Former Cibro Petroleum Terminal Site
Brownfield Cleanup Program Site No. C130153
Brownfield Cleanup Agreement Index No. W1-1075-05-09
Island Park, Nassau County, New York

REMEDIAL WORK PLAN

Submitted to
New York State Department of Environmental Conservation.
Region 1, Stony Brook, New York

Prepared for
Posillico Development Company at Harbor Island, Inc.
1750 New Highway
Farmingdale, New York 11735

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August 2012
Revision 1: October 2013
Revision 2: November 2017

CERTIFICATIONS

I, Steven D. Meersma, am currently a registered professional engineer licensed by the State of New York. I have primary direct responsibility for implementation of the remedial program for the Former Cibro Petroleum Terminal Site New York State Department of Environmental Conservation ("NYSDEC") Brownfield Cleanup Agreement ("BCA") Index No. W1-1075-05-09, Brownfield Cleanup Program ("BCP") Site No. C130153.

I certify that the BCP Site C130153 descriptions presented in this Remedial Work Plan ("RWP") are identical to the descriptions presented in the BCA and related amendments for the site.

I certify that this plan includes proposed use restrictions, Institutional Controls, Engineering Controls, and plans for operation and maintenance requirements applicable to the BCP Site C130153. This RWP requires that a Site Management Plan must be submitted, for approval by the NYSDEC, by Posillico Development Company at Harbor Island, Inc. ("PDC") (the "Applicant") for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the BCP Site C130153, including the proper maintenance of all remaining monitoring wells. I certify that this RWP has a plan for transport and disposal of soil, fill, fluids, and other material removed from the property under this plan, and that transport and disposal under my direction will be performed in accordance with all local, State, and Federal laws and requirements. To the extent it is under my control, exported material will be taken to facilities licensed to accept this material in full compliance with all local, State, and Federal laws.

I certify that this RWP has a plan for import of soil and other material and that, activities of this type will be in accordance with all local, State, and Federal laws and requirements.

I certify that that this RWP has a plan for nuisance control during the remediation and all invasive development work, including a dust, and odor suppression plan and that such plan is sufficient to control dust and odors and will prevent nuisances from occurring.

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

CERTIFICATIONS (Continued)

STATE OF NEW YORK
STEVEN DONALD MEEKMA
076572-1
LICENSED PROFESSIONAL ENGINEER

076572	11-28-17	
NYS Professional Engineer #	Date	Signature

It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by the New York State licensed engineer identified above in accordance with Section 7209(2), Article 130 of the New York State Education Law.

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LIST OF ACRONYMS

AST	Aboveground Storage Tank
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BGS	Below Ground Surface
COPECs	Contaminants of Potential Ecological Concern
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
CGI	Combustible Gas Indicator
COC	Certificate of Completion
DER-10	NYSDEC, Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation
DMM	Division of Materials Management
EPA	Environmental Protection Agency
FER	Final Engineering Report
GFI	Gannett Fleming, Inc.
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IC/EC	Institutional Control/ Engineering Control
LAW	LawGibb Group
NCDH	Nassau County Department of Health
NTU	Nephelometric Turbidity Unit
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
OM&M	Operations, Maintenance and Monitoring
PCB	Polychlorinated Biphenyl
PDC	Posillico Development Company at Harbor Island, Inc.
PID	Photoionization Detector
PPM	Parts per Million
QEA	Qualitative Exposure Assessment
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RIR	Remedial Investigation Report
RA	Remedial Action
RWP	Remedial Work Plan
SCG	Standard, Criteria and Guidance
SEQRA	State Environmental Quality Review Act
SoMP	Soils/Materials Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDEs	Sub-slab Depressurization Elements
SSC	Site Safety Coordinator
SSSCO	Site-specific Soil Cleanup Objective
SVOC	Semivolatile Organic Compound

LIST OF ACRONYMS (CONTINUED)

SWPPP	Storm Water Pollution Prevention Plan
TAGM	Technical and Administrative Guidance Memorandum
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TICs	Tentatively Identified Compounds
TOGS	Technical and Operational Guidance Series
USDOT	United States Department of Transportation
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

Site Description/Physical Setting/Site History

The Former Cibro Brothers Terminal Facility is located at the southern terminus of Washington Avenue in Island Park, Town of Hempstead, Nassau County, New York (hereinafter the "Site"). The 11.56-acre property is identified on Nassau County tax maps as Section 43, Block 381, Lots 35, 36, 102, 314, and 328. Surrounding land use consists primarily of single-family residential properties and schools. Currently, the property is zoned Residential.

The Site was an oil bulk storage and distribution facility from 1937 until site operations were terminated in or around 1990. Historic petroleum releases occurred during Cibro's former operations at the Site and have been investigated since 1988 when a New York State Department of Environmental Conservation ("NYSDEC") Spill Number (#88-05691) was opened. Cibro filed for bankruptcy in the same year as the opening of the Spill Case.

Blue Island Development, LLC ("Blue Island") purchased the property from the Bankruptcy Court on November 2, 2000. Posillico Development Company at Harbor Island, Inc. ("PDC") ("the Applicant"), entered into the NYSDEC Brownfield Cleanup Program ("BCP"). PDC seeks NYSDEC approval for development of residential and ancillary uses of the Site.

Summary of Historic Remedial Investigations

A series of environmental investigations were performed on the Site from 1993 to 2011. The environmental investigations identified petroleum-related contamination at the Site and characterized the extent of soil and groundwater contamination.

Qualitative Human Health Exposure Assessment

Based on the historic on and off-site investigations, contaminants in the Site include volatile organic compounds ("VOCs") and semivolatile organic compounds ("SVOCs") in soil and groundwater; and VOCs in soil gas. Dermal contact, ingestion of soil or groundwater, or inhalation of vapors or dust represent the potential routes of exposure. Potential receptors include construction workers during development, future on-site residents and visitors, future on-site maintenance workers, and off-site residents. The following exposure pathways are considered potentially complete: groundwater dermal contact by construction workers and future maintenance workers; soil dermal contact by construction workers and future maintenance workers; inhalation of vapors by on-site residents and visitors; inhalation of vapors and dust by construction workers, future maintenance workers, and off-site residents during construction.

One exposure pathway that will not be complete following the implementation of the remedy is inhalation of vapors originating from the Site by on-site or off-site residents. The installation, maintenance, and/or operation of vapor barriers and sub-slab depressurizations elements ("SSDEs") in all Site occupied buildings will prevent this pathway from being complete.

A site-specific Health and Safety Plan ("HASP") will be implemented during remediation, development, and future maintenance activities when soil, vapors or groundwater could become exposed. The HASP will establish procedures for the protection of on-site workers and off-site residents. A Site Management Plan ("SMP") will be implemented after the completion of the remedial action to govern post-remediation soil and groundwater disturbances.

Fish and Wildlife Resources Impact Analysis

The fish and wildlife resources impact analysis generally followed the framework of Appendix 3C of the Draft DER–10 technical guidance. Significant findings of the analysis are presented below.

The Site contains 1.5-acres of old field vegetation and 0.12-acres of vegetated tidal wetlands. The remainder of the Site is gravel and dirt associated with previous demolition activities and impervious surfaces such as roadways and building foundations. The old field vegetation area and the tidal wetlands area are considered fish and wildlife resources that could support populations of ecological receptors.

Potentially complete exposure pathways for human and ecological receptors were identified under the current use, construction/remediation phase, and future/potential future use scenarios. All exposure pathways will either be managed or effectively eliminated.

Summary of the Remedy

Remedial action objectives are presented in Section 3.2 and the Standards, Criteria, and Guidance are presented in Section 3.3 of this report. The following activities will be performed to achieve the remedial action objectives:

1. Implementation of the soil erosion and sediment control plan consistent with the Stormwater Pollution Prevention Plan ("SWPPP");
2. Implementation of a site-specific HASP during remediation, development and future maintenance activities when soil gas, soil or groundwater could become exposed. The HASP will establish procedures for the protection of on-site workers and off-site residents and workers;
3. Sorting and sampling of existing stockpiles of recycled concrete aggregate and soil. Soil with concentrations detected above the Site-specific Soil Cleanup Objective ("SSSCOs") will be either treated on-site or transported off-site for disposal;

4. Removal of concrete tank containments and foundation slabs and the anecdotal 3,000-gallon UST;
5. Investigation of areas under and immediately adjacent to the tank foundation slabs following their removal;
6. Partial removal of existing bulkhead and adjacent soils to allow construction of new bulkhead. Sediment sampling of the channel will also be completed prior to the bulkhead work;
7. Excavation of soil at concentrations above the SSSCOs to the maximum depth at which shoring, dewatering, or disruption of the peat layer are not required and off-site transportation and disposal of soil exceeding the numeric SSSCOs. Reasonable efforts will be made in each case to extend excavations to depths that achieve the SSSCOs. Excavation of soil with contaminant levels exceeding numeric SSSCOs may not be achievable below certain depths in the water table due to engineering and health and safety issues;
8. Post-excavation sampling to evaluate performance of the remedy;
9. Backfilling and restoration with reusable material in compliance with the Track 4 SSSCOs and imported material that will meet in the requirements of 6 NYCRR Part 375-6.7(d) or otherwise approved by the NYSDEC, or recycled concrete aggregate from other portions of the Site in compliance with 6 NYCRR Part 360;
10. The horizontal and vertical extent of excavations as well as the locations and elevations of post-excavation soil sampling points will be surveyed and mapped. Additionally, after installation, the location and elevation of the demarcation layer will be surveyed as well as final grade and permanent sheeting lines will be surveyed and mapped;
11. Placement of a cover system consistent with 6 NYCRR Part 375-3.8(e)(4)(iii) will consist either of structures such as buildings, pavement and sidewalks comprising the Site development, or a Clean Fill Cover Layer in areas where the two feet of exposed surface soil will exceed the applicable SSSCOs. Where the Clean Fill Cover Layer is required, it will be a minimum of two feet of soil meeting the requirements for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The Clean Fill Cover Layer will be placed over the Demarcation Layer. Any fill material brought to the Site will meet the requirements for the identified Site use as set forth in 6 NYCRR Part 375-6.7(d);
12. Preparation and submission of a FER to NYSDEC following implementation of the Remedial Action. The FER will provide the documentation that the remedial work required under this RWP was completed and performed in compliance with this plan;
13. The SMP will describe the engineering controls to be implemented following the completion of the Remedial Action;
14. All routinely occupied buildings will be constructed with sub-slab vapor barriers and sub-slab depressurization elements should soil vapor present a concern;
15. Implementation of a Site Management Plan that will describe the institutional and engineering controls ("ICs/ECs") includes: (1) an Engineering and Institutional Control Plan for implementation and management of IC/ECs; (2) a Monitoring and Management Plan for implementation of Site Monitoring including long-term and remedial performance groundwater monitoring; (3) a plan to activate the SSDEs should concerns with soil vapor intrusion arise. That will include the requirements for energizing the elements and preparing an operations and maintenance plan specifically for the

equipment utilized to energize the piping; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. ICs will be put in place that restrict the use of groundwater, the use of the property as a farm or vegetable garden, and preventing the use of the property for a less restrictive use and enforce the requirements of the Site Management Plan;

16. Recording environmental easements on the land, as appropriate, requiring implementation of all SMP activities; and,
17. Groundwater monitoring to assess performance of the remedy and attainment of groundwater standards and remedial action objectives.

1.0 INTRODUCTION

Posillico Development Company at Harbor Island, Inc. ("PDC") entered into the New York State Department of Environmental Conservation ("NYSDEC") Brownfield Cleanup Program ("BCP") Agreement (Index Number W1-1075-05-09) for BCP Site C130153.

Descriptions of the metes and bounds for the Site are included in Appendix A. PDC seeks NYSDEC approval for clean-up consistent with restricted residential and ancillary uses of the Site in accordance with 6 NYCRR § 375-1.8(g)(2)(ii).

This RWP summarizes the nature and extent of contamination as determined from data gathered during the historic investigations performed at the Site from 1989 to 2011 and summarized in Section 2.0. It provides an evaluation of Remedial Action alternatives and identifies a selected remedy. The selected remedy described in this document was developed in accordance with the procedures defined in the 6 NYCRR Part 375 regulations and NYSDEC Technical Guidance for Site Investigation and Remediation ("DER-10") and complies with all applicable standards, criteria, and guidance. The selected remedy described in this document also complies with all applicable Federal, State, and local laws, regulations and requirements. The NYSDEC and New York State Department of Health ("NYSDOH") will determine whether the Site poses a significant threat to human health and the environment. The Remedial Investigation ("RI") for the Site did not identify fish and wildlife resources that will be impacted by the project.

1.1 Site Location and Description

The Former Cibro Brothers Terminal Facility is located at the southern terminus of Washington Avenue in Island Park, Town of Hempstead Nassau County, New York (hereinafter the "Site"). The 11.56-acre property is identified on Nassau County tax maps as Section 43, Block 381, Lots 35, 36, 102, 314, and 328. The property was zoned Y Industrial District when the Site entered into the BCP. PDC recently received a zoning change from Y-Industrial to CA-Residential.

The Site layout is shown on Figure RWP-2. With the exception of a small building to the south and several concrete bases used to support aboveground storage tanks ("ASTs") that are no longer on the property, all above-grade structures were removed prior to 2000. Most of the Site is covered by vegetation, soil stockpiles, recycled concrete aggregate stockpiles or exposed soil, with the remainder covered by asphalt-paved roadways and the previously mentioned concrete tank bases. Most of the shoreline is supported by a bulkhead, except for a portion to the west, which is at sea level and contains a mapped wetland as defined under Article 25 of the NYS Environmental Conservation Law.

1.2 Contemplated Redevelopment Plan

The Remedial Action to be performed under the RWP is intended to make the Site protective of human health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use is described here to provide the basis for this evaluation.

The planned future use of the Site is restricted residential development, which includes residential buildings and ancillary uses. New buildings to be constructed on the private development parcels will be slab-on-grade construction, supported by piles, with no basement or subbasement levels. New roads with subsurface utilities will be constructed to serve the private parcels and other areas of the Site. The conceptual layout for the redevelopment is shown on Figure RWP-3.

1.3 Description of Surrounding Property

Residential properties border the site to the north and northwest, and an operating marina borders the Site to the southwest. Surface water bodies border the Site on three sides: Island Park Canal to the east; Wreck Lead Channel to the south; and Simmons Hassock Creek to the west. The surrounding land uses and sensitive receptors within one-half mile of the Site are shown on Figure RWP-4.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The Site was investigated from 1989 to 2011 under the direction of the NYSDEC and NYSDOH. Presented in this Section is a summary of the individual investigations with comparisons to proposed criteria that are applicable, relevant, and appropriate (refer to Section 3.3 – Standards, Criteria and Guidance).

2.1 Summary of Investigations

2.1.1 Subsurface Investigations, Inc.

Initial Soil Investigation

Subsurface Investigations, Inc. ("SI") evaluated soil and groundwater conditions on behalf of Cibro and issued a draft Remedial Investigation/Feasibility Study report in 1993, and a supplemental soils and groundwater cover letter on June 21, 1994. The investigation found indications of releases of petroleum hydrocarbons from historical Site operations that resulted in impacts to soil and groundwater quality. As reported in the Gannett Fleming Inc. ("GFI") Final Remedial Investigation, the available version of this report is incomplete and generally does not include figures depicting sampling locations.

The investigation included the digging and sampling of forty-five test pits to groundwater on a 100 by 100 foot grid. Soil samples from each pit were collected approximately 6-inches above the water table. Field screening reported stained soil, product, or petroleum odor in approximately one quarter of the test pits. Based on field screening results, 31 samples were selected for total petroleum hydrocarbon ("TPH") analysis using Method 418.1. Five of the 31 samples were selected at random and further analyzed for semivolatile compounds ("SVOCs") using Method 8270. An additional five samples collected near above ground storage tanks ("ASTs") that stored gasoline were analyzed for benzene, toluene, ethylbenzene and xylenes ("BTEX") using Method 8010.

TPH concentrations ranged from less than the laboratory reporting limit to 25,700 milligrams per kilogram ("mg/kg"). The concentration of total SVOC tentatively identify compounds ("TICs") in the samples selected for analysis ranged from approximately 31.6 mg/kg to 407.2 mg/kg). The concentration of SVOC TICs in three of the five samples exceeded the site-specific Soil Clean-up Objectives ("SSSCOs"). The concentration of individual SVOC constituents in all samples did not exceed the Restricted-Residential Use Soil Cleanup Objective ("SCO"). Polychlorinated biphenyls ("PCBs") were detected in two samples in the tidal wetlands portion of the Site, with concentrations reported at approximately 4.2 mg/kg and 0.9 mg/kg.

The total concentration of BTEX in the five samples collected near the ASTs ranged from less than the laboratory-reporting limit to 0.4 mg/kg. None of the BTEX constituents were detected above Restricted-Residential Use SCO. A sampling location map was not available and tables presenting sampling results were not created due to the inability to spatially locate the data.

Initial Soil Investigation – Second Round

As a result of the concentrations of PCBs detected, eight test pits were dug in the vicinity of the sampling locations, near the southwest property boundary, to better characterize the extent of PCB residuals detected during the initial sampling round. Fifteen soil samples collected between 0.5 to 3.5 feet below grade. Three samples contained total PCBs at concentrations exceeding the 1 mg/kg Restricted-Residential SCO.

In addition to the delineation of PCB-impacts during the second round of SI's investigation, samples were collected for SVOC analysis in the vicinity of the samples with elevated concentrations of TPH. All samples exceeded the SSSCO for total SVOC TIC concentration and ranged from 101.9 mg/kg to 256.9 mg/kg. Individual SVOC constituents were not detected at concentrations exceeding the Restricted-Residential SCO in any of the samples. A sampling location map was not available and tables presenting sampling results were not created due to the inability to spatially locate the data.

Initial Soil Investigation – Third Round

In June 1994, SI performed additional soil sampling near the southwest property boundary to further define the extent of PCB residuals. A grid with 30-foot spacing was used to guide the sampling and soil samples were collected at 6 to 12-inches below grade at each grid node. The samples were analyzed in the field for PCBs using immunoassay test kits. Of the 20 samples collected, eight contained PCBs at concentrations estimated between 1 mg/kg to 4 mg/kg, and one sample contained PCBs at concentrations estimated between 0.5 and 1 mg/kg. PCB concentrations in the remaining 11 samples did not exceed the detection limit of the test kit. SI indicated that one sample was submitted to a fixed laboratory for confirmation analysis, but the analytical results were not available at the time their report was issued. Based on the field screening sampling results, SI concluded that the extent of PCB-impacted soil was approximately 45 feet by 60 feet. A sampling location map was not available and tables presenting sampling results were not created due to the inability to spatially locate the data.

Initial Groundwater Investigation

Twelve monitoring wells were installed at the facility in the late 1980s. Soil from monitoring well boreholes was analyzed for BTEX, dichlorobenzene and lead.

One or more individual BTEX constituents were detected in all samples, with total BTEX concentrations ranging from 0.097 mg/kg to 2.2 mg/kg. The concentrations of benzene, toluene and xylenes in all samples did not exceed the Restricted Residential SCO. Lead was detected in two of the samples below the Restricted-Residential SCO.

Three rounds of groundwater sampling were performed in April 1989, May 1991 and January 1992 by other parties (tables showing sample results for these three groundwater sampling events are not presented in this RWP because the sample locations were not available). A fourth round by SI was performed in April 1994.

Wells W-5 through W-12 were sampled during the April 1989 groundwater sampling event. The data indicate that total BTEX concentrations ranged from 3.3 microgram per liter ("µg/L") to 197.5 µg/L, with the highest concentration in the sample from a well near Tank 11 on the northern end of the property. Individual BTEX constituents were detected in all but two samples at concentrations exceeding the NYSDEC Class GA Standards and Guidance Values ("Class GA Values"). Groundwater samples from six wells were also analyzed for TPH. TPH was not detected in any sample at a concentration exceeding the laboratory reporting limit.

All 12 wells were sampled in May 1991 for BTEX. The laboratory data indicate total BTEX concentrations ranged from less than the laboratory reporting limit to 34.5 µg/L, with the highest concentration in the sample from a well near Tank 4 on the southeast portion of the property. Only two samples contained individual BTEX constituents at concentrations exceeding Class GA Values.

The entire monitoring well network was again sampled in January 1992 for BTEX and SVOCs. Samples from ten of the 12 monitoring wells did not contain BTEX constituents at concentrations exceeding the laboratory reporting limits. Total BTEX concentrations in the samples from the two remaining wells were 31.3 µg/L and 74.6 µg/L. The concentrations of individual BTEX constituents in both samples exceeded Class GA Values. The concentration of total SVOC TICs ranged from less than the laboratory reporting limit to 188.4 µg/L near the northwest comer of the property. Only one sample contained individual SVOC constituents at concentrations exceeding Class GA Values.

Second Groundwater Investigation

Based on the historical groundwater sampling results, SI installed six additional wells designated MW-1 through MW-6 to address gaps in the monitoring well network coverage. The six new wells and four existing wells (W-2, W-4, W-8 and W-11) were sampled in April 1994 for volatile organic compounds ("VOCs") and SVOCs. MW-1 was also sampled for PCBs.

The concentration of total VOC TICs ranged from 6 µg/L to 759 µg/L, with the highest concentration found in the sample from on the east side of Tank 10. Except for two samples, the detected compounds were made up entirely of TICs. All but one sample did not contain individual VOC compounds at concentrations exceeding Class GA Values. The concentration of SVOC TICs ranged from 54 µg/L to 666 µg/L. Two samples contained SVOC constituents at a concentration exceeding the NYSDEC groundwater standard. PCBs were not detected in the sole sample collected at a concentration exceeding the laboratory reporting limit. See Table RWP-1 for groundwater samples results for the wells for which locations are known.

2.1.2 LawGibb Group

Initial Soil Investigation

In December 2000 LawGibb Group ("LAW") advanced seventy soil borings (SB-1 through SB-70) using a Geoprobe. Soil samples were, in general, collected at 0 to 18-inches below grade (shallow unsaturated zone); 24 to 48-inches below grade (water table/smear zone); and near the top of the underlying peat layer (typically seven to nine-feet below grade) at each location. All soil samples were analyzed for TPH using Method 418.1.

In the shallow zone, TPH concentrations ranged from 37 mg/kg to 3,970 mg/kg, with the highest concentrations in the samples from the areas near Tanks 1 through 4, 12 and 13, and the former loading dock. TPH concentrations in the intermediate zone ranged from 15 mg/kg to 3,580 mg/kg, with the highest concentrations in the samples from areas downgradient of Tanks 2, 6, 7 and 9, and the former loading dock. The deep zone soil contained TPH at concentrations ranging from 28 mg/kg to 2,230 mg/kg, with the highest concentrations found in an area of limited extent downgradient of Tanks 12 and 13. Most deep zone samples did not contain TPH at concentrations exceeding 200 mg/kg.

Initial Groundwater Investigation

Six groundwater monitoring wells (LMW-1 through LMW-5 and MW-3R) were installed in December 2000. The new wells and existing wells MW-1, MW-2, MW-6, OW-1, W-2, W-11 and W-12 were sampled in January 2001 for the NYSDEC STARS list VOCs and SVOCs using Methods 8021 and 8270.

According to the LAW report, groundwater flow at the time of sampling was predominantly east and south from a northwest/southeast-trending groundwater divide near the southwest corner of the property. BTEX constituents were detected in samples from two of the 13 wells, LMW-1 (l59.l µg/L) near the former loading racks, and LMW-2 (59.99 µg/L) on the east side of Tank 9. The concentration of benzene and ethyl benzene in LMW-1 and ethylbenzene and xylenes in

LMW-2 exceeded the NYSDEC groundwater standards in effect at the time the work was done. The concentration of VOC TICs (excluding BTEX) ranged from less than the laboratory reporting limits to approximately 446 µg/L (LMW-1). One or more individual VOC constituents in the samples from MW-3 R, LMW -1 and LMW-2 were detected at concentrations exceeding Class GA Values. See Table RWP-2 for VOC groundwater sample results.

SVOCs were detected in samples from 9 of the 13 wells. Except for naphthalene, none of the individual SVOC constituents were found at concentrations exceeding the Class GA Values. Naphthalene was detected in samples LMW-1, LMW-2 and MW-3R at 420 µg/L, 148 µg/L and 118 µg/L, respectively. See Table RWP-3 for SVOC groundwater sample results.

Cleanup Plan for Soil and Groundwater

Based on its soil investigation findings, LAW proposed to segregate and remediate soil by TPH content. Soil with TPH content less than 500 mg/kg was considered "clean" for the purposes of reuse on the property, provided that confirmation sampling for individual STARS list VOCs and SVOCs constituents demonstrated that the material met the NYSDEC cleanup criteria.

Using the findings of its initial TPH sampling program, LAW designated a "clean area" where TPH concentrations were typically less than 500 mg/kg. TPH concentrations greater than 500 mg/kg are generally located on the east side of the boundary. LAW proposed a supplemental soil sampling program to further refine the TPH boundary location. As a separate task, LAW also proposed to excavate and dispose of off-site the soil from the area of PCB-impacted soil identified by SI in the early 1990s.

For groundwater, LAW proposed the use of an oxidant to enhance subsurface biological activity and increase the rate of petroleum hydrocarbon degradation. LAW recommended injecting a magnesium peroxide-based oxidant into the water table using a Geoprobe, focusing on the area where the highest concentrations of petroleum residuals in groundwater were found, at wells LMW-1, LMW-2 and MW-3R.

Supplemental Soil and Groundwater Investigation

LAW performed additional soil and groundwater sampling in May 2001 to confirm and refine the proposed "clean area" TPH boundary and to address other issues raised by NYSDEC. The scope of work consisted of:

- Sampling soil from 0 to 2-feet below grade at 21 locations (SS-1 through SS-21) and analyzing the samples for STARS list VOCs and SVOCs;
- Analyzing 20-percent of the samples for RCRA metals;

- Sampling eight additional borings for PCBs in the area of the PCB-impacted soil identified by SI; and
- Sampling "clean area" monitoring wells LMW-3, LMW-4, OW-l, W-2, MW-1, MW-2, MW-3R, W-11 and W-12 for VOCs and SVOCs.

VOCs were not detected in any soil sample at a concentration exceeding the Restricted-Residential SCO. None of the RCRA metals were found at concentrations exceeding Restricted-Residential SCOs. The SVOC data generally confirmed the initial "clean area" TPH boundary, with only a few samples containing a limited number of chemical constituents at concentrations greater than cleanup guidelines (benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; and dibenzo(a,h)anthracene). Soil samples from the PCB impact area did not reveal the presence of PCBs at concentrations exceeding Restricted-Residential Use SCO. See Table RWP-4 for SVOC soil sample results.

The groundwater sampling data shows that individual VOC and SVOC constituents were each detected in only one well at concentrations exceeding Class GA Values. Benzene and naphthalene were found in the sample from well MW-3R; and acenaphthene, benzo(a)anthracene and chrysene were found in the sample from W-11 at concentrations exceeding standards. No other groundwater sample contained VOCs or SVOCs at concentrations greater than the cleanup criteria. See Table RWP-5 for VOC and SVOC groundwater sample results.

Revised Cleanup Plan for Soil and Groundwater

Based on the findings of its supplemental soil and groundwater sampling, LAW amended its proposed remedial approach by incorporating limited soil capping and additional excavation as part of its overall cleanup plan.

2.1.3 Gannett Fleming

Soil Investigation

GFI performed additional work necessary to finalize a complete nature and extent Remedial Investigation (“RI”) of the Site pursuant to BCP requirements, and to develop the information needed to evaluate and select an appropriate remedy pursuant to a Pilot Test Work Plan submitted with the BCP application.

In 2007, GFI sampled eighteen test pits in the area formerly characterized by only TPH. Soil samples from each test pit were collected at intervals generally corresponding to 0 to 2-ft below grade; 2 to 4-ft below grade; and 4 to 7-ft below grade to describe the lithology, and better assess the vertical distribution of petroleum residuals. A total of 45 samples taken from eighteen test pits were analyzed for TPH, SVOC and VOC content. The TPH data was collected at the request of the NYSDEC to compare with the data collected by LAW in 2000.

The laboratory data indicate that the highest concentration of SVOCs was found in the shallow and mid zone soil. Soil samples from 11 of the 18 test pit locations (TP-1, TP-2, TP-3, TP-4, TP-5, TP-6, TP-7, TP-10, TP-11, TP-17 and TP-18), contained VOC TICs and/or SVOC TICs at concentrations exceeding SSSCOs. The SVOC content decreased markedly at four feet below grade. See Table RWP-6 for SVOC soil sample results and Table RWP-7 for VOC soil sample results.

Soil and Groundwater Pilot Test

In 2006, soil from eight (8) test pit excavations was stockpiled and subsequently used for feedstock for the first two rounds of pilot tests. Of the three soil pilot test technologies tested by GFI (biopile, land farming and ex-situ oxidation), ex-situ oxidation produced the most reliable results in the shortest amount of time. Chemical oxidation was successful in reducing the concentrations of SVOCs and VOCs in soil to less than the Unrestricted Use SCOs, especially when combined with mechanical screening and homogenization to reduce treatment variations. The biopile and land farming technologies were also successful in reducing the concentration of individual SVOC constituents to levels less than the Unrestricted Use SCOs. Both technologies, however, were time consuming and did not provide consistent or better results compared to the more aggressive ex-situ chemical oxidation process. Post-treatment groundwater sampling indicated that the application of nitrate compounds to groundwater was successful in enhancing biodegradation, and in reducing the concentration of SVOCs and VOCs.

Soil Vapor Study

Soil vapor was tested along the northern property line near the residential neighborhood at four (4) locations, and on post-treated soil from the ex-situ oxidation. Although, in general, soil vapors from the test pits in the petroleum-contaminated area were evident, no soil vapors were detected above applicable standards along the northern property line. NYSDOH has not yet developed guidance on petroleum related vapors. Therefore, a conservative approach to evaluating the results was taken. Indoor air standards were compared to the outside soil vapor results. If outside soil vapor constituents did not exceed the indoor air standards, then this Remedial Investigation ("RI") assumed such levels would exist at lower concentrations if detected indoors. Therefore, GFI compared United States Environmental Protection Agency ("USEPA") and New Jersey residential indoor air standards to the results of both sets of samples and found that no constituents exceeded the target indoor air concentrations used by either agency.

Groundwater Study

GFI reviewed the historical groundwater monitoring database. Previous studies collected groundwater quality information from eighteen different monitoring wells installed at various locations on the property. Groundwater at two of these locations had petroleum constituents that exceeded groundwater standards. Only one of the four groundwater monitoring wells located along the residential/industrial boundary had one chemical detected that was related to the petroleum releases, and that detection was below the applicable standards.

Qualitative Exposure Assessment ("QEA")

A QEA was performed to determine the qualitative health risks posed to humans, fish and wildlife by the chemicals identified in the soil and groundwater on the Site and at the Site's property boundary line. The analysis determines if an exposure pathway exists, and if so, the extent to which it can be mitigated. If there is no pathway, there is no quantifiable risk.

The QEA found a pathway for industrial use that could be mitigated with a proper soil management plan and various cap and cover techniques. However, the QEA identified pathways that would require more extensive mitigation under a potential residential use scenario due to the long-term habitation of the Site with different exposure rates. In general, the QEA found that the exposure potential will be adequately mitigated once the contaminated soil is remediated to applicable residential SCOs.

2.1.4 Posillico Consulting

May 13, 2010 Soil Sampling

Under NYSDEC oversight, PDC collected soil samples from three locations at depths ranging from four (4) to ten (10) feet. PDC also collected one sample from a test pit bottom and a previously-treated stockpile. The samples were analyzed by an ELAP-approved laboratory for SVOCs and SVOC TICs. None of the 20 soil samples collected exceeded the Restricted-Residential SCOs. See Table RWP-8 for SVOC soil sample results.

Supplemental Remedial Investigation - Soil

NYSDEC submitted a stipulation to PDC on November 9, 2010 which included a list of activities to be performed prior to construction. During July and August 2011, soil and sediment samples were collected at 49 locations up to five depths at each location. The samples were examined in the field for gross contamination and volatile organic vapors, and were analyzed by an ELAP-approved laboratory for ten VOC and thirty SVOC Tentatively-Identified Compounds

("TICs"). A total of 93 samples were analyzed for VOCs and SVOCs, 19 samples for lead, 9 samples for PCBs and 8 samples for TAL metals.

None of the samples meet the criteria in the grossly-contaminated soil definition; namely the soil did not contain free product and did not exhibit a PID reading above the 250 PPM limit. Of the samples analyzed for TAL metals, none exceeded the Restricted-Residential SCOs. Only one sample from location SL-42A slightly exceeded the PCB standard of 1,000 µg/kg. Only one sample, SB-44B, exceeded the Restricted-Residential SCOs for benzo(a)anthracene, benzo(a)pyrene, and benzo(a)fluoranthene. Soil samples from 18 of the 49 boring locations (SB-5, SB-6, SB-9, SB-10, SB-12, SB-13, SB-14, SB-15, SB-18, SB-19, SB-26, SB-37, SB-38, SB-39, SB-40, SB-41, SB-43, and SB-44), contained VOC TICs and/or SVOC TICs at concentrations exceeding SSSCOs. See Tables RWP-9, RWP-10, RWP-11 and RWP-12 for SVOC, VOC, TAL Metals, and PCB soil sample results, respectively.

Supplemental Remedial Investigation - Groundwater

In August 2011, PDC installed groundwater monitoring wells below the peat layer and in locations to fill gaps in the groundwater monitoring network. None of the 12 shallow wells and 3 deep wells contained free product when gauged prior to sampling.

Shallow wells MW-1, GW-2, MW-12, and MW-13 did not contain any detected chemicals. The highest concentrations and largest number of analytes were found in two shallow wells MW-3R and MW-15S, and two deep wells MW-15D and MW-17D. These wells are located closest to the southern property boundary, which is also the location of the former petroleum company's truck filling rack. SVOC(s) and/or VOC(s) were detected at concentrations exceeding the Class GA Values in the four wells. Of the three wells closest to the northern property boundary, only one (LMW-4) contained a constituent (acetone) exceeding the Class GA Value. One VOC was detected in the sample collected at MW-14 on the eastern portion of the Site that exceeded the Class GA Value. The concentration of 1,2,4,5-tetramethylbenzene at upgradient well LMW-2 exceeded the Class GA Value. See Table RWP-13 and RWP-14 for SVOC and VOC groundwater sample results, respectively.

2.1.5 Unrestricted Use SCOs

Soil sampling results were also compared to Unrestricted Use SCOs for the purposes of supporting the analysis of the Unrestricted Use alternative (see Section 3). In addition to the exceedances of the proposed Restricted-Residential SSSCOs summarized above, relatively few additional laboratory analytic results also exceeded the Unrestricted Use SCOs. Six (6) soil samples collected during the soil investigation in 2007 and three (3) collected during the supplemental RI in 2011 exceeded the Unrestricted Use SCO for the VOC acetone, a common lab contaminant. Two (2) additional soil samples from the 2011 supplemental RI exceeded Unrestricted Use SCOs for the VOCs shown in the table below:

Sample ID		TP-1	TP-2	TP-11	TP-12	TP-13	TP-14	SB-10B	SB-39B	SB-43B	SB-44C	SB-46B
Depth		0-2	0-2	2-4	2-4	2-4	2-6	0.5-3	0.5-3	0.5-3	3-7	0.5-3
Sampling Date		6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	6/7/2007	7/21/2011	8/3/2011	8/3/2011	8/3/2011	8/3/2011
Matrix		Solid	Solid	Solid	Solid	Solid	Solid	Soil	Solid	Solid	Solid	Solid
Units		µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
1,2,4-Trimethylbenzene	3,600	--	--	--	--	--	--	8,540	36,300	--	--	--
Acetone	50	60.5	75.6	76.7	66.2	83.1	71.8	--	--	297	188	179
Benzene	60	--	--	--	--	--	--	--	756	--	--	--
Ethylbenzene	1,000	--	--	--	--	--	--	--	3,010	--	--	--
n-Propylbenzene	3,900	--	--	--	--	--	--	--	9,260	--	--	--

Three (3) soil samples collected during the soil investigation in 2001, one (1) collected during the soil investigation in 2007 and two (2) collected during the supplemental RI in 2011 exceeded the Unrestricted Use SCOs for the SVOCs shown in the table below:

Sample ID		SS-3	SS-13	SS-17	TP-15	SB-44B	SB-47A
Depth		0-2	0-2	0-2	0-4	0.5-3	0-0.5
Sampling Date		5/14/2001	5/14/2001	5/14/2001	6/7/2007	8/3/2011	8/3/2011
Matrix		Solid	Solid	Solid	Solid	Solid	Solid
Units		µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Result	Result	Result	Result	Result	Result
Benzo(a)anthracene	1,000	1,080	2,550	5,760	--	1,260	--
Benzo(a)pyrene	1,000	--	2,600	3,840	--	1,080	--
Benzo(b)fluoranthene	1,000	1,330	3,780	6,610	--	1,210	--
Benzo(k)fluoranthene	800	--	2,770	3,590	993	1,150	981
Chrysene	1,000	1,300	2,920	5,720	--	1,430	--
Dibenz(a,h)anthracene	330	--	--	437	--	--	--

Four (4) soil samples collected during the supplemental RI in 2011 exceeded Unrestricted Use SCOs for the metals shown in the table below:

Sample ID		SB-9A	SB-23A	SB-42A	SB-49A
Depth		0-0.5	0-0.5	0-0.5	0-0.5
Lab Sample ID		1107290	1107318	118070	118070
Sampling Date		7/21/2011	7/21/2011	8/3/2011	8/3/2011
Matrix		Soil	Solid	Solid	Solid
Units		mg/kg	mg/kg	mg/kg	mg/kg
TAL METALS	Unrestricted Use SCO	Result	Result	Result	Result
Lead by SW846 6010/EPA 200.7	63	66.3	--	--	105
Chromium	30	--	--	120	--
Silver	2	--	--	13.8	--
Zinc	109	--	134	--	--

2.2 Summary of Findings

2.2.1 Soil

The findings of the Site investigations indicate that historic fill material and fine to medium grain sands exist above a peat layer which underlies the Site at approximately nine feet below grade, on average. (Figure RWP-6 indicates the top of peat layer elevation contours.) Analytical results were compared to the proposed Site-specific Soil Clean-up Objectives ("SSSCOs") (See Section 3.3). Refer to Figure RWP-7, which summarize the analytical results from the investigations that exceed the SSSCOs. Specific conclusions with regard to soil conditions are as follows:

1. In general, exceedances of SSSCOs were due to total VOC TICs and total SVOC TICs and not individual Target Compound List ("TCL") VOCs and SVOCs.
2. VOCs were detected at concentrations exceeding SSSCOs in 24 individual sampling locations. The highest concentrations of VOCs were detected in the vicinity of the truck filling rack in shallow and mid-zone soil.
3. SVOCs were detected at concentrations exceeding SSSCOs in 27 individual sampling locations. The highest concentrations of SVOCs were detected in the vicinity of the truck filling rack in shallow and mid-zone soil.
4. Petroleum-like odors were observed in the sampling locations predominately located in the southeastern portion of the Site.
5. No metals were detected at concentrations above the Restricted-Residential Use SCOs.
6. The frequency of exceedances of SSSCOs in surface and shallow soils was lower than that of deep soils.
7. As documented in the 2011 SRI, residual contamination exists to at least nine (9) feet bgs but no exceedances of SSSCOs were detected in the three (3) samples collected below the peat layer.
8. PCBs were historically detected at concentrations above the SSSCOs in the southwest portion of the Site in the tidal wetland area. Additional investigations in this area in 2001 did not indicate exceedances of SSSCO, only unrestricted SCOs. One sample in the 2011 data set from a different location than was sampled in the past slightly exceeded the SSSCO.

2.2.2 Groundwater

Overall, the groundwater sampling results indicate the presence of VOCs and SVOCs. Groundwater at the Site is tidally influenced. Figure RWP-8 shows the locations of the monitoring wells and the groundwater contaminant concentrations detected during the RI. Refer to Tables RWP-5, RWP-6 and RWP-12 through RWP-14 for a summary of sample analyses for groundwater.

Specific conclusions of the investigations with regard to groundwater are as follows:

1. Measured tidal fluctuations in groundwater surface elevation ranged from 0.14 feet to 3.08 feet in shallow wells. Generally, as would be expected, variability in groundwater

elevation resulting from tidal fluctuations decreases with increasing distance from the surrounding channels. Tidal fluctuation had no significant impact on groundwater flow direction. Groundwater flows radially away from the northwest portion of the Site towards the east-southeasterly direction, generally away from the adjacent residential areas.

2. VOCs were detected at concentrations exceeding Class GA values in seven wells historically sampled. The highest concentrations of VOCs were detected in the wells in the vicinity of the truck filling rack.
3. SVOCs were detected at concentrations exceeding Class GA Values in five wells historically sampled. The highest concentrations of SVOCs were detected in the wells in the vicinity of the truck filling rack.
4. Of the four monitoring wells located along the residential/industrial boundary, only one petroleum-related chemical was detected with a concentration below the Class GA Values.
5. The analytic data indicates a lesser degree of exceedances in the groundwater below the peat layer, in comparison to above the peat layer.
6. Based on the low levels of metals detected in Site soil, groundwater was not sampled for metals during the investigations.

2.2.3 Soil Gas

Soil vapor was tested along the northern property line near the residential neighborhood at four (4) off-site locations. No soil vapors were detected above applicable standards along the northern property line. An additional soil gas sample will be collected from the footprint of each of the eleven proposed residential buildings, as shown on Figure RWP-9 following the placement of the barrier layer. Mitigation of soil vapor intrusion will be completed, if necessary, via the activation of sub-slab vapor barriers and sub-slab depressurization elements installed beneath all routinely-occupied buildings if subsequent vapor sampling indicates a concern for soil vapor intrusion.

2.3 Significant Threat

The NYSDEC and NYSDOH will determine whether the BCP Site poses a significant threat to human health and the environment. Notice of that determination will be provided to the public. For purposes of this RWP, TRC has presumed a negative significant threat determination.

2.4 Site History

2.4.1 Past Uses and Ownership

The Site history is as briefly follows:

- Site was first used as an oil terminal in the 1940s by Oil Products, Inc. ("OPI," also referred to as "OPC");

- Cibro Petroleum ("Cibro") purchased property in 1973, and continued use as an oil terminal until early the 1990s, including 14 ASTs with 17,675,000 gallon storage capacity;
- Cibro declared bankruptcy in 1988;
- NYSDEC issued a spill number in 1988;
- Blue Island Development, LLC ("Blue Island") bought the Site in 2000; and
- PDC (contract vendee) submitted a BCP application in 2005, and Site investigation began thereafter pursuant to a fully executed BCA.

Figure RWP-5 provides a visual summary of the former industrial use of the Site over time.

OPI began operating a bulk fuel storage and distribution facility on the Site as early as the 1940s. In 1973, OPI sold the Site to Cibro, which continued to operate the facility until approximately 1988, but continued to own and conduct limited operations after they declared bankruptcy as a debtor in possession at this facility and its Albany terminal. No operations were being conducted at the Site, other than maintaining an oil boom, when Blue Island first visited the Site in the late 1990s.

Based on facility records and Site maps, the Site contained 14 ASTs with a total storage capacity of 17,675,000 gallons and one 3,000-gallon underground storage tank ("UST"), all of which were used to store various petroleum products, including fuel oil, kerosene and gasoline. Historical use of the Site as a petroleum bulk storage facility resulted in releases of stored materials that impacted soil, groundwater and surface water quality. Under OPI's ownership a spill of #4 fuel oil took place in the 1960s, and another spill that was quickly cleaned up occurred in 1979 into Wreck Lead Channel. However, details about the nature and extent of these earlier releases are not well documented. In 1988, a NYSDEC Spill Number 88- 05691 was opened to address a new spill and these historic releases. However, this was the same year that Cibro filed for bankruptcy.

Blue Island purchased the Site in November 2000 after all petroleum related operations had ceased on the Site. Prior to this date, Cibro had demolished and removed from the Site all the ASTs, with the exception of the tanks' concrete bases. According to reports prepared by prior consultants, the 3,000 gallon UST had been removed from the property prior to Cibro taking ownership. On November 17, 2000, Blue Island entered into a Stipulation Agreement with NYSDEC to remediate the property. Following a series of investigations to better establish the nature and extent of environmental impacts, Blue Island entered into a contract with PDC, that obligated PDC to procure zoning modifications for it intended residential use and to process the remediation of the Site through the Department's recently enacted statutory BCP. An application to the BCP was prepared by PDC, and submitted to NYSDEC on March 23, 2005. The application was approved and a BCA was executed by NYSDEC on April 14, 2006.

2.5 Geological Conditions

2.5.1 Geology

The Site is underlain by Cretaceous and Quaternary sediments, which rest unconformably on weathered Precambrian-aged biotite schist and gneissic bedrock. Depth to bedrock in the Long Island area ranges between 200 and 1,800 feet below grade. Figure RWP-6 provides a representation of the top of peat elevation across the Site based on the interpretation of boring logs. The late Cretaceous deposits are predominately associated with the Raritan and Magothy Formations, consisting of inter-bedded sand, gravel, silt and clay. Quaternary sediments of Pleistocene and younger age form the surficial deposits throughout the region and consist of sand, gravel, glacial till and associated outwash.

2.5.2 Hydrogeology

Site-specific hydrogeologic conditions consist of a tidally-influenced, unconfined aquifer within the shallow fill and glacial fluvial deposits underlying the property. Prior investigations encountered a peat layer approximately nine feet below grade. Depth to the water table varies as a result of tidal effects, but is approximately four to six feet below grade. Groundwater flows from the northwest comer of the property towards the east-southeast, and diffuses into the adjacent saltwater bodies.

A groundwater flow direction and tidal influence study was conducted by TRC in June 2012. TRC's letter report to Michael Posillico, dated June 22, 2012, presented the results of this study. The results of the Study indicate that groundwater elevations, reported with respect to mean sea level, ranged from 2.97 feet at well location MW-16S to 6.07 feet at well location MW-12 at high tide and from 2.30 at feet at well location MW-13 to 5.21 feet at well location MW-12 at low tide. The highest groundwater elevation at both the low and high tide events occurred at MW-12 in the northeastern corner of the Site. This may be the result of a storm sewer discharging into the canal just north of MW-12 and other discharge piping running just east of MW-12 that may have added water to the ground at this location.

Site-wide water table elevation measurements from shallow wells were used to determine groundwater flow direction during both high and low tides. Figure RWP-7 depicts the groundwater elevation contours measured at low tide on June 5, 2012. Groundwater was found to generally flow in a southerly direction, away from the residences located to the north of the Site and ultimately flows toward the channels located to the east and south of the Site.

Continuous measurements in on-site monitoring wells indicate that groundwater levels fluctuate in response to tidal fluctuations in the surrounding channels. The surface-water level measured at the bulkhead fluctuated 5.8 feet. Tidally-influenced fluctuations in shallow-well water levels ranged from a minimum of 0.14 feet at MW-GW1 and a maximum of 3.08 feet at MW-2. The well with the greatest measured overall tidal fluctuation of 4.91 feet was MW-15D. (The measured surface water tidal fluctuation between high and low tide was 5.83 feet.) Generally, variability in groundwater elevation attributable to tidal fluctuations decreased with increasing distance from the surrounding channels. Tidal fluctuation had no significant impact on groundwater flow direction.

The vertical gradients between the two monitoring well clusters (MW-15S/D and MW-16S/D) were calculated during high and low tides. These were -0.23 feet and +4.62 feet, respectively for MW-15S/D and -0.22 feet and 1.50 feet, respectively for MW-16S/D. The downward vertical gradient at low tide and the upward vertical gradient at high tide suggest that the peat layer at the Site impedes vertical groundwater movement between the shallow and deeper sediments.

2.6 Contamination Conditions

2.6.1 Conceptual Site Model of Site Contamination

The following conceptual model explains the nature and extent of the contaminants known to be present in the Site, the dominant fate and transport characteristics, potential exposure pathways and potential impacts to receptors. In summary, the conceptual model for the Site consists of a contiguous area of soil contamination caused by petroleum-related impacts attributed to historic oil storage and transfer. Contaminants in the Site presently pose minimal potential for risk to receptors unless soil, soil vapor, or groundwater are disturbed or exposed without appropriate engineering and institutional controls.

Visual and olfactory observations, field PID readings and chemical analyses indicate soil in the Site is impacted by former petroleum operations. SVOC and VOC composition of soil in the Site is attributable to former petroleum storage and transfer operations. Elevated VOC and SVOC concentrations were found to be concentrated in the southeast portion of the Site, especially in the vicinity of the truck filling rack where the depth of the peat layer is reportedly the greatest. Observations of free product, staining, odors, and elevated PID readings were more often recorded in boring logs in initial investigations. The decrease of visual and olfactory indications of petroleum-contamination during the 2007 and 2011 investigations indicates that the source has diminished in varying degrees since the termination of on-site petroleum operations.

Metals were not detected above Restricted-Residential SCO in soil and groundwater samples were not analyzed for metals.

Elevated levels of PCBs were historically encountered within the tidal wetlands area of the Site. Additional soil investigations completed in this area determined that PCBs did not exceed SSSCOs and verified that PCBs are not mobile at the Site. One surface soil sample in a different area within the tidal wetland jurisdictional area slightly exceeded the SSSCO. PCBs were not detected in groundwater.

Groundwater flows from the northwest corner of the property towards the east-southeast, and diffuses into the adjacent saltwater bodies. Measured tidal fluctuations in groundwater surface elevation ranged from 0.14 feet to 3.08 feet in shallow wells. Generally, as would be expected, variability in groundwater elevation resulting from tidal fluctuations decreases with increasing distance from the surrounding channels. A downward vertical gradient at low tide and an upward vertical gradient at high tide between shallow and deep wells suggest that the peat layer at the Site impedes vertical groundwater movement between the shallow and deeper sediments.

2.7 Qualitative Human Health Exposure Assessments

An evaluation of potential exposure pathways and potentially exposed human populations is presented in the Remedial Investigation Report ("RIR"). The evaluation addresses both potential on-site and off-site health impacts associated with the Site.

An exposure pathway consists of five elements: (1) a contaminant source, (2) a contaminant release, and transport mechanism, (3) a point of exposure, (4) a route of exposure, and (5) a receptor population. An exposure pathway is complete when all five elements of an exposure pathway are complete. Based on the RI and historical on and off-site investigations, contaminants in the Site include VOCs and SVOCs in soil and groundwater; limited PCBs in soil; and possibly VOCs in soil gas. Dermal contact, ingestion of soil or groundwater, or inhalation of vapors or dust represent the potential routes of exposure. Potential receptors include construction workers during development, future on-site residents and visitors, future on-site maintenance workers, and off-site residents.

Considering the future remediation and development activities and institutional and engineering controls that will restrict future use, the following exposure pathways are considered incomplete:

- Groundwater Ingestion: Use of groundwater in this area of Nassau County is prohibited as a source of potable water; therefore, this exposure pathway is not complete for on-site and off-site residents. Also, environmental easements will apply to groundwater, prohibiting its use.

- Soil dermal contact by future on-site residents: After completion of remediation and development activities, the soil in the Site will be covered by the cover system, thereby preventing future exposure of residents to any residual contaminated soil.

- Inhalation of vapors by on-site residents, off-site residents, and visitors: Future development includes the construction of a vapor barrier and sub-slab depressurization elements in all occupied buildings. If post-construction air sampling identifies elevated concentrations of VOCs, the sub-slab depressurization elements will be activated to minimize the potential for intrusion of VOCs into future building spaces and mitigate this exposure pathway. Mitigation measures during remediation will be employed that will prevent the off-site migration of soil vapor and, therefore, prevent the exposure of off-site residents to soil vapor from the Site.

The following exposure pathways are considered potentially complete:

- Groundwater dermal contact by construction workers and future maintenance workers: Potential remedial alternatives and future construction and maintenance activities (e.g., buried utility repairs) would require excavation below the water table, which could result in dermal contact with groundwater.

- Soil dermal contact by construction workers and future maintenance workers: Potential remedial alternatives and future construction and maintenance activities (e.g., utility repairs) could result in contact with on-site contaminated soil.

- Inhalation of vapors and dust by construction workers and future maintenance workers: Potential remedial alternatives and future construction and maintenance activities (e.g., utility repairs) could result in the generation of and exposure to contaminated vapors and dust.

- Inhalation of vapors and dust by off-site residents: Remedial alternatives and future construction activities (e.g., utility repairs) could result in the generation of contaminated vapors and dust that have the potential to migrate off-site.

A site-specific Health and Safety Plan ("HASP") will be implemented during remediation, development and future maintenance activities when soil gas, soil or groundwater could become exposed. The HASP will establish procedures for the protection of on-site workers. A Site

Management Plan ("SMP") will be implemented after the completion of the Remedial Action to govern post-remediation soil and groundwater disturbances.

2.8 Fish and Wildlife Resources Impact Analysis

The following is a summary of the Fish and Wildlife Qualitative Exposure Assessment prepared by Gannett Fleming, Inc. and reported in the Final Remedial Investigation Report dated May of 2008.

- Risks are evaluated using a conceptual ecological site model.
- Only surface soil and surface water were considered in the model.
- Old-field vegetation and tidal wetlands were evaluated.
- None of the chemicals in the soil exceeded the Fish and Wildlife standards.

Ecological exposures to contaminated Site surface soil or surface water during and after the remediation are evaluated in the context of an Ecological Conceptual Site Model ("Ecological Model"). Subsurface soil and groundwater were not considered in the Fish and Wildlife Qualitative Exposure Assessment (QEA) because ecological receptors are not typically exposed to these media. The Ecological Model describes potential links between contaminant source(s) and ecological resources. The Ecological Model considers potential exposures to contamination and potential transport of contamination off-site.

The Site contains 1.5-acres of old field vegetation and 0.12-acres of vegetated tidal wetlands. The remainder of the Site is gravel and dirt associated with previous demolition activities and impervious surfaces such as roadways and building foundations. According to the Fish and Wildlife Resources Impact Analysis Decision Key presented in Appendix 3C of DER-10, the old field vegetation area and the tidal wetlands area are considered fish and wildlife resources that could support populations of ecological receptors.

Ingestion is the most likely potential exposure pathway that exists for species utilizing the Site's ecological resources. Two potential routes of ingestion exist: the incidental ingestion of surface soil, and the ingestion of prey that have been in contact with surface soils.

The great blue heron and marsh wren are species that can typically be found in the Site's tidal wetland area. Great blue herons inhabit a variety of freshwater and marine areas, including freshwater lakes and rivers, brackish marshes, lagoons, mangroves, and coastal wetlands, particularly where small fish are plentiful in shallow areas. They are often seen on tidal flats and sandbars. It is important to note that the feeding area of a great blue heron can be up to 20 acres in size. While the 0.12-acre tidal wetland is a suitable habitat for the great blue heron, the likelihood of it spending a substantial amount of time in the area and being exposed to Site-related contamination is considered minimal. Incidental ingestion of surface soil and the ingestion of prey are two potentially complete routes of exposure for the great blue heron. However, the tidal wetland was not found to be contaminated and is part of the "clean area" of the property. Therefore, risk of ingestion is drastically minimized by this fact, as the great blue heron is not known to predate or utilize the ecological resources found outside of the Site's tidal wetland.

Marsh wrens inhabit freshwater and saltwater marshes, as well as standing water as a preferred habitat from several centimeters to nearly a meter in depth. Incidental ingestion of surface soil and the ingestion of prey are the two potentially complete routes of exposure for the marsh wren. Feeding areas for marsh wrens are usually less than half an acre, making exposure to site-related contamination more likely. However, like the great blue heron, this risk is minimized by the marsh wren's predation of ecological resources within the "clean area", which encompasses the Site's tidal wetland.

Deer mice inhabit nearly all types of dry-land habitats within their range including short-grass prairies, grass-sage communities, coastal sage scrub and other habitats. Incidental ingestion of surface soil and the ingestion of prey are the two potentially complete routes of exposure for the deer mouse. Feeding areas for deer mice are up to 1.5 acres, which is the approximate size of the old field vegetation area. However, because the old field vegetation area has not been appreciably impacted by the Site's previous activities, this exposure risk is minimal.

Given the proposed development of the Site, complete pathways to exposure are unlikely for these species and impact will remain minimal, as the 1.5-acres of old field vegetation and 0.12-acres of vegetated tidal wetlands shall be conserved in their present state.

Petroleum hydrocarbon-related source constituents, predominantly in the form of volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) were detected in groundwater and surface soil. Surface water quality has not been evaluated during previous Site investigations. Since groundwater beneath the Site discharges to the surrounding water bodies, it was assumed for the purposes of the ecological assessment that constituents in groundwater were also in surface water at the same concentration. This is an overly conservative assumption since it does not take into account the effects of dilution and dispersion which occur as groundwater discharges to surface water. The Fish and Wildlife QEA focuses on contaminants that may pose a risk to the ecological resources, therefore Contaminants of Potential Ecological Concern (COPECs) were selected.

Ecological Soil Cleanup Objectives have been promulgated by NYSDEC in the Part 375 regulations for several COPECs. Based on an evaluation of the datasets from the June 2007 test pit sampling event performed by GFI, and the 2001 sampling event performed by LAW, none of the detected constituents in surface soil (0 to 2 feet below grade) were found at concentrations exceeding the NYSDEC's ecological threshold values.

NYSDEC has not published ecological cleanup objectives for surface water. The Department uses Ambient Water Quality Standards. Based on the same GFI and LAW dataset, a limited number of VOCs and SVOCs have been found in groundwater at concentrations exceeding these standards, thereby creating a potentially complete exposure pathway. The proposed remedial activities, however, will mitigate groundwater conditions, resulting in the likely elimination of the exposure pathway.

Continued marine use of and roadway stormwater runoff from the existing community into the surrounding waterways will likely continue to impact these water bodies and marine habitats.

In summary, potentially complete exposure pathways for human and ecological receptors were identified under the current use, construction/remediation phase, and future/potential future use scenarios. All exposure pathways will either be managed or effectively eliminated.

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

3.1 Evaluation of Remedial Alternatives

The purpose of this section is to present descriptions of and an evaluation of the remedial alternatives selected for analysis for the Site. The primary goal of this analysis is to demonstrate how the selected remedy will comply with the following nine remedy selection factors in accordance with the NYSDEC BCP regulations found at 6 NYCRR 375-1.8(f):

1. Overall protectiveness of human health and the environment;
2. Standards, criteria, and guidance;
3. Long-term effectiveness and permanence;
4. Reduction in toxicity, mobility or volume of contamination;
5. Short-term impacts and effectiveness;
6. Implementability;
7. Cost effectiveness;
8. Community acceptance; and
9. Land use.

3.2 Remedial Action Objectives (RAOs)

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 contaminants and media of concern, potential migration pathways, exposure routes, and receptors. Typically, remediation goals are established based on Standards, Criteria, and Guidance ("SCGs") intended to protect human health and the environment. SCGs for the Site are discussed in detail in Section 3.3.

The RAOs of this RWP consist of the following:

1. Reduce the contaminant mass by removing and either treating or replacing contaminated soil and source material in soil;
2. Protect on-site workers and the surrounding community from exposure to Site-related contaminants during remedial construction and development; and,
3. Establish institutional and engineering controls for the Site to protect future occupants, maintenance personnel and the surrounding community from potential exposure to Site-related contaminants remaining after Site development.

The RAOs for specific media consist of the following:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater containing contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater.

RAOs for Environmental Protection

- Reduce the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of, or exposure to, contaminants volatilizing from contaminated soil.

RAOs for Environmental Protection

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

Surface Water

RAOs for Public Health Protection

- Prevent ingestion of contaminated water.
- Prevent contact or inhalation of contaminants from impacted water bodies.
- Prevent surface water contamination that may result in fish advisories.

RAOs for Environmental Protection

- Prevent impacts to biota due to ingestion/direct contact with contaminated surface water that would cause toxicity or bioaccumulation through the marine or aquatic food chain.

Sediment

RAOs for Public Health Protection

- Prevent direct contact with contaminated sediments.

RAOs for Environmental Protection

- Prevent release(s) of contaminant(s) to sediments that would result in surface water levels in excess of (ambient water quality criteria).

3.3 Standards, Criteria and Guidance (SCG)

A criterion for remedy selection is evaluation for conformance with SCGs that are applicable, relevant and appropriate. Principal SCGs that are applicable, relevant and appropriate for evaluating the alternatives for remediation of the Site include the following:

- New York State Environmental Conservation Law ("ECL") Article 27, Title 14, Brownfield Cleanup Program (ECL §27-1401 *et seq.*)
- 6 NYCRR Subpart 375-1, General Remedial Program Requirements; 6 NYCRR Subpart 375-3, Brownfield Cleanup Program; and 6 NYCRR Subpart 375-6, Remedial Program Soil Cleanup Objectives;
- 6 NYCRR Part 703 - New York State Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations;
- NYSDEC CP-51 Soil Cleanup Guidance.
- NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation;
- NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Groundwater Effluent Limitations;
- NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York;
- NYSDEC Draft Brownfield Cleanup Program Guide – May 2004; and
- NYSDOH Generic Community Air Monitoring Plan.

Additional regulations and guidance are applicable, relevant, and appropriate to the remedial alternatives (such as 6 NYCRR Part 360, Solid Waste Management Facilities; 6 NYCRR Part 364, Waste Transporter Permits; 6 NYCRR Part 613, Handling and Storage of Petroleum, etc.), and will be complied with; however, the list above is intended to represent the principal SCGs which should be considered in evaluating the remedial alternatives for the Site.

Conformance with the appropriate standards for remediation of contaminated soil is an important criteria in evaluating the remedial alternatives for the Site. Presently, in New York State 6 NYCRR Part 375 establishes the primary SCGs associated with remediation of contaminated soil that is in the BCP. If proposing remediation pursuant to a Track other than Track 1 (Unrestricted Use), 6 NYCRR Part 375 requires evaluation of at least one remedial alternative pursuant to Track 1 (Unrestricted Use) and one other alternative developed by PDC for the proposed use of the Site[i]. The remedial alternatives analysis presented in Section 3.5 and 3.6 of this RWP has been prepared in conformance with this requirement.

The preferred alternative, identified in Section 3.7, will be an alternative, which will satisfy the requirements of Track 4 - Restricted Use with SSSCOs. The Applicants are proposing the use of a combination of established soil cleanup objectives, as follows:

Contaminant	Proposed SSSCO
Targeted Volatile Organic Compounds	Track 2 Restricted Residential, Protection of Public Health
Targeted Semivolatile Organic Compounds	Track 2 Restricted Residential, Protection of Public Health
10 Volatile Organic Tentatively Identified Compounds	10 ppm (total)
20 Semivolatile Organic Tentatively Identified Compounds	100 ppm (total)
Source Material	Removal of Gross Contamination and Free Product (As defined in 6 NYCRR 375-1.2(u) and 6 NYCRR 375-1.2(ac))

Efforts to remove material that contain concentrations of contaminants above the SSSCOs (and other than Gross Contamination and Free Product (i.e. source material) will be limited to the depth at which shoring or dewatering or disruption of the peat layer is not required. Efforts will be made in each case to extend excavations to achieve this goal. Excavation of soil with contaminant levels exceeding numeric SSSCOs may not be achievable below certain depths in the water table due to engineering and health and safety issues.

As indicated in the table above, the Track 2 Restricted Residential, Protection of Public Health soil cleanup objectives are proposed for individual VOCs and SVOCs and for TIC VOCs and SVOCs. The Protection of Public Health soil cleanup objectives have been selected since this is consistent with the planned remedial program (as discussed in the following sections of this work plan) and the requirements of 6 NYCRR 375-6.5(a)(1), which indicates that the protection of groundwater soil cleanup objectives may not be applicable where:

(i) groundwater standard contravention is the result of an on-Site source which is addressed by the remedial program,
(ii) an environmental easement will be put in place which provides for a groundwater use restriction,
(iii) the NYSDEC determines that contaminated groundwater is not migrating or is not likely to migrate off-Site, and
(iv) the NYSDEC determines that the groundwater quality will improve over time.

The Protection of Public Health soil cleanup objectives are applicable because: the groundwater contamination of significance within the Site is a result of on-Site source material (i.e., historic petroleum storage activities) that will be addressed by source removal (i.e., removal of Gross Contamination and Free Product[ii]) or other control measures consistent with 6 NYCRR Part 375-1.8(c), and an environmental easement restricting the use of groundwater. Residual groundwater contamination is expected to improve over time as a function of the source removal remedy. Groundwater monitoring will be performed under a SMP to assess performance of the remedy for groundwater protection, to assess attainment of groundwater standards, and to determine that contamination is not migrating off-site.

As described in detail in the following sections of this work plan, the SSSCOs listed above are being proposed in conjunction with engineering and institutional controls.

3.4 Remedial Technologies Screening

Consistent with the NYSDEC remedial program requirements, a remedial work plan must include an alternatives analysis (6 NYCRR 375-3.8(g)(3)(vi)). The requirements for an alternatives analysis, found at 6 NYCRR 375-3.8(f), include a description of each alternative evaluated, a discussion of how each alternative would achieve the requirements of the remedial program, an analysis of each alternative against the remedy selection factors in 6 NYCRR 375-1.8(f), and, among other requirements, a summary of the basis for concluding that the proposed remedy represents the best alternative among those considered.

The applicable remedial work plan requirements do not include specific requirements for screening of remedial technologies. Nevertheless, as part of development of remedial alternatives for the Site, several technologies were screened with respect to remediation of soil and groundwater contamination during the historic remedial investigations. Pilot studies for three ex-situ treatment technologies (land farming, engineered biopile and chemical oxidation) were completed in 2006 and 2007. It was determined that chemical oxidation was the most viable of the ex-situ treatment technologies. Ex-situ treatment of contaminated soil to below the SSSCOs prior to placement as “Clean Fill” has been included in the evaluation as an alternative to transportation and disposal of contaminated soil above the SSSCOs. As used herein, the term “Clean Fill” shall mean soil meeting the soil cleanup objectives for restricted-residential use as described in 6 NYCRR Part 375-6.7(d) or otherwise approved by NYSDEC. Detailed descriptions of the alternatives selected for analysis are presented below.

3.5 Development of Remedial Alternatives

Three remedial alternatives, consistent with the 6 NYCRR Subpart 375-3 Brownfield Cleanup Program requirements, have been developed for analysis. Descriptions of the alternatives are presented below.

Remedial Alternative 1, Unrestricted Use: Remove Contaminated Soil with Contingent In-Situ Groundwater Treatment and Short-Term Institutional Controls Related to Groundwater

Alternative 1 consists of the excavation and removal of all soil, which exceeds NYSDEC BCP Track 1 Unrestricted Use Soil Clean-up Objectives including petroleum-impacted and PCB-impacted soil. Based on the data presented in the historic remedial investigations, the estimated volume requiring removal for Alternative 1 is approximately 128,000 tons (approximately 80,000 cubic yards in-place volume) of petroleum-impacted soil and 300 tons (approximately 187 cubic yards in-place volume) of PCB-impacted soil.

Existing stockpiles of recycled concrete aggregate and soil, concrete tank containments and foundation slabs, and the anecdotal 3,000-gallon underground storage tank ("UST") present on the Site would be removed. The existing bulkhead would be removed and a new bulkhead would be constructed in conjunction with contaminated soil removal. During remedial construction, controls would be in place to minimize the potential for exposure of workers, the surrounding community, and surface water receptors to contaminants. Controls would be implemented in accordance with a HASP, a Community Air Monitoring Plan ("CAMP"), and a Storm Water Pollution Prevention Plan ("SWPPP"). Following remedial activities, the Site would be backfilled to final grade using Clean Fill.

If monitoring of groundwater following source removal indicates the presence of contaminated groundwater, in-situ treatment will be completed. Additional monitoring and in-situ treatment, if necessary would be required to demonstrate the reduction in groundwater contaminants following source removal.

Consideration of this Alternative 1 satisfies the 6 NYCRR Part 375 requirement of evaluating at least one remedial alternative pursuant to Track 1 (Unrestricted Use).

Remedial Alternative 2: Ex-Situ Treatment Using Chemical Oxidation or Removal of Contaminated Soil to Proposed Track 4 Site-specific Soil Clean-up Objectives ("SSSCOs") with Engineering and Institutional Controls

Alternative 2 consists of the excavation and removal of soil that exceeds the proposed Track 4 SSSCOs and treating the soil using chemical oxidation to reach the SSSCOs. Alternatively, based on the data presented in the historic remedial investigations, the estimated volume of petroleum-impacted soil requiring removal for this alternative is estimated to be approximately 29,000 cubic yards (in-place volume) or 46,275 tons. No PCB-impacted soil would be removed under this alternative. Refer to Figure RWP-10, which shows the estimated extent of excavation required.

This Alternative was subsequently found to be unfeasible when a bench test conducted to obtain design parameters (see ahead) showed that the SSSCOs would not be met. Therefore, Alternative 2 is not considered in the Alternatives Analysis.

Remedial Alternative 3: Removal of Contaminated Soil to Proposed Track 4 Site-specific Soil Clean-up Objectives ("SSSCOs") with Engineering and Institutional Controls

Alternative 3 consists of the excavation of soil that exceeds the proposed Track 4 SSSCOs. Grossly contaminated soil and soil that exceeds the SSSCOs will be disposed off-site at a licensed facility. Based on the data presented in the historic remedial investigations, the estimated volume of petroleum-impacted soil requiring removal for this alternative is estimated to be approximately 29,000 cubic yards (in-place volume) or 46,275 tons (based on the vertical and horizontal limits shown on Figure RWP-10). Subsequent to the May 2014 NYSDEC Decision Document, an additional estimate of excavated soil was prepared using RockWorks 3D modeling software. This model used the top of peat layer, shown on Figure RWP-6 to reduce the estimated volume to 29,000 cubic yards (in-place) or 46,275 tons. Figure RWP-13 illustrated the results from the RockWorks model. No PCB-impacted soil would be removed under this alternative. Refer to Figure RWP-10, which shows the estimated extent of excavation required.

In October 2013, a Revision 1 to the RWP was submitted and ultimately approved by NYSDEC for a selected remedy consisting of ex-situ treatment using soil washing or removal of contaminated soil to proposed Track 4 SSSCOs. Appendix H contains the Department's approval letter.

Existing stockpiles of recycled concrete aggregate and soil will be sorted prior to sampling and screening against SSSCOs under this alternative. If concentrations in the soil are detected above the SSSCOs, the soil will be treated as described below. Soil that meets the SSSCOs will be reused as backfill during Site restoration. Concrete tank containments and foundation slabs and the anecdotal UST present in the Site would be removed. As described above, the existing bulkhead would be removed and a new bulkhead would be constructed. After bulkhead replacement, soil will be excavated as shown on Figure RWP-10. The excavated material will be transported off-site for disposal at a licensed facility. Groundwater extracted during excavation (i.e., for dewatering) would be treated prior to discharge in accordance with applicable surface water discharge requirements.

During remedial construction, controls would be in place to minimize the potential for exposure of on-site workers, the surrounding community, and surface water receptors to contaminants. The controls would be implemented in accordance with a HASP and a SWPPP.

Institutional and engineering controls are included in this alternative and would consist of the controls set forth in Sections 7.0 and 8.0 of this RWP.

3.6 Comparative Evaluation of Remedial Alternatives

This section compares the remedial alternatives to the remedy selection factors in accordance with the requirements of 6 NYCRR 375-1.8(f). Based on the results of the comparative analysis, a remedial plan will be selected.

3.6.1 Overall Protectiveness of Public Health and the Environment

The implementation of Alternative 1 – Removal of Contaminated Soil for Unrestricted Use would be protective of public health and the environment through the removal of all contaminated soil, removal of soil/concrete stockpiles, tank containments and foundation slabs and UST, and a reduction in groundwater contamination resulting from source removal and dewatering during soil excavation.

During remedial construction, on-site workers and the surrounding community would be protected from exposure to Site-related contaminants through the implementation of health and safety protocols, and adherence to community air monitoring plans.

Alternative 3 - Removal of Contaminated Soil to Proposed Track 4 SSSCOs with Engineering and Institutional Controls would be protective of public health and the environment through the removal of approximately 29,000 cubic yards (in-place volume) or 46,275 tons of impacted soil, removal of soil/concrete stockpiles, tank containments and foundation slabs and UST, and the implementation of engineering and institutional controls including the cover system, the SSDEs, and environmental easements. As described with respect to Alternative 1, under Alternative 3 groundwater contaminant mass would be reduced by source removal during excavation.

Also, under Alternative 3, during construction, on-site workers and the surrounding community would be protected from exposure to site-related contaminants through the implementation of health and safety protocols and adherence to a work site monitoring plan.

Both alternatives would provide overall protection of public health and the environment. Although impacted soil would remain in place beneath the cover system under Alternative 3, the use of engineering and institutional controls would minimize the potential for exposure to site-related contaminants. Therefore, both alternatives would be protective of human health and the environment.

3.6.2 Conformance to Standards, Criteria and Guidance

Alternative 1 – Removal of Contaminated Soil for Unrestricted Use would satisfy the remedial action objectives (described in Section 3.2) and the SCGs (described in Section 3.3) developed for the Site. Soil which exceeds BCP Track 1 Soil Cleanup Objectives, soil/concrete stockpiles, tank containment and foundations, and UST would be removed, and groundwater would be treated via dewatering during excavation.

Alternative 3 –Removal of Contaminated Soil to Proposed Track 4 SSSCOs with Engineering and Institutional Controls would satisfy the RAOs and SCGs developed for BCP Sites. Impacted soil exceeding the numerical Track 4 SSSCOs would be excavated to the depth at which sheeting or dewatering is not required. In addition, soil/concrete stockpiles, tank containment and foundations, and the UST would be removed, and groundwater would be treated via dewatering during excavation. Institutional and engineering controls included as a part of Alternative 3 would protect future Site users consistent with the RAOs and SCGs.

Under both alternatives, applicable environmental and health and safety laws and regulations would be complied with, and waste would be managed and disposed in accordance with applicable laws and regulations. In summary, both alternatives proposed would conform to the RAOs and SCGs applicable to remediation of the Site.

3.6.3 Long-Term Effectiveness and Permanence

Alternative 1 - Removal of Contaminated Soil for Unrestricted Use would be a long-term effective and permanent alternative since all contaminated soil above BCP Track 1 SCOs would be removed, soil/concrete stockpiles, tank containment and foundation, and UST would be removed, and groundwater would be treated during dewatering. As a contingency, in-situ treatment of the groundwater may be completed after source removal. Reliance on long-term engineering controls would not be required after implementation, because all impacted material would be removed.

Alternative 3 –Removal of Contaminated Soil to Proposed Track 4 SSSCOs with Engineering and Institutional Controls would be an effective and permanent alternative for the BCP Site. The removal of approximately 29,000 cubic yards (in-place volume) or 46,275 tons of impacted soil, soil/concrete stockpiles, tank containments and foundations, and UST represents an effective and permanent remedy. The remaining excavations would be backfilled with approved fill. The Site (excluding the protected wetlands) will be covered with a cover system consistent with 6 NYCRR Part 375-3.8(e)(4)(iii) consisting either of structures such as buildings, pavement and sidewalks comprising the Site development, or a Clean Fill Cover Layer in areas where the two feet of exposed surface soil exceeds the applicable SSSCOs; and vapor barriers and SSDEs would be installed beneath buildings. Therefore, potential for exposure to remaining soil would be minimized by long-term engineering controls. The use of institutional controls would serve to further minimize potential future exposure pathways over the long term.

Even though soil with contaminant concentrations exceeding the Track 1 SCOs would remain under Alternative 3, the use of engineering and institutional controls would eliminate significant potential for exposure to site-related contaminants. Therefore, both alternatives represent long-term effective and permanent remedies for the Site that are protective of human health and the environment.

3.6.4 Reduction in Toxicity, Mobility or Volume of Contamination

The implementation of Alternative 1 - Removal of Contaminated Soil for Unrestricted Use would reduce the toxicity, mobility, and volume of contamination by removing soil with contaminant concentrations above BCP Track 1 SCOs, removing soil/concrete stockpiles, tank containment and foundation, and UST, and the extraction and treatment of groundwater during excavation. The toxicity and mobility of the soil removed from the Site would be reduced by management at appropriate permitted off-site disposal facilities.

The implementation of Alternative 3 - Removal of Contaminated Soil to Proposed Track 4 SSSCOs with Engineering and Institutional Controls would reduce the toxicity, mobility, and volume of contamination by removing an estimated 29,000 cubic yards (in-place volume) or 46,275 tons of impacted soil, soil/concrete stockpiles, tank containment and foundation, and UST, and the extraction and treatment of groundwater during excavation. The toxicity and mobility of the soil removed would be reduced by management at permitted off-site treatment and disposal facilities.

Although both alternatives would serve to reduce the toxicity, mobility, and volume of contamination, Alternative 1 would be more effective since the volume of impacted soil removed would be larger and the volume of groundwater extracted, as a result of the additional excavation, would be greater.

3.6.5 Short-term Impacts and Effectiveness

Potential short-term impacts to the community associated with implementation of Alternative 1 include increased construction noise, increased truck traffic, and the potential creation of objectionable odors, vapors, and/or dust. Potential short-term impacts to on-site workers associated with Alternative 1 include exposure to site-related contaminants and physical hazards associated with working around heavy equipment and large excavations. It is estimated that the remedial phase of Alternative 1 could be completed in 24 months, based on availability of trucking and disposal facility capacity.

During the construction phase for Alternative 1, short-term impacts to the community would be minimized through remediation phase controls such as implementation of an enhanced community air monitoring plan, use of soil erosion controls and adherence to pre-approved truck routes. Decontamination of vehicles and equipment prior to leaving the Site would minimize the potential for off-site soil migration during remediation. Short-term exposures to on-site workers would be minimized through implementation of and adherence to a site-specific health and safety plan, which would establish procedures and personal protective equipment requirements for site work.

The implementation of Alternative 3 represents the potential for similar short term impacts and would include the same impact mitigation strategies as those described for Alternative 1, since both remedies are similar and differ only in the quantity of soil to be removed and the duration of the work. It is estimated that under Alternative 3 on-site remedial activities could be completed in approximately 14 months. The shorter duration of Alternative 3, compared to Alternative 1, represents corresponding decreases in the impacts to the surrounding community, including decreased construction noise, decreased truck traffic, and lower potential for creation of objectionable odors, vapors, and/or dust.

In summary, both alternatives would be effective in the short term, through the removal of contaminated soil, and additionally through the implementation of engineering and institutional controls under Alternative 3. Adherence to appropriate controls would minimize potential short-term impacts to the surrounding community and on-site workers. However, the potential for short-term impacts to the community and on-site workers during construction activities associated with Alternative 1 is greater than with Alternative 3, due to the extended remedial construction timeframe and volume of soil requiring removal.

3.6.6 Implementability

Alternative 1 and Alternative 3 can be implemented with standard construction techniques, using widely available construction equipment and materials. However, removal of all contaminated soil with contaminant concentrations exceeding Track 1 SCOs may require excavations 15 feet deep to the top of peat in limited areas in the southern portion of the Site; therefore, additional sheeting (for support of deep excavation sidewalls) and dewatering equipment would be required for Alternative 1. It is expected that required permits, such as NYSDEC SPDES permits, could be obtained in acceptable time frames.

Therefore, due to the need for specialized equipment and the complications of performing excavations up to 15 feet in depth and eight feet below the mean tide, Alternative 1 would be more difficult to implement than Alternative 3.

3.6.7 Cost Effectiveness

Cost estimates were prepared for both alternatives based on recent bids for remediation projects and communications with remedial contractors, material suppliers, waste transporters, and disposal facilities. Remedial Alternative 1 is estimated to cost $16,000,000. Remedial Alternative 3 is estimated to cost $8,890,000.

The cost of Alternative 1 is significantly higher than Alternative 3 due to the larger volume of soil removal and disposal required under Alternative 1.

3.6.8 Community Acceptance

Both alternatives would entail excavation of contaminated soil and the implementation of a remediation phase site management plan to minimize the potential for off-site migration of dust, which would promote community acceptance. However, the extended remedial timeframe and larger volume of soil requiring removal under Alternative 1 elevates the potential for impacts to the community from increased truck traffic and fugitive odors and vapors. Since Alternative 3 has a shorter remedial timeframe, it is likely that this alternative would be more acceptable to the community.

Public comments that are provided during the public comment period on this Remedial Work Plan will be evaluated, and this RWP may be modified as appropriate in response to comments.

3.6.9 Land Use

The contemplated use of the Site is the development of residential buildings with associated clubhouse, courtyards, roads, and utility corridors. Both remedial alternatives allow for this future planned development by removal of contaminated soils, extraction, and treatment of contaminated groundwater during excavation and under Alternative 3 implementation of institutional and engineering controls to minimize the potential for impacts from the Site to future users.

Additional land use factors such as accessibility to infrastructure, proximity to cultural resources, population growth patterns and projections, and proximity to natural resources have been taken into consideration as part of the development plans for the Site and are not considered to be inconsistent with the remedial alternatives and the planned future use of the Site.

Citizens' participation in connection with the Remedial Work Plan and planned future use of the Site will be described in a Citizens Participation Plan.

3.7 Selection of the Preferred Remedy

Both of the remedial alternatives evaluated would be protective of human health and the environment, provide a long term and effective remedy for the Site, and allow for future development. However, Remedial Alternative 1 would result in greater potential short term impacts to the community due to the longer remedial time frame and larger volume of soil removed, would be more difficult to implement due to the greater excavation depths, and is less cost effective when compared to the other remedial alternative. Although Alternative 1 would be more effective in reducing the volume of contaminants at the Site, it would not provide significant additional protection of human health or the environment.

Therefore, based on the evaluation of the remedial alternatives against the nine remedy selection factors in accordance with the requirements of 6 NYCRR 375-1.8(f), Remedial Alternative 3 is the selected remedy for the Site. Remedial Alternative 3, Removal of Contaminated Soil to Proposed Track 4 SSSCOs with Engineering and Institutional Controls, satisfies the remedial action objectives for the Site and will be protective of human health and the environment.

The following land use factor evaluation examines whether the alternative is acceptable based on the following criteria (below) as required by Article 27, Title 14 of the Environmental Conservation Law 27-1415. This evaluation applies to the preferred alternative and is addressed in the bulleted items below:

- Zoning – The planned end use for the Site is in conformance with the current zoning for the property.
- Applicable comprehensive community master plans or land use plans – The Supplemental Environmental Studies to the Environmental Assessment Form ("SES") dated December 2006 included discussions of the proposed use with applicable land use plans.

