MTA Long Island Rail Road

Delineation Phase II
Site Assessment Remedial Action Work Plan
Rockville Centre Substation: Site No. V00401-1

April 2008

DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS
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FILE COPY

Long Island Rail Road

April 4, 2008

Tara Diaz, Project Manager
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A
625 Broadway, 11th Floor
Albany, NY 12233-7015

Re: LIRR Rockville Centre Substation (NYSDEC VCA No. V00401-1)
Remedial Action Work Plan

Dear Ms. Diaz:

Enclosed please find three (3) copies of the final work plan entitled:

"LIRR Rockville Centre Substation
Remedial Action Work Plan
(NYSDEC VCA No. V00401-1)"

Please be advised that the LIRR will be conducting soil removal activities at the Rockville Centre Substation in October of 2008. The LIRR is eager to remediate this site to allow for construction of a new substation building at the Rockville Centre Substation, which in turn, will improve service to our customers.

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

Very truly yours,

Andrew Wilson, P.E.
Project Manager

AW/PSM/tpg
cc: Case Attorney (NYSDEC)
S. Messier (NYSDOH)
D. Miles (NYSDOH)
C. Hillenbrand (USEPA)
C. Pareja (NCDH)
C. Channer (MTA)
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T. Fox (D&B)
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METROPOLITAN TRANSPORTATION AUTHORITY
LONG ISLAND RAIL ROAD

DELINEATION PHASE 2 SITE ASSESSMENT
FOR
ROCKVILLE CENTRE SUBSTATION

REMEDIAL ACTION WORK PLAN

Prepared for:

METROPOLITAN TRANSPORTATION AUTHORITY
LONG ISLAND RAIL ROAD

Prepared by:

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
WOODBURY, NEW YORK

APRIL 2008

LONG ISLAND RAIL ROAD
DELINEATION PHASE 2 SITE ASSESSMENT FOR
ROCKVILLE CENTRE SUBSTATION
REMEDIAL ACTION WORK PLAN

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Section 1

1.0 INTRODUCTION

The Long Island Rail Road (LIRR) has entered into a Voluntary Cleanup Agreement (VCA) with the New York State Department of Environmental Conservation (NYSDEC) in order to investigate and remediate potential mercury contamination associated with the operation and subsequent decommissioning and removal of mercury-containing rectifiers at the Rockville Centre Electric Substation.

In 1999, the LIRR conducted environmental assessments at 20 of its electric substations which were identified as having previously utilized mercury-containing rectifiers. Among the substations investigated was the Rockville Centre Substation which detected mercury at concentrations above NYSDEC recommended cleanup objectives in soil at the facility. In order to further delineate and remediate impacted soil at the 20 substations, the LIRR agreed to undertake and complete what is referred to as "Delineation Phase 2 Site Assessments" under the NYSDEC's Voluntary Cleanup Program (VCP). As part of this Delineation Phase 2 Site Assessment program, an investigation was undertaken at the Rockville Centre Substation in November of 2005. Additional follow-up field work was also completed through October 2007. The results of these investigations were documented in a report prepared by D&B entitled, "Delineation Phase 2 Site Assessment Investigation Report for the Rockville Centre Substation," dated June 2007.

This Remedial Action Work Plan (RAWP) has been prepared by Dvirka and Bartilucci Consulting Engineers (D&B), under contract with the LIRR, to address mercury contamination identified in several areas of the Rockville Centre Substation as documented in the June 2007 Delineation Phase 2 Site Investigation Report.

As an agency under the Metropolitan Transportation Authority (MTA), the LIRR operates under the auspices of the Public Authorities Law. Section 1266, paragraph 11 of this law exempts the LIRR from the requirements of the State Environmental Quality Review Act (SEQRA) for projects, "which will not change in a material respect the general character of such prior transportation use." With this in mind, the LIRR is proceeding with the remediation of the

existing substation and construction of the new substation building at Rockville Centre without SEQRA evaluation.

1.1 Project Background

The LIRR initiated the operation of electric substations with mercury rectifiers from approximately the early 1930s through 1951. The 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. Based on a detailed review of its operating records, the LIRR identified 20 substations located throughout Queens, Nassau and Suffolk Counties (including the Rockville Centre Substation) that once utilized mercury containing rectifiers.

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, maintenance and decommissioning 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.

As mentioned above, in 1999, the LIRR conducted environmental assessments at 20 of its electric substations, which previously utilized mercury-containing rectifiers. The results of these assessments were documented in a report prepared by 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 Rockville Centre Substation, at concentrations above NYSDEC recommended cleanup objectives. In order to further delineate and remediate impacted soil at the 20 substations, the LIRR agreed to undertake and complete Delineation Phase 2 Site Assessments under the NYSDEC's VCP. In support of this VCP, the LIRR completed Delineation Phase 2 Site Assessment activities at the Rockville

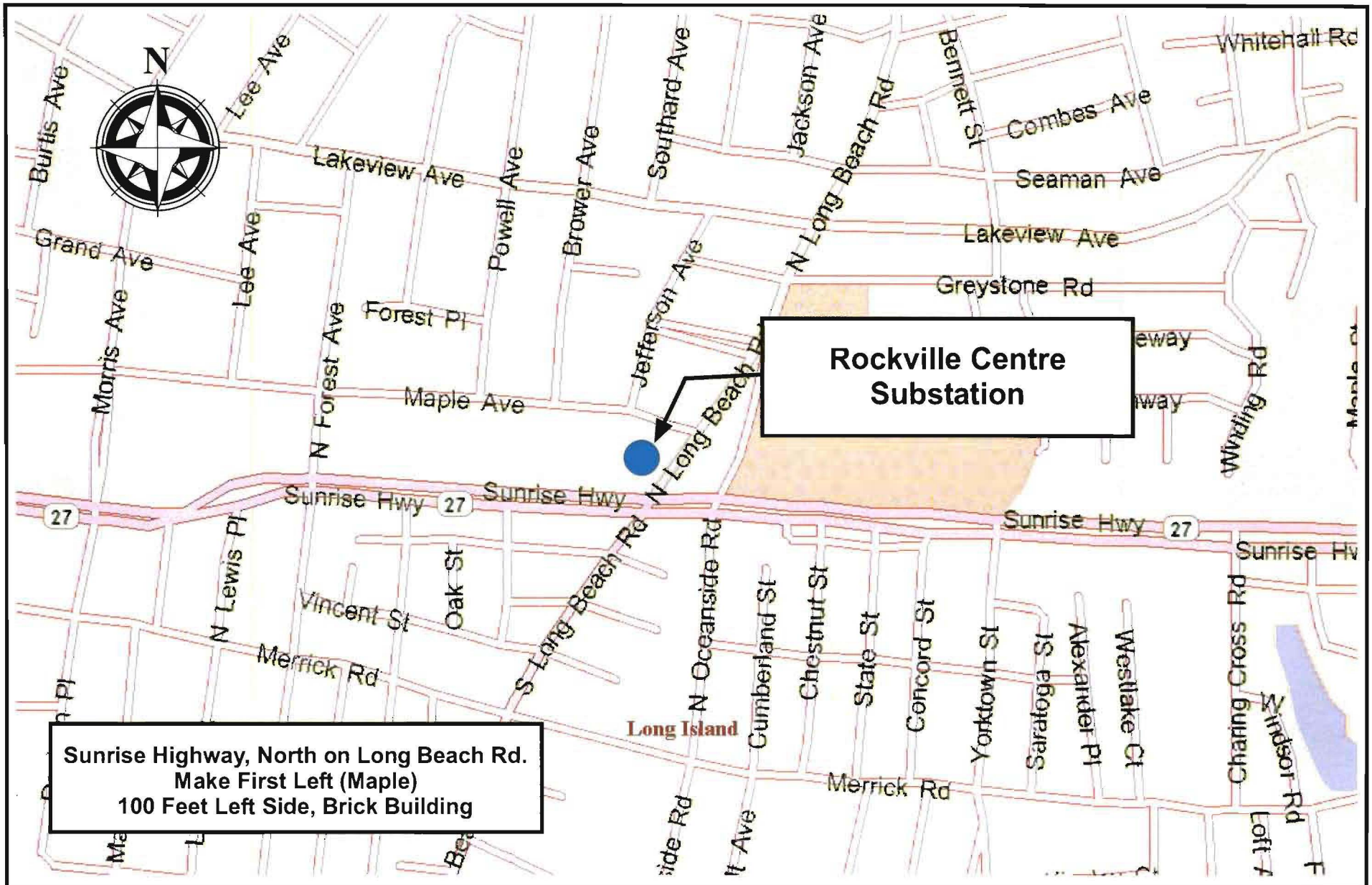
Centre Substation, which were completed by May of 2007. Section 1.3 provides a summary of key findings associated with this investigation.

1.2 Site Description

The Rockville Centre substation is located in Rockville Centre, Nassau County, New York (see Figure 1-1). The substation consists of an approximately 2,500 square foot two-story brick building, as shown on Figure 1-2. An approximately 2,100 square foot transformer yard is located adjacent to the substation to the south and is enclosed by a chain-linked fence. The substation building and transformer yard is presently utilized to convert AC to DC for the LIRR-Babylon branch. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking areas.

