg)		160U	78U	74U	150U	74U
Benzo(a)anthracene	(ug/kg)	11000	110U	64J	56J	2200J	82J
Benzo(a)pyrene	(ug/kg)	1100	120U	61U	58U	700J	59J
Benzo(b)fluoranthene	(ug/kg)	11000	130J	75J	88J	1400	82J
Benzo(ghi)perylene	(ug/kg)	1000000	130U	63U	60U	250J	59UJ
Benzo(k)fluoranthene	(ug/kg)	110000	170U	84U	80U	370J	79UJ
Biphenyl	(ug/kg)		470U	240U	230U	560U	220U
Bis(2-chloroethoxy)methane	(ug/kg)		130U	63U	59U	120U	59U
Bis(2-chloroethyl)ether	(ug/kg)		120U	60U	57U	120U	57U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)		720J	360J	350J	710J	370J
Butyl benzyl phthalate	(ug/kg)		120U	62U	59U	120U	58U
Caprolactam	(ug/kg)		120UJ	61UJ	58UJ	120UJ	58UJ
Carbazole	(ug/kg)		120U	58U	55U	530J	55U
Chrysene	(ug/kg)	110000	420J	220J	220J	2000J	240J

ug/kg: micrograms per kilogram

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-29 CMSB-29(0-2) 10/19/2005	CMSB-29 CMSB-29(2-4) 10/19/2005	CMSB-30 CMSB-30(0-2) 10/19/2005	CMSB-30 CMSB-30(2-4) 10/19/2005	CMSB-31 CMSB-31(0-2) 10/19/2005
Dibenzo(a,h)anthracene	(ug/kg)	1100	96U	48U	45U	93U	45UJ
Dibenzofuran	(ug/kg)	1000000	190J	63U	60U	1200	90J
Diethyl phthalate	(ug/kg)		130U	66U	62U	130U	62U
Dimethyl phthalate	(ug/kg)		120U	61U	58U	120U	58U
Di-n-butyl phthalate	(ug/kg)		120U	240J	55U	110U	230J
Di-n-octyl phthalate	(ug/kg)		130U	65U	62U	130U	61UJ
Fluoranthene	(ug/kg)	1000000	590J	330J	350J	13000D	320J
Fluorene	(ug/kg)	1000000	400J	64U	61U	2500J	190J
Hexachlorobenzene	(ug/kg)	12000	120U	61U	58U	120U	57U
Hexachlorobutadiene	(ug/kg)		120U	59U	56U	110U	55U
Hexachlorocyclopentadiene	(ug/kg)		120U	61U	58U	120U	57U
Hexachloroethane	(ug/kg)		130U	65U	61U	130U	61U
Indeno(1,2,3-cd)pyrene	(ug/kg)	11000	97U	48U	46U	94U	46UJ
Isophorone	(ug/kg)		110U	57U	54U	110U	54U
m-Nitroaniline	(ug/kg)		99U	50U	47U	96U	47U
Naphthalene	(ug/kg)	1000000	130U	65U	62U	590J	61U
Nitrobenzene	(ug/kg)		170U	83U	79U	160U	78U

ug/kg: micrograms per kilogram

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-29 CMSB-29(0-2) 10/19/2005	CMSB-29 CMSB-29(2-4) 10/19/2005	CMSB-30 CMSB-30(0-2) 10/19/2005	CMSB-30 CMSB-30(2-4) 10/19/2005	CMSB-31 CMSB-31(0-2) 10/19/2005
N-Nitrosodiphenylamine	(ug/kg)		130U	63U	60U	120U	59U
N-Nitrosodipropylamine	(ug/kg)		130U	63U	60U	120U	59U
o-Cresol	(ug/kg)	1000000	130U	63U	60U	120U	60U
o-Nitroaniline	(ug/kg)		97U	48U	46U	94U	46U
o-Nitrophenol	(ug/kg)		120U	59U	56U	110U	55U
p-Chloroaniline	(ug/kg)		91U	45U	43U	88U	43U
p-Chloro-m-cresol	(ug/kg)		110U	53U	50U	100U	50U
PCP	(ug/kg)	55000	180U	88U	84U	170U	83U
p-Cresol	(ug/kg)	1000000	120U	60U	57U	120U	57U
Phenanthrene	(ug/kg)	1000000	500J	260J	230J	14000D	280J
Phenol	(ug/kg)	1000000	120U	58U	55U	110U	54U
p-Nitroaniline	(ug/kg)		130U	65U	62U	130U	61U
p-Nitrophenol	(ug/kg)		95UJ	47UJ	45UJ	91UJ	44UJ
Pyrene	(ug/kg)	1000000	200J	110J	160J	7000DJ	200J
Total PAHs	(ug/kg)		2910	1299	1334	51230	1683
Total Semivolatile Organics	(ug/kg)		3630	2139	1684	54980	2675

ug/kg: micrograms per kilogram

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-31 CMSB-31(2-4) 10/19/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)		58U
2,4,5-Trichlorophenol	(ug/kg)		55U
2,4,6-Trichlorophenol	(ug/kg)		53U
2,4-Dichlorophenol	(ug/kg)		66U
2,4-Dimethylphenol	(ug/kg)		57U
2,4-Dinitrophenol	(ug/kg)		310U
2,4-Dinitrotoluene	(ug/kg)		53U
2,6-Dinitrotoluene	(ug/kg)		51U
2-Chloronaphthalene	(ug/kg)		59U
2-Chlorophenol	(ug/kg)		57U
2-Methylnaphthalene	(ug/kg)		60U
3,3-Dichlorobenzidine	(ug/kg)		61U
4,6-Dinitro-o-cresol	(ug/kg)		69U
4-Bromofluorobenzene	(ug/kg)		53U
4-Chlorophenylphenyl ether	(ug/kg)		57U
Acenaphthene	(ug/kg)	1000000	64U
Acenaphthylene	(ug/kg)	1000000	58U

ug/kg: micrograms per kilogram

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-31 CMSB-31(2-4) 10/19/2005
Acetophenone	(ug/kg)		52U
Anthracene	(ug/kg)	1000000	220J
Atrazine	(ug/kg)		55U
Benzaldehyde	(ug/kg)		73U
Benzo(a)anthracene	(ug/kg)	11000	61J
Benzo(a)pyrene	(ug/kg)	1100	57U
Benzo(b)fluoranthene	(ug/kg)	11000	49J
Benzo(ghi)perylene	(ug/kg)	1000000	59U
Benzo(k)fluoranthene	(ug/kg)	110000	79U
Biphenyl	(ug/kg)		220U
Bis(2-chloroethoxy)methane	(ug/kg)		59U
Bis(2-chloroethyl)ether	(ug/kg)		57U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)		340J
Butyl benzyl phthalate	(ug/kg)		58U
Caprolactam	(ug/kg)		58UJ
Carbazole	(ug/kg)		55U
Chrysene	(ug/kg)	110000	210J

ug/kg: micrograms per kilogram

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-31 CMSB-31(2-4) 10/19/2005
Dibenzo(a,h)anthracene	(ug/kg)	1100	45U
Dibenzofuran	(ug/kg)	1000000	59U
Diethyl phthalate	(ug/kg)		62U
Dimethyl phthalate	(ug/kg)		58U
Di-n-butyl phthalate	(ug/kg)		55U
Di-n-octyl phthalate	(ug/kg)		61U
Fluoranthene	(ug/kg)	1000000	290J
Fluorene	(ug/kg)	1000000	190J
Hexachlorobenzene	(ug/kg)	12000	57U
Hexachlorobutadiene	(ug/kg)		55U
Hexachlorocyclopentadiene	(ug/kg)		57U
Hexachloroethane	(ug/kg)		61U
Indeno(1,2,3-cd)pyrene	(ug/kg)	11000	45U
Isophorone	(ug/kg)		54U
m-Nitroaniline	(ug/kg)		47U
Naphthalene	(ug/kg)	1000000	61U
Nitrobenzene	(ug/kg)		78U

ug/kg: micrograms per kilogram

TABLE 9
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-31 CMSB-31(2-4) 10/19/2005
N-Nitrosodiphenylamine	(ug/kg)		59U
N-Nitrosodipropylamine	(ug/kg)		59U
o-Cresol	(ug/kg)	1000000	59U
o-Nitroaniline	(ug/kg)		45U
o-Nitrophenol	(ug/kg)		55U
p-Chloroaniline	(ug/kg)		43U
p-Chloro-m-cresol	(ug/kg)		49U
PCP	(ug/kg)	55000	83U
p-Cresol	(ug/kg)	1000000	56U
Phenanthrene	(ug/kg)	1000000	260J
Phenol	(ug/kg)	1000000	54U
p-Nitroaniline	(ug/kg)		61U
p-Nitrophenol	(ug/kg)		44UJ
Pyrene	(ug/kg)	1000000	99J
Total PAHs	(ug/kg)		1379
Total Semivolatile Organics	(ug/kg)		2000