- Surrounding property uses – Residential properties border the Site to the north and northwest, and an operating marina borders the site to the southwest as shown on Figure RWP-3. Figure RWP-3 also identifies schools, residential areas, surface waters, marshland, and sensitive receptors in the surrounding area.
- Citizen participation – Refer to Section 4.1.6 Community Participation Plan.
- Environmental justice concerns – No environmental justice concerns were identified by or studied as part of the Supplemental Environmental Studies to the Environmental Assessment Form dated December 2006.
- Land use designations – See zoning and surrounding property descriptions above.
- Population growth patterns – The impact of the project on population and housing characteristics were studied as part of the SES. No mitigation measures regarding population and housing characteristics were included in the SES.
- Accessibility to existing infrastructure – The impact of the project on existing infrastructure was studied as part of the SES, specifically impacts to public schools, community facilities and services, open space, water supply and wastewater treatment, solid waste and sanitation issues, energy, traffic, and transportation. The findings of the study are detailed in the SES and the planned project will be in conformance with the mitigation measures required by the SES.
- Proximity to cultural resources – No cultural resources within immediate proximity of the Site were identified in the SES.
- Proximity to natural resources – The nearest water bodies abutting the Site include: Island Park Canal, Wreck Lead Channel, and Simmons Hassock Creek. The on-site groundwater is not used as a source of potable water.
- Off-Site groundwater impacts – Potential off-site impacts to groundwater will be addressed by on-Site source removal.
- Proximity to floodplains – The Site is primarily located in Flood Zone AE which is within the 100-year flood zone. A small portion of the northwest corner is in Flood Zone X which is within the 500-year flood zone.
- Geography and geology of the Site – Refer to Section 2.4 Geological Conditions.
- Current Institutional Controls – Currently there are no institutional controls for the Site. Following the completion of remediation, an environmental easement or deed restriction will be in place as described in Section 8.1.

3.8 Summary of Selected Remedial Actions

Remedial activities will be performed in accordance with this RWP. The following activities will be performed to achieve the remedial objectives:

1. Implementation of the soil erosion and sediment control plan consistent with the Stormwater Pollution Prevention Plan ("SWPPP");
2. Implementation of a site-specific HASP during remediation, development and future maintenance activities when soil gas, soil or groundwater could become exposed. The HASP will establish procedures for the protection of on-site workers and off-site residents and workers;
3. Sorting and sampling of existing stockpiles of recycled concrete aggregate and soil. Soil with concentrations detected above the Site-specific Soil Cleanup Objective ("SSSCOs") will be either treated on-site or transported off-site for disposal;

4. Removal of concrete tank containments and foundation slabs and the anecdotal 3,000-gallon UST;
5. Investigation of areas under and immediately adjacent to the tank foundation slabs following their removal;
6. Partial removal of existing bulkhead and adjacent soils to allow construction of new bulkhead. Sediment sampling of the channel will also be completed prior to the bulkhead work;
7. Excavation of soil at concentrations above the SSSCOs to the maximum depth at which shoring, dewatering, or disruption of the peat layer are not required and off-site transportation and disposal of soil exceeding the numeric SSSCOs. Reasonable efforts will be made in each case to extend excavations to depths that achieve the SSSCOs. Excavation of soil with contaminant levels exceeding numeric SSSCOs may not be achievable below certain depths in the water table due to engineering and health and safety issues;
8. Post-excavation sampling to evaluate performance of the remedy;
9. Backfilling and restoration with reusable material in compliance with the Track 4 SSSCOs and imported material that will meet in the requirements of 6 NYCRR Part 375-6.7(d) or otherwise approved by the NYSDEC, or recycled concrete aggregate from other portions of the Site in compliance with 6 NYCRR Part 360;
10. The horizontal and vertical extent of excavations as well as the locations and elevations of post-excavation soil sampling points will be surveyed and mapped. Additionally, after installation, the location and elevation of the demarcation layer will be surveyed as well as final grade and permanent sheeting lines will be surveyed and mapped;
11. Placement of a cover system consistent with 6 NYCRR Part 375-3.8(e)(4)(iii) will consist either of structures such as buildings, pavement and sidewalks comprising the Site development, or a Clean Fill Cover Layer in areas where the two feet of exposed surface soil will exceed the applicable SSSCOs. Where the Clean Fill Cover Layer is required, it will be a minimum of two feet of soil meeting the requirements for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The Clean Fill Cover Layer will be placed over the Demarcation Layer. Any fill material brought to the Site will meet the requirements for the identified Site use as set forth in 6 NYCRR Part 375-6.7(d);
12. Preparation and submission of a FER to NYSDEC following implementation of the Remedial Action. The FER will provide the documentation that the remedial work required under this RWP was completed and performed in compliance with this plan;
13. The SMP will describe the engineering controls to be implemented following the completion of the Remedial Action;
14. All routinely occupied buildings will be constructed with sub-slab vapor barriers and sub-slab depressurization elements should soil vapor present a concern;
15. Implementation of a Site Management Plan that will describe the institutional and engineering controls ("ICs/ECs") includes: (1) an Engineering and Institutional Control Plan for implementation and management of IC/ECs; (2) a Monitoring and Management Plan for implementation of Site Monitoring including long-term and remedial performance groundwater monitoring; (3) a plan to activate the SSDEs should concerns with soil vapor intrusion arise. That will include the requirements for energizing the elements and preparing an operations and maintenance plan specifically for the

equipment utilized to energize the piping; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. ICs will be put in place that restrict the use of groundwater, the use of the property as a farm or vegetable garden, and preventing the use of the property for a less restrictive use and enforce the requirements of the Site Management Plan;

16. Recording environmental easements on the land, as appropriate, requiring implementation of all SMP activities; and,
17. Groundwater monitoring to assess performance of the remedy and attainment of groundwater standards and remedial action objectives.

4.0 REMEDIAL ACTION PROGRAM

The objective of this section of the RWP is to present a scope of work which will be approved by NYSDEC and when completely implemented will ready the Site for development for the Contemplated Use, which is Restricted Residential Use, consistent with the requirements of the Brownfield Cleanup Program. Additionally, following completion of the RWP activities and subject to any groundwater monitoring that may be required, it is an objective of this RWP that Clean Zones will be prepared beneath buildings, courtyards, parks, and utility corridors.

The following activities will be performed to achieve the remedial objectives:

1. Implementation of the soil erosion and sediment control plan consistent with the Stormwater Pollution Prevention Plan ("SWPPP");
2. Implementation of a site-specific HASP during remediation, development and future maintenance activities when soil gas, soil or groundwater could become exposed. The HASP will establish procedures for the protection of on-site workers and off-site residents and workers;
3. Sorting and sampling of existing stockpiles of recycled concrete aggregate and soil. Soil with concentrations detected above the Site-specific Soil Cleanup Objective ("SSSCOs") will be either treated on-site or transported off-site for disposal;
4. Removal of concrete tank containments and foundation slabs and the anecdotal 3,000-gallon UST;
5. Investigation of areas under and immediately adjacent to the tank foundation slabs following their removal;
6. Partial removal of existing bulkhead and adjacent soils to allow construction of new bulkhead. Sediment sampling of the channel will also be completed prior to the bulkhead work;
7. Excavation of soil at concentrations above the SSSCOs to the maximum depth at which shoring, dewatering, or disruption of the peat layer are not required and off-site transportation and disposal of soil exceeding the numeric SSSCOs. Reasonable efforts will be made in each case to extend excavations to depths that achieve the SSSCOs. Excavation of soil with contaminant levels exceeding numeric SSSCOs may not be achievable below certain depths in the water table due to engineering and health and safety issues;
8. Post-excavation sampling to evaluate performance of the remedy;
9. Backfilling and restoration with reusable material in compliance with the Track 4 SSSCOs and imported material that will meet in the requirements of 6 NYCRR Part 375-6.7(d) or otherwise approved by the NYSDEC, or recycled concrete aggregate from other portions of the Site in compliance with 6 NYCRR Part 360;
10. The horizontal and vertical extent of excavations as well as the locations and elevations of post-excavation soil sampling points will be surveyed and mapped. Additionally, after installation, the location and elevation of the demarcation layer will be surveyed as well as final grade and permanent sheeting lines will be surveyed and mapped;
11. Placement of a cover system consistent with 6 NYCRR Part 375-3.8(e)(4)(iii) will consist either of structures such as buildings, pavement and sidewalks comprising the Site

development, or a Clean Fill Cover Layer in areas where the two feet of exposed surface soil will exceed the applicable SSSCOs. Where the Clean Fill Cover Layer is required, it will be a minimum of two feet of soil meeting the requirements for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The Clean Fill Cover Layer will be placed over the Demarcation Layer. Any fill material brought to the Site will meet the requirements for the identified Site use as set forth in 6 NYCRR Part 375-6.7(d);

12. Preparation and submission of a FER to NYSDEC following implementation of the Remedial Action. The FER will provide the documentation that the remedial work required under this RWP was completed and performed in compliance with this plan;
13. The SMP will describe the engineering controls to be implemented following the completion of the Remedial Action;
14. All routinely occupied buildings will be constructed with sub-slab vapor barriers and sub-slab depressurization elements should soil vapor present a concern;
15. Implementation of a Site Management Plan that will describe the institutional and engineering controls ("ICs/ECs") includes: (1) an Engineering and Institutional Control Plan for implementation and management of IC/ECs; (2) a Monitoring and Management Plan for implementation of Site Monitoring including long-term and remedial performance groundwater monitoring; (3) a plan to activate the SSDEs should concerns with soil vapor intrusion arise. That will include the requirements for energizing the elements and preparing an operations and maintenance plan specifically for the equipment utilized to energize the piping; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. ICs will be put in place that restrict the use of groundwater, the use of the property as a farm or vegetable garden, and preventing the use of the property for a less restrictive use and enforce the requirements of the Site Management Plan;
16. Recording environmental easements on the land, as appropriate, requiring implementation of all SMP activities; and,
17. Groundwater monitoring to assess performance of the remedy and attainment of groundwater standards and remedial action objectives.

4.1 Governing Documents

4.1.1 Site-Specific Health and Safety Plan (HASP)

All remedial work performed under this plan will be in full compliance with governmental requirements, including worker safety requirements mandated by the United States Occupational Safety and Health Administration ("OSHA").

The associated parties preparing and reviewing the remedial documents submitted to the State and those performing the construction work, are completely responsible for the preparation of an appropriate Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws.

The Health and Safety Plan ("HASP") and requirements defined in this RWP pertain to remedial and invasive work performed at the Site until the issuance of a Certificate of Completion.

The Site Safety Coordinator has not been determined. The resume of the proposed individual will be provided to NYSDEC prior to the start of remedial construction.

Confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gases.

Activities performed on-site by the remediation contractors will be conducted under the procedures of a HASP that at a minimum meets the requirements of the example in Appendix B. The final HASP will be provided to NYSDEC if requested.

An air monitoring program detailed in the HASP will establish the appropriate equipment and sampling frequency to determine airborne levels of contaminants of concern for use in selecting levels of protection for workers. Workers required to wear respirators will be medically evaluated, will be trained in the proper use of respirators, and will be fit tested for respirator selection.

Air Monitoring of Work Areas

<u>Real-Time Intrusive Activities Air Monitoring</u>

During intrusive activities, air monitoring will be conducted continuously in and around the areas of work to measure the concentrations of combustible and toxic gases, VOCs, and particulates. VOC levels will be monitored using a photoionization detector ("PID"). A DataRAM or similar instrument will be used to monitor particulate concentrations. A combustible gas indicator ("CGI") will be used in conjunction with an oxygen/hydrogen sulfide/carbon monoxide detector to monitor for the presence of combustible and toxic gases and oxygen deficiency or enrichment when the work involves confined spaces. Toxic gas monitoring may be augmented by the use of direct reading indicator tubes. Monitoring instruments will be calibrated in accordance with the manufacturer specifications.

If observed levels of the target compounds reach established action levels (as described in the HASP), the Site Safety Coordinator ("SSC") will direct personnel to take appropriate action, which may include upgrading the level of personal protective equipment or temporarily halting work to protect workers and the surrounding residents in the area

4.1.2 Quality Assurance Project Plan (QAPP)

This Quality Assurance/Quality Control Project Plan ("QAPP") presents the organization, objectives, planned activities, and specific quality assurance/quality control ("QA/QC") procedures associated with the RWP for the Site.

The QAPP describes specific protocols for field sampling, sampling handling and storage, chain-of-custody, laboratory analysis, and data handling and management. Preparation of the plan was based on EPA Quality Assurance Project Plan guidance documents, including:

- EPA Requirements for Quality Assurance Project Plans (EPA QA/R-5, March 2001), and
- Guidance for Quality Assurance Project Plans (EPA QA/G-5, December 2002).

The data generated from the analysis of samples will be used to determine the extent of contamination, identify impacted targets, and to compare the results of the remedial actions to site-specific cleanup goals. A list of the potential parameters to be analyzed, including their respective quantitation limits and data quality levels is included in Appendix C.

4.1.3 Soil/Materials Management Plan (SoMP)

The Soil/Materials Management Plan ("SoMP") is described in section 5.6.

4.1.4 Storm-Water Pollution Prevention Plan (SWPPP)

The SWPPP associated with the existing general permit coverage (permit identification number NYR 10K975) will apply to the demolition activities including concrete tank containments and foundation slabs, and pavements. TRC prepared a Stormwater Pollution Prevention Plan (SWPPP), which details the steps and procedures for compliance with New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-10-001 that will apply to the remedial actions other than demolition. This SWPPP will be updated, as necessary. The erosion and sediment controls will be in conformance with requirements presented in the New York State Standards and Specifications for Erosion and Sediment Control and New York State Stormwater Management Design Manual. Refer to Section 5.5.10 and Appendix D for additional details.

4.1.5 Community Air Monitoring Plan (CAMP)

Site investigations have indicated the presence of VOCs and SVOCs, and metals in soil and groundwater. The generic Community Air Monitoring Plan ("CAMP") has been designed to monitor for the target contaminants (refer to Appendix F). Real-time air monitoring will be performed at the perimeter of the work zone. The goal of the CAMP is to recognize and respond to pre-determined action levels for contaminants of concern. Corrective actions, which may include dust and vapor suppression techniques, alteration of certain work activities, or stopping work, will be taken if predetermined action levels are detected. Refer to Appendix E for additional details.

4.1.6 Community Participation Plan

Citizen participation activities will include preparation of project fact sheets and a public meeting. Project fact sheets will be submitted in WordPerfect format for NYSDEC approval and will include a description of the Site, a summary of remedial action objectives, a description of the selected remedial alternative, a project schedule, and a list of sources of additional information. The approved fact sheet will be sent by mail to the persons on the mailing list in Table RWP-16. A public meeting will be scheduled in coordination with the NYSDEC prior to the start of active remediation.

A certification of mailing will be sent by the Volunteer to the NYSDEC Project Manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected (with specific date) and that it contained all applicable project documents.

No changes will be made to approved Fact Sheets authorized for release by NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

Document repositories have been established at the following locations and contain all applicable project documents:

1. Island Park Public Library
   176 Long Beach Road
   Island Park, New York 11558
   Attn: Head Librarian
   Phone: 516-432-0122
   Hours: Monday-Thursday 10am to 9pm, Saturday 10am to 5pm, closed Sunday

2. NYSDEC Region 1 Office
Building 40-SUNY
Stony Brook, New York 11790-2356
Attn: Nick Acampora and Walter Parish
Phone: 631-444-0204
Hours: 9 am to 5 pm
(Call for appointment)

4.2 General Remedial Construction Information

4.2.1 Project Organization

Project Team	Key Personnel
Applicant: PDC	Michael Posillico
Primary Remedial Consultant: TRC Engineers, Inc.	Steven Meersma, P.E.
NYSDEC Case Managers	Nick Acampora and Walter Parish

An organization chart is included in Appendix F. Resumes of key personnel involved in the Remedial Action are included in Appendix F.

4.2.2 Remedial Engineer

The Remedial Engineer for this project will be Steven D. Meersma, P.E.. The Remedial Engineer is a registered Professional Engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program for the Site (NYSDEC BCA W1-1075-05-09). The Remedial Engineer will certify in the Final Engineering Report that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in the Remedial Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RWP.

The Remedial Engineer will coordinate the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of back fill material, and management of waste transport and disposal. The Remedial Engineer will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The Remedial Engineer will review all pre-remedial plans submitted by contractors for compliance with this Remedial Work Plan and will certify compliance in the Final Engineering Report.

The Remedial Engineer will provide the certifications listed in Section 10.1 in the Final Engineering Report.

4.2.3 Remedial Action Construction Schedule

The schedule for performance of the remedial work has been broken down into Remedial Action elements based on elapsed time from approval by NYSDEC. The following is a summary of the schedule.

Schedule Milestone	Estimated Completion Date (subject to change)
NYSDEC Approval of RWP	December 2012
Implementation of Soil Erosion and Sediment Control Measures	January 2013
NYSDEC Approval of RWP changes to include On-Site Soil Washing	May 2014
Applicant Files Revised RWP for Off-Site T&D	October 2017
NYSDEC Approval of Revised RWP	September 2017
Demolition	February 2018
Cleaning and Grubbing	March 2018
Stockpile Processing	April 2018
Sampling Under Tank Pads Outside Excavation Area	May 2018
Complete Remedial Excavation of Soil as Per Alternative 3 (Track 4 SSSCOs)	September 2018
Place Reuse and Imported Backfill	September 2018
Complete Bulkhead Installation	October 2018
Place Clean Fill Cover Layer	October 2018
Submit Final Engineering Report	December 2018

4.2.4 Work Hours

The hours of operation of remedial construction will conform to the local construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified by the Applicant of any variances issued by the Department of Buildings. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

Access to the Site will be controlled through gated entrances to the fenced property. During remediation, all personnel will be required to sign in/out when entering and leaving the Site. After completion of remediation, signing in and out will not be required. Barrier protection will be installed around work areas as needed, for delineation of and restricting access to the work areas. For work areas of limited size, barrier tape will be sufficient to delineate and restrict access. For larger worker areas, temporary fencing will be provided.

4.2.6 Traffic Control

Trucks will leave the Site from the gate located at Washington Street. Trucks leaving the Site will proceed without stopping or staging en route to prevent neighborhood complaints. The planned route on local roads for waste transport vehicles is presented on Figure RWP-18.

4.2.7 Worker Training and Monitoring

Worker training will include HAZWOPER, safety training, and medical monitoring for workers. Refer to Section 4.1.1 and the HASP in Appendix E for additional details.

4.2.8 Agency Approvals

The Applicant is aware of no SEQRA requirements for the Site, as it relates to the remedial activities. All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction.

The planned end use for the Site is in conformance with the current zoning for the property. A Certificate of Completion will not be issued for the project unless conformance with zoning designation is demonstrated.

A complete list of all local, regional, and national governmental permits, certificates or other approvals or authorizations required to perform the remedial and development work is attached in Table RWP-15. This list includes a citation of the law, statute or code to be complied with, the originating agency, and a contact name and phone number in that agency. This list will be updated in the Final Engineering Report.

4.2.9 NYSDEC BCP Signage

Signs will be posted in accordance with NYSDEC specifications to show that the project is being performed under the New York State Brownfield Cleanup Program.

A project sign will be erected at the main entrance to the Site prior to the start of any remedial activities. The sign will indicate that the project is being performed under the New York State Brownfield Cleanup Program. The sign will meet the detailed specifications provided by the NYSDEC Project Manager.

4.2.10 Pre-Construction Meeting with NYSDEC

A pre-construction meeting will take place prior to the start of major remedial construction activities. The meeting with the NYSDEC will be attended by the key project team members including the remediation (i.e., construction) contractor.

4.2.11 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in Attachment 1 of the HASP in Appendix E. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.12 Remedial Action Costs

The total preliminary estimated cost of the Remedial Action is $8,900,000. This cost estimate was prepared based on recent bids for remediation projects and communications with remedial contractors, material suppliers, waste transporters, and disposal facilities. An itemized and detailed summary of estimated costs for all remedial activity is provided in Appendix I. This will be revised based on actual costs and submitted as an appendix to the Final Engineering Report.

4.3 Site Preparation

4.3.1 Mobilization

The first step in site preparation is mobilization. Mobilization will be conducted in stages as necessary for each phase of work. Demobilization is discussed below.

4.3.2 Erosion and Sedimentation Controls

Erosion and sediment controls are described in detail in the SWPPP in Appendix D.

4.3.3 Stabilized Construction Entrance(s)

The truck decontamination facilities will be located near the Washington Street exit and the stone-based egress path, therefore, trucks will not be recontaminated prior to departure from the Site.

4.3.4 Utility Marker and Easements Layout

The Applicant and its contractors will identify utilities that might be affected by work under the RWP and will implement all required, appropriate, or necessary health and safety measures during performance of work under this RWP. The Applicant and its contractors will be solely responsible for safe execution of all invasive and other work performed under this RWP. The Applicant and its contractors will obtain any local, State, or Federal permits or approvals pertinent to such work that may be required to perform work under this RWP. Approval of this RWP by NYSDEC does not constitute satisfaction of these requirements.

The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no unreasonable risk or impediment to the planned work under this RWP is posed by utilities or easements on the Site.

4.3.5 Sheeting and Shoring

Appropriate management of structural stability of on-site or off-site structures during on-site activities including excavation will be the sole responsibility of the Applicant and its contractors. The Applicant and its contractors are solely responsible for safe execution of all invasive and other work performed under this plan and the attached HASP. The Applicants and their contractors will obtain any local, State, or Federal permits, or approvals required to perform work under this plan. Further, the Applicant and its contractors will be solely responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved plan.

Sheeting is not contemplated for remediation of the BCP Site. However, if certain excavations need support it will be installed for the following reasons:

- Temporary sheeting or shoring if required to stabilize excavation sidewalls and protect improvements on adjacent parcels and roadways; and,
- Temporary sheeting or shoring if required to limit the flow of groundwater into excavations, decreasing the amount of dewatering required.

Sheeting will be designed by a licensed New York State Professional Engineer and will conform to applicable building codes.

4.3.6 Dewatering

Dewatering is not contemplated for this remediation project. However, in certain instances where it may be needed submersible pumps will be used to extract groundwater from gravel-lined sumps in the excavations or a system of well points will be used for groundwater extraction. A Long Island Well Permit will be obtained to extract groundwater as necessary. Extracted groundwater will be conveyed to a treatment system.

Groundwater at the Site is contaminated with VOCs and SVOCs and treatment prior to discharge to surface water is regulated by the NYSDEC. A SPDES permit will be obtained to remove and discharge treated groundwater to surface water.

A treatment system capable of reducing contaminant levels as necessary to satisfy the requirements of SPDES permit will be operated on-site. It is expected that the treatment system will include settling tanks and an oil-water separator, particulate filters and activated carbon units. Effluent discharge compliance sampling will be performed in accordance with permit requirements.

Alternatively, extracted groundwater will be stored temporarily on site, characterized, and transferred off site for disposal.

4.3.7 Equipment and Material Staging

Equipment and material will be stored and staged in a manner that is consistent with local, State, and Federal regulations, as well as in accordance with the requirements of the SWPPP in Appendix D.

4.3.8 Decontamination Area

During remediation, soil and liquids adhered to construction vehicles and equipment will be removed prior to such vehicles and equipment leaving the Site. Soil and liquids will be removed from vehicles and equipment at a designated location near the Washington Street exit gate, as indicated in Section 4.3.3. Suitable decontamination procedures will be used for each type of contaminant that may adhere to vehicles. Soil generated by the decontamination process will be stockpiled and tested, and based on the results of the testing will be either reused onsite or transported off-site for disposal. Decontamination liquids will be collected and treated as described above in Section 4.3.6.

Additionally, to prevent spread of Gross Contamination, equipment in contact with Gross Contamination will be decontaminated after use.

4.3.9 Fencing

Fencing currently at the Site restricts the public’s access to the remediation area. Barrier protection will be installed around work areas as needed, for delineation of and restricting access to the work areas. For work areas of limited size, barrier tape will be sufficient to delineate and restrict access. For larger worker areas, temporary fencing will be provided.

4.3.10 Demobilization

Demobilization will include:

- Restoration of areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management area[s], and access area);
- Removal of temporary access areas (whether on-site or off-site) and restoration of disturbed access areas to pre-remediation conditions;
- Removal of sediment and erosion control measures and disposal of materials in accordance with acceptable rules and regulations;
- Equipment decontamination, and;
- General refuse disposal.

4.4 Reporting

All daily and monthly reports will be included in the Final Engineering Report.

4.4.1 Weekly Reports

Weekly reports will be submitted to the NYSDEC Project Manager by the end of each week following the reporting period and will include:

- An update of progress made during the reporting day;
- Photographs;
- Locations of work and quantities of material imported and exported from the Site;
- References to keyed numeric map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of work site monitoring; and,
- An explanation of notable Site conditions.

Weekly reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the RWP or other sensitive or time critical information. However, such conditions must also be included in the reports. Emergency conditions and changes to the RWP will be addressed directly to the NYSDEC Project Manager via personal communication.

The weekly reports will be based on written daily logs. Weekly reports will include a description of daily activities keyed to an alphanumeric map for the Site that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public. Weekly reports will not be required during any period when active remediation is not being performed.

A map that shows a predefined numeric grid for use in identifying locations described in reports submitted to NYSDEC is attached in Figure RWP-10.

The NYSDEC assigned project number will appear on all reports.

4.4.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers by the 10th day of each month. At a minimum, the Monthly Reports will include:

- Actions relative to the Site during the previous reporting period and those anticipated for the next reporting period;
- Approved activity modification (changes of work scope and/or schedule;
- Results of sampling and tests and other data received or generated by or on behalf of Posillico in connection with the Site whether under Agreement or otherwise, in the previous reporting period, including quality assurance/quality control information;
- Information regarding percentage of completion;
- Unresolved delays encountered or anticipated that may affect the future schedule and efforts made to mitigate such delays; and
- Information regarding activities undertaken in support of Citizen Participation Plan during the previous reporting period and those anticipated for the next reporting period.

4.4.3 Other Reporting

Photographs will be taken of remedial activities and submitted to NYSDEC in digital format. Photos will illustrate the remedial program elements and will be of acceptable quality. Representative photos of the Site prior to remedial actions will be provided. Representative photos will be provided of each contaminant source, source area, and structures before, during, and after remediation. Photos will be submitted to NYSDEC on CD or other acceptable electronic media and will be sent to NYSDEC's Project Manager (2 copies) and to NYSDOH's Project Manager (1 copy). CDs will have a label and a general file inventory structure that separates photos into directories and sub-directories according to logical remedial action components. A photo log keyed to photo file ID numbers will be prepared to provide explanation for all representative photos. Photos will be submitted on a monthly basis.

Record keeping for all remedial work will be appropriately documented. These records will be maintained on-site at all times during the project and be available for inspection by NYSDEC and NYSDOH staff.

4.4.4 Complaint Management Plan

Complaints from the public regarding nuisance or other conditions will be addressed promptly. Complaints and the response to those complaints will be recorded in the daily reports. NYSDEC and NYSDOH will be notified of all odor events and of other complaints about the project.

4.4.5 Deviations from the Remedial Work Plan

The process to be followed if there are any deviations from the RWP, where time permits at a minimum, will include a written submission to the NYSDEC with the following information:

- Reasons for deviating from the approved RWP;
- Effect of the deviations on overall remedy; and,
- A request for NYSDEC approval regarding the deviation.

In situations where unexpected occurrences require a fast response, the NYSDEC will be notified as soon as practicable of any deviations from the RWP and the reason for it.

5.0 REMEDIAL ACTION: MATERIAL REMOVAL

This section introduces plans for removal of contaminated media (soil, water, structures, etc.) under the Remedial Action (RA), and includes a description and identification of: the locations of planned remedial activities; the volume of each environmental medium to be remediated; the location, depth, and concentration of all contaminants in excess of remediation standards; and planned sample locations, depths, and parameters for post-construction samples. Future development activities will be conducted under a SMP, not the RWP. The RWP Quality Assurance Project Plan, describing the proposed sampling and analytical methods, is provided in Appendix C. A list of all required permits is provided in Table RWP-15.

5.1 Soil Cleanup Objectives

The SSSCOs for the Site are listed in Section 3.3. Soil and materials management will be conducted in accordance with the Soil Management Plan as described below. UST closure will, at a minimum, conform to criteria defined in DER-10. Figures RWP-6 through RWP-8 summarize the results of the RI soil sampling program and the figures identify the results of soil sample analyses that exceed the SSSCOs proposed for this Remedial Action.

5.2 Remedial Phase Investigations

5.2.1 Post-Tank Foundation Removal Soil Sampling

The objective of post-tank foundation removal soil sampling is to investigate soil adjacent to and below the remaining tank foundations not previously characterized. The aboveground tanks were previously removed. After the removal of the remaining tank foundations, samples will be collected in the locations shown on RWP-9. In general, samples will be collected one (1) per 100 linear feet of tank circumference and one (1) per 2,500 square feet of tank foundation area (to match the 50-foot by 50-foot remediation area grid boxes). Since Existing Tank Pad No. 5 is an area to be excavated for the removal of soil for off-site transportation and disposal (see Figure RWP-10), no soil sampling and analysis following foundation removal is proposed. Boring locations will be biased towards areas with indications of potential contamination, stained concrete, or deteriorated concrete.

At each boring location, direct-push equipment will be used to advance 4- or 5-foot long 2-inch diameter macro-core samplers to collect soil samples continuously from ground surface to the termination depth of each boring. Borings will be advanced to the top of the peat layer or if the peat layer is not encountered, to four feet below the current water table.

The soil samples will be screened for organic vapors utilizing a portable photoionization detector (PID). Field observations, including evidence of contamination (i.e., odors, staining, separate phase hydrocarbons, etc.), debris (i.e., concrete, brick, asphalt, wood), PID readings, and geological descriptions of each soil sample will be recorded in a field logbook. Soil samples will be selected from the 6-inch interval exhibiting the highest concentration of VOC vapors or where other evidence of contamination (i.e., odors, staining, fill material, etc.) is noted. If none of the soil exhibits evidence of contamination, the sample interval from zero to one foot below the current water table elevation will be analyzed.

If exceedances above the Restricted-Residential SCO are detected in any of the samples, the proposed area of excavation will be further evaluated. Additional soil samples may be submitted for analysis for purposes of delineation.

5.2.2 Bulkhead Replacement and Sediment Sampling

As part of the bulkhead reconstruction permitting, five (5) sediment samples will be collected at the locations shown on Figure RWP-9. In general, a ten foot-long Vibracore sampler will be advanced at each location with two samples collected at each location in accordance with the QAPP. Samples will be collected, if petroleum impacts are observed, from the two depth intervals that exhibit the highest potential for contamination (based on field observations). If no petroleum impacts are identified, the samples will be collected from the interval with the highest silt content and the interval with the highest organic content. The results of this sampling will be provided to the NYSDEC for informational purposes as requested, but will not affect the scope of the required remediation.

5.3 Soil Excavation and Removal of Subsurface Structures of Concern

5.3.1 Determination of Excavation Limits

During the BCP Site SRI, soil probes were advanced at or near the accessible intersection points of a 100-foot by 100-foot grid across the BCP Site. At each soil probe location, soil samples were collected continuously through the depth of the probe hole. Probe holes were extended to the water table or the apparent depth of contamination based on field observations (whichever was deeper). Additionally, discrete soil samples were selected for chemical analysis as described in the BCP Site RIR dated 2008.

The results of the soil sampling were used to estimate the extent and volume of contaminated soil exceeding the Track 4 SSSCOs. For this purpose, the BCP Site was conceptually divided into 50-foot by 50-foot grid boxes. Grid boxes characterized as containing soil exceeding the Track 4 SSSCOs provided one basis of the estimated limits and volumes of soil to be excavated for remediation. In the case of grid boxes without sampling data, available analytical data from surrounding grid boxes and professional judgment were utilized to determine what additional areas and depths would be included in the estimate of the remedial excavation limits. Refer to Figure RWP-10 for the results of this analysis.

Based on the results of soil investigations, it is anticipated that in grid cells lacking analytical data to the contrary, surface soils, may be deemed potentially reusable as fill beneath the Clean Soil Cover Layer. The size and depth of soil excavations are also subject to change based on post-tank foundation removal soil sampling, observations and field monitoring results during remediation, and the results of post-excavation, confirmatory soil sampling. In addition, excavation depths will potentially be limited by the constraint that excavations not require dewatering or sidewall support and not disturb the peat layer.

5.3.2 Soil Excavation and Ex-Situ Treatment and/or Load Out

Prior to beginning excavation, the results of the historic remedial investigations will be reviewed to determine whether ex-situ treatment should be implemented or if the excavated material will be transported off-site for disposal. If indications of Gross Contamination extend beyond the planned limits of excavation, excavation will continue until the Gross Contamination is removed within the boundaries of the Site[iii]. The vertical and horizontal extent of excavations will be surveyed by a New York State licensed land surveyor.

Appropriate measures will be taken to minimize the potential for re-contaminating remediated areas and spreading contamination. This will include decontaminating equipment after exposure to Gross Contamination, proper storm water management and use of soil erosion and sediment controls, use of liners below stockpiles of potentially contaminated media, and use of sheeting to "cut-off" potential migration pathways, if necessary.

Ex-situ treatment will include the addition of a chemical oxidizing agent and mechanical mixing. Post-treatment samples will be analyzed and compared to SSSCOs to determine if treated material may be used as Clean Fill. If the concentrations in the post-treatment samples exceed SSSCOs, additional treatment will be completed unless scheduling constraints prevent additional treatment and the material will be loaded for off-site disposal. Stockpiling of soil will be in accordance with SWPPP.

Trucks used to transport the soil will hold valid 6 NYCRR Part 364 Waste Transporter Permits. The trucks will be covered with functional tarps. A decontamination pad will be constructed near the Washington Street exit gate. Upon exiting the Site, waste transport vehicles will be required to stop at the decontamination pad and will be inspected for evidence of contaminated soil on the undercarriage, body, and wheels. Contamination will be removed on the decontamination pad.

Trucks will leave the Site from the gate located at Washington Street. Trucks leaving the Site will proceed without stopping or staging en route to prevent neighborhood complaints. The planned route on local roads for waste transport vehicles is presented on Figure RWP-11.

5.3.3 Tank Containment and Foundation Removal

Tank containment and foundations will be removed. Appropriate equipment (e.g., hydraulic hoe-ram) will be used to break up and remove concrete. The debris generated will be inspected prior to stockpiling on-site for additional crushing. If Gross Contamination is observed, a field determination will be made whether or not the contamination can be effectively removed by pressure washing. If it can be effectively removed, the debris will be pressure washed, crushed, and re-used on-site. If it is determined that the debris cannot be effectively cleaned, it will be further reduced to an appropriate size and disposed off-site. After the removal of tank containment and foundations, the soil in the vicinity of the removed concrete will be field screened for evidence of Gross Contamination. If indications of previously unidentified Gross Contamination are identified in the area, excavation will continue until the Gross Contamination is removed.

5.3.4 Underground Storage Tank Removal

A 3,000-gallon UST may be on-site in the general vicinity of the filling racks. Following slab and pavement removal, a magnetometer survey will be performed to locate the UST. The UST may also be encountered in the course of soil excavation. If the UST is located, the removal of the UST will be conducted in accordance with applicable local, State, and Federal regulations as well as standard industry practices.

The proposed UST removal will include the following tasks:

- Required filings for the removal of the UST, including filings with the Nassau County Department of Health ("NCDH") and NYSDEC will be made.
- The tank will be accessed utilizing non-sparking tools, and remaining product, liquids, and sludges and contents will be sampled for fingerprint and disposal analysis and pumped from the tanks into USDOT-approved drums or a vacuum truck for waste characterization and off-site disposal.
- After product has been pumped out of the tank, the tank will be entered or otherwise accessed and decommissioned in accordance with standard industry practices and OSHA requirements for confined space entry (29 CFR 1910.146). If the tank has been filled with concrete, the tank will be disposed of as one unit. If the tank has been filled with sand, the material will be sampled to determine if it is petroleum contaminated. Any petroleum contaminated sand within the tank will be characterized and disposed of at an appropriate off-site facility.

- The decommissioned tank and associated piping systems will be hoisted from the ground. The tank system will be inspected to document its interior and exterior conditions and subsequently disposed at an appropriate off-site recycling facility. The underlying concrete pad, if present, will be removed from the ground.
- If the tank is not in an anticipated excavation area post-excavation sampling will be conducted prior to backfilling. One sample from each of the four sidewalls and one from the bottom of the excavation will be collected and analyzed for TCL VOCs and SVOCs.
- The excavation will be backfilled with stockpiled reusable material from the Site, plus, as necessary, imported backfill.
- If the tank is in an area where additional excavation is planned, no post-excavation sampling will be done. Instead the post excavation sampling will be done when the full extent of the remediation in this area is completed.

5.4 Remedial Performance Evaluation (Post-Excavation Sampling)

5.4.1 Post-Excavation Soil Sampling

Post-excavation soil samples will be collected to document post-remediation soil conditions. Post-excavation soil sampling will be performed in accordance with the procedures described in the QAPP in Appendix G. Given the relatively large size of the Site and the proposed excavation utilizing a 50-foot by 50-foot grid, post-excavation samples will consist of one grab sample from the bottom of each 50-foot by 50-foot grid and for each side of the 50-foot by 50-foot grid that abuts the property boundary or otherwise represents the extent of a remedial excavation, a sidewall grab sample will be collected. This post-excavation soil sampling approach will also apply to sidewalls were the base of excavation changes.

In addition to collecting post-excavation end point samples in areas of Gross Contamination, post-excavation end points will be determined by inspecting for Gross Contamination in the field.

Post-excavation soil samples will be analyzed for the parameters of concern in accordance with the QAPP.

5.4.2 Post-Remediation Performance Groundwater Monitoring

Post-remediation performance groundwater monitoring will consist of groundwater sampling for characterization of the dissolved phase constituents in post-remediation groundwater. The groundwater monitoring plan will determine whether the remedy addressed groundwater contamination. Procedures for long term site-wide groundwater monitoring and continued performance will be proposed and approved by the NYSDEC in the Site Management Plan as described in Section 8.2.

It is expected that during soil removal activities, many, if not all of the existing wells that were installed as part of historic remedial investigations will be removed or damaged. Therefore, following the completion of the remedial activities, monitoring wells necessary for performance groundwater monitoring will be installed and sampled as described below. It is anticipated that the performance monitoring well system will also be used for the long-term monitoring program described in the Site Management Plan. Therefore, the locations of the wells need to be accessible once the site is redeveloped. To accomplish this, monitoring wells will be located in one upgradient location, one mid-site location and two downgradient locations as close as possible to existing wells that had dissolved constituents in the recent samples.

The Site Management Plan, to be submitted to the NYSDEC after the FER is accepted, will identify the proposed final locations subject to NYSDEC's approval.

5.4.3 Post-Remediation Soil Gas Survey

After soil excavation and backfilling is complete, post-remediation VOC levels in soil gas will be measured within the footprint of each of the eleven proposed buildings. The proposed soil gas sampling locations are shown on Figure RWP-9. Soil gas sampling will be conducted in accordance with the NYSDOH document titled, "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" and the QAPP.

The soil gas samples will be collected from directly above the capillary fringe, which will typically be encountered at a depth of 3 to 4 feet bgs. The actual depths of soil gas sampling will be field determined based on the observed depth of groundwater. Soil gas sample collection trains will be advanced using a direct drive rig as described in the QAPP. Prior to collecting soil gas samples, helium tracer gas will be used to verify the integrity of each soil vapor probe seal.

At each soil gas sample location, a representative soil gas sample will be collected utilizing a SUMMA canister. The soil gas samples will be shipped to TestAmerica Laboratories of Edison, New Jersey and analyzed for VOCs via EPA Method TO-15. After each soil gas sample is collected, the location will be field screened for methane using a landfill gas meter.

5.4.4 Surveying

As part of the BCP Site Remedial Investigation, a survey was conducted to locate the sampling points and determine ground surface elevations. A survey was also conducted after the installation of the monitoring wells to establish the nearby ground surface elevations and the elevation of the top of the inner casing of each well. Elevations were reported in reference to the Nassau County Datum. The datum used for horizontal data is the New York State Plan Coordinate System of 1983. Additionally, Jeffrey S. Bausch, P.L.S., P.C., a New York State-licensed land surveyor, prepared a property boundary survey and descriptions of metes and bounds for the BCP Site (refer to Appendix A).

Excavations for remediation will be surveyed by a New York State licensed surveyor. Both horizontal and vertical extent of excavations as well as the locations and elevations of post-excavation soil sampling points will be surveyed and mapped. Additionally, after installation, the location and elevation of the Demarcation Layer (refer to Section 5.6.8) will be surveyed as well as final grade, and long term monitoring wells (i.e., location, adjacent ground surface elevation and the elevation of the top of the inner casing for each well) and permanent sheeting lines will be surveyed and mapped.

Please refer to Section 5.6.8 for addition details regarding the Demarcation Layer.

5.5 Estimated Material Removal Quantities

Remedial Alternative 3 consists of the excavation of soil that exceeds the proposed Track 4 SSSCOs. Based on the data presented in the historic remedial investigations, the estimated volume of petroleum-impacted soil that was presented in the October 2013 RWP was approximately 47,000 cubic yards (in-place volume) or 75,000 tons. This volume was based on the vertical and horizontal limits that are shown on Figure RWP-10 for all soils that would safeguard Restricted Residential Use. Subsequent to the May 2014 NYSDEC Decision Document, an additional estimate of excavated soil was prepared using RockWorks 3D modeling software. This model used the top of peat layer, shown on Figure RWP-6 to reduce the estimated volume to 29,000 cubic yards (in-place) or 46,275 tons. Figure RWP-13 illustrated the results from the RockWorks model. No PCB-impacted soil would be removed under this alternative. Refer to Figure RWP-10, which shows the estimated extent of excavation required.

5.6 Soil/Materials Management Plan (SoMP)

5.6.1 Soil Screening Methods

Visual, olfactory, and PID soil screening and assessment will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (Residual Contamination Zone). Soil screening will be performed during all excavation and invasive work performed in the Residual Contamination Zone during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the COC.

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the Final Engineering Report.

Screening will be performed by qualified environmental professionals. Resumes will be provided for all personnel responsible for field screening (i.e., those representing the Remedial Engineer) of invasive work for unknown contaminant sources during remediation and development work.

5.6.2 Stockpile Methods

This section includes details describing stockpile methods:

- Stockpiles will be limited to 2,000 cubic yards in volume and a maximum height of 20 feet.
- Stockpiles will be inspected daily and after every storm event. Results of inspections will be recorded in a logbook, maintained at the Site and made available for inspection by NYSDEC.
- Stockpiles will be placed on rugged tarps and kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.
- Soil erosion and sediment control devices will be used as necessary and in accordance with the SWPPP at stockpiles and stormwater inlets.
- A dedicated water truck equipped with a water cannon will be available on-site for dust control, as necessary.

5.6.3 Materials Excavation and Ex-Situ Treatment and/or Load Out

This section includes the methods to be followed for materials excavation, on-site management and ex-situ treatment and/or loading as described below:

- A qualified environmental professional under the supervision of the Remedial Engineer will oversee all invasive work and the excavation and ex-situ treatment and/or load-out of all excavated material.
- The Applicant and their contractors, including the Remedial Engineer, will be solely responsible for safe execution of all invasive and other work performed under this plan.
- The presence of utilities and easements on the Site has been investigated by the Remedial Engineer. It has been determined that no unreasonable risk or impediment to the planned work under this RWP is posed by utilities or easements on the Site.
- Ex-situ treatment will include the addition of a chemical oxidizing agent and mechanical mixing. Post-treatment samples will be analyzed and compared to SSSCOs to determine if treated material may be used as Clean Fill. If the concentrations in the post-treatment samples exceed SSSCOs, additional treatment will be completed unless scheduling constraints prevent additional treatment and the material will be loaded for off-site disposal.

- Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).
- A truck decontamination area will be operated on-site. The Remedial Engineer will be responsible for confirming that outbound trucks, which were potentially in contact with contaminated media, were decontaminated before leaving the Site until the remedial construction is complete.
- Locations where vehicles enter or exit the Site will be inspected daily for evidence of off-site soil/sediment tracking.
- The Remedial Engineer will be responsible for confirming that egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.
- The Applicant and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).
- The Remedial Engineer will confirm that development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this RWP.
- Each identified hotspot to be remediated will be removed and end-point remedial performance sampling completed before excavations related to development commence proximal to the hotspot.
- All primary contaminant sources (including but not limited to tanks) identified during historic remedial investigations and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be reported in the Final Engineering Report.
- The FER will include a tabulation of the amount of material treated and re-used on-site.

5.6.4 Materials Transport Off-Site

This section describes all the methods to be followed for materials management while in transport off-site:

- All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.
- Truck transport routes are shown on Figure RWP-11. All trucks loaded with Site materials will exit the vicinity of the Site using only approved truck routes.
- Proposed in-bound and out-bound truck routes to the Site are shown in Figure RWP-11. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive receptors; (b) prohibiting off-site queuing of trucks entering the facility; (c) limiting total distance to major highways; (d)

promoting safety in access to highways; (e) overall safety in transport; and (f) community input.

- Trucks will be prohibited from stopping and idling in the neighborhood outside the Site.
- Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during remediation and development.
- Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.
- Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, liquid tight trucks will be used.
- All trucks potentially in contact with contaminated media will be washed prior to leaving the Site. Truck wash wastewater will be collected and disposed of off-site in an appropriate manner.

5.6.5 Materials Disposal Off-Site

The total quantity of material expected to be disposed off-site is less than 45,000 tons after any soil that is reusable is subtracted from the excavated soil, as explained ahead. Disposal facilities will be selected following completion of waste characterization sampling and analysis. The anticipated disposal locations for the petroleum-contaminated non-hazardous soil associated with the remediation may include but are not limited to the following locations:

- Bayshore Recycling Corp., Keasbey, New Jersey;
- Clean Earth (BioCycle) of Carteret, New Jersey;
- Soil Safe, Logan, New Jersey; and,
- Posillico Materials, Farmingdale, NY.

Disposal locations established at a later date will be reported to the NYSDEC Project Manager.

All soil/fill/solid waste excavated and removed from the BCP Sites will be treated as contaminated and regulated material and will be disposed in accordance with all applicable local, State (including 6 NYCRR Part 360) and Federal regulations. If disposal of soil/fill from the BCP Sites is proposed for unregulated disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-site management of materials from the BCP Sites is prohibited without formal NYSDEC approval.

Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360-16 Registration Facility).

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the BCP Sites conforms to all applicable laws:

(1) A letter from the Remedial Engineer or BCP Applicants to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed is contaminated material generated at an environmental remediation BCP Site in New York State. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of pertinent chemical data for the material being transported (including site characterization data); and
(2) A letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at a minimum, as a municipal solid waste, per 6 NYCRR Part 360-1.2. Historical fill and contaminated soils from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the Division of Materials Management ("DMM") in NYSDEC to be Construction and Demolition ("C/D") materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill in New York State, or managed in accordance with the applicable laws and regulations in any jurisdiction outside of New York State. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC Region 2 DMM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from environmental remediation of a BCP Site, that the soil material is contaminated and that it must not be redirected to on-site or off-site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of chemical data for the material being transported.

The Final Engineering Report will include an accounting of the destination of all material removed from the Site during this Remedial Action, including excavated soil, contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material will also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the FER.

Bill of Lading system or equivalent will be used for off-site movement of non-hazardous wastes and contaminated soils. This information will be reported in the Final Engineering Report.

Hazardous wastes derived on-site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

Appropriately licensed haulers will be used for material removed from the Site and will be in full compliance with all applicable local, State, and Federal regulations.

Waste characterization will be performed for off-site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results, and QA/QC will be reported in the FER. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

5.6.6 Materials Reuse On-Site

Excavated soil sampled to confirm that concentrations are below the Track 4 SSSCOs and without Gross Contamination will generally be reused to backfill excavations up to two feet below Final Grade. "Final Grade" is defined as the surface elevation achieved in the Site after completion of remediation and placement of the Cover Layer. The Clean Fill Cover Layer, consisting of a minimum of two feet of Clean Fill, will be installed because development (i.e., buildings, roads, sidewalks, and landscaping) may not be completed for several years. Soil used for the Clean Fill Cover Layer will be obtained from sources approved by the NYSDEC and will meet the lower of the protection of groundwater or the protection of public health soil cleanup objectives for restricted-residential use as described in 6 NYCRR Part 375-3.8(e)(4)(iii)[iv]. Stockpiled backfill material will be maintained on-site separate from the areas of active remediation work. Reuse sampling will be completed following ex-situ treatment and excavation of potentially clean overburden for SVOCs and VOCs, including TICs. Two (2) discrete VOC samples and one (1) composite SVOC sample will be collected per 1,000 cubic yards or part thereof. Samples will be collected Stockpile sizes will be limited to 2,000 cubic yards or less. Additional requirements regarding material reuse on-site is detailed below:

- Chemical criteria for on-site reuse of material have been approved by NYSDEC. These criteria are listed in Section 3.3. The Remedial Engineer will confirm that procedures defined for materials reuse in this RWP are established and that unacceptable material will not remain on the Site.
- Acceptable demolition material proposed for reuse on the Site, if any, will be sampled for asbestos.
- On-site concrete crushing will comply with all applicable regulations.
- Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for reuse on the Site.
- Contaminated material originating from the Site, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer,

within landscaping, berms, or as backfill for subsurface utility lines. This will be expressed in the final Site Management Plan.

5.6.7 Fluids Management

All liquids to be removed from the Site, including dewatering fluids (refer to Section 4.3.6), will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged to surface water will be addressed through approval by NYSDEC.

Dewatered fluids will not be recharged back to the land surface or subsurface of the Site without approval of the NYSDEC.

Discharge of water generated during remedial construction to surface waters (i.e., a local pond, stream, or river) is prohibited without a SPDES permit.

5.6.8 Demarcation

After the completion of soil removal and any other invasive remedial activities and prior to placement of the Demarcation Layer, a land survey will be performed by a New York State-licensed surveyor. The survey will define the elevation of Demarcation Layer. A physical Demarcation Layer, consisting of orange snow fencing material or equivalent material, will be placed on this surface to provide a visual reference. The survey will measure the grade covered by the Demarcation Layer before the placement of cover soils, pavement and sub-soils, structures, or other materials. A map showing the survey results will be included in the Final Remediation Report and the Site Management Plan.

5.6.9 Backfill from Off-Site Sources

This section presents the requirements for imported fill materials to be used below the cover system or as the Clean Fill Cover Layer. Soil used for the Clean Fill Cover Layer will be obtained from sources approved by the NYSDEC and will meet soil cleanup objectives for restricted-residential use as described in 6 NYCRR Part 375-3.8(e)(4)(iii). Imported soil for use below the cover system shall be obtained from an approved source and will meet 6 NYCRR 375-6.7(d). Figure RWP-12 provides a detail of the inter-relationship of these discrete materials.

Potential Imported Fill Material Sources

A preliminary property review will be conducted to evaluate sources of potential fill to be used on the Site, and will include documentation of each source's location, and current and historical use(s). The following potential sources will be considered, subject to NYSDEC approval:

- Virgin sources (i.e., natives soils and/or sediments from undeveloped properties),
- Construction projects at non-industrial properties,

- Roadway or other transportation-related projects, and
- Other non-industrial sources.

Imported Fill Material Source Screening and Testing

Prior to acceptance of fill material, the procedures described below will be followed to verify the acceptability of the source. History of fill material source properties will be determined using historical Sanborn Fire Insurance Maps, if available, and one or more of the following sources:

- For fill sources in New York City or other urban areas, historical topographic maps will be reviewed, if available;
- Aerial photographs;
- Historical title information;
- Site reconnaissance;
- Database review; and,
- Interviews of knowledgeable persons.

Materials from virgin sources will be tested initially, and will consist of collecting and analyzing one sample for the parameters described below. Materials from non-virgin sources will be tested initially at a frequency one five point composite and two discrete VOC samples for every 1,000 cubic yards of imported material. If, based on the initial analytical results, the material is suitable for use as Clean Fill, a lesser frequency of testing may be proposed to the NYSDEC for approval on a case-by-case basis. The samples will be analyzed to determine whether the fill material is nonhazardous and meets the soil cleanup objectives for restricted-residential use as described in 6 NYCRR 375-6.7(d) or otherwise approved by NYSDEC. The exception to the composite sampling will be the portion of each sample that will be submitted for analysis for VOCs, which will not be homogenized and will consist of a grab sample. The parameters to be analyzed for include TCL VOCs, TCL SVOCs, TCL pesticides/polychlorinated biphenyls (PCBs), TCL herbicides, and TAL metals.

Additional details regarding imported material are detailed below:

- All materials proposed for import onto the Site will be approved by the Remedial Engineer and will be in compliance with provisions in this RWP prior to receipt at the Site.
- Material from industrial, spill, other environmental remediation properties or other potentially contaminated properties will not be imported to the Site.
- The Final Engineering Report will include the following certification by the Remedial Engineer: "I certify that all import of soils from off-site, including source evaluation, approval, and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Work Plan".
- All imported soils will meet NYSDEC approved backfill or cover soil (i.e. Cover Layer) quality objectives for the Site. These NYSDEC approved backfill or cover soil quality objectives are listed in Section 3.3. Soils that do not meet these quality objectives will

not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved Remedial Work Plan or its approval by NYSDEC should be construed as an approval for this purpose.

- Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for the Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in this RWP should be construed as an approval for this purpose.
- Recycled concrete aggregate that originated from the Site and that meets 'exempt fill' requirements under 6 NYCRR Part 360 and also meet the SSSCOs may be reused on-site. The import of RCA from other sources must be approved by the NYSDEC.
- Solid waste will not be imported onto the Site.
- Trucks entering the Site with imported soils will be securely covered with tight fitting covers.

5.6.10 Stormwater Pollution Prevention

The SWPPP associated with the existing general permit coverage (permit identification number NYR 10K975) will apply to the demolition activities including concrete tank containments and foundation slabs, and pavements. TRC prepared a Stormwater Pollution Prevention Plan (SWPPP), which details the steps and procedures for compliance with New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-10-001 that will apply to the remedial actions other than demolition.

Soil erosion and sediment control procedures will be in place and functional prior to beginning any intrusive work. Components of the SWPPP, which will be employed, include installation and maintenance of silt fencing, vehicle-tracking pads at egress points, storm drain inlet protection, and soil stockpile protection. Refer to Appendix D for the SWPPP. Additional requirements regarding stormwater pollution prevention are listed below:

- Barriers will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs will be made immediately.
- Accumulated sediments will be removed as required to keep the barrier functional.
- All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.
- Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.
- Silt fencing or other silt filtration device will be installed around the entire perimeter of the remedial construction area.
- A turbidity curtain will be installed in bulkhead replacement areas.
- Erosion and sediment control measures identified in the SWPPP will be observed to confirm that they are operating correctly. Where discharge locations or points are

accessible, they will be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

5.6.11 Contingency Plan

Underground Tanks or Other Previously Unidentified Contaminant Sources

If underground tanks or other previously unidentified contaminant sources are found during Site remedial excavation or development related construction, sampling will be performed on product, sediment, and surrounding soils, etc. Chemical analytical work will be for full scan parameters (TAL metals; TCL volatiles and semivolatiles, TCL pesticides, and PCBs). Analyses will not be otherwise limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during invasive work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will be also included in daily and periodic electronic media reports.

Piping and Subsurface Structures Removal

Based on former use, subsurface piping and/or facilities may exist at the site. Industrial remnants, including all identified piping will be removed. Appropriate equipment (e.g., hydraulic hoe-ram) will be used to break up and remove subterranean concrete that may be encountered prior to transport off-site or crushing and on-site reuse. The debris generated will be inspected. If Gross Contamination is observed, a field determination will be made whether or not the contamination can be effectively removed by pressure washing. If it can be effectively removed, the debris will be pressure washed and managed as construction and demolition debris. If it is determined that the debris cannot be effectively cleaned, it will be further reduced to an appropriate size and disposed off-site. If remediation requires the removal of concrete foundations and footings and evidence of gross contamination or exceedances of the SSSCOs were not previously identified in that area, the soil underneath and around the area will be field screened for evidence of Gross Contamination. If indications of previously unidentified Gross Contamination are identified in the area, excavation will continue until the Gross Contamination is removed within the boundaries of the Site.

If buried piping or structures are found, which extend beyond the boundaries of the Site the piping or structures will be cut at the boundary and sealed with grout. If the piping or structures contain product and continue past the boundary of the Site, spills will be reported to the NYSDEC, as necessary.

5.6.12 Community Air Monitoring

Site investigations have indicated the presence of VOCs and SVOCs. The NYSDOH generic CAMP will be followed during remedial activities (refer to Appendix E). Real-time air monitoring will be performed at the perimeter of the work zone. The goal of the CAMP is to recognize and respond to pre-determined action levels for contaminants of concern. Corrective actions, which may include dust and vapor suppression techniques, alteration of certain work activities, or stopping work, will be taken if predetermined action levels are detected.

Exceedances of CAMP action levels will be reported to NYSDEC and NYSDOH Project Managers and included in the Daily Report.

5.6.13 Odor, Dust and Nuisance Control Plan

This section describes all methods to be followed for odor, dust, and nuisance control.

Odor Control Plan

The Supplemental Investigations in 2011 did not identify any strong odors. This odor control plan is capable of controlling emissions of nuisance odors, if encountered. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Establishment of odor control procedures, including the suspension of work, will be the responsibility of the Applicant's Remedial Engineer, who is responsible for certifying the Final Engineering Report.

All necessary means will be employed to prevent nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include direct load-out of soils to trucks for disposal; and use of chemical odorants in spray or misting systems.

Dust Control Plan

Dust management during invasive on-site work, will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck or equivalent for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- If necessary, gravel will be used on roadways to provide a clean and dust-free road surface.

On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during preparation, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work and will conform, at a minimum, to local noise control standards. Generally, remediation work will occur on weekdays between the hours of 7:00 am and 6:00 pm.

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

Since residual contaminated soil and groundwater/soil vapor will exist beneath the Site after the remedy is complete, Engineering and Institutional Controls ("ECs/ ICs") are required to protect human health and the environment. These ECs and ICs are described below. Long-term management of IC/ECs and of residual contamination will be executed under a Site Management Plan that will be developed and included in the Final Engineering Report ("FER").

ECs will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the Site) will have two primary EC systems. These are: (1) the cover system; and (2) all routinely occupied buildings will be constructed with sub-slab vapor barriers and sub-slab depressurization elements. If vapor intrusion into a building becomes a concern, the sub-slab depressurization elements will be activated. See Figure RWP-12 for details of the Final Site Development Cover.

The FER will report residual contamination on the Site in tabular and map form.

7.0 ENGINEERING CONTROLS

The engineering controls to be implemented at the Site include the following:

- Placement of a cover system consistent with 6 NYCRR Part 375-3.8(e)(4)(iii) will consist either of Final Site Development Covers consisting of structures such as buildings, pavement and sidewalks comprising the Site development, or a Clean Fill Cover Layer in areas where the two feet of exposed surface soil will exceed the applicable SSSCOs. The Clean Fill Cover Layer will be placed over the Demarcation Layer.; and,
- All routinely occupied buildings will be constructed with sub-slab vapor barriers and sub-slab depressurization elements. If vapor intrusion into a building becomes a concern, the sub-slab depressurization elements will be activated.

7.1 Clean Fill Cover Layer

Engineering controls for the Site may consist of a Demarcation Layer and Clean Fill Cover Layer (refer to Figure RWP-12). The Clean Fill Cover Layer will consist of a minimum of two feet of soil in compliance with the requirements for restricted-residential use specified at 6 NYCRR 375-6.7(d) or otherwise approved by the NYSDEC. Additionally, a Demarcation Layer consisting of an orange plastic safety fence type grid or netting will be placed to indicate that soil above the Demarcation Layer is Clean Fill. The Demarcation Layer will serve as a physical indicator for the surface of underlying soil with contaminant concentrations meeting Track 2 SCOs or residual soil and will aid in managing future subsurface disturbance[v].

7.2 Vapor Barriers

The buildings will be constructed with vapor barriers below the concrete floor slabs with continuous waterstops within required construction joints. The vapor barrier design and details will be submitted under SMP. It is anticipated that the vapor barriers will consist of 6-inch concrete floor slabs with a 46-mil Preprufe 300 R membrane, or approved equivalent, beneath the slab.

7.3 Building Sub-Slab Depressurization Elements

Sub-slab depressurization elements (SSDEs) will be designed and installed should future vapor monitoring indicate sub-slab depressurization is needed to minimize the potential for vapor intrusion. The principal components of each SSDE will include:

- Vapor barrier (described above);
- Suction pits beneath the floor slab;
- Pipe running horizontally beneath the slab from each suction pit to a common header;
- A vertical riser, at least four inches in diameter, from the common header discharging above the building roof; and,
- Valve boxes to control the air flow from each pit.

If avapor intrusion for an on-site building concern is identified and NYSDEC, NYSDOH, or Nassau County Department of Health ("NCDH") require, the sub-slab depressurization elements will be activated. The OM&M requirements for the SSDEs that are required to be activated will consist of energizing the elements, an initial startup testing, routine maintenance and monitoring activities, and non-routine maintenance activities to be detailed as an addendum to the Site Management Plan.

The active SSDEs will not be discontinued without written approval by NYSDEC and NYSDOH. A proposal to discontinue the active SSDEs may be submitted by the property owner based on confirmatory data that justifies such request. Active SSDEs will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

7.4 Final Site Development Cover

Final Site Development Cover will consist of impervious surfaces (e.g., buildings, and asphalt and concrete paving) and in all other areas (e.g., landscaped areas) at least two feet of clean soil meeting the soil cleanup objectives for restricted-residential use as described in 6 NYCRR 375-6.7(d) or otherwise approved by NYSDEC (i.e., Cover Layer). Refer to Figure RWP-12 for Final Site Development Cover details. The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity.

A diagram showing the conceptual design detail for each final site development cover type is shown in Figure RWP-12. A map showing the aerial distribution of each of the cover types to be built at the Site is included in Figure RWP-3. These features are subject to modification through the design phase.

A Soil and Underground Structure Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual contamination are disturbed after the Remedial Action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the FER.

8.0 INSTITUTIONAL CONTROLS

After the remedy is complete, the Site will have residual contamination remaining in place. Engineering Controls ("ECs") for the residual contamination have been incorporated into the remedy to render the overall remedy protective of public health and the environment. Two elements have been designed for continual and proper management of residual contamination in perpetuity: an Environmental Easement and a Site Management Plan. These elements are described in this Section. Site-specific Environmental Easements will be recorded with Nassau County to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. ICs provide restrictions on the Site usage and mandate operation, maintenance, monitoring, and reporting measures for all ICs/ECs. The SMP describes appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easements. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor and grantor's successors and assigns.

8.1 Environmental Easement

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-site after the Remedial Action is complete. Under the BCP, an Environmental Easement is required for the Site. As part of this remedy, an Environmental Easement approved by NYSDEC will be filed and recorded with the Nassau County Clerk. The Environmental Easement will be submitted as part of the Remedial Action

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with the Nassau County Clerk before the Certificate of Completion can be issued by NYSDEC. A series of Institutional Controls are required under this remedy to implement, maintain, and monitor these Engineering Control systems, prevent future exposure to residual contamination by controlling disturbances of the subsurface soil, and restricting the use of the Site to Restricted Residential use(s) only. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by the Environmental Easement. Institutional Controls in both of these groups are closely integrated with the Site Management Plan, which provides all of the methods and procedures to be followed to comply with this remedy.

The Institutional Controls are:

- The Controlled Property may be used for restricted-residential use (as defined in 6 Codes Rules and Regulations of the State of New York ("NYCRR") Section 375-1.8(g)(2)(ii)), provided the long-term engineering and institutional controls in the Site Management Plan are employed.
- The Controlled Property may not be used for a less restrictive use than restricted-residential, i.e., residential or unrestricted (as such terms are defined in 6 NYCRR Section 375-1.8(g)(1) and (2)), without an amendment or termination of this Declaration of Covenants and Restrictions.
- Vegetable gardens are prohibited on the Controlled Property, with the exception of those located entirely above the Cover Layer and separated from the Residual Soil by a high-density polyethylene ("HDPE") liner or equivalent approved by the Relevant Agency.
- Farming is prohibited on the Controlled Property.
- Engineering controls must operate as specified in the Site Management Plan and may not be discontinued or modified without an amendment of the Site Management Plan (approved by the NYSDEC) or the termination of this Declaration of Covenants and Restrictions.
- A cover system consisting of either of structures such as buildings, pavement and sidewalks comprising the Site development or a Clean Fill Cover Layer must be maintained, inspected, and certified at a frequency and in a manner specified in the Site Management Plan.
- The soil vapor mitigation elements on the Controlled Property consisting of the sub-slab depressurization piping under all building structures, riser pipes, and valves must be operated, maintained, inspected, and certified at a frequency and in, if activated, a manner specified in the Site Management Plan.
- All data and information pertinent to management for the Controlled Property must be reported at the frequency and in a manner specified in the Site Management Plan.
- All groundwater, soil vapor, and other environmental or public health monitoring requirements related to the Controlled Property must be performed as required in the Site Management Plan.
- Environmental monitoring devices, including but not limited to, groundwater monitoring wells and soil vapor probes, must be protected and replaced as necessary to ensure continued functioning as specified in the Site Management Plan.
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless such activities are conducted in accordance with the soil management provisions in the Site Management Plan.
- The use of the groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for the intended purpose.
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP.

Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert as per DER 10.

8.2 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the Final Engineering Report and issuance of the Certificate of Completion ("COC") for the Remedial Action. The Site Management Plan ("SMP") is submitted as part of the FER but will be written in a manner that allows its removal and use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement or deed restriction and the SMP are performed.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the Site following completion of the Remedial Action in accordance with the BCA with the NYSDEC. This includes: (1) development, implementation, and management of all Engineering and Institutional Controls; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of information to NYSDEC; and (5) defining criteria for termination of mitigation system operation.

To address these needs, this SMP will include: (1) an Engineering and Institutional Control Plan for implementation and management of IC/ECs; (2) a Monitoring and Management Plan for implementation of Site Monitoring; (3) a plan to activate the SSDEs should concerns with soil vapor intrusion arise. That will include the requirements for energizing the elements and preparing an operations and maintenance plan specifically for the equipment utilized to energize the piping; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC.

9.0 FINAL ENGINEERING REPORT

A Final Engineering Report (FER) will be submitted to NYSDEC following implementation of the Remedial Action defined in this RWP. The FER provides the documentation that the remedial work required under this RWP has been completed and has been performed in compliance with this plan. The FER will provide a comprehensive account of the locations and characteristics of all material removed from the Site including the surveyed map(s) of all sources. The Final Engineering Report will include as-built drawings for all constructed elements, certifications, manifests, and bills of lading as well as the complete SMP. The FER will provide a description of the changes in the Remedial Action from the elements provided in the RWP and associated design documents. The FER will provide a tabular summary of all performance evaluation sampling results, all material characterization results, and other sampling and chemical analysis performed as part of the Remedial Action. The FER will provide test results demonstrating that all mitigation and remedial systems are functioning properly. The FER will be prepared in conformance with DER-10.

The FER will include written and photographic documentation of all remedial work performed under this remedy.

The FER will include an itemized tabular description of actual costs incurred during all aspects of the Remedial Action.

The FER will provide a thorough summary of all residual contamination left on the Site after the remedy is complete. Residual contamination includes all contamination that exceeds the Track 1 Unrestricted Use SCOs in 6 NYCRR Part 375-6. A table that shows exceedances from Track 1 Unrestricted SCOs for soil/fill remaining at the Site after the Remedial Action and a map that shows the location and summarizes exceedances from Track 1 Unrestricted SCOs for soil/fill remaining at the Site after the Remedial Action will be included in the FER.

The FER will provide a thorough summary of residual contamination that exceeds the SSSCOs defined for the Site in the RWP and must provide an explanation for why the material was not removed as part of the Remedial Action. A table that shows residual contamination in excess of SSSCOs and a map that shows residual contamination in excess of SSSCOs will be included in the FER.

The Final Engineering Report will include an accounting of the destination of all material removed from the Site, including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of material imported onto the Site.

Before approval of a FER and issuance of a Certificate of Completion, all project reports must be submitted in digital form on electronic media (PDF).

For projects with approved documents, such as a Remedial Investigation Work Plan and/or a Remedial Investigation Report, which were not originally submitted in digital format, the approved versions of such documents must be submitted in digital format to the NYSDEC project manager before FER approval will be provided.

9.1 Certifications

The following certification will appear in front of the Executive Summary of the Final Engineering Report ("FER"). The certification will be signed by the Remedial Engineer, Steven D. Meersma, a Professional Engineer registered in New York State This certification will be appropriately signed and stamped. The certification will include the following statements:

> I, Steven D. Meersma, am currently a registered professional engineer licensed by the State of New York. Individuals under my supervision had responsibility for implementation of the remedial program activities, and I certify that the Remediation Work Plan was implemented and that all construction activities were completed in substantial conformance with the Department-approved Remediation Work Plan.
>
> I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the Remediation Work Plan and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.
>
> I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.
>
> I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, and that such plan has been submitted to the Department.

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Steven D. Meersma, of TRC Engineers, Inc. located at 1430 Broadway, New York, New York 10018, am certifying as the Remedial Party's Designated Site Representative and I have been authorized and designated by all Site owners to sign this certification for the Site.

Steven D. Meersma, P.E.

NYS Professional Engineer No. 076572-1	Date	Signature

It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

10.0 SCHEDULE

Section 4.2.3 presents a schedule for proposed remediation and reporting. As the schedule for remediation and development activities becomes more defined, the schedule will be updated and provided to the NYSDEC. Currently, a 14-month remediation period is anticipated, inclusive of reporting and regulatory approvals.

11.0 REFERENCES

1. Remedial Investigation/Feasibility Study, Volume I of III, Former Cibro Petroleum Terminal, Subsurface Investigations, August 1993.

2. New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Groundwater Effluent Limitations (TOGS) June 1998.

3. Site Investigation Work Plan, Law Environmental Consultants, Inc., November 2000.

4. Cleanup Plan for Soil and Groundwater at the Former Cibro Island Part Site, Law Environmental Consultants, Inc., February 2001.

5. Results of Supplemental Soil and Ground-Water Investigation, Law Environmental Consultants, Inc., August 6, 2001.

6. Permit issued by NYSDEC, February 25, 2003, for Waterfront and Shoreline Enhancement, #2-6304-00427/00005.

7. Voluntary Brownfield Cleanup Agreement, Site Number C130153, Index Number W1-1075-05-09, October 3, 2003.

8. New York State Department of Environmental Conservation Brownfield Cleanup Program Guide, May 2004.

9. New York State Department of Environmental Conservation Concrete Crushing Registration letter, November 29, 2004.

10. Interim Remedial Measure (IRM) Pilot Test Workplan and Supplemental Data Collection for the Former Cibro Island Park Site, Gannett Fleming, Inc., March 2005.

11. Phase I Environmental Site Assessment Former Cibro Brothers' Terminal, Metron Development Services, March 2, 2005.

12. Supplemental Data Collection Addendum to the Pilot Test Workplan for the Former Cibro Island Park Site, Metron Development Services, May 2006.

13. Citizen Participation Plan for Former Cibro Petroleum Terminal Site, New York State Department of Environmental Conservation, June 2006.

14. New York State Department of Health, Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006.

15. Environmental Assessment Form, Urbitran Associates, December 2006.

16. NYCRR Subpart 375-1, General Remedial Program Requirements; 6 NYCRR Subpart 375-3, Brownfield Cleanup Program; and 6 NYCRR Subpart 375-6, Remedial Program Soil Cleanup Objectives, December 14, 2006.

17. Final Remedial Investigation Report, Gannett Fleming Engineers, PC, May 2008.

18. New York State Department of Environmental Conservation letter to Posillico Development Company at Harbor Island, Inc. Re: BCP #C130153, Former Cibro Terminal Site, Harbor Island – Island Park, August 15, 2008.

19. Resolved Disputes and Remaining Outstanding Issues letter, Knauf Shaw LLP, September 30, 2008.

20. Update of Resolved Disputes, Continued Outstanding Issues & Proposed Final Resolutions Subject to State Approval letter, Knauf Shaw LLP, November 4, 2008.

21. New York State Department of Environmental Conservation letter to Posillico Development Company at Harbor Island, Inc. Re: BCP #C130153, Former Cibro Terminal Site, Harbor Island – Island Park, November 26, 2008.

22. New York State Department of Environmental Conservation Final DER-10 Technical Guidance for Site Investigation and Remediation, May 2010.

23. New York State Department of Environmental Conservation CP-51 Soil Cleanup Guidance, October 21, 2010.

24. New York State Department of Environmental Conservation SPDES General Permit for Stormwater Discharges from Construction Activity Permit No. GP-0-10-001.

25. New York State Groundwater Quality Standards, 6 NYCRR Part 703.

26. Supplemental Remedial Investigation Field Work, Subject to April 2011 Supplemental Remedial Investigation Work Plan & November 9, 2010, Stipulation of Discontinuance, Posillico Consulting, LLC, December 9, 2011.

27. New York State Department of Environmental Conservation letter to Posillico Development Company at Harbor Island, Inc. Re: BCP C130153, Former Cibro Terminal, Washington Avenue, Island Park, May 7, 2012.

28. TRC Engineers, Inc. letter report to Mr. Michael Posillico, regarding Groundwater Flow Direction and Tidal Influence Study, June 22, 2012.

[i] Exceptions apply to this and can be found at 6 NYCRR 375-3.8(f)(3).

Tables

TABLE RWP-1
SUMMARY OF VOLATILE ORGANIC COMPOUND AND SEMIVOLATILE ORGANIC COMPOUND ANALYSES FOR GROUND WATER SAMPLES
APRIL 1994
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		MW-1	MW-2	MW-3	MW-5	W-2	W-11
Lab Sample ID		T405002-7A	T405002-6A	T405002-4A	T405002-10A	T405002-05A	T405002-03A
Sampling Date		4/28/1994	4/28/1994	4/28/1994	4/28/1994	4/28/1994	4/28/1994
Matrix		Water	Water	Water	Water	Water	Water
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result	Result	Result	Result	Result
Methylene Chloride	5	1 JB	2 JB	2 JB	1 JB	ND	ND
Trichloroethene	5	ND	ND	ND	ND	2 J	ND
Benzene	1	ND	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND	ND	ND
Ethylbenzene	5	ND	ND	ND	ND	ND	ND
Total VOCs	NC	1	2	2	1	2	ND
Total VOC TICs	NC	87	6	594	505	14	452
SEMIVOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result	Result	Result	Result	Result
Di-n-butyl phthalate	50	6 J	6 J	3 J	5 J	3 J	4 J
Bis(2-ethylhexyl) phthalate	5	2 J	2 J	ND	2 J	1 J	ND
Acenaphthene	20	ND	4 J	7 J	6 J	ND	82
Dibenzofuran	NC	ND	1 J	3 J	6 J	ND	53
Fluorene	50	ND	ND	7 J	7 J	ND	29
Naphthalene	10	ND	ND	ND	32	ND	20
Phenanthrene	50	ND	ND	ND	7 J	ND	42
Pyrene	50	ND	ND	ND	ND	ND	3 J
Anthracene	50	ND	ND	ND	ND	ND	3 J
Fluoranthene	50	ND	ND	ND	ND	ND	9 J
Total SVOCs	NC	8	13	20	65	4	245
Total SVOC TICs	NC	122	171	491	431	178	359

Notes:
µg/L - micrograms per liter
ND Not detected above laboratory reporting limits
NC No Criteria
B - Analyte found in the method blank as well as the sample indicating possible cross contamination
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value

TABLE RWP-2
SUMMARY OF VOLATILE ORGANIC COMPOUND ANALYSES FOR GROUND WATER SAMPLES
JANUARY 2001
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		OW-1	W-2	W-11	W-12	FB-010801	FB-010901	TB-010801	TB-010901	MW-1	MW-2	MW-3R
Sampling Date		1/8/2001	1/10/2001	1/9/2001	1/9/2001	1/8/2001	1/9/2001	1/8/2001	1/10/2001	1/8/2001	1/8/2001	1/9/2001
Matrix		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
1,2,4-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.8
m&p-Xylene	5(a)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MTBE	10	ND	ND	ND	ND	4.1	3.9	3.8	4.6	ND	ND	ND
Naphthalene	10	ND	ND	5.8	ND	ND	ND	ND	ND	ND	ND	118
n-Butylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.6
o-Xylene	5(a)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	15.8
sec-Butylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.6
tert-Butylbenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total BTEX	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs*	NC	ND	ND	5.8	ND	4.1	3.9	3.8	4.6	ND	ND	145.8

Notes:
µg/L - micrograms per liter
(a) There is no Standard or Guidance Value for total xylenes. The Standard for o-xylene, m-xylene, and p-xylene is 5 µg/L.
ND Not detected above laboratory reporting limits
NC No Criteria
* Total volatile organic compounds, excluding total BTEX

TABLE RWP-2
SUMMARY OF VOLATILE ORGANIC COMPOUND ANALYSES FOR GROUND WATER SAMPLES
JANUARY 2001
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		MW-6	LMW-1	LMW-2	LMW-3	LMW-4	LMW-5
Sampling Date		1/9/2001	1/9/2001	1/10/2001	1/10/2001	1/8/2001	1/8/2001
Matrix		Water	Water	Water	Water	Water	Water
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result	Result	Result	Result	Result
1,2,4-Trimethylbenzene	5	ND	ND	123	ND	ND	ND
1,3,5-Trimethylbenzene	5	ND	4	19.9	ND	ND	ND
Benzene	1	ND	109	ND	ND	ND	ND
Ethylbenzene	5	ND	48	34.1	ND	ND	ND
Isopropylbenzene	5	ND	23.3	8	ND	ND	ND
m&p-Xylene	5(a)	ND	1.1	20.5	ND	ND	ND
MTBE	10	ND	15.9	ND	ND	ND	ND
Naphthalene	10	ND	352	148	ND	ND	ND
n-Butylbenzene	5	ND	6.5	6.8	ND	ND	ND
n-Propylbenzene	5	ND	28.5	12.1	ND	ND	ND
o-Xylene	5(a)	ND	1	4.6	ND	ND	ND
p-Isopropyltoluene	5	ND	6.1	7.9	ND	ND	ND
sec-Butylbenzene	5	ND	9.4	4.4	ND	ND	ND
tert-Butylbenzene	5	ND	0.85	ND	ND	ND	ND
Toluene	5	ND	ND	0.79	ND	ND	ND
Total BTEX	NC	ND	159.1	59.99	ND	ND	ND
Total VOCs*	NC	ND	446.55	330.1	ND	ND	ND

Notes:
µg/L - micrograms per liter
(a) There is no Standard or Guidance Value for total xylenes. The Standard for o-xylene, m-xylene, and p-xylene is 5 µg/L.
ND Not detected above laboratory reporting limits
NC No Criteria
* Total volatile organic compounds, excluding total BTEX

TABLE RWP-3
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND ANALYSES FOR GROUND WATER SAMPLES
JANUARY 2001
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		OW-1	W-2	W-11	W-12	MW-1	MW-2	MW-3R	MW-6	LMW-1	LMW-2	LMW-3	LMW-
Sampling Date		1/8/2001	1/10/2001	1/9/2001	1/9/2001	1/8/2001	1/8/2001	1/9/2001	1/9/2001	1/9/2001	1/10/2001	1/10/2001	1/8/200
Matrix		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Wate
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SEMIVOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Resul
Acenaphthene	20	ND	ND	14.7	5	ND	1.7	4.7	0.54 J	7.5	6.2	ND	ND
Anthracene	50	ND	ND	0.39 J	ND	ND	ND	ND	ND	0.39 J	0.77 J	ND	ND
Fluoranthene	50	ND	ND	0.86	ND	ND	0.34 J	ND	ND	ND	ND	ND	ND
Fluorene	50	ND	ND	4.4	1.5	ND	ND	5.1	ND	13.8	8.9	ND	ND
Naphthalene	10	ND	ND	5.8	0.33	ND	ND	118	ND	420	148	0.43 J	0.43
Phenanthrene	50	ND	ND	2.7	0.87	ND	ND	4.4	ND	14.3	10.8	ND	0.43
Pyrene	50	ND	ND	0.39J	ND	ND	0.24J	ND	ND	ND	ND	ND	ND

Notes:
µg/L - micrograms per liter
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
NA Not available
ND Not detected above laboratory reporting limits
NC No Criteria

TABLE RWP-3
SUMMARY OF SEMIVOLATILE ORGANIC COMPOUND ANALYSES FOR GROUND WATER SAMPLES
JANUARY 2001
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		4	LMW-5
Sampling Date		)1	1/8/2001
Matrix			Water
Units			µg/L
SEMIVOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	t	Result
Acenaphthene	20		ND
Anthracene	50		ND
Fluoranthene	50		ND
Fluorene	50		ND
Naphthalene	10	J	ND
Phenanthrene	50	J	ND
Pyrene	50		ND

Notes:
µg/L - micrograms per liter
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
NA Not available
ND Not detected above laboratory reporting limits
NC No Criteria

TABLE RWP-4
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
MAY 2001
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SS-3		SS-4		SS-8		SS-9		SS-11		SS-12		SS-13		SS-14		SS-15		SS-16	
Depth			0-2		0-2		0-2		0-2		0-2		0-2		0-2		0-2		0-2		0-2	
Lab Sample ID			L2919-3		L2919-4		L2619-11		L2619-9		L2619-8		L2619-12		L2919-13		L2919-14		L2619-15		L2619-16	
Sampling Date			5/14/2001		5/14/2001		5/14/2001		5/14/2001		5/14/2001		5/14/2001		5/14/2001		5/14/2001		5/14/2001		5/14/2001	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Benzo(a)anthracene	1,000	1,000	1,080		--		--		--		622		--		2,550		--		276		--	
Benzo(a)pyrene	1,000	1,000	792		87		229		125		585		127		2,600		129		--		109	
Benzo(b)fluoranthene	1,000	1,000	1,330		--		--		--		--		--		3,780		--		--		--	
Benzo(k)fluoranthene	800	3,900	--		--		--		--		--		--		2,770		--		--		--	
Chrysene	1,000	3,900	1,300		--		--		--		665		--		2,920		--		--		--	
Dibenz(a,h)anthracene	330	330	117		--		--		--		55		--		249		--		--		--	

Notes:
µg/kg - micrograms per kilogram
-- Compound either not detected above laboratory reporting limits or below NYSDEC standards.

Soil samples collected at locations SS-1, SS-2, SS-5, SS-6, SS-7, SS-10, SS-20, and SS-21 did not have constituents above NYSDEC standards and were not included in this table.
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result is above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.