The Rockville Centre substation is equipped with a basement, sanitary facilities, water service and a utility trench system. The interior of the substation consists of an active solid-state rectifier located over a pit leading to the basement that once serviced a mercury-containing rectifier enclosed by a chain-linked fence. In addition, the substation is equipped with a second pit leading to the basement that is covered with a steel plate which was utilized in conjunction with a second mercury-containing rectifier that has since been removed from the substation. Located in the southeast portion of the basement is a sump pump, which is utilized for flood prevention and discharges outside the east wall of the building to a 4-foot by 10-foot parcel of land in the southeast exterior corner of the substation building. In addition, there is a water meter pit with an earthen bottom that is located off the northwest corner of the substation and is covered with a steel plate.

Based on the results of the Delineation Phase II Site Investigation, the depth to groundwater at this site is approximately 20 feet below grade.



KRB/2229 (LIRR)/RAWP Site Map cdr(10/11/07)

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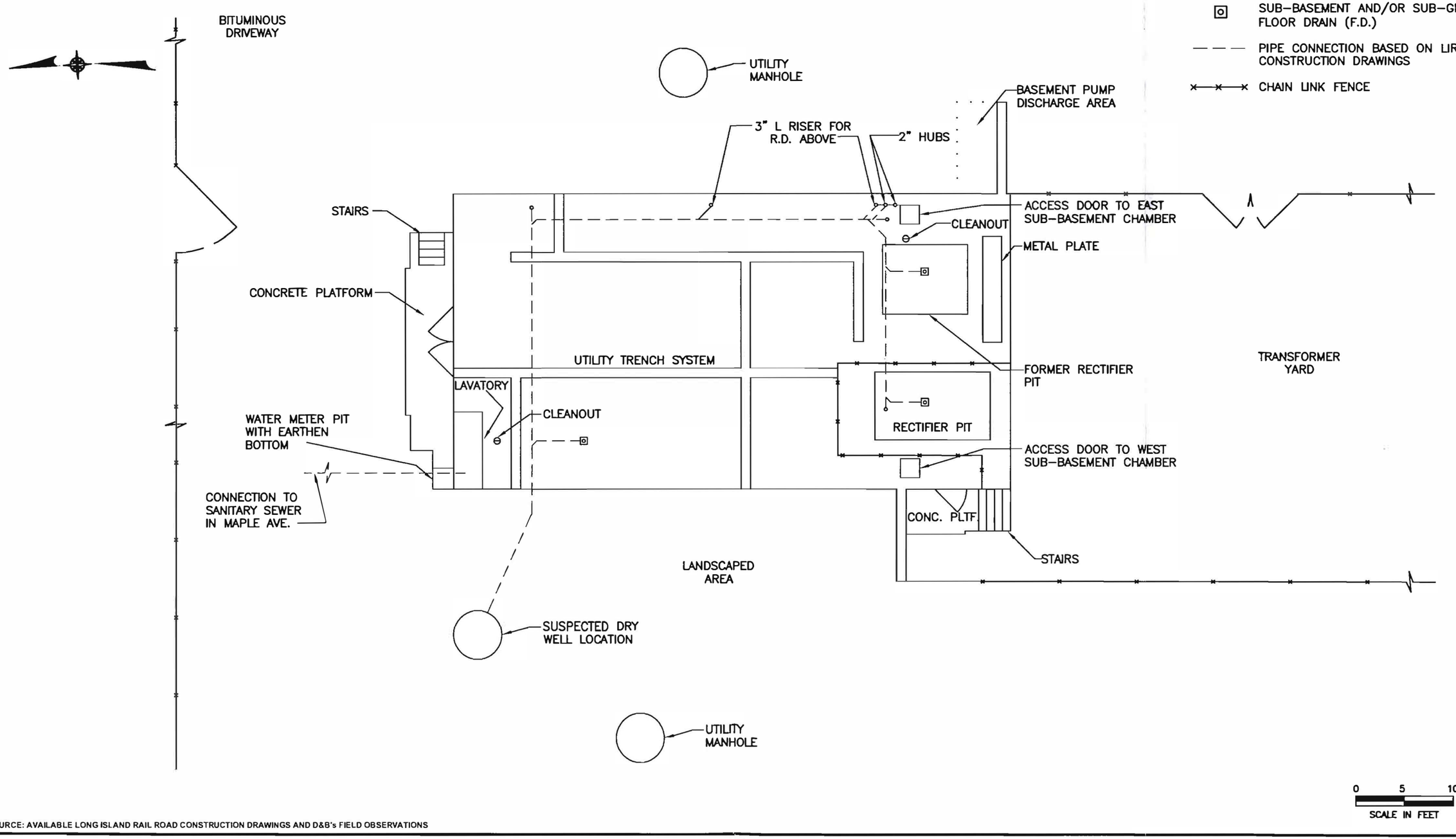
LONG ISLAND RAIL ROAD
REMEDIAL ACTION WORK PLAN

SITE LOCATION MAP
ROCKVILLE CENTRE SUBSTATION (V00401-1)

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
REMEDIAL ACTION WORK PLAN

SITE PLAN
ROCKVILLE CENTRE SUBSTATION (V00401-1)

FIGURE 1-2

1.3 Summary of Prior Investigations

The LIRR completed an initial environmental site assessment of the Rockville Centre Substation in 1999, as documented in the report entitled, "Site Assessment of 20 Substations for Mercury Contamination," dated December 2000. Investigation methods utilized during the initial site assessment included a site inspection, mercury vapor measurements, drainage determinations and a geophysical survey. In addition, samples of various environmental media were collected at the site for laboratory analysis. Samples collected for laboratory analysis included five surface soil samples, sixteen subsurface soil samples and one concrete core.

As discussed in Section 1.1 and subsequent to the Initial Site Assessment, a Delineation Phase 2 Site Assessment was completed in May of 2007. As part of this investigation, a total of 45 surface soil samples, 64 subsurface soil samples and 3 groundwater samples, were collected for chemical analysis. In addition, several below grade structures were investigated for Underground Injection Control (UIC) applicability.

Mercury was detected in surface and subsurface soil at the Rockville Centre Substation. Mercury concentrations in exceedance of the SCO for mercury of 5.7 mg/kg have been identified in surface soil collected in areas surrounding the substation building, with the greatest mercury concentrations detected adjacent to the concrete platform, north of the substation building at concentrations of up to 2,278 mg/kg.

PCBs were detected in surface soil at the Rockville Centre Substation. Total PCB concentrations in one surface soil sample (RCSS-21) collected in the center of the transformer yard located to the south of the substation building have been identified in exceedance of the SCO for total PCBs of 25.0 mg/kg, at a concentration of 56.0 mg/kg. Note that RCSS-21, collected in the center of the transformer yard, also exhibited a lead concentration of 6,770 mg/kg, exceeding the SCO for lead of 3,900 mg/kg. Arsenic was detected in surface soil ranging in concentration from 21.0 mg/kg to 41.2 mg/kg. Arsenic was also detected in subsurface soil at a concentration of 25.3 mg/kg.

The depth to groundwater beneath the Rockville Centre Substation is approximately 20 feet below ground surface. Mercury was not found to exceed the NYSDEC Class GA Standard of 0.7 ug/l in either the filtered or unfiltered samples collected from groundwater probes, RCGP-01, RCGP-02, and RCGP-03.

The below grade structures investigated for UIC applicability included the water meter pit located adjacent to the northwest corner of the substation building, a dry well and associated rectifier piping suspected to be located to the west of the substation building, three floor drains located within the substation building and the substation lavatory. It was determined that the water meter pit was not designed as a drainage structure and did not accept fluids, and the substation lavatory discharged to the sewer system running beneath Maple Avenue, and as such, these structures did not meet the definition of a UIC structure. A geophysical investigation utilizing an Electromagnetic survey and a Ground Penetrating Radar survey did not indicate the presence of subsurface anomalies consistent with a dry well structure, and as such, it was concluded that the dry well structure was removed and the rectifier piping was then connected to the sewer. A flush and dye test determined that several of the floor drains were connected to each other, however an ultimate discharge point could not be determined. Due to the potential for the drains to discharge to the subsurface, these structures did meet the definition of a UIC structure.

One surface soil sample and one subsurface soil sample was collected from the bottom of the water meter pit, two subsurface soil samples were collected from the location corresponding to where the dry well is depicted on LIRR construction drawings and two subsurface soil samples were collected through the drain bottom of the southwest floor drain in the substation building. The soil samples collected were analyzed for mercury. Mercury was detected at a concentration exceeding its soil cleanup objective (SCO) of 5.7 mg/kg in the surface soil sample collected from the water meter pit and the two subsurface soil samples collected below the southwest floor drain. Mercury was not detected in either subsurface soil sample collected from the suspected dry well location.

Additional details concerning the above findings are presented in the Delineation Phase 2 Site Assessment Report for the Rockville Centre Substation, submitted to the NYSDEC in June of 2007.