ug/kg: micrograms per kilogram

TABLE 10
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-29 CMSB-29(0-2) 10/19/2005	CMSB-29 CMSB-29(2-4) 10/19/2005	CMSB-30 CMSB-30(0-2) 10/19/2005	CMSB-30 CMSB-30(2-4) 10/19/2005	CMSB-31 CMSB-31(0-2) 10/19/2005
Aroclor 1016	(ug/kg)		2.9U	2.9U	2.8U	2.8U	2.8U
Aroclor 1221	(ug/kg)		4.6U	4.5U	4.3U	4.4U	4.3U
Aroclor 1232	(ug/kg)		6.8U	6.8U	6.4U	6.5U	6.5U
Aroclor 1242	(ug/kg)		6.1U	6.0U	5.7U	5.8U	5.8U
Aroclor 1248	(ug/kg)		3.0U	2.9U	2.8U	2.8U	2.8U
Aroclor 1254	(ug/kg)		1.9U	1.9U	1.8U	1.8U	1.8U
Aroclor 1260	(ug/kg)		4.9U	4.9U	20J	4.7U	4.6U
Total PCBs (subsurface soil)	(ug/kg)	25000	0	0	20	0	0

ug/kg: micrograms per kilogram

TABLE 10
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
SUBSURFACE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-31 CMSB-31(2-4) 10/19/2005
Aroclor 1016	(ug/kg)		2.7U
Aroclor 1221	(ug/kg)		4.3U
Aroclor 1232	(ug/kg)		6.4U
Aroclor 1242	(ug/kg)		5.7U
Aroclor 1248	(ug/kg)		2.8U
Aroclor 1254	(ug/kg)		1.8U
Aroclor 1260	(ug/kg)		4.6U
Total PCBs (subsurface soil)	(ug/kg)	25000	0

ug/kg: micrograms per kilogram

TABLE 11
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
GROUNDWATER SAMPLE RESULTS
TOGS GA STANDARDS AND GUIDANCE VALUES
TAL METALS AND MERCURY

PERIOD: From 10/20/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	CMGP-01 CMGP-01 10/20/2005	CMGP-01 CMGP-01(F) 10/20/2005	CMGP-02 CMGP-02 10/20/2005	CMGP-02 CMGP-02(F) 10/20/2005	CMGP-03 CMGP-03 10/20/2005
Aluminum	(ug/l)		7020	189	210	138	290
Antimony	(ug/l)	3	7.0	4.8	5.9	5.2	6.1
Arsenic	(ug/l)	25	3.3U	3.3U	3.3U	3.3U	3.3U
Barium	(ug/l)	1000	153	56.8	36.8	37.8	14.5
Beryllium	(ug/l)	3	0.30	0.09U	0.09U	0.09U	0.09U
Cadmium	(ug/l)	5	0.33U	0.33U	0.33U	0.33U	0.33U
Calcium	(ug/l)		79200J	72600J	58300J	60800J	26700J
Chromium	(ug/l)	50	165	1.2	1.6	0.38	3.6
Cobalt	(ug/l)		16.3	4.1	1.9	1.3	0.54
Copper	(ug/l)	200	61.5	4.3	5.9	4.7	4.5
Iron	(ug/l)	300	41200	277	2380	556	1430
Lead	(ug/l)	25	53.4	2.8U	2.8U	2.8U	2.8U
Magnesium	(ug/l)	35000	13600J	10800J	6800J	7300J	2730J
Manganese	(ug/l)	300	1560J	819J	293J	307J	120J
Mercury	(ug/l)	0.7	0.7700J	0.1600J	0.0300UJ	0.1600J	0.0300UJ
Nickel	(ug/l)	100	59.6	11.7	9.8	7.0	4.0
Potassium	(ug/l)		11200J	10000J	4590J	4940J	2800J

ug/l: micrograms per liter

TABLE 11
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
GROUNDWATER SAMPLE RESULTS
TOGS GA STANDARDS AND GUIDANCE VALUES
TAL METALS AND MERCURY

PERIOD: From 10/20/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	CMGP-01 CMGP-01 10/20/2005	CMGP-01 CMGP-01(F) 10/20/2005	CMGP-02 CMGP-02 10/20/2005	CMGP-02 CMGP-02(F) 10/20/2005	CMGP-03 CMGP-03 10/20/2005
Selenium	(ug/l)	10	9.6	6.5	3.0U	3.0U	3.0U
Silver	(ug/l)	50	1.6U	1.6U	1.6U	1.6U	1.6U
Sodium	(ug/l)	20000	134000	133000	8620	9010	3810
Thallium	(ug/l)	0.5	3.1U	6.9	4.8	3.1U	10.4
Vanadium	(ug/l)		17.1	0.70U	0.70U	0.70U	0.70U
Zinc	(ug/l)	2000	231	23.0	24.1	15.4	15.9

ug/l: micrograms per liter

TABLE 11
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
GROUNDWATER SAMPLE RESULTS
TOGS GA STANDARDS AND GUIDANCE VALUES
TAL METALS AND MERCURY

PERIOD: From 10/20/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	CMGP-03 CMGP-03(F) 10/20/2005
Aluminum	(ug/l)		144
Antimony	(ug/l)	3	10.4
Arsenic	(ug/l)	25	3.3U
Barium	(ug/l)	1000	11.9
Beryllium	(ug/l)	3	0.09U
Cadmium	(ug/l)	5	0.33U
Calcium	(ug/l)		24800J
Chromium	(ug/l)	50	0.47
Cobalt	(ug/l)		2.0
Copper	(ug/l)	200	5.8
Iron	(ug/l)	300	211
Lead	(ug/l)	25	2.8U
Magnesium	(ug/l)	35000	2600J
Manganese	(ug/l)	300	90.4J
Mercury	(ug/l)	0.7	0.1700J
Nickel	(ug/l)	100	3.5
Potassium	(ug/l)		2640J

ug/l: micrograms per liter

TABLE 11
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
GROUNDWATER SAMPLE RESULTS
TOGS GA STANDARDS AND GUIDANCE VALUES
TAL METALS AND MERCURY

PERIOD: From 10/20/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	CMGP-03 CMGP-03(F) 10/20/2005
Selenium	(ug/l)	10	3.0U
Silver	(ug/l)	50	1.6U
Sodium	(ug/l)	20000	3640
Thallium	(ug/l)	0.5	3.1U
Vanadium	(ug/l)		0.70U
Zinc	(ug/l)	2000	14.2

ug/l: micrograms per liter

TABLE 12
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
GROUNDWATER SAMPLE RESULTS
TOGS GA STANDARDS AND GUIDANCE VALUES
VOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/20/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	CMGP-01 CMGP-01 10/20/2005	CMGP-02 CMGP-02 10/20/2005	CMGP-03 CMGP-03 10/20/2005
1,1,1-Trichloroethane	(ug/l)	5	0.32U	0.32U	0.32U
1,1,2,2-Tetrachloroethane	(ug/l)	5	0.30U	0.30U	0.30U
1,1,2-Trichloroethane	(ug/l)	1	0.41U	0.41U	0.41U
1,1-Dichloroethane	(ug/l)	5	0.38U	0.38U	0.38U
1,1-Dichloroethylene	(ug/l)	5	0.42U	0.42U	0.42U
1,2,4-Trichlorobenzene	(ug/l)	5	0.46U	0.46U	0.46U
1,2-Dichloroethane	(ug/l)	0.6	0.34U	0.34U	0.34U
1,2-Dichloropropane	(ug/l)	1	0.40U	0.40U	0.40U
2-Hexanone	(ug/l)	50	1.7U	1.7U	1.7U
Acetone	(ug/l)	50	2.3U	2.3U	2.3U
Benzene	(ug/l)	1.0	0.39U	0.39U	0.39U
Benzene, 1-methylethyl-	(ug/l)	5	0.44U	0.44U	0.44U
Bromodichloromethane	(ug/l)	50	0.33U	0.33U	0.33U
Bromoform	(ug/l)	50	0.32U	0.32U	0.32U
Carbon disulfide	(ug/l)	60	0.40U	0.40U	0.40U
Carbon tetrachloride	(ug/l)	5	1.1U	1.1U	1.1U
Chlorobenzene	(ug/l)	5	0.47U	0.47U	0.47U

ug/l: micrograms per liter

TABLE 12
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
GROUNDWATER SAMPLE RESULTS
TOGS GA STANDARDS AND GUIDANCE VALUES
VOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/20/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	CMGP-01 CMGP-01 10/20/2005	CMGP-02 CMGP-02 10/20/2005	CMGP-03 CMGP-03 10/20/2005
Chloroethane	(ug/l)	5	0.83U	0.83U	0.83U
Chloroform	(ug/l)	7	0.33U	0.33U	0.33U
cis-1,2-Dichloroethylene	(ug/l)	5	0.29U	0.29U	0.29U
cis-1,3-Dichloropropene	(ug/l)	0.4	0.36U	0.36U	0.36U
Cyclohexane	(ug/l)		0.36U	0.36U	0.36U
DBCP	(ug/l)	0.04	0.38U	0.38U	0.38U
Dibromochloromethane	(ug/l)	50	0.26U	0.26U	0.26U
Dichlorodifluoromethane	(ug/l)	5	0.17U	0.17U	0.17U
EDB	(ug/l)	0.0006	0.32U	0.32U	0.32U
Ethene, 1,2-dichloro-, (E)-	(ug/l)	5	0.40U	0.40U	0.40U
Ethylbenzene	(ug/l)	5	0.45U	0.45U	0.45U
Freon 113	(ug/l)		1.3U	1.3U	1.3U
m-Dichlorobenzene	(ug/l)	3	0.50U	0.50U	0.50U
Methyl Acetate	(ug/l)		0.20U	0.20U	0.20U
Methyl bromide	(ug/l)	5	0.41U	0.41U	0.41U
Methyl chloride	(ug/l)	5	0.34U	0.34U	0.34U
Methyl ethyl ketone	(ug/l)	50	1.1U	1.1U	1.1U

ug/l: micrograms per liter

TABLE 12
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
GROUNDWATER SAMPLE RESULTS
TOGS GA STANDARDS AND GUIDANCE VALUES
VOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/20/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Water