TABLE RWP-4
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
MAY 2001
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SS-17	SS-19
Depth			0-2	0-2
Lab Sample ID			L2619-17	L2619-19
Sampling Date			5/14/2001	5/14/2001
Matrix			Solid	Soil
Units			µg/kg	µg/kg
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result	Result
Benzo(a)anthracene	1,000	1,000	5,760	848
Benzo(a)pyrene	1,000	1,000	3,840	631
Benzo(b)fluoranthene	1,000	1,000	6,610	--
Benzo(k)fluoranthene	800	3,900	3,590	--
Chrysene	1,000	3,900	5,720	845
Dibenz(a,h)anthracene	330	330	437	--

Notes:
µg/kg - micrograms per kilogram
-- Compound either not detected above laboratory reporting limits or below NYSDEC standards.

Soil samples collected at locations SS-1, SS-2, SS-5, SS-6, SS-7, SS-10, SS-20, and SS-21 did not have constituents above NYSDEC standards and were not included in this table.
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result is above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.

TABLE RWP-5
SUMMARY OF VOLATILE ORGANIC COMPOUND AND SEMIVOLATILE ORGANIC COMPOUND ANALYSES FOR GROUND WATER SAMPLES
MAY 2001
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		W-11	MW-3R
Lab Sample ID		5/15/2001	5/15/2001
Sampling Date		L2919-3	L2919-4
Matrix		Water	Water
Dilution Factor		1	1
Units		µg/L	µg/L
VOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result
Benzene	1	--	3.8
SEMIVOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result
Acenophthene	20	37.5	--
Benzo[a]anthracene	0.002	0.72	--
Chrysene	0.002	0.55	--
Naphthalene	10	--	67.3

Notes:
µg/L - micrograms per liter
-- Compound either not detected above laboratory reporting limits or below NYSDEC standards.
Ground water samples collected in monitoring wells MW-1, MW-2, LMW-3, LMW-4, OW-1, W-2, and W-12 did not have constituents detected above NYSDEC standards and are not in this table.

TABLE RWP-6
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-1		TP-1		TP-1		TP-2		TP-2		TP-3		TP-3		TP-4		TP-4		TP-4		TP-5		TP-5	
Depth				0-2		2-4		4-7		0-2		2-4		0-2		2-4		0-2		2-4		5-7		0-1.5		1.5-3	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<18.5	U	<29.9	U	<167	U	<29.9	U	<19.7	U	<19.6	U	<16.7	U	<17.0	U	<17.2	U	<14.5	U	<25.9	U	<27.4	U
1,2-Dichlorobenzene	NC	NC		<25.7	U	<46.0	U	<213	U	<46.0	U	<27.3	U	<27.2	U	<23.2	U	<23.6	U	<23.9	U	<18.5	U	<33.0	U	<34.9	U
1,2-Diphenylhydrazine	NC	NC		<20.9	U	<45.0	U	<212	U	<45.0	U	<22.2	U	<22.1	U	<18.8	U	<19.1	U	<19.4	U	<18.3	U	<32.8	U	<34.7	U
1,3-Dichlorobenzene	NC	NC		<25.0	U	<27.1	U	<172	U	<27.1	U	<26.6	U	<26.5	U	<22.6	U	<22.9	U	<23.3	U	<14.9	U	<26.6	U	<28.2	U
1,4-Dichlorobenzene	NC	NC		<19.5	U	<30.9	U	<139	U	<30.9	U	<20.8	U	<20.6	U	<17.6	U	<17.9	U	<18.2	U	<12.0	U	<21.5	U	<22.7	U
2,3,4,6-Tetrachlorophenol	NC	NC		<110	U	<69.3	U	<288	U	<69.3	U	<117	U	<117	U	<99.5	U	<101	U	<103	U	<24.9	U	<44.6	U	<47.2	U
2,4,5-Trichlorophenol	NC	NC		<19.3	U	<29.4	U	<252	U	<29.4	U	<20.5	U	<20.4	U	<17.4	U	<17.7	U	<18.0	U	<21.8	U	<39.1	U	<41.4	U
2,4,6-Trichlorophenol	NC	NC		<19.5	U	<16.7	U	<206	U	<16.7	U	<20.8	U	<20.6	U	<17.6	U	<17.9	U	<18.2	U	<17.8	U	<31.9	U	<33.7	U
2,4-Dichlorophenol	NC	NC		<20.2	U	<23.0	U	<181	U	<23.0	U	<21.5	U	<21.4	U	<18.2	U	<18.5	U	<18.8	U	<15.6	U	<28.0	U	<29.6	U
2,4-Dimethylphenol	NC	NC		<30.6	U	<36.4	U	<149	U	<36.4	U	<32.6	U	<32.4	U	<27.6	U	<28.1	U	<28.5	U	<12.9	U	<23.1	U	<24.4	U
2,4-Dinitrophenol	NC	NC		<251	U	<119	U	<1120	U	<119	U	<267	U	<266	U	<227	U	<230	U	<234	U	<97.1	U	<174	U	<184	U
2,4-Dinitrotoluene	NC	NC		<51.6	U	<17.1	U	<141	U	<17.1	U	<54.9	U	<54.6	U	<46.6	U	<47.3	U	<48.0	U	<12.2	U	<21.8	U	<23.1	U
2,6-Dinitrotoluene	NC	NC		<34.9	U	<29.3	U	<160	U	<29.3	U	<37.1	U	<36.9	U	<31.5	U	<32.0	U	<32.5	U	<13.9	U	<24.8	U	<26.2	U
2-Chloronaphthalene	NC	NC		<24.9	U	<37.3	U	<196	U	<37.3	U	<26.5	U	<26.3	U	<22.5	U	<22.8	U	<23.2	U	<17.0	U	<30.4	U	<32.2	U
2-Chlorophenol	NC	NC		<38.6	U	<42.4	U	<232	U	<42.4	U	<41.1	U	<40.8	U	<34.8	U	<35.4	U	<35.9	U	<20.1	U	<36.0	U	<38.1	U
2-Methylnaphthalene	NC	NC		8,360		<25.0	U	<213	U	<25.0	U	<27.9	U	<27.8	U	<23.7	U	135	J	<24.4	U	<18.5	U	122	J	176	J
2-Methylphenol	330	100,000		<19.1	U	<39.8	U	<189	U	<39.8	U	<20.3	U	<20.2	U	<17.2	U	<17.5	U	<17.7	U	<16.3	U	<29.3	U	<31.0	U
2-Nitroaniline	NC	NC		<25.0	U	<35.4	U	<167	U	<35.4	U	<26.6	U	<26.5	U	<22.6	U	<22.9	U	<23.3	U	<14.5	U	<25.9	U	<27.4	U
2-Nitrophenol	NC	NC		<23.9	U	<26.4	U	<162	U	<26.4	U	<25.4	U	<25.3	U	<21.6	U	<21.9	U	<22.2	U	<14.0	U	<25.0	U	<26.5	U
3,3'-Dichlorobenzidine	NC	NC		<27.2	U	<58.4	U	<369	U	<58.4	U	<28.9	U	<28.7	U	<24.5	U	<24.9	U	<25.3	U	<31.9	U	<57.1	U	<60.5	U
3+4-Methylphenol	330	100,000		<24.5	U	<36.9	U	<232	U	<36.9	U	<26.0	U	<25.9	U	<22.1	U	<22.4	U	<22.8	U	<20.1	U	<35.9	U	<38.0	U
3-Nitroaniline	NC	NC		<33.7	U	<40.4	U	<283	U	<40.4	U	<35.8	U	<35.6	U	<30.4	U	<30.9	U	<31.3	U	<24.5	U	<43.9	U	<46.4	U
4,6-Dinitro-2-methylphenol	NC	NC		<460	U	<364	U	<3230	U	<364	U	<489	U	<486	U	<415	U	<422	U	<428	U	<280	U	<501	U	<530	U
4-Bromophenyl phenyl ether	NC	NC		<12.8	U	<37.1	U	<278	U	<37.1	U	<13.6	U	<13.5	U	<11.5	U	<11.7	U	<11.9	U	<24.1	U	<43.1	U	<45.6	U
4-Chloro-3-methylphenol	NC	NC		<55.1	U	<49.8	U	<338	U	<49.8	U	<58.6	U	<58.2	U	<49.7	U	<50.5	U	<51.3	U	<29.3	U	<52.5	U	<55.5	U
4-Chloroaniline	NC	NC		<35.2	U	<50.2	U	<211	U	<50.2	U	<37.5	U	<37.2	U	<31.8	U	<32.3	U	<32.8	U	<18.3	U	<32.7	U	<34.6	U
4-Chlorophenyl phenyl ether	NC	NC		<23.9	U	<34.2	U	<186	U	<34.2	U	<25.4	U	<25.3	U	<21.6	U	<21.9	U	<22.2	U	<16.1	U	<28.8	U	<30.5	U
4-Nitroaniline	NC	NC		<60.2	U	<21.7	U	<355	U	<21.7	U	<64.0	U	<63.6	U	<54.3	U	<55.1	U	<55.9	U	<30.7	U	<55.0	U	<58.2	U
4-Nitrophenol	NC	NC		<74.9	U	<501	U	<367	U	<501	U	<79.6	U	<79.1	U	<67.5	U	<68.6	U	<69.6	U	<31.8	U	<56.9	U	<60.2	U
Acenaphthene	20,000	100000		1,520		<41.2	U	2,210	J	<41.2	U	214	J	294	J	118	J	166	J	542		<15.6	U	<27.9	U	227	J
Acenaphthylene	100,000	100,000		<23.2	U	<40.3	U	<217	U	<40.3	U	<24.7	U	<24.6	U	<21.0	U	<21.3	U	<21.6	U	<18.8	U	<33.6	U	<35.6	U
Aniline	NC	NC		<24.8	U	<39.9	U	<234	U	<39.9	U	<26.4	U	<26.2	U	<22.4	U	<22.7	U	<23.1	U	<20.2	U	<36.2	U	<38.3	U
Anthracene	100,000	100,000		<30.6	U	111	J	1190	J	111		<32.6	U	<32.4	U	<27.6	U	<28.1	U	265	J	<22.0	U	<39.4	U	<41.7	U
Benzidine	NC	NC		<470	U	<669	U	<7670	U	<669	U	<500	U	<497	U	<424	U	<431	U	<437	U	<664	U	<1190	U	<1260	U
Benzo(a)anthracene	1,000	1,000		133	J	<44.3	U	<347	U	<44.3	U	<36.3	U	<36.1	U	<30.8	U	<31.3	U	<31.7	U	<30.1	U	<53.8	U	<57.0	U
Benzo(a)pyrene	1,000	1,000		147	J	<38.8	U	<294	U	<38.8	U	<25.2	U	<25.0	U	<21.4	U	<21.7	U	<22.0	U	<25.4	U	<45.5	U	<48.1	U
Benzo(b)fluoranthene	1,000	1,000		83.7	J	<48.0	U	<367	U	<48.0	U	<33.8	U	<33.6	U	<28.6	U	<29.1	U	<29.5	U	<31.8	U	61.3	J	<60.2	U
Benzo(g,h,i)perylene	100,000	100,000		<36.8	U	<38.0	U	<361	U	<38.0	U	<39.1	U	<38.9	U	<33.2	U	<33.7	U	<34.2	U	<31.3	U	<56.0	U	<59.3	U
Benzo(k)fluoranthene	800	3,900		70.4	J	<45.2	U	<339	U	<45.2	U	<45.6	U	<45.3	U	<38.7	U	<39.3	U	<39.9	U	<29.4	U	<52.6	U	<55.6	U
Benzoic acid	NC	NC		<2720	U	<2480	U	<19100	U	<2480	U	<2890	U	<2870	U	<2450	U	<2490	U	<2530	U	<1650	U	<2960	U	<3130	U
Benzyl alcohol	NC	NC		<27.3	U	<36.0	U	<181	U	<36.0	U	<29.0	U	<28.8	U	<24.6	U	<25.0	U	<25.4	U	<15.7	U	<28.1	U	<29.7	U
bis(2-Chloroethoxy)methane	NC	NC		<22.2	U	<38.7	U	<243	U	<38.7	U	<23.6	U	<23.5	U	<20.0	U	<20.4	U	<20.7	U	<21.1	U	<37.7	U	<39.9	U
bis(2-Chloroethyl)ether	NC	NC		<25.4	U	<36.4	U	<202	U	<36.4	U	<27.0	U	<26.8	U	<22.9	U	<23.3	U	<23.6	U	<17.5	U	<31.3	U	<33.1	U
bis(2-Chloroisopropyl)ether	NC	NC		<24.5	U	<33.4	U	<176	U	<33.4	U	<26.0	U	<25.9	U	<22.1	U	<22.4	U	<22.8	U	<15.2	U	<27.2	U	<28.8	U
bis(2-Ethylhexyl)phthalate	NC	NC		640		<66.4	U	799		<66.4	U	<63.5	U	<63.1	U	<53.8	U	<54.7	U	<55.5	U	<59.8	U	<107	U	<113	U
Butyl benzyl phthalate	NC	NC		<29.3	U	<24.5	U	<291	U	<24.5	U	<31.1	U	<31.0	U	<26.4	U	<26.9	U	<27.2	U	<25.2	U	<45.0	U	<47.6	U
Carbazole	NC	NC		<72.6	U	<73.1	U	<605	U	<73.1	U	<77.2	U	<76.7	U	<65.5	U	<66.6	U	<67.5	U	<52.4	U	<93.7	U	<99.2	U
Chrysene	1,000	3,900		252		<49.5	U	405		<49.5	U	<37.5	U	<37.2	U	<31.8	U	<32.3	U	<32.8	U	<30.3	U	<54.3	U	<57.4	U
Cresols	NC	NC		<196	U	<121	U	<421	U	<121	U	<46.3	U	<46.1	U	<39.3	U	<39.9	U	<40.5	U	<36.4	U	<65.2	U	<69.0	U
Di-n-butyl phthalate	NC	NC		<35.1	U	<36.4	U	<385	U	<36.4	U	<37.4	U	<37.1	U	<31.7	U	<32.2	U	<32.7	U	<33.3	U	<59.7	U	<63.1	U
Di-n-octyl phthalate	NC	NC		<26.9	U	<41.0	U	<259	U	<41.0	U	<28.6	U	211		84.2	J	<24.7	U	<25.1	U	<22.4	U	<40.1	U	<42.4	U
Dibenz(a,h)anthracene	330	330		<25.1	U	<28.5	U	<213	U	<28.5	U	<26.7	U	<26.6	U	<22.7	U	<23.0	U	<23.4	U	<18.5	U	<33.0	U	<34.9	U
Dibenzofuran	7,000	59,000		<21.4	U	<21.3	U	<214	U	<21.3	U	<22.8	U	<22.7	U	<19.3	U	<19.7	U	<19.9	U	<18.5	U	<33.1	U	<35.1	U
Diethyl phthalate	NC	NC		<39.6	U	48.7	J	<299	U	48.7		<42.1	U	<41.9	U	<35.7	U	<36.3	U	<36.8	U	<25.9	U	<46.4	U	<49.1	U
Dimethyl phthalate	NC	NC		<39.6	U	<43.8	U	<294	U	<43.8	U	<42.1	U	<41.9	U	<35.7	U	<36.3	U	<36.8	U	<25.5	U	<45.6	U	<48.2	U
Fluoranthene	100,000	100,000		326	J	<38.9	U	847		<38.9	U	<34.7	U	<34.5	U	<29.5	U	<29.9	U	<30.4	U	<28.9	U	66.7	J	<54.8	U
Fluorene	30,000	100,000		4,350		<34.8	U	4,660		<34.8	U	331	J	568	J	<23.8	U	365	J	1,130		23.7	J	<30.3	U	480	J
Hexachlorobenzene	330	1,200		<32.1	U	<30.4	U	<296	U	<30.4	U	<34.1	U	<33.9	U	<28.9	U	<29.4	U	<29.9	U	<25.6	U	<45.8	U	<48.5	U
Hexachlorobutadiene	NC	NC		<17.2	U	<27.8	U	<212	U	<27.8	U	<18.3	U	<18.1	U	<15.5	U	<15.7	U	<16.0	U	<18.4	U	<32.9	U	<34.8	U
Hexachlorocyclopentadiene	NC	NC		<7.25	U	<333	U	<54.9	U	<333	U	<7.71	U	<7.66	U	<6.54	U	<6.65	U	<6.74	U	<4.75	U	<8.50	U	<9.00	U
Hexachloroethane	NC	NC		<25.4	U	<53.3	U	<161	U	<53.3	U	<27.0	U	<26.8	U	<22.9	U	<23.3	U	<23.6	U	<13.9	U	<24.9	U	<26.4	U
Indeno(1,2,3-cd)pyrene	500	500		<35.2	U	<38.7	U	<312	U	<38.7	U	<37.5	U	<37.2	U	<31.8	U	<32.3	U	<32.8	U	<27.0	U	<48.3	U	<51.1	U
Isophorone	NC	NC		<27.8	U	<32.9	U	<184	U	<32.9	U	<29.6	U	<29.4	U	<25.1	U	<25.5	U	<25.9	U	<16.0	U	<28.6	U	<30.2	U

TABLE RWP-6
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-1		TP-1		TP-1		TP-2		TP-2		TP-3		TP-3		TP-4		TP-4		TP-4		TP-5		TP-5	
Depth				0-2		2-4		4-7		0-2		2-4		0-2		2-4		0-2		2-4		5-7		0-1.5		1.5-3	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Naphthalene	12,000	100,000		1,230		<35.2	U	<229	U	<35.2	U	<26.6	U	<26.5	U	<22.6	U	<22.9	U	<23.3	U	<19.9	U	52.2	J	<37.6	U
Nitrobenzene	NC	NC		<20.0	U	<28.5	U	<271	U	<28.5	U	<21.2	U	<21.1	U	<18.0	U	<18.3	U	<18.6	U	<23.4	U	<41.9	U	<44.4	U
N-Nitrosodi-n-propylamine	NC	NC		<53.0	U	<55.7	U	<211	U	<55.7	U	<56.3	U	<56.0	U	<47.8	U	<48.6	U	<49.3	U	<18.3	U	<32.7	U	<34.6	U
N-Nitrosodimethylamine	NC	NC		<48.0	U	<30.9	U	<156	U	<30.9	U	<51.1	U	<50.8	U	<43.3	U	<44.0	U	<44.7	U	<13.5	U	<24.1	U	<25.5	U
N-Nitrosodiphenylamine	NC	NC		<28.7	U	<38.0	U	<246	U	<38.0	U	<30.5	U	<30.4	U	<25.9	U	<26.3	U	<26.7	U	<21.3	U	<38.2	U	<40.4	U
Pentachlorophenol	800	6,700		<452	U	<551	U	<3930	U	<551	U	<481	U	<478	U	<408	U	<415	U	<421	U	<340	U	<609	U	<644	U
Phenanthrene	100,000	100,000		8,060		203	J	6,900	U	203		<29.1	U	1,170		108	J	767		1,860		30.5	J	145		952	
Phenol	330	100,000		<45.0	U	<542	U	<455	U	<542	U	<47.9	U	<47.6	U	<40.6	U	<41.3	U	<41.9	U	<39.4	U	<70.5	U	<74.6	U
Pyrene	100,000	100,000		879		66.9	J	1040		66.9		<36.6	U	203	J	143	J	<31.6	U	<32.0	U	<24.8	U	88.8	J	<46.9	U
Pyridine	NC	NC		<36.5	U	<346	U	<299	U	<346	U	<38.8	U	<38.6	U	<32.9	U	<33.4	U	<33.9	U	<25.9	U	<46.3	U	<49.0	U
Total SVOC TICs	NC	NC	100,000	311,460		103,150		690,800		31,570		157,800		110,710		53,380		69,750		98,830		12,384		85,390		77,900	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
* = Indicates Toluene identified

TABLE RWP-6
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-5		TP-6		TP-6		TP-7		TP-7		TP-7		TP-8		TP-8		TP-9		TP-9		TP-10		TP-10	
Depth				5-7		0-2		2-4		0-2		2-4		4-7		0-2		4-5		0-2		2-4		0-2		2-4	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<9.08	U	<30.3	U	<26.9	U	<646	U	<544	U	<178	U	<30.2	U	<10.0	U	<15.1	U	<10.7	U	<50.6	U	<101	U
1,2-Dichlorobenzene	NC	NC		<11.6	U	<38.6	U	<34.3	U	<822	U	<693	U	<227	U	<38.5	U	<15.4	U	<23.4	U	<16.5	U	<78.0	U	<156	U
1,2-Diphenylhydrazine	NC	NC		<11.5	U	<38.4	U	<34.0	U	<817	U	<688	U	<226	U	<38.2	U	<15.1	U	<22.8	U	<16.2	U	<76.2	U	<152	U
1,3-Dichlorobenzene	NC	NC		<9.32	U	<31.1	U	<27.6	U	<663	U	<559	U	<183	U	<31.0	U	<9.09	U	<13.8	U	<9.74	U	<46.0	U	<92.0	U
1,4-Dichlorobenzene	NC	NC		<7.52	U	<25.1	U	<22.3	U	<535	U	<451	U	<148	U	<25.0	U	<10.3	U	<15.7	U	<11.1	U	<52.3	U	<105	U
2,3,4,6-Tetrachlorophenol	NC	NC		<15.6	U	<52.1	U	<46.3	U	<1110	U	<935	U	<307	U	<51.9	U	<23.2	U	<35.2	U	<24.9	U	<117	U	<235	U
2,4,5-Trichlorophenol	NC	NC		<13.7	U	<45.7	U	<40.6	U	<973	U	<820	U	<269	U	<45.5	U	<9.85	U	<14.9	U	<10.6	U	<49.8	U	<99.6	U
2,4,6-Trichlorophenol	NC	NC		<11.2	U	<37.3	U	<33.1	U	<794	U	<669	U	<219	U	<37.2	U	<5.61	U	<8.49	U	<6.01	U	<28.4	U	<56.7	U
2,4-Dichlorophenol	NC	NC		<9.80	U	<32.8	U	<29.1	U	<697	U	<588	U	<193	U	<32.6	U	<7.69	U	<11.6	U	<8.24	U	<38.9	U	<77.8	U
2,4-Dimethylphenol	NC	NC		<8.08	U	<27.0	U	<24.0	U	<575	U	<484	U	<159	U	<26.9	U	<12.2	U	<18.5	U	<13.1	U	<61.7	U	<123	U
2,4-Dinitrophenol	NC	NC		<60.8	U	<203	U	<180	U	<4320	U	<3650	U	<1190	U	<202	U	<39.8	U	<60.2	U	<42.6	U	<201	U	<402	U
2,4-Dinitrotoluene	NC	NC		<7.64	U	<25.5	U	<22.7	U	<543	U	<458	U	<150	U	<25.4	U	<5.72	U	<8.66	U	<6.13	U	<28.9	U	<57.9	U
2,6-Dinitrotoluene	NC	NC		<8.68	U	<29.0	U	<25.7	U	<617	U	<520	U	<171	U	<28.9	U	<9.81	U	<14.9	U	<10.5	U	<49.6	U	<99.2	U
2-Chloronaphthalene	NC	NC		<10.6	U	<35.6	U	<31.6	U	<757	U	<638	U	<209	U	<35.4	U	<12.5	U	<18.9	U	<13.4	U	<63.2	U	<126	U
2-Chlorophenol	NC	NC		<12.6	U	<42.1	U	50.6	J	<896	U	<755	U	<248	U	<41.9	U	<14.2	U	<21.5	U	<15.2	U	<71.8	U	<144	U
2-Methylnaphthalene	NC	NC		20.9	J	<38.6	U	<34.3	U	<822	U	<693	U	<227	U	<38.5	U	<8.37	U	19.7	J	14.2	J	<42.3	U	12,300	
2-Methylphenol	330	100,000		<10.2	U	<34.2	U	<30.4	U	<728	U	<614	U	<201	U	<34.1	U	<13.3	U	<20.2	U	<14.3	U	<67.4	U	<135	U
2-Nitroaniline	NC	NC		<9.08	U	<30.3	U	<26.9	U	<646	U	<544	U	<178	U	<30.2	U	<11.9	U	<18.0	U	<12.7	U	<60.0	U	<120	U
2-Nitrophenol	NC	NC		<8.76	U	<29.3	U	<26.0	U	<623	U	<525	U	<172	U	<29.2	U	<8.83	U	<13.4	U	<9.46	U	<44.6	U	<89.3	U
3,3'-Dichlorobenzidine	NC	NC		<20.0	U	<66.8	U	<59.3	U	<1420	U	<1200	U	<393	U	<66.6	U	<19.5	U	<29.6	U	<21.0	U	<98.9	U	<198	U
3+4-Methylphenol	330	100,000		<12.6	U	<42.0	U	<37.2	U	<893	U	<753	U	<247	U	<41.8	U	<12.3	U	<18.7	U	<13.2	U	<62.5	U	<125	U
3-Nitroaniline	NC	NC		<15.4	U	<51.3	U	<45.6	U	<1090	U	<921	U	<302	U	<51.1	U	<13.5	U	<20.5	U	<14.5	U	<68.4	U	<137	U
4,6-Dinitro-2-methylphenol	NC	NC		<175	U	<586	U	<520	U	<12500	U	<10500	U	<3440	U	<583	U	<122	U	<185	U	<131	U	<617	U	<1230	U
4-Bromophenyl phenyl ether	NC	NC		<15.1	U	<50.4	U	<44.7	U	<1070	U	<904	U	<296	U	<50.2	U	<12.4	U	<18.8	U	<13.3	U	<62.8	U	<126	U
4-Chloro-3-methylphenol	NC	NC		<18.4	U	<61.4	U	<54.4	U	<1310	U	<1100	U	<361	U	<61.1	U	<16.7	U	<25.2	U	<17.9	U	<84.3	U	<169	U
4-Chloroaniline	NC	NC		<11.4	U	<38.2	U	<33.9	U	<814	U	<686	U	<225	U	<38.1	U	<16.8	U	<25.5	U	<18.0	U	<85.1	U	<170	U
4-Chlorophenyl phenyl ether	NC	NC		<10.1	U	<33.7	U	<29.9	U	<717	U	<604	U	<198	U	<33.6	U	<11.4	U	<17.3	U	<12.3	U	<57.9	U	<116	U
4-Nitroaniline	NC	NC		<19.2	U	<64.3	U	<57.1	U	<1370	U	<1150	U	<378	U	<64.0	U	<7.27	U	<11.0	U	<7.80	U	<36.8	U	<73.6	U
4-Nitrophenol	NC	NC		<19.9	U	<66.6	U	<59.1	U	<1420	U	<1190	U	<392	U	<66.3	U	<168	U	<254	U	<180	U	<849	U	<1700	U
Acenaphthene	20,000	100000		183	J	238	J	133	J	<694	U	1,090	J	802	J	<32.5	U	<13.8	U	<20.9	U	<14.8	U	1,510		1,300	J
Acenaphthylene	100,000	100,000		<11.8	U	<39.3	U	<34.9	U	<836	U	<705	U	<231	U	<39.1	U	<13.5	U	<20.4	U	<14.5	U	<68.2	U	<136	U
Aniline	NC	NC		<12.7	U	<42.4	U	<37.6	U	<902	U	<760	U	<249	U	<42.2	U	<13.4	U	<20.3	U	<14.3	U	<67.6	U	<135	U
Anthracene	100,000	100,000		128	J	<46.1	U	<40.9	U	<982	U	<827	U	<271	U	<45.9	U	<14.7	U	<22.3	U	<15.8	U	<74.3	U	<149	U
Benzidine	NC	NC		<416	U	<1390	U	<1230	U	<29600	U	<24900	U	<8180	U	<1380	U	<224	U	<339	U	<240	U	<1130	U	<2260	U
Benzo(a)anthracene	1,000	1,000		<18.8	U	<63.0	U	<55.9	U	<1340	U	<1130	U	<370	U	<62.7	U	<14.8	U	38.8	J	<15.9	U	109	J	<150	U
Benzo(a)pyrene	1,000	1,000		<15.9	U	<53.2	U	<47.2	U	<1130	U	<954	U	<313	U	<53.0	U	<13.0	U	41.2	J	<13.9	U	88.8	J	<131	U
Benzo(b)fluoranthene	1,000	1,000		<19.9	U	<66.6	U	<59.1	U	<1420	U	<1190	U	<392	U	<66.3	U	<16.1	U	44.6	J	<17.2	U	93.3	J	<162	U
Benzo(g,h,i)perylene	100,000	100,000		<19.6	U	<65.5	U	<58.1	U	<1390	U	<1180	U	<385	U	<65.2	U	<12.7	U	40.1	J	<13.6	U	<64.4	U	<129	U
Benzo(k)fluoranthene	800	3,900		<18.4	U	<61.5	U	<54.6	U	<1310	U	<1100	U	<362	U	<61.3	U	<15.2	U	46.4	J	<16.2	U	88.8	J	<153	U
Benzoic acid	NC	NC		<1040	U	<3460	U	<3070	U	<73700	U	<62100	U	<20400	U	<3450	U	<830	U	<1260	U	<889	U	<4200	U	<8390	U
Benzyl alcohol	NC	NC		<9.84	U	<32.9	U	<29.2	U	<700	U	<590	U	<193	U	<32.8	U	<12.0	U	<18.2	U	<12.9	U	<60.9	U	<122	U
bis(2-Chloroethoxy)methane	NC	NC		<13.2	U	<44.1	U	<39.1	U	<939	U	<791	U	<259	U	<43.9	U	<13.0	U	<19.6	U	<13.9	U	<65.5	U	<131	U
bis(2-Chloroethyl)ether	NC	NC		<11.0	U	<36.6	U	<32.5	U	<780	U	<657	U	<215	U	<36.5	U	<12.2	U	<18.5	U	<13.1	U	<61.7	U	<123	U
bis(2-Chloroisopropyl)ether	NC	NC		<9.52	U	<31.8	U	<28.2	U	<677	U	<571	U	<187	U	<31.7	U	<11.2	U	<16.9	U	<12.0	U	<56.5	U	<113	U
bis(2-Ethylhexyl)phthalate	NC	NC		<37.5	U	<125	U	<111	U	<2660	U	<2240	U	<736	U	221		<22.2	U	275	BJ	27.7	BJ	3,070	B	1,490	BJ
Butyl benzyl phthalate	NC	NC		<15.8	U	<52.7	U	<46.7	U	<1120	U	<945	U	<310	U	<52.5	U	<8.22	U	<12.4	U	<8.81	U	<41.6	U	<83.1	U
Carbazole	NC	NC		<32.8	U	<110	U	<97.3	U	<2330	U	<1970	U	<645	U	<109	U	<24.5	U	<37.1	U	<26.2	U	<124	U	<248	U
Chrysene	1,000	3,900		<19.0	U	<63.5	U	<56.3	U	<1350	U	<1140	U	<373	U	<63.2	U	<16.6	U	65.9	J	20.2	J	143	J	<168	U
Cresols	NC	NC		<22.8	U	<76.2	U	<67.6	U	<1620	U	<1370	U	<448	U	<75.9	U	<25.6	U	<38.9	U	<27.5	U	<156	U	<286	U
Di-n-butyl phthalate	NC	NC		<20.9	U	<69.8	U	<61.9	U	<1490	U	<1250	U	<410	U	<69.5	U	<12.2	U	<18.5	U	<13.1	U	<61.7	U	<123	U
Di-n-octyl phthalate	NC	NC		<14.0	U	<46.9	U	104	J	<999	U	<842	U	<276	U	<46.7	U	<13.7	U	<20.8	U	<14.7	U	<69.3	U	<139	U
Dibenz(a,h)anthracene	330	330		<11.6	U	<38.6	U	<34.3	U	<822	U	<693	U	<227	U	<38.5	U	12.9	BJ	<14.5	U	<10.2	U	<48.3	U	<96.6	U
Dibenzofuran	7,000	59,000		<11.6	U	<38.8	U	<34.4	U	<825	U	<695	U	<228	U	<38.6	U	<7.12	U	<10.8	U	<7.63	U	<36.0	U	<72.0	U
Diethyl phthalate	NC	NC		<16.2	U	<54.3	U	49.3	J	<1160	U	<974	U	<319	U	230		<9.43	U	24.2	J	<10.1	U	<47.7	U	<95.4	U
Dimethyl phthalate	NC	NC		<16.0	U	<53.3	U	<47.3	U	<1140	U	<957	U	<314	U	<53.1	U	<14.7	U	<22.2	U	<15.7	U	<74.1	U	<148	U
Fluoranthene	100,000	100,000		36.9	J	<60.6	U	<53.7	U	<1290	U	<1090	U	<356	U	<60.3	U	<13.0	U	76.7	J	35.2	J	381	J	247	J
Fluorene	30,000	100,000		393		428	J	272	J	<754	U	<635	U	<208	U	<35.3	U	<11.7	U	<17.7	U	16.7	J	2,440		2,290	
Hexachlorobenzene	330	1,200		<16.0	U	<53.6	U	<47.6	U	<1140	U	<962	U	<315	U	<53.4	U	<10.2	U	<15.4	U	<10.9	U	<51.5	U	<103	U
Hexachlorobutadiene	NC	NC		<11.5	U	<38.5	U	<34.2	U	<819	U	<691	U	<226	U	<38.3	U	<9.32	U	<14.1	U	<9.99	U	<47.1	U	<94.3	U
Hexachlorocyclopentadiene	NC	NC		<2.98	U	<9.95	U	<8.83	U	<212	U	<178	U	<58.5	U	<9.91	U	<111	U	<169	U	<119	U	<563	U	<1130	U
Hexachloroethane	NC	NC		<8.72	U	<29.1	U	<25.9	U	<620	U	<523	U	<171	U	<29.0	U	<17.8	U	<27.0	U	<19.1	U	<90.2	U	<180	U
Indeno(1,2,3-cd)pyrene	500	500		<16.9	U	<56.6	U	<50.2	U	<1200	U	<1010	U	<333	U	<56.3	U	<13.0	U	32.9	J	<13.9	U	<65.5	U	<131	U
Isophorone	NC	NC		<10.0	U	<33.4	U	<29.7	U	<711	U	<600	U	<197	U	<33.3	U	<11.0	U	<16.7	U	<11.8	U	<55.7	U	<111	U

TABLE RWP-6
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-5		TP-6		TP-6		TP-7		TP-7		TP-7		TP-8		TP-8		TP-9		TP-9		TP-10		TP-10	
Depth				5-7		0-2		2-4		0-2		2-4		4-7		0-2		4-5		0-2		2-4		0-2		2-4	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Naphthalene	12,000	100,000		<12.4	U	<41.6	U	<36.9	U	<885	U	<746	U	<244	U	<41.4	U	<11.8	U	<17.8	U	<12.6	U	<59.6	U	2,300	
Nitrobenzene	NC	NC		<14.7	U	<49.1	U	<43.5	U	<1040	U	<880	U	<289	U	<48.9	U	<9.55	U	<14.5	U	<10.2	U	<48.3	U	<96.6	U
N-Nitrosodi-n-propylamine	NC	NC		<11.4	U	<38.2	U	<33.9	U	<814	U	<686	U	<225	U	<38.1	U	<18.6	U	<28.2	U	<20.0	U	<94.3	U	<189	U
N-Nitrosodimethylamine	NC	NC		<8.44	U	<28.2	U	<25.0	U	<600	U	<506	U	<166	U	<28.1	U	<10.3	U	<15.7	U	<11.1	U	<52.3	U	<105	U
N-Nitrosodiphenylamine	NC	NC		<13.4	U	<44.7	U	<39.6	U	<950	U	<801	U	<263	U	<44.5	U	<12.7	U	<19.3	U	<13.6	U	<64.4	U	<129	U
Pentachlorophenol	800	6,700		<213	U	<713	U	<632	U	<15200	U	<12800	U	<4190	U	<710	U	<184	U	<279	U	<198	U	<933	U	<1870	U
Phenanthrene	100,000	100,000		790		808		581	J	<979	U	<825	U	645	J	<45.8	U	<14.6	U	32.8	J	47.7	J	5,480		4,660	
Phenol	330	100,000		<24.7	U	<82.5	U	<73.2	U	<1760	U	<1480	U	<485	U	<82.2	U	<181	U	<275	U	<194	U	<918	U	<1840	U
Pyrene	100,000	100,000		46	J	57.4	J	46.1	J	1,430	J	1,110	J	<305	U	<51.7	U	<9.47	U	71.7	J	49.6	J	434	J	321	J
Pyridine	NC	NC		<16.2	U	<54.1	U	<48.0	U	<1150	U	<971	U	<318	U	<53.9	U	<116	U	<176	U	<124	U	<586	U	<1170	U
Total SVOC TICs	NC	NC	100,000	51,290		120,480		40,860		589,300		394,500		125,080		47,210		259		444		2,041		326,850		258,600	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
* = Indicates Toluene identified

Sample ID				TP-10		TP-11		TP-11		TP-11		TP-12		TP-12		TP-13		TP-13		TP-14		TP-14		TP-14		TP-15		TP-15	
Depth				4-6		0-2		2-4		5-7		0-2		2-4		0-2		2-4		0-2		2-6		6-7		0-4		4-6	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<9.41	U	<19.4	U	<48.8	U	<42.5	U	<8.19	U	<9.42	U	<33.6	U	<10.4	U	<8.81	U	<40.9	U	<18.5	U	<38.8	U	<8.79	U
1,2-Dichlorobenzene	NC	NC		<12.0	U	<29.9	U	<75.2	U	<54.1	U	<10.4	U	<12.0	U	<42.7	U	<13.2	U	<11.2	U	<52.1	U	<23.5	U	<49.3	U	<11.2	U
1,2-Diphenylhydrazine	NC	NC		<11.9	U	<29.2	U	<73.5	U	<53.7	U	<10.4	U	<11.9	U	<42.4	U	<13.1	U	<11.1	U	<51.7	U	<23.3	U	<49.0	U	<11.1	U
1,3-Dichlorobenzene	NC	NC		<9.66	U	<17.6	U	<44.3	U	<43.6	U	<8.41	U	<9.67	U	<34.4	U	<10.7	U	<9.04	U	<42.0	U	<18.9	U	<39.8	U	<9.02	U
1,4-Dichlorobenzene	NC	NC		<7.79	U	<20.0	U	<50.4	U	<35.2	U	<6.78	U	<7.80	U	<27.8	U	<8.60	U	<7.30	U	<33.9	U	<15.3	U	<32.1	U	<7.28	U
2,3,4,6-Tetrachlorophenol	NC	NC		<16.2	U	<45.0	U	<113	U	<73.0	U	<14.1	U	<16.2	U	<57.6	U	<17.8	U	<15.1	U	<70.3	U	<31.7	U	<66.6	U	<15.1	U
2,4,5-Trichlorophenol	NC	NC		<14.2	U	<19.1	U	<48.0	U	<64.0	U	<12.3	U	<14.2	U	<50.6	U	<15.6	U	<13.3	U	<61.6	U	<27.8	U	<58.4	U	<13.2	U
2,4,6-Trichlorophenol	NC	NC		<11.6	U	<10.9	U	<27.3	U	<52.2	U	<10.1	U	<11.6	U	<41.2	U	<12.8	U	<10.8	U	<50.3	U	<22.7	U	<47.6	U	<10.8	U
2,4-Dichlorophenol	NC	NC		<10.2	U	<14.9	U	<37.5	U	<45.9	U	<8.84	U	<10.2	U	<36.2	U	<11.2	U	<9.51	U	<44.1	U	<19.9	U	<41.8	U	<9.49	U
2,4-Dimethylphenol	NC	NC		<8.37	U	<23.6	U	<59.5	U	<37.8	U	<7.29	U	<8.39	U	<29.9	U	<9.24	U	<7.84	U	<36.4	U	<16.4	U	<34.5	U	<7.82	U
2,4-Dinitrophenol	NC	NC		<63.0	U	<77.1	U	<194	U	<285	U	<54.8	U	<63.1	U	<225	U	<69.5	U	<59.0	U	<274	U	<124	U	<259	U	<58.8	U
2,4-Dinitrotoluene	NC	NC		<7.92	U	<11.1	U	<27.9	U	<35.8	U	<6.89	U	<7.93	U	<28.2	U	<8.73	U	<7.41	U	<34.4	U	<15.5	U	<32.6	U	<7.39	U
2,6-Dinitrotoluene	NC	NC		<9.00	U	<19.0	U	<47.9	U	<40.6	U	<7.83	U	<9.01	U	<32.1	U	<9.92	U	<8.42	U	<39.1	U	<17.6	U	<37.0	U	<8.40	U
2-Chloronaphthalene	NC	NC		<11.0	U	<24.2	U	<61.0	U	<49.8	U	<9.60	U	<11.0	U	<39.3	U	<12.2	U	<10.3	U	<47.9	U	<21.6	U	<45.4	U	<10.3	U
2-Chlorophenol	NC	NC		<13.1	U	<27.5	U	<69.3	U	<59.0	U	<11.4	U	<13.1	U	<46.6	U	<14.4	U	<12.2	U	<56.8	U	<25.6	U	<53.8	U	<12.2	U
2-Methylnaphthalene	NC	NC		<12.0	U	28.1	J	7,360		319	J	<10.4	U	<12.0	U	<42.7	U	<13.2	U	<11.2	U	<52.1	U	<23.5	U	<49.3	U	<11.2	U
2-Methylphenol	330	100,000		<10.6	U	<25.8	U	<65.0	U	<47.9	U	<9.24	U	<10.6	U	<37.8	U	<11.7	U	<9.93	U	<46.1	U	<20.8	U	<43.7	U	<9.91	U
2-Nitroaniline	NC	NC		<9.41	U	<23.0	U	<57.8	U	<42.5	U	<8.19	U	<9.42	U	<33.6	U	<10.4	U	<8.81	U	<40.9	U	<18.5	U	<38.8	U	<8.79	U
2-Nitrophenol	NC	NC		<9.08	U	<17.1	U	<43.1	U	<41.0	U	<7.90	U	<9.09	U	<32.4	U	<10.0	U	<8.50	U	<39.5	U	<17.8	U	<37.4	U	<8.48	U
3,3'-Dichlorobenzidine	NC	NC		<20.7	U	<37.9	U	<95.3	U	<93.6	U	<18.0	U	<20.8	U	<73.9	U	<22.9	U	<19.4	U	<90.1	U	<40.7	U	<85.4	U	<19.4	U
3+4-Methylphenol	330	100,000		<13.0	U	<23.9	U	<60.2	U	<58.8	U	<11.3	U	<13.0	U	<46.4	U	<14.4	U	<12.2	U	<56.6	U	<25.5	U	<53.6	U	<12.2	U
3-Nitroaniline	NC	NC		<15.9	U	<26.2	U	<66.0	U	<71.9	U	<13.9	U	<15.9	U	<56.8	U	<17.6	U	<14.9	U	<69.2	U	<31.2	U	<65.6	U	<14.9	U
4,6-Dinitro-2-methylphenol	NC	NC		<182	U	<236	U	<595	U	<820	U	<158	U	<182	U	<647	U	<200	U	<170	U	<789	U	<356	U	<748	U	<170	U
4-Bromophenyl phenyl ether	NC	NC		<15.6	U	<24.1	U	<60.6	U	<70.6	U	<13.6	U	<15.6	U	<55.7	U	<17.2	U	<14.6	U	<67.9	U	<30.7	U	<64.4	U	<14.6	U
4-Chloro-3-methylphenol	NC	NC		<19.0	U	<32.3	U	<81.3	U	<86.0	U	<16.6	U	<19.1	U	<67.8	U	<21.0	U	<17.8	U	<82.7	U	<37.3	U	<78.4	U	<17.8	U
4-Chloroaniline	NC	NC		<11.9	U	<32.6	U	<82.0	U	<53.6	U	<10.3	U	<11.9	U	<42.3	U	<13.1	U	<11.1	U	<51.5	U	<23.3	U	<48.8	U	<11.1	U
4-Chlorophenyl phenyl ether	NC	NC		<10.4	U	<22.2	U	<55.8	U	<47.2	U	<9.09	U	<10.5	U	<37.3	U	<11.5	U	<9.78	U	<45.4	U	<20.5	U	<43.0	U	<9.76	U
4-Nitroaniline	NC	NC		<19.9	U	<14.1	U	<35.5	U	<90.1	U	<17.4	U	<20.0	U	<71.1	U	<22.0	U	<18.7	U	<86.7	U	<39.1	U	<82.1	U	<18.6	U
4-Nitrophenol	NC	NC		<20.6	U	<325	U	<819	U	<93.3	U	<18.0	U	<20.7	U	<73.6	U	<22.8	U	<19.3	U	<89.7	U	<40.5	U	<85.0	U	<19.3	U
Acenaphthene	20,000	100000		<10.1	U	<26.7	U	1,570		86.2	J	10.6	J	45.3	J	87.3	J	<11.2	U	<9.47	U	<44.0	U	<19.8	U	<41.7	U	58.2	J
Acenaphthylene	100,000	100,000		<12.2	U	<26.1	U	<65.8	U	<55.1	U	28.8	J	<12.2	U	197	J	<13.4	U	<11.4	U	<53.0	U	<23.9	U	90		25.4	J
Aniline	NC	NC		<13.1	U	<25.9	U	<65.2	U	<59.4	U	<11.4	U	<13.2	U	<46.9	U	<14.5	U	<12.3	U	<57.1	U	<25.8	U	<54.1	U	<12.3	U
Anthracene	100,000	100,000		<14.3	U	<28.5	U	<71.7	U	77.4	J	38	J	<14.3	U	230	J	35.9	J	<13.4	U	69.2	J	<28.0	U	180	J	45	J
Benzidine	NC	NC		<431	U	<434	U	<1090	U	<1950	U	<375	U	<432	U	<1540	U	<476	U	<404	U	<1870	U	<846	U	<1780	U	<403	U
Benzo(a)anthracene	1,000	1,000		<19.5	U	55.9	J	74.7	J	<88.2	U	140	J	<19.6	U	515	J	68.1	J	29.9	J	178	J	<38.3	U	843	J	174	J
Benzo(a)pyrene	1,000	1,000		<16.5	U	86.3	J	<63.4	U	<74.5	U	158	J	<16.5	U	577	J	62.2	J	28.2	J	175	J	<32.4	U	981		184	J
Benzo(b)fluoranthene	1,000	1,000		<20.6	U	81.3	J	<78.3	U	<93.3	U	131	J	<20.7	U	483	J	63	J	26	J	185	J	<40.5	U	731	J	154	J
Benzo(g,h,i)perylene	100,000	100,000		<20.3	U	80.8	J	<62.1	U	<91.8	U	110	J	<20.3	U	294	J	36.7	J	20.7	J	<88.3	U	<39.8	U	403	J	124	J
Benzo(k)fluoranthene	800	3,900		<19.1	U	45.3	J	<73.9	U	<86.1	U	137	J	<19.1	U	435	J	45.9	J	24.9	J	203	J	<37.4	U	993		147	J
Benzoic acid	NC	NC		<1070	U	<1610	U	<4050	U	<4850	U	<934	U	<1080	U	<3830	U	<1180	U	<1010	U	<4670	U	<2110	U	<4420	U	<1000	U
Benzyl alcohol	NC	NC		<10.2	U	<23.3	U	<58.8	U	<46.1	U	<8.87	U	<10.2	U	<36.4	U	<11.2	U	<9.55	U	<44.3	U	<20.0	U	<42.0	U	<9.52	U
bis(2-Chloroethoxy)methane	NC	NC		<13.7	U	<25.1	U	<63.2	U	<61.8	U	<11.9	U	<13.7	U	<48.8	U	<15.1	U	<12.8	U	<59.5	U	<26.8	U	<56.3	U	<12.8	U
bis(2-Chloroethyl)ether	NC	NC		<11.4	U	<23.6	U	<59.5	U	<51.3	U	<9.88	U	<11.4	U	<40.5	U	<12.5	U	<10.6	U	<49.4	U	<22.3	U	<46.8	U	<10.6	U
bis(2-Chloroisopropyl)ether	NC	NC		<9.87	U	<21.7	U	<54.5	U	<44.6	U	<8.59	U	<9.88	U	<35.2	U	<10.9	U	<9.24	U	<42.9	U	<19.3	U	<40.6	U	<9.21	U
bis(2-Ethylhexyl)phthalate	NC	NC		<38.8	U	44	BJ	<108	U	<175	U	66.7	BJ	<38.9	U	<138	U	48.6	BJ	37.3	BJ	<169	U	<76.1	U	<160	U	<36.2	U
Butyl benzyl phthalate	NC	NC		<16.3	U	<15.9	U	<40.1	U	<73.8	U	32.4	J	<16.4	U	<58.2	U	<18.0	U	<15.3	U	<71.0	U	<32.0	U	<67.3	U	<15.3	U
Carbazole	NC	NC		<34.0	U	<47.4	U	<119	U	<154	U	<29.6	U	<34.0	U	<121	U	<37.5	U	<31.8	U	<148	U	<66.7	U	<140	U	<31.7	U
Chrysene	1,000	3,900		<19.7	U	75.2	J	153	J	<89.0	U	163	J	<19.7	U	556	J	78.3	J	32.9	J	199	J	<38.6	U	854		189	J
Cresols	NC	NC		<23.6	U	<74.6	U	<150	U	<534	U	<41.1	U	<23.6	U	<295	U	<52.2	U	<22.1	U	<359	U	<46.3	U	<340	U	<22.1	U
Di-n-butyl phthalate	NC	NC		<21.6	U	<23.6	U	<59.5	U	<97.8	U	36.8	J	<21.7	U	114	J	<23.9	U	<20.3	U	<94.1	U	<42.4	U	166	J	36	J
Di-n-octyl phthalate	NC	NC		<14.6	U	<26.6	U	<66.9	U	<65.7	U	<12.7	U	<14.6	U	<51.9	U	<16.0	U	<13.6	U	<63.2	U	<28.5	U	<59.9	U	21.5	J
Dibenz(a,h)anthracene	330	330		<12.0	U	<18.5	U	<46.6	U	<54.1	U	<10.4	U	<12.0	U	<42.7	U	<13.2	U	<11.2	U	<52.1	U	<23.5	U	<49.3	U	<11.2	U
Dibenzofuran	7,000	59,000		<12.0	U	<13.8	U	<34.7	U	<54.3	U	<10.5	U	<12.0	U	<42.9	U	<13.3	U	<11.3	U	77.4	J	<23.6	U	<49.5	U	<11.2	U
Diethyl phthalate	NC	NC		<16.8	U	<18.3	U	<46.0	U	<76.0	U	19.6	J	17.7	J	<60.0	U	<18.6	U	29.3	J	<73.2	U	<33.0	U	<69.3	U	<15.7	U
Dimethyl phthalate	NC	NC		<16.5	U	<28.4	U	<71.5	U	<74.7	U	<14.4	U	<16.6	U	<59.0	U	<18.2	U	<15.5	U	<71.9	U	<32.4	U	<68.1	U	<15.4	U
Fluoranthene	100,000	100,000		<18.8	U	106	J	441	J	130	J	255		51.6	J	818		94.7	J	57.6	J	318	J	<36.8	U	1,320		240	
Fluorene	30,000	100,000		<11.0	U	<22.6	U	2,560		160	J	<9.56	U	73.3	J	94	J	40.6	J	<10.3	U	49.9	J	<21.5	U	<45.2	U	44.8	J
Hexachlorobenzene	330	1,200		<16.6	U	<19.8	U	<49.7	U	<75.1	U	<14.5	U	<16.6	U	<59.3	U	<18.3	U	<15.6	U	<72.3	U	<32.6	U	<68.5	U	<15.5	U
Hexachlorobutadiene	NC	NC		<11.9	U	<18.1	U	<45.5	U	<53.9	U	<10.4	U	<12.0	U	<42.6	U	<13.2	U	<11.2	U	<51.9	U	<23.4	U	<49.2	U	<11.1	U
Hexachlorocyclopentadiene	NC	NC		<3.08	U	<216	U	<543	U	<13.9	U	<2.68	U	<3.09	U	<11.0	U	<3.40	U	<2.89	U	<13.4	U	<6.05	U	<12.7	U	<2.88	U
Hexachloroethane	NC	NC		<9.04	U	<34.6	U	<87.0	U	<40.8	U	<7.86	U	<9.05	U	<32.2	U	<9.97	U	<8.46	U	<39.3	U	<17.7	U	<37.2	J	<8.44	U
Indeno(1,2,3-cd)pyrene	500	500		<17.5	U	70	J	<63.2	U	<79.2	U	96	J	<17.6	U	274	J	34.3	J	18.4	J	88.4	J	<34.4	U	427	U	120	J
Isophorone	NC	NC		<10.4	U	<21.4	U	<53.8	U	<46.8	U	<9.02	U	<10.4	U	<37.0	U	<11.4	U	<9.70	U	<45.0	U	<20.3	U	<42.7	U	<9.68	U

TABLE RWP-6
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-10		TP-11		TP-11		TP-11		TP-12		TP-12		TP-13		TP-13		TP-14		TP-14		TP-14		TP-15		TP-15	
Depth				4-6		0-2		2-4		5-7		0-2		2-4		0-2		2-4		0-2		2-6		6-7		0-4		4-6	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Naphthalene	12,000	100,000		<12.9	U	<22.8	U	1,750		156	J	<11.2	U	<12.9	U	<46.0	U	<14.2	U	<12.1	U	<56.0	U	<25.3	U	<53.1	U	<12.0	U
Nitrobenzene	NC	NC		<15.2	U	<18.5	U	<46.6	U	<68.7	U	<13.2	U	<15.2	U	<54.2	U	<16.8	U	<14.2	U	<66.1	U	<29.8	U	<62.7	U	<14.2	U
N-Nitrosodi-n-propylamine	NC	NC		<11.9	U	<36.1	U	<90.9	U	<53.6	U	<10.3	U	<11.9	U	<42.3	U	<13.1	U	<11.1	U	<51.5	U	<23.3	U	<48.8	U	<11.1	U
N-Nitrosodimethylamine	NC	NC		<8.75	U	<20.0	U	<50.4	U	<39.5	U	<7.61	U	<8.76	U	<31.2	U	<9.65	U	<8.19	U	<38.0	U	<17.2	U	<36.0	U	<8.17	U
N-Nitrosodiphenylamine	NC	NC		<13.8	U	<24.7	U	<62.1	U	<62.5	U	<12.0	U	<13.9	U	<49.4	U	<15.3	U	<13.0	U	<60.2	U	<27.2	U	<57.0	U	<12.9	U
Pentachlorophenol	800	6,700		<221	U	<358	U	<900	U	<998	U	<192	U	<221	U	<788	U	<244	U	<207	U	<960	U	<433	U	<910	U	<206	U
Phenanthrene	100,000	100,000		<14.3	U	<28.3	U	5,880		343	J	97	J	99.5	J	417	J	154	J	31.7	J	233	J	<28.0	U	432	J	169	J
Phenol	330	100,000		<25.6	U	<352	U	<885	U	<116	U	<22.3	U	<25.6	U	<91.2	U	<28.2	U	<23.9	U	<111	U	172	J	<105	U	<23.9	U
Pyrene	100,000	100,000		<16.1	U	134	J	456	J	135	J	229		49.7	J	885		153	J	51.2	J	357	J	<31.5	U	1,380		<15.0	U
Pyridine	NC	NC		<16.8	U	<225	U	<565	U	<75.8	U	<14.6	U	<16.8	U	<59.9	U	<18.5	U	<15.7	U	<73.0	U	<32.9	U	<69.1	U	<15.7	U
Total SVOC TICs	NC	NC	100,000	349*		19,991		263,030		45,240		403		8,043		ND		7,208		288		7,600		6435*		ND		ND	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
* = Indicates Toluene identified

Sample ID				TP-15		TP-16		TP-16		TP-17		TP-17		TP-17		TP-18		TP-18	
Depth				6-7		0-2		2-4		0-2		2-4		4-7		0-2		2-4	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<10.5	U	<9.77	U	<9.18	U	<19.5	U	<92.6	U	<9.76	U	<49.8	U	<9.47	U
1,2-Dichlorobenzene	NC	NC		<13.4	U	<15.1	U	<14.1	U	<30.0	U	<143	U	<12.4	U	<76.7	U	<14.6	U
1,2-Diphenylhydrazine	NC	NC		<13.3	U	<14.7	U	<13.8	U	<29.4	U	<140	U	<12.3	U	<75.0	U	<14.3	U
1,3-Dichlorobenzene	NC	NC		<10.8	U	<8.88	U	<8.34	U	<17.7	U	<84.2	U	<10.0	U	<45.2	U	<8.61	U
1,4-Dichlorobenzene	NC	NC		<8.70	U	<10.1	U	<9.49	U	<20.2	U	<95.8	U	<8.09	U	<51.5	U	<9.80	U
2,3,4,6-Tetrachlorophenol	NC	NC		<18.1	U	<22.7	U	<21.3	U	<45.3	U	<215	U	<16.8	U	<116	U	<22.0	U
2,4,5-Trichlorophenol	NC	NC		<15.8	U	<9.62	U	<9.04	U	<19.2	U	<91.2	U	<14.7	U	<49.0	U	<9.33	U
2,4,6-Trichlorophenol	NC	NC		<12.9	U	<5.48	U	<5.14	U	<10.9	U	<51.9	U	<12.0	U	<27.9	U	<5.31	U
2,4-Dichlorophenol	NC	NC		<11.3	U	<7.51	U	<7.06	U	<15.0	U	<71.2	U	<10.5	U	<38.3	U	<7.28	U
2,4-Dimethylphenol	NC	NC		<9.35	U	<11.9	U	<11.2	U	<23.8	U	<113	U	<8.69	U	<60.7	U	<11.6	U
2,4-Dinitrophenol	NC	NC		<70.4	U	<38.8	U	<36.5	U	<77.5	U	<368	U	<65.4	U	<198	U	<37.7	U
2,4-Dinitrotoluene	NC	NC		<8.84	U	<5.59	U	<5.25	U	<11.1	U	<53.0	U	<8.22	U	<28.5	U	<5.42	U
2,6-Dinitrotoluene	NC	NC		<10.0	U	<9.58	U	<9.00	U	<19.1	U	<90.9	U	<9.33	U	<48.8	U	<9.29	U
2-Chloronaphthalene	NC	NC		<12.3	U	<12.2	U	<11.5	U	<24.4	U	<116	U	<11.4	U	<62.2	U	<11.8	U
2-Chlorophenol	NC	NC		<14.6	U	<13.9	U	<13.0	U	<27.7	U	<132	U	<13.5	U	<70.7	U	<13.5	U
2-Methylnaphthalene	NC	NC		<13.4	U	<8.18	U	15.8	J	34	J	18,800		203	J	<41.7	U	<7.93	U
2-Methylphenol	330	100,000		<11.9	U	<13.0	U	<12.2	U	<26.0	U	<124	U	<11.0	U	<66.4	U	<12.6	U
2-Nitroaniline	NC	NC		<10.5	U	<11.6	U	<10.9	U	<23.1	U	<110	U	<9.76	U	<59.0	U	<11.2	U
2-Nitrophenol	NC	NC		<10.1	U	<8.62	U	<8.10	U	<17.2	U	<81.8	U	<9.42	U	<43.9	U	<8.36	U
3,3'-Dichlorobenzidine	NC	NC		<23.1	U	<19.1	U	<17.9	U	<38.1	U	<181	U	<21.5	U	<97.3	U	<18.5	U
3+4-Methylphenol	330	100,000		<14.5	U	<15.7	U	<14.7	U	<31.3	U	<149	U	<13.5	U	<79.9	U	<15.2	U
3-Nitroaniline	NC	NC		<17.8	U	<12.1	U	<11.3	U	<24.1	U	<114	U	<16.5	U	<61.5	U	<11.7	U
4,6-Dinitro-2-methylphenol	NC	NC		<203	U	<13.2	U	<12.4	U	<26.4	U	<125	U	<188	U	<67.3	U	<12.8	U
4-Bromophenyl phenyl ether	NC	NC		<17.5	U	<119	U	<112	U	<238	U	<1130	U	<16.2	U	<607	U	<116	U
4-Chloro-3-methylphenol	NC	NC		<21.3	U	<12.1	U	<11.4	U	<24.2	U	<115	U	<19.7	U	<61.8	U	<11.8	U
4-Chloroaniline	NC	NC		<13.2	U	<16.3	U	<15.3	U	<32.5	U	<154	U	<12.3	U	<83.0	U	<15.8	U
4-Chlorophenyl phenyl ether	NC	NC		<11.7	U	<16.4	U	<15.4	U	<32.8	U	<156	U	<10.8	U	<83.7	U	<15.9	U
4-Nitroaniline	NC	NC		<22.3	U	<11.2	U	<10.5	U	<22.3	U	<106	U	<20.7	U	<56.9	U	<10.8	U
4-Nitrophenol	NC	NC		<23.1	U	<7.10	U	<6.67	U	<14.2	U	<67.4	U	<21.4	U	<36.2	U	<6.89	U
Acenaphthene	20,000	100000		<11.3	U	<164	U	<154	U	<327	U	<1550	U	35.4	J	<835	U	<159	U
Acenaphthylene	100,000	100,000		<13.6	U	<13.5	U	48.9	J	<26.9	U	1760		<12.6	U	377	J	46	J
Aniline	NC	NC		<14.7	U	<13.2	U	<12.4	U	<26.3	U	<125	U	<13.6	U	<67.1	U	<12.8	U
Anthracene	100,000	100,000		<16.0	U	<13.1	U	<12.3	U	<26.1	U	<124	U	<14.8	U	<66.6	U	<12.7	U
Benzidine	NC	NC		<481	U	<14.4	U	<13.5	U	<28.6	U	<136	U	<447	U	<73.2	U	<13.9	U
Benzo(a)anthracene	1,000	1,000		29.1	J	<219	U	<205	U	<436	U	<2070	U	<20.3	U	<1110	U	<212	U
Benzo(a)pyrene	1,000	1,000		33.3	J	<14.5	U	<13.6	U	<28.9	U	<138	U	<17.1	U	<73.9	U	<14.1	U
Benzo(b)fluoranthene	1,000	1,000		25.3	J	<12.7	U	<11.9	U	<25.3	U	<120	U	<21.4	U	<64.7	U	<12.3	U
Benzo(g,h,i)perylene	100,000	100,000		22.9	J	<12.4	U	<11.7	U	<24.8	U	<118	U	<21.1	U	<63.3	U	<12.1	U
Benzo(k)fluoranthene	800	3,900		29	J	<14.8	U	<13.9	U	<29.5	U	<140	U	<19.8	U	<75.4	U	<14.4	U
Benzoic acid	NC	NC		<1200	U	<810	U	<761	U	<1620	U	<7680	U	<1110	U	<4130	U	<786	U
Benzyl alcohol	NC	NC		<11.4	U	<11.8	U	<11.1	U	<23.5	U	<112	U	<10.6	U	<60.0	U	<11.4	U
bis(2-Chloroethoxy)methane	NC	NC		<15.3	U	<12.7	U	<11.9	U	<25.2	U	<120	U	<14.2	U	<64.5	U	<12.3	U
bis(2-Chloroethyl)ether	NC	NC		<12.7	U	<11.9	U	<11.2	U	<23.8	U	<113	U	<11.8	U	<60.7	U	<11.6	U
bis(2-Chloroisopropyl)ether	NC	NC		<11.0	U	<10.9	U	<10.3	U	<21.8	U	<104	U	<10.2	U	<55.6	U	<10.6	U
bis(2-Ethylhexyl)phthalate	NC	NC		<43.3	U	<21.7	U	<20.4	U	<43.3	U	<206	U	<40.3	U	<111	U	<21.1	U
Butyl benzyl phthalate	NC	NC		<18.2	U	<8.03	U	<7.54	U	<16.0	U	<76.1	U	<16.9	U	<40.9	U	<7.79	U
Carbazole	NC	NC		<38.0	U	<23.9	U	<22.5	U	<47.7	U	<227	U	<35.3	U	<122	U	<23.2	U
Chrysene	1,000	3,900		30	J	<16.2	U	<15.2	U	<32.3	U	<154	U	<20.4	U	<82.6	U	<15.7	U
Cresols	NC	NC		<26.4	U	<25.1	U	<23.5	U	<75.1	U	<262	U	<24.5	U	<128	U	<24.3	U
Di-n-butyl phthalate	NC	NC		<24.2	U	<11.9	U	<11.2	U	<23.8	U	<113	U	<22.5	U	<60.7	U	<11.6	U
Di-n-octyl phthalate	NC	NC		<16.3	U	<13.4	U	<12.6	U	<26.7	U	1320		32.4	J	<68.3	U	<13.0	U
Dibenz(a,h)anthracene	330	330		<13.4	U	<9.32	U	<8.76	U	<18.6	U	<88.4	U	<12.4	U	<47.5	U	40.2	BJ
Dibenzofuran	7,000	59,000		<13.4	U	<6.96	U	<6.53	U	<13.9	U	<66.0	U	<12.5	U	<35.4	U	<6.75	U
Diethyl phthalate	NC	NC		28.7	J	14.9	J	<8.65	U	<18.4	U	<87.4	U	26.3	J	<46.9	U	<8.93	U
Dimethyl phthalate	NC	NC		<18.5	U	<14.3	U	<13.5	U	<28.6	U	<136	U	<17.2	U	<73.0	U	<13.9	U
Fluoranthene	100,000	100,000		44	J	<10.1	U	<9.49	U	<20.2	U	<95.8	U	<19.5	U	<51.5	U	<9.80	U
Fluorene	30,000	100,000		<12.3	U	<12.4	U	<11.7	U	<24.8	U	<118	U	83.9	J	<63.3	U	<12.1	U
Hexachlorobenzene	330	1,200		<18.6	U	<12.7	U	28.6	J	<25.4	U	303	J	<17.2	U	<64.9	U	23	J
Hexachlorobutadiene	NC	NC		<13.3	U	<11.4	U	81.7	J	<22.7	U	3,270		<12.4	U	454	J	20.9	J
Hexachlorocyclopentadiene	NC	NC		<3.44	U	<9.95	U	<9.35	U	<19.9	U	<94.4	U	<3.20	U	<50.7	U	<9.65	U
Hexachloroethane	NC	NC		<10.1	U	<9.10	U	<8.55	U	<18.2	U	<86.3	U	<9.38	U	<46.4	U	<8.83	U
Indeno(1,2,3-cd)pyrene	500	500		21.7	J	<109	U	<102	U	<217	U	<1030	U	<18.2	U	<554	U	<105	U
Isophorone	NC	NC		<11.6	U	<17.4	U	<16.4	U	<34.8	U	<165	U	<10.8	U	<88.8	U	<16.9	U

TABLE RWP-6
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-15		TP-16		TP-16		TP-17		TP-17		TP-17		TP-18		TP-18	
Depth				6-7		0-2		2-4		0-2		2-4		4-7		0-2		2-4	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result	
Naphthalene	12,000	100,000		<14.4	U	<12.7	U	<11.9	U	<25.2	U	<120	U	38.1	J	<64.5	U	<12.3	U
Nitrobenzene	NC	NC		<17.0	U	<10.8	U	<10.1	U	<21.5	U	<102	U	<15.8	U	<54.9	U	<10.4	U
N-Nitrosodi-n-propylamine	NC	NC		<13.2	U	<11.5	U	<10.8	U	<23.0	U	<109	U	<12.3	U	<58.6	U	<11.2	U
N-Nitrosodimethylamine	NC	NC		<9.77	U	<9.32	U	<8.76	U	<18.6	U	<88.4	U	<9.08	U	<47.5	U	<9.04	U
N-Nitrosodiphenylamine	NC	NC		<15.5	U	<18.2	U	<17.1	U	<36.3	U	<173	U	<14.4	U	<92.8	U	<17.7	U
Pentachlorophenol	800	6,700		<247	U	<180	U	<169	U	<360	U	<1710	U	<229	U	<918	U	<175	U
Phenanthrene	100,000	100,000		<15.9	U	<14.3	U	251	J	<28.5	U	6770		113	J	726	J	58.8	J
Phenol	330	100,000		<28.6	U	<177	U	<166	U	<354	U	<1680	U	<26.5	U	<903	U	<172	U
Pyrene	100,000	100,000		43.8	J	<9.25	U	48	J	<18.5	U	343	J	<16.7	U	220	J	16.4	J
Pyridine	NC	NC		<18.8	U	<113	U	<106	U	<226	U	<1070	U	<17.4	U	<577	U	<110	U
Total SVOC TICs	NC	NC	100,000	821*		ND		14,942		5,522		256,600		9264*		82,120		7,942	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
* = Indicates Toluene identified

TABLE RWP-7
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-1		TP-1		TP-1		TP-2		TP-2		TP-3		TP-3		TP-4		TP-4		TP-4		TP-5		TP-5	
Depth				0-2		2-4		4-7		0-2		2-4		0-2		2-4		0-2		2-4		5-7		0-1.5		1.5-3	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1,2-Tetrachloroethane	NC	NC		<0.88	U	<95.9	U	<0.88	U	<0.87	U	<101	U	<0.94	U	<0.80	U	<0.81	U	<88.4	U	<1.52	U	<0.90	U	<103	U
1,1,1-Trichloroethane	680	100,000		<0.56	U	<102	U	<0.56	U	<0.55	U	<107	U	<0.60	U	<0.50	U	<0.51	U	<93.6	U	<0.96	U	<0.57	U	<109	U
1,1,2,2-Tetrachloroethane	NC	NC		<1.60	U	<114	U	<1.59	U	<1.57	U	<121	U	<1.70	U	<1.44	U	<1.47	U	<105	U	<2.75	U	<1.63	U	<122	U
1,1,2-Trichloroethane	NC	NC		<0.99	U	<121	U	<0.98	U	<0.97	U	<128	U	<1.05	U	<0.89	U	<0.91	U	<112	U	<1.69	U	<1.00	U	<130	U
1,1,2-Trichlorotrifluoroethane	NC	NC		<0.83	U	<86.0	U	<0.82	U	<0.81	U	<90.9	U	<0.88	U	<0.75	U	<0.76	U	<79.3	U	<1.42	U	<0.84	U	<92.1	U
1,1-Dichloroethane	270	26,000		<0.49	U	<110	U	<0.49	U	<0.48	U	<116	U	<0.52	U	<0.44	U	<0.45	U	<101	U	<0.84	U	<0.50	U	<118	U
1,1-Dichloroethene	330	100,000		<0.77	U	<110	U	<0.77	U	<0.76	U	<116	U	<0.82	U	<0.70	U	<0.71	U	<101	U	<1.32	U	<0.79	U	<118	U
1,1-Dichloropropene	NC	NC		<1.18	U	<97.3	U	<1.17	U	<1.15	U	<103	U	<1.25	U	<1.06	U	<1.08	U	<89.7	U	<2.02	U	<1.20	U	<104	U
1,2,3-Trichlorobenzene	NC	NC		<1.15	U	<71.9	U	<1.14	U	<1.13	U	<76.0	U	<1.23	U	<1.04	U	<1.06	U	<66.3	U	<1.98	U	<1.17	U	<77.0	U
1,2,3-Trichloropropane	NC	NC		<2.25	U	<152	U	<2.23	U	<2.21	U	<161	U	<2.39	U	<2.03	U	<2.07	U	<140	U	<3.86	U	<2.29	U	<163	U
1,2,4,5-Tetramethylbenzene	NC	NC		1,370	E	12,600		8,930		5		1,900		60.9		258		8.57		<78.0	U	8.13	J	<1.24	U	1,140	
1,2,4-Trichlorobenzene	NC	NC		<1.12	U	<79.0	U	<1.11	U	<1.10	U	<83.4	U	<1.19	U	1.04	J	<1.03	U	<72.8	U	3.34	J	<1.14	U	<84.6	U
1,2,4-Trimethylbenzene	3,600	52,000		4.27	J	890		<1.04	U	1.92		731	J	11.9		32.2		<0.97	U	<70.2	U	<1.80	U	<1.07	U	2,150	
1,2-Dibromo-3-chloropropane	NC	NC		<2.56	U	<90.2	U	<2.54	U	<2.52	U	<95.4	U	<2.73	U	<2.31	U	<2.36	U	<83.2	U	<4.40	U	<2.61	U	<96.6	U
1,2-Dibromoethane	NC	NC		<0.83	U	<100	U	<0.82	U	<0.81	U	<106	U	<0.88	U	<0.75	U	<0.76	U	<92.3	U	<1.42	U	<0.84	U	<107	U
1,2-Dichlorobenzene	1,100	100,000		<1.32	U	<90.2	U	<1.31	U	<1.30	U	<95.4	U	<1.40	U	<1.19	U	<1.22	U	<83.2	U	<2.27	U	<1.35	U	<96.6	U
1,2-Dichloroethane	20	3,100		<0.64	U	<98.7	U	<0.63	U	<0.63	U	<104	U	<0.68	U	<0.58	U	<0.59	U	<91.0	U	<1.09	U	<0.65	U	<106	U
1,2-Dichloropropane	NC	NC		<0.43	U	<91.7	U	<0.42	U	<0.42	U	<96.8	U	<0.45	U	<0.38	U	<0.39	U	<84.5	U	<0.73	U	<0.43	U	<98.2	U
1,3,5-Trimethylbenzene	8,400	52,000		<0.92	U	157	J	<0.91	U	<0.90	U	<83.4	U	<0.98	U	<0.83	U	<0.84	U	<72.8	U	<1.57	U	<0.93	U	<84.6	U
1,3-Dichlorobenzene	2,400	49,000		<1.11	U	<88.8	U	<1.10	U	<1.09	U	<93.9	U	<1.18	U	<1.00	U	<1.02	U	<81.9	U	<1.90	U	<1.13	U	<95.1	U
1,3-Dichloropropane	NC	NC		<0.60	U	<93.1	U	<0.60	U	<0.59	U	<98.3	U	<0.64	U	<0.55	U	<0.56	U	<85.8	U	<1.04	U	<0.62	U	<99.7	U
1,4-Dichlorobenzene	1,800	13,000		<1.15	U	<93.1	U	<1.14	U	<1.13	U	<98.3	U	<1.23	U	<1.04	U	<1.06	U	<85.8	U	<1.98	U	<1.17	U	<99.7	U
2,2-Dichloropropane	NC	NC		<0.86	U	<69.1	U	<0.85	U	<0.85	U	<73.0	U	<0.92	U	<0.78	U	<0.79	U	<63.7	U	<1.48	U	<0.88	U	<74.0	U
2-Butanone	120	100,000		<3.54	U	<326	U	<3.51	U	16.6		<344	U	<3.76	U	<3.19	U	<3.25	U	<300	U	<6.07	U	<3.60	U	<349	U
2-Chloroethylvinylether	NC	NC		<3.80	U	<182	U	<3.76	U	<3.73	U	<192	U	<4.03	U	<3.42	U	<3.49	U	<168	U	<6.51	U	<3.86	U	<195	U
2-Chlorotoluene	NC	NC		<1.00	U	<86.0	U	<0.99	U	<0.98	U	<90.9	U	<1.06	U	<0.90	U	<0.92	U	<79.3	U	<1.71	U	<1.01	U	<92.1	U
2-Hexanone	NC	NC		<1.95	U	<312	U	<1.93	U	<1.91	U	<329	U	<2.07	U	<1.76	U	<1.79	U	<287	U	<3.34	U	<1.98	U	<334	U
4-Chlorotoluene	NC	NC		<1.10	U	<84.6	U	<1.09	U	<1.08	U	<89.4	U	<1.17	U	<0.99	U	<1.01	U	<78.0	U	<1.88	U	<1.12	U	<90.6	U
4-Isopropyltoluene	NC	NC		11.3		1,360		2.53	J	1.72		113	J	8.18		7.25		<0.81	U	<70.2	U	<1.52	U	<0.90	U	372	J
4-Methyl-2-pentanone	NC	NC		<2.17	U	<350	U	<2.15	U	<2.13	U	<370	U	<2.31	U	<1.96	U	<2.00	U	<322	U	<3.72	U	<2.21	U	<374	U
Acetone	50	100,000		60.5	U	<333	U	17.1	J	75.6		<352	U	37.5		11.1	J	7.55	J	<307	U	16.5	J	<5.77	U	<356	U
Acrylonitrile	NC	NC		<6.87	U	<642	U	<6.80	U	<6.74	U	<678	U	<7.29	U	<6.19	U	<6.31	U	<592	U	<11.8	U	<6.99	U	<687	U
Benzene	60	4,800		1.18	J	<103	U	<0.56	U	<0.55	U	<109	U	<0.60	U	<0.50	U	<0.51	U	<94.9	U	<0.96	U	<0.57	U	<110	U
Bromobenzene	NC	NC		<0.91	U	<94.5	U	<0.90	U	<0.89	U	<99.8	U	<0.96	U	<0.82	U	<0.83	U	<87.1	U	<1.56	U	<0.92	U	<101	U
Bromochloromethane	NC	NC		<1.12	U	<97.3	U	<1.11	U	<1.10	U	<103	U	<1.19	U	<1.01	U	<1.03	U	<89.7	U	<1.92	U	<1.14	U	<104	U
Bromodichloromethane	NC	NC		<0.48	U	<94.5	U	<0.48	U	<0.47	U	<99.8	U	<0.51	U	<0.43	U	<0.44	U	<87.1	U	<0.83	U	<0.49	U	<101	U
Bromoform	NC	NC		<1.27	U	<94.5	U	<1.25	U	<1.24	U	<99.8	U	<1.34	U	<1.14	U	<1.16	U	<87.1	U	<2.17	U	<1.29	U	<101	U
Bromomethane	NC	NC		<0.58	U	<125	U	<0.58	U	<0.57	U	<133	U	<0.62	U	<0.53	U	<0.54	U	<116	U	<1.00	U	<0.59	U	<134	U
c-1,2-Dichloroethene	250	100,000		<0.60	U	<95.9	U	<0.60	U	<0.59	U	<101	U	<0.64	U	<0.55	U	<0.56	U	<88.4	U	<1.04	U	<0.62	U	<103	U
c-1,3-Dichloropropene	NC	NC		<0.55	U	<74.7	U	<0.54	U	<0.54	U	<79.0	U	<0.58	U	<0.49	U	<0.50	U	<68.9	U	<0.94	U	<0.56	U	<80.0	U
Carbon disulfide	NC	NC		<1.40	U	<104	U	<1.39	U	<1.38	U	<110	U	<1.49	U	1.39	J	1.75	J	<96.2	U	53.7		<1.42	U	<112	U
Carbon Tetrachloride	760	2,400		<0.64	U	<95.9	U	<0.63	U	<0.63	U	<101	U	<0.68	U	<0.58	U	<0.59	U	<88.4	U	<1.09	U	<0.65	U	<103	U
Chlorobenzene	1,100	100,000		<0.57	U	<98.7	U	<0.57	U	<0.56	U	<104	U	<0.61	U	<0.52	U	<0.53	U	<91.0	U	<0.98	U	<0.58	U	<106	U
Chlorodifluoromethane	NC	NC		<0.73	U	<109	U	<0.72	U	<0.71	U	<115	U	<0.77	U	<0.66	U	<0.67	U	<100	U	<1.25	U	<0.74	U	<116	U
Chloroethane	NC	NC		<1.42	U	<189	U	<1.41	U	<1.40	U	<200	U	<1.51	U	<1.28	U	<1.31	U	<174	U	<2.44	U	<1.45	U	<202	U
Chloroform	370	49,000		<0.53	U	<107	U	<0.52	U	<0.52	U	<113	U	<0.56	U	<0.47	U	<0.48	U	<98.8	U	<0.90	U	<0.54	U	<115	U
Chloromethane	NC	NC		<0.44	U	<106	U	<0.43	U	<0.43	U	<112	U	<0.46	U	<0.39	U	<0.40	U	<97.5	U	<0.75	U	<0.44	U	<113	U
Dibromochloromethane	NC	NC		<0.81	U	<95.9	U	<0.80	U	<0.79	U	<101	U	<0.86	U	<0.73	U	<0.74	U	<88.4	U	<1.38	U	<0.82	U	<103	U
Dibromomethane	NC	NC		<0.56	U	<97.3	U	<0.56	U	<0.55	U	<103	U	<0.60	U	<0.50	U	<0.51	U	<89.7	U	<0.96	U	<0.57	U	<104	U
Dichlorodifluoromethane	NC	NC		<0.59	U	<98.7	U	<0.59	U	<0.58	U	<104	U	<0.63	U	<0.54	U	<0.55	U	<91.0	U	<1.02	U	<0.60	U	<106	U
Ethylbenzene	1,000	41,000		<0.48	U	202		<0.48	U	<0.47	U	<104	U	<0.51	U	<0.43	U	<0.44	U	<91.0	U	<0.83	U	<0.49	U	<106	U
Hexachlorobutadiene	NC	NC		<1.11	U	<74.7	U	<1.10	U	<1.09	U	<79.0	U	<1.18	U	<1.00	U	<1.02	U	<68.9	U	<1.90	U	<1.13	U	<80.0	U
Isopropylbenzene	NC	NC		4.59	J	1130		<0.70	U	1.28		211	J	2.63	J	4.12	J	<0.65	U	<83.2	U	<1.21	U	<0.72	U	<96.6	U
m,p-xylene	NC	NC		<1.12	U	330	J	<1.11	U	<1.10	U	<171	U	<1.19	U	<1.01	U	<1.03	U	<150	U	<1.92	U	<1.14	U	<174	U
Methyl t-butyl ether	930	100,000		<0.56	U	<104	U	<0.56	U	<0.55	U	<110	U	<0.60	U	<0.50	U	<0.51	U	<96.2	U	<0.96	U	<0.57	U	<112	U
Methylene Chloride	50	100,000		4.32	J	<111	U	13.1	B	3.66	J	<118	U	4.8	J	4.54	J	4.4	J	<103	U	35.1	B	1.72	BJ	<119	U
Naphthalene	NC	NC		42		11,200		<1.35	U	2.73	J	1,020		<1.45	U	<1.23	U	<1.26	U	<80.6	U	<2.34	U	<1.39	U	2,070	
n-Butylbenzene	12,000	100,000		26.8		3,680		<0.99	U	1.28	J	302	J	12.4		57.2		<0.92	U	<75.4	U	<1.71	U	<1.01	U	456	J
n-Propylbenzene	3,900	100,000		6.63		2,130		<0.80	U	1.81	J	565	J	6.92		8.35		<0.74	U	<83.2	U	<1.38	U	<0.82	U	202	J
o-xylene	NC	NC		<0.84	U	<95.9	U	<0.83	U	<0.82	U	<101	U	<0.89	U	<0.76	U	<0.77	U	<88.4	U	<1.44	U	<0.86	U	<103	U
p-Diethylbenzene	NC	NC		53.6		4,510		24.9		1.3		358	J	13.2		45.6		<1.02	U	181	J	2.38	J	<1.13	U	472	J

TABLE RWP-7
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-1		TP-1		TP-1		TP-2		TP-2		TP-3		TP-3		TP-4		TP-4		TP-4		TP-5		TP-5	
Depth				0-2		2-4		4-7		0-2		2-4		0-2		2-4		0-2		2-4		5-7		0-1.5		1.5-3	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		2.73	J	392	J	<1.02	U	<1.01	U	<87.9	U	4.5	J	3.61	J	<0.95	U	<76.7	U	<1.77	U	<1.05	U	228	J
sec-Butylbenzene	11,000	100,000		17.1		2,900		<0.92	U	<0.91	U	267	J	15.1		52.8		<0.85	U	104	J	<1.59	U	<0.95	U	277	J
Styrene	NC	NC		<0.83	U	<84.6	U	<0.82	U	<0.81	U	<89.4	U	<0.88	U	<0.75	U	<0.76	U	<78.0	U	<1.42	U	<0.84	U	<90.6	U
t-1,2-Dichloroethene	190	100,000		<0.47	U	<94.5	U	<0.47	U	<0.46	U	<99.8	U	<0.50	U	<0.42	U	<0.43	U	<87.1	U	<0.81	U	<0.48	U	<101	U
t-1,3-Dichloropropene	NC	NC		<0.55	U	<90.2	U	<0.54	U	<0.54	U	<95.4	U	<0.58	U	<0.49	U	<0.50	U	<83.2	U	<0.94	U	<0.56	U	<96.6	U
TAME	NC	NC		<2.35	U	<60.6	U	<2.33	U	<2.31	U	<64.1	U	<2.50	U	<2.12	U	<2.16	U	<55.9	U	<4.03	U	<2.39	U	<64.9	U
tert-Butylbenzene	5,900	100,000		<1.08	U	<79.0	U	7.21		<1.06	U	<83.4	U	<1.14	U	<0.97	U	<0.99	U	<72.8	U	<1.84	U	<1.09	U	<84.6	U
Tertiary butyl alcohol	NC	NC		<19.5	U	<1290	U	<19.3	U	<19.1	U	<1360	U	<20.7	U	<17.6	U	<17.9	U	<1190	U	<33.4	U	<19.8	U	<1380	U
Tetrachloroethene	1,300	19,000		<0.65	U	<88.8	U	<0.64	U	<0.64	U	<93.9	U	<0.69	U	<0.59	U	<0.60	U	<81.9	U	<1.11	U	<0.66	U	<95.1	U
Toluene	700	100,000		<0.43	U	102	J	<0.42	U	<0.42	U	<81.9	U	<0.45	U	<0.38	U	<0.39	U	<71.5	U	<0.73	U	<0.43	U	<83.1	U
Trichloroethene	470	2,100		<0.40	U	<97.3	U	<0.40	U	<0.40	U	<103	U	<0.43	U	<0.36	U	<0.37	U	<89.7	U	<0.69	U	<0.41	U	<104	U
Trichlorofluoromethane	NC	NC		<0.72	U	<97.3	U	<0.71	U	<0.70	U	<103	U	<0.76	U	<0.65	U	<0.66	U	<89.7	U	<1.23	U	<0.73	U	<104	U
Vinyl Chloride	20	900		<0.66	U	<103	U	<0.65	U	<0.65	U	<109	U	<0.70	U	<0.60	U	<0.61	U	<94.9	U	<1.13	U	<0.67	U	<110	U
Total VOC TICs	NC	NC	10,000	9,097		174,200		10,415		3,259		107,190		8,277		7,667		1,461		48,980		3,352		ND		2,281	

Notes:
µg/kg - micrograms per kilogram
B - Compound was found in the blank and sample
E - Concentration of analyte exceeded the calibration range.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
ND = Not detected
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** - There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 250 mg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 mg/kg.