1.4 Summary of Environmental Conditions at the Site

This section briefly describes the current and future conditions of the Rockville Centre Substation. The Rockville Centre Substation is actively used by the LIRR to convert AC obtained from the local electrical provider, the Long Island Power Authority (LIPA), to 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 substation is only accessible by authorized LIRR personnel and its subcontractors. In addition, the substations are not occupied by LIRR personnel on a 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 fenced and locked, preventing public access to the property. The areas to the north, northeast and northwest of the Rockville Centre Substation are covered by a maintained lawn, and the area to the south of the substation building, in the transformer yard, is covered with approximately 2 inches of crushed stone.

The Rockville Centre Substation is serviced by public water and on-site groundwater is not used for any purpose.

Based on the results of the Delineation Phase 2 Site Assessment Report, multiple areas surrounding the substation building will require remediation. This includes four areas to a depth of 1 foot below ground surface, one area to a depth of 3 feet below ground surface and one area to a depth of 5 feet below ground surface. In addition, soil within the water meter pit located at the northwest corner of the substation building will be removed to a depth of 2 feet below the pit

bottom and soil within the floor drain located near the southwest corner of the substation building will be removed to a depth of 8 feet below the floor slab.

The areas requiring remediation are depicted on Figure 2-1 in a "conceptual fashion" and are described in the Initial Site Assessment and the Delineation Phase 2 Site Assessment of the Rockville Centre Substation and the NYSDEC-approved "Delineation Phase 2 Site Assessment Investigation Report for the Rockville Centre Substation," dated June 2007. Specific details regarding the soil excavation will be included in the plans and specifications prepared for implementation of the remedy.

1.5 Contemplated Use of the Site

As part of the LIRR's overall system upgrade in response to increased ridership, the Rockville Centre Substation will be decommissioned and a new substation building will be constructed. This upgrade will occur in three phases: excavation of contaminated soil, abatement and demolition of the substation building, and construction of a new substation building.

All remedial excavation activities will be overseen by a LIRR representative and will be completed in accordance with the Contractor's Construction Health and Safety Plan (CHASP) as detailed in Section 5.0. In addition, full-time air monitoring will be performed in accordance with the CHASP and the Community Air Monitoring Plan (CAMP), as detailed in Appendix A. Specific details regarding remedial activities will be included in the plans and specifications.

The abatement and demolition of the Rockville Centre Substation building will be performed by a qualified abatement and demolition contractor and supervised by the LIRR's abatement and demolition consultant. All demolition work will be performed in accordance with a site-specific work plan approved by the LIRR. The LIRR's abatement and demolition consultant will be on-site at all times to ensure that all work is performed in accordance with applicable codes and regulations. The abatement and demolition consultant will conduct air monitoring throughout demolition activities. In addition, the LIRR will have on-site a full-time representative to observe the demolition of the building and to identify and document any

mercury-related contamination that may be uncovered during the demolition process. If mercury contamination is identified, this contamination will be remediated by the remediation contractor in accordance with the procedures set forth in this RAWP.

As part of the decommissioning, all electric transformers and equipment will be shutdown, drained and removed from the site and the existing substation building will be demolished. All debris generated from the demolition of the subsurface building walls will be properly characterized and disposed by the abatement and demolition contractor in accordance with all applicable regulations.

Finally, once remedial and demolition activities are completed, the LIRR will construct a new substation building in the footprint of the existing substation building. Once construction is complete, the LIRR will evaluate the potential for soil vapor intrusion. After installation of the new substation building, the LIRR will not be disturbing or excavating in the Rockville Centre Substation for the foreseeable future. As a result, future exposure to residual contamination, if any, is not expected.

Section 2

2.0 REMEDIAL ACTION SELECTION

The purpose of this section is to provide an engineering evaluation of the selected remedial alternative to address the surface and subsurface soil contamination in multiple areas defined in the Delineation Phase 2 Site Assessment Investigation Report. The goal of this evaluation is to demonstrate how the selected remedy would meet the remedial goals and remedial action objectives presented in Section 2.1 below.

2.1 Remedial Goals and Remedial Action Objectives

Remedial action objectives (RAOs) are goals developed for the protection of human health and the environment. Definition of these objectives requires an assessment of the media of concern, migration pathways, exposure routes and potential receptors. Typically, remedial goals are established based on standards, criteria and guidelines (SCGs) to protect human health and the environment. SCGs for the site, which were developed in the Site Assessment Investigation Report, include New York Codes, Rules and Regulations Title (6 NYCRR), Part 375 Environmental Remediation Programs. Within Part 375, Soil Cleanup Objectives (SCOs) for Industrial Use are presented. These SCOs have been utilized to define areas requiring remediation.

While mercury has been detected above the SCOs for Industrial Use in soil at multiple areas of the Rockville Centre Substation, the completed exposure assessment has determined that the surrounding community is not exposed to these contaminants due to the restricted nature of the facility. Furthermore, direct exposure to mercury by LIRR workers (on-site receptors) who are required to periodically enter the site for equipment maintenance and repair is not expected. LIRR workers and subcontractors could be potentially exposed to these compounds during excavation activities. However, the LIRR has instituted standard operating procedures to prevent the excavation of contaminated soil at LIRR properties without first identifying and implementing appropriate health and safety measures. Finally, the completed Fish and Wildlife Resources Impact Analysis (FWRIA) determined that there are no significant or special habitats or wildlife within or surrounding the substation property and, therefore, the presence of the soil

contaminants do not represent a significant concern with regard to environmental resources. Based on the nature of the contaminants associated with the site and the findings of the exposure assessment and the FWRIA, the RAOs of this Remedial Action Work Plan (RAWP) include the following:

RAOs for Public Health Protection

- Mitigate ingestion/direct contact with contaminated soil and dust.
- Mitigate inhalation of or exposure from contaminants volatilizing from contaminants in soil.

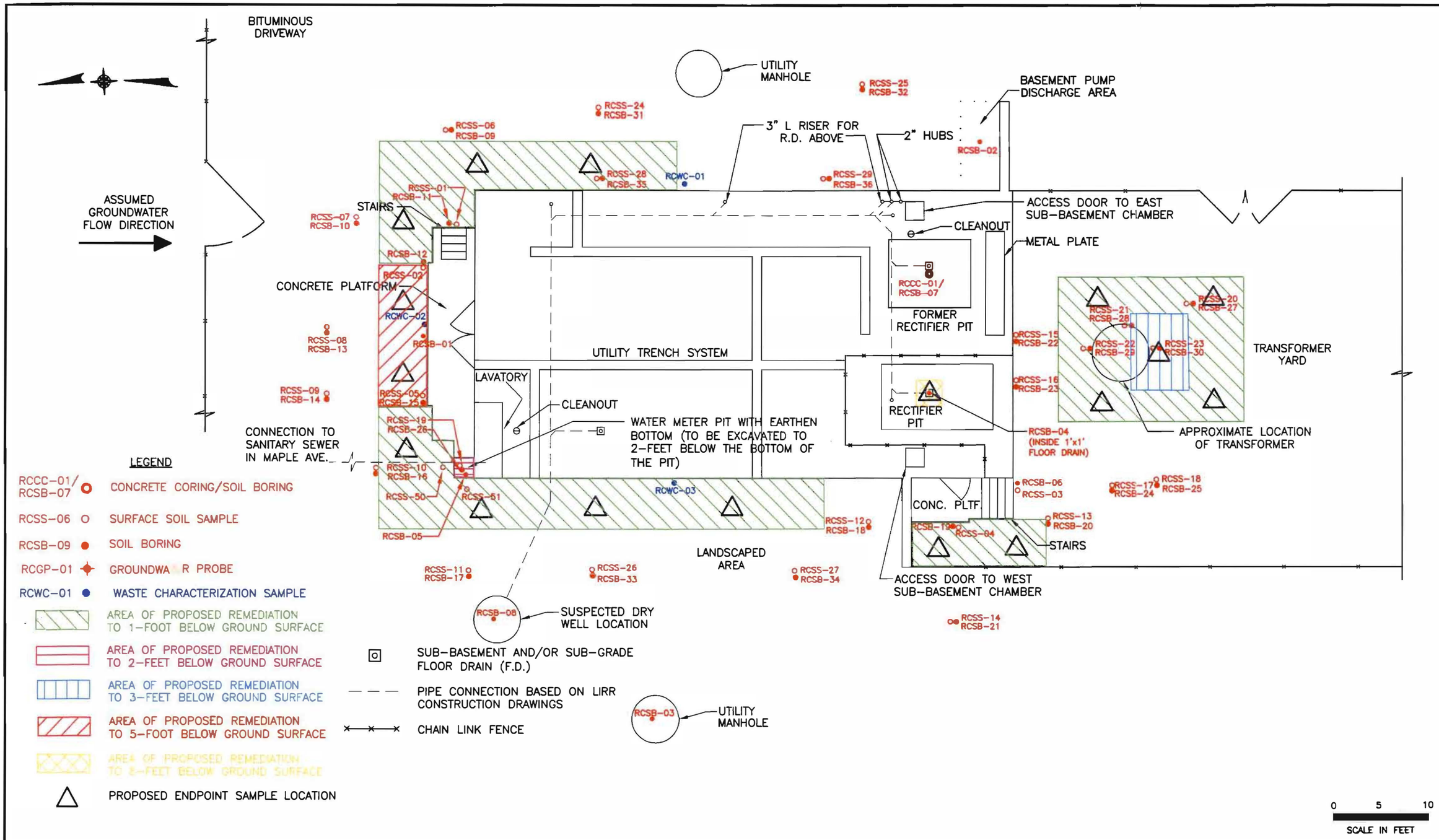
RAOs for Environmental Protection

- Mitigate migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

2.2 Summary of Remedy

The approximate locations and limits of areas requiring remediation are depicted on Figure 2-1. The six proposed excavation areas are approximately 991 square feet in total area. As shown on Figure 2-1, the areas to be excavated include the following:

- One area to the north of the substation building will be excavated to a depth of 5 feet below ground surface (bgs). This area is approximately 75 square feet in area, and will require the removal of approximately 14 cubic yards of soil.
- One area to the northwest of the substation building will be excavated to a depth of 1 foot bgs. This area is approximately 315 square feet in area, and will require the removal of approximately 12 cubic yards of soil. This area also includes soil to a depth of 2 feet below the bottom of the water meter pit and will require the removal of approximately 8 cubic feet of soil.
- One area to the northeast of the substation building will be excavated to a depth of 1 foot bgs. This area is approximately 226 square feet in area, and will require the removal of approximately 8 cubic yards of soil.



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LONG ISLAND RAIL ROAD
REMEDIAL ACTION WORK PLAN

CONCEPTUAL LOCATION OF AREAS OF REMEDIATION OF SOIL CONTAINING MERCURY, ARSENIC, LEAD AND PCBs ROCKVILLE CENTRE SUBSTATION (V00401-1)

FIGURE 2-1

- One area to the southwest of the substation building will be excavated to a depth of 1 foot bgs. This area is approximately 68 square feet in area, and will require the removal of approximately 3 cubic yards of soil.

- One area to the south of the substation building, within the transformer yard, will be excavated to a depth of 3 feet bgs. This area is approximately 51 square feet in area, and will require the removal of approximately 6 cubic yards of soil.

- One area to the south of the substation building, within the transformer yard, will be excavated to a depth of 1 foot bgs. This area is approximately 256 square feet in area, and will require the removal of approximately 15 cubic yards of soil.

As part of this remediation, the transformer located within the southern excavation area will be removed and stored on-site for off-site removal by the abatement and demolition contractor, and its associated concrete foundation will be demolished and removed. In addition, soil to a depth of 8 feet below the concrete substation slab will be removed from the southwest floor drain and if the suspected dry well and associated rectifier drain pipe is encountered upon removal of the substation building, this structure will be investigated for UIC applicability and contaminant concentration and subsequently closed in accordance with all USEPA and NCDH regulations.

Soil removal will be conducted prior to demolition of the existing substation building. In the event that additional soil will require removal, this soil will be properly characterized and disposed of by the remedial contractor in accordance with the requirements of the RAWP. The excavated soil will be replaced with clean fill from an off-site approved source.

Generation of dust during the implementation of the remedy will be monitored by utilizing a digital dust monitor and, if necessary, dust controls will be implemented in accordance with the CHASP. Air monitoring is discussed further in Section 5.0 of this report.

Endpoint samples will be collected from the excavation to determine the characteristics of the remaining soil prior to site restoration. The proposed location of each endpoint sample is shown on Figure 2-1. Endpoint sample results will be provided to NYSDEC and New York State Department of Health (NYSDOH) for review. Based on the results of the endpoint sampling, determination will be made between LIRR and NYSDEC with regard to the need for

additional excavation. Institutional controls in the form of a deed restriction and/or environmental easement will be implemented to maintain the industrial nature of the property.

2.3 Evaluation of Remedy

The following discussion presents the engineering evaluation of the remedy against the six remedy selection criteria. In accordance with NYSDEC draft VCP Guide, the following discussion evaluates the remedy against the factors presented in 6 NYCRR 375-1.10(c) with the exception of cost effectiveness and community acceptance which will be evaluated by the NYSDEC.

Protection of Human Health and the Environment

As described above, implementation of the remedy will include mitigation of the potential for the direct exposure to contaminated soil through the excavation and off-site transportation and disposal of soil exceeding Part 375 SCOs for Industrial Use. The remedy will meet the RAOs for the site through the removal of contaminated soil and mitigating potential impacts to human health through removal of the potential for exposure through ingestion, direct contact and/or inhalation. The remedy will also meet the RAOs through the implementation of a CHASP that will provide protection of on-site workers and surrounding community during implementation of the remedy. This RAWP also provides information on proper management of contaminated soil and generated waste to mitigate impacts to surrounding community during implementation of the remedy. Therefore, this remedy will provide for the protection of human health and the environment.

Standards, Criteria and Guidance

The selected remedy will comply with applicable regulatory SCGs developed for the site. Applicable regulatory SCGs are considered minimum performance specifications for the remedy. The following is a list of major SCGs that apply to the site:

- 6 NYCRR Part 364 - Waste Transporter Permits
- 6 NYCRR Part 370 - Hazardous Waste Management Systems
- 6 NYCRR Part 375 - Environmental Remediation Programs
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response (HAZWOPER) Standard
- 29 CFR Part 1926 - Safety and Health Regulations for Consideration
- TAGM 4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites
- NYSDOH Generic CAMP
- NYSDEC draft VCP Guide - May 2002

As described above, since the remedy will remove the majority of soil exhibiting contaminants above the Part 375 SCOs for Industrial Use and will be implemented in accordance with the above standards and guidelines, the remedy will meet the SCGs for the site.

Short-term Effectiveness and Impacts

Evaluation of short-term effectiveness and impacts includes defining potential health and environmental risks likely to exist during implementation of the remedy and the ability to control the risks during implementation. Excavation and off-site disposal of approximately 59 cubic yards of soil from the surface and shallow subsurface of the site will pose a low risk to health and the environment. Generation of dust during excavation will be monitored and controlled through dust suppression techniques, if necessary. Due to the small volume of soil requiring excavation and off-site disposal, the remedy will be completed in less than 1 month; however, the schedule will be coordinated with the upgrade of the substation. Remedial activities will only occur during normal business hours and noise levels will be maintained to meet local noise ordinances. Since the Rockville Centre Substation is only accessible by authorized LIRR personnel and its subcontractors, access to the site is limited and therefore impacts to the community during implementation of the remedy would be negligible. Impacts to the on-site

workers would include exposure to contaminated soil, vapors and dust; however, these impacts would be minimized through the implementation of the CHASP. Implementation of appropriate storm water management, soil erosion and sediment control techniques during construction will be designed to minimize the potential for migration of contaminated soil off-site. In addition, vehicles used to transport contaminated soil will be tarped before departing the site and equipment contacting contaminated soil would be properly decontaminated, as per the CHASP, prior to moving off-site, also minimizing the potential for off-site migration of contaminated soil and impacts to the community.

Long-term Effectiveness and Permanence

Excavation and off-site disposal of the soil exceeding the Part 375 SCOs for Industrial Use will be a long-term permanent and effective remedy for the site. The potential for exposure to this contaminated soil at the site in the future will be eliminated. Although it is anticipated that a majority of the soil exceeding the Part 375 SCOs for Industrial Use will be removed from the site, the results of endpoint sampling will be evaluated to determine the need for additional excavation. Institutional controls in the form of a deed restriction and/or environmental easement will be implemented to maintain the industrial nature of the property.

Reduction of Toxicity, Mobility or Volume

Removal of approximately 59 cubic yards of contaminated soil from the site will effectively reduce the toxicity, mobility and volume of contamination at the site. The contaminated soil will be disposed of at a permitted off-site disposal facility, which would minimize the potential for mobility of the contaminants.

Implementability

Excavation and off-site disposal of contaminated soil at the site can be completed with standard equipment. Since the remedy will be implemented in conjunction with the upgrade of the site, all utilities and structures in the area of the contaminated soil will be removed, and

therefore, there will not be any impacts to existing utilities or structures. All necessary labor, equipment and supplies are readily available. This remedy will require coordination with NYSDEC, which is not expected to impact implementation.

As described above the selected remedy for the site meets the objectives of the six remedy selection criteria as defined in the draft VCP Guide.

Section 3

3.0 REMEDIAL CONSTRUCTION

As detailed in Section 2.0, the LIRR has identified multiple areas at the Rockville Centre Substation requiring remediation. This section describes the activities to be undertaken to complete the implementation of the remedy. Specific details regarding soil excavation will be included in the plans and specifications prepared for the implementation of the remedy.

3.1 Mobilization

Site mobilization activities by the remediation contractor will occur prior to initiation of the implementation of the remedial measure. Staging areas for construction equipment and excavated material storage and handling, decontamination areas and temporary facilities will be established in the area of the existing substation as directed by LIRR.