CONSTITUENT	SITE SAMPLE ID DATE	NYSDEC SCG	CMGP-01 CMGP-01 10/20/2005	CMGP-02 CMGP-02 10/20/2005	CMGP-03 CMGP-03 10/20/2005
Methyl isobutylketone (MIBK)	(ug/l)		1.6U	1.6U	1.6U
Methylcyclohexane	(ug/l)		0.34U	0.34U	0.34U
Methylene chloride	(ug/l)	5	0.43U	0.43U	0.43U
Methyltert-butylether	(ug/l)	10	0.28U	0.28U	0.28U
o-Dichlorobenzene	(ug/l)	3	0.44U	0.44U	0.44U
o-Xylene	(ug/l)	5	0.46U	0.46U	0.46U
p-Dichlorobenzene	(ug/l)	3	0.54U	0.54U	0.54U
p-Xylene	(ug/l)	5	1.2U	1.2U	1.2U
Styrene	(ug/l)	5	0.41U	0.41U	0.41U
Tetrachloroethylene	(ug/l)	5	0.48U	0.48U	0.48U
Toluene	(ug/l)	5	0.36U	0.36U	0.36U
trans-1,3-Dichloropropene	(ug/l)	0.4	0.32U	0.32U	0.32U
Trichloroethylene	(ug/l)	5	0.46U	0.46U	0.46U
Trichlorofluoromethane	(ug/l)	5	0.22U	0.22U	0.22U
Vinyl chloride	(ug/l)	2	0.33U	0.33U	0.33U
TOTAL VOLATILE ORGANICS	(ug/l)		0	0	0

ug/l: micrograms per liter

TABLE 13
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-02A CMSB-02A(10-11) 10/19/2005	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005
Mercury	(mg/kg)	0.10	2.4DJ	0.061U	0.061U	0.174JD	0.059U

mg/kg: milligrams per kilogram

TABLE 13
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(10-12) 10/20/2005	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005
Mercury	(mg/kg)	0.10	0.061U	0.536JD	0.078JD	0.183JD	0.732JD

mg/kg: milligrams per kilogram

TABLE 13
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(12-14) 10/20/2005
Mercury	(mg/kg)	0.10	0.611JD

mg/kg: milligrams per kilogram

TABLE 14
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
RCRA METALS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
Arsenic	(mg/kg)	7.5	0.40U	0.42U	0.42U	0.41U	0.41U
Barium	(mg/kg)	300	13.1	20.2	15.6	13.9	19.3
Cadmium	(mg/kg)	10	0.03U	0.03U	0.04U	0.03U	0.03U
Chromium	(mg/kg)	50	7.3	8.6	7.8	5.0	7.9
Lead	(mg/kg)	400	2.3	3.4	4.7	3.7	4.6
Manganese	(mg/kg)						
Selenium	(mg/kg)	2	0.35U	0.36U	0.36U	0.36U	0.49
Silver	(mg/kg)		0.19	0.27	0.41	0.29	0.50

mg/kg: milligrams per kilogram

TABLE 14
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
RCRA METALS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
Arsenic	(mg/kg)	7.5	1.5	0.40U	0.41U	0.76	0.41U
Barium	(mg/kg)	300	16.1	31.0	18.4	24.1	17.0
Cadmium	(mg/kg)	10	0.03U	0.03U	0.03U	0.03U	0.03U
Chromium	(mg/kg)	50	8.1	7.1	10.8	9.9	8.9
Lead	(mg/kg)	400	43.5	7.4	7.1	13.9	5.4
Manganese	(mg/kg)				295J		
Selenium	(mg/kg)	2	0.82	0.35U	0.68	0.67	0.87
Silver	(mg/kg)		0.40	0.57	0.64	0.99	0.51

mg/kg: milligrams per kilogram

TABLE 15
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
1,1,1-Trichloroethane	(ug/kg)	800	0.44U	0.44U	0.44U	0.43U	2.2U
1,1,2,2-Tetrachloroethane	(ug/kg)	600	0.33U	0.33U	0.33U	0.32U	1.6U
1,1,2-Trichloroethane	(ug/kg)		0.31U	0.31U	0.31U	0.31U	1.5U
1,1-Dichloroethane	(ug/kg)	200	0.28U	0.29U	0.28U	0.28U	1.4U
1,1-Dichloroethylene	(ug/kg)	400	0.60U	0.61U	0.61U	0.60U	3.0U
1,2,4-Trichlorobenzene	(ug/kg)	3400	0.72U	0.73U	0.72U	0.71U	3.6U
1,2-Dichloroethane	(ug/kg)	100	0.32U	0.33U	0.32U	0.32U	1.6U
1,2-Dichloropropane	(ug/kg)		0.42U	0.42U	0.42U	0.41U	2.1U
2-Hexanone	(ug/kg)		3.8U	3.8U	3.8U	3.8U	19U
Acetone	(ug/kg)	200	3.5U	3.6U	3.6U	3.5U	53J
Benzene	(ug/kg)	60	0.42U	0.42U	0.42U	0.41U	2.1U
Benzene, 1-methylethyl-	(ug/kg)		0.44U	0.44U	0.44U	0.43U	2.2U
Bromodichloromethane	(ug/kg)		0.35U	0.36U	0.35U	0.35U	1.7U
Bromoform	(ug/kg)		0.33U	0.33U	0.33U	0.32U	1.6U
Carbon disulfide	(ug/kg)	2700	0.39U	0.39U	0.39U	0.38U	1.9U
Carbon tetrachloride	(ug/kg)	600	0.47U	0.47U	0.47U	0.46U	2.3U
Chlorobenzene	(ug/kg)	1700	0.38U	0.38U	0.38U	0.38U	1.9U

mg/kg: milligrams per kilogram

TABLE 15
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
Chloroethane	(ug/kg)	1900	2.2U	2.3U	2.3U	2.2U	11U
Chloroform	(ug/kg)	300	0.37U	0.37U	0.37U	0.36U	1.8U
cis-1,2-Dichloroethylene	(ug/kg)		0.34U	0.35U	0.34U	0.34U	1.7U
cis-1,3-Dichloropropene	(ug/kg)		0.35U	0.35U	0.35U	0.34U	1.7U
Cyclohexane	(ug/kg)		0.34U	0.34U	0.34U	0.34U	1.7U
DBCP	(ug/kg)		0.99U	1.0U	1.0U	0.98U	4.9U
Dibromochloromethane	(ug/kg)		0.24U	0.24U	0.24U	0.24U	1.2U
Dichlorodifluoromethane	(ug/kg)		0.90U	0.91U	0.91U	0.89U	4.5U
EDB	(ug/kg)		0.42U	0.43U	0.43U	0.42U	2.1U
Ethene, 1,2-dichloro-, (E)-	(ug/kg)	300	0.67U	0.68U	0.68U	0.66U	3.3U
Ethylbenzene	(ug/kg)	5500	0.37U	0.38U	0.37U	0.37U	1.8U
Freon 113	(ug/kg)		0.70U	0.71U	0.70U	0.69U	3.5U
m-Dichlorobenzene	(ug/kg)	1600	0.59U	0.59U	0.59U	0.58U	2.9U
Methyl Acetate	(ug/kg)		0.91U	0.92U	0.91U	0.90U	4.5U
Methyl bromide	(ug/kg)		2.1U	2.2U	2.1U	2.1U	11U
Methyl chloride	(ug/kg)		0.90U	0.91U	0.90U	0.89U	4.4U
Methyl ethyl ketone	(ug/kg)	300	3.0U	3.0U	3.0U	2.9U	15U