TABLE RWP-7
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-5		TP-6		TP-6		TP-7		TP-7		TP-7		TP-8		TP-8		TP-9		TP-9		TP-10		TP-10	
Depth				5-7		0-2		2-4		0-2		2-4		4-7		0-2		4-5		0-2		2-4		0-2		2-4	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1,2-Tetrachloroethane	NC	NC		<4.74	U	<114	U	<101	U	<1.12	U	<0.95	U	<0.93	U	<1.05	U	<1.05	U	<1.36	U	<0.96	U	<0.91	U	<227	U
1,1,1-Trichloroethane	680	100,000		<3.00	U	<120	U	<107	U	<0.71	U	<0.60	U	<0.59	U	<0.67	U	<0.57	U	<0.86	U	<0.61	U	<0.57	U	<123	U
1,1,2,2-Tetrachloroethane	NC	NC		<8.58	U	<135	U	<120	U	<2.03	U	<1.72	U	<1.69	U	<1.90	U	<1.63	U	<2.46	U	<1.74	U	<1.64	U	<123	U
1,1,2-Trichloroethane	NC	NC		<5.28	U	<144	U	<127	U	<1.25	U	<1.06	U	<1.04	U	<1.17	U	<1	U	<1.51	U	<1.07	U	<1.01	U	<158	U
1,1,2-Trichlorotrifluoroethane	NC	NC		<4.44	U	<102	U	<90.3	U	<1.05	U	<0.89	U	<0.87	U	<0.98	U	<0.84	U	<1.27	U	<0.9	U	<0.85	U	<121	U
1,1-Dichloroethane	270	26,000		<2.64	U	<130	U	<115	U	<0.62	U	<0.53	U	<0.52	U	<0.59	U	<0.5	U	<0.76	U	<0.54	U	<0.51	U	<132	U
1,1-Dichloroethene	330	100,000		<4.14	U	<130	U	<115	U	<0.98	U	<0.83	U	<0.81	U	<0.92	U	<0.79	U	<1.19	U	<0.84	U	<0.79	U	<103	U
1,1-Dichloropropene	NC	NC		<6.30	U	<115	U	<102	U	<1.49	U	<1.26	U	<1.24	U	<1.40	U	<1.13	U	<1.81	U	<1.28	U	<1.21	U	<106	U
1,2,3-Trichlorobenzene	NC	NC		<6.18	U	<85.2	U	<75.5	U	<1.46	U	<1.24	U	<1.22	U	<1.37	U	<1.17	U	<1.77	U	<1.26	U	<1.18	U	<60.3	U
1,2,3-Trichloropropane	NC	NC		<12.1	U	<180	U	<160	U	<2.85	U	<2.41	U	<2.37	U	<2.67	U	<2.29	U	<3.46	U	<2.45	U	<2.31	U	<149	U
1,2,4,5-Tetramethylbenzene	NC	NC		209		1,170		712	J	<1.55	U	<1.31	U	<1.29	U	<1.45	U	<1.24	U	<1.87	U	<1.33	U	19.4		<204	U
1,2,4-Trichlorobenzene	NC	NC		<6.00	U	<93.5	U	<82.9	U	<1.42	U	<1.20	U	1.84	J	<1.33	U	<1.14	U	<1.72	U	<1.22	U	<1.15	U	13,700	
1,2,4-Trimethylbenzene	3,600	52,000		<5.64	U	156	J	130	J	<1.33	U	<1.13	U	1.78	J	<1.25	U	<1.07	U	<1.62	U	<1.15	U	21.9		<121	U
1,2-Dibromo-3-chloropropane	NC	NC		<13.7	U	<107	U	<94.7	U	<3.25	U	<2.75	U	<2.70	U	<3.05	U	<2.61	U	<3.94	U	<2.79	U	<2.63	U	48,000	E
1,2-Dibromoethane	NC	NC		<4.44	U	<119	U	<105	U	<1.05	U	<0.89	U	<0.87	U	<0.98	U	<0.84	U	<1.27	U	<0.9	U	<0.85	U	<201	U
1,2-Dichlorobenzene	1,100	100,000		<7.08	U	<107	U	<94.7	U	<1.68	U	<1.42	U	<1.39	U	<1.57	U	<1.35	U	<2.03	U	<1.44	U	<1.36	U	<103	U
1,2-Dichloroethane	20	3,100		<3.42	U	<117	U	<104	U	<0.81	U	<0.68	U	<0.67	U	<0.76	U	<0.65	U	<0.98	U	<0.7	U	<0.66	U	<118	U
1,2-Dichloropropane	NC	NC		<2.28	U	<109	U	<96.2	U	<0.54	U	<0.46	U	<0.45	U	<0.51	U	<0.43	U	<0.65	U	<0.46	U	<0.44	U	<91.8	U
1,3,5-Trimethylbenzene	8,400	52,000		13.5	J	<93.5	U	126	J	<1.16	U	<0.98	U	<0.97	U	<1.09	U	<0.93	U	<1.41	U	<1	U	7.76		<141	U
1,3-Dichlorobenzene	2,400	49,000		<5.94	U	<105	U	<93.2	U	<1.41	U	<1.19	U	<1.17	U	<1.32	U	0.93		<1.7	U	<1.21	U	<1.14	U	1,590	
1,3-Dichloropropane	NC	NC		<3.24	U	<110	U	<97.7	U	<0.77	U	<0.65	U	<0.64	U	<0.72	U	<0.62	U	<0.93	U	<0.66	U	<0.62	U	<129	U
1,4-Dichlorobenzene	1,800	13,000		<6.18	U	<110	U	<97.7	U	<1.46	U	<1.24	U	<1.22	U	<1.37	U	<1.17	U	<1.77	U	<1.26	U	<1.18	U	<109	U
2,2-Dichloropropane	NC	NC		<4.62	U	<81.8	U	<72.5	U	<1.09	U	<0.92	U	<0.91	U	<1.02	U	<1.2	U	<1.32	U	<0.94	U	<0.89	U	<132	U
2-Butanone	120	100,000		<19.0	U	<386	U	<342	U	<4.49	U	<3.79	U	<3.73	U	<4.20	U	<3.6	U	7.61	J	5.46	J	6.54	J	<135	U
2-Chloroethylvinylether	NC	NC		<20.3	U	<215	U	<191	U	<4.81	U	<4.07	U	<4.00	U	<4.51	U	<3.86	U	<5.83	U	<4.14	U	<3.9	U	<276	U
2-Chlorotoluene	NC	NC		<5.34	U	<102	U	<90.3	U	<1.26	U	<1.07	U	<1.05	U	<1.18	U	<1.01	U	<1.53	U	<1.09	U	<1.02	U	<508	U
2-Hexanone	NC	NC		<10.4	U	<369	U	<327	U	<2.47	U	<2.09	U	<2.05	U	<2.31	U	<0.88	U	<2.99	U	<2.12	U	<2	U	<123	U
4-Chlorotoluene	NC	NC		<5.88	U	<100	U	<88.8	U	<1.39	U	<1.18	U	<1.16	U	<1.30	U	<1.12	U	<1.69	U	<1.2	U	<1.13	U	<89.0	U
4-Isopropyltoluene	NC	NC		47.3		193	J	127	J	<1.12	U	<0.95	U	<0.93	U	<1.05	U	<0.9	U	<1.36	U	<0.96	U	<3.31	U	<132	U
4-Methyl-2-pentanone	NC	NC		<11.6	U	<414	U	<367	U	<2.75	U	<2.33	U	<2.29	U	<2.58	U	<2.21	U	<3.34	U	<2.37	U	<2.23	U	2,560	
Acetone	50	100,000		<30.4	U	<394	U	<349	U	<7.19	U	18.3	J	<5.97	U	<6.73	U	10.9	J	40.4	J	14.2	J	<33.9	U	<141	U
Acrylonitrile	NC	NC		<36.8	U	<760	U	<673	U	<8.70	U	<7.36	U	<7.23	U	<8.15	U	<6.99	U	<10.5	U	<7.48	U	<7.05	U	<585	U
Benzene	60	4,800		<3.00	U	<122	U	<108	U	<0.71	U	<0.60	U	<0.59	U	<0.67	U	<0.57	U	<0.86	U	<0.61	U	<0.57	U	<97.6	U
Bromobenzene	NC	NC		<4.86	U	<112	U	<99.2	U	<1.15	U	<0.97	U	<0.96	U	<1.08	U	<0.92	U	<1.39	U	<0.99	U	<0.93	U	<109	U
Bromochloromethane	NC	NC		<6.00	U	<115	U	<102	U	<1.42	U	<1.20	U	<1.18	U	<1.33	U	<1.14	U	<1.72	U	<1.22	U	<1.15	U	<175	U
Bromodichloromethane	NC	NC		<2.58	U	<112	U	<99.2	U	<0.61	U	<0.52	U	<0.51	U	<0.57	U	<0.49	U	<0.74	U	<0.52	U	<0.49	U	<129	U
Bromoform	NC	NC		<6.78	U	<112	U	<99.2	U	<1.60	U	<1.36	U	<1.33	U	<1.50	U	<1.29	U	<1.94	U	<1.38	U	<1.3	U	<132	U
Bromomethane	NC	NC		<3.12	U	<149	U	<132	U	<0.74	U	<0.62	U	<0.61	U	<0.69	U	<0.59	U	<0.89	U	<0.63	U	<0.6	U	<149	U
c-1,2-Dichloroethene	250	100,000		<3.24	U	<114	U	<101	U	<0.77	U	<0.65	U	<0.64	U	<0.72	U	<0.62	U	<0.93	U	<0.66	U	<0.62	U	<123	U
c-1,3-Dichloropropene	NC	NC		<2.94	U	<88.5	U	<78.4	U	<0.70	U	<0.59	U	<0.58	U	<0.65	U	<0.56	U	<0.84	U	<0.6	U	<0.56	U	<118	U
Carbon disulfide	NC	NC		<7.50	U	<124	U	<110	U	<1.77	U	<1.50	U	<1.48	U	<1.66	U	<1.42	U	<2.15	U	5.9	J	<1.44	U	<91.8	U
Carbon Tetrachloride	760	2,400		<3.42	U	<114	U	<101	U	<0.81	U	<0.68	U	<0.67	U	<0.76	U	<0.65	U	<0.98	U	<0.7	U	<0.66	U	<86.1	U
Chlorobenzene	1,100	100,000		<3.06	U	<117	U	<104	U	<0.72	U	<0.61	U	<0.60	U	<0.68	U	<0.58	U	<0.88	U	<0.62	U	<0.59	U	<103	U
Chlorodifluoromethane	NC	NC		<3.90	U	<129	U	<114	U	<0.92	U	<0.78	U	<0.77	U	<0.86	U	<0.74	U	<1.12	U	<0.79	U	<0.75	U	<100	U
Chloroethane	NC	NC		<7.62	U	<224	U	<198	U	<1.80	U	<1.52	U	<1.50	U	<1.69	U	<1.45	U	<2.18	U	<1.55	U	<1.46	U	<215	U
Chloroform	370	49,000		<2.82	U	<127	U	<112	U	<0.67	U	<0.56	U	<0.55	U	<0.63	U	<0.54	U	<0.81	U	<0.57	U	<0.54	U	<112	U
Chloromethane	NC	NC		<2.34	U	<125	U	<111	U	<0.55	U	<0.47	U	<0.46	U	<0.52	U	<0.44	U	<0.67	U	<0.48	U	<0.45	U	<210	U
Dibromochloromethane	NC	NC		<4.32	U	<114	U	<101	U	<1.02	U	<0.86	U	<0.85	U	<0.96	U	<0.82	U	<1.24	U	<0.88	U	<0.83	U	<129	U
Dibromomethane	NC	NC		<3.00	U	<115	U	<102	U	<0.71	U	<0.60	U	<0.59	U	<0.67	U	<0.57	U	<0.86	U	<0.61	U	<0.57	U	<118	U
Dichlorodifluoromethane	NC	NC		<3.18	U	<117	U	<104	U	<0.75	U	<0.64	U	<0.63	U	<0.70	U	<0.6	U	<0.91	U	<0.65	U	<0.61	U	<97.6	U
Ethylbenzene	1,000	41,000		<2.58	U	<117	U	<104	U	<0.61	U	<0.52	U	<0.51	U	<0.57	U	<0.49	U	<0.74	U	<0.52	U	6.4		3,050	
Hexachlorobutadiene	NC	NC		<5.94	U	<88.5	U	<78.4	U	<1.41	U	<1.19	U	<1.17	U	<1.32	U	<1.13	U	<1.7	U	<1.21	U	<1.14	U	<141	U
Isopropylbenzene	NC	NC		<3.78	U	<107	U	<94.7	U	<0.89	U	<0.76	U	<0.74	U	<0.84	U	<0.72	U	<1.08	U	<0.77	U	0.94	J	1,400	
m,p-xylene	NC	NC		<6.00	U	<192	U	<170	U	<1.42	U	<1.20	U	<1.18	U	<1.33	U	<1.74	U	<1.72	U	1.54	J	2.16	J	530	
Methyl t-butyl ether	930	100,000		<3.00	U	<124	U	<110	U	<0.71	U	<0.60	U	<0.59	U	<0.67	U	<0.57	U	<0.86	U	<0.61	U	<0.57	U	<115	U
Methylene Chloride	50	100,000		42.6	B	<132	U	<117	U	5.32	BJ	3.93	BJ	16.2	B	2.66	BJ	<2.46	U	<1.46	U	3.65	J	4.15	J	<126	U
Naphthalene	NC	NC		<7.32	U	222	J	<91.8	U	<1.73	U	<1.46	U	<1.44	U	<1.62	U	<1.39	U	<2.1	U	<1.49	U	<1.4	U	13,500	
n-Butylbenzene	12,000	100,000		<5.34	U	<96.9	U	124	J	<1.26	U	4.7	J	<1.05	U	<1.18	U	<1.01	U	<1.53	U	<1.09	U	<1.02	U	4,550	
n-Propylbenzene	3,900	100,000		<4.32	U	<107	U	<94.7	U	<1.02	U	<0.86	U	<0.85	U	<0.96	U	<0.82	U	<1.24	U	<0.88	U	1.64	J	3,450	
o-xylene	NC	NC		<4.50	U	<114	U	<101	U	<1.07	U	<0.90	U	<0.88	U	<1.00	U	<0.86	U	<1.29	U	<0.92	U	1.01	J	<126	U
p-Diethylbenzene	NC	NC		<5.94	U	<96.9	U	144	J	<1.41	U	<1.19	U	<1.17	U	<1.32	U	<1.13	U	<1.7	U	<1.21	U	<1.14	U	7,960	

TABLE RWP-7
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-5		TP-6		TP-6		TP-7		TP-7		TP-7		TP-8		TP-8		TP-9		TP-9		TP-10		TP-10	
Depth				5-7		0-2		2-4		0-2		2-4		4-7		0-2		4-5		0-2		2-4		0-2		2-4	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<5.52	U	<98.5	U	103	J	<1.31	U	<1.10	U	<1.09	U	<1.22	U	<1.98	U	<1.58	U	<1.12	U	2.07	J	1,570	
sec-Butylbenzene	11,000	100,000		<4.98	U	<96.9	U	157	J	<1.18	U	<1.00	U	<0.98	U	<1.10	U	<0.95	U	<1.43	U	<1.01	U	1.35	J	1,810	
Styrene	NC	NC		<4.44	U	<100	U	<88.8	U	<1.05	U	<0.89	U	<0.87	U	<0.98	U	<0.84	U	<1.27	U	<0.9	U	<0.85	U	<94.7	U
t-1,2-Dichloroethene	190	100,000		<2.52	U	<112	U	<99.2	U	<0.60	U	<0.50	U	<0.50	U	<0.56	U	<0.48	U	<0.72	U	<0.51	U	<0.48	U	<109	U
t-1,3-Dichloropropene	NC	NC		<2.94	U	<107	U	<94.7	U	<0.70	U	<0.59	U	<0.58	U	<0.65	U	<0.56	U	<0.84	U	<0.6	U	<0.56	U	<121	U
TAME	NC	NC		<12.6	U	<71.8	U	<63.6	U	<2.98	U	<2.52	U	<2.48	U	<2.79	U	<2.39	U	<3.61	U	<2.56	U	<2.41	U	<118	U
tert-Butylbenzene	5,900	100,000		<5.76	U	<93.5	U	<82.9	U	<1.36	U	<1.15	U	<1.13	U	<1.28	U	<1.09	U	<1.65	U	<1.17	U	<1.1	U	<138	U
Tertiary butyl alcohol	NC	NC		<104	U	<1520	U	<1350	U	<24.7	U	<20.9	U	<20.5	U	<23.1	U	<19.8	U	<29.9	U	<21.2	U	<20	U	<6140	U
Tetrachloroethene	1,300	19,000		<3.48	U	<105	U	<93.2	U	<0.82	U	<0.70	U	<0.68	U	<0.77	U	<0.66	U	<1	U	<0.71	U	<0.67	U	<51.7	U
Toluene	700	100,000		<2.28	U	<91.8	U	<81.4	U	<0.54	U	<0.46	U	<0.45	U	<0.51	U	<0.43	U	<0.65	U	<0.46	U	0.81	J	<115	U
Trichloroethene	470	2,100		<2.16	U	<115	U	<102	U	<0.51	U	<0.43	U	<0.42	U	<0.48	U	<0.41	U	<0.62	U	<0.44	U	<0.41	U	<80.4	U
Trichlorofluoromethane	NC	NC		<3.84	U	<115	U	<102	U	<0.91	U	<0.77	U	<0.76	U	<0.85	U	<0.73	U	<1.1	U	<0.78	U	<0.74	U	<97.6	U
Vinyl Chloride	20	900		<3.54	U	<122	U	<108	U	<0.84	U	<0.71	U	<0.70	U	<0.78	U	<0.67	U	<1.01	U	<0.72	U	<0.68	U	<109	U
Total VOC TICs	NC	NC	10,000	21,410		53,850		33,460		7,287		4,039		29,991		189		52		8,348		726		4,031		329,400	

Notes:
µg/kg - micrograms per kilogram
B - Compound was found in the blank and sample
E - Concentration of analyte exceeded the calibration range.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
ND = Not detected
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** - There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 250 mg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 mg/kg.

TABLE RWP-7
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-10		TP-11		TP-11		TP-11		TP-12		TP-12		TP-13		TP-13		TP-14		TP-14		TP-14		TP-15		TP-15	
Depth				4-6		0-2		2-4		5-7		0-2		2-4		0-2		2-4		0-2		2-6		6-7		0-4		4-6	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1,2-Tetrachloroethane	NC	NC		<0.98	U	<0.87	U	<0.88	U	<0.88	U	<0.85	U	<0.99	U	<0.88	U	<1.08	U	<0.92	U	<1.07	U	<1.93	U	<1.01	U	<0.92	U
1,1,1-Trichloroethane	680	100,000		<0.62	U	<0.55	U	<0.56	U	<0.56	U	<0.54	U	<0.63	U	<0.56	U	<0.69	U	<0.58	U	<0.68	U	<1.22	U	<0.64	U	<0.58	U
1,1,2,2-Tetrachloroethane	NC	NC		<1.77	U	<1.57	U	<1.59	U	<1.60	U	<1.54	U	<1.79	U	<1.59	U	<1.96	U	<1.66	U	<1.93	U	<3.49	U	<1.83	U	<1.66	U
1,1,2-Trichloroethane	NC	NC		<1.09	U	<0.97	U	<0.98	U	<0.99	U	<0.95	U	<1.10	U	<0.98	U	<1.21	U	<1.02	U	<1.19	U	<2.15	U	<1.13	U	<1.02	U
1,1,2-Trichlorotrifluoroethane	NC	NC		<0.92	U	<0.81	U	<0.82	U	<0.83	U	<0.80	U	<0.93	U	<0.82	U	<1.01	U	<0.86	U	<1.00	U	<1.81	U	<0.95	U	<0.86	U
1,1-Dichloroethane	270	26,000		<0.55	U	<0.48	U	<0.49	U	<0.49	U	<0.48	U	<0.55	U	<0.49	U	<0.60	U	<0.51	U	<0.59	U	<1.07	U	<0.56	U	<0.51	U
1,1-Dichloroethene	330	100,000		<0.86	U	<0.76	U	<0.77	U	<0.77	U	<0.75	U	<0.86	U	<0.77	U	<0.95	U	<0.80	U	<0.93	U	<1.68	U	<0.88	U	<0.80	U
1,1-Dichloropropene	NC	NC		<1.30	U	<1.15	U	<1.17	U	<1.18	U	<1.13	U	<1.31	U	<1.17	U	<1.44	U	<1.22	U	<1.42	U	<2.56	U	<1.34	U	<1.22	U
1,2,3-Trichlorobenzene	NC	NC		<1.28	U	<1.13	U	<1.14	U	<1.15	U	<1.11	U	<1.29	U	<1.14	U	<1.41	U	<1.19	U	<1.39	U	<2.51	U	<1.32	U	<1.19	U
1,2,3-Trichloropropane	NC	NC		<2.49	U	<2.21	U	<2.23	U	<2.25	U	<2.17	U	<2.51	U	<2.23	U	<2.75	U	<2.33	U	<2.71	U	<4.90	U	<2.57	U	<2.33	U
1,2,4,5-Tetramethylbenzene	NC	NC		<1.35	U	<1.2	U	526		<1.22	U	1.73		14.6		<1.21	U	<1.49	U	<1.26	U	<1.47	U	<2.66	U	<1.40	U	<1.26	U
1,2,4-Trichlorobenzene	NC	NC		<1.24	U	<1.1	U	<1.11	U	<1.12	U	<1.08	U	<1.25	U	<1.11	U	<1.37	U	<1.16	U	<1.35	U	<2.44	U	<1.28	U	<1.16	U
1,2,4-Trimethylbenzene	3,600	52,000		<1.17	U	<1.03	U	<1.77	J	<1.05	U	<1.02	U	<1.17	U	<1.04	U	<1.29	U	<1.09	U	<1.27	U	<2.29	U	<1.20	U	<1.09	U
1,2-Dibromo-3-chloropropane	NC	NC		<2.84	U	<2.52	U	<2.54	U	<2.56	U	<2.47	U	<2.86	U	<2.54	U	<3.14	U	<2.66	U	<3.09	U	<5.59	U	<2.93	U	<2.66	U
1,2-Dibromoethane	NC	NC		<0.92	U	<0.81	U	<0.82	U	<0.83	U	<0.80	U	<0.93	U	<0.82	U	<1.01	U	<0.86	U	<1.00	U	<1.81	U	<0.95	U	<0.86	U
1,2-Dichlorobenzene	1,100	100,000		<1.46	U	<1.3	U	<1.31	U	<1.32	U	<1.27	U	<1.48	U	<1.31	U	<1.62	U	<1.37	U	<1.59	U	<2.88	U	<1.51	U	<1.37	U
1,2-Dichloroethane	20	3,100		<0.71	U	<0.63	U	<0.63	U	<0.64	U	<0.62	U	<0.71	U	<0.63	U	<0.78	U	<0.66	U	<0.77	U	<1.39	U	<0.73	U	<0.66	U
1,2-Dichloropropane	NC	NC		<0.47	U	<0.42	U	<0.42	U	<0.43	U	<0.41	U	<0.47	U	<0.42	U	<0.52	U	<0.44	U	<0.51	U	<0.93	U	<0.49	U	<0.44	U
1,3,5-Trimethylbenzene	8,400	52,000		<1.02	U	<0.9	U	<0.91	U	<0.92	U	<0.89	U	<1.02	U	<0.91	U	<1.12	U	<0.95	U	<1.11	U	<2.00	U	<1.05	U	<0.95	U
1,3-Dichlorobenzene	2,400	49,000		<1.23	U	<1.09	U	<1.1	U	<1.11	U	<1.07	U	<1.24	U	<1.10	U	<1.36	U	<1.15	U	<1.34	U	<2.42	U	<1.27	U	<1.15	U
1,3-Dichloropropane	NC	NC		<0.67	U	<0.59	U	<0.6	U	<0.60	U	<0.58	U	<0.68	U	<0.60	U	<0.74	U	<0.63	U	<0.73	U	<1.32	U	<0.69	U	<0.63	U
1,4-Dichlorobenzene	1,800	13,000		<1.28	U	<1.13	U	<1.14	U	<1.15	U	<1.11	U	<1.29	U	<1.14	U	<1.41	U	<1.19	U	<1.39	U	<2.51	U	<1.32	U	<1.19	U
2,2-Dichloropropane	NC	NC		<0.95	U	<0.85	U	<0.85	U	<0.86	U	<0.83	U	<0.96	U	<0.85	U	<1.05	U	<0.89	U	<1.04	U	<1.88	U	<0.99	U	<0.89	U
2-Butanone	120	100,000		<3.92	U	<3.48	U	15	J	<3.54	U	<3.41	U	14.3	J	<3.51	U	<4.33	U	<3.67	U	6.33	J	<7.71	U	<4.04	U	<3.67	U
2-Chloroethylvinylether	NC	NC		<4.20	U	<3.73	U	<3.76	U	<3.80	U	<3.66	U	<4.24	U	<3.76	U	<4.64	U	<3.93	U	<4.58	U	<8.27	U	<4.34	U	<3.93	U
2-Chlorotoluene	NC	NC		<1.10	U	<0.98	U	<0.99	U	<1.00	U	<0.96	U	<1.11	U	<0.99	U	<1.22	U	<1.03	U	<1.20	U	<2.17	U	<1.14	U	<1.03	U
2-Hexanone	NC	NC		<2.16	U	<1.91	U	<1.93	U	<1.95	U	<1.88	U	<2.17	U	<1.93	U	<2.38	U	<2.02	U	<2.35	U	<4.25	U	<2.23	U	<2.02	U
4-Chlorotoluene	NC	NC		<1.22	U	<1.08	U	<1.09	U	<1.10	U	<1.06	U	<1.23	U	<1.09	U	<1.34	U	<1.14	U	<1.32	U	<2.39	U	<1.25	U	<1.14	U
4-Isopropyltoluene	NC	NC		<0.98	U	<0.87	U	7.54		<0.88	U	<0.85	U	<0.99	U	<0.88	U	3.29	J	<0.92	U	1.23	U	<1.93	U	<1.01	U	<0.92	U
4-Methyl-2-pentanone	NC	NC		<2.41	U	<2.13	U	<2.15	U	<2.17	U	<2.10	U	<2.42	U	<2.15	U	<2.66	U	<2.25	U	<2.62	U	<4.73	U	<2.48	U	<2.25	U
Acetone	50	100,000		6.97		<20.1	J	76.7		<5.67	U	<5.46	U	66.2		12.7		83.1		27.6		71.8		29.8		27.9		22	J
Acrylonitrile	NC	NC		<7.60	U	<6.74	U	<6.8	U	<6.87	U	<6.62	U	<7.66	U	<6.80	U	<8.40	U	<7.11	U	<8.28	U	<15.0	U	<7.85	U	<7.11	U
Benzene	60	4,800		<0.62	U	<0.55	U	<0.56	U	<0.56	U	<0.54	U	<0.63	U	<0.56	U	<0.69	U	<0.58	U	<0.68	U	<1.22	U	<0.64	U	<0.58	U
Bromobenzene	NC	NC		<1.00	U	<0.89	U	<0.9	U	<0.91	U	<0.87	U	<1.01	U	<0.90	U	<1.11	U	<0.94	U	<1.09	U	<1.98	U	<1.04	U	<0.94	U
Bromochloromethane	NC	NC		<1.24	U	<1.1	U	<1.11	U	<1.12	U	<1.08	U	<1.25	U	<1.11	U	<1.37	U	<1.16	U	<1.35	U	<2.44	U	<1.28	U	<1.16	U
Bromodichloromethane	NC	NC		<0.53	U	<0.47	U	<0.48	U	<0.48	U	<0.46	U	<0.54	U	<0.48	U	<0.59	U	<0.50	U	<0.58	U	<1.05	U	<0.55	U	<0.50	U
Bromoform	NC	NC		<1.40	U	<1.24	U	<1.25	U	<1.27	U	<1.22	U	<1.41	U	<1.25	U	<1.55	U	<1.31	U	<1.53	U	<2.76	U	<1.45	U	<1.31	U
Bromomethane	NC	NC		<0.64	U	<0.57	U	<0.58	U	<0.58	U	<0.56	U	<0.65	U	<0.58	U	<0.71	U	<0.60	U	<0.70	U	<1.27	U	<0.67	U	<0.60	U
c-1,2-Dichloroethene	250	100,000		<0.67	U	<0.59	U	<0.6	U	<0.60	U	<0.58	U	<0.68	U	<0.60	U	<0.74	U	<0.63	U	<0.73	U	<1.32	U	<0.69	U	<0.63	U
c-1,3-Dichloropropene	NC	NC		<0.61	U	<0.54	U	<0.54	U	<0.55	U	<0.53	U	<0.61	U	<0.54	U	<0.67	U	<0.57	U	<0.66	U	<1.20	U	<0.63	U	<0.57	U
Carbon disulfide	NC	NC		2.8		<1.38	U	<1.39	U	<1.40	U	<1.35	U	10.4		<1.39	U	14.4		<1.45	U	14.6	U	30.2		<1.60	U	<1.45	U
Carbon Tetrachloride	760	2,400		<0.71	U	<0.63	U	<0.63	U	<0.64	U	<0.62	U	<0.71	U	<0.63	U	<0.78	U	<0.66	U	<0.77	U	<1.39	U	<0.73	U	<0.66	U
Chlorobenzene	1,100	100,000		<0.63	U	<0.56	U	<0.57	U	<0.57	U	<0.55	U	<0.64	U	<0.57	U	<0.70	U	<0.59	U	<0.69	U	<1.24	U	<0.65	U	<0.59	U
Chlorodifluoromethane	NC	NC		<0.81	U	<0.71	U	<0.72	U	<0.73	U	<0.70	U	<0.81	U	<0.72	U	<0.89	U	<0.75	U	<0.88	U	<1.59	U	<0.83	U	<0.75	U
Chloroethane	NC	NC		<1.57	U	<1.4	U	<1.41	U	<1.42	U	<1.37	U	<1.59	U	<1.41	U	<1.74	U	<1.47	U	<1.71	U	<3.10	U	<1.63	U	<1.47	U
Chloroform	370	49,000		<0.58	U	<0.52	U	<0.52	U	<0.53	U	<0.51	U	<0.59	U	<0.52	U	<0.64	U	<0.55	U	<0.63	U	<1.15	U	<0.60	U	<0.55	U
Chloromethane	NC	NC		<0.48	U	<0.43	U	<0.43	U	<0.44	U	<0.42	U	<0.49	U	<0.43	U	<0.53	U	<0.45	U	<0.53	U	<0.95	U	<0.50	U	<0.45	U
Dibromochloromethane	NC	NC		<0.89	U	<0.79	U	<0.8	U	<0.81	U	<0.78	U	<0.90	U	<0.80	U	<0.99	U	<0.84	U	<0.97	U	<1.76	U	<0.92	U	<0.84	U
Dibromomethane	NC	NC		<0.62	U	<0.55	U	<0.56	U	<0.56	U	<0.54	U	<0.63	U	<0.56	U	<0.69	U	<0.58	U	<0.68	U	<1.22	U	<0.64	U	<0.58	U
Dichlorodifluoromethane	NC	NC		<0.66	U	<0.58	U	<0.59	U	<0.59	U	<0.57	U	<0.66	U	<0.59	U	<0.73	U	<0.61	U	<0.72	U	<1.29	U	<0.68	U	<0.61	U
Ethylbenzene	1,000	41,000		<0.53	U	<0.47	U	<0.48	U	<0.48	U	<0.46	U	<0.54	U	<0.48	U	<0.59	U	<0.50	U	<0.58	U	<1.05	U	<0.55	U	<0.50	U
Hexachlorobutadiene	NC	NC		<1.23	U	<1.09	U	<1.1	U	<1.11	U	<1.07	U	<1.24	U	<1.10	U	<1.36	U	<1.15	U	<1.34	U	<2.42	U	<1.27	U	<1.15	U
Isopropylbenzene	NC	NC		<0.78	U	<0.69	U	19.4		<0.71	U	<0.68	U	4.1	J	<0.70	U	<0.86	U	<0.73	U	<0.85	U	<1.54	U	<0.81	U	<0.73	U
m,p-xylene	NC	NC		<1.24	U	<1.1	U	2.89	J	<1.12	U	1.27	J	1.53	J	<1.11	U	<1.37	U	<1.16	U	<1.35	U	<2.44	U	<1.28	U	<1.16	U
Methyl t-butyl ether	930	100,000		<0.62	U	<0.55	U	<0.56	U	<0.56	U	<0.54	U	<0.63	U	<0.56	U	<0.69	U	<0.58	U	<0.68	U	<1.22	U	<0.64	U	<0.58	U
Methylene Chloride	50	100,000		12.1	B	2.76	J	4.4	J	11.2	B	1.95	J	2.75	J	1.27	J	4.93	BJ	<0.99	U	4.23	BJ	<2.07	U	<1.09	U	<0.99	U
Naphthalene	NC	NC		<1.51	U	<1.34	U	741		<1.37	U	<1.32	U	<1.52	U	<1.35	U	<1.67	U	<1.42	U	<1.65	U	<2.98	U	<1.56	U	<1.42	U
n-Butylbenzene	12,000	100,000		<1.10	U	<0.98	U	53.2		<1.00	U	<0.96	U	<1.11	U	<0.99	U	<1.22	U	<1.03	U	<1.20	U	<2.17	U	<1.14	U	<1.03	U
n-Propylbenzene	3,900	100,000		<0.89	U	<0.79	U	28		<0.81	U	<0.78	U	3.26	J	<0.80	U	<0.99	U	<0.84	U	<0.97	U	<1.76	U	<0.92	U	<0.84	U
o-xylene	NC	NC		<0.93	U	<0.82	U	4.15	J	<0.84	U	<0.81	U	<0.94	U	<0.83	U	<1.03	U	<0.87	U	<1.01	U	<1.83	U	<0.96	U	<0.87	U
p-Diethylbenzene	NC	NC		<1.23	U	<1.09	U	45.4		<1.11	U	<1.07	U	3.6	J	<1.10	U	<1.36	U	<1.15	U	<1.34	U	<2.42	U	<1.27	U	<1.15	U

TABLE RWP-7
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-10		TP-11		TP-11		TP-11		TP-12		TP-12		TP-13		TP-13		TP-14		TP-14		TP-14		TP-15		TP-15	
Depth				4-6		0-2		2-4		5-7		0-2		2-4		0-2		2-4		0-2		2-6		6-7		0-4		4-6	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<1.14	U	<1.01	U	5.74		<1.03	U	<0.99	U	<1.15	U	<1.02	U	<1.26	U	<1.07	U	<1.24	U	<2.24	U	<1.18	U	<1.07	U
sec-Butylbenzene	11,000	100,000		<1.03	U	<0.91	U	33.5		<0.93	U	<0.90	U	3.37	J	<0.92	U	<1.14	U	<0.96	U	<1.12	U	<2.03	U	<1.06	U	<0.96	U
Styrene	NC	NC		<0.92	U	<0.81	U	<0.82	U	<0.83	U	<0.80	U	<0.93	U	<0.82	U	<1.01	U	<0.86	U	<1.00	U	<1.81	U	<0.95	U	<0.86	U
t-1,2-Dichloroethene	190	100,000		<0.52	U	<0.46	U	<0.47	U	<0.47	U	<0.45	U	<0.52	U	<0.47	U	<0.58	U	<0.49	U	<0.57	U	<1.02	U	<0.54	U	<0.49	U
t-1,3-Dichloropropene	NC	NC		<0.61	U	<0.54	U	<0.54	U	<0.55	U	<0.53	U	<0.61	U	<0.54	U	<0.67	U	<0.57	U	<0.66	U	<1.20	U	<0.63	U	<0.57	U
TAME	NC	NC		<2.60	U	<2.31	U	<2.33	U	<2.35	U	<2.27	U	<2.63	U	<2.33	U	<2.88	U	<2.44	U	<2.84	U	<5.12	U	<2.69	U	<2.44	U
tert-Butylbenzene	5,900	100,000		<1.19	U	<1.06	U	3.7	J	<1.08	U	<1.04	U	<1.20	U	<1.07	U	<1.32	U	<1.11	U	<1.30	U	<2.34	U	<1.23	U	<1.11	U
Tertiary butyl alcohol	NC	NC		<21.6	U	<19.1	U	<19.3	U	<19.5	U	<18.8	U	<21.8	U	<19.3	U	<23.8	U	<20.2	U	<23.5	U	<42.5	U	<22.3	U	<20.2	U
Tetrachloroethene	1,300	19,000		<0.72	U	<0.64	U	<0.64	U	<0.65	U	<0.63	U	<0.73	U	<0.64	U	<0.79	U	<0.67	U	<0.78	U	<1.42	U	<0.74	U	<0.67	U
Toluene	700	100,000		<0.47	U	<0.42	U	<0.42	U	<0.43	U	<0.41	U	<0.47	U	<0.42	U	<0.52	U	<0.44	U	<0.51	U	2.88	U	<0.49	U	<0.44	U
Trichloroethene	470	2,100		<0.45	U	<0.4	U	<0.4	U	<0.40	U	<0.39	U	<0.45	U	<0.40	U	<0.49	U	<0.42	U	<0.49	U	<0.88	U	<0.46	U	<0.42	U
Trichlorofluoromethane	NC	NC		<0.79	U	<0.71	U	<0.71	U	<0.72	U	<0.69	U	<0.80	U	<0.71	U	<0.88	U	<0.74	U	<0.86	U	<1.56	U	<0.82	U	<0.74	U
Vinyl Chloride	20	900		<0.73	U	<0.65	U	<0.65	U	<0.66	U	<0.64	U	<0.74	U	<0.65	U	<0.81	U	<0.68	U	<0.80	U	<1.44	U	<0.76	U	<0.68	U
Total VOC TICs	NC	NC	10,000	3,346		2,299		8,447		1,479		87		780		21		ND		ND		28		718		ND		ND	

Notes:
µg/kg - micrograms per kilogram
B - Compound was found in the blank and sample
E - Concentration of analyte exceeded the calibration range.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
ND = Not detected
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** - There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 250 mg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 mg/kg.

TABLE RWP-7
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-15		TP-16		TP-16		TP-17		TP-17		TP-17		TP-18		TP-18	
Depth				6-7		0-2		2-4		0-2		2-4		4-7		0-2		2-4	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1,2-Tetrachloroethane	NC	NC		<1.10	U	<0.88	U	<0.82	U	<0.88	U	<56.8	U	<1.02	U	<4.47	U	<4.25	U
1,1,1-Trichloroethane	680	100,000		<0.69	U	<0.56	U	<0.52	U	<0.56	U	<56.8	U	<0.64	U	<2.83	U	<2.69	U
1,1,2,2-Tetrachloroethane	NC	NC		<1.99	U	<1.59	U	<1.49	U	<1.59	U	<72.6	U	<1.84	U	<8.09	U	<7.69	U
1,1,2-Trichloroethane	NC	NC		<1.22	U	<0.98	U	<0.92	U	<0.98	U	<55.4	U	<1.14	U	<4.98	U	<4.73	U
1,1,2-Trichlorotrifluoroethane	NC	NC		<1.03	U	<0.49	U	<0.46	U	<0.49	U	<47.5	U	<0.95	U	<2.49	U	<2.37	U
1,1-Dichloroethane	270	26,000		<0.61	U	<0.77	U	<0.72	U	<0.77	U	<48.8	U	<0.57	U	<3.91	U	<3.71	U
1,1-Dichloroethene	330	100,000		<0.96	U	<1.17	U	<1.09	U	<1.17	U	<27.7	U	<0.89	U	<5.94	U	<5.65	U
1,1-Dichloropropene	NC	NC		<1.46	U	<1.14	U	<1.07	U	<1.14	U	<68.6	U	<1.35	U	<5.83	U	<5.54	U
1,2,3-Trichlorobenzene	NC	NC		<1.43	U	<2.23	U	<2.09	U	<2.23	U	<93.7	U	<1.33	U	<11.4	U	<10.8	U
1,2,3-Trichloropropane	NC	NC		<2.79	U	<1.21	U	9.86		<1.21	U	4,800		<2.59	U	503		208	
1,2,4,5-Tetramethylbenzene	NC	NC		<1.52	U	<1.11	U	1.52	J	<1.11	U	<55.4	U	12.5		<5.66	U	<5.38	U
1,2,4-Trichlorobenzene	NC	NC		<1.39	U	<1.04	U	<0.98	U	<1.04	U	79.1	J	<1.29	U	<5.32	U	<5.06	U
1,2,4-Trimethylbenzene	3,600	52,000		<1.31	U	<2.54	U	<2.38	U	<2.54	U	<92.4	U	<1.21	U	<13.0	U	<12.3	U
1,2-Dibromo-3-chloropropane	NC	NC		<3.18	U	<0.82	U	<0.77	U	<0.82	U	<47.5	U	<2.95	U	<4.19	U	<3.98	U
1,2-Dibromoethane	NC	NC		<1.03	U	<1.31	U	<1.23	U	<1.31	U	<54.1	U	<0.95	U	<6.68	U	<6.35	U
1,2-Dichlorobenzene	1,100	100,000		<1.64	U	<0.63	U	<0.59	U	<0.63	U	<42.2	U	<1.52	U	<3.23	U	<3.07	U
1,2-Dichloroethane	20	3,100		<0.79	U	<0.42	U	<0.40	U	<0.42	U	<64.7	U	<0.74	U	<2.15	U	<2.04	U
1,2-Dichloropropane	NC	NC		<0.53	U	<0.91	U	<0.85	U	<0.91	U	<44.9	U	<0.49	U	<4.64	U	<4.41	U
1,3,5-Trimethylbenzene	8,400	52,000		<1.14	U	<1.10	U	<1.03	U	<1.10	U	<59.4	U	<1.06	U	<5.60	U	<5.33	U
1,3-Dichlorobenzene	2,400	49,000		<1.38	U	<0.60	U	<0.56	U	<0.60	U	<50.2	U	<1.28	U	<3.06	U	<2.91	U
1,3-Dichloropropane	NC	NC		<0.75	U	<1.14	U	<1.07	U	<1.14	U	<60.7	U	<0.70	U	<5.83	U	<5.54	U
1,4-Dichlorobenzene	1,800	13,000		<1.43	U	<0.85	U	<0.80	U	<0.85	U	<62.0	U	<1.33	U	<4.36	U	<4.14	U
2,2-Dichloropropane	NC	NC		<1.07	U	<3.76	U	<3.53	U	<3.76	U	<234	U	<0.99	U	<19.2	U	<18.2	U
2-Butanone	120	100,000		<4.39	U	<0.99	U	<0.93	U	<0.99	U	<56.8	U	<4.08	U	<5.04	U	<4.79	U
2-Chloroethylvinylether	NC	NC		<4.71	U	<1.93	U	<1.81	U	<1.93	U	<40.9	U	<4.37	U	<9.85	U	<9.36	U
2-Chlorotoluene	NC	NC		<1.24	U	14.7	J	39.3	U	23.9	J	<104	U	<1.15	U	40.9	J	<27.2	U
2-Hexanone	NC	NC		<2.42	U	<1.09	U	<1.02	U	<1.09	U	<60.7	U	<2.24	U	<5.55	U	<5.27	U
4-Chlorotoluene	NC	NC		<1.36	U	<0.88	U	1.17	J	<0.88	U	651	J	<1.26	U	<4.47	U	<4.25	U
4-Isopropyltoluene	NC	NC		<1.10	U	<2.15	U	<2.02	U	<2.15	U	<64.7	U	<1.02	U	<11.0	U	<10.4	U
4-Methyl-2-pentanone	NC	NC		<2.70	U	<6.80	U	<6.38	U	<6.80	U	<269	U	<2.50	U	<34.7	U	<33.0	U
Acetone	50	100,000		10.5	J	<0.56	U	<0.52	U	<0.56	U	<44.9	U	<6.53	U	<2.83	U	<2.69	U
Acrylonitrile	NC	NC		<8.52	U	<0.90	U	<0.84	U	<0.90	U	<50.2	U	<7.91	U	<4.58	U	<4.36	U
Benzene	60	4,800		<0.69	U	<1.11	U	<1.04	U	<1.11	U	<80.5	U	<0.64	U	<5.66	U	<5.38	U
Bromobenzene	NC	NC		<1.13	U	<0.48	U	<0.45	U	<0.48	U	<59.4	U	<1.04	U	<2.43	U	<2.31	U
Bromochloromethane	NC	NC		<1.39	U	<1.25	U	<1.18	U	<1.25	U	<60.7	U	<1.29	U	<6.40	U	<6.08	U
Bromodichloromethane	NC	NC		<0.60	U	<0.58	U	<0.54	U	<0.58	U	<68.6	U	<0.55	U	<2.94	U	<2.80	U
Bromoform	NC	NC		<1.57	U	<1.39	U	<1.30	U	<1.39	U	<42.2	U	<1.46	U	<7.07	U	<6.72	U
Bromomethane	NC	NC		<0.72	U	<0.63	U	<0.59	U	<0.63	U	<39.6	U	<0.67	U	<3.23	U	<3.07	U
c-1,2-Dichloroethene	250	100,000		<0.75	U	<0.57	U	<0.53	U	<0.57	U	<47.5	U	<0.70	U	<2.89	U	<2.74	U
c-1,3-Dichloropropene	NC	NC		<0.68	U	<0.72	U	<0.68	U	<0.72	U	<46.2	U	<0.63	U	<3.68	U	<3.50	U
Carbon disulfide	NC	NC		27.7		<1.41	U	<1.32	U	<1.41	U	<99.0	U	2.75	J	<7.19	U	<6.83	U
Carbon Tetrachloride	760	2,400		<0.79	U	<0.52	U	<0.49	U	<0.52	U	<51.5	U	<0.74	U	<2.66	U	<2.53	U
Chlorobenzene	1,100	100,000		<0.71	U	<0.43	U	<0.41	U	<0.43	U	<96.4	U	<0.66	U	<2.21	U	<2.10	U
Chlorodifluoromethane	NC	NC		<0.90	U	<0.60	U	<0.56	U	<0.60	U	<56.8	U	<0.84	U	<3.06	U	<2.91	U
Chloroethane	NC	NC		<1.77	U	<0.54	U	<0.51	U	<0.54	U	<54.1	U	<1.64	U	<2.77	U	<2.64	U
Chloroform	370	49,000		<0.65	U	<0.70	U	<0.66	U	<0.70	U	647	J	<0.61	U	19.9		<3.39	U
Chloromethane	NC	NC		<0.54	U	<0.80	U	<0.75	U	<0.80	U	<59.4	U	<0.50	U	<4.08	U	<3.87	U
Dibromochloromethane	NC	NC		<1.00	U	<0.56	U	<0.52	U	<0.56	U	<54.1	U	<0.93	U	<2.83	U	<2.69	U
Dibromomethane	NC	NC		<0.69	U	<0.59	U	<0.55	U	<0.59	U	<44.9	U	<0.64	U	<3.00	U	<2.85	U
Dichlorodifluoromethane	NC	NC		<0.74	U	<0.48	U	<0.45	U	<0.48	U	<58.1	U	<0.68	U	<2.43	U	<2.31	U
Ethylbenzene	1,000	41,000		<0.60	U	<0.71	U	<0.67	U	<0.71	U	<44.9	U	<0.55	U	<3.62	U	<3.44	U
Hexachlorobutadiene	NC	NC		<1.38	U	<0.82	U	<0.77	U	<0.82	U	<60.7	U	<1.28	U	<4.19	U	<3.98	U
Isopropylbenzene	NC	NC		<0.88	U	<1.10	U	<1.03	U	<1.10	U	<64.7	U	<0.81	U	<5.60	U	<5.33	U
m,p-xylene	NC	NC		<1.39	U	<1.11	U	<1.04	U	<1.11	U	<103	U	<1.29	U	<5.66	U	<5.38	U
Methyl t-butyl ether	930	100,000		<0.69	U	<3.51	U	<3.29	U	<3.51	U	<127	U	<0.64	U	<17.9	U	<17.0	U
Methylene Chloride	50	100,000		19.6	B	<0.56	U	<0.52	U	<0.56	U	<52.8	U	10.8	B	<2.83	U	<2.69	U
Naphthalene	NC	NC		<1.70	U	7.35		<0.88	U	8.67		<58.1	U	<1.57	U	<4.81	U	<4.57	U
n-Butylbenzene	12,000	100,000		<1.24	U	1.52	J	<1.27	U	<1.35	U	627	J	<1.15	U	<6.91	U	<6.56	U
n-Propylbenzene	3,900	100,000		<1.00	U	<0.99	U	1.42	J	<0.99	U	1,580		<0.93	U	70.8		<4.79	U
o-xylene	NC	NC		<1.04	U	<0.80	U	<0.75	U	<0.80	U	1,190		<0.97	U	30.1		<3.87	U
p-Diethylbenzene	NC	NC		<1.38	U	<0.83	U	<0.78	U	<0.83	U	<58.1	U	5.47	J	<4.24	U	<4.03	U

TABLE RWP-7
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JUNE 2007
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				TP-15		TP-16		TP-16		TP-17		TP-17		TP-17		TP-18		TP-18	
Depth				6-7		0-2		2-4		0-2		2-4		4-7		0-2		2-4	
Sampling Date				6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007		6/7/2007	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<1.28	U	<1.10	U	1.14	J	<1.10	U	1,810		<1.19	U	120		27.3	
sec-Butylbenzene	11,000	100,000		<1.15	U	<1.02	U	<0.96	U	<1.02	U	<52.8	U	3.27	J	<5.21	U	<4.95	U
Styrene	NC	NC		<1.03	U	<0.92	U	0.89	J	<0.92	U	1,380		<0.95	U	77.2		6.21	
t-1,2-Dichloroethene	190	100,000		<0.58	U	<0.82	U	<0.77	U	<0.82	U	<43.6	U	<0.54	U	<4.19	U	<3.98	U
t-1,3-Dichloropropene	NC	NC		<0.68	U	<2.33	U	<2.18	U	<2.33	U	<54.1	U	<0.63	U	<11.9	U	<11.3	U
TAME	NC	NC		<2.92	U	<0.40	U	<0.37	U	<0.40	U	<37.0	U	<2.71	U	<2.04	U	<1.94	U
tert-Butylbenzene	5,900	100,000		<1.33	U	<1.07	U	<1.00	U	<1.07	U	<63.4	U	<1.24	U	12.9		<5.16	U
Tertiary butyl alcohol	NC	NC		<24.2	U	<19.3	U	<18.1	U	<19.3	U	<2820	U	<22.4	U	<98.5	U	<93.6	U
Tetrachloroethene	1,300	19,000		<0.81	U	<0.64	U	<0.60	U	<0.64	U	<23.8	U	<0.75	U	<3.28	U	<3.12	U
Toluene	700	100,000		<0.53	U	<0.42	U	<0.40	U	<0.42	U	<52.8	U	<0.49	U	<2.15	U	<2.04	U
Trichloroethene	470	2,100		<0.50	U	<0.47	U	<0.44	U	<0.47	U	<50.2	U	<0.46	U	<2.38	U	<2.26	U
Trichlorofluoromethane	NC	NC		<0.89	U	<0.54	U	<0.51	U	<0.54	U	<55.4	U	<0.83	U	<2.77	U	<2.64	U
Vinyl Chloride	20	900		<0.82	U	<0.65	U	<0.61	U	<0.65	U	<50.2	U	<0.76	U	<3.34	U	<3.17	U
Total VOC TICs	NC	NC	10,000	1,370		169		3,803		155		75,290		8,839		60,800		33,090	

Notes:
µg/kg - micrograms per kilogram
B - Compound was found in the blank and sample
E - Concentration of analyte exceeded the calibration range.
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
ND = Not detected
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** - There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 250 mg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 mg/kg.

TABLE RWP-8
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
MAY 2010
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				1-C North		TP1-S		TP1-S		TP7-N		TP7-S		TP7-S		TP7-S		TP11A-N		TP11A-N		TP11A		TP11A-S		P1-B	
Depth				9		5		9		10		4-5		9-10		12-12.5		5		10		5-4		8		5.5	
Lab Sample ID				1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196	
Sampling Date				5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<50.9	U	<48.5	U	<122	U	<85.8	U	<50.6	U	<50.4	U	<48.6	U	<49.9	U	<46.5	U	<99.5	U	<51.9	U	<50.2	U
1,2-Dichlorobenzene	NC	NC		<37.8	U	<36.1	U	<90.4	U	<63.7	U	<37.6	U	<37.4	U	<36.1	U	<37.1	U	<34.5	U	<73.9	U	<38.5	U	<37.3	U
1,2-Diphenylhydrazine	NC	NC		<37.0	U	<35.2	U	<88.3	U	<62.3	U	<36.7	U	<36.6	U	<35.3	U	<36.3	U	<33.7	U	<72.2	U	<37.7	U	<36.5	U
1,3-Dichlorobenzene	NC	NC		<41.1	U	<39.2	U	<98.2	U	<69.3	U	<40.9	U	<40.7	U	<39.3	U	<40.3	U	<37.5	U	<80.4	U	<41.9	U	<40.6	U
1,4-Dichlorobenzene	NC	NC		<39.9	U	<38.0	U	<95.3	U	<67.2	U	<39.7	U	<39.5	U	<38.1	U	<39.1	U	<36.4	U	<78.0	U	<40.6	U	<39.4	U
2,3,4,6-Tetrachlorophenol	NC	NC		<48.5	U	<46.2	U	<116	U	<81.6	U	<48.2	U	<47.9	U	<46.3	U	<47.5	U	<44.2	U	<94.7	U	<49.4	U	<47.8	U
2,4,5-Trichlorophenol	NC	NC		<26.6	U	<25.3	U	<63.5	U	<44.7	U	<26.4	U	<26.3	U	<25.4	U	<26.1	U	<24.2	U	<51.9	U	<27.1	U	<26.2	U
2,4,6-Trichlorophenol	NC	NC		<46.0	U	<43.9	U	<110	U	<77.5	U	<45.7	U	<45.5	U	<43.9	U	<45.1	U	<42.0	U	<90.0	U	<46.9	U	<45.4	U
2,4-Dichlorophenol	NC	NC		<40.1	U	<38.3	U	<95.9	U	<67.6	U	<39.9	U	<39.7	U	<38.3	U	<39.4	U	<36.6	U	<78.5	U	<40.9	U	<39.6	U
2,4-Dimethylphenol	NC	NC		<51.2	U	<48.8	U	<122	U	<86.2	U	<50.9	U	<50.6	U	<48.8	U	<50.2	U	<46.7	U	<100	U	<52.1	U	<50.5	U
2,4-Dinitrophenol	NC	NC		<431	U	<411	U	<1030	U	<726	U	<428	U	<426	U	<411	U	<423	U	<393	U	<842	U	<439	U	<425	U
2,4-Dinitrotoluene	NC	NC		<73.4	U	<70.0	U	<175	U	<124	U	<73.0	U	<72.6	U	<70.1	U	<72.0	U	<67.0	U	<144	U	<74.8	U	<72.5	U
2,6-Dinitrotoluene	NC	NC		<50.4	U	<48.1	U	<120	U	<84.9	U	<50.1	U	<49.9	U	<48.1	U	<49.5	U	<46.0	U	<98.6	U	<51.4	U	<49.8	U
2-Chloronaphthalene	NC	NC		<59.0	U	<56.2	U	<141	U	<99.4	U	<58.6	U	<58.4	U	<56.3	U	<57.9	U	<53.9	U	<115	U	<60.1	U	<58.2	U
2-Chlorophenol	NC	NC		<59.0	U	<56.2	U	<141	U	<99.4	U	<58.6	U	<58.4	U	<56.3	U	<57.9	U	<53.9	U	<115	U	<60.1	U	<58.2	U
2-Methylnaphthalene	NC	NC		1,020		<46.3	U	2,670		131	J	<48.3	U	<48.1	U	<46.4	U	<47.7	U	<44.4	U	<95.0	U	<49.5	U	36,900	
2-Methylphenol	330	100,000		<43.8	U	<41.8	U	<105	U	<73.8	U	<43.6	U	<43.3	U	<41.8	U	<43.0	U	<40.0	U	<85.6	U	<44.6	U	<43.2	U
2-Nitroaniline	NC	NC		<63.8	U	<60.8	U	<152	U	<107	U	<63.4	U	<63.1	U	<60.9	U	<62.5	U	<58.2	U	<125	U	<65.0	U	<62.9	U
2-Nitrophenol	NC	NC		<37.2	U	<35.5	U	<88.9	U	<62.7	U	<37.0	U	<36.8	U	<35.5	U	<36.5	U	<34.0	U	<72.7	U	<37.9	U	<36.7	U
3+4-Methylphenol	330	100,000		<37.8	U	<36.1	U	<90.4	U	<63.7	U	<37.6	U	<37.4	U	<36.1	U	<37.1	U	<34.5	U	<73.9	U	<38.5	U	<37.3	U
3,3'-Dichlorobenzidine	NC	NC		<59.0	U	<56.2	U	<141	U	<99.4	U	<58.6	U	<58.4	U	<56.3	U	<57.9	U	<53.9	U	<115	U	<60.1	U	<58.2	U
3-Nitroaniline	NC	NC		<21.1	U	<20.1	U	<50.3	U	<35.5	U	<20.9	U	<20.8	U	<20.1	U	<20.6	U	<19.2	U	<41.1	U	<21.4	U	<20.8	U
4,6-Dinitro-2-methylphenol	NC	NC		<535	U	<510	U	<1280	U	<901	U	<532	U	<529	U	<511	U	<525	U	<488	U	<1050	U	<545	U	<528	U
4-Bromophenyl phenyl ether	NC	NC		<55.6	U	<53.0	U	<133	U	<93.6	U	<55.2	U	<55.0	U	<53.0	U	<54.5	U	<50.7	U	<109	U	<56.6	U	<54.8	U
4-Chloro-3-methylphenol	NC	NC		<45.7	U	<43.5	U	<109	U	<76.9	U	<45.4	U	<45.2	U	<43.6	U	<44.8	U	<41.7	U	<89.2	U	<46.5	U	<45.0	U
4-Chloroaniline	NC	NC		<46.6	U	<44.5	U	<111	U	<78.6	U	<46.4	U	<46.1	U	<44.5	U	<45.7	U	<42.6	U	<91.1	U	<47.5	U	<46.0	U
4-Chlorophenyl phenyl ether	NC	NC		<47.6	U	<45.4	U	<114	U	<80.2	U	<47.3	U	<47.1	U	<45.4	U	<46.7	U	<43.5	U	<93.1	U	<48.5	U	<47.0	U
4-Nitroaniline	NC	NC		<120	U	<114	U	<286	U	<202	U	<119	U	<118	U	<114	U	<117	U	<109	U	<234	U	<122	U	<118	U
4-Nitrophenol	NC	NC		<816	U	<778	U	<1950	U	<1380	U	<811	U	<808	U	<779	U	<801	U	<745	U	<1600	U	<832	U	<806	U
Acenaphthene	20,000	100000		<51.5	U	519	J	<123	U	<86.8	U	274	J	<51.0	U	<49.2	U	<50.5	U	<47.0	U	<101	U	<52.5	U	894	
Acenaphthylene	100,000	100,000		<42.1	U	<40.1	U	<101	U	<70.9	U	<41.8	U	<41.6	U	<40.2	U	<41.3	U	<38.4	U	<82.3	U	<42.9	U	<41.5	U
Aniline	NC	NC		<38.1	U	<36.3	U	<90.9	U	<64.1	U	<37.8	U	<37.7	U	<36.3	U	<37.3	U	<34.7	U	<74.4	U	<38.8	U	<37.6	U
Anthracene	100,000	100,000		<54.5	U	<51.9	U	<130	U	<91.8	U	<54.1	U	<53.9	U	<52.0	U	<53.4	U	<49.7	U	<106	U	<55.5	U	<53.7	U
Benzidine	NC	NC		<1070	U	<1020	U	<2570	U	<1810	U	<1070	U	<1060	U	<1030	U	<1050	U	<981	U	<2100	U	<1090	U	<1060	U
Benzo(a)anthracene	1,000	1,000		<51.8	U	<49.4	U	<124	U	<87.2	U	75.8	J	<51.2	U	<49.4	U	<50.8	U	<47.3	U	<101	U	<52.7	U	<51.1	U
Benzo(a)pyrene	1,000	1,000		<63.8	U	<60.8	U	<152	U	<107	U	68.5	J	<63.1	U	<60.9	U	<62.5	U	89.6	J	<125	U	<65.0	U	<62.9	U
Benzo(b)fluoranthene	1,000	1,000		<50.8	U	<48.4	U	<121	U	<85.6	U	<50.5	U	<50.2	U	<48.5	U	<49.8	U	55.8	J	<99.3	U	<51.7	U	<50.1	U
Benzo(g,h,i)perylene	100,000	100,000		<93.5	U	<89.1	U	<223	U	<158	U	<92.9	U	<92.5	U	<89.3	U	<91.7	U	<85.4	U	<183	U	<95.3	U	<92.3	U
Benzo(k)fluoranthene	800	3,900		<93.1	U	<88.8	U	<223	U	<157	U	<92.6	U	<92.1	U	<88.9	U	<91.4	U	<85.0	U	<182	U	<94.9	U	<91.9	U
Benzoic acid	NC	NC		<7170	U	<6840	U	<17100	U	<12100	U	<7130	U	<7090	U	<6850	U	<7030	U	<6550	U	<14000	U	<7310	U	<7080	U
Benzyl alcohol	NC	NC		<72.2	U	<68.8	U	<173	U	<122	U	<71.8	U	<71.4	U	<68.9	U	<70.8	U	<65.9	U	<141	U	<73.6	U	<71.3	U
Butyl benzyl phthalate	NC	NC		<64.6	U	<61.6	U	<154	U	<109	U	<64.2	U	<63.9	U	<61.7	U	<63.4	U	<59.0	U	<126	U	<65.8	U	<63.8	U
Carbazole	NC	NC		<70.5	U	<67.2	U	<168	U	<119	U	<70.1	U	<69.7	U	<67.3	U	<69.1	U	<64.4	U	<138	U	<71.8	U	<69.6	U
Chrysene	1,000	3,900		<64.7	U	97.2		<155	U	<109	U	188	J	<64.0	U	<61.8	U	<63.5	U	<59.1	U	<127	U	<66.0	U	<63.9	U
Cresols	NC	NC		<81.6	U	<77.9	U	<195	U	<138	U	<43.6	U	<80.7	U	<77.9	U	<80.1	U	<74.5	U	<160	U	<83.1	U	<80.5	U
Di-n-butyl phthalate	NC	NC		<68.9	U	<65.7	U	<165	U	<116	U	<68.5	U	<68.2	U	<65.8	U	<67.6	U	<62.9	U	<135	U	<70.2	U	<68.0	U
Di-n-octyl phthalate	NC	NC		<60.2	U	<57.4	U	<144	U	<101	U	<59.9	U	<59.6	U	<57.5	U	<59.1	U	<55.0	U	<118	U	<61.3	U	<59.4	U
Dibenz(a,h)anthracene	330	330		<68.3	U	<65.1	U	<163	U	<115	U	<67.9	U	<67.6	U	<65.2	U	<67.0	U	<62.3	U	<133	U	<69.6	U	<67.4	U
Dibenzofuran	7,000	59,000		<40.9	U	<39.0	U	<97.7	U	<68.9	U	<40.6	U	<40.4	U	<39.0	U	<40.1	U	<37.3	U	<79.9	U	<41.6	U	1,370	
Diethyl phthalate	NC	NC		<80.0	U	<76.3	U	<191	U	<135	U	<79.6	U	<79.2	U	<76.4	U	<78.5	U	<73.1	U	<156	U	<81.5	U	<79.0	U
Dimethyl phthalate	NC	NC		<59.1	U	<56.4	U	<141	U	<99.6	U	<58.8	U	<58.5	U	<56.4	U	<58.0	U	<54.0	U	<116	U	<60.2	U	<58.3	U
Fluoranthene	100,000	100,000		<67.4	U	<64.3	U	<161	U	<114	U	258	J	<66.7	U	<64.4	U	<66.1	U	<61.6	U	<132	U	101	J	<66.5	U
Fluorene	30,000	100,000		131	J	<46.9	U	199	J	<82.9	U	<48.9	U	<48.7	U	<47.0	U	<48.3	U	<44.9	U	<96.2	U	<50.1	U	2790	
Hexachlorobenzene	330	1,200		<52.4	U	<49.9	U	<125	U	<88.2	U	<52.1	U	<51.8	U	<50.0	U	<51.4	U	<47.8	U	<102	U	<53.4	U	<51.7	U
Hexachlorobutadiene	NC	NC		<49.0	U	<46.7	U	<117	U	<82.5	U	<48.7	U	<48.4	U	<46.7	U	<48.0	U	<44.7	U	<95.7	U	<49.9	U	<48.3	U
Hexachlorocyclopentadiene	NC	NC		<378	U	<361	U	<904	U	<637	U	<376	U	<374	U	<361	U	<371	U	<345	U	<739	U	<385	U	<373	U
Hexachloroethane	NC	NC		<54.5	U	<51.9	U	<130	U	<91.8	U	<54.1	U	<53.9	U	<52.0	U	<53.4	U	<49.7	U	<106	U	<55.5	U	<53.7	U
Indeno(1,2,3-cd)pyrene	500	500		<56.5	U	<53.9	U	<135	U	<95.3	U	<56.2	U	<55.9	U	<54.0	U	<55.5	U	64.4	J	<111	U	<57.6	U	<55.8	U
Isophorone	NC	NC		<55.9	U	<53.3	U	<134	U	<94.2	U	<55.6	U	<55.3	U	<53.4	U	<54.9	U	<51.1	U	<109	U	<57.0	U	<55.2	U
N-Nitrosodi-n-propylamine	NC	NC		<37.0	U	<35.2	U	<88.3	U	<62.3	U	<36.7	U	<36.6	U	<35.3	U	<36.3	U	<33.7	U	<72.2	U	<37.7	U	<36.5	U
N-Nitrosodimethylamine	NC	NC		<77.7	U	<74.1	U	<186	U	<131	U	<77.3	U	<76.9	U	<74.2	U	<76.2	U	<70.9	U	<152	U	<79.2	U	<76.7	U
N-Nitrosodiphenylamine	NC	NC		<66.7	U	<63.6	U	<159	U	<112	U	<66.3	U	<66.0	U	<63.7	U	<65.4	U	<60.9	U	<130	U	<68.0	U	<65.8	U

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MAY 2010
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				1-C North		TP1-S		TP1-S		TP7-N		TP7-S		TP7-S		TP7-S		TP11A-N		TP11A-N		TP11A		TP11A-S		P1-B	
Depth				9		5		9		10		4-5		9-10		12-12.5		5		10		5-4		8		5.5	
Lab Sample ID				1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196	
Sampling Date				5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Naphthalene	12,000	100,000		<49.2	U	<46.9	U	1040	J	270	J	<48.9	U	<48.7	U	<47.0	U	<48.3	U	<44.9	U	<96.2	U	<50.1	U	1,510	
Nitrobenzene	NC	NC		<47.4	U	<45.2	U	<113	U	<79.8	U	<47.1	U	<46.9	U	<45.2	U	<46.5	U	<43.2	U	<92.6	U	<48.3	U	<46.7	U
Pentachlorophenol	800	6,700		<464	U	<442	U	<1110	U	<781	U	<461	U	<459	U	<443	U	<455	U	<423	U	<907	U	<473	U	<458	U
Phenanthrene	100,000	100,000		256		<53.1	U	343	J	<93.8	U	<55.4	U	<55.1	U	<53.2	U	<54.6	U	<50.8	U	<109	U	60.5	J	5,540	
Phenol	330	100,000		<31.9	U	<30.5	U	<76.3	U	<53.8	U	<31.8	U	<31.6	U	<30.5	U	<31.3	U	<29.2	U	<62.4	U	<32.5	U	<31.5	U
Pyrene	100,000	100,000		<45.3	U	266	J	<108	U	83.1	J	668		<44.8	U	<43.2	U	<44.4	U	<41.3	U	<88.5	U	96.5	J	117	J
Pyridine	NC	NC		<70.1	U	<66.9	U	<168	U	<118	U	<69.7	U	<69.4	U	<66.9	U	<68.8	U	<64.0	U	<137	U	<71.4	U	<69.2	U
bis(2-Chloroethoxy)methane	NC	NC		<50.7	U	<48.3	U	<121	U	<85.4	U	<50.4	U	<50.1	U	<48.4	U	<49.7	U	<46.3	U	<99.0	U	<51.6	U	<50.0	U
bis(2-Chloroethyl)ether	NC	NC		<57.9	U	<55.2	U	<138	U	<97.5	U	<57.5	U	<57.3	U	<55.3	U	<56.8	U	<52.8	U	<113	U	<59.0	U	<57.1	U
bis(2-Chloroisopropyl)ether	NC	NC		<44.9	U	<42.8	U	<107	U	<75.7	U	<44.6	U	<44.4	U	<42.9	U	<44.1	U	<41.0	U	<87.8	U	<45.8	U	<44.3	U
bis(2-Ethylhexyl)phthalate	NC	NC		<80.2	U	85.9	J	402	J	2110		178	J	<79.3	U	117	J	91.1	J	<73.2	U	181	J	<81.7	U	<79.1	U
Total SVOC TICs	NC	NC	100,000	14.7		70.5		21.8		ND		160		ND		ND		ND		ND		ND		ND		334	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the reporting limit
U - Indicates the analyte was analyzed for but not detected
NA - Not available
NC - No Criterion
ND - Not detected
SCO - Soil Cleanup Objective
Shading indicates result is above SCO. Color representing least stringent
SCO exceeded is shown unless otherwise noted.

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SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
MAY 2010
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				P1-B		P7-S		P7-S		P7-S		P-11		P-11		Test Pit Bottom		Clean Pile	
Depth				10		6		7		10		6		9					
Lab Sample ID				1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196	
Sampling Date				5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010	
Matrix				Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units				μg/kg		μg/kg		μg/kg		μg/kg		μg/kg		μg/kg		μg/kg		μg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<109	U	<46.4	U	<51.4	U	<99.3	U	<47.9	U	<70.9	U	<45.7	U	<44.7	U
1,2-Dichlorobenzene	NC	NC		<81.1	U	<34.5	U	<38.1	U	<73.7	U	<35.6	U	<52.6	U	<34.0	U	<33.2	U
1,2-Diphenylhydrazine	NC	NC		<79.3	U	<33.7	U	<37.3	U	<72.1	U	<34.8	U	<51.4	U	<33.2	U	<32.5	U
1,3-Dichlorobenzene	NC	NC		<88.2	U	<37.5	U	<41.5	U	<80.2	U	<38.7	U	<57.2	U	<36.9	U	<36.1	U
1,4-Dichlorobenzene	NC	NC		<85.6	U	<36.4	U	<40.2	U	<77.8	U	<37.5	U	<55.5	U	<35.8	U	<35.1	U
2,3,4,6-Tetrachlorophenol	NC	NC		<104	U	<44.2	U	<48.9	U	<94.5	U	<45.6	U	<67.5	U	<43.5	U	<42.6	U
2,4,5-Trichlorophenol	NC	NC		<57.0	U	<24.2	U	<26.8	U	<51.8	U	<25.0	U	<37.0	U	<23.8	U	<23.3	U
2,4,6-Trichlorophenol	NC	NC		<98.7	U	<42.0	U	<46.4	U	<89.7	U	<43.3	U	<64.1	U	<41.3	U	<40.4	U
2,4-Dichlorophenol	NC	NC		<86.1	U	<36.6	U	<40.5	U	<78.3	U	<37.7	U	<55.9	U	<36.0	U	<35.3	U
2,4-Dimethylphenol	NC	NC		<110	U	<46.7	U	<51.6	U	<99.8	U	<48.1	U	<71.2	U	<45.9	U	<44.9	U
2,4-Dinitrophenol	NC	NC		<924	U	<393	U	<435	U	<840	U	<405	U	<600	U	<387	U	<378	U
2,4-Dinitrotoluene	NC	NC		<157	U	<67.0	U	<74.1	U	<143	U	<69.0	U	<102	U	<65.9	U	<64.5	U
2,6-Dinitrotoluene	NC	NC		<108	U	<46.0	U	<50.9	U	<98.3	U	<47.4	U	<70.2	U	<45.3	U	<44.3	U
2-Chloronaphthalene	NC	NC		<127	U	<53.8	U	<59.5	U	<115	U	<55.5	U	<82.1	U	<53.0	U	<51.8	U
2-Chlorophenol	NC	NC		<127	U	<53.8	U	<59.5	U	<115	U	<55.5	U	<82.1	U	<53.0	U	<51.8	U
2-Methylnaphthalene	NC	NC		108	J	<44.3	U	<49.0	U	<94.7	U	1,180		113		<43.6	U	106	
2-Methylphenol	330	100,000		<94.0	U	<40.0	U	<44.2	U	<85.4	U	<41.2	U	<61.0	U	<39.3	U	<38.5	U
2-Nitroaniline	NC	NC		<137	U	<58.1	U	<64.3	U	<124	U	<60.0	U	<88.8	U	<57.3	U	<56.0	U
2-Nitrophenol	NC	NC		<79.8	U	<33.9	U	<37.5	U	<72.6	U	<35.0	U	<51.8	U	<33.4	U	<32.7	U
3+4-Methylphenol	330	100,000		<81.1	U	<34.5	U	<38.1	U	<73.7	U	<35.6	U	<52.6	U	<34.0	U	<33.2	U
3,3'-Dichlorobenzidine	NC	NC		<127	U	<53.8	U	<59.5	U	<115	U	<55.5	U	<82.1	U	<53.0	U	<51.8	U
3-Nitroaniline	NC	NC		<45.1	U	<19.2	U	<21.2	U	<41.1	U	<19.8	U	<29.3	U	<18.9	U	<18.5	U
4,6-Dinitro-2-methylphenol	NC	NC		<1150	U	<488	U	<540	U	<1040	U	<503	U	<744	U	<480	U	<470	U
4-Bromophenyl phenyl ether	NC	NC		<119	U	<50.7	U	<56.0	U	<108	U	<52.2	U	<77.3	U	<49.9	U	<48.8	U
4-Chloro-3-methylphenol	NC	NC		<97.9	U	<41.6	U	<46.0	U	<89.0	U	<42.9	U	<63.5	U	<41.0	U	<40.1	U
4-Chloroaniline	NC	NC		<100	U	<42.5	U	<47.0	U	<90.9	U	<43.8	U	<64.9	U	<41.9	U	<41.0	U
4-Chlorophenyl phenyl ether	NC	NC		<102	U	<43.4	U	<48.0	U	<92.8	U	<44.8	U	<66.3	U	<42.7	U	<41.8	U
4-Nitroaniline	NC	NC		<257	U	<109	U	<121	U	<233	U	<113	U	<167	U	<107	U	<105	U
4-Nitrophenol	NC	NC		<1750	U	<744	U	<823	U	<1590	U	<768	U	<1140	U	<733	U	<717	U
Acenaphthene	20,000	100000		<110	U	<47.0	U	<52.0	U	<100	U	<48.4	U	<71.7	U	<46.3	U	<45.3	U
Acenaphthylene	100,000	100,000		<90.3	U	<38.4	U	<42.5	U	<82.1	U	<39.6	U	<58.6	U	<37.8	U	<37.0	U
Aniline	NC	NC		<81.6	U	<34.7	U	<38.4	U	<74.2	U	<35.8	U	<53.0	U	<34.2	U	<33.4	U
Anthracene	100,000	100,000		<117	U	<49.7	U	<54.9	U	<106	U	<51.2	U	659		<48.9	U	148	
Benzidine	NC	NC		<2300	U	<980	U	<1080	U	<2100	U	<1010	U	<1500	U	<965	U	<944	U
Benzo(a)anthracene	1,000	1,000		<111	U	<47.2	U	<52.2	U	<101	U	298		232		<46.5	U	225	
Benzo(a)pyrene	1,000	1,000		<137	U	<58.1	U	<64.3	U	<124	U	234		260		<57.3	U	293	
Benzo(b)fluoranthene	1,000	1,000		<109	U	<46.3	U	<51.2	U	<99.0	U	258		255		<45.6	U	246	
Benzo(g,h,i)perylene	100,000	100,000		<201	U	<85.3	U	<94.3	U	<182	U	189		180		<84.0	U	320	
Benzo(k)fluoranthene	800	3,900		<200	U	<84.9	U	<94.0	U	<182	U	244		273		<83.6	U	208	
Benzoic acid	NC	NC		<15400	U	<6540	U	<7230	U	<14000	U	<6740	U	<9980	U	<6440	U	<6300	U
Benzyl alcohol	NC	NC		<155	U	<65.8	U	<72.8	U	<141	U	<67.9	U	<101	U	<64.8	U	<63.4	U
Butyl benzyl phthalate	NC	NC		<139	U	<58.9	U	<65.2	U	<126	U	<60.8	U	<89.9	U	<58.0	U	<56.8	U
Carbazole	NC	NC		<151	U	<64.3	U	<71.1	U	<137	U	<66.3	U	<98.1	U	<63.3	U	<61.9	U
Chrysene	1,000	3,900		<139	U	<59.0	U	<65.3	U	<126	U	328		317		<58.1	U	232	
Cresols	NC	NC		<175	U	<74.5	U	<82.3	U	<159	U	<76.8	U	<114	U	<73.3	U	<71.7	U
Di-n-butyl phthalate	NC	NC		<148	U	<62.8	U	<69.5	U	<134	U	<64.8	U	<95.9	U	<61.9	U	<60.5	U
Di-n-octyl phthalate	NC	NC		<129	U	<54.9	U	<60.7	U	<117	U	<56.6	U	<83.8	U	<54.1	U	<52.9	U
Dibenz(a,h)anthracene	330	330		<146	U	<62.3	U	<68.9	U	<133	U	<64.2	U	<95.1	U	<61.3	U	<60.0	U
Dibenzofuran	7,000	59,000		<87.7	U	<37.3	U	<41.2	U	<79.7	U	389		182		<36.7	U	36.2	
Diethyl phthalate	NC	NC		<172	U	<73.0	U	<80.7	U	<156	U	<75.3	U	<111	U	<71.9	U	<70.3	U
Dimethyl phthalate	NC	NC		<127	U	<53.9	U	<59.6	U	<115	U	<55.6	U	<82.3	U	<53.1	U	<51.9	U
Fluoranthene	100,000	100,000		<145	U	<61.5	U	<68.0	U	<132	U	446		1,600		156		384	
Fluorene	30,000	100,000		<106	U	<44.9	U	<49.6	U	<95.9	U	875		695		<44.2	U	<43.2	U
Hexachlorobenzene	330	1,200		<112	U	<47.8	U	<52.8	U	<102	U	<49.3	U	<72.9	U	<47.0	U	<46.0	U
Hexachlorobutadiene	NC	NC		<105	U	<44.6	U	<49.4	U	<95.5	U	<46.0	U	<68.1	U	<44.0	U	<43.0	U
Hexachlorocyclopentadiene	NC	NC		<811	U	<345	U	<381	U	<737	U	<356	U	<526	U	<340	U	<332	U
Hexachloroethane	NC	NC		<117	U	<49.7	U	<54.9	U	<106	U	<51.2	U	<75.8	U	<48.9	U	<47.8	U
Indeno(1,2,3-cd)pyrene	500	500		<121	U	<51.6	U	<57.0	U	<110	U	168		179		<50.8	U	233	
Isophorone	NC	NC		<120	U	<51.0	U	<56.4	U	<109	U	<52.6	U	<77.9	U	<50.2	U	<49.1	U
N-Nitrosodi-n-propylamine	NC	NC		<79.3	U	<33.7	U	<37.3	U	<72.1	U	<34.8	U	<51.4	U	<33.2	U	<32.5	U
N-Nitrosodimethylamine	NC	NC		<167	U	<70.9	U	<78.4	U	<152	U	<73.1	U	<108	U	<69.8	U	<68.3	U
N-Nitrosodiphenylamine	NC	NC		<143	U	<60.8	U	<67.3	U	<130	U	<62.7	U	<92.8	U	<59.9	U	<58.6	U

TABLE RWP-8
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
MAY 2010
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				P1-B		P7-S		P7-S		P7-S		P-11		P-11		Test Pit Bottom		Clean Pile	
Depth				10		6		7		10		6		9					
Lab Sample ID				1005196		1005196		1005196		1005196		1005196		1005196		1005196		1005196	
Sampling Date				5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010		5/13/2010	
Matrix				Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result	
Naphthalene	12,000	100,000		<106	U	<44.9	U	<49.6	U	<95.9	U	380		299		<44.2	U	55.5	
Nitrobenzene	NC	NC		<102	U	<43.2	U	<47.8	U	<92.4	U	<44.5	U	<65.9	U	<42.5	U	<41.6	U
Pentachlorophenol	800	6,700		<995	U	<423	U	<468	U	<905	U	<436	U	<646	U	<416	U	<408	U
Phenanthrene	100,000	100,000		<119	U	<50.8	U	<56.2	U	<109	U	2,040		3,110		<50.0	U	245	U
Phenol	330	100,000		<68.5	U	<29.1	U	<32.2	U	<62.3	U	<30.0	U	<44.5	U	<28.7	U	<28.1	U
Pyrene	100,000	100,000		<97.1	U	48	J	<45.7	U	<88.3	U	685		1240		143		405	
Pyridine	NC	NC		<150	U	<64.0	U	<70.7	U	<137	U	<65.9	U	<97.6	U	<63.0	U	<61.6	U
bis(2-Chloroethoxy)methane	NC	NC		<109	U	<46.2	U	<51.1	U	<98.8	U	<47.6	U	<70.5	U	<45.5	U	<44.5	U
bis(2-Chloroethyl)ether	NC	NC		<124	U	<52.8	U	<58.4	U	<113	U	<54.4	U	<80.6	U	<52.0	U	<50.9	U
bis(2-Chloroisopropyl)ether	NC	NC		<96.3	U	<41.0	U	<45.3	U	<87.6	U	<42.2	U	<62.5	U	<40.3	U	<39.5	U
bis(2-Ethylhexyl)phthalate	NC	NC		<172	U	<73.1	U	<80.9	U	160	J	96.3		<112	U	77.9		87.8	
Total SVOC TICs	NC	NC	100,000	1.3		0.45		ND		0.96		110		0.79		NA		NA	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the reporting limit
U - Indicates the analyte was analyzed for but not detected
NA - Not available
NC - No Criterion
ND - Not detected
SCO - Soil Cleanup Objective
Shading indicates result is above SCO. Color representing least stringent
SCO exceeded is shown unless otherwise noted.