Equipment and personnel decontamination facilities will be described in detail in the CHASP to be provided by the contractor. All equipment exposed to contaminated soil will be decontaminated on-site in accordance with the CHASP and removed at the conclusion of remedial activities.

All personnel and visitors will be required to sign in and sign out upon arrival and departure. Personnel and visitors entering the site will be required to have 40-hour HAZWOPER training and participate in a medical surveillance program.

Prior to the initiation of the remedial activities, utilities will be identified and located by the contractor in coordination with the LIRR in accordance with local and state requirements.

3.2 Excavation and Material Handling

As discussed in Section 2.0, excavation activities will commence prior to demolition of the substation building and construction of the new substation building. The approximate areas of surface and subsurface soil to be excavated as part of the remedial measures presented as part

of this RAWP are presented in Figure 2-1. The actual extent of the area to be remediated will be staked and marked by a land surveyor in the field prior to excavation. The transformer located within the southern excavation area will be removed and stored on-site for off-site disposal by the abatement and demolition contractor and its associated concrete foundation will be demolished and removed during the excavation activities.

Air monitoring will be performed throughout the duration of the work and will dictate actions required to control emissions. A detailed air-monitoring program including action levels will be included in the CHASP. If dust is generated during implementation of the remedy at levels that exceed minimum action levels, standard dust suppression techniques will be employed. Standard dust suppression techniques that may be employed during excavation activities, as well as any other material handling activities include:

- Application of wetting agents to soil, stockpiles, buckets and equipment; and
- Covering/tarping of containers, excavations and stockpiles.

If dust suppression techniques do not lower the particulate concentrations to an acceptable level, work will be suspended until acceptable corrective measures are implemented. As part of the CHASP, the contractor will prepare a CAMP prior to mobilization. The contractor will be responsible for implementing the CAMP. The plan will comply with the requirements of the NYSDOH CAMP included in Appendix A.

3.3 Soil Characterization

Pre-characterization sampling of the soil directly adjacent to the substation building was completed as part of the Site Assessment Investigation Report to characterize the soil to be removed as part of the new substation building construction. A total of three surface and three subsurface soil samples were selected for waste characterization. All samples were analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals (including mercury), TCLP SVOCs, TCLP VOCs, RCRA waste characteristics (ignitability, reactivity and corrosivity), RCRA metals, total PCBs and target compound list pesticides/herbicides. The results of the pre-

characterization sample analysis are provided as Appendix B. All RCRA waste characterization results were compared to appropriate criteria and no exceedances of these criteria were identified for any sample collected.

The results of this laboratory analysis will be provided in the detailed plans and specifications for reference purposes only. The remedial contractor will be required to collect and analyze waste characterization samples from the areas to be excavated prior to performance of the remedial work. The samples shall conform to the requirements of the off-site LIRR approved disposal facility.

3.4 Waste Transportation and Disposal

As discussed above, prior to the off-site transportation of the excavated material, the remedial contractor will need to obtain confirmation from the disposal facility that the contaminated soil will be accepted at the facility. Permitted transporters approved by the LIRR will transport the soil to permitted off-site LIRR approved disposal facilities. All trucks will have functional intact tarps to cover their loads.

LIRR will be the generator of record. Soil will not be transported for disposal without prior approval from LIRR. Documentation of transportation and disposal of all material will be maintained in the project files.

3.5 Endpoint Sampling

Upon reaching the final excavation depth, samples will be collected by the contractor from the base of the excavation to determine the characteristics of the remaining soil prior to site restoration. Figure 2-1 provides the proposed location of each endpoint sample location. Although the draft NYSDEC VCP Guide does not provide guidance regarding endpoint sampling, the NYSDEC Draft DER-10 Technical Guidance recommends sampling from the bottom of the excavation every 900 square feet. Since each area is less than 900 square feet, a minimum of one endpoint sample for each area would be required. In addition, to minimize the

total amount of extra soil that would need to be removed in the event the endpoint samples exceed the SCOs, additional endpoint samples are proposed. The proposed endpoint sample locations are shown on Figure 2-1.

Each sample from the excavation areas to the south of the substation building will be collected and analyzed for mercury, PCBs, arsenic and lead and each sample from the excavation areas surrounding the substation building will be collected and analyzed for mercury. Expedited 2-day turnaround analysis will be performed to determine the characteristics of remaining soil prior to completion of site redevelopment and site restoration. The Part 375 SCOs for Industrial Use will be used to screen the endpoint samples. The actual need for additional remediation will be determined by the LIRR in consultation with the NYSDEC and NYSDOH. When available, the LIRR will transmit the data to the NYSDEC and NYSDOH for review, along with a sample location map. The NYSDEC will be available for a conference call with the LIRR to discuss the provided data and to determine if additional remediation is necessary within 1 day of receipt of the endpoint sample analysis data. Field sampling procedures and quality assurance protocols will be conducted in accordance with the Quality Assurance/Quality Control (QA/QC) Plan prepared by the remedial contractor.

3.6 Underground Injection Control Structure Closure

As shown on Figure 2-1, one UIC structure located at the Rockville Centre Substation will need to be properly closed as part of the planned demolition and remediation of the existing substation building. The UIC structure is the southwest floor drain located inside the substation building. The closure procedures utilized to decommission the floor drain will be in accordance with all USEPA and NCDH UIC regulations.

An approximate 2-foot by 2-foot perimeter will be saw cut around the floor drain. The floor drain and associated concrete around the floor drain will be demolished and removed. Guzzler extraction will be used to remove soil to a depth of 8 feet below the drain bottom. The maximum amount of contaminated soil will be removed, as is feasible, without undermining the substation foundation.

One post excavation sample will be collected from the bottom of the excavation and this sample will be analyzed for RCRA metals, total petroleum hydrocarbons (TPH), total VOCs and total SVOCs. The analytical results will be provided to the NYSDEC and NCDH and after approval of the results, the excavation will be backfilled with clean fill to grade.

All waste generated as part of the closure will be characterized congruent to NYSDEC regulations and disposed off-site by the remedial contractor at a State-regulated disposal facility.

3.7 Backfill

As discussed in Section 2.0, the LIRR plans to decommission and demolish the existing substation building as part of the planned upgrade of the Rockville Centre Substation. As part of that work, excavation of soil will be required in order to construct a new substation building in this area. This soil will be tested and compared to Part 375 SCOs. If the soil is below all applicable Part 375 SCOs, it will be used as backfill, as needed, for site restoration purposes. Excess soil not used for site restoration will be disposed of off-site congruent to State and Federal regulations. If additional backfill material is needed, clean fill from an off-site source approved by LIRR will be used. The fill will consist of mostly 3/4-inch crushed stone, commonly referred to as track ballast, and general fill containing no organic material, rubbish or debris and being capable of being compacted to a relative compaction of 90 percent.

The fill material will be accompanied by a Certificate of Clean Fill certifying that the area from which the fill originated was never used for industrial purposes and that the fill is free of contaminants. Details regarding backfill requirements will be included in the plans and specifications. The Certificate of Clean Fill will be submitted with the name of the supplier, the source of fill and the history of the location where the fill was obtained for approval by the LIRR and NYSDEC prior to use of the fill. Upon receipt, the LIRR and NYSDEC will review the information provided regarding the backfill and will determine the acceptability of the material and its source. Copies of the Certificates of Clean Fill will be submitted in the Final Engineering Report.

3.8 Site Restoration

The excavated areas will be restored as part of site redevelopment. Areas outside the excavation area disturbed during implementation of the remedy will be restored as necessary to coincide with site redevelopment.

Final construction of the substation area will include the construction of a new substation building. Endpoint samples will be collected from the soil in the area of the new substation footprint to determine the characteristics of the soil beneath the new substation building. Once construction is completed, the LIRR will conduct an investigation to assess the potential for soil vapor intrusion.

3.9 Erosion Controls

Storm water management, soil erosion and sediment control will be performed in accordance with New York State Guidelines for Urban Erosion and Sediment Controls. The contractor will be responsible for preventing off-site migration of storm water during implementation of the remedy.

If it will be necessary to stockpile contaminated soil, it will be placed on bermed plastic liners and covered with plastic tarps to prevent erosion. Stockpiles of clean fill will also be placed on bermed liners and covered. Liners will be secured in place with stakes or concrete.

Section 4

4.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

A Construction QA/QC Plan will be prepared by the contractor for review by the LIRR and for review and acceptance by the NYSDEC. The plan will identify procedures to be utilized to ensure the quality of the work performed meets the objectives of this RAWP. The QA/QC plan will include, at a minimum, the following:

- A description of the quality control organization including a chart showing the lines of authority.
- The names, qualifications, duties and responsibilities of each person assigned a QC function.
- Procedures for scheduling and managing submittals including those from subcontractors.
- The location, number and type of each sample to be collected and analysis to be performed for all samples to be collected, including waste characterization and endpoint sampling requirements.
- Description of sample collection methods for each sample matrix including sample containers, sample custody, sample packaging, storage and shipping procedures.
- The analytical protocols to be utilized.
- Quality control methods and procedures for each specific test to be used during construction.
- The name, address and qualifications of each proposed testing laboratory and the intended project-specific function.
- A description of all instrumentation and equipment to be used for testing on-site, as well as operating and calibration procedures.
- Reporting procedures for quality assurance activities including proposed reporting formats.
- Method for notification of changes.