mg/kg: milligrams per kilogram

TABLE 15
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
Methyl isobutylketone (MIBK)	(ug/kg)	1000	2.1U	2.1U	2.1U	2.1U	10U
Methylcyclohexane	(ug/kg)		0.44U	0.45U	0.44U	0.44U	2.2U
Methylene chloride	(ug/kg)	100	1.9U	1.9U	1.9U	1.9U	9.5U
Methyltert-butylether	(ug/kg)		0.39U	0.39U	0.39U	0.38U	1.9U
o-Dichlorobenzene	(ug/kg)	7900	0.41U	0.41U	0.41U	0.40U	2.0U
o-Xylene	(ug/kg)		0.40U	0.41U	0.41U	0.40U	2.0U
p-Dichlorobenzene	(ug/kg)	8500	0.57U	0.58U	0.58U	0.57U	2.8U
p-Xylene	(ug/kg)		0.91U	0.92U	0.91U	0.90U	4.5U
Styrene	(ug/kg)		0.48U	0.49U	0.49U	0.48U	2.4U
Tetrachloroethylene	(ug/kg)	1400	0.77U	0.78U	0.77U	0.76U	3.8U
Toluene	(ug/kg)	1500	0.43U	0.43U	0.43U	0.42U	2.1U
trans-1,3-Dichloropropene	(ug/kg)		0.38U	0.39U	0.38U	0.38U	1.9U
Trichloroethylene	(ug/kg)	700	0.32U	0.33U	0.33U	0.32U	1.6U
Trichlorofluoromethane	(ug/kg)		1.3U	1.3U	1.3U	1.3U	6.5U
Vinyl chloride	(ug/kg)	200	0.86U	0.87U	0.87U	0.86U	4.3U
TOTAL VOLATILE ORGANICS	(ug/kg)	10000	0.0	0.0	0.0	0.0	53

mg/kg: milligrams per kilogram

TABLE 15
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
1,1,1-Trichloroethane	(ug/kg)	800	0.45U	0.43U	0.44U	0.44U	0.44U
1,1,2,2-Tetrachloroethane	(ug/kg)	600	0.33U	0.32U	0.33U	0.33U	0.33U
1,1,2-Trichloroethane	(ug/kg)		0.31U	0.30U	0.31U	0.31U	0.31U
1,1-Dichloroethane	(ug/kg)	200	0.29U	0.28U	0.28U	0.28U	0.28U
1,1-Dichloroethylene	(ug/kg)	400	0.61U	0.59U	0.60U	0.60U	0.61U
1,2,4-Trichlorobenzene	(ug/kg)	3400	0.73U	0.71U	0.72U	0.72U	0.72U
1,2-Dichloroethane	(ug/kg)	100	0.33U	0.32U	0.32U	0.32U	0.32U
1,2-Dichloropropane	(ug/kg)		0.42U	0.41U	0.42U	0.42U	0.42U
2-Hexanone	(ug/kg)		3.8U	3.7U	3.8U	3.8U	3.8U
Acetone	(ug/kg)	200	3.6U	3.5U	3.5U	3.5U	3.6U
Benzene	(ug/kg)	60	0.43U	0.41U	0.42U	0.42U	0.42U
Benzene, 1-methylethyl-	(ug/kg)		0.44U	0.43U	0.44U	0.44U	0.44U
Bromodichloromethane	(ug/kg)		0.36U	0.35U	0.35U	0.35U	0.35U
Bromoform	(ug/kg)		0.33U	0.32U	0.33U	0.33U	0.33U
Carbon disulfide	(ug/kg)	2700	0.39U	0.38U	0.39U	0.39U	0.39U
Carbon tetrachloride	(ug/kg)	600	0.47U	0.46U	0.47U	0.47U	0.47U
Chlorobenzene	(ug/kg)	1700	0.39U	0.37U	0.38U	0.38U	0.38U

mg/kg: milligrams per kilogram

TABLE 15
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
Chloroethane	(ug/kg)	1900	2.3U	2.2U	2.2U	2.2U	2.3U
Chloroform	(ug/kg)	300	0.37U	0.36U	0.37U	0.37U	0.37U
cis-1,2-Dichloroethylene	(ug/kg)		0.35U	0.34U	0.34U	0.34U	0.34U
cis-1,3-Dichloropropene	(ug/kg)		0.35U	0.34U	0.35U	0.35U	0.35U
Cyclohexane	(ug/kg)		0.35U	0.33U	0.34U	0.34U	0.34U
DBCP	(ug/kg)		1.0U	0.97U	0.99U	0.99U	1.0U
Dibromochloromethane	(ug/kg)		0.25U	0.24U	0.24U	0.24U	0.24U
Dichlorodifluoromethane	(ug/kg)		0.91U	0.88U	0.90U	0.90U	0.90U
EDB	(ug/kg)		0.43U	0.42U	0.42U	0.42U	0.42U
Ethene, 1,2-dichloro-, (E)-	(ug/kg)	300	0.68U	0.66U	0.67U	0.67U	0.68U
Ethylbenzene	(ug/kg)	5500	0.38U	0.37U	0.37U	0.37U	0.37U
Freon 113	(ug/kg)		0.71U	0.69U	0.70U	0.70U	0.70U
m-Dichlorobenzene	(ug/kg)	1600	0.59U	0.58U	0.59U	0.59U	0.59U
Methyl Acetate	(ug/kg)		0.92U	0.89U	0.91U	0.91U	0.91U
Methyl bromide	(ug/kg)		2.2U	2.1U	2.1U	2.1U	2.1U
Methyl chloride	(ug/kg)		0.91U	0.88U	0.90U	0.90U	0.90U
Methyl ethyl ketone	(ug/kg)	300	3.0U	2.9U	3.0U	3.0U	3.0U

mg/kg: milligrams per kilogram

TABLE 15
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
VOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
Methyl isobutylketone (MIBK)	(ug/kg)	1000	2.1U	2.0U	2.1U	2.1U	2.1U
Methylcyclohexane	(ug/kg)		0.45U	0.43U	0.44U	0.44U	0.44U
Methylene chloride	(ug/kg)	100	1.9U	1.9U	1.9U	1.9U	1.9U
Methyltert-butylether	(ug/kg)		0.39U	0.38U	0.39U	0.39U	0.39U
o-Dichlorobenzene	(ug/kg)	7900	0.41U	0.40U	0.41U	0.41U	0.41U
o-Xylene	(ug/kg)		0.41U	0.40U	0.41U	0.40U	0.41U
p-Dichlorobenzene	(ug/kg)	8500	0.58U	0.56U	0.57U	0.57U	0.58U
p-Xylene	(ug/kg)		0.92U	0.89U	0.91U	0.91U	0.91U
Styrene	(ug/kg)		0.49U	0.48U	0.49U	0.48U	0.49U
Tetrachloroethylene	(ug/kg)	1400	0.78U	0.75U	0.77U	0.77U	0.77U
Toluene	(ug/kg)	1500	0.43U	0.42U	0.43U	0.43U	0.43U
trans-1,3-Dichloropropene	(ug/kg)		0.39U	0.37U	0.38U	0.38U	0.38U
Trichloroethylene	(ug/kg)	700	0.33U	0.32U	0.32U	0.32U	0.33U
Trichlorofluoromethane	(ug/kg)		1.3U	1.3U	1.3U	1.3U	1.3U
Vinyl chloride	(ug/kg)	200	0.88U	0.85U	0.87U	0.86U	0.87U
TOTAL VOLATILE ORGANICS	(ug/kg)	10000	0.0	0.0	0.0	0.0	0.0

mg/kg: milligrams per kilogram

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)		55U	56UJ	56U	55U	55U
2,4,5-Trichlorophenol	(ug/kg)	100	52U	53UJ	53U	52U	52U
2,4,6-Trichlorophenol	(ug/kg)		50U	51UJ	51U	50U	50U
2,4-Dichlorophenol	(ug/kg)	400	63U	64UJ	64U	63U	63U
2,4-Dimethylphenol	(ug/kg)		54U	55UJ	55U	54U	54U
2,4-Dinitrophenol	(ug/kg)	200	290U	300UJ	300U	290U	290U
2,4-Dinitrotoluene	(ug/kg)		50U	51UJ	51U	50U	50U
2,6-Dinitrotoluene	(ug/kg)	1000	48U	49UJ	49U	48U	48U
2-Chloronaphthalene	(ug/kg)		57U	57UJ	58U	56U	56U
2-Chlorophenol	(ug/kg)	800	55U	55UJ	55U	54U	54U
2-Methylnaphthalene	(ug/kg)	36400	57U	58UJ	58U	57U	57U
3,3-Dichlorobenzidine	(ug/kg)		59U	59UJ	59U	58U	58U
4,6-Dinitro-o-cresol	(ug/kg)		66U	67UJ	67U	66U	66U
4-Bromofluorobenzene	(ug/kg)		51U	52UJ	52U	51U	51U
4-Chlorophenylphenyl ether	(ug/kg)		54U	55UJ	55U	54U	54U
Acenaphthene	(ug/kg)	50000	61U	61UJ	62U	60U	61U
Acenaphthylene	(ug/kg)	41000	56U	56UJ	56U	55U	55U