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-1B		SB-1C		SB-2B		SB-2C		SB-3B		SB-3C		SB-4B		SB-4C		SB-5B		SB-5C		SB-6B		SB-6C	
Depth				0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<49.9	U	<53.5	U	<98.6	U	<47.5	U	<46.7	U	<48.9	U	<194	U	<204	U	<185	U	<195	U	<46.3	U	<196	U
1,2-Dichlorobenzene	NC	NC		<37.1	U	<39.8	U	<73.2	U	<35.3	U	<34.7	U	<36.4	U	<144	U	<151	U	<137	U	<145	U	<34.4	U	<145	U
1,2-Diphenylhydrazine	NC	NC		<36.3	U	<38.9	U	<71.6	U	<34.5	U	<33.9	U	<35.5	U	<141	U	<148	U	<134	U	<142	U	<33.6	U	<142	U
1,3-Dichlorobenzene	NC	NC		<40.3	U	<43.2	U	<79.6	U	<38.4	U	<37.7	U	<39.5	U	<157	U	<165	U	<149	U	<158	U	<37.4	U	<158	U
1,4-Dichlorobenzene	NC	NC		<39.1	U	<42.0	U	<77.3	U	<37.2	U	<36.6	U	<38.4	U	<152	U	<160	U	<145	U	<153	U	<36.3	U	<153	U
2,3,4,6-Tetrachlorophenol	NC	NC		<47.5	U	<51.0	U	<93.8	U	<45.2	U	<44.4	U	<46.6	U	<185	U	<194	U	<176	U	<186	U	<44.0	U	<186	U
2,4,5-Trichlorophenol	NC	NC		<26.1	U	<27.9	U	<51.4	U	<24.8	U	<24.4	U	<25.5	U	<101	U	<106	U	<96.3	U	<102	U	<24.1	U	<102	U
2,4,6-Trichlorophenol	NC	NC		<45.1	U	<48.4	U	<89.1	U	<42.9	U	<42.2	U	<44.2	U	<176	U	<184	U	<167	U	<176	U	<41.8	U	<177	U
2,4-Dichlorophenol	NC	NC		<39.4	U	<42.2	U	<77.7	U	<37.4	U	<36.8	U	<38.6	U	<153	U	<161	U	<146	U	<154	U	<36.5	U	<154	U
2,4-Dimethylphenol	NC	NC		<50.2	U	<53.8	U	<99.1	U	<47.7	U	<46.9	U	<49.2	U	<195	U	<205	U	<186	U	<196	U	<46.5	U	<197	U
2,4-Dinitrophenol	NC	NC		<423	U	<453	U	<834	U	<402	U	<395	U	<414	U	<1640	U	<1730	U	<1560	U	<1650	U	<392	U	<1660	U
2,4-Dinitrotoluene	NC	NC		<72.0	U	<77.2	U	<142	U	<68.5	U	<67.3	U	<70.6	U	<280	U	<294	U	<266	U	<281	U	<66.7	U	<282	U
2,6-Dinitrotoluene	NC	NC		<49.5	U	<53.0	U	<97.6	U	<47.0	U	<46.2	U	<48.5	U	<193	U	<202	U	<183	U	<193	U	<45.8	U	<194	U
2-Chloronaphthalene	NC	NC		<57.9	U	<62.0	U	<114	U	<55.0	U	<54.1	U	<56.7	U	<225	U	<236	U	<214	U	<226	U	<53.6	U	<227	U
2-Chlorophenol	NC	NC		<57.9	U	<62.0	U	<114	U	<55.0	U	<54.1	U	<56.7	U	<225	U	<236	U	<214	U	<226	U	<53.6	U	<227	U
2-Methylnaphthalene	NC	NC		<47.7	U	<51.1	U	<94.1	U	<45.3	U	<44.6	U	94.6	J	<186	U	<195	U	<176	U	<186	U	3770		<187	U
2-Methylphenol	330	100,000		<43.0	U	<46.1	U	<84.8	U	<40.9	U	<40.2	U	<42.1	U	<167	U	<175	U	<159	U	<168	U	<39.8	U	<168	U
2-Nitroaniline	NC	NC		<62.5	U	<67.1	U	<123	U	<59.5	U	<58.5	U	<61.3	U	<243	U	<255	U	<231	U	<244	U	<58.0	U	<245	U
2-Nitrophenol	NC	NC		<36.5	U	<39.1	U	<72.0	U	<34.7	U	<34.1	U	<35.8	U	<142	U	<149	U	<135	U	<143	U	<33.8	U	<143	U
3+4-Methylphenol	330**	330**		<37.1	U	<39.8	U	<73.2	U	<35.3	U	<34.7	U	<36.4	U	<144	U	<151	U	<137	U	<145	U	<34.4	U	<145	U
3,3'-Dichlorobenzidine	NC	NC		<57.9	U	<62.0	U	<114	U	<55.0	U	<54.1	U	<56.7	U	<225	U	<236	U	<214	U	<226	U	<53.6	U	<227	U
3-Nitroaniline	NC	NC		<20.6	U	<22.1	U	<40.8	U	<19.6	U	<19.3	U	<20.2	U	<80.4	U	<84.3	U	<76.4	U	<80.7	U	<19.1	U	<80.9	U
4,6-Dinitro-2-methylphenol	NC	NC		<525	U	<562	U	<1040	U	<499	U	<490	U	<514	U	<2040	U	<2140	U	<1940	U	<2050	U	<486	U	<2060	U
4-Bromophenyl phenyl ether	NC	NC		<54.5	U	<58.4	U	<108	U	<51.8	U	<51.0	U	<53.4	U	<212	U	<223	U	<202	U	<213	U	<50.5	U	<214	U
4-Chloro-3-methylphenol	NC	NC		<44.8	U	<48.0	U	<88.4	U	<42.6	U	<41.9	U	<43.9	U	<174	U	<183	U	<166	U	<175	U	<41.5	U	<176	U
4-Chloroaniline	NC	NC		<45.7	U	<49.0	U	<90.3	U	<43.5	U	<42.8	U	<44.8	U	<178	U	<187	U	<169	U	<179	U	<42.4	U	<179	U
4-Chlorophenyl phenyl ether	NC	NC		<46.7	U	<50.1	U	<92.2	U	<44.4	U	<43.7	U	<45.8	U	<182	U	<191	U	<173	U	<182	U	<43.3	U	<183	U
4-Nitroaniline	NC	NC		<117	U	<126	U	<232	U	<112	U	<110	U	<115	U	<457	U	<479	U	<434	U	<459	U	<109	U	<460	U
4-Nitrophenol	NC	NC		<801	U	<858	U	<1580	U	<761	U	<749	U	<785	U	<3120	U	<3270	U	<2960	U	<3130	U	<742	U	<3140	U
Acenaphthene	20,000	100,000		<50.5	U	<54.2	U	104	J	<48.1	U	<47.3	U	<49.5	U	<197	U	438		<187	U	<197	U	1500		<198	U
Acenaphthylene	100,000	100,000		<41.3	U	<44.3	U	<81.5	U	<39.3	U	<38.6	U	<40.5	U	<161	U	<169	U	<153	U	<161	U	<38.3	U	<162	U
Aniline	NC	NC		<37.3	U	<40.0	U	<73.7	U	<35.5	U	<34.9	U	<36.6	U	<145	U	<152	U	<138	U	<146	U	<34.6	U	<146	U
Anthracene	100,000	100,000		<53.4	U	<57.3	U	<105	U	<50.8	U	<49.9	U	<52.4	U	<208	U	<218	U	<198	U	<209	U	<49.5	U	<209	U
Benzidine	NC	NC		<1050	U	<1130	U	<2080	U	<1000	U	<985	U	<1030	U	<4100	U	<4300	U	<3900	U	<4120	U	<977	U	<4130	U
Benzo(a)anthracene	1,000	1,000		<50.8	U	<54.4	U	160		<48.3	U	<47.5	U	<49.8	U	<198	U	<207	U	<188	U	<198	U	<47.1	U	<199	U
Benzo(a)pyrene	1,000	1,000		<62.5	U	<67.1	U	178		<59.5	U	<58.5	U	<61.3	U	<243	U	<255	U	<231	U	<244	U	<58.0	U	<245	U
Benzo(b)fluoranthene	1,000	1,000		<49.8	U	<53.4	U	182		<47.4	U	<46.6	U	<48.8	U	<194	U	<203	U	<184	U	<195	U	<46.2	U	<195	U
Benzo(g,h,i)perylene	100,000	100,000		<91.7	U	<98.3	U	<181	U	<87.2	U	<85.7	U	<89.9	U	<357	U	<375	U	<339	U	<358	U	<85.0	U	<360	U
Benzo(k)fluoranthene	800	3,900		<91.4	U	<97.9	U	<180	U	<86.9	U	<85.4	U	<89.5	U	<356	U	<373	U	<338	U	<357	U	<84.6	U	<358	U
Benzoic acid	NC	NC		<7030	U	<7540	U	<13900	U	<6690	U	<6580	U	<6890	U	<27400	U	<28700	U	<26000	U	<27500	U	<6520	U	<27600	U
Benzyl alcohol	NC	NC		<70.8	U	<75.9	U	<140	U	<67.4	U	<66.2	U	<69.4	U	<276	U	<289	U	<262	U	<277	U	<65.6	U	<278	U
bis(2-Chloroethoxy)methane	NC	NC		<49.7	U	<53.3	U	<98.1	U	<47.3	U	<46.5	U	<48.7	U	<193	U	<203	U	<184	U	<194	U	<46.1	U	<195	U
bis(2-Chloroethyl)ether	NC	NC		<56.8	U	<60.9	U	<112	U	<54.0	U	<53.1	U	<55.6	U	<221	U	<232	U	<210	U	<222	U	<52.6	U	<223	U
bis(2-Chloroisopropyl)ether	NC	NC		<44.1	U	<47.2	U	<87.0	U	<41.9	U	<41.2	U	<43.2	U	<171	U	<180	U	<163	U	<172	U	<40.8	U	<173	U
bis(2-Ethylhexyl)phthalate	NC	NC		<78.6	U	<84.3	U	<155	U	<74.8	U	<73.5	U	<77.1	U	<306	U	<321	U	<291	U	<307	U	<72.9	U	<308	U
Butyl benzyl phthalate	NC	NC		<63.4	U	<68.0	U	<125	U	<60.3	U	<59.3	U	<62.1	U	<247	U	<259	U	<234	U	<248	U	<58.7	U	<248	U
Carbazole	NC	NC		<69.1	U	<74.1	U	<136	U	<65.8	U	<64.6	U	<67.8	U	<269	U	<282	U	<256	U	<270	U	<64.1	U	<271	U
Chrysene	1,000	3,900		<63.5	U	<68.1	U	211		<60.4	U	<59.4	U	<62.2	U	<247	U	<259	U	<235	U	<248	U	<58.8	U	<249	U
Cresols	NC	NC		<80.1	U	<85.9	U	<158	U	<76.2	U	<74.9	U	<78.5	U	<311	U	<326	U	<296	U	<313	U	<74.2	U	<313	U
Di-n-butyl phthalate	NC	NC		<67.6	U	<72.5	U	<133	U	<64.3	U	<63.2	U	<66.2	U	<263	U	<276	U	<250	U	<264	U	<62.6	U	<265	U
Di-n-octyl phthalate	NC	NC		<59.1	U	<63.3	U	<117	U	<56.2	U	<55.2	U	<57.9	U	<230	U	<241	U	<218	U	<231	U	<54.7	U	<232	U
Dibenz(a,h)anthracene	330	330		<67.0	U	<71.8	U	<132	U	<63.7	U	<62.6	U	<65.6	U	<261	U	<274	U	<248	U	<262	U	<62.1	U	<263	U
Dibenzofuran	7,000	59,000		<40.1	U	<43.0	U	<79.1	U	<38.1	U	<37.5	U	<39.3	U	<156	U	<164	U	<148	U	<157	U	<37.2	U	<157	U
Diethyl phthalate	NC	NC		<78.5	U	<84.2	U	<155	U	<74.7	U	<73.4	U	<76.9	U	<306	U	<321	U	<290	U	<307	U	<72.7	U	<308	U
Dimethyl phthalate	NC	NC		<58.0	U	<62.2	U	<114	U	<55.1	U	<54.2	U	<56.8	U	<226	U	<237	U	<214	U	<226	U	<53.7	U	<227	U
Fluoranthene	100,000	100,000		<66.1	U	<70.9	U	344	J	<62.9	U	<61.8	U	<64.8	U	<257	U	<270	U	<245	U	<258	U	<61.3	U	<259	U
Fluorene	30,000	100,000		<48.3	U	<51.7	U	<95.3	U	<45.9	U	<45.1	U	<47.3	U	<188	U	<197	U	<178	U	<189	U	<44.7	U	<189	U
Hexachlorobenzene	330	1,200		<51.4	U	<55.1	U	<101	U	<48.9	U	<48.0	U	<50.4	U	<200	U	<210	U	<190	U	<201	U	<47.6	U	<201	U
Hexachlorobutadiene	NC	NC		<48.0	U	<51.5	U	<94.8	U	<45.7	U	<44.9	U	<47.1	U	<187	U	<196	U	<178	U	<188	U	<44.5	U	<188	U
Hexachlorocyclopentadiene	NC	NC		<371	U	<398	U	<732	U	<353	U	<347	U	<364	U	<1440	U	<1510	U	<1370	U	<1450	U	<344	U	<1450	U
Hexachloroethane	NC	NC		<53.4	U	<57.3	U	<105	U	<50.8	U	<49.9	U	<52.4	U	<208	U	<218	U	<198	U	<209	U	<49.5	U	<209	U
Indeno(1,2,3-cd)pyrene	500	500		<55.5	U	<59.5	U	113		<52.7	U	<51.9	U	<54.4	U	<216	U	<226	U	<205	U	<217	U	<51.4	U	<217	U

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-1B		SB-1C		SB-2B		SB-2C		SB-3B		SB-3C		SB-4B		SB-4C		SB-5B		SB-5C		SB-6B		SB-6C	
Depth				0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Isophorone	NC	NC		<54.9	U	<58.8	U	<108	U	<52.2	U	<51.3	U	<53.8	U	<214	U	<224	U	<203	U	<214	U	<50.8	U	<215	U
N-Nitrosodi-n-propylamine	NC	NC		<36.3	U	<38.9	U	<71.6	U	<34.5	U	<33.9	U	<35.5	U	<141	U	<148	U	<134	U	<142	U	<33.6	U	<142	U
N-Nitrosodimethylamine	NC	NC		<76.2	U	<81.7	U	<150	U	<72.5	U	<71.3	U	<74.7	U	<297	U	<311	U	<282	U	<298	U	<70.6	U	<299	U
N-Nitrosodiphenylamine	NC	NC		<65.4	U	<70.1	U	<129	U	<62.2	U	<61.2	U	<64.1	U	<255	U	<267	U	<242	U	<256	U	<60.6	U	<256	U
Naphthalene	12,000	100,000		<48.3	U	<51.7	U	<95.3	U	<45.9	U	<45.1	U	<47.3	U	<188	U	<197	U	<178	U	<189	U	<44.7	U	<189	U
Nitrobenzene	NC	NC		<46.5	U	<49.8	U	<91.7	U	<44.2	U	<43.4	U	<45.5	U	<181	U	<190	U	<172	U	<181	U	<43.0	U	<182	U
Pentachlorophenol	800	6,700		<455	U	<488	U	<898	U	<433	U	<425	U	<446	U	<1770	U	<1860	U	<1680	U	<1780	U	<422	U	<1780	U
Phenanthrene	100,000	100,000		<54.6	U	<58.6	U	<108	U	<51.9	U	<51.1	U	<53.5	U	<213	U	<223	U	<202	U	<213	U	<50.6	U	<214	U
Phenol	330	100,000		<31.3	U	<33.6	U	<61.8	U	<29.8	U	<29.3	U	<30.7	U	<122	U	<128	U	<116	U	<122	U	<29.0	U	<123	U
Pyrene	100,000	100,000		<44.4	U	<47.6	U	347	B	<42.2	U	164	B	366	B	225		<181	U	<164	U	464	B	329	J	175	J
Pyridine	NC	NC		<68.8	U	<73.7	U	<136	U	<65.4	U	<64.3	U	<67.4	U	<268	U	<281	U	<254	U	<269	U	<63.7	U	<270	U
Total SVOC TICs	NC	NC	100,000	NR		NR		NR		NR		NR		NR		NR		NR		4,870		95,820		194,740		147,200	

Notes:
µg/kg - micrograms per kilogram
B - Analyte found in the method blank as well as the sample indicating
possible cross contamination;
J - Result is less than the RL but greater than or equal to the MDL and the concentration
is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO
exceeded is shown unless otherwise noted.
** There is no SCO for 3+4-methylphenol. The Unrestricted Use SCOs for 3-methylphenol and
4-methylphenol are 330 µg/kg. The Restricted-Residential Use SCOs are 100,000 µg/kg.

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-7A		SB-8A		SB-8B		SB-8C		SB-8D		SB-9A		SB-9B		SB-9C		SB-9D		SB-10B		SB-10C		SB-11A	
Depth				0-0.5		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0-0.5	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<202	U	<176	U	<91.7	U	<49.3	U	<50.7	U	NR		<185	U	<53.5	U	<51.9	U	<179	U	<51.6	U	<206	U
1,2-Dichlorobenzene	NC	NC		<150	U	<130	U	<68.1	U	<36.7	U	<37.7	U	NR		<138	U	<39.8	U	<38.5	U	<133	U	<38.3	U	<153	U
1,2-Diphenylhydrazine	NC	NC		<147	U	<127	U	<66.6	U	<35.8	U	<36.8	U	NR		<135	U	<38.9	U	<37.7	U	<130	U	<37.5	U	<150	U
1,3-Dichlorobenzene	NC	NC		<163	U	<142	U	<74.1	U	<39.9	U	<41.0	U	NR		<150	U	<43.2	U	<41.9	U	<145	U	<41.7	U	<167	U
1,4-Dichlorobenzene	NC	NC		<158	U	<138	U	<71.9	U	<38.7	U	<39.8	U	NR		<145	U	<42.0	U	<40.6	U	<140	U	<40.4	U	<162	U
2,3,4,6-Tetrachlorophenol	NC	NC		<192	U	<167	U	<87.3	U	<47.0	U	<48.3	U	NR		<176	U	<51.0	U	<49.4	U	<171	U	<49.1	U	<197	U
2,4,5-Trichlorophenol	NC	NC		<105	U	<91.6	U	<47.9	U	<25.7	U	<26.5	U	NR		<96.7	U	<27.9	U	<27.1	U	<93.4	U	<26.9	U	<108	U
2,4,6-Trichlorophenol	NC	NC		<183	U	<159	U	<82.9	U	<44.6	U	<45.9	U	NR		<167	U	<48.4	U	<46.9	U	<162	U	<46.7	U	<187	U
2,4-Dichlorophenol	NC	NC		<159	U	<138	U	<72.3	U	<38.9	U	<40.0	U	NR		<146	U	<42.2	U	<40.9	U	<141	U	<40.7	U	<163	U
2,4-Dimethylphenol	NC	NC		<203	U	<176	U	<92.2	U	<49.6	U	<51.0	U	NR		<186	U	<53.8	U	<52.1	U	<180	U	<51.9	U	<207	U
2,4-Dinitrophenol	NC	NC		<1710	U	<1490	U	<776	U	<418	U	<429	U	NR		<1570	U	<453	U	<439	U	<1520	U	<437	U	<1750	U
2,4-Dinitrotoluene	NC	NC		<292	U	<253	U	<132	U	<71.2	U	<73.2	U	NR		<267	U	<77.2	U	<74.8	U	<258	U	<74.4	U	<298	U
2,6-Dinitrotoluene	NC	NC		<200	U	<174	U	<90.8	U	<48.9	U	<50.2	U	NR		<184	U	<53.0	U	<51.4	U	<177	U	<51.1	U	<204	U
2-Chloronaphthalene	NC	NC		<234	U	<203	U	<106	U	<57.2	U	<58.8	U	NR		<215	U	<62.0	U	<60.1	U	<208	U	<59.8	U	<239	U
2-Chlorophenol	NC	NC		<234	U	<203	U	<106	U	<57.2	U	<58.8	U	NR		<215	U	<62.0	U	<60.1	U	<208	U	<59.8	U	<239	U
2-Methylnaphthalene	NC	NC		<193	U	<168	U	<87.5	U	<47.1	U	192	J	NR		1210	J	<51.1	U	<49.5	U	5300		311	J	<197	U
2-Methylphenol	330	100,000		<174	U	<151	U	<78.9	U	<42.5	U	<43.7	U	NR		<159	U	<46.1	U	<44.6	U	<154	U	<44.4	U	<178	U
2-Nitroaniline	NC	NC		<253	U	<220	U	<115	U	<61.8	U	<63.5	U	NR		<232	U	<67.1	U	<65.0	U	<224	U	<64.6	U	<259	U
2-Nitrophenol	NC	NC		<148	U	<128	U	<67.0	U	<36.1	U	<37.1	U	NR		<135	U	<39.1	U	<37.9	U	<131	U	<37.7	U	<151	U
3+4-Methylphenol	330**	330**		<150	U	<130	U	<68.1	U	<36.7	U	<37.7	U	NR		<138	U	<39.8	U	<38.5	U	<133	U	<38.3	U	<153	U
3,3'-Dichlorobenzidine	NC	NC		<234	U	<203	U	<106	U	<57.2	U	<58.8	U	NR		<215	U	<62.0	U	<60.1	U	<208	U	<59.8	U	<239	U
3-Nitroaniline	NC	NC		<83.6	U	<72.6	U	<37.9	U	<20.4	U	<21.0	U	NR		<76.6	U	<22.1	U	<21.4	U	<74.1	U	<21.3	U	<85.4	U
4,6-Dinitro-2-methylphenol	NC	NC		<2120	U	<1840	U	<964	U	<518	U	<533	U	NR		<1950	U	<562	U	<545	U	<1880	U	<542	U	<2170	U
4-Bromophenyl phenyl ether	NC	NC		<221	U	<192	U	<100	U	<53.9	U	<55.4	U	NR		<202	U	<58.4	U	<56.6	U	<195	U	<56.3	U	<225	U
4-Chloro-3-methylphenol	NC	NC		<181	U	<157	U	<82.2	U	<44.2	U	<45.5	U	NR		<166	U	<48.0	U	<46.5	U	<161	U	<46.3	U	<185	U
4-Chloroaniline	NC	NC		<185	U	<161	U	<84.0	U	<45.2	U	<46.5	U	NR		<170	U	<49.0	U	<47.5	U	<164	U	<47.3	U	<189	U
4-Chlorophenyl phenyl ether	NC	NC		<189	U	<164	U	<85.8	U	<46.1	U	<47.4	U	NR		<173	U	<50.1	U	<48.5	U	<167	U	<48.3	U	<193	U
4-Nitroaniline	NC	NC		<475	U	<413	U	<216	U	<116	U	<119	U	NR		<436	U	<126	U	<122	U	<421	U	<121	U	<485	U
4-Nitrophenol	NC	NC		<3240	U	<2810	U	<1470	U	<791	U	<813	U	NR		<2970	U	<858	U	<832	U	<2870	U	<828	U	<3310	U
Acenaphthene	20,000	100,000		<205	U	<178	U	<92.8	U	<49.9	U	<51.3	U	NR		<188	U	<54.2	U	<52.5	U	560	J	88.3	J	<209	U
Acenaphthylene	100,000	100,000		<167	U	<145	U	<75.9	U	<40.8	U	<42.0	U	NR		<153	U	<44.3	U	<42.9	U	<148	U	<42.7	U	<171	U
Aniline	NC	NC		<151	U	<131	U	<68.6	U	<36.9	U	<37.9	U	NR		<139	U	<40.0	U	<38.8	U	<134	U	<38.6	U	<154	U
Anthracene	100,000	100,000		<216	U	<188	U	<98.1	U	<52.8	U	<54.3	U	NR		<198	U	<57.3	U	<55.5	U	<192	U	<55.2	U	<221	U
Benzidine	NC	NC		<4270	U	<3700	U	<1940	U	<1040	U	<1070	U	NR		<3910	U	<1130	U	<1090	U	<3780	U	<1090	U	<4360	U
Benzo(a)anthracene	1,000	1,000		<206	U	<178	U	<93.3	U	<50.2	U	<51.6	U	NR		<188	U	<54.4	U	<52.7	U	<182	U	<52.5	U	<210	U
Benzo(a)pyrene	1,000	1,000		<253	U	<220	U	<115	U	<61.8	U	<63.5	U	NR		<232	U	<67.1	U	<65.0	U	<224	U	<64.6	U	<259	U
Benzo(b)fluoranthene	1,000	1,000		<202	U	<175	U	<91.5	U	<49.2	U	<50.6	U	NR		<185	U	<53.4	U	<51.7	U	<179	U	<51.5	U	<206	U
Benzo(g,h,i)perylene	100,000	100,000		<371	U	<322	U	<168	U	<90.6	U	<93.2	U	NR		<340	U	<98.3	U	<95.3	U	<329	U	<94.8	U	<379	U
Benzo(k)fluoranthene	800	3,900		<370	U	<321	U	<168	U	<90.3	U	<92.8	U	NR		<339	U	<97.9	U	<94.9	U	<328	U	<94.4	U	<378	U
Benzoic acid	NC	NC		<28500	U	<24700	U	<12900	U	<6950	U	<7150	U	NR		<26100	U	<7540	U	<7310	U	<25200	U	<7270	U	<29100	U
Benzyl alcohol	NC	NC		<287	U	<249	U	<130	U	<70.0	U	<72.0	U	NR		<263	U	<75.9	U	<73.6	U	<254	U	<73.2	U	<293	U
bis(2-Chloroethoxy)methane	NC	NC		<201	U	<175	U	<91.3	U	<49.1	U	<50.5	U	NR		<184	U	<53.3	U	<51.6	U	<178	U	<51.4	U	<205	U
bis(2-Chloroethyl)ether	NC	NC		<230	U	<200	U	<104	U	<56.1	U	<57.7	U	NR		<211	U	<60.9	U	<59.0	U	<204	U	<58.7	U	<235	U
bis(2-Chloroisopropyl)ether	NC	NC		<178	U	<155	U	<80.9	U	<43.5	U	<44.8	U	NR		<163	U	<47.2	U	<45.8	U	<158	U	<45.5	U	<182	U
bis(2-Ethylhexyl)phthalate	NC	NC		<318	U	<276	U	<144	U	<77.7	U	99.7	J	NR		<292	U	<84.3	U	<81.7	U	<282	U	<81.3	U	<325	U
Butyl benzyl phthalate	NC	NC		<257	U	<223	U	<116	U	<62.6	U	<64.4	U	NR		<235	U	<68.0	U	<65.8	U	<227	U	<65.5	U	<262	U
Carbazole	NC	NC		<280	U	<243	U	<127	U	<68.3	U	<70.2	U	NR		<257	U	<74.1	U	<71.8	U	<248	U	<71.5	U	<286	U
Chrysene	1,000	3,900		<257	U	<223	U	<117	U	<62.8	U	<64.5	U	NR		<236	U	<68.1	U	<66.0	U	<228	U	<65.6	U	<263	U
Cresols	NC	NC		<324	U	<281	U	<147	U	<79.2	U	<81.4	U	NR		<297	U	<85.9	U	<83.1	U	<287	U	<82.7	U	<331	U
Di-n-butyl phthalate	NC	NC		<274	U	<238	U	<124	U	<66.8	U	<68.7	U	NR		<251	U	<72.5	U	<70.2	U	<242	U	<69.9	U	<279	U
Di-n-octyl phthalate	NC	NC		<239	U	<208	U	<108	U	<58.4	U	<60.0	U	NR		<219	U	<63.3	U	<61.3	U	<212	U	<61.0	U	<244	U
Dibenz(a,h)anthracene	330	330		<271	U	<235	U	<123	U	<66.2	U	<68.0	U	NR		<249	U	<71.8	U	<69.6	U	<240	U	<69.2	U	<277	U
Dibenzofuran	7,000	59,000		<162	U	<141	U	<73.6	U	<39.6	U	<40.7	U	NR		<149	U	<43.0	U	<41.6	U	<144	U	<41.4	U	<166	U
Diethyl phthalate	NC	NC		<318	U	<276	U	<144	U	<77.6	U	<79.8	U	NR		<291	U	<84.2	U	<81.5	U	<282	U	<81.1	U	<325	U
Dimethyl phthalate	NC	NC		<235	U	<204	U	<107	U	<57.3	U	<58.9	U	NR		<215	U	<62.2	U	<60.2	U	<208	U	<59.9	U	<240	U
Fluoranthene	100,000	100,000		<268	U	<232	U	<121	U	<65.4	U	<67.2	U	NR		<245	U	<70.9	U	<68.7	U	<237	U	<68.4	U	<273	U
Fluorene	30,000	100,000		<195	U	<170	U	<88.6	U	<47.7	U	<49.0	U	NR		<179	U	<51.7	U	<50.1	U	<173	U	109	J	<200	U
Hexachlorobenzene	330	1,200		<208	U	<181	U	<94.4	U	<50.8	U	<52.2	U	NR		<191	U	<55.1	U	<53.4	U	<184	U	<53.1	U	<212	U
Hexachlorobutadiene	NC	NC		<194	U	<169	U	<88.2	U	<47.4	U	<48.8	U	NR		<178	U	<51.5	U	<49.9	U	<172	U	<49.6	U	<199	U
Hexachlorocyclopentadiene	NC	NC		<1500	U	<1300	U	<681	U	<367	U	<377	U	NR		<1380	U	<398	U	<385	U	<1330	U	<383	U	<1530	U
Hexachloroethane	NC	NC		<216	U	<188	U	<98.1	U	<52.8	U	<54.3	U	NR		<198	U	<57.3	U	<55.5	U	<192	U	<55.2	U	<221	U
Indeno(1,2,3-cd)pyrene	500	500		<225	U	<195	U	<102	U	<54.8	U	<56.3	U	NR		<206	U	<59.5	U	<57.6	U	<199	U	<57.3	U	<229	U

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-7A		SB-8A		SB-8B		SB-8C		SB-8D		SB-9A		SB-9B		SB-9C		SB-9D		SB-10B		SB-10C		SB-11A	
Depth				0-0.5		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0-0.5	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Isophorone	NC	NC		<222	U	<193	U	<101	U	<54.2	U	<55.7	U	NR		<204	U	<58.8	U	<57.0	U	<197	U	<56.7	U	<227	U
N-Nitrosodi-n-propylamine	NC	NC		<147	U	<127	U	<66.6	U	<35.8	U	<36.8	U	NR		<135	U	<38.9	U	<37.7	U	<130	U	<37.5	U	<150	U
N-Nitrosodimethylamine	NC	NC		<309	U	<268	U	<140	U	<75.3	U	<77.4	U	NR		<283	U	<81.7	U	<79.2	U	<273	U	<78.8	U	<315	U
N-Nitrosodiphenylamine	NC	NC		<265	U	<230	U	<120	U	<64.7	U	<66.5	U	NR		<243	U	<70.1	U	<68.0	U	<235	U	<67.6	U	<270	U
Naphthalene	12,000	100,000		<195	U	<170	U	<88.6	U	<47.7	U	<49.0	U	NR		<179	U	<51.7	U	<50.1	U	2480		155		<200	U
Nitrobenzene	NC	NC		<188	U	<163	U	<85.3	U	<45.9	U	<47.2	U	NR		<172	U	<49.8	U	<48.3	U	<167	U	<48.0	U	<192	U
Pentachlorophenol	800	6,700		<1840	U	<1600	U	<836	U	<450	U	<462	U	NR		<1690	U	<488	U	<473	U	<1630	U	<470	U	<1880	U
Phenanthrene	100,000	100,000		<221	U	<192	U	<100	U	<54.0	U	88.6	J	NR		1070	J	<58.6	U	<56.7	U	2110	J	211	J	<226	U
Phenol	330	100,000		<127	U	<110	U	<57.6	U	<31.0	U	<31.8	U	NR		<116	U	<33.6	U	<32.5	U	<112	U	<32.4	U	<130	U
Pyrene	100,000	100,000		<180	U	<156	U	<81.6	U	<43.9	U	<45.1	U	NR		<165	U	<47.6	U	<46.1	U	<159	U	<45.9	U	<184	U
Pyridine	NC	NC		<278	U	<242	U	<126	U	<68.0	U	<69.9	U	NR		<255	U	<73.7	U	<71.4	U	<247	U	<71.1	U	<284	U
Total SVOC TICs	NC	NC	100,000	NR		NR		25,607		744		NR		NR		191,450		17,725		NR		207,240		19,832		NR	

Notes:
µg/kg - micrograms per kilogram
B - Analyte found in the method blank as well as the sample indicating possible cross contamination;
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for 3+4-methylphenol. The Unrestricted Use SCOs for 3-methylphenol and 4-methylphenol are 330 µg/kg. The Restricted-Residential Use SCOs are 100,000 µg/kg.

SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-12A		SB-12B		SB-12C		SB-12D		SB-13B		SB-13C		SB-14A		SB-14B		SB-14C		SB-15A		SB-15B		SB-15C		SB-16A	
Depth				0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107318		1107318		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		NR		<188	U	<46.1	U	<203	U	<227	U	<48.2	U	NR		<45.8	U	<48.7	U	NR		<181	U	<49.5	U	<125	U
1,2-Dichlorobenzene	NC	NC		NR		<139	U	<34.3	U	<151	U	<168	U	<35.8	U	NR		<34.0	U	<36.2	U	NR		<134	U	<36.7	U	<93.1	U
1,2-Diphenylhydrazine	NC	NC		NR		<136	U	<33.5	U	<147	U	<164	U	<35.0	U	NR		<33.2	U	<35.4	U	NR		<131	U	<35.9	U	<91.0	U
1,3-Dichlorobenzene	NC	NC		NR		<152	U	<37.3	U	<164	U	<183	U	<38.9	U	NR		<37.0	U	<39.3	U	NR		<146	U	<40.0	U	<101	U
1,4-Dichlorobenzene	NC	NC		NR		<147	U	<36.1	U	<159	U	<178	U	<37.8	U	NR		<35.9	U	<38.2	U	NR		<142	U	<38.8	U	<98.2	U
2,3,4,6-Tetrachlorophenol	NC	NC		NR		<179	U	<43.9	U	<193	U	<216	U	<45.9	U	NR		<43.6	U	<46.4	U	NR		<172	U	<47.1	U	<119	U
2,4,5-Trichlorophenol	NC	NC		NR		<97.9	U	<24.1	U	<106	U	<118	U	<25.1	U	NR		<23.9	U	<25.4	U	NR		<94.5	U	<25.8	U	<65.4	U
2,4,6-Trichlorophenol	NC	NC		NR		<170	U	<41.7	U	<184	U	<205	U	<43.6	U	NR		<41.4	U	<44.0	U	NR		<164	U	<44.7	U	<113	U
2,4-Dichlorophenol	NC	NC		NR		<148	U	<36.4	U	<160	U	<179	U	<38.0	U	NR		<36.1	U	<38.4	U	NR		<143	U	<39.0	U	<98.8	U
2,4-Dimethylphenol	NC	NC		NR		<189	U	<46.3	U	<204	U	<228	U	<48.4	U	NR		<46.0	U	<48.9	U	NR		<182	U	<49.7	U	<126	U
2,4-Dinitrophenol	NC	NC		NR		<1590	U	<390	U	<1720	U	<1920	U	<408	U	NR		<387	U	<412	U	NR		<1530	U	<419	U	<1060	U
2,4-Dinitrotoluene	NC	NC		NR		<271	U	<66.5	U	<293	U	<327	U	<69.5	U	NR		<66.0	U	<70.3	U	NR		<261	U	<71.3	U	<181	U
2,6-Dinitrotoluene	NC	NC		NR		<186	U	<45.7	U	<201	U	<224	U	<47.7	U	NR		<45.3	U	<48.2	U	NR		<179	U	<49.0	U	<124	U
2-Chloronaphthalene	NC	NC		NR		<217	U	<53.4	U	<235	U	<263	U	<55.9	U	NR		<53.0	U	<56.4	U	NR		<210	U	<57.3	U	<145	U
2-Chlorophenol	NC	NC		NR		<217	U	<53.4	U	<235	U	<263	U	<55.9	U	NR		<53.0	U	<56.4	U	NR		<210	U	<57.3	U	<145	U
2-Methylnaphthalene	NC	NC		NR		917	J	50300		21300		19000		<46.0	U	NR		566		86700		NR		53200		108	J	424	J
2-Methylphenol	330	100,000		NR		<161	U	<39.7	U	<175	U	<195	U	<41.5	U	NR		<39.4	U	<41.9	U	NR		<156	U	<42.6	U	<108	U
2-Nitroaniline	NC	NC		NR		<235	U	<57.8	U	<254	U	<284	U	<60.4	U	NR		<57.3	U	<61.0	U	NR		<227	U	<62.0	U	<157	U
2-Nitrophenol	NC	NC		NR		<137	U	<33.7	U	<148	U	<166	U	<35.2	U	NR		<33.4	U	<35.6	U	NR		<132	U	<36.1	U	<91.6	U
3+4-Methylphenol	330**	330**		NR		<139	U	<34.3	U	<151	U	<168	U	<35.8	U	NR		<34.0	U	<36.2	U	NR		<134	U	<36.7	U	<93.1	U
3,3'-Dichlorobenzidine	NC	NC		NR		<217	U	<53.4	U	<235	U	<263	U	<55.9	U	NR		<53.0	U	<56.4	U	NR		<210	U	<57.3	U	<145	U
3-Nitroaniline	NC	NC		NR		<77.6	U	<19.1	U	<84.0	U	<93.7	U	<19.9	U	NR		<18.9	U	<20.1	U	NR		<74.9	U	<20.5	U	<51.8	U
4,6-Dinitro-2-methylphenol	NC	NC		NR		<1970	U	<484	U	<2130	U	<2380	U	<506	U	NR		<481	U	<512	U	NR		<1900	U	<520	U	<1320	U
4-Bromophenyl phenyl ether	NC	NC		NR		<205	U	<50.3	U	<222	U	<247	U	<52.6	U	NR		<49.9	U	123		NR		<198	U	<54.0	U	<137	U
4-Chloro-3-methylphenol	NC	NC		NR		<168	U	<41.4	U	<182	U	<203	U	<43.2	U	NR		<41.0	U	<43.7	U	NR		<162	U	<44.4	U	<112	U
4-Chloroaniline	NC	NC		NR		<172	U	<42.2	U	<186	U	<208	U	<44.1	U	NR		<41.9	U	<44.6	U	NR		<166	U	<45.3	U	<115	U
4-Chlorophenyl phenyl ether	NC	NC		NR		<175	U	<43.1	U	<190	U	<212	U	<45.1	U	NR		<42.8	U	<45.6	U	NR		<169	U	<46.3	U	<117	U
4-Nitroaniline	NC	NC		NR		<441	U	<108	U	<478	U	<533	U	<113	U	NR		<108	U	<115	U	NR		<426	U	<116	U	<295	U
4-Nitrophenol	NC	NC		NR		<3010	U	<739	U	<3260	U	<3630	U	<773	U	NR		<734	U	<781	U	NR		<2900	U	<793	U	<2010	U
Acenaphthene	20,000	100,000		NR		1280	J	1870		1320	J	1110	J	<48.8	U	NR		<46.3	U	4200	U	NR		4110		<50.1	U	<127	U
Acenaphthylene	100,000	100,000		NR		<155	U	<38.1	U	<168	U	<187	U	<39.9	U	NR		<37.8	U	<40.3	U	NR		<150	U	<40.9	U	<104	U
Aniline	NC	NC		NR		<140	U	<34.5	U	<152	U	<169	U	<36.0	U	NR		<34.2	U	<36.4	U	NR		<135	U	<37.0	U	<93.7	U
Anthracene	100,000	100,000		NR		<201	U	<49.3	U	<217	U	<242	U	<51.6	U	NR		<49.0	U	<52.1	U	NR		<194	U	<52.9	U	<134	U
Benzidine	NC	NC		NR		<3960	U	<973	U	<4290	U	<4780	U	<1020	U	NR		<966	U	<1030	U	NR		<3820	U	<1040	U	<2640	U
Benzo(a)anthracene	1,000	1,000		NR		<191	U	<46.9	U	<207	U	<230	U	<49.0	U	NR		<46.5	U	71.8		NR		<184	U	<50.3	U	<127	U
Benzo(a)pyrene	1,000	1,000		NR		<235	U	<57.8	U	<254	U	<284	U	<60.4	U	NR		<57.3	U	<61.0	U	NR		<227	U	<62.0	U	<157	U
Benzo(b)fluoranthene	1,000	1,000		NR		<187	U	<46.0	U	<203	U	<226	U	<48.1	U	NR		<45.7	U	<48.6	U	NR		<181	U	<49.3	U	<125	U
Benzo(g,h,i)perylene	100,000	100,000		NR		<345	U	<84.7	U	<373	U	<416	U	<88.5	U	NR		<84.0	U	<89.5	U	NR		<333	U	<90.8	U	<230	U
Benzo(k)fluoranthene	800	3,900		NR		<343	U	<84.4	U	<372	U	<414	U	<88.2	U	NR		<83.7	U	<89.1	U	NR		<331	U	<90.5	U	<229	U
Benzoic acid	NC	NC		NR		<26400	U	<6500	U	<28600	U	<31900	U	<6790	U	NR		<6450	U	<6860	U	NR		<25500	U	<6970	U	<17700	U
Benzyl alcohol	NC	NC		NR		<266	U	<65.4	U	<288	U	<321	U	<68.4	U	NR		<64.9	U	<69.1	U	NR		<257	U	<70.2	U	<178	U
bis(2-Chloroethoxy)methane	NC	NC		NR		<187	U	<45.9	U	<202	U	<225	U	<48.0	U	NR		<45.5	U	<48.5	U	NR		<180	U	<49.2	U	<125	U
bis(2-Chloroethyl)ether	NC	NC		NR		<213	U	<52.4	U	<231	U	<258	U	<54.8	U	NR		<52.0	U	<55.4	U	NR		<206	U	<56.2	U	<142	U
bis(2-Chloroisopropyl)ether	NC	NC		NR		<166	U	<40.7	U	<179	U	<200	U	<42.5	U	NR		<40.4	U	<43.0	U	NR		<160	U	<43.6	U	<111	U
bis(2-Ethylhexyl)phthalate	NC	NC		NR		<295	U	<72.6	U	400	J	2020	J	<75.9	U	NR		430	J	199	J	NR		361		105	J	<197	U
Butyl benzyl phthalate	NC	NC		NR		<238	U	<58.5	U	<258	U	<288	U	<61.2	U	NR		<58.1	U	<61.8	U	NR		<230	U	<62.8	U	<159	U
Carbazole	NC	NC		NR		<260	U	<63.9	U	<281	U	<314	U	<66.7	U	NR		<63.4	U	<67.4	U	NR		<251	U	<68.5	U	<173	U
Chrysene	1,000	3,900		NR		<239	U	<58.6	U	<258	U	<288	U	<61.3	U	NR		<58.2	U	118		NR		<230	U	<62.9	U	<159	U
Cresols	NC	NC		NR		<300	U	<74.0	U	<326	U	<363	U	<77.3	U	NR		<73.4	U	<78.1	U	NR		<290	U	<79.3	U	<201	U
Di-n-butyl phthalate	NC	NC		NR		<254	U	<62.4	U	<275	U	<307	U	<65.2	U	NR		<61.9	U	<65.9	U	NR		<245	U	<66.9	U	<170	U
Di-n-octyl phthalate	NC	NC		NR		<222	U	<54.5	U	<240	U	<268	U	<57.0	U	NR		<54.1	U	<57.6	U	NR		<214	U	<58.5	U	<148	U
Dibenz(a,h)anthracene	330	330		NR		<252	U	<61.9	U	<273	U	<304	U	<64.7	U	NR		<61.4	U	<65.3	U	NR		<243	U	<66.3	U	<168	U
Dibenzofuran	7,000	59,000		NR		<151	U	<37.0	U	<163	U	<182	U	<38.7	U	NR		<36.7	U	<39.1	U	NR		<145	U	<39.7	U	<101	U
Diethyl phthalate	NC	NC		NR		<295	U	<72.5	U	<319	U	<356	U	<75.8	U	NR		<71.9	U	<76.6	U	NR		<285	U	<77.8	U	<197	U
Dimethyl phthalate	NC	NC		NR		<218	U	<53.5	U	<236	U	<263	U	<56.0	U	NR		<53.1	U	<56.6	U	NR		<210	U	<57.4	U	<145	U
Fluoranthene	100,000	100,000		NR		743	J	186	J	554	J	<300	U	<63.8	U	NR		<60.6	U	955	U	NR		590	J	<65.5	U	<166	U
Fluorene	30,000	100,000		NR		1860	J	3440		<196	U	2380	J	<46.6	U	NR		<44.2	U	3120		NR		7260		54.5	J	<121	U
Hexachlorobenzene	330	1,200		NR		<193	U	<47.5	U	<209	U	<233	U	<49.6	U	NR		<47.1	U	<50.1	U	NR		<186	U	<50.9	U	<129	U
Hexachlorobutadiene	NC	NC		NR		<180	U	<44.3	U	<195	U	<218	U	<46.3	U	NR		<44.0	U	<46.8	U	NR		<174	U	<47.6	U	<120	U
Hexachlorocyclopentadiene	NC	NC		NR		<1390	U	<343	U	<1510	U	<1680	U	<358	U	NR		<340	U	<362	U	NR		<1340	U	<367	U	<931	U
Hexachloroethane	NC	NC		NR		<201	U	<49.3	U	<217	U	<242	U	<51.6	U	NR		<49.0	U	<52.1	U	NR		<194	U	<52.9	U	<134	U
Indeno(1,2,3-cd)pyrene	500	500		NR		<208	U	<51.2	U	<226	U	<252	U	<53.5	U	NR		<50.8	U	<54.1	U	NR		<201	U	<54.9	U	<139	U

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-12A		SB-12B		SB-12C		SB-12D		SB-13B		SB-13C		SB-14A		SB-14B		SB-14C		SB-15A		SB-15B		SB-15C		SB-16A	
Depth				0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107318		1107318		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Isophorone	NC	NC		NR		<206	U	<50.7	U	<223	U	<249	U	<53.0	U	NR		<50.3	U	<53.5	U	NR		<199	U	<54.3	U	<138	U
N-Nitrosodi-n-propylamine	NC	NC		NR		<136	U	<33.5	U	<147	U	<164	U	<35.0	U	NR		<33.2	U	<35.4	U	NR		<131	U	<35.9	U	<91.0	U
N-Nitrosodimethylamine	NC	NC		NR		<286	U	<70.4	U	<310	U	<346	U	<73.6	U	NR		<69.9	U	<74.4	U	NR		<276	U	<75.5	U	<191	U
N-Nitrosodiphenylamine	NC	NC		NR		<246	U	<60.4	U	<266	U	<297	U	<63.2	U	NR		<60.0	U	<63.8	U	NR		<237	U	<64.8	U	<164	U
Naphthalene	12,000	100,000		NR		<181	U	<44.6	U	<196	U	<219	U	<46.6	U	NR		215		<47.1	U	NR		5930		<47.8	U	<121	U
Nitrobenzene	NC	NC		NR		<175	U	<42.9	U	<189	U	<211	U	<44.8	U	NR		<42.6	U	<45.3	U	NR		<168	U	<46.0	U	<117	U
Pentachlorophenol	800	6,700		NR		<1710	U	<420	U	<1850	U	<2060	U	<439	U	NR		<417	U	<444	U	NR		<1650	U	<451	U	<1140	U
Phenanthrene	100,000	100,000		NR		3180		7090		4630		4030		<52.7	U	NR		<50.1	U	14000		NR		14300		126		<137	U
Phenol	330	100,000		NR		<118	U	<28.9	U	<127	U	<142	U	<30.2	U	NR		<28.7	U	<30.6	U	NR		<114	U	<31.0	U	<78.6	U
Pyrene	100,000	100,000		NR		959	J	303	J	710	J	252	B	<42.9	U	NR		<40.7	U	1170		NR		<161	U	<44.0	U	<111	U
Pyridine	NC	NC		NR		<258	U	<63.5	U	<280	U	<312	U	<66.4	U	NR		<63.0	U	<67.1	U	NR		<249	U	<68.1	U	<173	U
Total SVOC TICs	NC	NC	100,000	NR		272,420		256,760		316,850		NR		NR		NR		NR		NR		NR		NR		NR		NR	

Notes:
µg/kg - micrograms per kilogram
B - Analyte found in the method blank as well as the sample indicating possible cross contamination;
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for 3+4-methylphenol. The Unrestricted Use SCOs for 3-methylphenol and 4-methylphenol are 330 µg/kg. The Restricted-Residential Use SCOs are 100,000 µg/kg.

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-17A		SB-18B		SB-18C		SB-19B		SB-19C		SB-19 Peat		SB-20B		SB-20C		SB-21B		SB-21C		SB-22B		SB-22C		SB-23A	
Depth				0-0.5		0.5-3		3-7		0.5-3		3-7		7+		0.5-3		3-7		0.5-3		0.5-3		0.5-3		3-7		0-0.5	
Lab Sample ID				1107290		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		NR		<185	U	<59.5	U	<193	U	<49.5	U	<163	U	<45.8	U	<68.6	U	<232	U	<49.6	U	<48.0	U	<51.4	U	<46.7	U
1,2-Dichlorobenzene	NC	NC		NR		<137	U	<44.2	U	<144	U	<36.8	U	<121	U	<34.0	U	<51.0	U	<173	U	<36.9	U	<35.7	U	<38.2	U	<34.7	U
1,2-Diphenylhydrazine	NC	NC		NR		<134	U	<43.2	U	<140	U	<36.0	U	<118	U	<33.3	U	<49.8	U	<169	U	<36.0	U	<34.9	U	<37.3	U	<33.9	U
1,3-Dichlorobenzene	NC	NC		NR		<149	U	<48.0	U	<156	U	<40.0	U	<132	U	<37.0	U	<55.4	U	<188	U	<40.1	U	<38.8	U	<41.5	U	<37.7	U
1,4-Dichlorobenzene	NC	NC		NR		<145	U	<46.6	U	<152	U	<38.8	U	<128	U	<35.9	U	<53.8	U	<182	U	<38.9	U	<37.6	U	<40.3	U	<36.6	U
2,3,4,6-Tetrachlorophenol	NC	NC		NR		<176	U	<56.6	U	<184	U	<47.1	U	<155	U	<43.6	U	<65.3	U	<221	U	<47.3	U	<45.7	U	<48.9	U	<44.4	U
2,4,5-Trichlorophenol	NC	NC		NR		<96.4	U	<31.0	U	<101	U	<25.8	U	<84.9	U	<23.9	U	<35.8	U	<121	U	<25.9	U	<25.1	U	<26.8	U	<24.4	U
2,4,6-Trichlorophenol	NC	NC		NR		<167	U	<53.8	U	<175	U	<44.8	U	<147	U	<41.4	U	<62.0	U	<210	U	<44.9	U	<43.4	U	<46.5	U	<42.2	U
2,4-Dichlorophenol	NC	NC		NR		<146	U	<46.9	U	<153	U	<39.0	U	<128	U	<36.1	U	<54.1	U	<183	U	<39.1	U	<37.9	U	<40.5	U	<36.8	U
2,4-Dimethylphenol	NC	NC		NR		<186	U	<59.8	U	<194	U	<49.8	U	<164	U	<46.0	U	<69.0	U	<234	U	<49.9	U	<48.3	U	<51.7	U	<46.9	U
2,4-Dinitrophenol	NC	NC		NR		<1560	U	<503	U	<1640	U	<419	U	<1380	U	<388	U	<581	U	<1970	U	<420	U	<406	U	<435	U	<395	U
2,4-Dinitrotoluene	NC	NC		NR		<267	U	<85.8	U	<279	U	<71.4	U	<235	U	<66.1	U	<99.0	U	<335	U	<71.6	U	<69.3	U	<74.2	U	<67.3	U
2,6-Dinitrotoluene	NC	NC		NR		<183	U	<58.9	U	<192	U	<49.0	U	<161	U	<45.4	U	<68.0	U	<230	U	<49.2	U	<47.6	U	<50.9	U	<46.2	U
2-Chloronaphthalene	NC	NC		NR		<214	U	<68.9	U	<224	U	<57.4	U	<189	U	<53.1	U	<79.5	U	<269	U	<57.5	U	<55.7	U	<59.6	U	<54.1	U
2-Chlorophenol	NC	NC		NR		<214	U	<68.9	U	<224	U	<57.4	U	<189	U	<53.1	U	<79.5	U	<269	U	<57.5	U	<55.7	U	<59.6	U	<54.1	U
2-Methylnaphthalene	NC	NC		NR		185	J	6350		6750		<47.3	U	<155	U	<43.7	U	<65.5	U	<222	U	<47.4	U	<45.8	U	<49.1	U	<44.6	U
2-Methylphenol	330	100,000		NR		<159	U	<51.2	U	<167	U	<42.6	U	<140	U	<39.4	U	<59.1	U	<200	U	<42.7	U	<41.3	U	<44.3	U	<40.2	U
2-Nitroaniline	NC	NC		NR		<232	U	<74.5	U	<242	U	<62.0	U	<204	U	<57.4	U	<86.0	U	<291	U	<62.2	U	<60.2	U	<64.4	U	<58.5	U
2-Nitrophenol	NC	NC		NR		<135	U	<43.5	U	<141	U	<36.2	U	<119	U	<33.5	U	<50.2	U	<170	U	<36.3	U	<35.1	U	<37.6	U	<34.1	U
3+4-Methylphenol	330**	330**		NR		<137	U	<44.2	U	<144	U	<36.8	U	<121	U	<34.0	U	<51.0	U	<173	U	<36.9	U	<35.7	U	<38.2	U	<34.7	U
3,3'-Dichlorobenzidine	NC	NC		NR		<214	U	<68.9	U	<224	U	<57.4	U	<189	U	<53.1	U	<79.5	U	<269	U	<57.5	U	<55.7	U	<59.6	U	<54.1	U
3-Nitroaniline	NC	NC		NR		<76.4	U	<24.6	U	<80.0	U	<20.5	U	<67.3	U	<18.9	U	<28.4	U	<96.1	U	<20.5	U	<19.9	U	<21.3	U	<19.3	U
4,6-Dinitro-2-methylphenol	NC	NC		NR		<1940	U	<625	U	<2030	U	<520	U	<1710	U	<481	U	<721	U	<2440	U	<521	U	<505	U	<540	U	<490	U
4-Bromophenyl phenyl ether	NC	NC		NR		<202	U	<64.9	U	<211	U	<54.0	U	<178	U	<50.0	U	<74.9	U	<254	U	<54.2	U	<52.4	U	<56.1	U	<51.0	U
4-Chloro-3-methylphenol	NC	NC		NR		<166	U	<53.3	U	<173	U	<44.4	U	<146	U	<41.1	U	<61.6	U	<208	U	<44.5	U	<43.1	U	<46.1	U	<41.9	U
4-Chloroaniline	NC	NC		NR		<169	U	<54.5	U	<177	U	<45.4	U	<149	U	<42.0	U	<62.9	U	<213	U	<45.5	U	<44.0	U	<47.1	U	<42.8	U
4-Chlorophenyl phenyl ether	NC	NC		NR		<173	U	<55.6	U	<181	U	<46.3	U	<152	U	<42.8	U	<64.2	U	<217	U	<46.4	U	<44.9	U	<48.1	U	<43.7	U
4-Nitroaniline	NC	NC		NR		<435	U	<140	U	<455	U	<116	U	<383	U	<108	U	<161	U	<546	U	<117	U	<113	U	<121	U	<110	U
4-Nitrophenol	NC	NC		NR		<2960	U	<954	U	<3100	U	<794	U	<2610	U	<735	U	<1100	U	<3730	U	<796	U	<770	U	<824	U	<749	U
Acenaphthene	20,000	100,000		NR		<187	U	626	J	1320	J	<50.1	U	<165	U	<46.4	U	<69.5	U	<235	U	<50.2	U	<48.6	U	<52.0	U	<47.3	U
Acenaphthylene	100,000	100,000		NR		<153	U	<49.2	U	<160	U	<41.0	U	<135	U	<37.9	U	<56.8	U	<192	U	<41.1	U	<39.7	U	<42.5	U	<38.6	U
Aniline	NC	NC		NR		<138	U	<44.5	U	<145	U	<37.0	U	<122	U	<34.3	U	<51.3	U	<174	U	<37.1	U	<35.9	U	<38.4	U	<34.9	U
Anthracene	100,000	100,000		NR		<198	U	219	J	<207	U	<53.0	U	<174	U	<49.0	U	<73.4	U	<249	U	<53.1	U	<51.4	U	<55.0	U	<49.9	U
Benzidine	NC	NC		NR		<3900	U	<1260	U	<4080	U	<1050	U	<3440	U	<967	U	<1450	U	<4910	U	<1050	U	<1010	U	<1090	U	<985	U
Benzo(a)anthracene	1,000	1,000		NR		<188	U	<60.5	U	<197	U	<50.4	U	<166	U	<46.6	U	<69.8	U	<236	U	<50.5	U	<48.8	U	<52.3	U	53.4	U
Benzo(a)pyrene	1,000	1,000		NR		<232	U	<74.5	U	<242	U	<62.0	U	<204	U	<57.4	U	<86.0	U	<291	U	<62.2	U	<60.2	U	<64.4	U	<58.5	U
Benzo(b)fluoranthene	1,000	1,000		NR		<184	U	<59.3	U	<193	U	<49.4	U	<162	U	<45.7	U	<68.5	U	<232	U	<49.5	U	<47.9	U	<51.3	U	<46.6	U
Benzo(g,h,i)perylene	100,000	100,000		NR		<340	U	<109	U	<355	U	<91.0	U	<299	U	<84.1	U	<126	U	<427	U	<91.2	U	<88.2	U	<94.4	U	<85.7	U
Benzo(k)fluoranthene	800	3,900		NR		<338	U	<109	U	<354	U	<90.6	U	<298	U	<83.8	U	<126	U	<425	U	<90.8	U	<87.9	U	<94.1	U	<85.4	U
Benzoic acid	NC	NC		NR		<26000	U	<8380	U	<27300	U	<6980	U	<22900	U	<6450	U	<9670	U	<32700	U	<6990	U	<6770	U	<7240	U	<6580	U
Benzyl alcohol	NC	NC		NR		<262	U	<84.4	U	<274	U	<70.2	U	<231	U	<65.0	U	<97.4	U	<330	U	<70.4	U	<68.1	U	<72.9	U	<66.2	U
bis(2-Chloroethoxy)methane	NC	NC		NR		<184	U	<59.2	U	<193	U	<49.3	U	<162	U	<45.6	U	<68.3	U	<231	U	<49.4	U	<47.8	U	<51.2	U	<46.5	U
bis(2-Chloroethyl)ether	NC	NC		NR		<210	U	<67.6	U	<220	U	<56.3	U	<185	U	<52.1	U	<78.1	U	<264	U	<56.4	U	<54.6	U	<58.5	U	<53.1	U
bis(2-Chloroisopropyl)ether	NC	NC		NR		<163	U	<52.5	U	<171	U	<43.7	U	<144	U	<40.4	U	<60.6	U	<205	U	<43.8	U	<42.4	U	<45.4	U	<41.2	U
bis(2-Ethylhexyl)phthalate	NC	NC		NR		<291	U	<93.7	U	<305	U	<78.0	U	<256	U	<72.1	U	155	J	<366	U	<78.2	U	<75.6	U	<81.0	U	<73.5	U
Butyl benzyl phthalate	NC	NC		NR		<235	U	<75.5	U	<246	U	<62.9	U	<207	U	<58.1	U	<87.1	U	<295	U	<63.0	U	<61.0	U	<65.3	U	<59.3	U
Carbazole	NC	NC		NR		<256	U	<82.4	U	<268	U	<68.6	U	<225	U	<63.4	U	<95.0	U	<322	U	<68.7	U	<66.5	U	<71.2	U	<64.6	U
Chrysene	1,000	3,900		NR		<235	U	<75.6	U	<246	U	<63.0	U	<207	U	<58.3	U	<87.3	U	<296	U	<63.1	U	<61.1	U	<65.4	U	<59.4	U
Cresols	NC	NC		NR		<296	U	<51.2	U	<311	U	<79.4	U	<261	U	<73.4	U	<110	U	<373	U	<79.6	U	<77.0	U	<82.5	U	<74.9	U
Di-n-butyl phthalate	NC	NC		NR		<250	U	<80.5	U	<262	U	<67.0	U	<220	U	<62.0	U	<92.9	U	<315	U	<67.2	U	<65.0	U	<69.6	U	<63.2	U
Di-n-octyl phthalate	NC	NC		NR		<219	U	<70.4	U	<229	U	<58.6	U	<193	U	<54.2	U	<81.2	U	<275	U	<58.7	U	<56.8	U	<60.8	U	<55.2	U
Dibenz(a,h)anthracene	330	330		NR		<248	U	<79.8	U	<260	U	<66.4	U	<218	U	<61.5	U	<92.1	U	<312	U	<66.6	U	<64.4	U	<69.0	U	<62.6	U
Dibenzofuran	7,000	59,000		NR		<148	U	<47.8	U	<155	U	<39.8	U	<131	U	<36.8	U	<55.1	U	<187	U	<39.9	U	<38.6	U	<41.3	U	<37.5	U
Diethyl phthalate	NC	NC		NR		<291	U	<93.5	U	<304	U	<77.9	U	<256	U	<72.0	U	<108	U	<365	U	<78.0	U	<75.5	U	<80.8	U	<73.4	U
Dimethyl phthalate	NC	NC		NR		<215	U	<69.1	U	<225	U	<57.5	U	<189	U	<53.2	U	<79.7	U	<270	U	<57.6	U	<55.8	U	<59.7	U	<54.2	U
Fluoranthene	100,000	100,000		NR		<245	U	<78.8	U	<256	U	<65.6	U	<216	U	<60.7	U	<90.9	U	<308	U	<65.8	U	<63.6	U	<68.1	U	113	J
Fluorene	30,000	100,000		NR		<179	U	958		1860	J	<47.9	U	<157	U	<44.3	U	<66.3	U	<225	U	<48.0	U	<46.4	U	<49.7	U	<45.1	U
Hexachlorobenzene	330	1,200		NR		<190	U	<61.2	U	<199	U	<51.0	U	<168	U	<47.1	U	<70.6	U	<239	U	<51.1	U	<49.4	U	<52.9	U	<48.0	U
Hexachlorobutadiene	NC	NC		NR		<178	U	<57.2	U	<186	U	<47.6	U	<157	U	<44.1	U	<66.0	U	<223	U	<47.7	U	<46.2	U	<49.4	U	<44.9	U
Hexachlorocyclopentadiene	NC	NC		NR		<1370	U	<442	U	<1440	U	<368	U	<1210	U	<340	U	<510	U	<1730	U	<369	U	<357	U	<382	U	<347	U
Hexachloroethane	NC	NC		NR		<198	U	<63.6	U	<207	U	<53.0	U	<174	U	<49.0	U	<73.4	U	<249	U	<53.1	U	<51.4	U	<55.0	U	<49.9	U
Indeno(1,2,3-cd)pyrene	500	500		NR		<205	U	<66.1	U	<215	U	<55.0	U	<181	U	<50.9	U	<76.2	U	<258	U	<55.1	U	<53.3	U	<57.1	U	<51.9	U

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-17A		SB-18B		SB-18C		SB-19B		SB-19C		SB-19 Peat		SB-20B		SB-20C		SB-21B		SB-21C		SB-22B		SB-22C		SB-23A	
Depth				0-0.5		0.5-3		3-7		0.5-3		3-7		7+		0.5-3		3-7		0.5-3		0.5-3		0.5-3		3-7		0-0.5	
Lab Sample ID				1107290		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Isophorone	NC	NC		NR		<203	U	<65.4	U	<213	U	<54.4	U	<179	U	<50.3	U	<75.4	U	<255	U	<54.5	U	<52.8	U	<56.5	U	<51.3	U
N-Nitrosodi-n-propylamine	NC	NC		NR		<134	U	<43.2	U	<140	U	<36.0	U	<118	U	<33.3	U	<49.8	U	<169	U	<36.0	U	<34.9	U	<37.3	U	<33.9	U
N-Nitrosodimethylamine	NC	NC		NR		<282	U	<90.8	U	<295	U	<75.6	U	<249	U	<69.9	U	<105	U	<355	U	<75.8	U	<73.3	U	<78.5	U	<71.3	U
N-Nitrosodiphenylamine	NC	NC		NR		<242	U	<77.9	U	<253	U	<64.9	U	<213	U	<60.0	U	<89.9	U	<304	U	<65.0	U	<62.9	U	<67.4	U	<61.2	U
Naphthalene	12,000	100,000		NR		<179	U	<57.5	U	<187	U	<47.9	U	<157	U	<44.3	U	<66.3	U	<225	U	<48.0	U	<46.4	U	<49.7	U	<45.1	U
Nitrobenzene	NC	NC		NR		<172	U	<55.3	U	<180	U	<46.1	U	<151	U	<42.6	U	<63.9	U	<216	U	<46.2	U	<44.7	U	<47.8	U	<43.4	U
Pentachlorophenol	800	6,700		NR		<1680	U	<542	U	<1760	U	<451	U	<1480	U	<417	U	<625	U	<2120	U	<452	U	<438	U	<468	U	<425	U
Phenanthrene	100,000	100,000		NR		<202	U	1710		2300		<54.2	U	<178	U	<50.1	U	<75.1	U	<254	U	<54.3	U	<52.5	U	<56.2	U	99.5	
Phenol	330	100,000		NR		<116	U	<37.3	U	<121	U	<31.1	U	<102	U	<28.7	U	<43.1	U	<146	U	<31.1	U	<30.1	U	<32.3	U	<29.3	U
Pyrene	100,000	100,000		NR		<164	U	117	J	436	J	<44.0	U	<145	U	<40.7	U	<61.1	U	<207	U	<44.2	U	<42.7	U	<45.7	U	94.9	
Pyridine	NC	NC		NR		<255	U	<81.9	U	<267	U	<68.2	U	<224	U	<63.1	U	<94.6	U	<320	U	<68.4	U	<66.2	U	<70.8	U	<64.3	U
Total SVOC TICs	NC	NC	100,000	NR		1,780		101,300		333,430		NR		NR		NR		38,030		NR		NR		30,932		NR		NR	

Notes:
µg/kg - micrograms per kilogram
B - Analyte found in the method blank as well as the sample indicating possible cross contamination;
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for 3+4-methylphenol. The Unrestricted Use SCOs for 3-methylphenol and 4-methylphenol are 330 µg/kg. The Restricted-Residential Use SCOs are 100,000 µg/kg.

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-24B		SB-24C		SB-25A		SB-25B		SB-25C		SB-26C		SB-26D		SB-27C		SB-28B		SB-28C		SB-30B		SB-30C		SB-31B	
Depth				0.5-3		3-7		0-0.5		0.5-3		3-7		3-7		7+		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3	
Lab Sample ID				1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<45.8	U	<51.9	U	<53.8	U	<48.6	U	<51.0	U	<46.5	U	<52.2	U	<187	U	<45.7	U	<50.6	U	<46.3	U	<47.8	U	<45.2	U
1,2-Dichlorobenzene	NC	NC		<34.0	U	<38.5	U	<40.0	U	<36.1	U	<37.9	U	<34.6	U	<38.8	U	<139	U	<34.0	U	<37.6	U	<34.4	U	<35.5	U	<33.6	U
1,2-Diphenylhydrazine	NC	NC		<33.2	U	<37.7	U	<39.1	U	<35.3	U	<37.1	U	<33.8	U	<37.9	U	<136	U	<33.2	U	<36.7	U	<33.6	U	<34.7	U	<32.8	U
1,3-Dichlorobenzene	NC	NC		<37.0	U	<41.9	U	<43.5	U	<39.3	U	<41.2	U	<37.6	U	<42.2	U	<151	U	<36.9	U	<40.9	U	<37.4	U	<38.6	U	<36.5	U
1,4-Dichlorobenzene	NC	NC		<35.9	U	<40.6	U	<42.2	U	<38.1	U	<40.0	U	<36.5	U	<40.9	U	<147	U	<35.8	U	<39.7	U	<36.3	U	<37.4	U	<35.4	U
2,3,4,6-Tetrachlorophenol	NC	NC		<43.6	U	<49.4	U	<51.2	U	<46.3	U	<48.6	U	<44.3	U	<49.7	U	<178	U	<43.5	U	<48.2	U	<44.1	U	<45.5	U	<43.0	U
2,4,5-Trichlorophenol	NC	NC		<23.9	U	<27.1	U	<28.1	U	<25.4	U	<26.6	U	<24.3	U	<27.2	U	<97.5	U	<23.8	U	<26.4	U	<24.2	U	<24.9	U	<23.6	U
2,4,6-Trichlorophenol	NC	NC		<41.4	U	<46.9	U	<48.6	U	<43.9	U	<46.1	U	<42.1	U	<47.2	U	<169	U	<41.3	U	<45.7	U	<41.9	U	<43.2	U	<40.9	U
2,4-Dichlorophenol	NC	NC		<36.1	U	<40.9	U	<42.4	U	<38.3	U	<40.2	U	<36.7	U	<41.2	U	<147	U	<36.0	U	<39.9	U	<36.5	U	<37.7	U	<35.7	U
2,4-Dimethylphenol	NC	NC		<46.0	U	<52.1	U	<54.1	U	<48.8	U	<51.3	U	<46.8	U	<52.4	U	<188	U	<45.9	U	<50.9	U	<46.5	U	<48.0	U	<45.4	U
2,4-Dinitrophenol	NC	NC		<387	U	<439	U	<455	U	<411	U	<432	U	<394	U	<442	U	<1580	U	<387	U	<428	U	<392	U	<404	U	<383	U
2,4-Dinitrotoluene	NC	NC		<66.0	U	<74.8	U	<77.6	U	<70.1	U	<73.6	U	<67.1	U	<75.3	U	<270	U	<65.9	U	<73.0	U	<66.8	U	<68.9	U	<65.2	U
2,6-Dinitrotoluene	NC	NC		<45.3	U	<51.4	U	<53.3	U	<48.1	U	<50.6	U	<46.1	U	<51.7	U	<185	U	<45.3	U	<50.1	U	<45.9	U	<47.3	U	<44.8	U
2-Chloronaphthalene	NC	NC		<53.0	U	<60.1	U	<62.4	U	<56.3	U	<59.1	U	<53.9	U	<60.5	U	<217	U	<53.0	U	<58.6	U	<53.7	U	<55.3	U	<52.4	U
2-Chlorophenol	NC	NC		<53.0	U	<60.1	U	<62.4	U	<56.3	U	<59.1	U	<53.9	U	<60.5	U	<217	U	<53.0	U	<58.6	U	<53.7	U	<55.3	U	<52.4	U
2-Methylnaphthalene	NC	NC		<43.7	U	<49.5	U	<51.4	U	<46.4	U	<48.7	U	634		1200		<178	U	<43.6	U	67.4	J	<44.2	U	68.3	J	<43.2	U
2-Methylphenol	330	100,000		<39.4	U	<44.6	U	<46.3	U	<41.8	U	<43.9	U	<40.0	U	<44.9	U	<161	U	<39.3	U	<43.6	U	<39.9	U	<41.1	U	<38.9	U
2-Nitroaniline	NC	NC		<57.3	U	<65.0	U	<67.4	U	<60.9	U	<63.9	U	<58.3	U	<65.4	U	<234	U	<57.3	U	<63.4	U	<58.0	U	<59.8	U	<56.6	U
2-Nitrophenol	NC	NC		<33.4	U	<37.9	U	<39.3	U	<35.5	U	<37.3	U	<34.0	U	<38.1	U	<137	U	<33.4	U	<37.0	U	<33.9	U	<34.9	U	<33.0	U
3+4-Methylphenol	330**	330**		<34.0	U	<38.5	U	<40.0	U	<36.1	U	<37.9	U	<34.6	U	<38.8	U	<139	U	<34.0	U	<37.6	U	<34.4	U	<35.5	U	<33.6	U
3,3'-Dichlorobenzidine	NC	NC		<53.0	U	<60.1	U	<62.4	U	<56.3	U	<59.1	U	<53.9	U	<60.5	U	<217	U	<53.0	U	<58.6	U	<53.7	U	<55.3	U	<52.4	U
3-Nitroaniline	NC	NC		<18.9	U	<21.4	U	<22.3	U	<20.1	U	<21.1	U	<19.2	U	<21.6	U	<77.3	U	<18.9	U	<20.9	U	<19.2	U	<19.7	U	<18.7	U
4,6-Dinitro-2-methylphenol	NC	NC		<481	U	<545	U	<565	U	<511	U	<536	U	<489	U	<548	U	<1960	U	<480	U	<532	U	<487	U	<502	U	<475	U
4-Bromophenyl phenyl ether	NC	NC		<49.9	U	<56.6	U	<58.7	U	<53.0	U	<55.7	U	<50.8	U	<57.0	U	<204	U	<49.9	U	<55.2	U	<50.6	U	<52.1	U	<49.3	U
4-Chloro-3-methylphenol	NC	NC		<41.0	U	<46.5	U	<48.3	U	<43.6	U	<45.8	U	<41.7	U	<46.8	U	<168	U	<41.0	U	<45.4	U	<41.5	U	<42.8	U	<40.5	U
4-Chloroaniline	NC	NC		<41.9	U	<47.5	U	<49.3	U	<44.5	U	<46.7	U	<42.6	U	<47.8	U	<171	U	<41.9	U	<46.4	U	<42.4	U	<43.7	U	<41.4	U
4-Chlorophenyl phenyl ether	NC	NC		<42.8	U	<48.5	U	<50.3	U	<45.4	U	<47.7	U	<43.5	U	<48.8	U	<175	U	<42.7	U	<47.3	U	<43.3	U	<44.7	U	<42.3	U
4-Nitroaniline	NC	NC		<108	U	<122	U	<127	U	<114	U	<120	U	<109	U	<123	U	<440	U	<107	U	<119	U	<109	U	<112	U	<106	U
4-Nitrophenol	NC	NC		<734	U	<832	U	<863	U	<779	U	<818	U	<746	U	<837	U	<3000	U	<733	U	<811	U	<743	U	<766	U	<725	U
Acenaphthene	20,000	100,000		<46.3	U	<52.5	U	<54.5	U	<49.2	U	<51.7	U	92.3	J	197		<189	U	<46.3	U	<51.2	U	<46.9	U	<48.3	U	<45.8	U
Acenaphthylene	100,000	100,000		<37.8	U	<42.9	U	<44.5	U	<40.2	U	<42.2	U	<38.5	U	<43.2	U	<155	U	<37.8	U	<41.8	U	<38.3	U	<39.5	U	<37.4	U
Aniline	NC	NC		<34.2	U	<38.8	U	<40.2	U	<36.3	U	<38.2	U	<34.8	U	<39.0	U	<140	U	<34.2	U	<37.8	U	<34.6	U	<35.7	U	<33.8	U
Anthracene	100,000	100,000		<49.0	U	<55.5	U	<57.6	U	<52.0	U	<54.6	U	<49.8	U	<55.8	U	<200	U	<48.9	U	<54.1	U	<49.6	U	<51.1	U	104	
Benzidine	NC	NC		<966	U	<1090	U	<1140	U	<1030	U	<1080	U	<982	U	<1100	U	<3950	U	<965	U	<1070	U	<978	U	<1010	U	<954	U
Benzo(a)anthracene	1,000	1,000		<46.5	U	<52.7	U	<54.7	U	<49.4	U	<51.9	U	67	J	<53.1	U	<190	U	<46.5	U	<51.5	U	<47.1	U	<48.6	U	424	
Benzo(a)pyrene	1,000	1,000		<57.3	U	<65.0	U	<67.4	U	<60.9	U	<63.9	U	59.8	J	<65.4	U	<234	U	<57.3	U	<63.4	U	<58.0	U	<59.8	U	427	
Benzo(b)fluoranthene	1,000	1,000		<45.7	U	<51.7	U	<53.7	U	<48.5	U	<50.9	U	51	J	<52.1	U	<187	U	<45.6	U	<50.5	U	<46.2	U	<47.6	U	391	
Benzo(g,h,i)perylene	100,000	100,000		<84.0	U	<95.3	U	<98.8	U	<89.3	U	<93.7	U	<85.5	U	<95.9	U	<343	U	<84.0	U	<92.9	U	<85.1	U	<87.7	U	237	
Benzo(k)fluoranthene	800	3,900		<83.7	U	<94.9	U	<98.4	U	<88.9	U	<93.4	U	<85.1	U	<95.5	U	<342	U	<83.6	U	<92.6	U	<84.7	U	<87.4	U	376	
Benzoic acid	NC	NC		<6450	U	<7310	U	<7580	U	<6850	U	<7190	U	<6550	U	<7350	U	<26300	U	<6440	U	<7130	U	<6530	U	<6730	U	<6370	U
Benzyl alcohol	NC	NC		<64.9	U	<73.6	U	<76.3	U	<68.9	U	<72.4	U	<66.0	U	<74.0	U	<265	U	<64.8	U	<71.8	U	<65.7	U	<67.7	U	<64.1	U
bis(2-Chloroethoxy)methane	NC	NC		<45.5	U	<51.6	U	<53.6	U	<48.4	U	<50.8	U	<46.3	U	<51.9	U	<186	U	<45.5	U	<50.4	U	<46.1	U	<47.5	U	<45.0	U
bis(2-Chloroethyl)ether	NC	NC		<52.0	U	<59.0	U	<61.2	U	<55.3	U	<58.0	U	<52.9	U	<59.3	U	<213	U	<52.0	U	<57.5	U	<52.7	U	<54.3	U	<51.4	U
bis(2-Chloroisopropyl)ether	NC	NC		<40.4	U	<45.8	U	<47.5	U	<42.9	U	<45.0	U	<41.1	U	<46.0	U	<165	U	<40.3	U	<44.6	U	<40.9	U	<42.1	U	<39.9	U
bis(2-Ethylhexyl)phthalate	NC	NC		<72.1	U	<81.7	U	<84.7	U	<76.5	U	<80.4	U	<73.3	U	293		<294	U	<72.0	U	<79.7	U	<72.9	U	<75.2	U	<71.2	U
Butyl benzyl phthalate	NC	NC		<58.1	U	<65.8	U	<68.3	U	<61.7	U	<64.8	U	<59.1	U	<66.2	U	<237	U	<58.0	U	<64.2	U	<58.8	U	<60.6	U	<57.4	U
Carbazole	NC	NC		<63.4	U	<71.8	U	<74.5	U	<67.3	U	<70.7	U	<64.4	U	<72.3	U	<259	U	<63.3	U	<70.1	U	<64.1	U	<66.1	U	<62.6	U
Chrysene	1,000	3,900		<58.2	U	<66.0	U	<68.4	U	<61.8	U	<64.9	U	76.5	J	<66.4	U	<238	U	<58.1	U	<64.4	U	<58.9	U	<60.7	U	422	
Cresols	NC	NC		<73.4	U	<83.1	U	<86.3	U	<77.9	U	<81.8	U	<74.6	U	<83.7	U	<300	U	<73.3	U	<81.2	U	<74.3	U	<76.6	U	<72.5	U
Di-n-butyl phthalate	NC	NC		<61.9	U	<70.2	U	<72.8	U	<65.8	U	<69.1	U	<63.0	U	<70.6	U	<253	U	<61.9	U	<68.5	U	<62.7	U	<64.6	U	<61.2	U
Di-n-octyl phthalate	NC	NC		<54.1	U	<61.3	U	<63.6	U	<57.5	U	<60.4	U	<55.0	U	<61.7	U	<221	U	<54.1	U	<59.9	U	<54.8	U	<56.5	U	<53.5	U
Dibenz(a,h)anthracene	330	330		<61.4	U	<69.6	U	<72.2	U	<65.2	U	<68.5	U	<62.4	U	<70.0	U	<251	U	<61.3	U	<67.9	U	<62.1	U	<64.1	U	<60.7	U
Dibenzofuran	7,000	59,000		<36.7	U	<41.6	U	<43.2	U	<39.0	U	<41.0	U	<37.4	U	<41.9	U	<150	U	<36.7	U	<40.6	U	<37.2	U	<38.3	U	<36.3	U
Diethyl phthalate	NC	NC		<71.9	U	<81.5	U	<84.6	U	<76.4	U	<80.2	U	<73.2	U	<82.1	U	<294	U	<71.9	U	<79.6	U	<72.8	U	<75.1	U	<71.1	U
Dimethyl phthalate	NC	NC		<53.1	U	<60.2	U	<62.5	U	<56.4	U	<59.3	U	<54.0	U	<60.6	U	<217	U	<53.1	U	<58.8	U	<53.8	U	<55.5	U	<52.5	U
Fluoranthene	100,000	100,000		<60.6	U	<68.7	U	<71.3	U	<64.4	U	<67.6	U	121	J	<69.1	U	<248	U	<60.5	U	<67.0	U	62.2	J	<63.3	U	715	
Fluorene	30,000	100,000		<44.2	U	<50.1	U	<52.0	U	<47.0	U	<49.3	U	189	J	<50.4	U	<181	U	<44.2	U	<48.9	U	<44.8	U	<46.2	U	48	
Hexachlorobenzene	330	1,200		<47.1	U	<53.4	U	<55.4	U	<50.0	U	<52.5	U	<47.9	U	<53.7	U	<192	U	<47.0	U	<52.1	U	<47.7	U	<49.1	U	<46.5	U
Hexachlorobutadiene	NC	NC		<44.0	U	<49.9	U	<51.7	U	<46.7	U	<49.1	U	<44.7	U	<50.2	U	<180	U	<44.0	U	<48.7	U	<44.5	U	<45.9	U	<43.5	U
Hexachlorocyclopentadiene	NC	NC		<340	U	<385	U	<400	U	<361	U	<379	U	<346	U	<388	U	<1390	U	<340	U	<376	U	<344	U	<355	U	<336	U
Hexachloroethane	NC	NC		<49.0	U	<55.5	U	<57.6	U	<52.0	U	<54.6	U	<49.8	U	<55.8	U	<200	U	<48.9	U	<54.1	U	<49.6	U	<51.1	U	<48.4	U
Indeno(1,2,3-cd)pyrene	500	500		<50.8	U	<57.6	U	<59.8	U	<54.0	U	<56.7	U	<51.7	U	<58.0	U	<208	U	<50.8	U	<56.2	U	<51.4	U	<53.0	U	202	

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-24B		SB-24C		SB-25A		SB-25B		SB-25C		SB-26C		SB-26D		SB-27C		SB-28B		SB-28C		SB-30B		SB-30C		SB-31B	
Depth				0.5-3		3-7		0-0.5		0.5-3		3-7		3-7		7+		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3	
Lab Sample ID				1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Isophorone	NC	NC		<50.3	U	<57.0	U	<59.1	U	<53.4	U	<56.1	U	<51.1	U	<57.3	U	<205	U	<50.2	U	<55.6	U	<50.9	U	<52.5	U	<49.7	U
N-Nitrosodi-n-propylamine	NC	NC		<33.2	U	<37.7	U	<39.1	U	<35.3	U	<37.1	U	<33.8	U	<37.9	U	<136	U	<33.2	U	<36.7	U	<33.6	U	<34.7	U	<32.8	U
N-Nitrosodimethylamine	NC	NC		<69.9	U	<79.2	U	<82.1	U	<74.2	U	<77.9	U	<71.0	U	<79.7	U	<285	U	<69.8	U	<77.3	U	<70.7	U	<72.9	U	<69.0	U
N-Nitrosodiphenylamine	NC	NC		<60.0	U	<68.0	U	<70.5	U	<63.7	U	<66.9	U	<61.0	U	<68.4	U	<245	U	<59.9	U	<66.3	U	<60.7	U	<62.6	U	<59.2	U
Naphthalene	12,000	100,000		<44.2	U	<50.1	U	<52.0	U	<47.0	U	<49.3	U	<45.0	U	<50.4	U	<181	U	<44.2	U	<48.9	U	<44.8	U	<46.2	U	<43.7	U
Nitrobenzene	NC	NC		<42.6	U	<48.3	U	<50.1	U	<45.2	U	<47.5	U	<43.3	U	<48.6	U	<174	U	<42.5	U	<47.1	U	<43.1	U	<44.4	U	<42.1	U
Pentachlorophenol	800	6,700		<417	U	<473	U	<490	U	<443	U	<465	U	<424	U	<476	U	<1700	U	<416	U	<461	U	<422	U	<435	U	<412	U
Phenanthrene	100,000	100,000		<50.1	U	<56.7	U	<58.9	U	<53.2	U	<55.8	U	370		658		<204	U	<50.0	U	<55.4	U	<50.7	U	<52.2	U	260	
Phenol	330	100,000		<28.7	U	<32.5	U	<33.8	U	<30.5	U	<32.0	U	<29.2	U	<32.7	U	<117	U	<28.7	U	<31.8	U	<29.1	U	<30.0	U	<28.4	U
Pyrene	100,000	100,000		<40.7	U	<46.1	U	69.9		<43.2	U	<45.4	U	142	J	79.0		<166	U	56.8		59.5	J	103	J	<42.5	U	989	
Pyridine	NC	NC		<63.0	U	<71.4	U	<74.1	U	<66.9	U	<70.3	U	<64.1	U	<71.9	U	<258	U	<63.0	U	<69.7	U	<63.8	U	<65.8	U	<62.3	U
Total SVOC TICs	NC	NC	100,000	18,267		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	

Notes:
µg/kg - micrograms per kilogram
B - Analyte found in the method blank as well as the sample indicating possible cross contamination;
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for 3+4-methylphenol. The Unrestricted Use SCOs for 3-methylphenol and 4-methylphenol are 330 µg/kg. The Restricted-Residential Use SCOs are 100,000 µg/kg.