The contractor will be responsible for implementing the QA/QC plan.

Section 5

5.0 HEALTH AND SAFETY

The remedial contractor will prepare a CHASP. Site personnel performing remedial work will be required to read and comply with the requirements of the CHASP.

The CHASP will be submitted to the LIRR and the NYSDEC for review and acceptance prior to initiation of the project. The CHASP will be required to address all the appropriate federal, state and local regulatory requirements necessary to undertake and successfully complete implementation of the remedy. The CHASP will be prepared in accordance with 29 CFR 1910.129 and will include the following items:

- Health and safety organization, including résumés of personnel responsible for health and safety
- Project site description and hazard assessment
- Training requirements
- Medical surveillance requirements
- Project site control procedures
- Standard operating procedures and engineering controls
- Personnel protective equipment requirements
- Personnel hygiene and decontamination protocols
- Equipment decontamination procedures
- Air monitoring requirements
- Emergency equipment/first aid requirements
- Emergency responses/contingency procedures
- Heat and cold stress procedures
- Record keeping requirements
- Community protection plan

The contractor will be responsible for ensuring that the CHASP and all work associated with the implementation of the remedy is performed in accordance with safe working practices including all Occupational Safety and Health Administration (OSHA) requirements. All site personnel will be trained and certified in the proper use of personal protective equipment and will have knowledge and understanding of construction standards. Certifications regarding training and expertise will be required prior to the start of work.

As part of the CHASP, the remedial contractor will prepare a CAMP prior to mobilization. The remedial contractor will be responsible for implementing the CAMP. The plan will comply with the requirements of the NYSDOH Generic CAMP included as Appendix A.

Section 6

6.0 REPORTING AND DOCUMENTATION

The remedial contractor will be required to prepare progress reports each week during implementation of the remedy. Each report will include information on the work completed during the week, the anticipated schedule for the following weeks, and a description of any problems encountered which will impact project progress and their resolution. Progress reports will be available for regulatory agency review.

Throughout implementation of the remedy, records will be maintained by the remedial contractor and engineer performing construction inspection to document activities completed on-site. Records that will be maintained include the following:

- Daily field activity reports
- Visitor sign-in/sign-out logs
- Construction photographs
- Instrument calibration logs
- Waste manifests/bills of lading and disposal facility receipts
- Waste characterization sampling results and waste treatment/ disposal facility prequalification forms
- Chain-of-custody forms
- Air monitoring forms
- Contractor submittals
- Measurements of material quantities for progress payments
- Incident/accident reports
- Meeting minutes
- Endpoint sampling results

Following completion of the remedy, and in accordance with the draft VCP Guide, within 90 days of completion of the remedy, a Remediation Report will be prepared. This report will include the following:

- Description of remedial actions performed;
- Deviations from the RAWP, if any;
- Copies of records maintained during the remediation;
- Problems encountered during construction and their resolution;

- A discussion on the quantification and listing of soil removed from the site;
- Detailed "as-built" drawings showing limits of the excavation and the locations of documentation samples;
- Copies of the Certificates of Clean Fill;
- Copies of all records documenting off-site disposal of soil; and
- Endpoint sampling results.

Also in accordance with the draft VCP Guide, the report will include a certification by a Professional Engineer registered in New York State, stating that the work was implemented and construction activities were completed in substantial conformance with this RAWP.

Section 7

7.0 PROJECT MANAGEMENT

7.1 Key Participants and Responsibilities

Key participants involved in the remediation of the LIRR Rockville Centre Substation site under the VCP include the following:

Key Participants	Primary Responsibilities
Volunteer: Long Island Rail Road	Oversee planning, implementation and reporting for remedial construction in accordance with approved RAWP, including procuring and directing contractors and consultants for design, remedial construction and site development in accordance with approved RAWP.
Regulatory Agencies: New York State Department of Environmental Conservation and New York State Department of Health	Regulatory oversight.
Remedial Engineer: Dvirka and Bartilucci Consulting Engineers	Construction inspection, record keeping, reporting and preparation of the Remediation Report.
Remedial Contractor: [to be determined]	Furnish labor, material, supplies, etc. for remedial construction in accordance with approved plans.

7.2 Project Communication and Management

Throughout the project, project meetings will be held to discuss work progress, plan upcoming activities for the week and discuss any unanticipated site conditions encountered. The remedial contractor's superintendent, as well as LIRR's Project Manager, will be required to attend the project meetings. Representatives of NYSDEC and NYSDOH will be made aware of the schedule for project meetings. Following an initial pre-construction meeting, project meetings will be held once per week at the site during the remediation.

During remedial construction, D&B will provide full-time on-site inspection of the work, engage in day-to-day communications with the remedial contractor's superintendent and maintain records and prepare reports as described in Section 6.0.

Section 8

8.0 PROJECT SCHEDULE AND KEY MILESTONES

A preliminary schedule for implementation of the remedy is provided below. Key milestones are identified in order to monitor work progress.

Schedule Milestone	Tentative Completion Date
• Submittal of Draft RAWP for NYSDEC Review	10/31/07
• Receive Comments from NYSDEC	12/4/07
• Complete Preparation of Specifications for Remedial Contractor	1/8/08
• Solicitation/Selection of Contractor	2/15/08
• Submittal of Final RAWP	4/4/08
• NYSDEC to issue Fact Sheet	4/9/08
• Mobilization	10/1/08
• Completion of Remedial Measures	10/23/08
• Submit Remediation Report to NYSDEC	1/23/09

Appendix A

APPENDIX A

NEW YORK STATE DEPARTMENT OF HEALTH
GENERIC COMMUNITY AIR MONITORING PLAN

New York State Department of Health
Generic Community Air Monitoring Plan

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for volatile organic compounds (VOCs) and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate NYSDEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All readings must be recorded and be available for State (DEC and DOH) personnel to review.

Appendix B

APPENDIX B

PRE-CHARACTERIZATION SOIL SAMPLING ANALYTICAL RESULTS

TABLE 11
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) PARAMETERS

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	US-TCLP/C	RCWC-01 RCWC-01(S) 03/05/2007	RCWC-01 RCWC-01(2-4) 03/05/2007	RCWC-02 RCWC-02(S) 03/05/2007	RCWC-02 RCWC-02(2-4) 03/05/2007	RCWC-03 RCWC-03(S) 03/05/2007
1,1-Dichloroethylene ()	(ug/l)	700	2.1U	2.1U	2.1U	2.1U	2.1U
1,2-Dichloroethane ()	(ug/l)	500	1.7U	1.7U	1.7U	1.7U	1.7U
2,4,5-Trichlorophenol ()	(ug/l)	400000	1.7U	1.7U	1.7U	1.7U	1.7U
2,4,6-Trichlorophenol ()	(ug/l)	2000	1.6U	1.6U	1.6U	1.6U	1.6U
2,4-D ()	(ug/l)	10000	1.670U	1.670U	1.670U	1.670U	1.670U
2,4-Dinitrotoluene ()	(ug/l)	130	1.7U	1.7U	1.7U	1.7U	1.7U
Arsenic ()	(ug/l)	5000	31.0U	31.0U	31.0U	31.0U	31.0U
Barium ()	(ug/l)	100000	345J	349J	762	288J	298J
Benzene ()	(ug/l)	500	1.9U	1.9U	1.9U	1.9U	1.9U
Cadmium ()	(ug/l)	1000	13.0J	9.000U	23.4J	9.000U	16.8J
Carbon tetrachloride ()	(ug/l)	500	5.7U	5.7U	5.7U	5.7U	5.7U
Chlordane ()	(ug/l)	30	0.2734U	0.2734U	0.2734U	0.2734U	0.2734U
Chlorobenzene ()	(ug/l)	100000	2.3U	2.3U	2.3U	2.3U	2.3U
Chloroform ()	(ug/l)	6000	1.7U	1.7U	1.7U	1.7U	1.7U
Chromium ()	(ug/l)	5000	10.0J	6.000U	11.0J	6.000U	18.3J
Endrin ()	(ug/l)	20	0.0099U	0.0099U	0.0099U	0.0099U	0.0099U
Heptachlor ()	(ug/l)	8.0	0.0324U	0.0324U	0.0324U	0.0324U	0.0324U
Heptachlor epoxide ()	(ug/l)	8.0	0.0173U	0.0173U	0.0173U	0.0173U	0.0173U
Hexachlorobenzene ()	(ug/l)	130	1.8U	1.8U	1.8U	1.8U	1.8U
Hexachlorobutadiene ()	(ug/l)	500	1.9U	1.9U	1.9U	1.9U	1.9U
Hexachloroethane ()	(ug/l)	3000	1.7U	1.7U	1.7U	1.7U	1.7U