ug/kg: micrograms per kilogram

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
Acetophenone	(ug/kg)		50U	51UJ	51U	50U	50U
Anthracene	(ug/kg)	50000	52U	52UJ	52U	51U	51U
Atrazine	(ug/kg)		52U	53UJ	53U	52U	52U
Benzaldehyde	(ug/kg)		70U	71UJ	71U	70U	70U
Benzo(a)anthracene	(ug/kg)	224	48U	48UJ	49U	48U	48U
Benzo(a)pyrene	(ug/kg)	61	55U	55UJ	55U	54U	54U
Benzo(b)fluoranthene	(ug/kg)	1100	38U	38UJ	38U	37U	37U
Benzo(ghi)perylene	(ug/kg)	50000	57U	57UJ	57U	56U	56U
Benzo(k)fluoranthene	(ug/kg)	1100	75U	76UJ	76U	75U	75U
Biphenyl	(ug/kg)		56U	57UJ	57U	56U	56U
Bis(2-chloroethoxy)methane	(ug/kg)		56U	57UJ	57U	56U	56U
Bis(2-chloroethyl)ether	(ug/kg)		54U	55UJ	55U	54U	54U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)	50000	66U	66UJ	120J	65U	65U
Butyl benzyl phthalate	(ug/kg)	50000	55U	56UJ	56U	55U	55U
Caprolactam	(ug/kg)		55U	56UJ	56U	55U	55U
Carbazole	(ug/kg)		52U	53UJ	53U	52U	52U
Chrysene	(ug/kg)	400	61U	62UJ	62U	61U	61U

ug/kg: micrograms per kilogram

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
Dibenzo(a,h)anthracene	(ug/kg)	14	43U	43UJ	43U	43U	43U
Dibenzofuran	(ug/kg)	6200	57U	57UJ	57U	56U	56U
Diethyl phthalate	(ug/kg)	7100	59U	60UJ	60U	59U	59U
Dimethyl phthalate	(ug/kg)	2000	55U	56UJ	56U	55U	55U
Di-n-butyl phthalate	(ug/kg)	8100	52U	53UJ	53U	52U	52U
Di-n-octyl phthalate	(ug/kg)	50000	58U	59UJ	59U	58U	58U
Fluoranthene	(ug/kg)	50000	51U	51UJ	52U	51U	51U
Fluorene	(ug/kg)	50000	58U	58UJ	58U	57U	57U
Hexachlorobenzene	(ug/kg)	410	55U	55UJ	55U	54U	54U
Hexachlorobutadiene	(ug/kg)		53U	53UJ	53U	52U	52U
Hexachlorocyclopentadiene	(ug/kg)		55U	55UJ	55U	54U	54U
Hexachloroethane	(ug/kg)		58U	59UJ	59U	58U	58U
Indeno(1,2,3-cd)pyrene	(ug/kg)	3200	43U	44UJ	44U	43U	43U
Isophorone	(ug/kg)	4400	51U	52UJ	52U	51U	51U
m-Nitroaniline	(ug/kg)	500	45U	45UJ	45U	44U	44U
Naphthalene	(ug/kg)	13000	58U	59UJ	59U	58U	58U
Nitrobenzene	(ug/kg)	200	75U	75UJ	76U	74U	74U

ug/kg: micrograms per kilogram

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
N-Nitrosodiphenylamine	(ug/kg)		56U	57UJ	57U	56U	56U
N-Nitrosodipropylamine	(ug/kg)		57U	57UJ	57U	56U	56U
o-Cresol	(ug/kg)	100	57U	57UJ	58U	56U	57U
o-Nitroaniline	(ug/kg)	430	43UJ	44UJ	44UJ	43UJ	43UJ
o-Nitrophenol	(ug/kg)	330	53U	53UJ	53U	52U	52U
p-Chloroaniline	(ug/kg)	220	41U	41UJ	41U	40U	41U
p-Chloro-m-cresol	(ug/kg)	240	47U	48UJ	48U	47U	47U
PCP	(ug/kg)	1000	79U	80UJ	80U	79U	79U
p-Cresol	(ug/kg)	900	54U	54UJ	55U	54U	54U
Phenanthrene	(ug/kg)	50000	54U	55UJ	55U	54U	54U
Phenol	(ug/kg)	30	52U	52UJ	52U	51U	52U
p-Nitroaniline	(ug/kg)		58U	59UJ	59U	58U	58U
p-Nitrophenol	(ug/kg)	100	42U	43UJ	43U	42U	42U
Pyrene	(ug/kg)	50000	60U	61UJ	61U	60U	60U
Total PAHs	(ug/kg)	500000	0	0	0	0	0
Total Semivolatile Organics	(ug/kg)	500000	0	0	120	0.0	0

ug/kg: micrograms per kilogram

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
2,2-oxyblis (1-chloropropane)	(ug/kg)		56U	54U	55U	55U	55U
2,4,5-Trichlorophenol	(ug/kg)	100	53U	51U	52U	52U	52U
2,4,6-Trichlorophenol	(ug/kg)		51U	49U	50U	50U	50U
2,4-Dichlorophenol	(ug/kg)	400	64U	62U	63U	63U	63U
2,4-Dimethylphenol	(ug/kg)		55U	53U	54U	54U	54U
2,4-Dinitrophenol	(ug/kg)	200	300U	290U	290U	290U	290U
2,4-Dinitrotoluene	(ug/kg)		51U	49U	50U	50U	50U
2,6-Dinitrotoluene	(ug/kg)	1000	49U	48U	48U	48U	48U
2-Chloronaphthalene	(ug/kg)		58U	56U	57U	57U	56U
2-Chlorophenol	(ug/kg)	800	55U	54U	54U	54U	54U
2-Methylnaphthalene	(ug/kg)	36400	58U	56U	57U	57U	57U
3,3-Dichlorobenzidine	(ug/kg)		59U	58U	58U	58U	58U
4,6-Dinitro-o-cresol	(ug/kg)		67U	65U	66U	66U	66U
4-Bromofluorobenzene	(ug/kg)		52U	50U	51U	51U	51U
4-Chlorophenylphenyl ether	(ug/kg)		55U	53U	54U	54U	54U
Acenaphthene	(ug/kg)	50000	62U	60U	61U	61U	61U
Acenaphthylene	(ug/kg)	41000	56U	55U	55U	55U	55U

ug/kg: micrograms per kilogram

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
Acetophenone	(ug/kg)		51U	49U	50U	50U	50U
Anthracene	(ug/kg)	50000	52U	51U	51U	51U	51U
Atrazine	(ug/kg)		53U	52U	52U	52U	52U
Benzaldehyde	(ug/kg)		71U	69U	70U	70U	70U
Benzo(a)anthracene	(ug/kg)	224	49U	47U	48U	48U	48U
Benzo(a)pyrene	(ug/kg)	61	56U	54U	55U	55U	54U
Benzo(b)fluoranthene	(ug/kg)	1100	38U	37U	38U	38U	37U
Benzo(ghi)perylene	(ug/kg)	50000	57U	56U	56U	56U	56U
Benzo(k)fluoranthene	(ug/kg)	1100	76U	74U	75U	75U	75U
Biphenyl	(ug/kg)		57U	55U	56U	56U	56U
Bis(2-chloroethoxy)methane	(ug/kg)		57U	55U	56U	56U	56U
Bis(2-chloroethyl)ether	(ug/kg)		55U	53U	54U	54U	54U
Bis(2-ethylhexyl)phthalate (BEHP)	(ug/kg)	50000	67U	65U	65U	66U	65U
Butyl benzyl phthalate	(ug/kg)	50000	56U	54U	55U	55U	55U
Caprolactam	(ug/kg)		56U	54U	55U	55U	55U
Carbazole	(ug/kg)		53U	51U	52U	52U	52U
Chrysene	(ug/kg)	400	62U	60U	61U	61U	61U

ug/kg: micrograms per kilogram

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
Dibenzo(a,h)anthracene	(ug/kg)	14	44U	42U	43U	43U	43U
Dibenzofuran	(ug/kg)	6200	57U	56U	56U	56U	56U
Diethyl phthalate	(ug/kg)	7100	60U	58U	59U	59U	59U
Dimethyl phthalate	(ug/kg)	2000	56U	54U	55U	55U	55U
Di-n-butyl phthalate	(ug/kg)	8100	53U	51U	52U	52U	52U
Di-n-octyl phthalate	(ug/kg)	50000	59U	57U	58U	58U	58U
Fluoranthene	(ug/kg)	50000	52U	50U	51U	51U	51U
Fluorene	(ug/kg)	50000	59U	57U	58U	58U	57U
Hexachlorobenzene	(ug/kg)	410	56U	54U	55U	55U	54U
Hexachlorobutadiene	(ug/kg)		53U	52U	52U	53U	52U
Hexachlorocyclopentadiene	(ug/kg)		55U	54U	54U	54U	54U
Hexachloroethane	(ug/kg)		59U	57U	58U	58U	58U
Indeno(1,2,3-cd)pyrene	(ug/kg)	3200	44U	43U	43U	43U	43U
Isophorone	(ug/kg)	4400	52U	51U	51U	51U	51U
m-Nitroaniline	(ug/kg)	500	45U	44U	44U	44U	44U
Naphthalene	(ug/kg)	13000	59U	57U	58U	58U	58U
Nitrobenzene	(ug/kg)	200	76U	73U	74U	75U	74U