Sample ID				SB-31C		SB-32B		SB-32C		SB-32A		SB-32B		SB-33B		SB-33C		SB-34A		SB-35A		SB-35B		SB-35C		SB-36B	
Depth				3-7		0.5-3		3-7		0-0.5		0.5-3		0.5-3		3-7		0-0.5		0-0.5		0.5-3		3-7		0.5-3	
Lab Sample ID				1107318		1107318		1107318		1107319		1107319		1107319		1107319		1107319		1107319		1107319		1107319		1107319	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Soil		Solid		Solid		Solid		Solid		Solid		Soil		Soil		Solid		Solid		Soil		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<47.9	U	<47.0	U	<48.8	U	NR		<47.6	U	<47.6	U	<48.3	U	NR		NR		<47.1	U	<47.1	U	<48.0	U
1,2-Dichlorobenzene	NC	NC		<35.6	U	<34.9	U	<36.2	U	NR		<35.4	U	<35.4	U	<35.9	U	NR		NR		<35.0	U	<35.0	U	<35.6	U
1,2-Diphenylhydrazine	NC	NC		<34.8	U	<34.1	U	<35.4	U	NR		<34.6	U	<34.6	U	<35.1	U	NR		NR		<34.2	U	<34.2	U	<34.8	U
1,3-Dichlorobenzene	NC	NC		<38.7	U	<38.0	U	<39.4	U	NR		<38.4	U	<38.4	U	<39.0	U	NR		NR		<38.1	U	<38.1	U	<38.8	U
1,4-Dichlorobenzene	NC	NC		<37.5	U	<36.8	U	<38.2	U	NR		<37.3	U	<37.3	U	<37.9	U	NR		NR		<36.9	U	<36.9	U	<37.6	U
2,3,4,6-Tetrachlorophenol	NC	NC		<45.6	U	<44.7	U	<46.4	U	NR		<45.3	U	<45.3	U	<46.0	U	NR		NR		<44.8	U	<44.8	U	<45.7	U
2,4,5-Trichlorophenol	NC	NC		<25.0	U	<24.5	U	<25.4	U	NR		<24.8	U	<24.8	U	<25.2	U	NR		NR		<24.6	U	<24.6	U	<25.0	U
2,4,6-Trichlorophenol	NC	NC		<43.3	U	<42.5	U	<44.1	U	NR		<43.0	U	<43.0	U	<43.7	U	NR		NR		<42.6	U	<42.6	U	<43.4	U
2,4-Dichlorophenol	NC	NC		<37.7	U	<37.1	U	<38.5	U	NR		<37.5	U	<37.5	U	<38.1	U	NR		NR		<37.1	U	<37.1	U	<37.8	U
2,4-Dimethylphenol	NC	NC		<48.1	U	<47.2	U	<49.0	U	NR		<47.8	U	<47.8	U	<48.5	U	NR		NR		<47.3	U	<47.3	U	<48.2	U
2,4-Dinitrophenol	NC	NC		<405	U	<398	U	<413	U	NR		<403	U	<403	U	<409	U	NR		NR		<399	U	<399	U	<406	U
2,4-Dinitrotoluene	NC	NC		<69.0	U	<67.8	U	<70.3	U	NR		<68.6	U	<68.6	U	<69.7	U	NR		NR		<68.0	U	<68.0	U	<69.2	U
2,6-Dinitrotoluene	NC	NC		<47.4	U	<46.6	U	<48.3	U	NR		<47.1	U	<47.1	U	<47.9	U	NR		NR		<46.7	U	<46.7	U	<47.5	U
2-Chloronaphthalene	NC	NC		<55.5	U	<54.5	U	<56.5	U	NR		<55.1	U	<55.1	U	<56.0	U	NR		NR		<54.6	U	<54.6	U	<55.6	U
2-Chlorophenol	NC	NC		<55.5	U	<54.5	U	<56.5	U	NR		<55.1	U	<55.1	U	<56.0	U	NR		NR		<54.6	U	<54.6	U	<55.6	U
2-Methylnaphthalene	NC	NC		<45.7	U	<44.9	U	<46.5	U	NR		<45.4	U	<45.4	U	<46.1	U	NR		NR		<45.0	U	<45.0	U	<45.8	U
2-Methylphenol	330	100,000		<41.2	U	<40.5	U	<42.0	U	NR		<41.0	U	<41.0	U	<41.6	U	NR		NR		<40.5	U	<40.5	U	<41.3	U
2-Nitroaniline	NC	NC		<60.0	U	<58.9	U	<61.1	U	NR		<59.6	U	<59.6	U	<60.5	U	NR		NR		<59.0	U	<59.0	U	<60.1	U
2-Nitrophenol	NC	NC		<35.0	U	<34.4	U	<35.6	U	NR		<34.8	U	<34.8	U	<35.3	U	NR		NR		<34.4	U	<34.4	U	<35.1	U
3+4-Methylphenol	330**	330**		<35.6	U	<34.9	U	<36.2	U	NR		<35.4	U	<35.4	U	<35.9	U	NR		NR		<35.0	U	<35.0	U	<35.6	U
3,3'-Dichlorobenzidine	NC	NC		<55.5	U	<54.5	U	<56.5	U	NR		<55.1	U	<55.1	U	<56.0	U	NR		NR		<54.6	U	<54.6	U	<55.6	U
3-Nitroaniline	NC	NC		<19.8	U	<19.4	U	<20.2	U	NR		<19.7	U	<19.7	U	<20.0	U	NR		NR		<19.5	U	<19.5	U	<19.8	U
4,6-Dinitro-2-methylphenol	NC	NC		<503	U	<494	U	<512	U	NR		<500	U	<500	U	<508	U	NR		NR		<495	U	<495	U	<504	U
4-Bromophenyl phenyl ether	NC	NC		<52.2	U	<51.3	U	<53.2	U	NR		<51.9	U	<51.9	U	<52.7	U	NR		NR		<51.4	U	<51.4	U	<52.4	U
4-Chloro-3-methylphenol	NC	NC		<42.9	U	<42.1	U	<43.7	U	NR		<42.7	U	<42.7	U	<43.3	U	NR		NR		<42.2	U	<42.2	U	<43.0	U
4-Chloroaniline	NC	NC		<43.8	U	<43.1	U	<44.7	U	NR		<43.6	U	<43.6	U	<44.3	U	NR		NR		<43.1	U	<43.1	U	<43.9	U
4-Chlorophenyl phenyl ether	NC	NC		<44.8	U	<44.0	U	<45.6	U	NR		<44.5	U	<44.5	U	<45.2	U	NR		NR		<44.1	U	<44.1	U	<44.9	U
4-Nitroaniline	NC	NC		<113	U	<111	U	<115	U	NR		<112	U	<112	U	<114	U	NR		NR		<111	U	<111	U	<113	U
4-Nitrophenol	NC	NC		<768	U	<754	U	<782	U	NR		<763	U	<763	U	<775	U	NR		NR		<755	U	<755	U	<769	U
Acenaphthene	20,000	100,000		<48.4	U	<47.6	U	<49.4	U	NR		<48.2	U	<48.2	U	<48.9	U	NR		NR		<47.7	U	<47.7	U	<48.6	U
Acenaphthylene	100,000	100,000		<39.6	U	<38.9	U	<40.3	U	NR		<39.4	U	<39.4	U	<40.0	U	NR		NR		<39.0	U	<39.0	U	<39.7	U
Aniline	NC	NC		<35.8	U	<35.1	U	<36.5	U	NR		<35.6	U	<35.6	U	<36.1	U	NR		NR		<35.2	U	<35.2	U	<35.9	U
Anthracene	100,000	100,000		97.6	J	<50.3	U	<52.2	U	NR		<50.9	U	<50.9	U	<51.7	U	NR		NR		<50.4	U	<50.4	U	<51.3	U
Benzidine	NC	NC		<1010	U	<992	U	<1030	U	NR		<1000	U	<1000	U	<1020	U	NR		NR		<994	U	<994	U	<1010	U
Benzo(a)anthracene	1,000	1,000		452	J	<47.8	U	<49.6	U	NR		<48.4	U	<48.4	U	<49.1	U	NR		NR		<47.9	U	<47.9	U	<48.8	U
Benzo(a)pyrene	1,000	1,000		478	J	<58.9	U	<61.1	U	NR		<59.6	U	<59.6	U	<60.5	U	NR		NR		<59.0	U	<59.0	U	<60.1	U
Benzo(b)fluoranthene	1,000	1,000		434	J	<46.9	U	<48.7	U	NR		<47.5	U	<47.5	U	<48.2	U	NR		NR		<47.0	U	<47.0	U	<47.9	U
Benzo(g,h,i)perylene	100,000	100,000		191	J	<86.3	U	<89.6	U	NR		<87.4	U	<87.4	U	<88.7	U	NR		NR		<86.5	U	<86.5	U	<88.1	U
Benzo(k)fluoranthene	800	3,900		436	J	<86.0	U	<89.2	U	NR		<87.1	U	<87.1	U	<88.4	U	NR		NR		<86.2	U	<86.2	U	<87.8	U
Benzoic acid	NC	NC		<6740	U	<6620	U	<6870	U	NR		<6700	U	<6700	U	<6810	U	NR		NR		<6640	U	<6640	U	<6760	U
Benzyl alcohol	NC	NC		<67.9	U	<66.7	U	<69.2	U	NR		<67.5	U	<67.5	U	<68.5	U	NR		NR		<66.8	U	<66.8	U	<68.1	U
bis(2-Chloroethoxy)methane	NC	NC		<47.6	U	<46.8	U	<48.5	U	NR		<47.4	U	<47.4	U	<48.1	U	NR		NR		<46.9	U	<46.9	U	<47.8	U
bis(2-Chloroethyl)ether	NC	NC		<54.4	U	<53.4	U	<55.5	U	NR		<54.1	U	<54.1	U	<54.9	U	NR		NR		<53.6	U	<53.6	U	<54.6	U
bis(2-Chloroisopropyl)ether	NC	NC		<42.2	U	<41.5	U	<43.0	U	NR		<42.0	U	<42.0	U	<42.6	U	NR		NR		<41.6	U	<41.6	U	<42.3	U
bis(2-Ethylhexyl)phthalate	NC	NC		<75.4	U	<74.0	U	<76.8	U	NR		<74.9	U	<74.9	U	<76.1	U	NR		NR		<74.2	U	<74.2	U	<75.5	U
Butyl benzyl phthalate	NC	NC		<60.8	U	<59.7	U	<61.9	U	NR		<60.4	U	<60.4	U	<61.3	U	NR		NR		<59.8	U	<59.8	U	<60.9	U
Carbazole	NC	NC		<66.3	U	<65.1	U	<67.5	U	NR		<65.9	U	<65.9	U	<66.9	U	NR		NR		<65.2	U	<65.2	U	<66.4	U
Chrysene	1,000	3,900		462	J	<59.8	U	<62.0	U	NR		<60.5	U	<60.5	U	<61.4	U	NR		NR		<59.9	U	<59.9	U	<61.0	U
Cresols	NC	NC		<76.8	U	<75.4	U	<78.2	U	NR		<76.4	U	<76.4	U	<77.5	U	NR		NR		<75.5	U	<75.5	U	<76.9	U
Di-n-butyl phthalate	NC	NC		<64.8	U	<63.6	U	<66.0	U	NR		<64.4	U	<64.4	U	<65.4	U	NR		NR		<63.8	U	<63.8	U	<64.9	U
Di-n-octyl phthalate	NC	NC		<56.6	U	<55.6	U	<57.7	U	NR		<56.3	U	<56.3	U	<57.1	U	NR		NR		<55.7	U	<55.7	U	<56.7	U
Dibenz(a,h)anthracene	330	330		<64.2	U	<63.1	U	<65.4	U	NR		<63.8	U	<63.8	U	<64.8	U	NR		NR		<63.2	U	<63.2	U	<64.4	U
Dibenzofuran	7,000	59,000		<38.4	U	<37.7	U	<39.2	U	NR		<38.2	U	<38.2	U	<38.8	U	NR		NR		<37.8	U	<37.8	U	<38.5	U
Diethyl phthalate	NC	NC		<75.3	U	<73.9	U	<76.7	U	NR		<74.8	U	<74.8	U	<76.0	U	NR		NR		<74.1	U	<74.1	U	<75.4	U
Dimethyl phthalate	NC	NC		<55.6	U	<54.6	U	<56.6	U	NR		<55.3	U	<55.3	U	<56.1	U	NR		NR		<54.7	U	<54.7	U	<55.7	U
Fluoranthene	100,000	100,000		685	J	<62.3	U	<64.6	U	NR		<63.0	U	<63.0	U	<64.0	U	NR		NR		<62.4	U	<62.4	U	<63.6	U
Fluorene	30,000	100,000		47.5	J	<45.4	U	<47.1	U	NR		<46.0	U	<46.0	U	<46.7	U	NR		NR		<45.5	U	<45.5	U	<46.4	U
Hexachlorobenzene	330	1,200		<49.3	U	<48.4	U	<50.2	U	NR		<49.0	U	<49.0	U	<49.7	U	NR		NR		<48.5	U	<48.5	U	<49.4	U
Hexachlorobutadiene	NC	NC		<46.0	U	<45.2	U	<46.9	U	NR		<45.8	U	<45.8	U	<46.5	U	NR		NR		<45.3	U	<45.3	U	<46.1	U
Hexachlorocyclopentadiene	NC	NC		<356	U	<349	U	<362	U	NR		<354	U	<354	U	<359	U	NR		NR		<350	U	<350	U	<356	U
Hexachloroethane	NC	NC		<51.2	U	<50.3	U	<52.2	U	NR		<50.9	U	<50.9	U	<51.7	U	NR		NR		<50.4	U	<50.4	U	<51.3	U
Indeno(1,2,3-cd)pyrene	500	500		180		<52.2	U	<54.2	U	NR		<52.9	U	<52.9	U	<53.7	U	NR		NR		<52.3	U	<52.3	U	<53.3	U

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-31C		SB-32B		SB-32C		SB-32A		SB-32B		SB-33B		SB-33C		SB-34A		SB-35A		SB-35B		SB-35C		SB-36B	
Depth				3-7		0.5-3		3-7		0-0.5		0.5-3		0.5-3		3-7		0-0.5		0-0.5		0.5-3		3-7		0.5-3	
Lab Sample ID				1107318		1107318		1107318		1107319		1107319		1107319		1107319		1107319		1107319		1107319		1107319		1107319	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Soil		Solid		Solid		Solid		Solid		Solid		Soil		Soil		Solid		Solid		Soil		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Isophorone	NC	NC		<52.6	U	<51.6	U	<53.6	U	NR		<52.3	U	<52.3	U	<53.1	U	NR		NR		<51.8	U	<51.8	U	<52.7	U
N-Nitrosodi-n-propylamine	NC	NC		<34.8	U	<34.1	U	<35.4	U	NR		<34.6	U	<34.6	U	<35.1	U	NR		NR		<34.2	U	<34.2	U	<34.8	U
N-Nitrosodimethylamine	NC	NC		<73.1	U	<71.8	U	<74.4	U	NR		<72.7	U	<72.7	U	<73.8	U	NR		NR		<71.9	U	<71.9	U	<73.2	U
N-Nitrosodiphenylamine	NC	NC		<62.7	U	<61.6	U	<63.9	U	NR		<62.4	U	<62.4	U	<63.3	U	NR		NR		<61.7	U	<61.7	U	<62.9	U
Naphthalene	12,000	100,000		<46.3	U	<45.4	U	<47.1	U	NR		<46.0	U	<46.0	U	<46.7	U	NR		NR		<45.5	U	<45.5	U	<46.4	U
Nitrobenzene	NC	NC		<44.5	U	<43.7	U	<45.4	U	NR		<44.3	U	<44.3	U	<44.9	U	NR		NR		<43.8	U	<43.8	U	<44.6	U
Pentachlorophenol	800	6,700		<436	U	<428	U	<444	U	NR		<434	U	<434	U	<440	U	NR		NR		<429	U	<429	U	<437	U
Phenanthrene	100,000	100,000		261		<51.4	U	<53.3	U	NR		<52.1	U	<52.1	U	<52.8	U	NR		NR		<51.5	U	<51.5	U	<52.5	U
Phenol	330	100,000		<30.0	U	<29.5	U	<30.6	U	NR		<29.9	U	<29.9	U	<30.3	U	NR		NR		<29.6	U	<29.6	U	<30.1	U
Pyrene	100,000	100,000		1470		<41.8	U	<43.4	U	NR		<42.3	U	<42.3	U	<43.0	U	NR		NR		172	J	172		47	J
Pyridine	NC	NC		<65.9	U	<64.7	U	<67.2	U	NR		<65.6	U	<65.6	U	<66.6	U	NR		NR		<64.9	U	<64.9	U	<66.1	U
Total SVOC TICs	NC	NC	100,000	NR		NR		NR		NR		0				0		NR		NR		NR		NR		NR	

Notes:
µg/kg - micrograms per kilogram
B - Analyte found in the method blank as well as the sample indicating possible cross contamination;
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for 3+4-methylphenol. The Unrestricted Use SCOs for 3-methylphenol and 4-methylphenol are 330 µg/kg. The Restricted-Residential Use SCOs are 100,000 µg/kg.

Sample ID				SB-36C		SB-36D		SB-37B		SB-37C		SB-38B		SB-38C		SB-39A		SB-39B		SB-39C		SB-39E		SB-40B		SB-40C	
Depth				3-7		7+		0.5-3		3-7		0.5-3		3-7		0-0.5		0.5-3		3-7		7+		0.5-3		3-7	
Lab Sample ID				1107319		1107319		1107319		1107319		118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Soil		Soil		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<49.8	U	<51.0	U	<232	U	<188	U	<94.9	U	<50.1	U	NR		<46.0	U	<48.7	U	<52.5	U	<183	U	<223	U
1,2-Dichlorobenzene	NC	NC		<37.0	U	<37.9	U	<172	U	<140	U	<70.5	U	<37.2	U	NR		<34.2	U	<36.2	U	<39.0	U	<136	U	<166	U
1,2-Diphenylhydrazine	NC	NC		<36.1	U	<37.1	U	<168	U	<137	U	<68.9	U	<36.4	U	NR		<33.4	U	<35.4	U	<38.1	U	<133	U	<162	U
1,3-Dichlorobenzene	NC	NC		<40.2	U	<41.2	U	<187	U	<152	U	<76.6	U	<40.5	U	NR		<37.2	U	<39.3	U	<42.4	U	<148	U	<180	U
1,4-Dichlorobenzene	NC	NC		<39.0	U	<40.0	U	<182	U	<148	U	<74.3	U	<39.3	U	NR		<36.1	U	<38.2	U	<41.1	U	<144	U	<175	U
2,3,4,6-Tetrachlorophenol	NC	NC		<47.4	U	<48.6	U	<221	U	<179	U	<90.3	U	<47.7	U	NR		<43.8	U	<46.4	U	<49.9	U	<175	U	<213	U
2,4,5-Trichlorophenol	NC	NC		<26.0	U	<26.6	U	<121	U	<98.3	U	<49.5	U	<26.1	U	NR		<24.0	U	<25.4	U	<27.4	U	<95.7	U	<117	U
2,4,6-Trichlorophenol	NC	NC		<45.0	U	<46.1	U	<210	U	<170	U	<85.7	U	<45.3	U	NR		<41.6	U	<44.0	U	<47.4	U	<166	U	<202	U
2,4-Dichlorophenol	NC	NC		<39.2	U	<40.2	U	<183	U	<149	U	<74.8	U	<39.5	U	NR		<36.3	U	<38.4	U	<41.4	U	<145	U	<176	U
2,4-Dimethylphenol	NC	NC		<50.0	U	<51.3	U	<233	U	<189	U	<95.3	U	<50.4	U	NR		<46.2	U	<48.9	U	<52.7	U	<184	U	<224	U
2,4-Dinitrophenol	NC	NC		<421	U	<432	U	<1960	U	<1590	U	<803	U	<424	U	NR		<389	U	<412	U	<444	U	<1550	U	<1890	U
2,4-Dinitrotoluene	NC	NC		<71.8	U	<73.6	U	<334	U	<272	U	<137	U	<72.3	U	NR		<66.4	U	<70.3	U	<75.7	U	<265	U	<322	U
2,6-Dinitrotoluene	NC	NC		<49.3	U	<50.6	U	<230	U	<187	U	<94.0	U	<49.6	U	NR		<45.6	U	<48.2	U	<52.0	U	<182	U	<221	U
2-Chloronaphthalene	NC	NC		<57.7	U	<59.1	U	<269	U	<218	U	<110	U	<58.1	U	NR		<53.3	U	<56.4	U	<60.8	U	<213	U	<259	U
2-Chlorophenol	NC	NC		<57.7	U	<59.1	U	<269	U	<218	U	<110	U	<58.1	U	NR		<53.3	U	<56.4	U	<60.8	U	<213	U	<259	U
2-Methylnaphthalene	NC	NC		<47.5	U	<48.7	U	<221	U	4450		<90.5	U	1500		NR		27300		64300		<50.1	U	628	J	8780	
2-Methylphenol	330	100,000		<42.8	U	<43.9	U	<200	U	<162	U	<81.6	U	<43.1	U	NR		<39.6	U	<41.9	U	<45.1	U	<158	U	<192	U
2-Nitroaniline	NC	NC		<62.3	U	<63.9	U	<290	U	<236	U	<119	U	<62.8	U	NR		<57.6	U	<61.0	U	<65.7	U	<230	U	<280	U
2-Nitrophenol	NC	NC		<36.4	U	<37.3	U	<169	U	<138	U	<69.3	U	<36.6	U	NR		<33.6	U	<35.6	U	<38.3	U	<134	U	<163	U
3+4-Methylphenol	330**	330**		<37.0	U	<37.9	U	<172	U	<140	U	<70.5	U	<37.2	U	NR		<34.2	U	<36.2	U	<39.0	U	<136	U	<166	U
3,3'-Dichlorobenzidine	NC	NC		<57.7	U	<59.1	U	<269	U	<218	U	<110	U	<58.1	U	NR		<53.3	U	<56.4	U	<60.8	U	<213	U	<259	U
3-Nitroaniline	NC	NC		<20.6	U	<21.1	U	<95.9	U	<77.9	U	<39.2	U	<20.7	U	NR		<19.0	U	<20.1	U	<21.7	U	<75.9	U	<92.3	U
4,6-Dinitro-2-methylphenol	NC	NC		<523	U	<536	U	<2440	U	<1980	U	<997	U	<527	U	NR		<483	U	<512	U	<551	U	<1930	U	<2350	U
4-Bromophenyl phenyl ether	NC	NC		<54.3	U	<55.7	U	<253	U	<206	U	<104	U	<54.7	U	NR		<50.2	U	<53.2	U	<57.3	U	<200	U	<244	U
4-Chloro-3-methylphenol	NC	NC		<44.6	U	<45.8	U	<208	U	<169	U	<85.1	U	<44.9	U	NR		<41.3	U	<43.7	U	<47.0	U	<164	U	<200	U
4-Chloroaniline	NC	NC		<45.6	U	<46.7	U	<212	U	<173	U	<86.9	U	<45.9	U	NR		<42.1	U	<44.6	U	<48.0	U	<168	U	<205	U
4-Chlorophenyl phenyl ether	NC	NC		<46.5	U	<47.7	U	<217	U	<176	U	<88.7	U	<46.9	U	NR		<43.0	U	<45.6	U	<49.1	U	<172	U	<209	U
4-Nitroaniline	NC	NC		<117	U	<120	U	<545	U	<443	U	<223	U	<118	U	NR		<108	U	<115	U	<123	U	<431	U	<525	U
4-Nitrophenol	NC	NC		<798	U	<818	U	<3720	U	<3020	U	<1520	U	<804	U	NR		<738	U	<781	U	<841	U	<2940	U	<3580	U
Acenaphthene	20,000	100,000		<50.4	U	<51.7	U	<235	U	417	J	<96.0	U	1070		NR		2320		<49.3	U	<53.1	U	831	J	<226	U
Acenaphthylene	100,000	100,000		<41.1	U	<42.2	U	<192	U	<156	U	<78.4	U	<41.4	U	NR		<38.1	U	<40.3	U	<43.4	U	<152	U	<185	U
Aniline	NC	NC		<37.2	U	<38.2	U	<173	U	<141	U	<70.9	U	<37.5	U	NR		<34.4	U	<36.4	U	<39.2	U	<137	U	<167	U
Anthracene	100,000	100,000		<53.2	U	<54.6	U	<248	U	<202	U	<101	U	<53.6	U	NR		<49.2	U	<52.1	U	<56.1	U	<196	U	<239	U
Benzidine	NC	NC		<1050	U	<1080	U	<4890	U	<3980	U	<2000	U	<1060	U	NR		<971	U	<1030	U	<1110	U	<3870	U	<4710	U
Benzo(a)anthracene	1,000	1,000		<50.6	U	<51.9	U	<236	U	<192	U	<96.5	U	<51.0	U	NR		<46.8	U	<49.5	U	<53.3	U	383		<227	U
Benzo(a)pyrene	1,000	1,000		<62.3	U	<63.9	U	<290	U	<236	U	<119	U	<62.8	U	NR		<57.6	U	<61.0	U	<65.7	U	508		<280	U
Benzo(b)fluoranthene	1,000	1,000		<49.6	U	<50.9	U	<231	U	<188	U	<94.6	U	<50.0	U	NR		<45.9	U	<48.6	U	<52.3	U	463		<223	U
Benzo(g,h,i)perylene	100,000	100,000		<91.4	U	<93.7	U	<426	U	<346	U	<174	U	<92.0	U	NR		<84.5	U	<89.5	U	<96.3	U	<337	U	<410	U
Benzo(k)fluoranthene	800	3,900		<91.0	U	<93.4	U	<424	U	<345	U	<174	U	<91.7	U	NR		<84.2	U	<89.1	U	<96.0	U	486		<409	U
Benzoic acid	NC	NC		<7010	U	<7190	U	<32700	U	<26500	U	<13400	U	<7060	U	NR		<6480	U	<6860	U	<7390	U	<25800	U	<31500	U
Benzyl alcohol	NC	NC		<70.6	U	<72.4	U	<329	U	<267	U	<135	U	<71.1	U	NR		<65.3	U	<69.1	U	<74.4	U	<260	U	<317	U
bis(2-Chloroethoxy)methane	NC	NC		<49.5	U	<50.8	U	<231	U	<188	U	<94.4	U	<49.9	U	NR		<45.8	U	<48.5	U	<52.2	U	<183	U	<222	U
bis(2-Chloroethyl)ether	NC	NC		<56.6	U	<58.0	U	<264	U	<214	U	<108	U	<57.0	U	NR		<52.3	U	<55.4	U	<59.6	U	<209	U	<254	U
bis(2-Chloroisopropyl)ether	NC	NC		<43.9	U	<45.0	U	<205	U	<166	U	<83.7	U	<44.2	U	NR		<40.6	U	<43.0	U	<46.3	U	<162	U	<197	U
bis(2-Ethylhexyl)phthalate	NC	NC		<78.3	U	<80.4	U	<365	U	<297	U	<149	U	<78.9	U	NR		2730		<76.7	U	<82.6	U	1,540	J	<352	U
Butyl benzyl phthalate	NC	NC		<63.2	U	<64.8	U	<294	U	<239	U	<120	U	<63.6	U	NR		<58.4	U	<61.8	U	<66.6	U	<233	U	<283	U
Carbazole	NC	NC		<68.9	U	<70.7	U	<321	U	<261	U	<131	U	<69.4	U	NR		<63.7	U	<67.4	U	<72.6	U	<254	U	<309	U
Chrysene	1,000	3,900		<63.3	U	<64.9	U	<295	U	<240	U	<121	U	<63.7	U	NR		<58.5	U	<61.9	U	<66.7	U	460		<284	U
Cresols	NC	NC		<79.8	U	<81.8	U	<372	U	<302	U	<152	U	<80.3	U	NR		<73.8	U	<78.1	U	<84.1	U	<294	U	<358	U
Di-n-butyl phthalate	NC	NC		<67.3	U	<69.1	U	<314	U	<255	U	<128	U	<67.8	U	NR		<62.3	U	<65.9	U	<71.0	U	<248	U	<302	U
Di-n-octyl phthalate	NC	NC		<58.9	U	<60.4	U	<274	U	<223	U	<112	U	<59.3	U	NR		<54.4	U	<57.6	U	<62.0	U	<217	U	<264	U
Dibenz(a,h)anthracene	330	330		<66.7	U	<68.5	U	<311	U	<253	U	<127	U	<67.2	U	NR		<61.7	U	<65.3	U	<70.4	U	<246	U	<300	U
Dibenzofuran	7,000	59,000		<40.0	U	<41.0	U	<186	U	<151	U	<76.2	U	<40.2	U	NR		<36.9	U	<39.1	U	<42.1	U	705	J	<179	U
Diethyl phthalate	NC	NC		<78.2	U	<80.2	U	<365	U	<296	U	<149	U	<78.8	U	NR		<72.3	U	<76.6	U	<82.5	U	<288	U	<351	U
Dimethyl phthalate	NC	NC		<57.8	U	<59.3	U	<269	U	<219	U	<110	U	<58.2	U	NR		<53.4	U	<56.6	U	<60.9	U	<213	U	<259	U
Fluoranthene	100,000	100,000		<65.9	U	<67.6	U	<307	U	<250	U	<126	U	<66.4	U	NR		<61.0	U	<64.5	U	<69.5	U	1,620	J	<296	U
Fluorene	30,000	100,000		<48.1	U	<49.3	U	<224	U	552	J	<91.7	U	1480		NR		2880		5020		<50.7	U	1,060	J	<216	U
Hexachlorobenzene	330	1,200		<51.2	U	<52.5	U	<239	U	<194	U	<97.6	U	<51.6	U	NR		<47.3	U	<50.1	U	<54.0	U	<189	U	<230	U
Hexachlorobutadiene	NC	NC		<47.8	U	<49.1	U	<223	U	<181	U	<91.2	U	<48.2	U	NR		<44.2	U	<46.8	U	<50.4	U	<176	U	<215	U
Hexachlorocyclopentadiene	NC	NC		<370	U	<379	U	<1720	U	<1400	U	<705	U	<372	U	NR		<342	U	<362	U	<390	U	<1360	U	<1660	U
Hexachloroethane	NC	NC		<53.2	U	<54.6	U	<248	U	<202	U	<101	U	<53.6	U	NR		<49.2	U	<52.1	U	<56.1	U	<196	U	<239	U
Indeno(1,2,3-cd)pyrene	500	500		<55.3	U	<56.7	U	<258	U	<209	U	<105	U	<55.7	U	NR		<51.1	U	<54.1	U	<58.3	U	<204	U	<248	U

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-36C		SB-36D		SB-37B		SB-37C		SB-38B		SB-38C		SB-39A		SB-39B		SB-39C		SB-39E		SB-40B		SB-40C	
Depth				3-7		7+		0.5-3		3-7		0.5-3		3-7		0-0.5		0.5-3		3-7		7+		0.5-3		3-7	
Lab Sample ID				1107319		1107319		1107319		1107319		118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Soil		Soil		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Isophorone	NC	NC		<54.7	U	<56.1	U	<255	U	<207	U	<104	U	<55.1	U	NR		<50.6	U	<53.5	U	<57.6	U	<202	U	<245	U
N-Nitrosodi-n-propylamine	NC	NC		<36.1	U	<37.1	U	<168	U	<137	U	<68.9	U	<36.4	U	NR		<33.4	U	<35.4	U	<38.1	U	<133	U	<162	U
N-Nitrosodimethylamine	NC	NC		<76.0	U	<77.9	U	<354	U	<288	U	<145	U	<76.5	U	NR		<70.2	U	<74.4	U	<80.1	U	<280	U	<341	U
N-Nitrosodiphenylamine	NC	NC		<65.2	U	<66.9	U	<304	U	<247	U	<124	U	<65.7	U	NR		<60.3	U	<63.8	U	<68.7	U	<240	U	<293	U
Naphthalene	12,000	100,000		<48.1	U	<49.3	U	<224	U	760	J	<91.7	U	<48.4	U	NR		8490		<47.1	U	<50.7	U	566	J	<216	U
Nitrobenzene	NC	NC		<46.3	U	<47.5	U	<216	U	<175	U	<88.3	U	<46.6	U	NR		<42.8	U	<45.3	U	<48.8	U	<171	U	<208	U
Pentachlorophenol	800	6,700		<453	U	<465	U	<2110	U	<1720	U	<864	U	<457	U	NR		<419	U	<444	U	<478	U	<1670	U	<2030	U
Phenanthrene	100,000	100,000		<54.4	U	<55.8	U	<254	U	1070	J	<104	U	4180		NR		7750	U	8640		<57.4	U	2,370		<244	U
Phenol	330	100,000		<31.2	U	<32.0	U	<145	U	<118	U	<59.5	U	<31.4	U	NR		<28.9	U	<30.6	U	<32.9	U	<115	U	<140	U
Pyrene	100,000	100,000		<44.3	U	<45.4	U	<206	U	343	J	<84.4	U	301	J	NR		751		253	J	<46.7	U	1,190		<199	U
Pyridine	NC	NC		<68.5	U	<70.3	U	<319	U	<260	U	<131	U	<69.0	U	NR		<63.4	U	<67.1	U	<72.3	U	<253	U	<308	U
Total SVOC TICs	NC	NC	100,000	NR		NR		NR		NR		33,640		86,480		0		111,021		398,250		835		0		387,120	

Notes:
µg/kg - micrograms per kilogram
B - Analyte found in the method blank as well as the sample indicating possible cross contamination;
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for 3+4-methylphenol. The Unrestricted Use SCOs for 3-methylphenol and 4-methylphenol are 330 µg/kg. The Restricted-Residential Use SCOs are 100,000 µg/kg.

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-41B		SB-41C		SB-42A		SB-43B		SB-43C		SB-43E		SB-44A		SB-44B		SB-44C		SB-45B		SB-45C		SB-46B	
Depth				0.5-3		3-7		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7		0.5-3		3-7		0.5-3	
Lab Sample ID				118070		118070		118070		118070		118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date				8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<96.9	U	<193	U	<183	U	<89.5	U	<56.8	U	<68.3	U	NR		<226	U	<102	U	<47.0	U	<50.1	U	<184	U
1,2-Dichlorobenzene	NC	NC		<71.9	U	<144	U	<136	U	<66.5	U	<42.2	U	<50.7	U	NR		<168	U	<75.8	U	<34.9	U	<37.2	U	<137	U
1,2-Diphenylhydrazine	NC	NC		<70.3	U	<140	U	<133	U	<64.9	U	<41.3	U	<49.6	U	NR		<164	U	<74.1	U	<34.1	U	<36.3	U	<133	U
1,3-Dichlorobenzene	NC	NC		<78.2	U	<156	U	<148	U	<72.3	U	<45.9	U	<55.2	U	NR		<183	U	<82.5	U	<37.9	U	<40.4	U	<149	U
1,4-Dichlorobenzene	NC	NC		<75.9	U	<152	U	<144	U	<70.1	U	<44.5	U	<53.5	U	NR		<177	U	<80.0	U	<36.8	U	<39.2	U	<144	U
2,3,4,6-Tetrachlorophenol	NC	NC		<92.2	U	<184	U	<174	U	<85.2	U	<54.1	U	<65.0	U	NR		<215	U	<97.2	U	<44.7	U	<47.7	U	<175	U
2,4,5-Trichlorophenol	NC	NC		<50.5	U	<101	U	<95.6	U	<46.7	U	<29.6	U	<35.6	U	NR		<118	U	<53.3	U	<24.5	U	<26.1	U	<95.9	U
2,4,6-Trichlorophenol	NC	NC		<87.5	U	<175	U	<166	U	<80.9	U	<51.4	U	<61.7	U	NR		<204	U	<92.3	U	<42.4	U	<45.2	U	<166	U
2,4-Dichlorophenol	NC	NC		<76.4	U	<153	U	<144	U	<70.5	U	<44.8	U	<53.9	U	NR		<178	U	<80.5	U	<37.0	U	<39.5	U	<145	U
2,4-Dimethylphenol	NC	NC		<97.3	U	<194	U	<184	U	<89.9	U	<57.1	U	<68.6	U	NR		<227	U	<103	U	<47.2	U	<50.3	U	<185	U
2,4-Dinitrophenol	NC	NC		<820	U	<1640	U	<1550	U	<757	U	<481	U	<578	U	NR		<1910	U	<864	U	<397	U	<424	U	<1560	U
2,4-Dinitrotoluene	NC	NC		<140	U	<279	U	<264	U	<129	U	<82.0	U	<98.5	U	NR		<326	U	<147	U	<67.7	U	<72.2	U	<265	U
2,6-Dinitrotoluene	NC	NC		<95.9	U	<192	U	<181	U	<88.6	U	<56.3	U	<67.7	U	NR		<224	U	<101	U	<46.5	U	<49.6	U	<182	U
2-Chloronaphthalene	NC	NC		<112	U	<224	U	<212	U	<104	U	<65.8	U	<79.1	U	NR		<262	U	<118	U	<54.4	U	<58.0	U	<213	U
2-Chlorophenol	NC	NC		<112	U	<224	U	<212	U	<104	U	<65.8	U	<79.1	U	NR		<262	U	<118	U	<54.4	U	<58.0	U	<213	U
2-Methylnaphthalene	NC	NC		<92.4	U	7210		<175	U	<85.4	U	1640		<65.2	U	NR		<216	U	<97.4	U	<44.8	U	<47.8	U	<175	U
2-Methylphenol	330	100,000		<83.4	U	<167	U	<158	U	<77.0	U	<48.9	U	<58.8	U	NR		<195	U	<87.9	U	<40.4	U	<43.1	U	<158	U
2-Nitroaniline	NC	NC		<121	U	<242	U	<230	U	<112	U	<71.2	U	<85.6	U	NR		<283	U	<128	U	<58.8	U	<62.7	U	<230	U
2-Nitrophenol	NC	NC		<70.8	U	<141	U	<134	U	<65.4	U	<41.5	U	<49.9	U	NR		<165	U	<74.6	U	<34.3	U	<36.6	U	<134	U
3+4-Methylphenol	330**	330**		<71.9	U	<144	U	<136	U	<66.5	U	<42.2	U	<50.7	U	NR		<168	U	<75.8	U	<34.9	U	<37.2	U	<137	U
3,3'-Dichlorobenzidine	NC	NC		<112	U	<224	U	<212	U	<104	U	<65.8	U	<79.1	U	NR		<262	U	<118	U	<54.4	U	<58.0	U	<213	U
3-Nitroaniline	NC	NC		<40.0	U	<80.0	U	<75.8	U	<37.0	U	<23.5	U	<28.2	U	NR		<93.5	U	<42.2	U	<19.4	U	<20.7	U	<76.0	U
4,6-Dinitro-2-methylphenol	NC	NC		<1020	U	<2030	U	<1930	U	<940	U	<597	U	<718	U	NR		<2380	U	<1070	U	<493	U	<526	U	<1930	U
4-Bromophenyl phenyl ether	NC	NC		<106	U	<211	U	<200	U	<97.6	U	<62.0	U	<74.5	U	NR		<247	U	<111	U	<51.2	U	<54.6	U	<201	U
4-Chloro-3-methylphenol	NC	NC		<86.8	U	<173	U	<164	U	<80.2	U	<51.0	U	<61.2	U	NR		<203	U	<91.5	U	<42.1	U	<44.9	U	<165	U
4-Chloroaniline	NC	NC		<88.7	U	<177	U	<168	U	<81.9	U	<52.0	U	<62.6	U	NR		<207	U	<93.5	U	<43.0	U	<45.8	U	<168	U
4-Chlorophenyl phenyl ether	NC	NC		<90.6	U	<181	U	<171	U	<83.7	U	<53.1	U	<63.9	U	NR		<211	U	<95.5	U	<43.9	U	<46.8	U	<172	U
4-Nitroaniline	NC	NC		<228	U	<455	U	<431	U	<210	U	<134	U	<161	U	NR		<532	U	<240	U	<110	U	<118	U	<432	U
4-Nitrophenol	NC	NC		<1550	U	<3100	U	<2940	U	<1430	U	<911	U	<1100	U	NR		<3620	U	<1640	U	<753	U	<803	U	<2950	U
Acenaphthene	20,000	100,000		<98.0	U	<196	U	<185	U	<90.5	U	<57.5	U	<69.1	U	NR		<229	U	<103	U	<47.5	U	<50.7	U	<186	U
Acenaphthylene	100,000	100,000		<80.1	U	<160	U	<152	U	<74.0	U	<47.0	U	<56.5	U	NR		<187	U	<84.4	U	<38.8	U	<41.4	U	<152	U
Aniline	NC	NC		<72.4	U	<145	U	<137	U	<66.9	U	<42.5	U	<51.1	U	NR		<169	U	<76.3	U	<35.1	U	<37.4	U	<137	U
Anthracene	100,000	100,000		<104	U	<207	U	<196	U	<95.7	U	<60.8	U	<73.1	U	NR		<242	U	<109	U	<50.2	U	<53.5	U	<197	U
Benzidine	NC	NC		<2040	U	<4080	U	<3870	U	<1890	U	<1200	U	<1440	U	NR		<4770	U	<2150	U	<991	U	<1060	U	<3880	U
Benzo(a)anthracene	1,000	1,000		<98.5	U	<197	U	504	J	<91.0	U	<57.8	U	<69.5	U	NR		1,260	J	<104	U	<47.7	U	<50.9	U	<187	U
Benzo(a)pyrene	1,000	1,000		<121	U	<242	U	<230	U	<112	U	<71.2	U	<85.6	U	NR		1,080	J	<128	U	<58.8	U	<62.7	U	<230	U
Benzo(b)fluoranthene	1,000	1,000		<96.6	U	<193	U	<183	U	<89.2	U	<56.7	U	<68.1	U	NR		1,210	J	<102	U	<46.8	U	<49.9	U	<183	U
Benzo(g,h,i)perylene	100,000	100,000		<178	U	<355	U	<337	U	<164	U	<104	U	<125	U	NR		<415	U	<187	U	<86.2	U	<91.9	U	<338	U
Benzo(k)fluoranthene	800	3,900		<177	U	<354	U	<335	U	<164	U	<104	U	<125	U	NR		1,150	J	<187	U	<85.9	U	<91.6	U	<336	U
Benzoic acid	NC	NC		<13600	U	<27300	U	<25800	U	<12600	U	<8010	U	<9620	U	NR		<31800	U	<14400	U	<6610	U	<7050	U	<25900	U
Benzyl alcohol	NC	NC		<137	U	<274	U	<260	U	<127	U	<80.6	U	<96.9	U	NR		<321	U	<145	U	<66.6	U	<71.0	U	<261	U
bis(2-Chloroethoxy)methane	NC	NC		<96.4	U	<193	U	<182	U	<89.0	U	<56.6	U	<68.0	U	NR		<225	U	<102	U	<46.7	U	<49.8	U	<183	U
bis(2-Chloroethyl)ether	NC	NC		<110	U	<220	U	<208	U	<102	U	<64.6	U	<77.7	U	NR		<257	U	<116	U	<53.4	U	<56.9	U	<209	U
bis(2-Chloroisopropyl)ether	NC	NC		<85.4	U	<171	U	<162	U	<78.9	U	<50.1	U	<60.3	U	NR		<199	U	<90.1	U	<41.4	U	<44.2	U	<162	U
bis(2-Ethylhexyl)phthalate	NC	NC		<153	U	<305	U	<289	U	<141	U	313	J	<108	U	NR		<356	U	<161	U	<73.9	U	<78.8	U	336	J
Butyl benzyl phthalate	NC	NC		<123	U	<246	U	<233	U	<114	U	<72.1	U	<86.7	U	NR		<287	U	<130	U	<59.6	U	<63.5	U	<233	U
Carbazole	NC	NC		<134	U	<268	U	<254	U	<124	U	<78.7	U	<94.6	U	NR		<313	U	<141	U	<65.0	U	<69.3	U	<255	U
Chrysene	1,000	3,900		<123	U	<246	U	586	J	<114	U	<72.3	U	<86.9	U	NR		1,430	J	293	J	<59.7	U	<63.7	U	<234	U
Cresols	NC	NC		<155	U	<311	U	<294	U	<144	U	<91.1	U	<110	U	NR		<363	U	<164	U	<75.3	U	<80.3	U	<295	U
Di-n-butyl phthalate	NC	NC		<131	U	<262	U	<248	U	<121	U	<76.9	U	<92.4	U	NR		<306	U	<138	U	<63.5	U	<67.7	U	<249	U
Di-n-octyl phthalate	NC	NC		<115	U	<229	U	<217	U	<106	U	<67.2	U	<80.8	U	NR		<267	U	<121	U	<55.5	U	<59.2	U	<217	U
Dibenz(a,h)anthracene	330	330		<130	U	<260	U	<246	U	<120	U	<76.2	U	<91.6	U	NR		<303	U	<137	U	<63.0	U	<67.1	U	<247	U
Dibenzofuran	7,000	59,000		<77.8	U	<155	U	<147	U	<71.8	U	<45.6	U	<54.8	U	NR		<182	U	<82.0	U	<37.7	U	<40.2	U	<148	U
Diethyl phthalate	NC	NC		<152	U	<304	U	<288	U	<141	U	<89.3	U	<107	U	NR		<355	U	<160	U	<73.8	U	<78.7	U	<289	U
Dimethyl phthalate	NC	NC		<112	U	<225	U	<213	U	<104	U	<66.0	U	<79.3	U	NR		<262	U	<119	U	<54.5	U	<58.1	U	<213	U
Fluoranthene	100,000	100,000		<128	U	<256	U	856	J	<118	U	208	J	<90.5	U	NR		3970		516	J	<62.2	U	<66.3	U	<244	U
Fluorene	30,000	100,000		<93.6	U	1670	J	<177	U	<86.5	U	852		<66.0	U	NR		<218	U	<98.7	U	<45.4	U	<48.4	U	<178	U
Hexachlorobenzene	330	1,200		<99.7	U	<199	U	<189	U	<92.0	U	<58.5	U	<70.3	U	NR		<233	U	<105	U	<48.3	U	<51.5	U	<189	U
Hexachlorobutadiene	NC	NC		<93.1	U	<186	U	<176	U	<86.0	U	<54.6	U	<65.7	U	NR		<217	U	<98.2	U	<45.1	U	<48.1	U	<177	U
Hexachlorocyclopentadiene	NC	NC		<719	U	<1440	U	<1360	U	<665	U	<422	U	<507	U	NR		<1680	U	<758	U	<349	U	<372	U	<1370	U
Hexachloroethane	NC	NC		<104	U	<207	U	<196	U	<95.7	U	<60.8	U	<73.1	U	NR		<242	U	<109	U	<50.2	U	<53.5	U	<197	U
Indeno(1,2,3-cd)pyrene	500	500		<108	U	<215	U	<204	U	<99.4	U	<63.1	U	<75.9	U	NR		<251	U	<113	U	<52.1	U	<55.6	U	<204	U

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-41B		SB-41C		SB-42A		SB-43B		SB-43C		SB-43E		SB-44A		SB-44B		SB-44C		SB-45B		SB-45C		SB-46B	
Depth				0.5-3		3-7		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7		0.5-3		3-7		0.5-3	
Lab Sample ID				118070		118070		118070		118070		118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date				8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Isophorone	NC	NC		<106	U	<213	U	<201	U	<98.3	U	<62.4	U	<75.0	U	NR		<248	U	<112	U	<51.6	U	<55.0	U	<202	U
N-Nitrosodi-n-propylamine	NC	NC		<70.3	U	<140	U	<133	U	<64.9	U	<41.3	U	<49.6	U	NR		<164	U	<74.1	U	<34.1	U	<36.3	U	<133	U
N-Nitrosodimethylamine	NC	NC		<148	U	<295	U	<280	U	<137	U	<86.7	U	<104	U	NR		<345	U	<156	U	<71.7	U	<76.4	U	<281	U
N-Nitrosodiphenylamine	NC	NC		<127	U	<253	U	<240	U	<117	U	<74.5	U	<89.5	U	NR		<296	U	<134	U	<61.5	U	<65.6	U	<241	U
Naphthalene	12,000	100,000		<93.6	U	1210	J	<177	U	<86.5	U	<54.9	U	<66.0	U	NR		<218	U	<98.7	U	<45.4	U	<48.4	U	<178	U
Nitrobenzene	NC	NC		<90.1	U	<180	U	<170	U	<83.2	U	<52.9	U	<63.5	U	NR		<210	U	<95.0	U	<43.7	U	<46.6	U	<171	U
Pentachlorophenol	800	6,700		<882	U	<1760	U	<1670	U	<815	U	<518	U	<622	U	NR		<2060	U	<930	U	<428	U	<456	U	<1680	U
Phenanthrene	100,000	100,000		<106	U	<212	U	463	J	<97.8	U	<62.2	U	<74.7	U	NR		2230		377		<51.4	U	<54.8	U	<201	U
Phenol	330	100,000		<60.8	U	<121	U	<115	U	<56.1	U	<35.7	U	<42.9	U	NR		<142	U	<64.0	U	<29.5	U	<31.4	U	<115	U
Pyrene	100,000	100,000		<86.1	U	<172	U	817	J	97.7	J	258	J	<60.8	U	NR		2710		613		<41.8	U	<44.5	U	301	
Pyridine	NC	NC		<133	U	<267	U	<252	U	<123	U	<78.3	U	<94.1	U	NR		<311	U	<141	U	<64.7	U	<69.0	U	<253	U
Total SVOC TICs	NC	NC	100,000	0		253,530		0		0		75,572		1,220		NR		0		0		748		934		3,960	

Notes:
µg/kg - micrograms per kilogram
B - Analyte found in the method blank as well as the sample indicating
possible cross contamination;
J - Result is less than the RL but greater than or equal to the MDL and the concentration
is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO
exceeded is shown unless otherwise noted.
** There is no SCO for 3+4-methylphenol. The Unrestricted Use SCOs for 3-methylphenol and
4-methylphenol are 330 µg/kg. The Restricted-Residential Use SCOs are 100,000 µg/kg.

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-46C		SB-46E		SB-47A		SB-48A		SB-49A	
Depth				3-7		7+		0-0.5		0-0.5		0-0.5	
Lab Sample ID				118070		118070		118070		118070		118070	
Sampling Date				8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result	
1,2,4-Trichlorobenzene	NC	NC		<49.9	U	<58.8	U	<182	U	NR		NR	
1,2-Dichlorobenzene	NC	NC		<37.1	U	<43.7	U	<135	U	NR		NR	
1,2-Diphenylhydrazine	NC	NC		<36.2	U	<42.7	U	<132	U	NR		NR	
1,3-Dichlorobenzene	NC	NC		<40.3	U	<47.5	U	<147	U	NR		NR	
1,4-Dichlorobenzene	NC	NC		<39.1	U	<46.1	U	<143	U	NR		NR	
2,3,4,6-Tetrachlorophenol	NC	NC		<47.5	U	<56.0	U	<173	U	NR		NR	
2,4,5-Trichlorophenol	NC	NC		<26.0	U	<30.7	U	<94.9	U	NR		NR	
2,4,6-Trichlorophenol	NC	NC		<45.1	U	<53.2	U	<164	U	NR		NR	
2,4-Dichlorophenol	NC	NC		<39.3	U	<46.4	U	<143	U	NR		NR	
2,4-Dimethylphenol	NC	NC		<50.1	U	<59.1	U	<183	U	NR		NR	
2,4-Dinitrophenol	NC	NC		<422	U	<498	U	<1540	U	NR		NR	
2,4-Dinitrotoluene	NC	NC		<71.9	U	<84.9	U	<262	U	NR		NR	
2,6-Dinitrotoluene	NC	NC		<49.4	U	<58.3	U	<180	U	NR		NR	
2-Chloronaphthalene	NC	NC		<57.8	U	<68.2	U	<211	U	NR		NR	
2-Chlorophenol	NC	NC		<57.8	U	<68.2	U	<211	U	NR		NR	
2-Methylnaphthalene	NC	NC		<47.6	U	<56.2	U	<174	U	NR		NR	
2-Methylphenol	330	100,000		<42.9	U	<50.6	U	<157	U	NR		NR	
2-Nitroaniline	NC	NC		<62.5	U	<73.7	U	<228	U	NR		NR	
2-Nitrophenol	NC	NC		<36.5	U	<43.0	U	<133	U	NR		NR	
3+4-Methylphenol	330**	330**		<37.1	U	<43.7	U	<135	U	NR		NR	
3,3'-Dichlorobenzidine	NC	NC		<57.8	U	<68.2	U	<211	U	NR		NR	
3-Nitroaniline	NC	NC		<20.6	U	<24.3	U	<75.2	U	NR		NR	
4,6-Dinitro-2-methylphenol	NC	NC		<524	U	<618	U	<1910	U	NR		NR	
4-Bromophenyl phenyl ether	NC	NC		<54.4	U	<64.2	U	<198	U	NR		NR	
4-Chloro-3-methylphenol	NC	NC		<44.7	U	<52.8	U	<163	U	NR		NR	
4-Chloroaniline	NC	NC		<45.7	U	<53.9	U	<167	U	NR		NR	
4-Chlorophenyl phenyl ether	NC	NC		<46.6	U	<55.0	U	<170	U	NR		NR	
4-Nitroaniline	NC	NC		<117	U	<138	U	<428	U	NR		NR	
4-Nitrophenol	NC	NC		<800	U	<943	U	<2920	U	NR		NR	
Acenaphthene	20,000	100,000		<50.5	U	<59.5	U	<184	U	NR		NR	
Acenaphthylene	100,000	100,000		<41.2	U	<48.7	U	<150	U	NR		NR	
Aniline	NC	NC		<37.3	U	<44.0	U	<136	U	NR		NR	
Anthracene	100,000	100,000		<53.4	U	<62.9	U	<195	U	NR		NR	
Benzidine	NC	NC		<1050	U	<1240	U	<3840	U	NR		NR	
Benzo(a)anthracene	1,000	1,000		<50.7	U	<59.8	U	878	J	NR		NR	
Benzo(a)pyrene	1,000	1,000		<62.5	U	<73.7	U	972	J	NR		NR	
Benzo(b)fluoranthene	1,000	1,000		<49.8	U	<58.7	U	968	J	NR		NR	
Benzo(g,h,i)perylene	100,000	100,000		<91.6	U	<108	U	<334	U	NR		NR	
Benzo(k)fluoranthene	800	3,900		<91.2	U	<108	U	981	J	NR		NR	
Benzoic acid	NC	NC		<7030	U	<8290	U	<25600	U	NR		NR	
Benzyl alcohol	NC	NC		<70.7	U	<83.5	U	<258	U	NR		NR	
bis(2-Chloroethoxy)methane	NC	NC		<49.6	U	<58.6	U	<181	U	NR		NR	
bis(2-Chloroethyl)ether	NC	NC		<56.7	U	<66.9	U	<207	U	NR		NR	
bis(2-Chloroisopropyl)ether	NC	NC		<44.0	U	<51.9	U	<160	U	NR		NR	
bis(2-Ethylhexyl)phthalate	NC	NC		<78.5	U	<92.6	U	<286	U	NR		NR	
Butyl benzyl phthalate	NC	NC		<63.3	U	<74.7	U	<231	U	NR		NR	
Carbazole	NC	NC		<69.1	U	<81.5	U	<252	U	NR		NR	
Chrysene	1,000	3,900		<63.4	U	<74.8	U	973	J	NR		NR	
Cresols	NC	NC		<80.0	U	<94.3	U	<292	U	NR		NR	
Di-n-butyl phthalate	NC	NC		<67.5	U	<79.6	U	<246	U	NR		NR	
Di-n-octyl phthalate	NC	NC		<59.0	U	<69.6	U	<215	U	NR		NR	
Dibenz(a,h)anthracene	330	330		<66.9	U	<78.9	U	<244	U	NR		NR	
Dibenzofuran	7,000	59,000		<40.0	U	<47.2	U	<146	U	NR		NR	
Diethyl phthalate	NC	NC		<78.4	U	<92.5	U	<286	U	NR		NR	
Dimethyl phthalate	NC	NC		<57.9	U	<68.3	U	<211	U	NR		NR	
Fluoranthene	100,000	100,000		<66.1	U	<77.9	U	1930	J	NR		NR	
Fluorene	30,000	100,000		<48.2	U	<56.9	U	<176	U	NR		NR	
Hexachlorobenzene	330	1,200		<51.3	U	<60.5	U	<187	U	NR		NR	
Hexachlorobutadiene	NC	NC		<48.0	U	<56.6	U	<175	U	NR		NR	
Hexachlorocyclopentadiene	NC	NC		<371	U	<437	U	<1350	U	NR		NR	
Hexachloroethane	NC	NC		<53.4	U	<62.9	U	<195	U	NR		NR	
Indeno(1,2,3-cd)pyrene	500	500		<55.4	U	<65.3	U	<202	U	NR		NR	

TABLE RWP-9
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-46C		SB-46E		SB-47A		SB-48A		SB-49A	
Depth				3-7		7+		0-0.5		0-0.5		0-0.5	
Lab Sample ID				118070		118070		118070		118070		118070	
Sampling Date				8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result	
Isophorone	NC	NC		<54.8	U	<64.6	U	<200	U	NR		NR	
N-Nitrosodi-n-propylamine	NC	NC		<36.2	U	<42.7	U	<132	U	NR		NR	
N-Nitrosodimethylamine	NC	NC		<76.1	U	<89.8	U	<278	U	NR		NR	
N-Nitrosodiphenylamine	NC	NC		<65.3	U	<77.1	U	<238	U	NR		NR	
Naphthalene	12,000	100,000		<48.2	U	<56.9	U	<176	U	NR		NR	
Nitrobenzene	NC	NC		<46.4	U	<54.7	U	<169	U	NR		NR	
Pentachlorophenol	800	6,700		<454	U	<536	U	<1660	U	NR		NR	
Phenanthrene	100,000	100,000		<54.6	U	<64.4	U	630	J	NR		NR	
Phenol	330	100,000		<31.3	U	<36.9	U	<114	U	NR		NR	
Pyrene	100,000	100,000		52.6		<52.3	U	1390	J	NR		NR	
Pyridine	NC	NC		<68.7	U	<81.0	U	<250	U	NR		NR	
Total SVOC TICs	NC	NC	100,000	821		814		NR		0		NR	

Notes:
µg/kg - micrograms per kilogram
B - Analyte found in the method blank as well as the sample indicating possible cross contamination;
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for 3+4-methylphenol. The Unrestricted Use SCOs for 3-methylphenol and 4-methylphenol are 330 µg/kg. The Restricted-Residential Use SCOs are 100,000 µg/kg.

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-1B		SB-1C		SB-2B		SB-2C		SB-3B		SB-3C		SB-4B		SB-4C		SB-5B		SB-5C		SB-6B		SB-6C	
Depth				0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1-Trichloroethane (TCA)	680	100,000		<0.81	U	<0.87	U	<0.80	U	<0.77	U	<0.76	U	<0.80	U	<0.79	U	<0.83	U	<0.75	U	<140	U	<0.75	U	<0.80	U
1,1,1,2-Tetrachloroethane	NC	NC		<0.68	U	<0.73	U	<0.67	U	<0.64	U	<0.63	U	<0.66	U	<0.66	U	<0.69	U	<0.63	U	<126	U	<0.63	U	<0.66	U
1,1,2,2-Tetrachloroethane	NC	NC		<1.05	U	<1.13	U	<1.04	U	<1.00	U	<0.99	U	<1.03	U	<1.03	U	<1.08	U	<0.98	U	<110	U	<0.98	U	<1.03	U
1,1,2-Trichloroethane	NC	NC		<1.00	U	<1.07	U	<0.99	U	<0.95	U	<0.94	U	<0.98	U	<0.97	U	<1.02	U	<0.93	U	<132	U	<0.93	U	<0.98	U
1,1,2-Trichlorotrifluoroethane (Freon 113)	NC	NC		<0.68	U	<0.73	U	<0.67	U	<0.64	U	<0.63	U	<0.66	U	<0.66	U	<0.69	U	<0.63	U	<129	U	<0.63	U	<0.66	U
1,1-Dichloroethane	270	26,000		<0.59	U	<0.64	U	<0.59	U	<0.57	U	<0.56	U	<0.58	U	<0.58	U	<0.61	U	<0.55	U	<148	U	<0.55	U	<0.58	U
1,1-Dichloroethene	330	100,000		<0.78	U	<0.84	U	<0.77	U	<0.75	U	<0.73	U	<0.77	U	<0.76	U	<0.80	U	<0.73	U	<137	U	<0.73	U	<0.77	U
1,1-Dichloropropene	NC	NC		<1.30	U	<1.39	U	<1.28	U	<1.23	U	<1.21	U	<1.27	U	<1.26	U	<1.32	U	<1.20	U	<118	U	<1.20	U	<1.27	U
1,2,3-Trichlorobenzene	NC	NC		<0.94	U	<1.01	U	<0.93	U	<0.90	U	<0.89	U	<0.93	U	<0.92	U	<0.97	U	<0.88	U	272		<0.88	U	<0.93	U
1,2,3-Trichloropropane	NC	NC		<1.67	U	<1.80	U	<1.66	U	<1.59	U	<1.57	U	<1.64	U	<1.63	U	<1.71	U	<1.55	U	<115	U	<1.55	U	<1.64	U
1,2,4,5-Tetramethylbenzene (Durene)	NC	NC		7.96	J	<1.04	U	<0.96	U	<0.93	U	<0.91	U	<0.95	U	<0.95	U	<0.99	U	<0.90	U	<115	U	74.5	U	33.5	
1,2,4-Trichlorobenzene	NC	NC		<0.81	U	<0.87	U	<0.80	U	<0.77	U	<0.76	U	<0.80	U	<0.79	U	<0.83	U	<0.75	U	<98.5	U	<0.75	U	<0.80	U
1,2,4-Trimethylbenzene	3,600	52,000		<0.81	U	<0.87	U	<0.80	U	<0.77	U	<0.76	U	<0.80	U	<0.79	U	<0.83	U	<0.75	U	<123	U	<0.75	U	<0.80	U
1,2-Dibromo-3-chloropropane	NC	NC		<2.19	U	<2.35	U	<2.16	U	<2.08	U	<2.05	U	<2.15	U	<2.13	U	<2.24	U	<2.03	U	<110	U	<2.03	U	<2.15	U
1,2-Dibromoethane	NC	NC		<0.78	U	<0.84	U	<0.77	U	<0.75	U	<0.73	U	<0.77	U	<0.76	U	<0.80	U	<0.73	U	<115	U	<0.73	U	<0.77	U
1,2-Dichlorobenzene	1,100	100,000		<0.86	U	<0.93	U	<0.85	U	<0.82	U	<0.81	U	<0.85	U	<0.84	U	<0.88	U	<0.80	U	<118	U	<0.80	U	<0.85	U
1,2-Dichloroethane	20	3,100		<0.94	U	<1.01	U	<0.93	U	<0.90	U	<0.89	U	<0.93	U	<0.92	U	<0.97	U	<0.88	U	<143	U	<0.88	U	<0.93	U
1,2-Dichloropropane	NC	NC		<1.03	U	<1.10	U	<1.01	U	<0.98	U	<0.96	U	<1.01	U	<1.00	U	<1.05	U	<0.95	U	<131	U	<0.95	U	<1.01	U
1,3,5-Trimethylbenzene	8,400	52,000		<0.92	U	<0.99	U	<0.91	U	<0.87	U	<0.86	U	<0.90	U	<0.89	U	<0.94	U	<0.85	U	<121	U	<0.85	U	<0.90	U
1,3-Dichlorobenzene	2,400	49,000		<0.73	U	<0.78	U	<0.72	U	<0.69	U	<0.68	U	<0.72	U	<0.71	U	<0.75	U	<0.68	U	<113	U	<0.68	U	<0.72	U
1,3-Dichloropropane	NC	NC		<0.57	U	<0.61	U	<0.56	U	<0.54	U	<0.53	U	<0.56	U	<0.55	U	<0.58	U	<0.52	U	<122	U	<0.52	U	<0.56	U
1,4-Dichlorobenzene	1,800	13,000		<0.57	U	<0.61	U	<0.56	U	<0.54	U	<0.53	U	<0.56	U	<0.55	U	<0.58	U	<0.52	U	<115	U	<0.52	U	<0.56	U
2,2-Dichloropropane	NC	NC		<1.00	U	<1.07	U	<0.99	U	<0.95	U	<0.94	U	<0.98	U	<0.97	U	<1.02	U	<0.93	U	<128	U	<0.93	U	<0.98	U
2-Butanone (MEK)	120	100,000		<5.67	U	<6.09	U	<5.61	U	<5.40	U	<5.31	U	<5.57	U	<5.52	U	<5.80	U	<5.25	U	<112	U	<5.25	U	<5.57	U
2-Chloroethylvinylether	NC	NC		<4.40	U	<4.73	U	<4.35	U	<4.19	U	<4.12	U	<4.32	U	<4.29	U	<4.50	U	<4.07	U	<209	U	<4.07	U	<4.32	U
2-Chlorotoluene	NC	NC		<0.73	U	<0.78	U	<0.72	U	<0.69	U	<0.68	U	<0.72	U	<0.71	U	<0.75	U	<0.68	U	<122	U	<0.68	U	<0.72	U
2-Hexanone	NC	NC		<2.38	U	<2.55	U	<2.35	U	<2.26	U	<2.23	U	<2.33	U	<2.31	U	<2.43	U	<2.20	U	<89.7	U	<2.20	U	<2.33	U
4-Chlorotoluene	NC	NC		<0.81	U	<0.87	U	<0.80	U	<0.77	U	<0.76	U	<0.80	U	<0.79	U	<0.83	U	<0.75	U	<115	U	<0.75	U	<0.80	U
4-Isopropyltoluene	NC	NC		<0.62	U	<0.67	U	<0.61	U	<0.59	U	<0.58	U	<0.61	U	<0.60	U	<0.63	U	<0.57	U	<119	U	<0.57	U	<0.61	U
4-Methyl-2-pentanone	NC	NC		<3.59	U	<3.86	U	<3.55	U	<3.42	U	<3.36	U	<3.52	U	<3.50	U	<3.67	U	<3.33	U	<126	U	<3.33	U	<3.52	U
Acetone	50	100,000		<6.64	U	<7.13	U	<6.57	U	<6.32	U	<6.22	U	<6.52	U	<6.47	U	<6.79	U	<6.15	U	<171	U	<6.15	U	<6.52	U
Acrylonitrile	NC	NC		<16.6	U	<17.8	U	<16.4	U	<15.8	U	<15.6	U	<16.3	U	<16.2	U	<17.0	U	<15.4	U	<556	U	<15.4	U	<16.3	U
Benzene	60	4,800		<0.84	U	<0.90	U	<0.83	U	<0.80	U	<0.78	U	<0.82	U	<0.82	U	<0.86	U	<0.77	U	<129	U	<0.77	U	<0.82	U
Bromobenzene	NC	NC		<0.84	U	<0.90	U	<0.83	U	<0.80	U	<0.78	U	<0.82	U	<0.82	U	<0.86	U	<0.77	U	<118	U	<0.77	U	<0.82	U
Bromochloromethane	NC	NC		<1.11	U	<1.19	U	<1.09	U	<1.05	U	<1.04	U	<1.09	U	<1.08	U	<1.13	U	<1.02	U	<134	U	<1.02	U	<1.09	U
Bromodichloromethane	NC	NC		<0.81	U	<0.87	U	<0.80	U	<0.77	U	<0.76	U	<0.80	U	<0.79	U	<0.83	U	<0.75	U	<131	U	<0.75	U	<0.80	U
Bromoform	NC	NC		<0.89	U	<0.96	U	<0.88	U	<0.85	U	<0.83	U	<0.87	U	<0.87	U	<0.91	U	<0.82	U	<119	U	<0.82	U	<0.87	U
Bromomethane	NC	NC		<1.32	U	<1.42	U	<1.31	U	<1.26	U	<1.24	U	<1.30	U	<1.29	U	<1.35	U	<1.23	U	<150	U	<1.23	U	<1.30	U
Carbon disulfide	NC	NC		<0.78	U	<0.84	U	<0.77	U	<0.75	U	<0.73	U	<0.77	U	<0.76	U	<0.80	U	<0.73	U	<121	U	<0.73	U	<0.77	U
Carbon Tetrachloride	760	2,400		<1.03	U	<1.10	U	<1.01	U	<0.98	U	<0.96	U	<1.01	U	<1.00	U	<1.05	U	<0.95	U	<132	U	<0.95	U	<1.01	U
Chlorobenzene	1,100	100,000		<0.70	U	<0.75	U	<0.69	U	<0.67	U	<0.66	U	<0.69	U	<0.68	U	<0.72	U	<0.65	U	<126	U	<0.65	U	<0.69	U
Chlorodifluoromethane (Freon 22)	NC	NC		<0.78	U	<0.84	U	<0.77	U	<0.75	U	<0.73	U	<0.77	U	<0.76	U	<0.80	U	<0.73	U	<137	U	<0.73	U	<0.77	U
Chloroethane	NC	NC		<1.16	U	<1.25	U	<1.15	U	<1.11	U	<1.09	U	<1.14	U	<1.13	U	<1.19	U	<1.08	U	<212	U	<1.08	U	<1.14	U
Chloroform	370	49,000		<0.65	U	<0.70	U	<0.64	U	<0.62	U	<0.61	U	<0.64	U	<0.63	U	<0.66	U	<0.60	U	<143	U	<0.60	U	<0.64	U
Chloromethane	NC	NC		<1.05	U	<1.13	U	<1.04	U	<1.00	U	<0.99	U	<1.03	U	<1.03	U	<1.08	U	<0.98	U	<116	U	<0.98	U	<1.03	U
c-1,2-Dichloroethene	250	100,000		<1.05	U	<1.13	U	<1.04	U	<1.00	U	<0.99	U	<1.03	U	<1.03	U	<1.08	U	<0.98	U	<131	U	<0.98	U	<1.03	U
c-1,3-Dichloropropene	NC	NC		<0.84	U	<0.90	U	<0.83	U	<0.80	U	<0.78	U	<0.82	U	<0.82	U	<0.86	U	<0.77	U	<128	U	<0.77	U	<0.82	U
Dibromochloromethane	NC	NC		<0.54	U	<0.58	U	<0.53	U	<0.51	U	<0.51	U	<0.53	U	<0.53	U	<0.55	U	<0.50	U	<122	U	<0.50	U	<0.53	U
Dibromomethane	NC	NC		<0.70	U	<0.75	U	<0.69	U	<0.67	U	<0.66	U	<0.69	U	<0.68	U	<0.72	U	<0.65	U	<134	U	<0.65	U	<0.69	U
Dichlorodifluoromethane	NC	NC		<1.05	U	<1.13	U	<1.04	U	<1.00	U	<0.99	U	<1.03	U	<1.03	U	<1.08	U	<0.98	U	<118	U	<0.98	U	<1.03	U
Ethylbenzene	1,000	41,000		<1.05	U	<1.13	U	<1.04	U	<1.00	U	<0.99	U	<1.03	U	<1.03	U	<1.08	U	<0.98	U	<131	U	<0.98	U	<1.03	U
Hexachlorobutadiene	NC	NC		<0.92	U	<0.99	U	<0.91	U	<0.87	U	<0.86	U	<0.90	U	<0.89	U	<0.94	U	<0.85	U	<116	U	<0.85	U	<0.90	U
Isopropylbenzene	NC	NC		<0.68	U	<0.73	U	<0.67	U	<0.64	U	<0.63	U	<0.66	U	<0.66	U	<0.69	U	<0.63	U	<126	U	<0.63	U	<0.66	U
m,p-xylene	NC**	NC**		<1.70	U	<1.83	U	<1.68	U	<1.62	U	<1.59	U	<1.67	U	<1.66	U	<1.74	U	<1.58	U	<256	U	<1.58	U	<1.67	U
Methyl t-butyl ether (MTBE)	930	100,000		<0.84	U	<0.90	U	<0.83	U	<0.80	U	<0.78	U	<0.82	U	<0.82	U	<0.86	U	<0.77	U	<129	U	<0.77	U	<0.82	U
Methylene Chloride	50	100,000		<0.54	U	<0.58	U	<0.53	U	<0.51	U	<0.51	U	<0.53	U	<0.53	U	<0.55	U	<0.50	U	<159	U	<0.50	U	<0.53	U
Naphthalene	NC	NC		<1.43	U	<1.54	U	<1.42	U	<1.36	U	<1.34	U	<1.40	U	<1.39	U	<1.46	U	<1.33	U	<89.7	U	<1.33	U	<1.40	U
n-Butylbenzene	12,000	100,000		<0.73	U	<0.78	U	<0.72	U	<0.69	U	<0.68	U	<0.72	U	<0.71	U	<0.75	U	<0.68	U	<122	U	<0.68	U	<0.72	U
n-Propylbenzene	3,900	100,000		<0.94	U	<1.01	U	<0.93	U	<0.90	U	<0.89	U	<0.93	U	<0.92	U	<0.97	U	<0.88	U	<119	U	<0.88	U	<0.93	U
o-xylene	NC**	NC**		<0.92	U	<0.99	U	<0.91	U	<0.87	U	<0.86	U	<0.90	U	<0.89	U	<0.94	U	<0.85	U	<125	U	<0.85	U	<0.90	U
p-Diethylbenzene	NC	NC		<0.73	U	<0.78	U	<0.72	U	<0.69	U	<0.68	U	<0.72	U	<0.71	U	<0.75	U	<0.68	U	<113	U	<0.68	U	<0.72	U

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-1B		SB-1C		SB-2B		SB-2C		SB-3B		SB-3C		SB-4B		SB-4C		SB-5B		SB-5C		SB-6B		SB-6C	
Depth				0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Soil	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<0.84	U	<0.90	U	<0.83	U	<0.80	U	<0.78	U	<0.82	U	<0.82	U	<0.86	U	<0.77	U	<119	U	<0.77	U	<0.82	U
sec-Butylbenzene	11,000	100,000		<0.76	U	<0.81	U	<0.75	U	<0.72	U	<0.71	U	<0.74	U	<0.74	U	<0.77	U	<0.70	U	<115	U	<0.70	U	<0.74	U
Styrene	NC	NC		<0.49	U	<0.52	U	<0.48	U	<0.46	U	<0.46	U	<0.48	U	<0.47	U	<0.50	U	<0.45	U	<119	U	<0.45	U	<0.48	U
t-1,2-Dichloroethene	190	100,000		<0.92	U	<0.99	U	<0.91	U	<0.87	U	<0.86	U	<0.90	U	<0.89	U	<0.94	U	<0.85	U	<140	U	<0.85	U	<0.90	U
t-1,3-Dichloropropene	NC	NC		<0.89	U	<0.96	U	<0.88	U	<0.85	U	<0.83	U	<0.87	U	<0.87	U	<0.91	U	<0.82	U	<116	U	<0.82	U	<0.87	U
tert- Amyl methyl EtherTAME	NC	NC		<0.65	U	<0.70	U	<0.64	U	<0.62	U	<0.61	U	<0.64	U	<0.63	U	<0.66	U	<0.60	U	<126	U	<0.60	U	<0.64	U
tert-Butylbenzene	5,900	100,000		<0.70	U	<0.75	U	<0.69	U	<0.67	U	<0.66	U	<0.69	U	<0.68	U	<0.72	U	<0.65	U	<125	U	<0.65	U	<0.69	U
Tertiary butyl alcohol	NC	NC		<19.7	U	<21.1	U	<19.4	U	<18.7	U	<18.4	U	<19.3	U	<19.1	U	<20.1	U	<18.2	U	<1190	U	<18.2	U	<19.3	U
Tetrachloroethene (PCE)	1,300	19,000		<0.78	U	<0.84	U	<0.77	U	<0.75	U	<0.73	U	<0.77	U	<0.76	U	<0.80	U	<0.73	U	<123	U	<0.73	U	<0.77	U
Toluene	700	100,000		<0.89	U	<0.96	U	<0.88	U	<0.85	U	<0.83	U	<0.87	U	<0.87	U	<0.91	U	<0.82	U	<159	U	<0.82	U	<0.87	U
Trichloroethene (TCE)	470	21,000		<0.81	U	<0.87	U	<0.80	U	<0.77	U	<0.76	U	<0.80	U	<0.79	U	<0.83	U	<0.75	U	<138	U	<0.75	U	<0.80	U
Trichlorofluoromethane	NC	NC		<0.78	U	<0.84	U	<0.77	U	<0.75	U	<0.73	U	<0.77	U	<0.76	U	<0.80	U	<0.73	U	<147	U	<0.73	U	<0.77	U
Vinyl Chloride	20	900		<0.65	U	<0.70	U	<0.64	U	<0.62	U	<0.61	U	<0.64	U	<0.63	U	<0.66	U	<0.60	U	<121	U	<0.60	U	<0.64	U
Total VOC TICs	NC	NC	10,000	101		0		376		217		285		359		0		94		57		57,310		749		46	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No Result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 260 µg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 µg/kg.