Qualifiers defined in Appendix B: Data Flag/Qualifiers

ug/l: microgram/liter
USTCLP/C: TCLP Regulatory Levels

TABLE 11
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) PARAMETERS

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	US-TCLP/C	RCWC-01 RCWC-01(S) 03/05/2007	RCWC-01 RCWC-01(2-4) 03/05/2007	RCWC-02 RCWC-02(S) 03/05/2007	RCWC-02 RCWC-02(2-4) 03/05/2007	RCWC-03 RCWC-03(S) 03/05/2007
Lead ()	(ug/l)	5000	89.3	74.5	854	96.5	65.2
Lindane ()	(ug/l)	400	0.0101U	0.0101U	0.0101U	0.0101U	0.0101U
Mercury ()	(ug/l)	200	1.0849999U	1.0849999U	1.0849999U	1.0849999U	1.0849999U
Methoxychlor ()	(ug/l)	10000	0.0102U	0.0102U	0.0102U	0.0102U	0.0102U
Methyl ethyl ketone ()	(ug/l)	200000	5.7U	5.7U	5.7U	5.7U	5.7U
Nitrobenzene ()	(ug/l)	2000	2.2U	2.2U	2.2U	2.2U	2.2U
2-Methylphenol ()	(ug/l)	200000	2.1U	2.1U	2.1U	2.1U	2.1U
Pentachlorophenol ()	(ug/l)	100000	2.3U	2.3U	2.3U	2.3U	2.3U
4-Methylphenol ()	(ug/l)	200000	1.9U	1.9U	1.9U	1.9U	1.9U
1,4-Dichlorobenzene ()	(ug/l)	7500	1.7U	1.7U	1.7U	1.7U	1.7U
Pyridine ()	(ug/l)	5000	1.4U	1.4U	1.4U	1.4U	1.4U
Selenium ()	(ug/l)	1000	21.0U	26.6J	21.0U	21.0U	21.0U
Silver ()	(ug/l)	5000	6.000U	6.000U	6.000U	6.000U	16.5J
Silvex ()	(ug/l)	1000	1.670U	1.670U	1.670U	1.670U	1.670U
Tetrachloroethylene ()	(ug/l)	700	2.4U	2.4U	2.4U	2.4U	2.4U
Toxaphene ()	(ug/l)	500	0.1286U	0.1286U	0.1286U	0.1286U	0.1286U
Trichloroethylene ()	(ug/l)	500	2.3U	2.3U	2.3U	2.3U	2.3U
Vinyl chloride ()	(ug/l)	200	1.6U	1.6U	1.6U	1.6U	1.6U

Qualifiers defined In Appendix B: Data Flag/Qualifiers

ug/l: microgram/liter
USTCLP/C: TCLP Regulatory Levels

TABLE 11
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP) PARAMETERS

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	US-TCLP/C	RCWC-03 RCWC-03(2-4) 03/05/2007
1,1-Dichloroethylene ()	(ug/l)	700	2.1U
1,2-Dichloroethane ()	(ug/l)	500	1.7U
2,4,5-Trichlorophenol ()	(ug/l)	400000	1.7U
2,4,6-Trichlorophenol ()	(ug/l)	2000	1.6U
2,4-D ()	(ug/l)	10000	1.670U
2,4-Dinitrotoluene ()	(ug/l)	130	1.7U
Arsenic ()	(ug/l)	5000	31.0U
Barium ()	(ug/l)	100000	310J
Benzene ()	(ug/l)	500	1.9U
Cadmium ()	(ug/l)	1000	9.000U
Carbon tetrachloride ()	(ug/l)	500	5.7U
Chlordane ()	(ug/l)	30	0.2734U
Chlorobenzene ()	(ug/l)	100000	2.3U
Chloroform ()	(ug/l)	6000	1.7U
Chromium ()	(ug/l)	5000	10.7J
Endrin ()	(ug/l)	20	0.0099U
Heptachlor ()	(ug/l)	8.0	0.0324U
Heptachlor epoxide ()	(ug/l)	8.0	0.0173U
Hexachlorobenzene ()	(ug/l)	130	1.8U
Hexachlorobutadiene ()	(ug/l)	500	1.9U
Hexachloroethane ()	(ug/l)	3000	1.7U

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ug/l: microgram/liter
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PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	US-TCLP/C	RCWC-03 RCWC-03(2-4) 03/05/2007
Lead ()	(ug/l)	5000	34.2J
Lindane ()	(ug/l)	400	0.0101U
Mercury ()	(ug/l)	200	1.0849999U
Methoxychlor ()	(ug/l)	10000	0.0102U
Methyl ethyl ketone ()	(ug/l)	200000	5.7U
Nitrobenzene ()	(ug/l)	2000	2.2U
2-Methylphenol ()	(ug/l)	200000	2.1U
Pentachlorophenol ()	(ug/l)	100000	2.3U
4-Methylphenol ()	(ug/l)	200000	1.9U
1,4-Dichlorobenzene ()	(ug/l)	7500	1.7U
Pyridine ()	(ug/l)	5000	1.4U
Selenium ()	(ug/l)	1000	21.0U
Silver ()	(ug/l)	5000	6.000U
Silvex ()	(ug/l)	1000	1.670U
Tetrachloroethylene ()	(ug/l)	700	2.4U
Toxaphene ()	(ug/l)	500	0.1286U
Trichloroethylene ()	(ug/l)	500	2.3U
Vinyl chloride ()	(ug/l)	200	1.6U

Qualifiers defined In Appendix B: Data Flag/Qualifiers

ug/l: microgram/liter
USTCLP/C: TCLP Regulatory Levels

TABLE 12
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	RCWC-01 RCWC-01(S) 03/05/2007	RCWC-01 RCWC-01(2-4) 03/05/2007	RCWC-02 RCWC-02(S) 03/05/2007	RCWC-02 RCWC-02(2-4) 03/05/2007	RCWC-03 RCWC-03(S) 03/05/2007	RCWC-03 RCWC-03(2-4) 03/05/2007
Corrosivity (as pH)	(ppm)	7.1	5.2	7.2	5.6	5.7	6.8
Reactive Cyanide	(mg/kg)	10.00U	10.00U	10.00U	10.00U	10.00U	10.00U
Ignitability (degrees F)	(ppm)	140	140	140	140	140	140
Reactive Sulfide	(mg/kg)	40.00U	40.00U	40.00U	40.00U	40.00U	40.00U

mg/kg: milligram/kilogram

Qualifiers defined in Appendix B: Data Flag/Qualifiers

TABLE 13
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
RCRA METALS

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	6NYCRR Part 375 Industrial Use SCOs	RCWC-01 RCWC-01(S) 03/05/2007	RCWC-01 RCWC-01(2-4) 03/05/2007	RCWC-02 RCWC-02(S) 03/05/2007	RCWC-02 RCWC-02(2-4) 03/05/2007	RCWC-03 RCWC-03(S) 03/05/2007
Arsenic	(mg/kg)	16	[18.1]	3.650	[19.6]	2.150	11.7
Barium	(mg/kg)	10000	64.3	28.5	228	13.4	49.4
Cadmium	(mg/kg)	60	1.010	0.228J	6.000	0.065U	0.989
Chromium	(mg/kg)	6800	15.2	10.5	35.5	10.2	20.6
Lead	(mg/kg)	3900	230	18.9	1480	19.3	176
Mercury	(mg/kg)	5.7	0.040UD	0.049JD	[2278.87]	[38.300]D	[27.600]D
Selenium	(mg/kg)	6800	0.538J	0.559J	0.952J	0.194U	0.846J
Silver	(mg/kg)	6800	0.392J	0.229J	40.4	0.194U	0.879

mg/kg: milligram/kilogram
SCO: Soil Cleanup Objective

Qualifiers defined in Appendix B: Data Flag/Qualifiers

[ ]: Value exceeds 6 NYCRR Part 375 Industrial Use SCO

TABLE 13
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
RCRA METALS

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	6NYCRR Part 375 Industrial Use SCOs	RCWC-03 RCWC-03(2-4) 03/05/2007
Arsenic	(mg/kg)	16	3.360
Barium	(mg/kg)	10000	31.6
Cadmium	(mg/kg)	60	0.264J
Chromium	(mg/kg)	6800	11.3
Lead	(mg/kg)	3900	17.8
Mercury	(mg/kg)	5.7	0.056JD
Selenium	(mg/kg)	6800	0.203U
Silver	(mg/kg)	6800	0.298J

mg/kg: milligram/kilogram
SCO: Soil Cleanup Objective

Qualifiers defined in Appendix B: Data Flag/Qualifiers

[ ]: Value exceeds 6 NYCRR Part 375 Industrial Use SCO

TABLE 14
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	6NYCRR Part 375 Industrial Use SCOs	RCWC-01 RCWC-01(S) 03/05/2007	RCWC-01 RCWC-01(2-4) 03/05/2007	RCWC-02 RCWC-02(S) 03/05/2007	RCWC-02 RCWC-02(2-4) 03/05/2007	RCWC-03 RCWC-03(S) 03/05/2007
Aroclor 1016	(ug/kg)		3.0U	2.8U	3.1U	2.7U	3.1U
Aroclor 1221	(ug/kg)		4.7U	4.3U	4.8U	4.2U	4.9U
Aroclor 1232	(ug/kg)		7.0U	6.5U	7.2U	6.3U	7.3U
Aroclor 1242	(ug/kg)		6.3U	5.7U	6.4U	5.6U	6.5U
Aroclor 1248	(ug/kg)		3.0U	2.8U	3.1U	2.7U	3.2U
Aroclor 1254	(ug/kg)		2.0U	1.8U	1400D	1.8U	2.1U
Aroclor 1260	(ug/kg)		5.0U	4.6U	5.1U	4.5U	5.2U
Total PCBs (subsurface soil)	(ug/kg)	25000	0	0	1400	0	0

ug/kg: microgram/kilogram
SCO: Soil Cleanup Objective

Qualifiers defined in Appendix B: Data Flag/Qualifiers

[ ]: Value exceeds 6 NYCRR Part 375 Industrial Use SCO

TABLE 14
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
POLYCHLORINATED BIPHENYLS (PCBs)