ug/kg: micrograms per kilogram

TABLE 16
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
N-Nitrosodiphenylamine	(ug/kg)		57U	55U	56U	56U	56U
N-Nitrosodipropylamine	(ug/kg)		58U	56U	57U	57U	56U
o-Cresol	(ug/kg)	100	58U	56U	57U	57U	57U
o-Nitroaniline	(ug/kg)	430	44UJ	43UJ	43UJ	43UJ	43UJ
o-Nitrophenol	(ug/kg)	330	53U	52U	52U	53U	52U
p-Chloroaniline	(ug/kg)	220	41U	40U	41U	41U	41U
p-Chloro-m-cresol	(ug/kg)	240	48U	46U	47U	47U	47U
PCP	(ug/kg)	1000	80U	78U	79U	79U	79U
p-Cresol	(ug/kg)	900	55U	53U	54U	54U	54U
Phenanthrene	(ug/kg)	50000	55U	54U	54U	54U	54U
Phenol	(ug/kg)	30	53U	51U	52U	52U	52U
p-Nitroaniline	(ug/kg)		59U	57U	58U	58U	58U
p-Nitrophenol	(ug/kg)	100	43U	42U	42U	42U	42U
Pyrene	(ug/kg)	50000	61U	59U	60U	60U	60U
Total PAHs	(ug/kg)	500000	0	0	0	0	0
Total Semivolatile Organics	(ug/kg)	500000	0	0	0	0	0

ug/kg: micrograms per kilogram

TABLE 17
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
Aroclor 1016	(ug/kg)	10000	2.6U	2.6U	2.6U	2.6U	2.6U
Aroclor 1221	(ug/kg)	10000	4.1U	4.1U	4.1U	4.0U	4.1U
Aroclor 1232	(ug/kg)	10000	6.1U	6.1U	6.2U	6.0U	6.1U
Aroclor 1242	(ug/kg)	10000	5.4U	5.4U	5.5U	5.4U	5.4U
Aroclor 1248	(ug/kg)	10000	2.6U	2.6U	2.7U	2.6U	2.6U
Aroclor 1254	(ug/kg)	10000	1.7U	1.7U	1.7U	1.7U	1.7U
Aroclor 1260	(ug/kg)	10000	4.4U	4.4U	4.4U	4.3U	4.4U
Total PCBs (subsurface soil)	(ug/kg)	10000	0.0	0.0	0.0	0.0	0.0

ug/kg: micrograms per kilogram

TABLE 17
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(10-12) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
Aroclor 1016	(ug/kg)	10000	2.6U	2.6U	2.6U	2.7U	2.7U
Aroclor 1221	(ug/kg)	10000	4.1U	4.0U	4.0U	4.1U	4.1U
Aroclor 1232	(ug/kg)	10000	6.1U	5.9U	6.0U	6.2U	6.2U
Aroclor 1242	(ug/kg)	10000	5.4U	5.3U	5.4U	5.5U	5.5U
Aroclor 1248	(ug/kg)	10000	2.6U	2.6U	2.6U	2.7U	2.7U
Aroclor 1254	(ug/kg)	10000	1.7U	1.7U	1.7U	1.7U	1.7U
Aroclor 1260	(ug/kg)	10000	4.4U	4.2U	4.3U	4.4U	4.4U
Total PCBs (subsurface soil)	(ug/kg)	10000	0.0	0.0	0.0	0.0	0.0

ug/kg: micrograms per kilogram

Date: 08/20/2009

TABLE 18

LONG ISLAND RAIL ROAD - 17 SUBSTATIONS

CEDAR MANOR SUBSTATION

DRY WELL SUBSURFACE SOIL SAMPLE RESULTS

TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES

TOTAL PETROLEUM HYDROCARBONS (TPH)

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive

SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-03A CMSB-03A(12-14) 10/20/2005	CMSB-03A CMSB-03A(14-16) 10/20/2005	CMSB-03A CMSB-03A(16-18) 10/20/2005	CMSB-03A CMSB-03A(18-20) 10/20/2005	CMSB-03A CMSB-03A(10-12) 10/20/2005
TPH	(ug/kg)		6615U	6677U	349000J	10800	10700

ug/kg: micrograms per kilogram

TABLE 18
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
DRY WELL SUBSURFACE SOIL SAMPLE RESULTS
TAGM RECOMMENDED SOIL CLEANUP OBJECTIVES
TOTAL PETROLEUM HYDROCARBONS (TPH)

PERIOD: From 10/19/2005 thru 10/20/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	TAGM 4046 RSCOs	CMSB-04A CMSB-04A(14-16) 10/20/2005	CMSB-04A CMSB-04A(16-18) 10/20/2005	CMSB-04A CMSB-04A(18-20) 10/20/2005	CMSB-04A CMSB-04A(12-14) 10/20/2005
TPH	(ug/kg)		6676U	6518U	6661U	6653U

ug/kg: micrograms per kilogram

TABLE 19
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
NEGATIVE CABLE MANHOLE SOIL SAMPLE RESULTS
INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
MERCURY

PERIOD: From 10/19/2005 thru 10/19/2005 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMSB-28 CMSB-28(2-4) 10/19/2005	CMSS-19 CMSS-19 10/19/2005
Mercury	(mg/kg)	5.7	0.062UJ	0.084DJ

mg/kg: milligrams per kilogram

TABLE 20
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
WASTE CHARACTERIZATION SAMPLE RESULTS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE

PERIOD: From 05/01/2008 thru 05/01/2008 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMWC-01 CMWC-01(3) 05/01/2008	CMWC-01 CMWC-01(2-4) 05/01/2008
1,1-Dichloroethylene ()	(ug/l)		3.4UJ	3.4U
1,2-Dichloroethane ()	(ug/l)		2.0U	2.0U
2,4,5-Trichlorophenol ()	(ug/l)		0.380U	0.380U
2,4,6-Trichlorophenol ()	(ug/l)		0.350U	0.350U
2,4-D ()	(ug/l)		0.246U	0.246U
2,4-Dinitrotoluene ()	(ug/l)		0.340UJ	0.340UJ
Arsenic ()	(ug/l)		54.0U	54.0U
Barium ()	(ug/l)		939	768
Benzene ()	(ug/l)		1.8U	1.8U
Cadmium ()	(ug/l)		9.000U	9.000U
Carbon tetrachloride ()	(ug/l)		1.4U	1.4UJ
Chlordane ()	(ug/l)		0.1914U	0.1914U
Chlorobenzene ()	(ug/l)		1.4U	1.4U
Chloroform ()	(ug/l)		2.2U	2.2U
Chromium ()	(ug/l)		14.0U	14.0U
Endrin ()	(ug/l)		0.0069U	0.0069U
Heptachlor ()	(ug/l)		0.0227U	0.0227U

ug/l: micrograms per liter

TABLE 20
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
WASTE CHARACTERIZATION SAMPLE RESULTS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE

PERIOD: From 05/01/2008 thru 05/01/2008 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMWC-01 CMWC-01(3) 05/01/2008	CMWC-01 CMWC-01(2-4) 05/01/2008
Heptachlor epoxide ()	(ug/l)		0.0121U	0.0121U
Hexachlorobenzene ()	(ug/l)		0.270U	0.270U
Hexachlorobutadiene ()	(ug/l)		0.390UJ	0.390UJ
Hexachloroethane ()	(ug/l)		0.230UJ	0.230UJ
Lead ()	(ug/l)		31.0U	205
Lindane ()	(ug/l)		0.0071U	0.0071U
Mercury ()	(ug/l)		0.63U	3.2
Methoxychlor ()	(ug/l)		0.0072U	0.0072U
Methyl ethyl ketone ()	(ug/l)		9.7U	9.7U
Nitrobenzene ()	(ug/l)		0.330U	0.330U
o-Cresol ()	(ug/l)		0.360U	0.360U
PCP ()	(ug/l)		0.520UJ	0.520UJ
p-Cresol ()	(ug/l)		0.390U	0.390U
p-Dichlorobenzene ()	(ug/l)		0.300UJ	0.300UJ
Pyridine ()	(ug/l)		1.5U	1.5U
Selenium ()	(ug/l)		45.0U	45.0U
Silver ()	(ug/l)		17.0U	17.0U

ug/l: micrograms per liter

TABLE 20
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
WASTE CHARACTERIZATION SAMPLE RESULTS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE

PERIOD: From 05/01/2008 thru 05/01/2008 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMWC-01 CMWC-01(3) 05/01/2008	CMWC-01 CMWC-01(2-4) 05/01/2008
Silvex ()	(ug/l)		0.159U	0.159U
Tetrachloroethylene ()	(ug/l)		4.8U	4.8U
Toxaphene ()	(ug/l)		0.0900U	0.0900U
Trichloroethylene ()	(ug/l)		1.7U	1.7U
Vinyl chloride ()	(ug/l)		1.5UJ	1.5U

ug/l: micrograms per liter

TABLE 21
LONG ISLAND RAIL ROAD - 17 SUBSTATIONS
CEDAR MANOR SUBSTATION
WASTE CHARACTERIZATION SAMPLE RESULTS
RCRA CHARACTERISTICS