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-7A		SB-8A		SB-8B		SB-8C		SB-8D		SB-9A		SB-9B		SB-9C		SB-9D		SB-10B		SB-10C		SB-11A	
Depth				0-0.5		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0-0.5	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1-Trichloroethane (TCA)	680	100,000		<0.82	U	<0.71	U	<0.74	U	<0.80	U	<0.82	U	NR		<0.75	U	<0.87	U	<0.84	U	<128	U	<0.84	U	<0.84	U
1,1,1,2-Tetrachloroethane	NC	NC		<0.68	U	<0.59	U	<0.62	U	<0.67	U	<0.69	U	NR		<0.63	U	<0.73	U	<0.70	U	<116	U	<0.70	U	<0.70	U
1,1,2,2-Tetrachloroethane	NC	NC		<1.06	U	<0.92	U	<0.97	U	<1.04	U	<1.07	U	NR		<0.98	U	<1.13	U	<1.10	U	<101	U	<1.09	U	<1.09	U
1,1,2-Trichloroethane	NC	NC		<1.01	U	<0.88	U	<0.92	U	<0.99	U	<1.01	U	NR		<0.93	U	<1.07	U	<1.04	U	<122	U	<1.03	U	<1.03	U
1,1,2-Trichlorotrifluoroethane (Freon 113)	NC	NC		<0.68	U	<0.59	U	<0.62	U	<0.67	U	<0.69	U	NR		<0.63	U	<0.73	U	<0.70	U	<119	U	<0.70	U	<0.70	U
1,1-Dichloroethane	270	26,000		<0.60	U	<0.52	U	<0.55	U	<0.59	U	<0.60	U	NR		<0.55	U	<0.64	U	<0.62	U	<136	U	<0.61	U	<0.61	U
1,1-Dichloroethene	330	100,000		<0.79	U	<0.69	U	<0.72	U	<0.77	U	<0.79	U	NR		<0.73	U	<0.84	U	<0.81	U	<126	U	<0.81	U	<0.81	U
1,1-Dichloropropene	NC	NC		<1.31	U	<1.14	U	<1.19	U	<1.28	U	<1.32	U	NR		<1.20	U	<1.39	U	<1.35	U	<108	U	<1.34	U	<1.34	U
1,2,3-Trichlorobenzene	NC	NC		<0.96	U	<0.83	U	<0.87	U	<0.93	U	<0.96	U	NR		<0.88	U	<1.01	U	<0.98	U	<83.7	U	<0.98	U	<0.98	U
1,2,3-Trichloropropane	NC	NC		<1.69	U	<1.47	U	<1.54	U	<1.66	U	<1.70	U	NR		<1.56	U	<1.80	U	<1.74	U	<105	U	<1.73	U	<1.73	U
1,2,4,5-Tetramethylbenzene (Durene)	NC	NC		<0.98	U	<0.85	U	9.5	J	12	J	5.91	J	NR		5.29	J	3.91		4.92		3,620		8.79	J	<1.00	U
1,2,4-Trichlorobenzene	NC	NC		<0.82	U	<0.71	U	<0.74	U	<0.80	U	<0.82	U	NR		<0.75	U	<0.87	U	<0.84	U	<90.4	U	<0.84	U	<0.84	U
1,2,4-Trimethylbenzene	3,600	52,000		<0.82	U	<0.71	U	<0.74	U	<0.80	U	<0.82	U	NR		<0.75	U	<0.87	U	<0.84	U	8,540		<0.84	U	<0.84	U
1,2-Dibromo-3-chloropropane	NC	NC		<2.21	U	<1.92	U	<2.01	U	<2.16	U	<2.22	U	NR		<2.03	U	<2.35	U	<2.28	U	<101	U	<2.26	U	<2.26	U
1,2-Dibromoethane	NC	NC		<0.79	U	<0.69	U	<0.72	U	<0.77	U	<0.79	U	NR		<0.73	U	<0.84	U	<0.81	U	<105	U	<0.81	U	<0.81	U
1,2-Dichlorobenzene	1,100	100,000		<0.87	U	<0.76	U	<0.79	U	<0.85	U	<0.88	U	NR		<0.80	U	<0.93	U	<0.90	U	<108	U	<0.89	U	<0.89	U
1,2-Dichloroethane	20	3,100		<0.96	U	<0.83	U	<0.87	U	<0.93	U	<0.96	U	NR		<0.88	U	<1.01	U	<0.98	U	<131	U	<0.98	U	<0.98	U
1,2-Dichloropropane	NC	NC		<1.04	U	<0.90	U	<0.94	U	<1.01	U	<1.04	U	NR		<0.95	U	<1.10	U	<1.07	U	<120	U	<1.06	U	<1.06	U
1,3,5-Trimethylbenzene	8,400	52,000		<0.93	U	<0.81	U	<0.84	U	<0.91	U	<0.93	U	NR		<0.85	U	<0.99	U	<0.96	U	3540		<0.95	U	<0.95	U
1,3-Dichlorobenzene	2,400	49,000		<0.74	U	<0.64	U	<0.67	U	<0.72	U	<0.74	U	NR		<0.68	U	<0.78	U	<0.76	U	<104	U	<0.75	U	<0.75	U
1,3-Dichloropropane	NC	NC		<0.57	U	<0.50	U	<0.52	U	<0.56	U	<0.58	U	NR		<0.53	U	<0.61	U	<0.59	U	<112	U	<0.59	U	<0.59	U
1,4-Dichlorobenzene	1,800	13,000		<0.57	U	<0.50	U	<0.52	U	<0.56	U	<0.58	U	NR		<0.53	U	<0.61	U	<0.59	U	<105	U	<0.59	U	<0.59	U
2,2-Dichloropropane	NC	NC		<1.01	U	<0.88	U	<0.92	U	<0.99	U	<1.01	U	NR		<0.93	U	<1.07	U	<1.04	U	<117	U	<1.03	U	<1.03	U
2-Butanone (MEK)	120	100,000		<5.73	U	<4.98	U	<5.21	U	<5.61	U	<5.75	U	NR		<5.27	U	<6.09	U	<5.90	U	<103	U	<5.86	U	<5.86	U
2-Chloroethylvinylether	NC	NC		<4.45	U	<3.86	U	<4.04	U	<4.35	U	<4.47	U	NR		<4.09	U	<4.73	U	<4.58	U	<192	U	<4.55	U	<4.55	U
2-Chlorotoluene	NC	NC		<0.74	U	<0.64	U	<0.67	U	<0.72	U	<0.74	U	NR		<0.68	U	<0.78	U	<0.76	U	<112	U	<0.75	U	<0.75	U
2-Hexanone	NC	NC		<2.40	U	<2.09	U	<2.18	U	<2.35	U	<2.41	U	NR		<2.21	U	<2.55	U	<2.47	U	<82.3	U	<2.46	U	<2.46	U
4-Chlorotoluene	NC	NC		<0.82	U	<0.71	U	<0.74	U	<0.80	U	<0.82	U	NR		<0.75	U	<0.87	U	<0.84	U	<105	U	<0.84	U	<0.84	U
4-Isopropyltoluene	NC	NC		<0.63	U	<0.55	U	<0.57	U	<0.61	U	<0.63	U	NR		<0.58	U	<0.67	U	<0.65	U	2560		<0.64	U	<0.64	U
4-Methyl-2-pentanone	NC	NC		<3.63	U	<3.15	U	<3.30	U	<3.55	U	<3.64	U	NR		<3.34	U	<3.86	U	<3.74	U	<116	U	<3.71	U	<3.71	U
Acetone	50	100,000		<6.72	U	<5.83	U	<6.10	U	<6.57	U	<6.74	U	NR		<6.17	U	<7.13	U	<6.91	U	<157	U	<6.86	U	<6.86	U
Acrylonitrile	NC	NC		<16.8	U	<14.6	U	<15.3	U	<16.4	U	<16.9	U	NR		<15.4	U	<17.8	U	<17.3	U	<510	U	<17.2	U	<17.2	U
Benzene	60	4,800		<0.85	U	<0.73	U	<0.77	U	<0.83	U	<0.85	U	NR		<0.78	U	<0.90	U	<0.87	U	<119	U	<0.86	U	<0.86	U
Bromobenzene	NC	NC		<0.85	U	<0.73	U	<0.77	U	<0.83	U	<0.85	U	NR		<0.78	U	<0.90	U	<0.87	U	<108	U	<0.86	U	<0.86	U
Bromochloromethane	NC	NC		<1.12	U	<0.97	U	<1.02	U	<1.09	U	<1.12	U	NR		<1.03	U	<1.19	U	<1.15	U	<123	U	<1.14	U	<1.14	U
Bromodichloromethane	NC	NC		<0.82	U	<0.71	U	<0.74	U	<0.80	U	<0.82	U	NR		<0.75	U	<0.87	U	<0.84	U	<120	U	<0.84	U	<0.84	U
Bromoform	NC	NC		<0.90	U	<0.78	U	<0.82	U	<0.88	U	<0.90	U	NR		<0.83	U	<0.96	U	<0.93	U	<109	U	<0.92	U	<0.92	U
Bromomethane	NC	NC		<1.34	U	<1.16	U	<1.22	U	<1.31	U	<1.34	U	NR		<1.23	U	<1.42	U	<1.38	U	<138	U	<1.37	U	<1.37	U
Carbon disulfide	NC	NC		<0.79	U	<0.69	U	<0.72	U	<0.77	U	<0.79	U	NR		<0.73	U	<0.84	U	<0.81	U	<111	U	<0.81	U	<0.81	U
Carbon Tetrachloride	760	2,400		<1.04	U	<0.90	U	<0.94	U	<1.01	U	<1.04	U	NR		<0.95	U	<1.10	U	<1.07	U	<122	U	<1.06	U	<1.06	U
Chlorobenzene	1,100	100,000		<0.71	U	<0.62	U	<0.64	U	<0.69	U	<0.71	U	NR		<0.65	U	<0.75	U	<0.73	U	<116	U	<0.73	U	<0.73	U
Chlorodifluoromethane (Freon 22)	NC	NC		<0.79	U	<0.69	U	<0.72	U	<0.77	U	<0.79	U	NR		<0.73	U	<0.84	U	<0.81	U	<126	U	<0.81	U	<0.81	U
Chloroethane	NC	NC		<1.17	U	<1.02	U	<1.07	U	<1.15	U	<1.18	U	NR		<1.08	U	<1.25	U	<1.21	U	<194	U	<1.20	U	<1.20	U
Chloroform	370	49,000		<0.66	U	<0.57	U	<0.60	U	<0.64	U	<0.66	U	NR		<0.60	U	<0.70	U	<0.67	U	<131	U	<0.67	U	<0.67	U
Chloromethane	NC	NC		<1.06	U	<0.92	U	<0.97	U	<1.04	U	<1.07	U	NR		<0.98	U	<1.13	U	<1.10	U	<107	U	<1.09	U	<1.09	U
c-1,2-Dichloroethene	250	100,000		<1.06	U	<0.92	U	<0.97	U	<1.04	U	<1.07	U	NR		<0.98	U	<1.13	U	<1.10	U	<120	U	<1.09	U	<1.09	U
c-1,3-Dichloropropene	NC	NC		<0.85	U	<0.73	U	<0.77	U	<0.83	U	<0.85	U	NR		<0.78	U	<0.90	U	<0.87	U	<117	U	<0.86	U	<0.86	U
Dibromochloromethane	NC	NC		<0.55	U	<0.47	U	<0.50	U	<0.53	U	<0.55	U	NR		<0.50	U	<0.58	U	<0.56	U	<112	U	<0.56	U	<0.56	U
Dibromomethane	NC	NC		<0.71	U	<0.62	U	<0.64	U	<0.69	U	<0.71	U	NR		<0.65	U	<0.75	U	<0.73	U	<123	U	<0.73	U	<0.73	U
Dichlorodifluoromethane	NC	NC		<1.06	U	<0.92	U	<0.97	U	<1.04	U	<1.07	U	NR		<0.98	U	<1.13	U	<1.10	U	<108	U	<1.09	U	<1.09	U
Ethylbenzene	1,000	41,000		<1.06	U	<0.92	U	<0.97	U	<1.04	U	<1.07	U	NR		<0.98	U	<1.13	U	<1.10	U	311		<1.09	U	<1.09	U
Hexachlorobutadiene	NC	NC		<0.93	U	<0.81	U	<0.84	U	<0.91	U	<0.93	U	NR		<0.85	U	<0.99	U	<0.96	U	<107	U	<0.95	U	<0.95	U
Isopropylbenzene	NC	NC		<0.68	U	<0.59	U	<0.62	U	<0.67	U	<0.69	U	NR		<0.63	U	<0.73	U	<0.70	U	445	J	<0.70	U	<0.70	U
m,p-xylene	NC**	NC**		<1.72	U	<1.49	U	<1.56	U	<1.68	U	<1.73	U	NR		<1.58	U	<1.83	U	<1.77	U	338		<1.76	U	<1.76	U
Methyl t-butyl ether (MTBE)	930	100,000		<0.85	U	<0.73	U	<0.77	U	<0.83	U	<0.85	U	NR		<0.78	U	<0.90	U	<0.87	U	<119	U	<0.86	U	<0.86	U
Methylene Chloride	50	100,000		<0.55	U	<0.47	U	<0.50	U	<0.53	U	<0.55	U	NR		<0.50	U	<0.58	U	<0.56	U	<146	U	<0.56	U	<0.56	U
Naphthalene	NC	NC		<1.45	U	<1.26	U	<1.31	U	<1.42	U	<1.45	U	NR		<1.33	U	<1.54	U	<1.49	U	5210		<1.48	U	<1.48	U
n-Butylbenzene	12,000	100,000		<0.74	U	<0.64	U	<0.67	U	<0.72	U	<0.74	U	NR		<0.68	U	<0.78	U	<0.76	U	<112	U	<0.75	U	<0.75	U
n-Propylbenzene	3,900	100,000		<0.96	U	<0.83	U	<0.87	U	<0.93	U	<0.96	U	NR		<0.88	U	<1.01	U	<0.98	U	1040		<0.98	U	<0.98	U
o-xylene	NC**	NC**		<0.93	U	<0.81	U	<0.84	U	<0.91	U	<0.93	U	NR		<0.85	U	<0.99	U	<0.96	U	698		<0.95	U	<0.95	U
p-Diethylbenzene	NC	NC		<0.74	U	<0.64	U	<0.67	U	<0.72	U	<0.74	U	NR		<0.68	U	<0.78	U	<0.76	U	12600		<0.75	U	<0.75	U

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-7A		SB-8A		SB-8B		SB-8C		SB-8D		SB-9A		SB-9B		SB-9C		SB-9D		SB-10B		SB-10C		SB-11A	
Depth				0-0.5		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0-0.5	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<0.85	U	<0.73	U	<0.77	U	<0.83	U	<0.85	U	NR		<0.78	U	<0.90	U	<0.87	U	1770		<0.86	U	<0.86	U
sec-Butylbenzene	11,000	100,000		<0.76	U	<0.66	U	<0.69	U	<0.75	U	<0.77	U	NR		<0.70	U	<0.81	U	<0.79	U	1440		<0.78	U	<0.78	U
Styrene	NC	NC		<0.49	U	<0.43	U	<0.45	U	<0.48	U	<0.49	U	NR		<0.45	U	<0.52	U	<0.51	U	<109	U	<0.50	U	<0.50	U
t-1,2-Dichloroethene	190	100,000		<0.93	U	<0.81	U	<0.84	U	<0.91	U	<0.93	U	NR		<0.85	U	<0.99	U	<0.96	U	<128	U	<0.95	U	<0.95	U
t-1,3-Dichloropropene	NC	NC		<0.90	U	<0.78	U	<0.82	U	<0.88	U	<0.90	U	NR		<0.83	U	<0.96	U	<0.93	U	<107	U	<0.92	U	<0.92	U
tert- Amyl methyl EtherTAME	NC	NC		<0.66	U	<0.57	U	<0.60	U	<0.64	U	<0.66	U	NR		<0.60	U	<0.70	U	<0.67	U	<116	U	<0.67	U	<0.67	U
tert-Butylbenzene	5,900	100,000		<0.71	U	<0.62	U	<0.64	U	<0.69	U	<0.71	U	NR		<0.65	U	<0.75	U	<0.73	U	<115	U	<0.73	U	<0.73	U
Tertiary butyl alcohol	NC	NC		<19.9	U	<17.3	U	<18.1	U	<19.4	U	<19.9	U	NR		<18.3	U	<21.1	U	<20.5	U	<1090	U	<20.3	U	<20.3	U
Tetrachloroethene (PCE)	1,300	19,000		<0.79	U	<0.69	U	<0.72	U	<0.77	U	<0.79	U	NR		<0.73	U	<0.84	U	<0.81	U	<113	U	<0.81	U	<0.81	U
Toluene	700	100,000		<0.90	U	<0.78	U	<0.82	U	<0.88	U	<0.90	U	NR		<0.83	U	<0.96	U	<0.93	U	<146	U	<0.92	U	<0.92	U
Trichloroethene (TCE)	470	21,000		<0.82	U	<0.71	U	<0.74	U	<0.80	U	<0.82	U	NR		<0.75	U	<0.87	U	<0.84	U	<127	U	<0.84	U	<0.84	U
Trichlorofluoromethane	NC	NC		<0.79	U	<0.69	U	<0.72	U	<0.77	U	<0.79	U	NR		<0.73	U	<0.84	U	<0.81	U	<135	U	<0.81	U	<0.81	U
Vinyl Chloride	20	900		<0.66	U	<0.57	U	<0.60	U	<0.64	U	<0.66	U	NR		<0.60	U	<0.70	U	<0.67	U	<111	U	<0.67	U	<0.67	U
Total VOC TICs	NC	NC	10,000	0		0		68		0		0		NR		167		0		14		107,590		0		0	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No Result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 260 µg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 µg/kg.

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-12A		SB-12B		SB-12C		SB-12D		SB-13B		SB-13C		SB-14A		SB-14B		SB-14C		SB-15A		SB-15B		SB-15C	
Depth				0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5		0.5-3		3-7	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1-Trichloroethane (TCA)	680	100,000		NR		<134	U	<132	U	<290	U	<129	U	<138	U	NR		<131	U	<0.79	U	NR		<129	U	<142	U
1,1,1,2-Tetrachloroethane	NC	NC		NR		<121	U	<120	U	<262	U	<117	U	<125	U	NR		<119	U	<0.66	U	NR		<117	U	<128	U
1,1,2,2-Tetrachloroethane	NC	NC		NR		<106	U	<104	U	<229	U	<102	U	<109	U	NR		<104	U	<1.03	U	NR		<102	U	<112	U
1,1,2-Trichloroethane	NC	NC		NR		<127	U	<125	U	<274	U	<122	U	<130	U	NR		<124	U	<0.97	U	NR		<122	U	<134	U
1,1,2-Trichlorotrifluoroethane (Freon 113)	NC	NC		NR		<124	U	<122	U	<268	U	<120	U	<128	U	NR		<121	U	<0.66	U	NR		<120	U	<131	U
1,1-Dichloroethane	270	26,000		NR		<142	U	<140	U	<308	U	<137	U	<146	U	NR		<139	U	<0.58	U	NR		<137	U	<150	U
1,1-Dichloroethene	330	100,000		NR		<131	U	<129	U	<284	U	<126	U	<135	U	NR		<128	U	<0.76	U	NR		<126	U	<139	U
1,1-Dichloropropene	NC	NC		NR		<113	U	<111	U	<244	U	<109	U	<116	U	NR		<110	U	<1.26	U	NR		<109	U	<119	U
1,2,3-Trichlorobenzene	NC	NC		NR		<87.4	U	<86.2	U	<189	U	<84.3	U	<89.9	U	NR		<85.6	U	<0.92	U	NR		<84.3	U	<92.4	U
1,2,3-Trichloropropane	NC	NC		NR		<110	U	<108	U	<238	U	<106	U	<113	U	NR		<108	U	<1.63	U	NR		<106	U	<116	U
1,2,4,5-Tetramethylbenzene (Durene)	NC	NC		NR		4,630		5,350		12,700		3,770		8,680		NR		6,200		8.87	J	NR		16,600		8,350	
1,2,4-Trichlorobenzene	NC	NC		NR		<94.5	U	<93.1	U	<204	U	<91.1	U	<97.2	U	NR		<92.5	U	<0.79	U	NR		<91.1	U	<99.8	U
1,2,4-Trimethylbenzene	3,600	52,000		NR		<118	U	<117	U	<256	U	<114	U	601		NR		1400		<0.79	U	NR		3030		<125	U
1,2-Dibromo-3-chloropropane	NC	NC		NR		<106	U	<104	U	<229	U	<102	U	<109	U	NR		<104	U	<2.13	U	NR		<102	U	<112	U
1,2-Dibromoethane	NC	NC		NR		<110	U	<108	U	<238	U	<106	U	<113	U	NR		<108	U	<0.76	U	NR		<106	U	<116	U
1,2-Dichlorobenzene	1,100	100,000		NR		<113	U	<111	U	<244	U	<109	U	<116	U	NR		<110	U	<0.84	U	NR		<109	U	<119	U
1,2-Dichloroethane	20	3,100		NR		<137	U	<135	U	<296	U	<132	U	<141	U	NR		<134	U	<0.92	U	NR		<132	U	<145	U
1,2-Dichloropropane	NC	NC		NR		<125	U	<124	U	<271	U	<121	U	<129	U	NR		<123	U	<1.00	U	NR		<121	U	<133	U
1,3,5-Trimethylbenzene	8,400	52,000		NR		<116	U	<114	U	<250	U	<112	U	207		NR		146		<0.89	U	NR		2630		<122	U
1,3-Dichlorobenzene	2,400	49,000		NR		<109	U	<107	U	<235	U	<105	U	<112	U	NR		<106	U	<0.71	U	NR		<105	U	<115	U
1,3-Dichloropropane	NC	NC		NR		<117	U	<115	U	<253	U	<113	U	<120	U	NR		<115	U	<0.55	U	NR		<113	U	<124	U
1,4-Dichlorobenzene	1,800	13,000		NR		<110	U	<108	U	<238	U	<106	U	<113	U	NR		<108	U	<0.55	U	NR		<106	U	<116	U
2,2-Dichloropropane	NC	NC		NR		<123	U	<121	U	<265	U	<118	U	<126	U	NR		<120	U	<0.97	U	NR		<118	U	<130	U
2-Butanone (MEK)	120	100,000		NR		<107	U	<106	U	<232	U	<103	U	<110	U	NR		<105	U	<5.52	U	NR		<103	U	<113	U
2-Chloroethylvinylether	NC	NC		NR		<200	U	<197	U	<433	U	<193	U	<206	U	NR		<196	U	<4.29	U	NR		<193	U	<212	U
2-Chlorotoluene	NC	NC		NR		<117	U	<115	U	<253	U	<113	U	<120	U	NR		<115	U	<0.71	U	NR		<113	U	<124	U
2-Hexanone	NC	NC		NR		<86.0	U	<84.8	U	<186	U	<83.0	U	<88.4	U	NR		<84.2	U	<2.31	U	NR		<83.0	U	<90.9	U
4-Chlorotoluene	NC	NC		NR		<110	U	<108	U	<238	U	<106	U	<113	U	NR		<108	U	<0.79	U	NR		<106	U	<116	U
4-Isopropyltoluene	NC	NC		NR		<114	U	<113	U	<247	U	<110	U	<117	U	NR		1110		<0.60	U	NR		5010		282	J
4-Methyl-2-pentanone	NC	NC		NR		<121	U	<120	U	<262	U	<117	U	<125	U	NR		<119	U	<3.50	U	NR		<117	U	<128	U
Acetone	50	100,000		NR		<164	U	<161	U	<354	U	<158	U	<168	U	NR		<160	U	<6.47	U	NR		<158	U	<173	U
Acrylonitrile	NC	NC		NR		<533	U	<525	U	<1150	U	<514	U	<548	U	NR		<522	U	<16.2	U	NR		<514	U	<563	U
Benzene	60	4,800		NR		<124	U	<122	U	<268	U	<120	U	<128	U	NR		<121	U	<0.82	U	NR		<120	U	<131	U
Bromobenzene	NC	NC		NR		<113	U	<111	U	<244	U	<109	U	<116	U	NR		<110	U	<0.82	U	NR		<109	U	<119	U
Bromochloromethane	NC	NC		NR		<128	U	<126	U	<278	U	<124	U	<132	U	NR		<126	U	<1.08	U	NR		<124	U	<136	U
Bromodichloromethane	NC	NC		NR		<125	U	<124	U	<271	U	<121	U	<129	U	NR		<123	U	<0.79	U	NR		<121	U	<133	U
Bromoform	NC	NC		NR		<114	U	<113	U	<247	U	<110	U	<117	U	NR		<112	U	<0.87	U	NR		<110	U	<121	U
Bromomethane	NC	NC		NR		<144	U	<142	U	<311	U	<139	U	<148	U	NR		<141	U	<1.29	U	NR		<139	U	<152	U
Carbon disulfide	NC	NC		NR		<116	U	<114	U	<250	U	<112	U	<119	U	NR		<113	U	<0.76	U	NR		<112	U	<122	U
Carbon Tetrachloride	760	2,400		NR		<127	U	<125	U	<274	U	<122	U	<130	U	NR		<124	U	<1.00	U	NR		<122	U	<134	U
Chlorobenzene	1,100	100,000		NR		<121	U	<120	U	<262	U	<117	U	<125	U	NR		<119	U	<0.68	U	NR		<117	U	<128	U
Chlorodifluoromethane (Freon 22)	NC	NC		NR		<131	U	<129	U	<284	U	<126	U	<135	U	NR		<128	U	<0.76	U	NR		<126	U	<139	U
Chloroethane	NC	NC		NR		<203	U	<200	U	<439	U	<196	U	<209	U	NR		<199	U	<1.13	U	NR		<196	U	<215	U
Chloroform	370	49,000		NR		<137	U	<135	U	<296	U	<132	U	<141	U	NR		<134	U	<0.63	U	NR		<132	U	<145	U
Chloromethane	NC	NC		NR		<111	U	<110	U	<241	U	<107	U	<115	U	NR		<109	U	<1.03	U	NR		<107	U	<118	U
c-1,2-Dichloroethene	250	100,000		NR		<125	U	<124	U	<271	U	<121	U	<129	U	NR		<123	U	<1.03	U	NR		<121	U	<133	U
c-1,3-Dichloropropene	NC	NC		NR		<123	U	<121	U	<265	U	<118	U	<126	U	NR		<120	U	<0.82	U	NR		<118	U	<130	U
Dibromochloromethane	NC	NC		NR		<117	U	<115	U	<253	U	<113	U	<120	U	NR		<115	U	<0.53	U	NR		<113	U	<124	U
Dibromomethane	NC	NC		NR		<128	U	<126	U	<278	U	<124	U	<132	U	NR		<126	U	<0.68	U	NR		<124	U	<136	U
Dichlorodifluoromethane	NC	NC		NR		<113	U	<111	U	<244	U	<109	U	<116	U	NR		<110	U	<1.03	U	NR		<109	U	<119	U
Ethylbenzene	1,000	41,000		NR		<125	U	<124	U	<271	U	<121	U	<129	U	NR		<123	U	<1.03	U	NR		150	J	<133	U
Hexachlorobutadiene	NC	NC		NR		<111	U	<110	U	<241	U	<107	U	<115	U	NR		<109	U	<0.89	U	NR		<107	U	<118	U
Isopropylbenzene	NC	NC		NR		589	J	811		1780		338	J	1190		NR		199	J	<0.66	U	NR		1010		307	J
m,p-xylene	NC**	NC**		NR		<245	U	<242	U	<531	U	<237	U	<252	U	NR		<240	U	<1.66	U	NR		261	J	<259	U
Methyl t-butyl ether (MTBE)	930	100,000		NR		<124	U	<122	U	<268	U	<120	U	<128	U	NR		<121	U	<0.82	U	NR		<120	U	<131	U
Methylene Chloride	50	100,000		NR		<152	U	<150	U	<329	U	<147	U	<157	U	NR		<149	U	<0.53	U	NR		<147	U	<161	U
Naphthalene	NC	NC		NR		<86.0	U	<84.8	U	<186	U	<83.0	U	<88.4	U	NR		<84.2	U	<1.39	U	NR		6140		1580	
n-Butylbenzene	12,000	100,000		NR		2060		2350		5700		1790		4490		NR		1700		<0.71	U	NR		5720		2370	
n-Propylbenzene	3,900	100,000		NR		1370		1720		3820		801		2350		NR		634	J	<0.92	U	NR		2470		836	
o-xylene	NC**	NC**		NR		<120	U	<118	U	<259	U	<116	U	<123	U	NR		<117	U	<0.89	U	NR		<116	U	<127	U
p-Diethylbenzene	NC	NC		NR		1230		1460		3390		1190		3710		NR		2130		<0.71	U	NR		<105	U	2180	U

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-12A		SB-12B		SB-12C		SB-12D		SB-13B		SB-13C		SB-14A		SB-14B		SB-14C		SB-15A		SB-15B		SB-15C	
Depth				0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5		0.5-3		3-7	
Lab Sample ID				1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		NR		<114	U	<113	U	<247	U	<110	U	382		NR		283		<0.82	U	NR		1960		<121	U
sec-Butylbenzene	11,000	100,000		NR		1550		2220		4870		1110		2910		NR		928		<0.74	U	NR		4140		1570	
Styrene	NC	NC		NR		<114	U	<113	U	<247	U	<110	U	<117	U	NR		<112	U	<0.47	U	NR		<110	U	<121	U
t-1,2-Dichloroethene	190	100,000		NR		<134	U	<132	U	<290	U	<129	U	<138	U	NR		<131	U	<0.89	U	NR		<129	U	<142	U
t-1,3-Dichloropropene	NC	NC		NR		<111	U	<110	U	<241	U	<107	U	<115	U	NR		<109	U	<0.87	U	NR		<107	U	<118	U
tert- Amyl methyl EtherTAME	NC	NC		NR		<121	U	<120	U	<262	U	<117	U	<125	U	NR		<119	U	<0.63	U	NR		<117	U	<128	U
tert-Butylbenzene	5,900	100,000		NR		<120	U	<118	U	<259	U	<116	U	419		NR		<117	U	<0.68	U	NR		850		<127	U
Tertiary butyl alcohol	NC	NC		NR		<1140	U	<1130	U	<2470	U	<1100	U	<1170	U	NR		<1120	U	<19.1	U	NR		<1100	U	<1210	U
Tetrachloroethene (PCE)	1,300	19,000		NR		<118	U	<117	U	<256	U	<114	U	<122	U	NR		<116	U	<0.76	U	NR		<114	U	<125	U
Toluene	700	100,000		NR		<152	U	<150	U	<329	U	<147	U	<157	U	NR		<149	U	<0.87	U	NR		<147	U	<161	U
Trichloroethene (TCE)	470	21,000		NR		<133	U	<131	U	<287	U	<128	U	<136	U	NR		<130	U	<0.79	U	NR		<128	U	<140	U
Trichlorofluoromethane	NC	NC		NR		<141	U	<139	U	<305	U	<136	U	<145	U	NR		<138	U	<0.76	U	NR		<136	U	<149	U
Vinyl Chloride	20	900		NR		<116	U	<114	U	<250	U	<112	U	<119	U	NR		<113	U	<0.63	U	NR		<112	U	<122	U
Total VOC TICs	NC	NC	10,000	NR		79,330		68,880		225,800		67,370		99,830		NR		103,300		172		NR		172,000		98,620	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No Result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 260 µg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 µg/kg.

Sample ID				SB-16A		SB-17A		SB-18B		SB-18C		SB-19B		SB-19C		SB-19 Peat		SB-20B		SB-20C		SB-21B		SB-21C		SB-22B	
Depth				0-0.5		0-0.5		0.5-3		3-7		0.5-3		3-7		7+		0.5-3		3-7		0.5-3		0.5-3		0.5-3	
Lab Sample ID				1107290		1107290		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1-Trichloroethane (TCA)	680	100,000		<0.81	U	NR		<132	U	<0.97	U	<0.79	U	<0.80	U	<1.32	U	<0.74	U	<1.11	U	<0.75	U	<0.80	U	<0.78	U
1,1,1,2-Tetrachloroethane	NC	NC		<0.68	U	NR		<120	U	<0.81	U	<0.65	U	<0.67	U	<1.10	U	<0.62	U	<0.93	U	<0.63	U	<0.67	U	<0.65	U
1,1,2,2-Tetrachloroethane	NC	NC		<1.06	U	NR		<104	U	<1.26	U	<1.02	U	<1.05	U	<1.72	U	<0.97	U	<1.45	U	<0.98	U	<1.05	U	<1.01	U
1,1,2-Trichloroethane	NC	NC		<1.00	U	NR		<125	U	<1.19	U	<0.97	U	<0.99	U	<1.63	U	<0.92	U	<1.37	U	<0.93	U	<0.99	U	<0.96	U
1,1,2-Trichlorotrifluoroethane (Freon 113)	NC	NC		<0.68	U	NR		<122	U	<0.81	U	<0.65	U	<0.67	U	<1.10	U	<0.62	U	<0.93	U	<0.63	U	<0.67	U	<0.65	U
1,1-Dichloroethane	270	26,000		<0.60	U	NR		<140	U	<0.71	U	<0.58	U	<0.59	U	<0.97	U	<0.55	U	<0.82	U	<0.55	U	<0.59	U	<0.57	U
1,1-Dichloroethene	330	100,000		<0.79	U	NR		<129	U	<0.93	U	<0.76	U	<0.78	U	<1.28	U	<0.72	U	<1.08	U	<0.73	U	<0.78	U	<0.75	U
1,1-Dichloropropene	NC	NC		<1.30	U	NR		<111	U	<1.55	U	<1.26	U	<1.29	U	<2.11	U	<1.19	U	<1.78	U	<1.20	U	<1.29	U	<1.25	U
1,2,3-Trichlorobenzene	NC	NC		<0.95	U	NR		<86.2	U	<1.13	U	<0.92	U	<0.94	U	<1.54	U	<0.87	U	<1.30	U	<0.88	U	<0.94	U	<0.91	U
1,2,3-Trichloropropane	NC	NC		<1.68	U	NR		<108	U	<2.00	U	<1.62	U	<1.66	U	<2.73	U	<1.54	U	<2.30	U	<1.56	U	<1.66	U	<1.61	U
1,2,4,5-Tetramethylbenzene (Durene)	NC	NC		2.57	J	NR		8,400		17.6		<0.94	U	8.6	J	<1.58	U	12	J	<1.34	U	<0.90	U	<0.96	U	12.5	J
1,2,4-Trichlorobenzene	NC	NC		<0.81	U	NR		<93.1	U	<0.97	U	<0.79	U	<0.80	U	<1.32	U	<0.74	U	<1.11	U	<0.75	U	<0.80	U	<0.78	U
1,2,4-Trimethylbenzene	3,600	52,000		<0.81	U	NR		<117	U	<0.97	U	<0.79	U	6.67	J	<1.32	U	<0.74	U	<1.11	U	<0.75	U	<0.80	U	<0.78	U
1,2-Dibromo-3-chloropropane	NC	NC		<2.20	U	NR		<104	U	<2.61	U	<2.12	U	<2.17	U	<3.56	U	<2.01	U	<3.01	U	<2.03	U	<2.17	U	<2.11	U
1,2-Dibromoethane	NC	NC		<0.79	U	NR		<108	U	<0.93	U	<0.76	U	<0.78	U	<1.28	U	<0.72	U	<1.08	U	<0.73	U	<0.78	U	<0.75	U
1,2-Dichlorobenzene	1,100	100,000		<0.87	U	NR		<111	U	<1.03	U	<0.84	U	<0.86	U	<1.41	U	<0.79	U	<1.19	U	<0.80	U	<0.86	U	<0.83	U
1,2-Dichloroethane	20	3,100		<0.95	U	NR		<135	U	<1.13	U	<0.92	U	<0.94	U	<1.54	U	<0.87	U	<1.30	U	<0.88	U	<0.94	U	<0.91	U
1,2-Dichloropropane	NC	NC		<1.03	U	NR		<124	U	<1.22	U	<1.00	U	<1.02	U	<1.67	U	<0.94	U	<1.41	U	<0.95	U	<1.02	U	<0.99	U
1,3,5-Trimethylbenzene	8,400	52,000		<0.92	U	NR		<114	U	<1.09	U	<0.89	U	<0.91	U	<1.50	U	<0.84	U	<1.26	U	<0.85	U	<0.91	U	<0.88	U
1,3-Dichlorobenzene	2,400	49,000		<0.73	U	NR		<107	U	<0.87	U	<0.71	U	<0.72	U	<1.19	U	<0.67	U	<1.00	U	<0.68	U	<0.72	U	<0.70	U
1,3-Dichloropropane	NC	NC		<0.57	U	NR		<115	U	<0.68	U	<0.55	U	<0.56	U	<0.92	U	<0.52	U	<0.78	U	<0.53	U	<0.56	U	<0.55	U
1,4-Dichlorobenzene	1,800	13,000		<0.57	U	NR		<108	U	<0.68	U	<0.55	U	<0.56	U	<0.92	U	<0.52	U	<0.78	U	<0.53	U	<0.56	U	<0.55	U
2,2-Dichloropropane	NC	NC		<1.00	U	NR		<121	U	<1.19	U	<0.97	U	<0.99	U	<1.63	U	<0.92	U	<1.37	U	<0.93	U	<0.99	U	<0.96	U
2-Butanone (MEK)	120	100,000		<5.69	U	NR		<106	U	<6.76	U	<5.50	U	<5.63	U	<9.24	U	<5.21	U	<7.79	U	<5.27	U	<5.63	U	<5.46	U
2-Chloroethylvinylether	NC	NC		<4.42	U	NR		<197	U	<5.25	U	<4.27	U	<4.37	U	<7.17	U	<4.04	U	<6.05	U	<4.09	U	<4.37	U	<4.24	U
2-Chlorotoluene	NC	NC		<0.73	U	NR		<115	U	<0.87	U	<0.71	U	<0.72	U	<1.19	U	<0.67	U	<1.00	U	<0.68	U	<0.72	U	<0.70	U
2-Hexanone	NC	NC		<2.38	U	NR		<84.8	U	<2.83	U	<2.31	U	<2.36	U	<3.87	U	<2.18	U	<3.26	U	<2.21	U	<2.36	U	<2.29	U
4-Chlorotoluene	NC	NC		<0.81	U	NR		<108	U	<0.97	U	<0.79	U	<0.80	U	<1.32	U	<0.74	U	<1.11	U	<0.75	U	<0.80	U	<0.78	U
4-Isopropyltoluene	NC	NC		<0.62	U	NR		959		<0.74	U	<0.60	U	<0.62	U	<1.01	U	<0.57	U	<0.85	U	<0.58	U	<0.62	U	<0.60	U
4-Methyl-2-pentanone	NC	NC		<3.60	U	NR		<120	U	<4.28	U	<3.48	U	<3.56	U	<5.85	U	<3.30	U	<4.93	U	<3.34	U	<3.56	U	<3.46	U
Acetone	50	100,000		<6.67	U	NR		<161	U	<7.92	U	<6.45	U	<6.59	U	<10.8	U	<6.10	U	<9.13	U	<6.17	U	<6.59	U	<6.40	U
Acrylonitrile	NC	NC		<16.7	U	NR		<525	U	<19.8	U	<16.1	U	<16.5	U	<27.1	U	<15.3	U	<22.8	U	<15.4	U	<16.5	U	<16.0	U
Benzene	60	4,800		<0.84	U	NR		<122	U	<1.00	U	<0.81	U	<0.83	U	<1.36	U	<0.77	U	<1.15	U	<0.78	U	<0.83	U	<0.81	U
Bromobenzene	NC	NC		<0.84	U	NR		<111	U	<1.00	U	<0.81	U	<0.83	U	<1.36	U	<0.77	U	<1.15	U	<0.78	U	<0.83	U	<0.81	U
Bromochloromethane	NC	NC		<1.11	U	NR		<126	U	<1.32	U	<1.07	U	<1.10	U	<1.80	U	<1.02	U	<1.52	U	<1.03	U	<1.10	U	<1.07	U
Bromodichloromethane	NC	NC		<0.81	U	NR		<124	U	<0.97	U	<0.79	U	<0.80	U	<1.32	U	<0.74	U	<1.11	U	<0.75	U	<0.80	U	<0.78	U
Bromoform	NC	NC		<0.89	U	NR		<113	U	<1.06	U	<0.86	U	<0.88	U	<1.45	U	<0.82	U	<1.22	U	<0.83	U	<0.88	U	<0.86	U
Bromomethane	NC	NC		<1.33	U	NR		<142	U	<1.58	U	<1.28	U	<1.31	U	<2.16	U	<1.22	U	<1.82	U	<1.23	U	<1.31	U	<1.27	U
Carbon disulfide	NC	NC		<0.79	U	NR		<114	U	<0.93	U	<0.76	U	<0.78	U	<1.28	U	<0.72	U	<1.08	U	<0.73	U	<0.78	U	<0.75	U
Carbon Tetrachloride	760	2,400		<1.03	U	NR		<125	U	<1.22	U	<1.00	U	<1.02	U	<1.67	U	<0.94	U	<1.41	U	<0.95	U	<1.02	U	<0.99	U
Chlorobenzene	1,100	100,000		<0.70	U	NR		<120	U	<0.84	U	<0.68	U	<0.70	U	<1.14	U	<0.64	U	<0.96	U	<0.65	U	<0.70	U	<0.68	U
Chlorodifluoromethane (Freon 22)	NC	NC		<0.79	U	NR		<129	U	<0.93	U	<0.76	U	<0.78	U	<1.28	U	<0.72	U	<1.08	U	<0.73	U	<0.78	U	<0.75	U
Chloroethane	NC	NC		<1.17	U	NR		<200	U	<1.38	U	<1.13	U	<1.15	U	<1.89	U	<1.07	U	<1.60	U	<1.08	U	<1.15	U	<1.12	U
Chloroform	370	49,000		<0.65	U	NR		<135	U	<0.77	U	<0.63	U	<0.64	U	<1.06	U	<0.60	U	<0.89	U	<0.60	U	<0.64	U	<0.62	U
Chloromethane	NC	NC		<1.06	U	NR		<110	U	<1.26	U	<1.02	U	<1.05	U	<1.72	U	<0.97	U	<1.45	U	<0.98	U	<1.05	U	<1.01	U
c-1,2-Dichloroethene	250	100,000		<1.06	U	NR		<124	U	<1.26	U	<1.02	U	<1.05	U	<1.72	U	<0.97	U	<1.45	U	<0.98	U	<1.05	U	<1.01	U
c-1,3-Dichloropropene	NC	NC		<0.84	U	NR		<121	U	<1.00	U	<0.81	U	<0.83	U	<1.36	U	<0.77	U	<1.15	U	<0.78	U	<0.83	U	<0.81	U
Dibromochloromethane	NC	NC		<0.54	U	NR		<115	U	<0.64	U	<0.52	U	<0.54	U	<0.88	U	<0.50	U	<0.74	U	<0.50	U	<0.54	U	<0.52	U
Dibromomethane	NC	NC		<0.70	U	NR		<126	U	<0.84	U	<0.68	U	<0.70	U	<1.14	U	<0.64	U	<0.96	U	<0.65	U	<0.70	U	<0.68	U
Dichlorodifluoromethane	NC	NC		<1.06	U	NR		<111	U	<1.26	U	<1.02	U	<1.05	U	<1.72	U	<0.97	U	<1.45	U	<0.98	U	<1.05	U	<1.01	U
Ethylbenzene	1,000	41,000		<1.06	U	NR		<124	U	<1.26	U	<1.02	U	<1.05	U	<1.72	U	<0.97	U	<1.45	U	<0.98	U	<1.05	U	<1.01	U
Hexachlorobutadiene	NC	NC		<0.92	U	NR		<110	U	<1.09	U	<0.89	U	<0.91	U	<1.50	U	<0.84	U	<1.26	U	<0.85	U	<0.91	U	<0.88	U
Isopropylbenzene	NC	NC		<0.68	U	NR		276	J	<0.81	U	<0.65	U	<0.67	U	<1.10	U	<0.62	U	<0.93	U	<0.63	U	<0.67	U	<0.65	U
m,p-xylene	NC**	NC**		<1.71	U	NR		<242	U	<2.03	U	<1.65	U	<1.69	U	<2.77	U	<1.56	U	<2.34	U	<1.58	U	<1.69	U	<1.64	U
Methyl t-butyl ether (MTBE)	930	100,000		<0.84	U	NR		<122	U	<1.00	U	<0.81	U	<0.83	U	<1.36	U	<0.77	U	<1.15	U	<0.78	U	<0.83	U	<0.81	U
Methylene Chloride	50	100,000		<0.54	U	NR		<150	U	<0.64	U	<0.52	U	<0.54	U	<0.88	U	<0.50	U	<0.74	U	<0.50	U	<0.54	U	<0.52	U
Naphthalene	NC	NC		<1.44	U	NR		<84.8	U	<1.71	U	<1.39	U	<1.42	U	<2.33	U	<1.31	U	<1.97	U	<1.33	U	<1.42	U	<1.38	U
n-Butylbenzene	12,000	100,000		<0.73	U	NR		2280		<0.87	U	<0.71	U	<0.72	U	<1.19	U	<0.67	U	<1.00	U	<0.68	U	<0.72	U	<0.70	U
n-Propylbenzene	3,900	100,000		<0.95	U	NR		874		<1.13	U	<0.92	U	<0.94	U	<1.54	U	<0.87	U	<1.30	U	<0.88	U	<0.94	U	<0.91	U
o-xylene	NC**	NC**		<0.92	U	NR		<118	U	<1.09	U	<0.89	U	<0.91	U	<1.50	U	<0.84	U	<1.26	U	<0.85	U	<0.91	U	<0.88	U
p-Diethylbenzene	NC	NC		<0.73	U	NR		<107	U	<0.87	U	<0.71	U	<0.72	U	<1.19	U	<0.67	U	<1.00	U	<0.68	U	<0.72	U	<0.70	U

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-16A		SB-17A		SB-18B		SB-18C		SB-19B		SB-19C		SB-19 Peat		SB-20B		SB-20C		SB-21B		SB-21C		SB-22B	
Depth				0-0.5		0-0.5		0.5-3		3-7		0.5-3		3-7		7+		0.5-3		3-7		0.5-3		0.5-3		0.5-3	
Lab Sample ID				1107290		1107290		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<0.84	U	NR		150	J	<1.00	U	<0.81	U	<0.83	U	<1.36	U	<0.77	U	<1.15	U	<0.78	U	<0.83	U	<0.81	U
sec-Butylbenzene	11,000	100,000		<0.76	U	NR		1600		<0.90	U	<0.73	U	<0.75	U	<1.23	U	<0.69	U	<1.04	U	<0.70	U	<0.75	U	<0.73	U
Styrene	NC	NC		<0.49	U	NR		<113	U	<0.58	U	<0.47	U	<0.48	U	<0.79	U	<0.45	U	<0.67	U	<0.45	U	<0.48	U	<0.47	U
t-1,2-Dichloroethene	190	100,000		<0.92	U	NR		<132	U	<1.09	U	<0.89	U	<0.91	U	<1.50	U	<0.84	U	<1.26	U	<0.85	U	<0.91	U	<0.88	U
t-1,3-Dichloropropene	NC	NC		<0.89	U	NR		<110	U	<1.06	U	<0.86	U	<0.88	U	<1.45	U	<0.82	U	<1.22	U	<0.83	U	<0.88	U	<0.86	U
tert- Amyl methyl EtherTAME	NC	NC		<0.65	U	NR		<120	U	<0.77	U	<0.63	U	<0.64	U	<1.06	U	<0.60	U	<0.89	U	<0.60	U	<0.64	U	<0.62	U
tert-Butylbenzene	5,900	100,000		<0.70	U	NR		<118	U	<0.84	U	<0.68	U	<0.70	U	<1.14	U	<0.64	U	<0.96	U	<0.65	U	<0.70	U	<0.68	U
Tertiary butyl alcohol	NC	NC		<19.7	U	NR		<1130	U	<23.4	U	<19.1	U	<19.5	U	<32.0	U	<18.1	U	<27.0	U	<18.3	U	<19.5	U	<18.9	U
Tetrachloroethene (PCE)	1,300	19,000		<0.79	U	NR		<117	U	<0.93	U	<0.76	U	<0.78	U	<1.28	U	<0.72	U	<1.08	U	<0.73	U	<0.78	U	<0.75	U
Toluene	700	100,000		<0.89	U	NR		<150	U	<1.06	U	<0.86	U	<0.88	U	<1.45	U	<0.82	U	<1.22	U	<0.83	U	<0.88	U	<0.86	U
Trichloroethene (TCE)	470	21,000		<0.81	U	NR		<131	U	<0.97	U	<0.79	U	<0.80	U	<1.32	U	<0.74	U	<1.11	U	<0.75	U	<0.80	U	<0.78	U
Trichlorofluoromethane	NC	NC		<0.79	U	NR		<139	U	<0.93	U	<0.76	U	<0.78	U	<1.28	U	<0.72	U	<1.08	U	<0.73	U	<0.78	U	<0.75	U
Vinyl Chloride	20	900		<0.65	U	NR		<114	U	<0.77	U	<0.63	U	<0.64	U	<1.06	U	<0.60	U	<0.89	U	<0.60	U	<0.64	U	<0.62	U
Total VOC TICs	NC	NC	10,000	75		NR		98,620		18		0		0		0		13		0		0		0		354	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No Result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 260 µg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 µg/kg.

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-22C		SB-23A		SB-24B		SB-24C		SB-25A		SB-25B		SB-25C		SB-26C		SB-26D		SB-27C		SB-28B		SB-28C	
Depth				3-7		0-0.5		0.5-3		3-7		0-0.5		0.5-3		3-7		3-7		7+		3-7		0.5-3		3-7	
Lab Sample ID				1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1-Trichloroethane (TCA)	680	100,000		<0.83	U	<0.76	U	<0.74	U	<0.84	U	<0.87	U	<0.79	U	<0.83	U	<0.76	U	<149	U	<0.76	U	<0.74	U	<0.82	U
1,1,1,2-Tetrachloroethane	NC	NC		<0.69	U	<0.63	U	<0.62	U	<0.70	U	<0.73	U	<0.66	U	<0.69	U	<0.63	U	<135	U	<0.63	U	<0.62	U	<0.69	U
1,1,2,2-Tetrachloroethane	NC	NC		<1.08	U	<0.99	U	<0.97	U	<1.10	U	<1.13	U	<1.03	U	<1.08	U	<0.98	U	<118	U	<0.99	U	<0.96	U	<1.07	U
1,1,2-Trichloroethane	NC	NC		<1.03	U	<0.94	U	<0.92	U	<1.04	U	<1.08	U	<0.97	U	<1.02	U	<0.93	U	<141	U	<0.94	U	<0.91	U	<1.01	U
1,1,2-Trichlorotrifluoroethane (Freon 113)	NC	NC		<0.69	U	<0.63	U	<0.62	U	<0.70	U	<0.73	U	<0.66	U	<0.69	U	<0.63	U	<138	U	<0.63	U	<0.62	U	<0.69	U
1,1-Dichloroethane	270	26,000		<0.61	U	<0.56	U	<0.55	U	<0.62	U	<0.64	U	<0.58	U	<0.61	U	<0.55	U	<159	U	<0.56	U	<0.54	U	<0.60	U
1,1-Dichloroethene	330	100,000		<0.81	U	<0.73	U	<0.72	U	<0.81	U	<0.84	U	<0.76	U	<0.80	U	<0.73	U	<146	U	<0.73	U	<0.72	U	<0.79	U
1,1-Dichloropropene	NC	NC		<1.33	U	<1.21	U	<1.19	U	<1.35	U	<1.40	U	<1.26	U	<1.32	U	<1.21	U	<126	U	<1.21	U	<1.19	U	<1.32	U
1,2,3-Trichlorobenzene	NC	NC		<0.97	U	<0.89	U	<0.87	U	<0.98	U	<1.02	U	<0.92	U	<0.97	U	<0.88	U	<97.3	U	<0.89	U	<0.86	U	<0.96	U
1,2,3-Trichloropropane	NC	NC		<1.72	U	<1.57	U	<1.54	U	<1.74	U	<1.80	U	<1.63	U	<1.71	U	<1.56	U	<122	U	<1.57	U	<1.53	U	<1.70	U
1,2,4,5-Tetramethylbenzene (Durene)	NC	NC		<1.00	U	<0.91	U	<0.89	U	<1.01	U	<1.05	U	<0.95	U	<0.99	U	63.1		1500		<0.91	U	<0.89	U	4.79	J
1,2,4-Trichlorobenzene	NC	NC		<0.83	U	<0.76	U	<0.74	U	<0.84	U	<0.87	U	<0.79	U	<0.83	U	<0.76	U	<105	U	<0.76	U	<0.74	U	<0.82	U
1,2,4-Trimethylbenzene	3,600	52,000		<0.83	U	<0.76	U	<0.74	U	<0.84	U	<0.87	U	<0.79	U	<0.83	U	<0.76	U	<132	U	<0.76	U	<0.74	U	<0.82	U
1,2-Dibromo-3-chloropropane	NC	NC		<2.25	U	<2.05	U	<2.01	U	<2.28	U	<2.36	U	<2.13	U	<2.24	U	<2.04	U	<118	U	<2.05	U	<2.00	U	<2.22	U
1,2-Dibromoethane	NC	NC		<0.81	U	<0.73	U	<0.72	U	<0.81	U	<0.84	U	<0.76	U	<0.80	U	<0.73	U	<122	U	<0.73	U	<0.72	U	<0.79	U
1,2-Dichlorobenzene	1,100	100,000		<0.89	U	<0.81	U	<0.79	U	<0.90	U	<0.93	U	<0.84	U	<0.88	U	<0.81	U	<126	U	<0.81	U	<0.79	U	<0.88	U
1,2-Dichloroethane	20	3,100		<0.97	U	<0.89	U	<0.87	U	<0.98	U	<1.02	U	<0.92	U	<0.97	U	<0.88	U	<152	U	<0.89	U	<0.86	U	<0.96	U
1,2-Dichloropropane	NC	NC		<1.06	U	<0.96	U	<0.94	U	<1.07	U	<1.11	U	<1.00	U	<1.05	U	<0.96	U	<140	U	<0.96	U	<0.94	U	<1.04	U
1,3,5-Trimethylbenzene	8,400	52,000		<0.95	U	<0.86	U	<0.84	U	<0.96	U	<0.99	U	<0.89	U	<0.94	U	<0.86	U	<129	U	<0.86	U	<0.84	U	<0.93	U
1,3-Dichlorobenzene	2,400	49,000		<0.75	U	<0.68	U	<0.67	U	<0.76	U	<0.79	U	<0.71	U	<0.75	U	<0.68	U	<121	U	<0.68	U	<0.67	U	<0.74	U
1,3-Dichloropropane	NC	NC		<0.58	U	<0.53	U	<0.52	U	<0.59	U	<0.61	U	<0.55	U	<0.58	U	<0.53	U	<130	U	<0.53	U	<0.52	U	<0.58	U
1,4-Dichlorobenzene	1,800	13,000		<0.58	U	<0.53	U	<0.52	U	<0.59	U	<0.61	U	<0.55	U	<0.58	U	<0.53	U	<122	U	<0.53	U	<0.52	U	<0.58	U
2,2-Dichloropropane	NC	NC		<1.03	U	<0.94	U	<0.92	U	<1.04	U	<1.08	U	<0.97	U	<1.02	U	<0.93	U	<137	U	<0.94	U	<0.91	U	<1.01	U
2-Butanone (MEK)	120	100,000		<5.84	U	<5.31	U	<5.21	U	<5.90	U	<6.11	U	<5.52	U	<5.80	U	<5.29	U	<119	U	<5.31	U	<5.19	U	<5.75	U
2-Chloroethylvinylether	NC	NC		<4.53	U	<4.12	U	<4.04	U	<4.58	U	<4.74	U	<4.29	U	<4.50	U	<4.11	U	<223	U	<4.12	U	<4.03	U	<4.47	U
2-Chlorotoluene	NC	NC		<0.75	U	<0.68	U	<0.67	U	<0.76	U	<0.79	U	<0.71	U	<0.75	U	<0.68	U	<130	U	<0.68	U	<0.67	U	<0.74	U
2-Hexanone	NC	NC		<2.45	U	<2.23	U	<2.18	U	<2.47	U	<2.56	U	<2.31	U	<2.43	U	<2.22	U	<95.8	U	<2.23	U	<2.17	U	<2.41	U
4-Chlorotoluene	NC	NC		<0.83	U	<0.76	U	<0.74	U	<0.84	U	<0.87	U	<0.79	U	<0.83	U	<0.76	U	<122	U	<0.76	U	<0.74	U	<0.82	U
4-Isopropyltoluene	NC	NC		<0.64	U	<0.58	U	<0.57	U	<0.65	U	<0.67	U	<0.60	U	<0.63	U	<0.58	U	<127	U	<0.58	U	<0.57	U	<0.63	U
4-Methyl-2-pentanone	NC	NC		<3.70	U	<3.36	U	<3.30	U	<3.74	U	<3.87	U	<3.50	U	<3.67	U	<3.35	U	<135	U	<3.36	U	<3.29	U	<3.64	U
Acetone	50	100,000		<6.84	U	<6.22	U	<6.10	U	<6.91	U	<7.16	U	<6.47	U	<6.79	U	<6.20	U	<182	U	<6.22	U	<6.08	U	<6.74	U
Acrylonitrile	NC	NC		<17.1	U	<15.6	U	<15.3	U	<17.3	U	<17.9	U	<16.2	U	<17.0	U	<15.5	U	<593	U	<15.6	U	<15.2	U	<16.9	U
Benzene	60	4,800		<0.86	U	<0.78	U	<0.77	U	<0.87	U	<0.90	U	<0.82	U	<0.86	U	<0.78	U	<138	U	<0.78	U	<0.77	U	<0.85	U
Bromobenzene	NC	NC		<0.86	U	<0.78	U	<0.77	U	<0.87	U	<0.90	U	<0.82	U	<0.86	U	<0.78	U	<126	U	<0.78	U	<0.77	U	<0.85	U
Bromochloromethane	NC	NC		<1.14	U	<1.04	U	<1.02	U	<1.15	U	<1.19	U	<1.08	U	<1.13	U	<1.03	U	<143	U	<1.04	U	<1.01	U	<1.12	U
Bromodichloromethane	NC	NC		<0.83	U	<0.76	U	<0.74	U	<0.84	U	<0.87	U	<0.79	U	<0.83	U	<0.76	U	<140	U	<0.76	U	<0.74	U	<0.82	U
Bromoform	NC	NC		<0.92	U	<0.83	U	<0.82	U	<0.93	U	<0.96	U	<0.87	U	<0.91	U	<0.83	U	<127	U	<0.83	U	<0.82	U	<0.90	U
Bromomethane	NC	NC		<1.36	U	<1.24	U	<1.22	U	<1.38	U	<1.43	U	<1.29	U	<1.35	U	<1.23	U	<160	U	<1.24	U	<1.21	U	<1.34	U
Carbon disulfide	NC	NC		<0.81	U	<0.73	U	<0.72	U	<0.81	U	<0.84	U	<0.76	U	<0.80	U	<0.73	U	<129	U	<0.73	U	<0.72	U	<0.79	U
Carbon Tetrachloride	760	2,400		<1.06	U	<0.96	U	<0.94	U	<1.07	U	<1.11	U	<1.00	U	<1.05	U	<0.96	U	<141	U	<0.96	U	<0.94	U	<1.04	U
Chlorobenzene	1,100	100,000		<0.72	U	<0.66	U	<0.64	U	<0.73	U	<0.76	U	<0.68	U	<0.72	U	<0.66	U	<135	U	<0.66	U	<0.64	U	<0.71	U
Chlorodifluoromethane (Freon 22)	NC	NC		<0.81	U	<0.73	U	<0.72	U	<0.81	U	<0.84	U	<0.76	U	<0.80	U	<0.73	U	<146	U	<0.73	U	<0.72	U	<0.79	U
Chloroethane	NC	NC		<1.20	U	<1.09	U	<1.07	U	<1.21	U	<1.25	U	<1.13	U	<1.19	U	<1.08	U	<226	U	<1.09	U	<1.06	U	<1.18	U
Chloroform	370	49,000		<0.67	U	<0.61	U	<0.60	U	<0.67	U	<0.70	U	<0.63	U	<0.66	U	<0.60	U	<152	U	<0.61	U	<0.59	U	<0.66	U
Chloromethane	NC	NC		<1.08	U	<0.99	U	<0.97	U	<1.10	U	<1.13	U	<1.03	U	<1.08	U	<0.98	U	<124	U	<0.99	U	<0.96	U	<1.07	U
c-1,2-Dichloroethene	250	100,000		<1.08	U	<0.99	U	<0.97	U	<1.10	U	<1.13	U	<1.03	U	<1.08	U	<0.98	U	<140	U	<0.99	U	<0.96	U	<1.07	U
c-1,3-Dichloropropene	NC	NC		<0.86	U	<0.78	U	<0.77	U	<0.87	U	<0.90	U	<0.82	U	<0.86	U	<0.78	U	<137	U	<0.78	U	<0.77	U	<0.85	U
Dibromochloromethane	NC	NC		<0.56	U	<0.51	U	<0.50	U	<0.56	U	<0.58	U	<0.53	U	<0.55	U	<0.50	U	<130	U	<0.51	U	<0.49	U	<0.55	U
Dibromomethane	NC	NC		<0.72	U	<0.66	U	<0.64	U	<0.73	U	<0.76	U	<0.68	U	<0.72	U	<0.66	U	<143	U	<0.66	U	<0.64	U	<0.71	U
Dichlorodifluoromethane	NC	NC		<1.08	U	<0.99	U	<0.97	U	<1.10	U	<1.13	U	<1.03	U	<1.08	U	<0.98	U	<126	U	<0.99	U	<0.96	U	<1.07	U
Ethylbenzene	1,000	41,000		<1.08	U	<0.99	U	<0.97	U	<1.10	U	<1.13	U	<1.03	U	<1.08	U	<0.98	U	<140	U	<0.99	U	<0.96	U	<1.07	U
Hexachlorobutadiene	NC	NC		<0.95	U	<0.86	U	<0.84	U	<0.96	U	<0.99	U	<0.89	U	<0.94	U	<0.86	U	<124	U	<0.86	U	<0.84	U	<0.93	U
Isopropylbenzene	NC	NC		<0.69	U	<0.63	U	<0.62	U	<0.70	U	<0.73	U	<0.66	U	<0.69	U	6.23		<135	U	<0.63	U	<0.62	U	<0.69	U
m,p-xylene	NC**	NC**		<1.75	U	<1.59	U	<1.56	U	<1.77	U	<1.83	U	<1.66	U	<1.74	U	<1.59	U	<273	U	<1.59	U	<1.56	U	<1.73	U
Methyl t-butyl ether (MTBE)	930	100,000		<0.86	U	<0.78	U	<0.77	U	<0.87	U	<0.90	U	<0.82	U	<0.86	U	<0.78	U	<138	U	<0.78	U	<0.77	U	<0.85	U
Methylene Chloride	50	100,000		<0.56	U	<0.51	U	<0.50	U	<0.56	U	<0.58	U	<0.53	U	<0.55	U	<0.50	U	<170	U	<0.51	U	<0.49	U	<0.55	U
Naphthalene	NC	NC		<1.47	U	<1.34	U	<1.31	U	<1.49	U	<1.54	U	<1.39	U	<1.46	U	<1.34	U	<95.8	U	<1.34	U	<1.31	U	<1.45	U
n-Butylbenzene	12,000	100,000		<0.75	U	<0.68	U	<0.67	U	<0.76	U	<0.79	U	<0.71	U	<0.75	U	17.8		<130	U	<0.68	U	<0.67	U	<0.74	U
n-Propylbenzene	3,900	100,000		<0.97	U	<0.89	U	<0.87	U	<0.98	U	<1.02	U	<0.92	U	<0.97	U	13.4		<127	U	<0.89	U	<0.86	U	<0.96	U
o-xylene	NC**	NC**		<0.95	U	<0.86	U	<0.84	U	<0.96	U	<0.99	U	<0.89	U	<0.94	U	<0.86	U	<133	U	<0.86	U	<0.84	U	<0.93	U
p-Diethylbenzene	NC	NC		<0.75	U	<0.68	U	<0.67	U	<0.76	U	<0.79	U	<0.71	U	<0.75	U	<0.68	U	<121	U	<0.68	U	<0.67	U	<0.74	U

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-22C		SB-23A		SB-24B		SB-24C		SB-25A		SB-25B		SB-25C		SB-26C		SB-26D		SB-27C		SB-28B		SB-28C	
Depth				3-7		0-0.5		0.5-3		3-7		0-0.5		0.5-3		3-7		3-7		7+		3-7		0.5-3		3-7	
Lab Sample ID				1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<0.86	U	<0.78	U	<0.77	U	<0.87	U	<0.90	U	<0.82	U	<0.86	U	<0.78	U	<127	U	<0.78	U	<0.77	U	<0.85	U
sec-Butylbenzene	11,000	100,000		<0.78	U	<0.71	U	<0.69	U	<0.79	U	<0.81	U	<0.74	U	<0.77	U	16.8		<122	U	<0.71	U	<0.69	U	<0.77	U
Styrene	NC	NC		<0.50	U	<0.46	U	<0.45	U	<0.51	U	<0.52	U	<0.47	U	<0.50	U	<0.45	U	<127	U	<0.46	U	<0.44	U	<0.49	U
t-1,2-Dichloroethene	190	100,000		<0.95	U	<0.86	U	<0.84	U	<0.96	U	<0.99	U	<0.89	U	<0.94	U	<0.86	U	<149	U	<0.86	U	<0.84	U	<0.93	U
t-1,3-Dichloropropene	NC	NC		<0.92	U	<0.83	U	<0.82	U	<0.93	U	<0.96	U	<0.87	U	<0.91	U	<0.83	U	<124	U	<0.83	U	<0.82	U	<0.90	U
tert- Amyl methyl EtherTAME	NC	NC		<0.67	U	<0.61	U	<0.60	U	<0.67	U	<0.70	U	<0.63	U	<0.66	U	<0.60	U	<135	U	<0.61	U	<0.59	U	<0.66	U
tert-Butylbenzene	5,900	100,000		<0.72	U	<0.66	U	<0.64	U	<0.73	U	<0.76	U	<0.68	U	<0.72	U	<0.66	U	<133	U	<0.66	U	<0.64	U	<0.71	U
Tertiary butyl alcohol	NC	NC		<20.2	U	<18.4	U	<18.1	U	<20.5	U	<21.2	U	<19.1	U	<20.1	U	<18.3	U	<1270	U	<18.4	U	<18.0	U	<19.9	U
Tetrachloroethene (PCE)	1,300	19,000		<0.81	U	<0.73	U	<0.72	U	<0.81	U	<0.84	U	<0.76	U	<0.80	U	<0.73	U	<132	U	<0.73	U	<0.72	U	<0.79	U
Toluene	700	100,000		<0.92	U	<0.83	U	<0.82	U	<0.93	U	<0.96	U	<0.87	U	<0.91	U	<0.83	U	<170	U	<0.83	U	<0.82	U	<0.90	U
Trichloroethene (TCE)	470	21,000		<0.83	U	<0.76	U	<0.74	U	<0.84	U	<0.87	U	<0.79	U	<0.83	U	<0.76	U	<148	U	<0.76	U	<0.74	U	<0.82	U
Trichlorofluoromethane	NC	NC		<0.81	U	<0.73	U	<0.72	U	<0.81	U	<0.84	U	<0.76	U	<0.80	U	<0.73	U	<157	U	<0.73	U	<0.72	U	<0.79	U
Vinyl Chloride	20	900		<0.67	U	<0.61	U	<0.60	U	<0.67	U	<0.70	U	<0.63	U	<0.66	U	<0.60	U	<129	U	<0.61	U	<0.59	U	<0.66	U
Total VOC TICs	NC	NC	10,000	0		0		2,000		0		0		16		0		1,011		36020		59		0		16	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No Result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 260 µg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 µg/kg.

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-30B		SB-30C		SB-31B		SB-31C		SB-32B		SB-32C		SB-32A		SB-32B		SB-33B		SB-33C		SB-34A		SB-35A	
Depth				0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0-0.5		0.5-3		0.5-3		3-7		0-0.5		0-0.5	
Lab Sample ID				1107318		1107318		1107318		1107318		1107318		1107318		1107319		1107319		1107319		1107319		1107319		1107319	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Soil		Soil		Solid		Solid		Solid		Solid		Solid		Soil		Soil		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1-Trichloroethane (TCA)	680	100,000		<0.75	U	<0.77	U	<0.74	U	<0.78	U	<0.76	U	<0.79	U	NR		<0.77	U	<0.77	U	<0.78	U	NR		NR	
1,1,1,2-Tetrachloroethane	NC	NC		<0.63	U	<0.64	U	<0.61	U	<0.65	U	<0.63	U	<0.66	U	NR		<0.64	U	<0.64	U	<0.65	U	NR		NR	
1,1,2,2-Tetrachloroethane	NC	NC		<0.98	U	<1.01	U	<0.96	U	<1.01	U	<0.99	U	<1.03	U	NR		<1.00	U	<1.00	U	<1.02	U	NR		NR	
1,1,2-Trichloroethane	NC	NC		<0.93	U	<0.95	U	<0.91	U	<0.96	U	<0.94	U	<0.98	U	NR		<0.95	U	<0.95	U	<0.97	U	NR		NR	
1,1,2-Trichlorotrifluoroethane (Freon 113)	NC	NC		<0.63	U	<0.64	U	<0.61	U	<0.65	U	<0.63	U	<0.66	U	NR		<0.64	U	<0.64	U	<0.65	U	NR		NR	
1,1-Dichloroethane	270	26,000		<0.55	U	<0.57	U	<0.54	U	<0.57	U	<0.56	U	<0.58	U	NR		<0.57	U	<0.57	U	<0.57	U	NR		NR	
1,1-Dichloroethene	330	100,000		<0.73	U	<0.75	U	<0.71	U	<0.75	U	<0.74	U	<0.77	U	NR		<0.75	U	<0.75	U	<0.76	U	NR		NR	
1,1-Dichloropropene	NC	NC		<1.20	U	<1.24	U	<1.18	U	<1.24	U	<1.22	U	<1.27	U	NR		<1.23	U	<1.23	U	<1.25	U	NR		NR	
1,2,3-Trichlorobenzene	NC	NC		<0.88	U	<0.90	U	<0.86	U	<0.91	U	<0.89	U	<0.92	U	NR		<0.90	U	<0.90	U	<0.91	U	NR		NR	
1,2,3-Trichloropropane	NC	NC		<1.56	U	<1.60	U	<1.52	U	<1.61	U	<1.57	U	<1.64	U	NR		<1.59	U	<1.59	U	<1.62	U	NR		NR	
1,2,4,5-Tetramethylbenzene (Durene)	NC	NC		<0.90	U	<0.93	U	<0.88	U	<0.93	U	<0.91	U	<0.95	U	NR		<0.93	U	<0.93	U	<0.94	U	NR		NR	
1,2,4-Trichlorobenzene	NC	NC		<0.75	U	<0.77	U	<0.74	U	<0.78	U	<0.76	U	<0.79	U	NR		<0.77	U	<0.77	U	<0.78	U	NR		NR	
1,2,4-Trimethylbenzene	3,600	52,000		<0.75	U	<0.77	U	<0.74	U	<0.78	U	<0.76	U	<0.79	U	NR		<0.77	U	<0.77	U	<0.78	U	NR		NR	
1,2-Dibromo-3-chloropropane	NC	NC		<2.03	U	<2.09	U	<1.98	U	<2.10	U	<2.06	U	<2.14	U	NR		<2.08	U	<2.08	U	<2.11	U	NR		NR	
1,2-Dibromoethane	NC	NC		<0.73	U	<0.75	U	<0.71	U	<0.75	U	<0.74	U	<0.77	U	NR		<0.75	U	<0.75	U	<0.76	U	NR		NR	
1,2-Dichlorobenzene	1,100	100,000		<0.80	U	<0.83	U	<0.78	U	<0.83	U	<0.81	U	<0.84	U	NR		<0.82	U	<0.82	U	<0.84	U	NR		NR	
1,2-Dichloroethane	20	3,100		<0.88	U	<0.90	U	<0.86	U	<0.91	U	<0.89	U	<0.92	U	NR		<0.90	U	<0.90	U	<0.91	U	NR		NR	
1,2-Dichloropropane	NC	NC		<0.95	U	<0.98	U	<0.93	U	<0.98	U	<0.97	U	<1.00	U	NR		<0.98	U	<0.98	U	<0.99	U	NR		NR	
1,3,5-Trimethylbenzene	8,400	52,000		<0.85	U	<0.88	U	<0.83	U	<0.88	U	<0.86	U	<0.90	U	NR		<0.87	U	<0.87	U	<0.89	U	NR		NR	
1,3-Dichlorobenzene	2,400	49,000		<0.68	U	<0.70	U	<0.66	U	<0.70	U	<0.69	U	<0.71	U	NR		<0.69	U	<0.69	U	<0.70	U	NR		NR	
1,3-Dichloropropane	NC	NC		<0.53	U	<0.54	U	<0.51	U	<0.54	U	<0.53	U	<0.55	U	NR		<0.54	U	<0.54	U	<0.55	U	NR		NR	
1,4-Dichlorobenzene	1,800	13,000		<0.53	U	<0.54	U	<0.51	U	<0.54	U	<0.53	U	<0.55	U	NR		<0.54	U	<0.54	U	<0.55	U	NR		NR	
2,2-Dichloropropane	NC	NC		<0.93	U	<0.95	U	<0.91	U	<0.96	U	<0.94	U	<0.98	U	NR		<0.95	U	<0.95	U	<0.97	U	NR		NR	
2-Butanone (MEK)	120	100,000		<5.27	U	<5.42	U	<5.14	U	<5.44	U	<5.33	U	<5.54	U	NR		<5.40	U	<5.40	U	<5.48	U	NR		NR	
2-Chloroethylvinylether	NC	NC		<4.09	U	<4.21	U	<3.99	U	<4.22	U	<4.14	U	<4.30	U	NR		<4.19	U	<4.19	U	<4.25	U	NR		NR	
2-Chlorotoluene	NC	NC		<0.68	U	<0.70	U	<0.66	U	<0.70	U	<0.69	U	<0.71	U	NR		<0.69	U	<0.69	U	<0.70	U	NR		NR	
2-Hexanone	NC	NC		<2.21	U	<2.27	U	<2.16	U	<2.28	U	<2.24	U	<2.32	U	NR		<2.26	U	<2.26	U	<2.30	U	NR		NR	
4-Chlorotoluene	NC	NC		<0.75	U	<0.77	U	<0.74	U	<0.78	U	<0.76	U	<0.79	U	NR		<0.77	U	<0.77	U	<0.78	U	NR		NR	
4-Isopropyltoluene	NC	NC		<0.58	U	<0.59	U	<0.56	U	<0.60	U	<0.58	U	<0.61	U	NR		<0.59	U	<0.59	U	<0.60	U	NR		NR	
4-Methyl-2-pentanone	NC	NC		<3.34	U	<3.43	U	<3.26	U	<3.44	U	<3.38	U	<3.51	U	NR		<3.42	U	<3.42	U	<3.47	U	NR		NR	
Acetone	50	100,000		<6.17	U	<6.35	U	<6.03	U	<6.37	U	<6.25	U	<6.49	U	NR		<6.32	U	<6.32	U	<6.42	U	NR		NR	
Acrylonitrile	NC	NC		<15.4	U	<15.9	U	<15.1	U	<15.9	U	<15.6	U	<16.2	U	NR		<15.8	U	<15.8	U	<16.1	U	NR		NR	
Benzene	60	4,800		<0.78	U	<0.80	U	<0.76	U	<0.80	U	<0.79	U	<0.82	U	NR		<0.80	U	<0.80	U	<0.81	U	NR		NR	
Bromobenzene	NC	NC		<0.78	U	<0.80	U	<0.76	U	<0.80	U	<0.79	U	<0.82	U	NR		<0.80	U	<0.80	U	<0.81	U	NR		NR	
Bromochloromethane	NC	NC		<1.03	U	<1.06	U	<1.00	U	<1.06	U	<1.04	U	<1.08	U	NR		<1.05	U	<1.05	U	<1.07	U	NR		NR	
Bromodichloromethane	NC	NC		<0.75	U	<0.77	U	<0.74	U	<0.78	U	<0.76	U	<0.79	U	NR		<0.77	U	<0.77	U	<0.78	U	NR		NR	
Bromoform	NC	NC		<0.83	U	<0.85	U	<0.81	U	<0.85	U	<0.84	U	<0.87	U	NR		<0.85	U	<0.85	U	<0.86	U	NR		NR	
Bromomethane	NC	NC		<1.23	U	<1.26	U	<1.20	U	<1.27	U	<1.24	U	<1.29	U	NR		<1.26	U	<1.26	U	<1.28	U	NR		NR	
Carbon disulfide	NC	NC		<0.73	U	<0.75	U	<0.71	U	<0.75	U	<0.74	U	<0.77	U	NR		<0.75	U	<0.75	U	<0.76	U	NR		NR	
Carbon Tetrachloride	760	2,400		<0.95	U	<0.98	U	<0.93	U	<0.98	U	<0.97	U	<1.00	U	NR		<0.98	U	<0.98	U	<0.99	U	NR		NR	
Chlorobenzene	1,100	100,000		<0.65	U	<0.67	U	<0.64	U	<0.67	U	<0.66	U	<0.69	U	NR		<0.67	U	<0.67	U	<0.68	U	NR		NR	
Chlorodifluoromethane (Freon 22)	NC	NC		<0.73	U	<0.75	U	<0.71	U	<0.75	U	<0.74	U	<0.77	U	NR		<0.75	U	<0.75	U	<0.76	U	NR		NR	
Chloroethane	NC	NC		<1.08	U	<1.11	U	<1.05	U	<1.11	U	<1.09	U	<1.14	U	NR		<1.11	U	<1.11	U	<1.12	U	NR		NR	
Chloroform	370	49,000		<0.60	U	<0.62	U	<0.59	U	<0.62	U	<0.61	U	<0.63	U	NR		<0.62	U	<0.62	U	<0.63	U	NR		NR	
Chloromethane	NC	NC		<0.98	U	<1.01	U	<0.96	U	<1.01	U	<0.99	U	<1.03	U	NR		<1.00	U	<1.00	U	<1.02	U	NR		NR	
c-1,2-Dichloroethene	250	100,000		<0.98	U	<1.01	U	<0.96	U	<1.01	U	<0.99	U	<1.03	U	NR		<1.00	U	<1.00	U	<1.02	U	NR		NR	
c-1,3-Dichloropropene	NC	NC		<0.78	U	<0.80	U	<0.76	U	<0.80	U	<0.79	U	<0.82	U	NR		<0.80	U	<0.80	U	<0.81	U	NR		NR	
Dibromochloromethane	NC	NC		<0.50	U	<0.52	U	<0.49	U	<0.52	U	<0.51	U	<0.53	U	NR		<0.51	U	<0.51	U	<0.52	U	NR		NR	
Dibromomethane	NC	NC		<0.65	U	<0.67	U	<0.64	U	<0.67	U	<0.66	U	<0.69	U	NR		<0.67	U	<0.67	U	<0.68	U	NR		NR	
Dichlorodifluoromethane	NC	NC		<0.98	U	<1.01	U	<0.96	U	<1.01	U	<0.99	U	<1.03	U	NR		<1.00	U	<1.00	U	<1.02	U	NR		NR	
Ethylbenzene	1,000	41,000		<0.98	U	<1.01	U	<0.96	U	<1.01	U	<0.99	U	<1.03	U	NR		<1.00	U	<1.00	U	<1.02	U	NR		NR	
Hexachlorobutadiene	NC	NC		<0.85	U	<0.88	U	<0.83	U	<0.88	U	<0.86	U	<0.90	U	NR		<0.87	U	<0.87	U	<0.89	U	NR		NR	
Isopropylbenzene	NC	NC		<0.63	U	<0.64	U	<0.61	U	<0.65	U	<0.63	U	<0.66	U	NR		<0.64	U	<0.64	U	<0.65	U	NR		NR	
m,p-xylene	NC**	NC**		<1.58	U	<1.63	U	<1.54	U	<1.63	U	<1.60	U	<1.66	U	NR		<1.62	U	<1.62	U	<1.64	U	NR		NR	
Methyl t-butyl ether (MTBE)	930	100,000		<0.78	U	<0.80	U	<0.76	U	<0.80	U	<0.79	U	<0.82	U	NR		<0.80	U	<0.80	U	<0.81	U	NR		NR	
Methylene Chloride	50	100,000		<0.50	U	<0.52	U	<0.49	U	<0.52	U	<0.51	U	<0.53	U	NR		<0.51	U	<0.51	U	<0.52	U	NR		NR	
Naphthalene	NC	NC		<1.33	U	<1.37	U	<1.30	U	<1.37	U	<1.35	U	<1.40	U	NR		<1.36	U	<1.36	U	<1.38	U	NR		NR	
n-Butylbenzene	12,000	100,000		<0.68	U	<0.70	U	<0.66	U	<0.70	U	<0.69	U	<0.71	U	NR		<0.69	U	<0.69	U	<0.70	U	NR		NR	
n-Propylbenzene	3,900	100,000		<0.88	U	<0.90	U	<0.86	U	<0.91	U	<0.89	U	<0.92	U	NR		<0.90	U	<0.90	U	<0.91	U	NR		NR	
o-xylene	NC**	NC**		<0.85	U	<0.88	U	<0.83	U	<0.88	U	<0.86	U	<0.90	U	NR		<0.87	U	<0.87	U	<0.89	U	NR		NR	
p-Diethylbenzene	NC	NC		<0.68	U	<0.70	U	<0.66	U	<0.70	U	<0.69	U	<0.71	U	NR		<0.69	U	<0.69	U	<0.70	U	NR		NR	

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-30B		SB-30C		SB-31B		SB-31C		SB-32B		SB-32C		SB-32A		SB-32B		SB-33B		SB-33C		SB-34A		SB-35A	
Depth				0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0-0.5		0.5-3		0.5-3		3-7		0-0.5		0-0.5	
Lab Sample ID				1107318		1107318		1107318		1107318		1107318		1107318		1107319		1107319		1107319		1107319		1107319		1107319	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix				Solid		Solid		Soil		Soil		Solid		Solid		Solid		Solid		Solid		Soil		Soil		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<0.78	U	<0.80	U	<0.76	U	<0.80	U	<0.79	U	<0.82	U	NR		<0.80	U	<0.80	U	<0.81	U	NR		NR	
sec-Butylbenzene	11,000	100,000		<0.70	U	<0.72	U	<0.69	U	<0.73	U	<0.71	U	<0.74	U	NR		<0.72	U	<0.72	U	<0.73	U	NR		NR	
Styrene	NC	NC		<0.45	U	<0.46	U	<0.44	U	<0.47	U	<0.46	U	<0.48	U	NR		<0.46	U	<0.46	U	<0.47	U	NR		NR	
t-1,2-Dichloroethene	190	100,000		<0.85	U	<0.88	U	<0.83	U	<0.88	U	<0.86	U	<0.90	U	NR		<0.87	U	<0.87	U	<0.89	U	NR		NR	
t-1,3-Dichloropropene	NC	NC		<0.83	U	<0.85	U	<0.81	U	<0.85	U	<0.84	U	<0.87	U	NR		<0.85	U	<0.85	U	<0.86	U	NR		NR	
tert- Amyl methyl EtherTAME	NC	NC		<0.60	U	<0.62	U	<0.59	U	<0.62	U	<0.61	U	<0.63	U	NR		<0.62	U	<0.62	U	<0.63	U	NR		NR	
tert-Butylbenzene	5,900	100,000		<0.65	U	<0.67	U	<0.64	U	<0.67	U	<0.66	U	<0.69	U	NR		<0.67	U	<0.67	U	<0.68	U	NR		NR	
Tertiary butyl alcohol	NC	NC		<18.3	U	<18.8	U	<17.8	U	<18.9	U	<18.5	U	<19.2	U	NR		<18.7	U	<18.7	U	<19.0	U	NR		NR	
Tetrachloroethene (PCE)	1,300	19,000		<0.73	U	<0.75	U	<0.71	U	<0.75	U	<0.74	U	<0.77	U	NR		<0.75	U	<0.75	U	<0.76	U	NR		NR	
Toluene	700	100,000		<0.83	U	<0.85	U	<0.81	U	<0.85	U	<0.84	U	<0.87	U	NR		<0.85	U	<0.85	U	<0.86	U	NR		NR	
Trichloroethene (TCE)	470	21,000		<0.75	U	<0.77	U	<0.74	U	<0.78	U	<0.76	U	<0.79	U	NR		<0.77	U	<0.77	U	<0.78	U	NR		NR	
Trichlorofluoromethane	NC	NC		<0.73	U	<0.75	U	<0.71	U	<0.75	U	<0.74	U	<0.77	U	NR		<0.75	U	<0.75	U	<0.76	U	NR		NR	
Vinyl Chloride	20	900		<0.60	U	<0.62	U	<0.59	U	<0.62	U	<0.61	U	<0.63	U	NR		<0.62	U	<0.62	U	<0.63	U	NR		NR	
Total VOC TICs	NC	NC	10,000	18		0		0		0		0		0		NR		NR		0		0		NR		NR	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No Result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 260 µg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 µg/kg.