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	6NYCRR Part 375 Industrial Use SCOs	RCWC-03 RCWC-03(2-4) 03/05/2007
Aroclor 1016	(ug/kg)		2.8U
Aroclor 1221	(ug/kg)		4.4U
Aroclor 1232	(ug/kg)		6.6U
Aroclor 1242	(ug/kg)		5.9U
Aroclor 1248	(ug/kg)		2.9U
Aroclor 1254	(ug/kg)		1.9U
Aroclor 1260	(ug/kg)		4.7U
Total PCBs (subsurface soil)	(ug/kg)	25000	0

ug/kg: microgram/kilogram
SCO: Soil Cleanup Objective

Qualifiers defined in Appendix B: Data Flag/Qualifiers

[ ]: Value exceeds 6 NYCRR Part 375 Industrial Use SCO

TABLE 15
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
PESTICIDES AND HERBICIDES

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	6NYCRR Part 375 Industrial Use SCOs	RCWC-01 RCWC-01(S) 03/05/2007	RCWC-01 RCWC-01(2-4) 03/05/2007	RCWC-02 RCWC-02(S) 03/05/2007	RCWC-02 RCWC-02(2-4) 03/05/2007	RCWC-03 RCWC-03(S) 03/05/2007
2,4,5-T	(ug/kg)		42.3U	38.7U	43.0U	36.9U	43.4U
2,4-D	(ug/kg)		42.3U	38.7U	43.0U	36.9U	43.4U
2,4-DB	(ug/kg)		42.3U	38.7U	43.0U	36.9U	43.4U
4,4-DDD	(ug/kg)	180000	0.85U	0.76U	0.86U	0.75U	0.86U
4,4-DDE	(ug/kg)	120000	0.95U	0.86U	0.97U	0.84U	0.97U
4,4-DDT	(ug/kg)	94000	0.87U	0.79U	0.89U	0.77U	3.9P
Aldrin	(ug/kg)	1400	1.5U	1.3U	1.5U	1.3U	1.5U
alpha-BHC	(ug/kg)	6800	0.77U	0.70U	0.79U	0.68U	0.79U
alpha-Chlordane	(ug/kg)		1.0U	0.91U	1.0U	0.89U	1.0U
beta-BHC	(ug/kg)	14000	1.1U	0.95U	1.1U	0.93U	1.1U
delta-BHC	(ug/kg)	1000000	2.0U	1.8U	2.0U	1.7U	2.0U
Dicamba	(ug/kg)		42.3U	38.7U	43.0U	36.9U	43.4U
Dichlorprop	(ug/kg)		42.3U	38.7U	43.0U	36.9U	43.4U
Dieldrin	(ug/kg)	2800	0.99U	0.90U	1.0U	0.88U	1.0U
Dinoseb	(ug/kg)		42.3U	38.7U	43.0U	36.9U	43.4U
Endosulfan I	(ug/kg)	920000	1.1U	0.96U	1.1U	0.94U	1.1U
Endosulfan II	(ug/kg)	920000	1.1U	1.0U	1.2U	1.0U	1.2U
Endosulfan sulfate	(ug/kg)	920000	1.3U	1.2U	1.3U	1.1U	1.3U
Endrin	(ug/kg)	410000	1.0U	0.93U	1.0U	0.91U	1.0U
Endrin aldehyde	(ug/kg)		1.2U	1.1U	1.2U	1.1U	1.2U
Endrin ketone	(ug/kg)		0.99U	0.90U	1.0U	0.88U	1.0U

ug/kg: microgram/kilogram
SCO: Soil Cleanup Objective

Qualifiers defined in Appendix B: Data Flag/Qualifiers

[ ]: Value exceeds 6 NYCRR Part 375 Industrial Use SCO

TABLE 15
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
PESTICIDES AND HERBICIDES

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	6NYCRR Part 375 Industrial Use SCOs	RCWC-01 RCWC-01(S) 03/05/2007	RCWC-01 RCWC-01(2-4) 03/05/2007	RCWC-02 RCWC-02(S) 03/05/2007	RCWC-02 RCWC-02(2-4) 03/05/2007	RCWC-03 RCWC-03(S) 03/05/2007
gamma-Chlordane	(ug/kg)		1.1U	0.95U	1.1U	0.93U	1.1U
Heptachlor	(ug/kg)	29000	1.1U	1.0U	1.1U	0.99U	1.1U
Heptachlor epoxide	(ug/kg)		1.3U	1.2U	1.3U	1.1U	1.3U
Lindane	(ug/kg)	23000	0.87U	0.78U	0.88U	0.77U	0.89U
Methoxychlor	(ug/kg)		1.0U	0.94U	1.1U	0.92U	1.1U
Silvex	(ug/kg)	1000000	42.3U	38.7U	43.0U	36.9U	43.4U
Toxaphene	(ug/kg)		4.3U	3.9U	4.4U	3.8U	4.4U

ug/kg: microgram/kilogram
SCO: Soil Cleanup Objective

Qualifiers defined in Appendix B: Data Flag/Qualifiers

[ ]: Value exceeds 6 NYCRR Part 375 Industrial Use SCO

TABLE 15
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
PESTICIDES AND HERBICIDES

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	6NYCRR Part 375 Industrial Use SCOs	RCWC-03 RCWC-03(2-4) 03/05/2007
2,4,5-T	(ug/kg)		38.6U
2,4-D	(ug/kg)		38.6U
2,4-DB	(ug/kg)		38.6U
4,4-DDD	(ug/kg)	180000	0.77U
4,4-DDE	(ug/kg)	120000	0.87U
4,4-DDT	(ug/kg)	94000	0.79U
Aldrin	(ug/kg)	1400	1.4U
alpha-BHC	(ug/kg)	6800	0.70U
alpha-Chlordane	(ug/kg)		0.92U
beta-BHC	(ug/kg)	14000	0.96U
delta-BHC	(ug/kg)	1000000	1.8U
Dicamba	(ug/kg)		38.6U
Dichlorprop	(ug/kg)		38.6U
Dieldrin	(ug/kg)	2800	0.91U
Dinoseb	(ug/kg)		38.6U
Endosulfan I	(ug/kg)	920000	0.97U
Endosulfan II	(ug/kg)	920000	1.0U
Endosulfan sulfate	(ug/kg)	920000	1.2U
Endrin	(ug/kg)	410000	0.94U
Endrin aldehyde	(ug/kg)		1.1U
Endrin ketone	(ug/kg)		0.91U

ug/kg: microgram/kilogram
SCO: Soil Cleanup Objective

Qualifiers defined in Appendix B: Data Flag/Qualifiers

[ ]: Value exceeds 6 NYCRR Part 375 Industrial Use SCO

TABLE 15
LONG ISLAND RAILROAD
DELINEATION PHASE II SITE INVESTIGATION
ROCKVILLE CENTRE SUBSTATION
WASTE CHARACTERIZATION SOIL SAMPLE RESULTS
PESTICIDES AND HERBICIDES

PERIOD: From 03/05/2007 thru 03/05/2007 - Inclusive
SAMPLE TYPE: Soil

CONSTITUENT	SITE SAMPLE ID DATE	6NYCRR Part 375 Industrial Use SCOs	RCWC-03 RCWC-03(2-4) 03/05/2007
gamma-Chlordane	(ug/kg)		0.96U
Heptachlor	(ug/kg)	29000	1.0U
Heptachlor epoxide	(ug/kg)		1.2U
Lindane	(ug/kg)	23000	0.79U
Methoxychlor	(ug/kg)		0.95U
Silvex	(ug/kg)	1000000	38.6U
Toxaphene	(ug/kg)		3.9U

ug/kg: microgram/kilogram
SCO: Soil Cleanup Objective

Qualifiers defined in Appendix B: Data Flag/Qualifiers

[ ]: Value exceeds 6 NYCRR Part 375 Industrial Use SCO