PERIOD: From 05/01/2008 thru 05/01/2008 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	Industrial Use SCOs	CMWC-01 CMWC-01(3) 05/01/2008	CMWC-01 CMWC-01(2-4) 05/01/2008
Corrosivity	(ppm)		6.40	7.20
Cyanide(reactive)	(mg/kg)		10.00U	10.00U
Ignitability	(ppm)		140	140
Sulfide	(mg/kg)		40.00U	40.00U

mg/kg: milligrams per kilogram
ppm: parts per million

APPENDIX C

DELINEATION PHASE II BORING LOGS

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-02A** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 11' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 10'	0	-	-	-	-	Void.	
10' - 11'	1	HA	12	0.000	0.0	Black, silty fine SAND, some medium sand and fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 10'-11'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-03A** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 20' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 8'	0	-	-	-	-	Void.	
8' - 10'	0	GP	24	0.000	0.0	Blackish-brown, fine to medium silty SAND and BALLAST and fine to medium GRAVEL, some clay.	
10' - 12'	1	GP	24	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel and fine sand.	
12' - 14'	2	GP	24	0.000	0.0	Same as above.	
14' - 16'	3	GP	24	0.000	0.0	Same as above.	
16' - 18'	4	GP	24	0.000	0.0	Same as above.	
18' - 20'	5	GP	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for UIC constituent analysis were collected at 10'-12', 12'-14', 14'-16', 16'-18' and 18'-20'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-04A** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 20' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 10'	0	HA		0.000	0.0	Void.	
10' - 12'	1	HA	24	0.000	0.0	Brown, fine to medium SAND, some fine gravel and clay.	
12' - 14'	2	GP	24	0.000	0.0	Same as above.	
14' - 16'	3	GP	24	0.000	0.0	Same as above.	
16' - 18'	4	GP	24	0.000	0.0	Same as above.	
18' - 20'	5	GP	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for UIC constituent analysis were collected at 10'-12', 12'-14', 14'-16', 16'-18' and 18'-20'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-11** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" BLUESTONE. 6"-2' Blackish-brown, silty, fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-12** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" BLUESTONE. "6-2' Brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium SAND, some fine to medium GRAVEL.	
4' - 6'	2	GP	24	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel.	
6' - 8'	3	GP	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for mercury analysis were collected at 2'-4', 4'-6' and 6'-8'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-13** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.005	0.0	Brown, silty fine to medium SAND, little fine gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-14** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0. 021	0.0	Brown, silty fine to medium SAND and fine to medium GRAVEL, some coarse gravel.	
2' - 4'	1	HA	24	0.008	0.0	Brown, fine to medium SAND, little fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-15** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.009	0.0	Brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium SAND, some fine gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-16** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.009	0.0	Brown, silty fine to medium SAND and fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium SAND and fine gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-17** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-4" BLUESTONE. 4"-2' Brown, fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-18** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-3" BLUESTONE. 3"-2' Brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-19** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" BLUESTONE. 6"-2' Brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-20** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark-brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Dark-brown, silty fine to medium SAND, some to little fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-21** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Dark brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Dark brown, silty fine to medium SAND, some to little fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-22** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-6" Ballast. 6"-2' Dark brown, silty fine to medium SAND and fine to medium GRAVEL.	
2' - 4'	1	HA	24	0.000	0.0	Brown, silty fine to medium SAND, some fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-23** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Brown, silty fine to medium SAND, some fine to coarse gravel.	
2' - 4'	1	HA	24	0.000	0.0	Brown, silty fine to medium SAND, some fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-24** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	0-4" BLUESTONE. 4"-2' Brown, fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-25** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS

Project No.: 2229 **Project Name:** Long Island Railroad Cedar Manor Substation		**Boring No.: CMSB-26** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Brownish-gray, fine to coarse SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Brown, silty fine to medium SAND, some to little fine gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-27** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Grayish-brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci
CONSULTING ENGINEERS

	Project No.: 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-28** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Brownish-tan, fine to medium SAND, trace fine gravel.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-29** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0-3" BALLAST. 3"-2' Brown, silty fine to medium SAND, some fine to coarse gravel.	
2' - 4'	2	HA	24	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel and clay.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for PCB, RCRA Metals and SVOC analysis were collected at 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-30** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	Brown, silty fine to medium SAND and fine to medium GRAVEL.	
2' - 4'	2	HA	24	0.000	0.0	Brown, silty fine to medium SAND, some fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for PCB, RCRA Metals and SVOC analysis were collected at 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-31** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	1	HA	24	0.000	0.0	0-4" Grayish brown, silty fine to medium SAND. 4"-2' Grayish brown, silty fine to medium SAND and fine to coarse GRAVEL.	
2' - 4'	2	HA	24	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples for PCB, RCRA Metals and SVOC analysis were collected at 0-2' and 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-32** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 10/19/05	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 10/19/05	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 2'	0	HA	24	0.000	0.0	Brown, silty fine to medium SAND, some fine to medium gravel.	
2' - 4'	1	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample for mercury analysis was collected at 2'-4'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-33** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' brown, fine to medium SAND, some fine to medium gravel, little brick, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-34** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-35** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples collected at 1'-2'
Samples collected at 2'-4'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-36** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, fine to medium gravel, some brick, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-37** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-38** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-39** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, fine to medium gravel, some brick, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-40** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-41** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" Crushed STONE 4"-1' Brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
4' - 6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-43** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown fine to medium SAND and fine to medium gravel, loose, moist, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
6'-8'	5	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'
Sample collected at 6'-8'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-44** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown fine to medium SAND and fine to medium gravel, loose, moist, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
6'-8'	5	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'
Sample collected at 6'-8'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-45** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, fine to medium gravel, some brick, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-46** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
6'-8'	5	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples collected at 1'-2'
Samples collected at 2'-4'
Samples collected at 4'-6'
Samples collected at 6'-8'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-47** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, fine to medium gravel, some brick, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-48** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Type	Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown fine to medium SAND and fine to medium gravel, loose, moist, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
6'-8'	5	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'
Sample collected at 6'-8'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-49** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown fine to medium SAND and fine to medium gravel, loose, moist, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	
6'-8'	5	HA	24	0.000	0.0	Orange brown fine to medium SAND, little fine to medium gravel, loose, moist, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'
Sample collected at 6'-8'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-51** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-6" crushed STONE 6"-1' brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-52** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND and fine to medium gravel, loose, moist, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND and fine to medium gravel, loose, moist, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-53** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-54** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-55** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-2" crushed STONE 2"-1' Brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, some fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-56** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel and brick fragments, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-57** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/2/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/2/08**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel and brick fragments, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
4'-6'	4	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-58** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 3/12/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 3/12/09**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel and ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-59** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 3/12/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 3/12/09**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel and ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-59A** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/20/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/20/09**	**Boring Completion Depth:** 8' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
1'-2'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel and ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	
6'-8'	5	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'
Sample collected at 6'-8'

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-60** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 3/12/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 3/12/09**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND and GRAVEL and ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS

Project No.: 2801
Project Name: Long Island Railroad Cedar Manor Substation

Boring No.: CMSB-61
Sheet 1 **of** 1
By: Stephen Tauss

Drilling Contractor: Zebra
Driller: ---
Drill Rig: ---
Date Started: 3/12/09

Geologist: Stephen Tauss
Drilling Method: ---
Drive Hammer Weight: NA
Date Completed: 3/12/09

Boring Completion Depth: 8'
Ground Surface Elevation: ---
Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND and fine to medium GRAVEL and ballast, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	
6'-8'	5	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'
Sample collected at 6'-8'

Dvirka and Bartilucci CONSULTING ENGINEERS

	Project No.: 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-62** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 3/12/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 3/12/09**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
1'-2'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel and ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS

Project No.: 2801
Project Name: Long Island Railroad Substation

Boring No.: CMSB-63
Sheet 1 **of** 1
By: Stephen Tauss

Drilling Contractor: Zebra
Driller: ---
Drill Rig: ---
Date Started: 3/12/09

Geologist: Stephen Tauss
Drilling Method: ---
Drive Hammer Weight: NA
Date Completed: 3/12/09

Boring Completion Depth: 6'
Ground Surface Elevation: ---
Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel and ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-64** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 3/12/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 3/12/09**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, little ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS

Project No.: 2801
Project Name: Long Island Railroad Substation

Boring No.: CMSB-65
Sheet 1 **of** 1
By: Stephen Tauss

Drilling Contractor: Zebra
Driller: ---
Drill Rig: ---
Date Started: 3/12/09

Geologist: Stephen Tauss
Drilling Method: ---
Drive Hammer Weight: NA
Date Completed: 3/12/09

Boring Completion Depth: 6'
Ground Surface Elevation: ---
Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel and ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-66** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 3/12/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 3/12/09**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Dark Brown, fine to medium SAND, some fine to medium gravel and ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-68** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 3/12/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 3/12/09**	**Boring Completion Depth:** 6' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, little ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS

Project No.: 2801
Project Name: Long Island Railroad Substation

Boring No.: CMSB-69
Sheet 1 **of** 1
By: Stephen Tauss

Drilling Contractor: Zebra
Driller: ---
Drill Rig: ---
Date Started: 3/12/09

Geologist: Stephen Tauss
Drilling Method: ---
Drive Hammer Weight: NA
Date Completed: 3/12/09

Boring Completion Depth: 6'
Ground Surface Elevation: ---
Boring Diameter: ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, little ballast, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	
4'-6'	4	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'
Sample collected at 4'-6'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2229 **Project Name:** Long Island Railroad Cedar Manor Substation	**Boring No.: CMSB-70** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: L.A.W.E.S. **Driller:** --- **Drill Rig:** Geoprobe **Date Started:** 5/20/09	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed:** 5/20/09	**Boring Completion Depth:** 2' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-6" BALLAST. 6"-2' Brown, silty fine to medium SAND, some fine to coarse gravel, loose, dry, no odor.	
1' - 2'	2	HA	12	0.000	0.0	Brown, silty fine to medium SAND, some fine to coarse gravel, loose, dry, no odor.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples collected at 1'-2'.

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-71** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/20/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/20/09**	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND and fine to medium GRAVEL, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND and fine to medium GRAVEL, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-72** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/20/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/20/09**	**Boring Completion Depth:** 3' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND and fine to medium GRAVEL, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND and fine to medium GRAVEL, loose, dry, no odor or staining.	
2'-3'	3	HA	24	0.000	0.0	Same as above. Refusal at 3'.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-3'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-73** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/20/09**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/20/09**	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0'-1'	1	HA	12	0.000	0.0	Brown, fine to medium SAND and fine to medium GRAVEL, loose, dry, no odor or staining.	
1'-2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND and fine to medium GRAVEL, loose, dry, no odor or staining.	
2'-4'	3	HA	24	0.000	0.0	Same as above.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Sample collected at 1'-2'
Sample collected at 2'-4'

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 2801 **Project Name:** Long Island Railroad Substation	**Boring No.: CMSB-WC-01** **Sheet** 1 **of** 1 **By:** Stephen Tauss
Drilling Contractor: Zebra **Driller:** --- **Drill Rig:** --- **Date Started: 5/1/08**	**Geologist:** Stephen Tauss **Drilling Method:** --- **Drive Hammer Weight:** NA **Date Completed: 5/1/08**	**Boring Completion Depth:** 4' **Ground Surface Elevation:** --- **Boring Diameter:** ---

Depth (ft.)	Soil Sample No.	Soil Sample Type	Soil Sample Rec. (inches)	Mercury Vapor (mg/m^3)	Photo-ionization Detector (ppm)	Sample Description	USCS
0' - 1'	1	HA	12	0.000	0.0	0-4" crushed STONE 4"-1' Brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
1' - 2'	2	HA	12	0.000	0.0	Brown, fine to medium SAND, some fine to medium gravel, little brick fragments, loose, dry, no odor or staining.	
2' - 4'	3	HA	24	0.000	0.0	Orange brown, fine to medium SAND, little fine to medium gravel, loose, dry, no odor or staining.	

Sample Types:
SS = Split Spoon
HA = Hand Auger
GP = Geoprobe Sampler
CC = Concrete Core

NOTES:
Samples collected at 2'-4'

APPENDIX D

DATA VALIDATOR RESUME

DONNA M. BROWN

GEOLOGIST III

EDUCATION

N.Y. Institute of Technology, Westbury, New York, M.S. (Environmental Technology) - 2000
State University of New York at Stony Brook, B.S. (Geology) - 1992

PROFESSIONAL EXPERIENCE

Ms. Brown has over 16 years of experience in project management, data validation, data management and field geology. She has worked as the site geologist at a variety of commercial and industrial sites. She has prepared and conducted Phase I and Phase II Environmental Site Assessments in accordance with the American Society for Testing and Materials Standards, federal, state and local agencies, as well as with the guidelines established by various lending institutions. Her experience with field activities include supervision of the installation of groundwater monitoring wells, temporary well points, and soil borings in support of subsurface investigations; groundwater and soil sampling for quantitative analysis; obtaining water level measurements; and utilizing portable field instruments.

Ms. Brown developed and managed the Data Validation and Data Management Group for the northeast region of a worldwide environmental consulting firm and was responsible for coordination of validation work load for over 40 projects. In addition, she was responsible for training data validators, providing cost estimates for validation work, preparation of Quality Assurance Project Plans (QAPPs) and Sampling and Analysis Plans (SAPs), validation of data in accordance with the USEPA National Functional Guidelines, USEPA Region II and III, New York State Department of Environmental Conservation (NYSDEC) ASP, New Jersey Department of Environmental Protection, and USEPA Hazardous Waste Support. Ms. Brown also managed and maintained over 20 projects in the GIS/Key database system, interfaced with the analytical laboratories to ensure the successful transfer of electronic laboratory data into the database system; and manipulation of geologic, laboratory, and hydrogeologic data within the Fox Pro, GIS/Key, MS Access, Grapher, Surfer, and AutoCAD programs .

In addition, Ms. Brown is trained in and utilized Environmental Visualization System (EVS) software. EVS software enables the user to provide three-dimensional animations to illustrate subsurface technical issues.

Ms. Brown was responsible for performing data validation of chemical data collected on and offsite at a clean fill demolition debris site and at several aerospace industrial client sites on Long Island utilizing the following protocols:

- USEPA Contract Laboratory Program National Functional Guidelines Organic and Inorganic;
- USEPA Hazardous Waste Support Branch, Validating Air Samples; and
- USEPA Region II, Volatile Organics Analysis of Ambient Air in Canisters By Method TO-15.

In addition, she updated GIS/Key database for chemistry and water level data, proved tables, graphs, and figures associated with project reports; conducted water level and water quality sampling; and prepared quarterly groundwater quality monitoring reports.

She also was responsible for performing data validation of chemical data collected at automotive industry owned sites in New Jersey using New Jersey Department of Environmental Protection Quality Assurance Data Validation of Analytical Deliverables TCL-Organics and TAL-Inorganics, and USEPA Hazardous Waste Support Branch, Validating Air Samples, Volatile Organics Analysis of Ambient Air in Canisters By Method TO-15.

As a Project Manager she was responsible for client communications, coordination of field sampling, reviewed and interpreted geologic, hydrogeologic, and chemistry data, report preparation, maintained the database, and data validation for former chemical site in upstate New York.

Ms. Brown was responsible for maintaining the database which contains information from over 20 years of quarterly groundwater monitoring wells and four recovery well; performed data validation of chemical data using USEPA Contract Laboratory Program National Functional Guidelines Organic and Inorganic; proved tables, graphs, and figures associated with project reports, and updated GIS/Key database for chemistry and water level data at a chemical manufacturing site in Albuquerque, New Mexico.

APPENDIX E

APRIL 2010 STONE PLACEMENT PHOTOS

Stone installation area located south of the substation.

Stone installed in the non-fenced area south of the substation building.

Stone installed in the fenced area south of the swing-out doors on the south side of the substation building.

APPENDIX F

LIRR PROCEDURE/INSTRUCTION EE03-001

Procedure/Instruction: EE03-001
EXCAVATING SOILS AT RAILROAD LOCATIONS **Effective DATE: August 11, 2003**

A. Introduction:

At existing railroad shops, yards, substations, right-of-ways and other locations, past operations may have resulted in the chance of soils containing very low levels of chemical substances. Examples may include; trace levels of metals around old painted structures, oils and greases around train yards and repair locations, greasy or sooty compounds left from coal ash ("clinker").

This Procedure/Instruction has been prepared to eliminate any risk that may be posed to LIRR workers who must dig in these locations. It is to be applied on a case by case basis, with any questions referred to Department Management and System Safety.

B. Required Steps/Actions:

1. The first step of any LIRR excavation, regarding the soil composition and possible presence of contaminates, is to review the current System Safety Environmental Audit Map. This map includes all LIRR sites with documented soil contaminates. If your site appears on the map in red it may have soil concerns that could affect your project, contact System Safety before proceeding. If your site is not shown or is shown in black (does not have soil concerns) proceed to Step 2 as follows;

2. When digging at an existing railroad facility, the recommended procedures include:
   a. Wherever possible excavate with mechanical means, such as backhoes, ditch-witches or excavators.

   b. Wash facilities must be available for use by workers at the end of the task, before breaks, before meals, or at the end-of-shift. For field operations, wet-wipes are acceptable for fulfilling this requirement.

   c. Where hand digging must be used, workers must be instructed to brush soil from clothing and shoes. Disposable coveralls, shoe coverings and gloves should be made available upon workers request. Work clothing should be laundered.

   d. All equipment should be cleaned before leaving the worksite. The preferred method is hosing down with water, removing any clumps of dirt and soil. If water is not available, equipment should be brushed clean of any dirt and soil using a broom or stiff brush. Disposable items can be placed in the trash, no special disposal is necessary.

3. Where evidence of soil contamination is found, such as an odor, a stain or visible contaminant, the soil feels greasy, or results from laboratory analysis indicate a contaminant;

   a. Stop any excavation work or only excavate by mechanical means and

   b. Immediately Contact System Safety (information below) to assess the situation.

C. Regulations or Policy References: LIRR Corporate Environmental Policy; Section IV, B, 5

D. System Safety Contacts:

Environmental Engineer;	718-558-3252
Environmental Field Engineer;	718-558-3081

E. Forms & Attachments: None.