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-35B		SB-35C		SB-36B		SB-36C		SB-36D		SB-37B		SB-37C		SB-38B		SB-38C		SB-39A		SB-39B		SB-39C	
Depth				0.5-3		3-7		0.5-3		3-7		7+		0.5-3		3-7		0.5-3		3-7		0-0.5		0.5-3		3-7	
Lab Sample ID				1107319		1107319		1107319		1107319		1107319		1107319		1107319		118070		118070		118070		118070		118070	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Soil		Soil		Soil		Soil		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1-Trichloroethane (TCA)	680	100,000		<0.76	U	<0.76	U	<0.78	U	<0.81	U	<0.83	U	<132	U	<135	U	<74.4	U	<78.5	U	NR		<144	U	<3.04	U
1,1,1,2-Tetrachloroethane	NC	NC		<0.64	U	<0.64	U	<0.65	U	<0.67	U	<0.69	U	<120	U	<122	U	<60.1	U	<63.4	U	NR		<116	U	<2.69	U
1,1,2,2-Tetrachloroethane	NC	NC		<0.99	U	<0.99	U	<1.01	U	<1.05	U	<1.08	U	<104	U	<106	U	<65.8	U	<69.5	U	NR		<127	U	<3.51	U
1,1,2-Trichloroethane	NC	NC		<0.94	U	<0.94	U	<0.96	U	<1.00	U	<1.02	U	<125	U	<128	U	<72.9	U	<77.0	U	NR		<141	U	<3.69	U
1,1,2-Trichlorotrifluoroethane (Freon 113)	NC	NC		<0.64	U	<0.64	U	<0.65	U	<0.67	U	<0.69	U	<122	U	<125	U	<67.2	U	<71.0	U	NR		<130	U	<3.04	U
1,1-Dichloroethane	270	26,000		<0.56	U	<0.56	U	<0.57	U	<0.59	U	<0.61	U	<140	U	<143	U	<42.9	U	<45.3	U	NR		<83.1	U	<3.33	U
1,1-Dichloroethene	330	100,000		<0.74	U	<0.74	U	<0.75	U	<0.78	U	<0.80	U	<129	U	<132	U	<52.9	U	<55.9	U	NR		<102	U	<2.16	U
1,1-Dichloropropene	NC	NC		<1.22	U	<1.22	U	<1.25	U	<1.29	U	<1.32	U	<111	U	<114	U	<51.5	U	<54.4	U	NR		<99.7	U	<3.10	U
1,2,3-Trichlorobenzene	NC	NC		<0.89	U	<0.89	U	<0.91	U	<0.94	U	<0.97	U	<86.2	U	<88.0	U	<51.5	U	<54.4	U	NR		<99.7	U	<2.81	U
1,2,3-Trichloropropane	NC	NC		<1.58	U	<1.58	U	<1.61	U	<1.67	U	<1.71	U	<108	U	<111	U	<77.2	U	<81.5	U	NR		<150	U	<4.15	U
1,2,4,5-Tetramethylbenzene (Durene)	NC	NC		<0.92	U	<0.92	U	<0.94	U	<0.97	U	25.9		1100		3010		2280		2850		NR		16200		<2.34	U
1,2,4-Trichlorobenzene	NC	NC		<0.76	U	<0.76	U	<0.78	U	<0.81	U	<0.83	U	<93.1	U	<95.1	U	<64.3	U	<67.9	U	NR		<125	U	<1.99	U
1,2,4-Trimethylbenzene	3,600	52,000		<0.76	U	<0.76	U	<0.78	U	<0.81	U	<0.83	U	<117	U	427	J	<62.9	U	96.9	J	NR		36,300		<2.16	U
1,2-Dibromo-3-chloropropane	NC	NC		<2.07	U	<2.07	U	<2.11	U	<2.18	U	<2.24	U	<104	U	<106	U	<40.0	U	<42.3	U	NR		<77.6	U	<2.69	U
1,2-Dibromoethane	NC	NC		<0.74	U	<0.74	U	<0.75	U	<0.78	U	<0.80	U	<108	U	<111	U	<67.2	U	<71.0	U	NR		<130	U	<3.45	U
1,2-Dichlorobenzene	1,100	100,000		<0.82	U	<0.82	U	<0.83	U	<0.86	U	<0.88	U	<111	U	<114	U	<70.1	U	<74.0	U	NR		<136	U	<2.75	U
1,2-Dichloroethane	20	3,100		<0.89	U	<0.89	U	<0.91	U	<0.94	U	<0.97	U	<135	U	<138	U	<71.5	U	<75.5	U	NR		<138	U	<3.39	U
1,2-Dichloropropane	NC	NC		<0.97	U	<0.97	U	<0.99	U	<1.02	U	<1.05	U	<124	U	<126	U	<74.4	U	<78.5	U	NR		<144	U	<3.45	U
1,3,5-Trimethylbenzene	8,400	52,000		<0.87	U	<0.87	U	<0.88	U	<0.91	U	<0.94	U	<114	U	<116	U	<61.5	U	<64.9	U	NR		7560		<2.57	U
1,3-Dichlorobenzene	2,400	49,000		<0.69	U	<0.69	U	<0.70	U	<0.73	U	<0.75	U	<107	U	<109	U	<54.3	U	<57.4	U	NR		<105	U	<3.10	U
1,3-Dichloropropane	NC	NC		<0.54	U	<0.54	U	<0.55	U	<0.56	U	<0.58	U	<115	U	<118	U	<65.8	U	<69.5	U	NR		<127	U	<3.04	U
1,4-Dichlorobenzene	1,800	13,000		<0.54	U	<0.54	U	<0.55	U	<0.56	U	<0.58	U	<108	U	<111	U	<57.2	U	<60.4	U	NR		<111	U	<2.81	U
2,2-Dichloropropane	NC	NC		<0.94	U	<0.94	U	<0.96	U	<1.00	U	<1.02	U	<121	U	<124	U	<84.4	U	<89.1	U	NR		<163	U	<3.45	U
2-Butanone (MEK)	120	100,000		<5.36	U	<5.36	U	<5.46	U	<5.65	U	<5.80	U	<106	U	<108	U	<275	U	<290	U	NR		<532	U	<13.0	U
2-Chloroethylvinylether	NC	NC		<4.16	U	<4.16	U	<4.24	U	<4.38	U	<4.50	U	<197	U	<202	U	<71.5	U	<75.5	U	NR		<138	U	<3.74	U
2-Chlorotoluene	NC	NC		<0.69	U	<0.69	U	<0.70	U	<0.73	U	<0.75	U	<115	U	<118	U	<51.5	U	<54.4	U	NR		<99.7	U	<3.10	U
2-Hexanone	NC	NC		<2.24	U	<2.24	U	<2.29	U	<2.37	U	<2.43	U	<84.8	U	<86.6	U	<319	U	<337	U	NR		<618	U	<11.6	U
4-Chlorotoluene	NC	NC		<0.76	U	<0.76	U	<0.78	U	<0.81	U	<0.83	U	<108	U	<111	U	<74.4	U	<78.5	U	NR		<144	U	<2.92	U
4-Isopropyltoluene	NC	NC		<0.59	U	<0.59	U	<0.60	U	<0.62	U	<0.63	U	<113	U	<115	U	175	J	351		NR		2620		<2.75	U
4-Methyl-2-pentanone	NC	NC		<3.39	U	<3.39	U	<3.46	U	<3.58	U	<3.67	U	<120	U	<122	U	<260	U	<275	U	NR		<504	U	<12.6	U
Acetone	50	100,000		<6.27	U	<6.27	U	<6.40	U	<6.62	U	<6.79	U	<161	U	<165	U	<418	U	<441	U	NR		<809	U	<15.2	U
Acrylonitrile	NC	NC		<15.7	U	<15.7	U	<16.0	U	<16.5	U	<17.0	U	<525	U	<537	U	<1090	U	<1160	U	NR		<2120	U	<40.9	U
Benzene	60	4,800		<0.79	U	<0.79	U	<0.81	U	<0.83	U	<0.86	U	<122	U	<125	U	<61.5	U	<64.9	U	NR		756	J	<3.10	U
Bromobenzene	NC	NC		<0.79	U	<0.79	U	<0.81	U	<0.83	U	<0.86	U	<111	U	<114	U	<52.9	U	<55.9	U	NR		<102	U	<2.98	U
Bromochloromethane	NC	NC		<1.05	U	<1.05	U	<1.07	U	<1.10	U	<1.13	U	<126	U	<129	U	<75.8	U	<80.0	U	NR		<147	U	<3.39	U
Bromodichloromethane	NC	NC		<0.76	U	<0.76	U	<0.78	U	<0.81	U	<0.83	U	<124	U	<126	U	<71.5	U	<75.5	U	NR		<138	U	<2.75	U
Bromoform	NC	NC		<0.84	U	<0.84	U	<0.86	U	<0.89	U	<0.91	U	<113	U	<115	U	<52.9	U	<55.9	U	NR		<102	U	<2.81	U
Bromomethane	NC	NC		<1.25	U	<1.25	U	<1.27	U	<1.32	U	<1.35	U	<142	U	<145	U	<84.4	U	<89.1	U	NR		<163	U	<2.87	U
Carbon disulfide	NC	NC		<0.74	U	<0.74	U	<0.75	U	<0.78	U	<0.80	U	<114	U	<116	U	<57.2	U	<60.4	U	NR		<111	U	<2.75	U
Carbon Tetrachloride	760	2,400		<0.97	U	<0.97	U	<0.99	U	<1.02	U	<1.05	U	<125	U	<128	U	<62.9	U	<66.4	U	NR		<122	U	<3.28	U
Chlorobenzene	1,100	100,000		<0.66	U	<0.66	U	<0.68	U	<0.70	U	<0.72	U	<120	U	<122	U	<68.6	U	<72.5	U	NR		<133	U	<3.57	U
Chlorodifluoromethane (Freon 22)	NC	NC		<0.74	U	<0.74	U	<0.75	U	<0.78	U	<0.80	U	<129	U	<132	U	<67.2	U	<71.0	U	NR		<130	U	<5.15	U
Chloroethane	NC	NC		<1.10	U	<1.10	U	<1.12	U	<1.16	U	<1.19	U	<200	U	<204	U	<134	U	<142	U	NR		<260	U	<4.09	U
Chloroform	370	49,000		<0.61	U	<0.61	U	<0.62	U	<0.65	U	<0.66	U	<135	U	<138	U	<65.8	U	<69.5	U	NR		<127	U	<3.45	U
Chloromethane	NC	NC		<0.99	U	<0.99	U	<1.01	U	<1.05	U	<1.08	U	<110	U	<112	U	<72.9	U	<77.0	U	NR		<141	U	<2.92	U
c-1,2-Dichloroethene	250	100,000		<0.99	U	<0.99	U	<1.01	U	<1.05	U	<1.08	U	<124	U	<126	U	<60.1	U	<63.4	U	NR		<116	U	<2.63	U
c-1,3-Dichloropropene	NC	NC		<0.79	U	<0.79	U	<0.81	U	<0.83	U	<0.86	U	<121	U	<124	U	<74.4	U	<78.5	U	NR		<144	U	<2.98	U
Dibromochloromethane	NC	NC		<0.51	U	<0.51	U	<0.52	U	<0.54	U	<0.55	U	<115	U	<118	U	<61.5	U	<64.9	U	NR		<119	U	<2.69	U
Dibromomethane	NC	NC		<0.66	U	<0.66	U	<0.68	U	<0.70	U	<0.72	U	<126	U	<129	U	<67.2	U	<71.0	U	NR		<130	U	<4.62	U
Dichlorodifluoromethane	NC	NC		<0.99	U	<0.99	U	<1.01	U	<1.05	U	<1.08	U	<111	U	<114	U	<70.1	U	<74.0	U	NR		<136	U	<2.16	U
Ethylbenzene	1,000	41,000		<0.99	U	<0.99	U	<1.01	U	<1.05	U	<1.08	U	<124	U	<126	U	<58.6	U	<61.9	U	NR		3,010		<3.04	U
Hexachlorobutadiene	NC	NC		<0.87	U	<0.87	U	<0.88	U	<0.91	U	<0.94	U	<110	U	<112	U	<77.2	U	<81.5	U	NR		<150	U	<2.81	U
Isopropylbenzene	NC	NC		<0.64	U	<0.64	U	<0.65	U	<0.67	U	<0.69	U	<120	U	<122	U	<62.9	U	<66.4	U	NR		3,270		<2.57	U
m,p-xylene	NC**	NC**		<1.61	U	<1.61	U	<1.64	U	<1.69	U	<1.74	U	<242	U	419		<123	U	<130	U	NR		2,120	J	<5.26	U
Methyl t-butyl ether (MTBE)	930	100,000		<0.79	U	<0.79	U	<0.81	U	<0.83	U	<0.86	U	<122	U	<125	U	<71.5	U	<75.5	U	NR		<138	U	<3.04	U
Methylene Chloride	50	100,000		<0.51	U	<0.51	U	<0.52	U	<0.54	U	<0.55	U	<150	U	<153	U	<55.8	U	<58.9	U	NR		<108	U	<5.50	U
Naphthalene	NC	NC		<1.35	U	<1.35	U	<1.38	U	<1.43	U	21.6	U	<84.8	U	2320		<47.2	U	<49.8	U	NR		23,500		<2.63	U
n-Butylbenzene	12,000	100,000		<0.69	U	<0.69	U	<0.70	U	<0.73	U	<0.75	U	<115	U	670		<61.5	U	<64.9	U	NR		8,740		<2.81	U
n-Propylbenzene	3,900	100,000		<0.89	U	<0.89	U	<0.91	U	<0.94	U	<0.97	U	<113	U	296		<58.6	U	<61.9	U	NR		9,260		<2.69	U
o-xylene	NC**	NC**		<0.87	U	<0.87	U	<0.88	U	<0.91	U	<0.94	U	<118	U	<121	U	<52.9	U	<55.9	U	NR		470	J	<2.28	U
p-Diethylbenzene	NC	NC		<0.69	U	<0.69	U	<0.70	U	<0.73	U	<0.75	U	<107	U	<109	U	<55.8	U	<58.9	U	NR		22,900		<2.69	U

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-35B		SB-35C		SB-36B		SB-36C		SB-36D		SB-37B		SB-37C		SB-38B		SB-38C		SB-39A		SB-39B		SB-39C	
Depth				0.5-3		3-7		0.5-3		3-7		7+		0.5-3		3-7		0.5-3		3-7		0-0.5		0.5-3		3-7	
Lab Sample ID				1107319		1107319		1107319		1107319		1107319		1107319		1107319		118070		118070		118070		118070		118070	
Sampling Date				7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Soil		Soil		Soil		Soil		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<0.79	U	<0.79	U	<0.81	U	<0.83	U	<0.86	U	<113	U	510		<55.8	U	<58.9	U	NR		2,460		<2.46	U
sec-Butylbenzene	11,000	100,000		<0.71	U	<0.71	U	<0.73	U	<0.75	U	<0.77	U	<108	U	<111	U	<51.5	U	191		NR		4,130		<2.63	U
Styrene	NC	NC		<0.46	U	<0.46	U	<0.47	U	<0.48	U	<0.50	U	<113	U	<115	U	<55.8	U	<58.9	U	NR		<108	U	<2.52	U
t-1,2-Dichloroethene	190	100,000		<0.87	U	<0.87	U	<0.88	U	<0.91	U	<0.94	U	<132	U	<135	U	<38.6	U	<40.8	U	NR		<74.8	U	<2.69	U
t-1,3-Dichloropropene	NC	NC		<0.84	U	<0.84	U	<0.86	U	<0.89	U	<0.91	U	<110	U	<112	U	<52.9	U	<55.9	U	NR		<102	U	<2.46	U
tert- Amyl methyl EtherTAME	NC	NC		<0.61	U	<0.61	U	<0.62	U	<0.65	U	<0.66	U	<120	U	<122	U	<110	U	<116	U	NR		<213	U	<3.69	U
tert-Butylbenzene	5,900	100,000		<0.66	U	<0.66	U	<0.68	U	<0.70	U	<0.72	U	<118	U	<121	U	<62.9	U	<66.4	U	NR		<122	U	<3.10	U
Tertiary butyl alcohol	NC	NC		<18.6	U	<18.6	U	<18.9	U	<19.6	U	<20.1	U	<1130	U	<1150	U	<1280	U	<1350	U	NR		<2470	U	<31.5	U
Tetrachloroethene (PCE)	1,300	19,000		<0.74	U	<0.74	U	<0.75	U	<0.78	U	<0.80	U	<117	U	<119	U	<84.4	U	<89.1	U	NR		<163	U	<2.63	U
Toluene	700	100,000		<0.84	U	<0.84	U	<0.86	U	<0.89	U	<0.91	U	<150	U	<153	U	<64.3	U	<67.9	U	NR		660	J	<2.81	U
Trichloroethene (TCE)	470	21,000		<0.76	U	<0.76	U	<0.78	U	<0.81	U	<0.83	U	<131	U	<133	U	<65.8	U	<69.5	U	NR		<127	U	<2.87	U
Trichlorofluoromethane	NC	NC		<0.74	U	<0.74	U	<0.75	U	<0.78	U	<0.80	U	<139	U	<142	U	<74.4	U	<78.5	U	NR		<144	U	<3.28	U
Vinyl Chloride	20	900		<0.61	U	<0.61	U	<0.62	U	<0.65	U	<0.66	U	<114	U	<116	U	<61.5	U	<64.9	U	NR		<119	U	<3.98	U
Total VOC TICs	NC	NC	10,000	0		0		0		0		388		25,490		42,160		384,300		272,400		109		457,300		1,771	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No Result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 260 µg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 µg/kg.

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-39E		SB-40B		SB-40C		SB-41B		SB-41C		SB-42A		SB-43B		SB-43C		SB-43E		SB-44A		SB-44B		SB-44C	
Depth				7+		0.5-3		3-7		0.5-3		3-7		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7	
Lab Sample ID				118070		118070		118070		118070		118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date				8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1-Trichloroethane (TCA)	680	100,000		<1.31	U	<0.64	U	<175	U	<0.60	U	<75.4	U	<0.57	U	<1.12	U	<88.9	U	<0.85	U	<0.60	U	<3.53	U	<3.19	U
1,1,1,2-Tetrachloroethane	NC	NC		<1.16	U	<0.57	U	<141	U	<0.53	U	<60.9	U	<0.51	U	<0.99	U	<71.8	U	<0.75	U	<0.53	U	<3.12	U	<2.82	U
1,1,2,2-Tetrachloroethane	NC	NC		<1.51	U	<0.74	U	<155	U	<0.70	U	<66.7	U	<0.66	U	<1.29	U	<78.7	U	<0.98	U	<0.70	U	<4.07	U	<3.68	U
1,1,2-Trichloroethane	NC	NC		<1.59	U	<0.77	U	<171	U	<0.73	U	<73.9	U	<0.69	U	<1.35	U	<87.2	U	<1.03	U	<0.73	U	<4.28	U	<3.86	U
1,1,2-Trichlorotrifluoroethane (Freon 113)	NC	NC		<1.31	U	<0.64	U	<158	U	<0.60	U	<68.2	U	<0.57	U	<1.12	U	<80.4	U	<0.85	U	<0.60	U	<3.53	U	<3.19	U
1,1-Dichloroethane	270	26,000		<1.44	U	<0.70	U	<101	U	<0.66	U	<43.5	U	<0.63	U	<1.23	U	<51.3	U	<0.93	U	<0.66	U	<3.87	U	<3.49	U
1,1-Dichloroethene	330	100,000		<0.93	U	<0.46	U	<124	U	<0.43	U	<53.7	U	<0.41	U	<0.80	U	<63.3	U	<0.61	U	<0.43	U	<2.51	U	<2.27	U
1,1-Dichloropropene	NC	NC		<1.34	U	<0.65	U	<121	U	<0.61	U	<52.2	U	<0.58	U	<1.14	U	<61.6	U	<0.87	U	<0.61	U	<3.60	U	<3.25	U
1,2,3-Trichlorobenzene	NC	NC		<1.21	U	<0.59	U	<121	U	<0.56	U	<52.2	U	<0.53	U	<1.03	U	<61.6	U	<0.79	U	<0.56	U	<3.26	U	<2.94	U
1,2,3-Trichloropropane	NC	NC		<1.79	U	<0.87	U	<181	U	<0.82	U	<78.3	U	<0.78	U	<1.53	U	<92.3	U	<1.16	U	<0.82	U	<4.82	U	<4.35	U
1,2,4,5-Tetramethylbenzene (Durene)	NC	NC		<1.01	U	12		11600		<0.46	U	3750		<0.44	U	<0.86	U	5320		<0.66	U	<0.46	U	104		<2.45	U
1,2,4-Trichlorobenzene	NC	NC		<0.86	U	<0.42	U	<151	U	<0.39	U	<65.3	U	<0.37	U	<0.73	U	<76.9	U	<0.56	U	<0.39	U	<2.31	U	<2.08	U
1,2,4-Trimethylbenzene	3,600	52,000		<0.93	U	2.26	J	<148	U	<0.43	U	636	J	<0.41	U	<0.80	U	<75.2	U	<0.61	U	<0.43	U	<2.51	U	<2.27	U
1,2-Dibromo-3-chloropropane	NC	NC		<1.16	U	<0.57	U	<94.1	U	<0.53	U	<40.6	U	<0.51	U	<0.99	U	<47.9	U	<0.75	U	<0.53	U	<3.12	U	<2.82	U
1,2-Dibromoethane	NC	NC		<1.49	U	<0.73	U	<158	U	<0.68	U	<68.2	U	<0.65	U	<1.27	U	<80.4	U	<0.97	U	<0.68	U	<4.01	U	<3.62	U
1,2-Dichlorobenzene	1,100	100,000		<1.18	U	<0.58	U	<165	U	<0.55	U	<71.1	U	<0.52	U	<1.01	U	<83.8	U	<0.77	U	<0.55	U	<3.19	U	<2.88	U
1,2-Dichloroethane	20	3,100		<1.46	U	<0.71	U	<168	U	<0.67	U	<72.5	U	<0.64	U	<1.25	U	<85.5	U	<0.95	U	<0.67	U	<3.94	U	<3.56	U
1,2-Dichloropropane	NC	NC		<1.49	U	<0.73	U	<175	U	<0.68	U	<75.4	U	<0.65	U	<1.27	U	<88.9	U	<0.97	U	<0.68	U	<4.01	U	<3.62	U
1,3,5-Trimethylbenzene	8,400	52,000		<1.11	U	1.62	J	<144	U	<0.51	U	102	J	<0.48	U	<0.95	U	<73.5	U	<0.72	U	<0.51	U	<2.99	U	<2.70	U
1,3-Dichlorobenzene	2,400	49,000		<1.34	U	<0.65	U	<128	U	<0.61	U	<55.1	U	<0.58	U	<1.14	U	<65.0	U	<0.87	U	<0.61	U	<3.60	U	<3.25	U
1,3-Dichloropropane	NC	NC		<1.31	U	<0.64	U	<155	U	<0.60	U	<66.7	U	<0.57	U	<1.12	U	<78.7	U	<0.85	U	<0.60	U	<3.53	U	<3.19	U
1,4-Dichlorobenzene	1,800	13,000		<1.21	U	<0.59	U	<134	U	<0.56	U	<58.0	U	<0.53	U	<1.03	U	<68.4	U	<0.79	U	<0.56	U	<3.26	U	<2.94	U
2,2-Dichloropropane	NC	NC		<1.49	U	<0.73	U	<198	U	<0.68	U	<85.6	U	<0.65	U	<1.27	U	<101	U	<0.97	U	<0.68	U	<4.01	U	<3.62	U
2-Butanone (MEK)	120	100,000		<5.59	U	<2.73	U	<645	U	<2.58	U	<278	U	<2.44	U	49.8	J	<328	U	<3.64	U	<2.58	U	<15.1	U	<13.6	U
2-Chloroethylvinylether	NC	NC		<1.61	U	<0.79	U	<168	U	<0.74	U	<72.5	U	<0.70	U	<1.38	U	<85.5	U	<1.05	U	<0.74	U	<4.35	U	<3.92	U
2-Chlorotoluene	NC	NC		<1.34	U	<0.65	U	<121	U	<0.61	U	<52.2	U	<0.58	U	<1.14	U	<61.6	U	<0.87	U	<0.61	U	<3.60	U	<3.25	U
2-Hexanone	NC	NC		<4.99	U	<2.44	U	<749	U	<2.30	U	<323	U	<2.18	U	<4.26	U	<381	U	<3.25	U	<2.30	U	<13.4	U	<12.1	U
4-Chlorotoluene	NC	NC		<1.26	U	<0.62	U	<175	U	<0.58	U	<75.4	U	<0.55	U	<1.08	U	<88.9	U	<0.82	U	<0.58	U	<3.39	U	<3.07	U
4-Isopropyltoluene	NC	NC		<1.18	U	14.7		<114	U	<0.55	U	479	J	<0.52	U	<1.01	U	<58.1	U	<0.77	U	<0.55	U	<3.19	U	<2.88	U
4-Methyl-2-pentanone	NC	NC		<5.42	U	<2.64	U	<612	U	<2.49	U	<264	U	<2.37	U	<4.62	U	<311	U	<3.53	U	<2.49	U	<14.6	U	<13.2	U
Acetone	50	100,000		<6.55	U	<3.20	U	<981	U	<3.02	U	<423	U	<2.86	U	297		<499	U	26.4	J	<3.02	U	<17.7	U	188	
Acrylonitrile	NC	NC		<17.6	U	<8.60	U	<2570	U	<8.11	U	<1110	U	<7.69	U	<15.0	U	<1310	U	<11.5	U	<8.11	U	<47.5	U	<42.8	U
Benzene	60	4,800		<1.34	U	<0.65	U	<144	U	<0.61	U	<62.3	U	<0.58	U	<1.14	U	<73.5	U	<0.87	U	<0.61	U	<3.60	U	<3.25	U
Bromobenzene	NC	NC		<1.29	U	<0.63	U	<124	U	<0.59	U	<53.7	U	<0.56	U	<1.10	U	<63.3	U	<0.84	U	<0.59	U	<3.46	U	<3.13	U
Bromochloromethane	NC	NC		<1.46	U	<0.71	U	<178	U	<0.67	U	<76.8	U	<0.64	U	<1.25	U	<90.6	U	<0.95	U	<0.67	U	<3.94	U	<3.56	U
Bromodichloromethane	NC	NC		<1.18	U	<0.58	U	<168	U	<0.55	U	<72.5	U	<0.52	U	<1.01	U	<85.5	U	<0.77	U	<0.55	U	<3.19	U	<2.88	U
Bromoform	NC	NC		<1.21	U	<0.59	U	<124	U	<0.56	U	<53.7	U	<0.53	U	<1.03	U	<63.3	U	<0.79	U	<0.56	U	<3.26	U	<2.94	U
Bromomethane	NC	NC		<1.23	U	<0.60	U	<198	U	<0.57	U	<85.6	U	<0.54	U	<1.05	U	<101	U	<0.80	U	<0.57	U	<3.33	U	<3.00	U
Carbon disulfide	NC	NC		39.6		9.09		<134	U	<0.55	U	<58.0	U	<0.52	U	<1.01	U	<68.4	U	207		<0.55	U	<3.19	U	36.8	
Carbon Tetrachloride	760	2,400		<1.41	U	<0.69	U	<148	U	<0.65	U	<63.8	U	<0.62	U	<1.20	U	<75.2	U	<0.92	U	<0.65	U	<3.80	U	<3.43	U
Chlorobenzene	1,100	100,000		<1.54	U	<0.75	U	<161	U	<0.71	U	<69.6	U	<0.67	U	<1.31	U	<82.1	U	<1.00	U	<0.71	U	<4.14	U	<3.74	U
Chlorodifluoromethane (Freon 22)	NC	NC		<2.22	U	<1.08	U	<158	U	<1.02	U	<68.2	U	<0.97	U	<1.89	U	<80.4	U	<1.44	U	<1.02	U	<5.98	U	<5.39	U
Chloroethane	NC	NC		<1.76	U	<0.86	U	<316	U	<0.81	U	<136	U	<0.77	U	<1.50	U	<161	U	<1.15	U	<0.81	U	<4.75	U	<4.29	U
Chloroform	370	49,000		<1.49	U	<0.73	U	<155	U	<0.68	U	<66.7	U	<0.65	U	<1.27	U	<78.7	U	<0.97	U	<0.68	U	<4.01	U	<3.62	U
Chloromethane	NC	NC		<1.26	U	<0.62	U	<171	U	<0.58	U	<73.9	U	<0.55	U	<1.08	U	<87.2	U	<0.82	U	<0.58	U	<3.39	U	<3.07	U
c-1,2-Dichloroethene	250	100,000		<1.13	U	<0.55	U	<141	U	<0.52	U	<60.9	U	<0.50	U	<0.97	U	<71.8	U	<0.74	U	<0.52	U	<3.06	U	<2.76	U
c-1,3-Dichloropropene	NC	NC		<1.29	U	<0.63	U	<175	U	<0.59	U	<75.4	U	<0.56	U	<1.10	U	<88.9	U	<0.84	U	<0.59	U	<3.46	U	<3.13	U
Dibromochloromethane	NC	NC		<1.16	U	<0.57	U	<144	U	<0.53	U	<62.3	U	<0.51	U	<0.99	U	<73.5	U	<0.75	U	<0.53	U	<3.12	U	<2.82	U
Dibromomethane	NC	NC		<1.99	U	<0.97	U	<158	U	<0.92	U	<68.2	U	<0.87	U	<1.70	U	<80.4	U	<1.30	U	<0.92	U	<5.36	U	<4.84	U
Dichlorodifluoromethane	NC	NC		<0.93	U	<0.46	U	<165	U	<0.43	U	<71.1	U	<0.41	U	<0.80	U	<83.8	U	<0.61	U	<0.43	U	<2.51	U	<2.27	U
Ethylbenzene	1,000	41,000		<1.31	U	<0.64	U	<138	U	<0.60	U	<59.5	U	<0.57	U	<1.12	U	<70.1	U	<0.85	U	<0.60	U	<3.53	U	<3.19	U
Hexachlorobutadiene	NC	NC		<1.21	U	<0.59	U	<181	U	<0.56	U	<78.3	U	<0.53	U	<1.03	U	<92.3	U	<0.79	U	<0.56	U	<3.26	U	<2.94	U
Isopropylbenzene	NC	NC		<1.11	U	<0.54	U	452	J	<0.51	U	188	J	<0.48	U	1.61	J	269	J	<0.72	U	<0.51	U	<2.99	U	<2.70	U
m,p-xylene	NC**	NC**		<2.27	U	<1.11	U	<289	U	<1.04	U	438	J	<0.99	U	<1.93	U	<147	U	<1.48	U	<1.04	U	<6.11	U	<5.52	U
Methyl t-butyl ether (MTBE)	930	100,000		<1.31	U	<0.64	U	<168	U	<0.60	U	<72.5	U	<0.57	U	<1.12	U	<85.5	U	<0.85	U	<0.60	U	<3.53	U	<3.19	U
Methylene Chloride	50	100,000		<2.37	U	<1.16	U	<131	U	<1.09	U	<56.5	U	<1.03	U	<2.02	U	<66.7	U	<1.54	U	<1.09	U	<6.38	U	<5.76	U
Naphthalene	NC	NC		<1.13	U	16.7		<111	U	<0.52	U	3250		<0.50	U	<0.97	U	<56.4	U	<0.74	U	<0.52	U	<3.06	U	<2.76	U
n-Butylbenzene	12,000	100,000		<1.21	U	2.4	J	2380		<0.56	U	1240		<0.53	U	<1.03	U	<73.5	U	<0.79	U	<0.56	U	<3.26	U	<2.94	U
n-Propylbenzene	3,900	100,000		<1.16	U	<0.57	U	1180	J	<0.53	U	517	J	<0.51	U	<0.99	U	764		<0.75	U	<0.53	U	<3.12	U	<2.82	U
o-xylene	NC**	NC**		<0.98	U	<0.48	U	<124	U	<0.45	U	92.2	J	<0.43	U	<0.84	U	<63.3	U	<0.64	U	<0.45	U	<2.65	U	<2.39	U
p-Diethylbenzene	NC	NC		<1.16	U	7.49		2190	U	<0.53	U	<56.5	U	<0.51	U	<0.99	U	1190		<0.75	U	<0.53	U	<3.12	U	<2.82	U

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-39E		SB-40B		SB-40C		SB-41B		SB-41C		SB-42A		SB-43B		SB-43C		SB-43E		SB-44A		SB-44B		SB-44C	
Depth				7+		0.5-3		3-7		0.5-3		3-7		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7	
Lab Sample ID				118070		118070		118070		118070		118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date				8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<1.06	U	2.26	J	351		<0.49	U	730		<0.46	U	<0.90	U	<66.7	U	<0.69	U	<0.49	U	<2.85	U	<2.57	U
sec-Butylbenzene	11,000	100,000		<1.13	U	6.58		1420		<0.52	U	666	J	<0.50	U	<0.97	U	1340		<0.74	U	<0.52	U	<3.06	U	<2.76	U
Styrene	NC	NC		<1.08	U	<0.53	U	<131	U	<0.50	U	<56.5	U	<0.47	U	<0.92	U	<66.7	U	<0.71	U	<0.50	U	<2.92	U	<2.64	U
t-1,2-Dichloroethene	190	100,000		<1.16	U	<0.57	U	<90.7	U	<0.53	U	<39.2	U	<0.51	U	<0.99	U	<46.2	U	<0.75	U	<0.53	U	<3.12	U	<2.82	U
t-1,3-Dichloropropene	NC	NC		<1.06	U	<0.52	U	<124	U	<0.49	U	<53.7	U	<0.46	U	<0.90	U	<63.3	U	<0.69	U	<0.49	U	<2.85	U	<2.57	U
tert- Amyl methyl EtherTAME	NC	NC		<1.59	U	<0.77	U	<259	U	<0.73	U	<112	U	<0.69	U	<1.35	U	<132	U	<1.03	U	<0.73	U	<4.28	U	<3.86	U
tert-Butylbenzene	5,900	100,000		<1.34	U	<0.65	U	<148	U	<0.61	U	<63.8	U	<0.58	U	<1.14	U	<75.2	U	<0.87	U	<0.61	U	<3.60	U	<3.25	U
Tertiary butyl alcohol	NC	NC		<13.6	U	<6.63	U	<3000	U	<6.25	U	<1290	U	<5.93	U	<11.6	U	<1530	U	<8.84	U	<6.25	U	<36.6	U	<33.0	U
Tetrachloroethene (PCE)	1,300	19,000		<1.13	U	<0.55	U	<198	U	<0.52	U	<85.6	U	<0.50	U	<0.97	U	<101	U	<0.74	U	<0.52	U	<3.06	U	<2.76	U
Toluene	700	100,000		<1.21	U	<0.59	U	<151	U	<0.56	U	89.2	J	<0.53	U	<1.03	U	<76.9	U	<0.79	U	<0.56	U	<3.26	U	<2.94	U
Trichloroethene (TCE)	470	21,000		<1.23	U	<0.60	U	<155	U	<0.57	U	<66.7	U	<0.54	U	<1.05	U	<78.7	U	<0.80	U	<0.57	U	<3.33	U	<3.00	U
Trichlorofluoromethane	NC	NC		<1.41	U	<0.69	U	<175	U	<0.65	U	<75.4	U	<0.62	U	<1.20	U	<88.9	U	<0.92	U	<0.65	U	<3.80	U	<3.43	U
Vinyl Chloride	20	900		<1.71	U	<0.84	U	<144	U	<0.79	U	<62.3	U	<0.75	U	<1.46	U	<73.5	U	<1.12	U	<0.79	U	<4.62	U	<4.17	U
Total VOC TICs	NC	NC	10,000	40		1,224		301,400		8		142,000		7		5,921		255,100		254		0		14,240		14,360	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No Result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 260 µg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 µg/kg.

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-45B		SB-45C		SB-46B		SB-46C		SB-46E		SB-47A		SB-48A		SB-49A	
Depth				0.5-3		3-7		0.5-3		3-7		7+		0-0.5		0-0.5		0-0.5	
Lab Sample ID				118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date				8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result	
1,1,1-Trichloroethane (TCA)	680	100,000		<0.59	U	<0.62	U	<0.57	U	<0.62	U	<0.73	U	<0.71	U	<0.56	U	<0.71	U
1,1,1,2-Tetrachloroethane	NC	NC		<0.52	U	<0.55	U	<0.51	U	<0.55	U	<0.65	U	<0.63	U	<0.49	U	<0.63	U
1,1,2,2-Tetrachloroethane	NC	NC		<0.68	U	<0.72	U	<0.66	U	<0.72	U	<0.85	U	<0.82	U	<0.64	U	<0.82	U
1,1,2-Trichloroethane	NC	NC		<0.71	U	<0.76	U	<0.69	U	<0.76	U	<0.89	U	<0.86	U	<0.67	U	<0.86	U
1,1,2-Trichlorotrifluoroethane (Freon 113)	NC	NC		<0.59	U	<0.62	U	<0.57	U	<0.62	U	<0.73	U	<0.71	U	<0.56	U	<0.71	U
1,1-Dichloroethane	270	26,000		<0.64	U	<0.68	U	<0.63	U	<0.68	U	<0.80	U	<0.78	U	<0.61	U	<0.78	U
1,1-Dichloroethene	330	100,000		<0.42	U	<0.44	U	<0.41	U	<0.44	U	<0.52	U	<0.50	U	<0.40	U	<0.50	U
1,1-Dichloropropene	NC	NC		<0.60	U	<0.64	U	<0.58	U	<0.64	U	<0.75	U	<0.72	U	<0.57	U	<0.72	U
1,2,3-Trichlorobenzene	NC	NC		<0.54	U	<0.58	U	<0.53	U	<0.58	U	<0.68	U	<0.65	U	<0.51	U	<0.65	U
1,2,3-Trichloropropane	NC	NC		<0.80	U	<0.85	U	<0.78	U	<0.85	U	<1.00	U	<0.97	U	<0.76	U	<0.97	U
1,2,4,5-Tetramethylbenzene (Durene)	NC	NC		<0.45	U	<0.48	U	<0.44	U	0.78		<0.56	U	<0.54	U	<0.43	U	<0.54	U
1,2,4-Trichlorobenzene	NC	NC		<0.38	U	<0.41	U	<0.37	U	<0.41	U	<0.48	U	<0.46	U	<0.36	U	<0.46	U
1,2,4-Trimethylbenzene	3,600	52,000		<0.42	U	<0.44	U	<0.41	U	<0.44	U	<0.52	U	<0.50	U	<0.40	U	<0.50	U
1,2-Dibromo-3-chloropropane	NC	NC		<0.52	U	<0.55	U	<0.51	U	<0.55	U	<0.65	U	<0.63	U	<0.49	U	<0.63	U
1,2-Dibromoethane	NC	NC		<0.67	U	<0.71	U	<0.65	U	<0.71	U	<0.83	U	<0.80	U	<0.63	U	<0.80	U
1,2-Dichlorobenzene	1,100	100,000		<0.53	U	<0.56	U	<0.52	U	<0.56	U	<0.66	U	<0.64	U	<0.50	U	<0.64	U
1,2-Dichloroethane	20	3,100		<0.66	U	<0.70	U	<0.64	U	<0.70	U	<0.82	U	<0.79	U	<0.62	U	<0.79	U
1,2-Dichloropropane	NC	NC		<0.67	U	<0.71	U	<0.65	U	<0.71	U	<0.83	U	<0.80	U	<0.63	U	<0.80	U
1,3,5-Trimethylbenzene	8,400	52,000		<0.50	U	<0.53	U	<0.48	U	<0.53	U	<0.62	U	<0.60	U	<0.47	U	<0.60	U
1,3-Dichlorobenzene	2,400	49,000		<0.60	U	<0.64	U	<0.58	U	<0.64	U	<0.75	U	<0.72	U	<0.57	U	<0.72	U
1,3-Dichloropropane	NC	NC		<0.59	U	<0.62	U	<0.57	U	<0.62	U	<0.73	U	<0.71	U	<0.56	U	<0.71	U
1,4-Dichlorobenzene	1,800	13,000		<0.54	U	<0.58	U	<0.53	U	<0.58	U	<0.68	U	<0.65	U	<0.51	U	<0.65	U
2,2-Dichloropropane	NC	NC		<0.67	U	<0.71	U	<0.65	U	<0.71	U	<0.83	U	<0.80	U	<0.63	U	<0.80	U
2-Butanone (MEK)	120	100,000		<2.51	U	<2.66	U	<2.44	U	<2.66	U	<3.13	U	<3.02	U	<2.38	U	<3.02	U
2-Chloroethylvinylether	NC	NC		<0.72	U	<0.77	U	<0.70	U	<0.77	U	<0.90	U	<0.87	U	<0.68	U	<0.87	U
2-Chlorotoluene	NC	NC		<0.60	U	<0.64	U	<0.58	U	<0.64	U	<0.75	U	<0.72	U	<0.57	U	<0.72	U
2-Hexanone	NC	NC		<2.24	U	<2.38	U	<2.18	U	<2.38	U	<2.79	U	<2.69	U	<2.12	U	<2.69	U
4-Chlorotoluene	NC	NC		<0.56	U	<0.60	U	<0.55	U	<0.60	U	<0.70	U	<0.68	U	<0.54	U	<0.68	U
4-Isopropyltoluene	NC	NC		<0.53	U	<0.56	U	1.41	J	<0.56	U	<0.66	U	<0.64	U	<0.50	U	<0.64	U
4-Methyl-2-pentanone	NC	NC		<2.43	U	<2.58	U	<2.37	U	<2.58	U	<3.03	U	<2.92	U	<2.30	U	<2.92	U
Acetone	50	100,000		13.6	J	<3.12	U	179		7.3	J	7.06	J	<3.54	U	<2.78	U	<3.54	U
Acrylonitrile	NC	NC		<7.90	U	<8.39	U	<7.69	U	<8.39	U	<9.86	U	<9.51	U	<7.48	U	<9.51	U
Benzene	60	4,800		<0.60	U	<0.64	U	<0.58	U	<0.64	U	<0.75	U	<0.72	U	<0.57	U	<0.72	U
Bromobenzene	NC	NC		<0.58	U	<0.61	U	<0.56	U	<0.61	U	<0.72	U	<0.69	U	<0.55	U	<0.69	U
Bromochloromethane	NC	NC		<0.66	U	<0.70	U	<0.64	U	<0.70	U	<0.82	U	<0.79	U	<0.62	U	<0.79	U
Bromodichloromethane	NC	NC		<0.53	U	<0.56	U	<0.52	U	<0.56	U	<0.66	U	<0.64	U	<0.50	U	<0.64	U
Bromoform	NC	NC		<0.54	U	<0.58	U	<0.53	U	<0.58	U	<0.68	U	<0.65	U	<0.51	U	<0.65	U
Bromomethane	NC	NC		<0.55	U	<0.59	U	<0.54	U	<0.59	U	<0.69	U	<0.67	U	<0.52	U	<0.67	U
Carbon disulfide	NC	NC		2.38	J	5.14	J	<0.52	U	10.5		69.6		<0.64	U	<0.50	U	<0.64	U
Carbon Tetrachloride	760	2,400		<0.63	U	<0.67	U	<0.62	U	<0.67	U	<0.79	U	<0.76	U	<0.60	U	<0.76	U
Chlorobenzene	1,100	100,000		<0.69	U	<0.73	U	<0.67	U	<0.73	U	<0.86	U	<0.83	U	<0.65	U	<0.83	U
Chlorodifluoromethane (Freon 22)	NC	NC		<0.99	U	<1.06	U	<0.97	U	<1.06	U	<1.24	U	<1.20	U	<0.94	U	<1.20	U
Chloroethane	NC	NC		<0.79	U	<0.84	U	<0.77	U	<0.84	U	<0.99	U	<0.95	U	<0.75	U	<0.95	U
Chloroform	370	49,000		<0.67	U	<0.71	U	<0.65	U	<0.71	U	<0.83	U	<0.80	U	<0.63	U	<0.80	U
Chloromethane	NC	NC		<0.56	U	<0.60	U	<0.55	U	<0.60	U	<0.70	U	<0.68	U	<0.54	U	<0.68	U
c-1,2-Dichloroethene	250	100,000		<0.51	U	<0.54	U	<0.50	U	<0.54	U	<0.63	U	<0.61	U	<0.48	U	<0.61	U
c-1,3-Dichloropropene	NC	NC		<0.58	U	<0.61	U	<0.56	U	<0.61	U	<0.72	U	<0.69	U	<0.55	U	<0.69	U
Dibromochloromethane	NC	NC		<0.52	U	<0.55	U	<0.51	U	<0.55	U	<0.65	U	<0.63	U	<0.49	U	<0.63	U
Dibromomethane	NC	NC		<0.89	U	<0.95	U	<0.87	U	<0.95	U	<1.11	U	<1.07	U	<0.85	U	<1.07	U
Dichlorodifluoromethane	NC	NC		<0.42	U	<0.44	U	<0.41	U	<0.44	U	<0.52	U	<0.50	U	<0.40	U	<0.50	U
Ethylbenzene	1,000	41,000		<0.59	U	<0.62	U	<0.57	U	<0.62	U	<0.73	U	<0.71	U	<0.56	U	<0.71	U
Hexachlorobutadiene	NC	NC		<0.54	U	<0.58	U	<0.53	U	<0.58	U	<0.68	U	<0.65	U	<0.51	U	<0.65	U
Isopropylbenzene	NC	NC		<0.50	U	<0.53	U	<0.48	U	<0.53	U	<0.62	U	<0.60	U	<0.47	U	<0.60	U
m,p-xylene	NC**	NC**		<1.02	U	<1.08	U	<0.99	U	<1.08	U	<1.27	U	<1.22	U	<0.96	U	<1.22	U
Methyl t-butyl ether (MTBE)	930	100,000		<0.59	U	<0.62	U	<0.57	U	<0.62	U	<0.73	U	<0.71	U	<0.56	U	<0.71	U
Methylene Chloride	50	100,000		<1.06	U	<1.13	U	<1.03	U	<1.13	U	<1.33	U	<1.28	U	<1.01	U	<1.28	U
Naphthalene	NC	NC		<0.51	U	<0.54	U	<0.50	U	<0.54	U	<0.63	U	<0.61	U	<0.48	U	<0.61	U
n-Butylbenzene	12,000	100,000		<0.54	U	<0.58	U	<0.53	U	<0.58	U	<0.68	U	<0.65	U	<0.51	U	<0.65	U
n-Propylbenzene	3,900	100,000		<0.52	U	<0.55	U	<0.51	U	<0.55	U	<0.65	U	<0.63	U	<0.49	U	<0.63	U
o-xylene	NC**	NC**		<0.44	U	<0.47	U	<0.43	U	<0.47	U	<0.55	U	<0.53	U	<0.42	U	<0.53	U
p-Diethylbenzene	NC	NC		<0.52	U	<0.55	U	<0.51	U	<0.55	U	<0.65	U	<0.63	U	<0.49	U	<0.63	U

TABLE RWP-10
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID				SB-45B		SB-45C		SB-46B		SB-46C		SB-46E		SB-47A		SB-48A		SB-49A	
Depth				0.5-3		3-7		0.5-3		3-7		7+		0-0.5		0-0.5		0-0.5	
Lab Sample ID				118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date				8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix				Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units				µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
VOLATILE ORGANIC COMPOUNDS (VOCs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Proposed Site-Specific SCO	Result		Result		Result		Result		Result		Result		Result		Result	
p-Ethyltoluene	NC	NC		<0.47	U	<0.50	U	<0.46	U	<0.50	U	<0.59	U	<0.57	U	<0.45	U	<0.57	U
sec-Butylbenzene	11,000	100,000		<0.51	U	<0.54	U	<0.50	U	<0.54	U	<0.63	U	<0.61	U	<0.48	U	<0.61	U
Styrene	NC	NC		<0.49	U	<0.52	U	<0.47	U	<0.52	U	<0.61	U	<0.58	U	<0.46	U	<0.58	U
t-1,2-Dichloroethene	190	100,000		<0.52	U	<0.55	U	<0.51	U	<0.55	U	<0.65	U	<0.63	U	<0.49	U	<0.63	U
t-1,3-Dichloropropene	NC	NC		<0.47	U	<0.50	U	<0.46	U	<0.50	U	<0.59	U	<0.57	U	<0.45	U	<0.57	U
tert- Amyl methyl EtherTAME	NC	NC		<0.71	U	<0.76	U	<0.69	U	<0.76	U	<0.89	U	<0.86	U	<0.67	U	<0.86	U
tert-Butylbenzene	5,900	100,000		<0.60	U	<0.64	U	<0.58	U	<0.64	U	<0.75	U	<0.72	U	<0.57	U	<0.72	U
Tertiary butyl alcohol	NC	NC		<6.09	U	<6.47	U	<5.93	U	<6.47	U	<7.60	U	<7.33	U	<5.77	U	<7.33	U
Tetrachloroethene (PCE)	1,300	19,000		<0.51	U	<0.54	U	<0.50	U	<0.54	U	<0.63	U	<0.61	U	<0.48	U	<0.61	U
Toluene	700	100,000		<0.54	U	<0.58	U	<0.53	U	<0.58	U	<0.68	U	<0.65	U	<0.51	U	<0.65	U
Trichloroethene (TCE)	470	21,000		<0.55	U	<0.59	U	<0.54	U	<0.59	U	<0.69	U	<0.67	U	<0.52	U	<0.67	U
Trichlorofluoromethane	NC	NC		<0.63	U	<0.67	U	<0.62	U	<0.67	U	<0.79	U	<0.76	U	<0.60	U	<0.76	U
Vinyl Chloride	20	900		<0.77	U	<0.82	U	<0.75	U	<0.82	U	<0.96	U	<0.92	U	<0.73	U	<0.92	U
Total VOC TICs	NC	NC	10,000	16		25		189		25		315		NR		70		0	

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NR - No Result
NC - No Criterion
SCO - Soil Cleanup Objective
Shading indicates result above SCO. Color representing least stringent SCO exceeded is shown unless otherwise noted.
** There is no SCO for m/p xylene or o-xylene. The Unrestricted Use SCO for total xylenes is 260 µg/kg. The Restricted-Residential Use SCO for total xylenes is 100,000 µg/kg.

TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-1B	SB-1C	SB-2B	SB-2C	SB-3B	SB-3C	SB-4B	SB-4C	SB-5B
Depth			0.5-3	3-7	0.5-3	3-7	0.5-3	3-7	0.5-3	3-7	0.5-3
Lab Sample ID			1107290	1107290	1107290	1107290	1107290	1107290	1107290	1107290	1107290
Sampling Date			7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
Matrix			Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result	Result	Result	Result	Result	Result	Result	Result	Result
Lead by SW846 6010/EPA 200.7	63	400	NR	NR	NR	NR	NR	NR	NR	NR	NR
Aluminum	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Antimony	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Arsenic	13	16	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barium	350	400	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beryllium	7.2	72	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cadmium	2.5	4.3	NR	NR	NR	NR	NR	NR	NR	NR	NR
Calcium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	30	180	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cobalt	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Copper	50	270	NR	NR	NR	NR	NR	NR	NR	NR	NR
Iron	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lead	63	400	NR	NR	NR	NR	NR	NR	NR	NR	NR
Magnesium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Manganese	1,600	2,000	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury	0.18	0.81	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nickel	30	310	NR	NR	NR	NR	NR	NR	NR	NR	NR
Potassium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Selenium	3.9	180	NR	NR	NR	NR	NR	NR	NR	NR	NR
Silver	2	180	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sodium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thallium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vanadium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR
Zinc	109	10,000	NR	NR	NR	NR	NR	NR	NR	NR	NR

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-5C		SB-6B		SB-6C		SB-7A		SB-8A		SB-8B		SB-8C		SB-8D		SB-9A	
Depth			3-7		0.5-3		3-7		0-0.5		0-0.5		0.5-3		3-7		7+		0-0.5	
Lab Sample ID			1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date			7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix			Solid		Solid		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result	
Lead by SW846 6010/EPA 200.7	63	400	NR		NR		NR		NR	U	NR	U	NR		NR		NR		66.3	
Aluminum	NC	NC	NR		NR		NR		938		1780		NR		NR		NR		NR	
Antimony	NC	NC	NR		NR		NR		<1.16	U	<0.96	U	NR		NR		NR		NR	
Arsenic	13	16	NR		NR		NR		3.5		2.79		NR		NR		NR		NR	
Barium	350	400	NR		NR		NR		16		22.3		NR		NR		NR		NR	
Beryllium	7.2	72	NR		NR		NR		<0.22	U	<0.18	U	NR		NR		NR		NR	
Cadmium	2.5	4.3	NR		NR		NR		0.36		<0.26	U	NR		NR		NR		NR	
Calcium	NC	NC	NR		NR		NR		304		323		NR		NR		NR		NR	
Chromium	30	180	NR		NR		NR		5.85		4.64		NR		NR		NR		NR	
Cobalt	NC	NC	NR		NR		NR		1.07		1.72		NR		NR		NR		NR	
Copper	50	270	NR		NR		NR		6.41		6.77		NR		NR		NR		NR	
Iron	NC	NC	NR		NR		NR		7130		4010		NR		NR		NR		NR	
Lead	63	400	NR		NR		NR		28.6		24.7		NR		NR		NR		NR	
Magnesium	NC	NC	NR		NR		NR		497		511		NR		NR		NR		NR	
Manganese	1,600	2,000	NR		NR		NR		31.4		34.9		NR		NR		NR		NR	
Mercury	0.18	0.81	NR		NR		NR		0.027		0.045		NR		NR		NR		NR	
Nickel	30	310	NR		NR		NR		3.2		3.51		NR		NR		NR		NR	
Potassium	NC	NC	NR		NR		NR		376		273		NR		NR		NR		NR	
Selenium	3.9	180	NR		NR		NR		<0.75	U	<0.62	U	NR		NR		NR		NR	
Silver	2	180	NR		NR		NR		<0.34	U	<0.29	U	NR		NR		NR		NR	
Sodium	NC	NC	NR		NR		NR		1390		363		NR		NR		NR		NR	
Thallium	NC	NC	NR		NR		NR		<0.96	U	<0.80	U	NR		NR		NR		NR	
Vanadium	NC	NC	NR		NR		NR		6.25		7.49		NR		NR		NR		NR	
Zinc	109	10,000	NR		NR		NR		24.8		22.2		NR		NR		NR		NR	

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-9B		SB-9C		SB-9D		SB-10B		SB-10C		SB-11A		SB-12A		SB-12B		SB-12C		SB-12D	
Depth			0.5-3		3-7		7+		0.5-3		3-7		0-0.5		0-0.5		0.5-3		3-7		7+	
Lab Sample ID			1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date			7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix			Soil		Soil		Soil		Soil		Solid		Solid		Solid		Solid		Solid		Solid	
Units			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Lead by SW846 6010/EPA 200.7	63	400	NR		NR		NR		NR		NR		NR	U	60.6		NR		NR		NR	
Aluminum	NC	NC	NR		NR		NR		NR		NR		2960		NR		NR		NR		NR	
Antimony	NC	NC	NR		NR		NR		NR		NR		<1.12	U	NR		NR		NR		NR	
Arsenic	13	16	NR		NR		NR		NR		NR		3.63		NR		NR		NR		NR	
Barium	350	400	NR		NR		NR		NR		NR		23.9		NR		NR		NR		NR	
Beryllium	7.2	72	NR		NR		NR		NR		NR		<0.22	U	NR		NR		NR		NR	
Cadmium	2.5	4.3	NR		NR		NR		NR		NR		0.35		NR		NR		NR		NR	
Calcium	NC	NC	NR		NR		NR		NR		NR		805		NR		NR		NR		NR	
Chromium	30	180	NR		NR		NR		NR		NR		12		NR		NR		NR		NR	
Cobalt	NC	NC	NR		NR		NR		NR		NR		3.31		NR		NR		NR		NR	
Copper	50	270	NR		NR		NR		NR		NR		9.02		NR		NR		NR		NR	
Iron	NC	NC	NR		NR		NR		NR		NR		7770		NR		NR		NR		NR	
Lead	63	400	NR		NR		NR		NR		NR		36.5		NR		NR		NR		NR	
Magnesium	NC	NC	NR		NR		NR		NR		NR		863		NR		NR		NR		NR	
Manganese	1,600	2,000	NR		NR		NR		NR		NR		128		NR		NR		NR		NR	
Mercury	0.18	0.81	NR		NR		NR		NR		NR		0.081		NR		NR		NR		NR	
Nickel	30	310	NR		NR		NR		NR		NR		8.21		NR		NR		NR		NR	
Potassium	NC	NC	NR		NR		NR		NR		NR		540		NR		NR		NR		NR	
Selenium	3.9	180	NR		NR		NR		NR		NR		<0.73	U	NR		NR		NR		NR	
Silver	2	180	NR		NR		NR		NR		NR		<0.33	U	NR		NR		NR		NR	
Sodium	NC	NC	NR		NR		NR		NR		NR		56.4		NR		NR		NR		NR	
Thallium	NC	NC	NR		NR		NR		NR		NR		<0.93	U	NR		NR		NR		NR	
Vanadium	NC	NC	NR		NR		NR		NR		NR		12.8		NR		NR		NR		NR	
Zinc	109	10,000	NR		NR		NR		NR		NR		38.9		NR		NR		NR		NR	

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
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TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-13B		SB-13C		SB-14A		SB-14B		SB-14C		SB-15A		SB-15B		SB-15C		SB-16A		SB-17A	
Depth			0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5		0-0.5	
Lab Sample ID			1107290		1107290		1107290		1107290		1107290		1107290		1107318		1107318		1107290		1107290	
Sampling Date			7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		µg/kg		µg/kg		mg/kg		mg/kg	
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Lead by SW846 6010/EPA 200.7	63	400	NR		NR		44.6		NR		NR		38.9		NR		NR		NR	U	25.3	
Aluminum	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		1,350		NR	
Antimony	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		<1.08	U	NR	
Arsenic	13	16	NR		NR		NR		NR		NR		NR		NR		NR		<0.84	U	NR	
Barium	350	400	NR		NR		NR		NR		NR		NR		NR		NR		14.8		NR	
Beryllium	7.2	72	NR		NR		NR		NR		NR		NR		NR		NR		<0.21	U	NR	
Cadmium	2.5	4.3	NR		NR		NR		NR		NR		NR		NR		NR		<0.29	U	NR	
Calcium	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		1,360		NR	
Chromium	30	180	NR		NR		NR		NR		NR		NR		NR		NR		5.6		NR	
Cobalt	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		1.85		NR	
Copper	50	270	NR		NR		NR		NR		NR		NR		NR		NR		12		NR	
Iron	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		4,300		NR	
Lead	63	400	NR		NR		NR		NR		NR		NR		NR		NR		24.3		NR	
Magnesium	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		1,030		NR	
Manganese	1,600	2,000	NR		NR		NR		NR		NR		NR		NR		NR		30.8		NR	
Mercury	0.18	0.81	NR		NR		NR		NR		NR		NR		NR		NR		0.029		NR	
Nickel	30	310	NR		NR		NR		NR		NR		NR		NR		NR		3.59		NR	
Potassium	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		244		NR	
Selenium	3.9	180	NR		NR		NR		NR		NR		NR		NR		NR		<0.70	U	NR	
Silver	2	180	NR		NR		NR		NR		NR		NR		NR		NR		<0.32	U	NR	
Sodium	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		333		NR	
Thallium	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		<0.90	U	NR	
Vanadium	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		9.63		NR	
Zinc	109	10,000	NR		NR		NR		NR		NR		NR		NR		NR		43.3		NR	

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
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NR - No result
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Shading indicates result above SCO.

TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-18B	SB-18C	SB-19B	SB-19C	SB-19 Peat	SB-20B	SB-20C	SB-21B	SB-21C	SB-22B
Depth			0.5-3	3-7	0.5-3	3-7	7+	0.5-3	3-7	0.5-3	0.5-3	0.5-3
Lab Sample ID			1107318	1107318	1107318	1107318	1107318	1107318	1107318	1107318	1107318	1107318
Sampling Date			7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
Matrix			Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	mg/kg
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Lead by SW846 6010/EPA 200.7	63	400	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Aluminum	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Antimony	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Arsenic	13	16	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Barium	350	400	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Beryllium	7.2	72	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cadmium	2.5	4.3	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Calcium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Chromium	30	180	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Cobalt	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Copper	50	270	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Iron	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Lead	63	400	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Magnesium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Manganese	1,600	2,000	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Mercury	0.18	0.81	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Nickel	30	310	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Potassium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Selenium	3.9	180	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Silver	2	180	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Sodium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Thallium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Vanadium	NC	NC	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
Zinc	109	10,000	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
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NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

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SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-22C		SB-23A		SB-24B		SB-24C		SB-25A		SB-25B		SB-25C		SB-26C		SB-26D		SB-27C	
Depth			3-7		0-0.5		0.5-3		3-7		0-0.5		0.5-3		3-7		3-7		7+		3-7	
Lab Sample ID			1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date			7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011		7/21/2011	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Lead by SW846 6010/EPA 200.7	63	400	NR		48	U	NR		NR		54.3		NR		NR		NR		NR		NR	
Aluminum	NC	NC	NR		1,180		NR		NR		2,230		NR		NR		NR		NR		NR	
Antimony	NC	NC	NR		<1.04	U	NR		NR		<1.19	U	NR		NR		NR		NR		NR	
Arsenic	13	16	NR		3.48		NR		NR		<0.93	U	NR		NR		NR		NR		NR	
Barium	350	400	NR		14.3		NR		NR		72.8		NR		NR		NR		NR		NR	
Beryllium	7.2	72	NR		1.07		NR		NR		<0.23	U	NR		NR		NR		NR		NR	
Cadmium	2.5	4.3	NR		<0.28	U	NR		NR		0.43		NR		NR		NR		NR		NR	
Calcium	NC	NC	NR		206		NR		NR		4,290		NR		NR		NR		NR		NR	
Chromium	30	180	NR		13.8		NR		NR		12.9		NR		NR		NR		NR		NR	
Cobalt	NC	NC	NR		3.23		NR		NR		2.34		NR		NR		NR		NR		NR	
Copper	50	270	NR		30.4		NR		NR		13.6		NR		NR		NR		NR		NR	
Iron	NC	NC	NR		4,010		NR		NR		6,760		NR		NR		NR		NR		NR	
Lead	63	400	NR		48		NR		NR		54.3		NR		NR		NR		NR		NR	
Magnesium	NC	NC	NR		310		NR		NR		775		NR		NR		NR		NR		NR	
Manganese	1,600	2,000	NR		28.4		NR		NR		54		NR		NR		NR		NR		NR	
Mercury	0.18	0.81	NR		0.032		NR		NR		0.043		NR		NR		NR		NR		NR	
Nickel	30	310	NR		16.2		NR		NR		5.71		NR		NR		NR		NR		NR	
Potassium	NC	NC	NR		175		NR		NR		378		NR		NR		NR		NR		NR	
Selenium	3.9	180	NR		<0.68	U	NR		NR		<0.78	U	NR		NR		NR		NR		NR	
Silver	2	180	NR		<0.31	U	NR		NR		<0.36	U	NR		NR		NR		NR		NR	
Sodium	NC	NC	NR		1,010		NR		NR		1,070		NR		NR		NR		NR		NR	
Thallium	NC	NC	NR		<0.86	U	NR		NR		<0.99	U	NR		NR		NR		NR		NR	
Vanadium	NC	NC	NR		5.43		NR		NR		9.87		NR		NR		NR		NR		NR	
Zinc	109	10,000	NR		134		NR		NR		69.4		NR		NR		NR		NR		NR	

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-28B	SB-28C	SB-30B	SB-30C	SB-31B	SB-31C	SB-32A	SB-32B	SB-32C	SB-32B
Depth			0.5-3	3-7	0.5-3	3-7	0.5-3	3-7	0.5-3	3-7	0-0.5	0.5-3
Lab Sample ID			1107318	1107318	1107318	1107318	1107318	1107318	1107319	1107318	1107318	1107319
Sampling Date			7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
Matrix			Solid	Solid	Solid	Solid	Soil	Soil	Solid	Solid	Solid	Solid
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Lead by SW846 6010/EPA 200.7	63	400	NR	NR	NR	NR	NR	NR	37	NR	NR	NR
Aluminum	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Antimony	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Arsenic	13	16	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Barium	350	400	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Beryllium	7.2	72	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Cadmium	2.5	4.3	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Calcium	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Chromium	30	180	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Cobalt	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Copper	50	270	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Iron	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Lead	63	400	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Magnesium	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Manganese	1,600	2,000	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Mercury	0.18	0.81	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Nickel	30	310	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Potassium	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Selenium	3.9	180	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Silver	2	180	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Sodium	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Thallium	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Vanadium	NC	NC	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA
Zinc	109	10,000	NR	NR	NR	NR	NR	NR	NA	NR	NR	NA

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-33B	SB-33C	SB-34A	SB-35A	SB-35B	SB-35C	SB-36B	SB-36C	SB-36D	SB-37B
Depth			0.5-3	3-7	0-0.5	0-0.5	0.5-3	3-7	0.5-3	3-7	7+	0.5-3
Lab Sample ID			1107319	1107319	1107319	1107319	1107319	1107319	1107319	1107319	1107319	1107319
Sampling Date			7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011	7/21/2011
Matrix			Solid	Soil	Soil	Solid	Solid	Soil	Soil	Soil	Soil	Solid
Units			µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
Lead by SW846 6010/EPA 200.7	63	400	NR	NR	43.5	56.7	NR	NR	NR	NR	NR	NR
Aluminum	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	13	16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	350	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	7.2	72	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	2.5	4.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	30	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	50	270	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	63	400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	1,600	2,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	0.18	0.81	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	30	310	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	3.9	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	2	180	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NC	NC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	109	10,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-37C		SB-38B		SB-38C		SB-39A		SB-39B		SB-39C		SB-39E		SB-40B		SB-40C		SB-41B	
Depth			3-7		0.5-3		3-7		0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0.5-3	
Lab Sample ID			1107319		118070		118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date			7/21/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Lead by SW846 6010/EPA 200.7	63	400	NR		NR		NR		NR		NR		NR		NR		50.9		NR		NR	
Aluminum	NC	NC	NA		NR		NR		NR		NR		NR		NR		3,010		NR		NR	
Antimony	NC	NC	NA		NR		NR		NR		NR		NR		NR		<1.06	U	NR		NR	
Arsenic	13	16	NA		NR		NR		NR		NR		NR		NR		<0.82	U	NR		NR	
Barium	350	400	NA		NR		NR		NR		NR		NR		NR		32.6		NR		NR	
Beryllium	7.2	72	NA		NR		NR		NR		NR		NR		NR		<0.20	U	NR		NR	
Cadmium	2.5	4.3	NA		NR		NR		NR		NR		NR		NR		0.43		NR		NR	
Calcium	NC	NC	NA		NR		NR		NR		NR		NR		NR		21,900		NR		NR	
Chromium	30	180	NA		NR		NR		NR		NR		NR		NR		10.2		NR		NR	
Cobalt	NC	NC	NA		NR		NR		NR		NR		NR		NR		2.6		NR		NR	
Copper	50	270	NA		NR		NR		NR		NR		NR		NR		18.3		NR		NR	
Iron	NC	NC	NA		NR		NR		NR		NR		NR		NR		7980		NR		NR	
Lead	63	400	NA		NR		NR		NR		NR		NR		NR		50.9		NR		NR	
Magnesium	NC	NC	NA		NR		NR		NR		NR		NR		NR		4830		NR		NR	
Manganese	1,600	2,000	NA		NR		NR		NR		NR		NR		NR		98.4		NR		NR	
Mercury	0.18	0.81	NA		NR		NR		NR		NR		NR		NR		0.055		NR		NR	
Nickel	30	310	NA		NR		NR		NR		NR		NR		NR		5.21		NR		NR	
Potassium	NC	NC	NA		NR		NR		NR		NR		NR		NR		515		NR		NR	
Selenium	3.9	180	NA		NR		NR		NR		NR		NR		NR		<0.69	U	NR		NR	
Silver	2	180	NA		NR		NR		NR		NR		NR		NR		<0.32	U	NR		NR	
Sodium	NC	NC	NA		NR		NR		NR		NR		NR		NR		407		NR		NR	
Thallium	NC	NC	NA		NR		NR		NR		NR		NR		NR		<0.88	U	NR		NR	
Vanadium	NC	NC	NA		NR		NR		NR		NR		NR		NR		20.1		NR		NR	
Zinc	109	10,000	NA		NR		NR		NR		NR		NR		NR		58.4		NR		NR	

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-41C	SB-42A	SB-43B	SB-43C	SB-43E	SB-44A	SB-44B	SB-44C	SB-45B
Depth			3-7	0-0.5	0.5-3	3-7	7+	0-0.5	0.5-3	3-7	0.5-3
Lab Sample ID			118070	118070	118070	118070	118070	118070	118070	118070	118070
Sampling Date			8/3/2011	8/3/2011	8/3/2011	8/3/2011	8/3/2011	8/3/2011	8/3/2011	8/3/2011	8/3/2011
Matrix			Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Units			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result	Result	Result	Result	Result	Result	Result	Result	Result
Lead by SW846 6010/EPA 200.7	63	400	NR	41	NR	NR	NR	39.4	NR	NR	NR
Aluminum	NC	NC	NR	2,100	NR	NR	NR	NR	NR	NR	NR
Antimony	NC	NC	NR	<1.03 U	NR	NR	NR	NR	NR	NR	NR
Arsenic	13	16	NR	1.76	NR	NR	NR	NR	NR	NR	NR
Barium	350	400	NR	18.9	NR	NR	NR	NR	NR	NR	NR
Beryllium	7.2	72	NR	<0.20 U	NR	NR	NR	NR	NR	NR	NR
Cadmium	2.5	4.3	NR	3.33	NR	NR	NR	NR	NR	NR	NR
Calcium	NC	NC	NR	2,220	NR	NR	NR	NR	NR	NR	NR
Chromium	30	180	NR	120	NR	NR	NR	NR	NR	NR	NR
Cobalt	NC	NC	NR	2.17	NR	NR	NR	NR	NR	NR	NR
Copper	50	270	NR	35.2	NR	NR	NR	NR	NR	NR	NR
Iron	NC	NC	NR	5,500	NR	NR	NR	NR	NR	NR	NR
Lead	63	400	NR	41	NR	NR	NR	NR	NR	NR	NR
Magnesium	NC	NC	NR	1,270	NR	NR	NR	NR	NR	NR	NR
Manganese	1,600	2,000	NR	64.6	NR	NR	NR	NR	NR	NR	NR
Mercury	0.18	0.81	NR	0.073	NR	NR	NR	NR	NR	NR	NR
Nickel	30	310	NR	5.96	NR	NR	NR	NR	NR	NR	NR
Potassium	NC	NC	NR	275	NR	NR	NR	NR	NR	NR	NR
Selenium	3.9	180	NR	<0.67 U	NR	NR	NR	NR	NR	NR	NR
Silver	2	180	NR	13.8	NR	NR	NR	NR	NR	NR	NR
Sodium	NC	NC	NR	29.7	NR	NR	NR	NR	NR	NR	NR
Thallium	NC	NC	NR	<0.85 U	NR	NR	NR	NR	NR	NR	NR
Vanadium	NC	NC	NR	9.8	NR	NR	NR	NR	NR	NR	NR
Zinc	109	10,000	NR	93.8	NR	NR	NR	NR	NR	NR	NR

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-11
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR METALS
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-45C		SB-46B		SB-46C		SB-46E		SB-47A		SB-48A		SB-49A	
Depth			3-7		0.5-3		3-7		7+		0-0.5		0-0.5		0-0.5	
Lab Sample ID			118070		118070		118070		118070		118070		118070		118070	
Sampling Date			8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011		8/3/2011	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg		mg/kg	
METALS AND CYANIDE	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result	
Lead by SW846 6010/EPA 200.7	63	400	NR		NR		NR		NR		35		41.7		105	
Aluminum	NC	NC	NR		NR		NR		NR		3,680		NR		NR	
Antimony	NC	NC	NR		NR		NR		NR		<1.05	U	NR		NR	
Arsenic	13	16	NR		NR		NR		NR		<0.81	U	NR		NR	
Barium	350	400	NR		NR		NR		NR		38.4	U	NR		NR	
Beryllium	7.2	72	NR		NR		NR		NR		<0.20	U	NR		NR	
Cadmium	2.5	4.3	NR		NR		NR		NR		0.38		NR		NR	
Calcium	NC	NC	NR		NR		NR		NR		29,000		NR		NR	
Chromium	30	180	NR		NR		NR		NR		9.58		NR		NR	
Cobalt	NC	NC	NR		NR		NR		NR		2.88		NR		NR	
Copper	50	270	NR		NR		NR		NR		12.6		NR		NR	
Iron	NC	NC	NR		NR		NR		NR		9,360		NR		NR	
Lead	63	400	NR		NR		NR		NR		35		NR		NR	
Magnesium	NC	NC	NR		NR		NR		NR		2,970		NR		NR	
Manganese	1,600	2,000	NR		NR		NR		NR		134		NR		NR	
Mercury	0.18	0.81	NR		NR		NR		NR		0.074		NR		NR	
Nickel	30	310	NR		NR		NR		NR		4.14		NR		NR	
Potassium	NC	NC	NR		NR		NR		NR		497		NR		NR	
Selenium	3.9	180	NR		NR		NR		NR		<0.68	U	NR		NR	
Silver	2	180	NR		NR		NR		NR		<0.31	U	NR		NR	
Sodium	NC	NC	NR		NR		NR		NR		113		NR		NR	
Thallium	NC	NC	NR		NR		NR		NR		<0.87	U	NR		NR	
Vanadium	NC	NC	NR		NR		NR		NR		15.6		NR		NR	
Zinc	109	10,000	NR		NR		NR		NR		38.4		NR		NR	

Notes:
µg/kg - micrograms per kilogram
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-1B		SB-1C		SB-2B		SB-2C		SB-3B		SB-3C		SB-4B		SB-4C		SB-5B		SB-5C	
Depth			0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7	
Lab Sample ID			1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date			40745		40745		40745		40745		40745		40745		40745		40745		40745		40745	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1221	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1232	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1242	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1248	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1254	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1260	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Total PCBs	100	1,000	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-6B		SB-6C		SB-7A		SB-8A		SB-8B		SB-8C		SB-8D		SB-9A		SB-9B		SB-9C	
Depth			0.5-3		3-7		0-0.5		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7	
Lab Sample ID			1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date			40745		40745		40745		40745		40745		40745		40745		40745		40745		40745	
Matrix			Solid		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		<19.3	U	<16.8	U	NR		NR		NR		NR		NR		NR	
Aroclor 1221	NC	NC	NR		NR		<19.3	U	<16.8	U	NR		NR		NR		NR		NR		NR	
Aroclor 1232	NC	NC	NR		NR		<19.3	U	<16.8	U	NR		NR		NR		NR		NR		NR	
Aroclor 1242	NC	NC	NR		NR		<19.3	U	<16.8	U	NR		NR		NR		NR		NR		NR	
Aroclor 1248	NC	NC	NR		NR		<19.3	U	<16.8	U	NR		NR		NR		NR		NR		NR	
Aroclor 1254	NC	NC	NR		NR		<19.3	U	<16.8	U	NR		NR		NR		NR		NR		NR	
Aroclor 1260	NC	NC	NR		NR		<13.5	U	<11.7	U	NR		NR		NR		NR		NR		NR	
Total PCBs	100	1,000	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to th
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-9D		SB-10B		SB-10C		SB-11A		SB-12A		SB-12B		SB-12C		SB-12D		SB-13B		SB-13C		SB-14A	
Depth			7+		0.5-3		3-7		0-0.5		0-0.5		0.5-3		3-7		7+		0.5-3		3-7		0-0.5	
Lab Sample ID			1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290		1107290	
Sampling Date			40745		40745		40745		40745		40745		40745		40745		40745		40745		40745		40745	
Matrix			Soil		Soil		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		NR		<19.7	U	NR		NR		NR		NR		NR		NR		NR	
Aroclor 1221	NC	NC	NR		NR		NR		<19.7	U	NR		NR		NR		NR		NR		NR		NR	
Aroclor 1232	NC	NC	NR		NR		NR		<19.7	U	NR		NR		NR		NR		NR		NR		NR	
Aroclor 1242	NC	NC	NR		NR		NR		<19.7	U	NR		NR		NR		NR		NR		NR		NR	
Aroclor 1248	NC	NC	NR		NR		NR		<19.7	U	NR		NR		NR		NR		NR		NR		NR	
Aroclor 1254	NC	NC	NR		NR		NR		<19.7	U	NR		NR		NR		NR		NR		NR		NR	
Aroclor 1260	NC	NC	NR		NR		NR		<13.8	U	NR		NR		NR		NR		NR		NR		NR	
Total PCBs	100	1,000	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to th
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-14B		SB-14C		SB-15A		SB-15B		SB-15C		SB-16A		SB-17A		SB-18B		SB-18C		SB-19B		SB-19C	
Depth			0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5		0-0.5		0.5-3		3-7		0.5-3		3-7	
Lab Sample ID			1107290		1107290		1107290		1107318		1107318		1107290		1107290		1107318		1107318		1107318		1107318	
Sampling Date			40745		40745		40745		40745		40745		40745		40745		40745		40745		40745		40745	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		NR		<117	U	<128	U	<19.2	U	NR		NR		NR		NR		NR	
Aroclor 1221	NC	NC	NR		NR		NR		<129	U	<142	U	<19.2	U	NR		NR		NR		NR		NR	
Aroclor 1232	NC	NC	NR		NR		NR		<102	U	<112	U	<19.2	U	NR		NR		NR		NR		NR	
Aroclor 1242	NC	NC	NR		NR		NR		<122	U	<134	U	<19.2	U	NR		NR		NR		NR		NR	
Aroclor 1248	NC	NC	NR		NR		NR		<120	U	<131	U	<19.2	U	NR		NR		NR		NR		NR	
Aroclor 1254	NC	NC	NR		NR		NR		<137	U	<150	U	<19.2	U	NR		NR		NR		NR		NR	
Aroclor 1260	NC	NC	NR		NR		NR		<126	U	<139	U	<13.4	U	NR		NR		NR		NR		NR	
Total PCBs	100	1,000	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to th
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-19 Peat		SB-20B		SB-20C		SB-21B		SB-21C		SB-22B		SB-22C		SB-23A		SB-24B		SB-24C		SB-25A	
Depth			7+		0.5-3		3-7		0.5-3		0.5-3		0.5-3		3-7		0-0.5		0.5-3		3-7		0-0.5	
Lab Sample ID			1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date			40745		40745		40745		40745		40745		40745		40745		40745		40745		40745		40745	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		NR		NR		NR		NR		NR		<17.8	U	NR		NR		<20.6	U
Aroclor 1221	NC	NC	NR		NR		NR		NR		NR		NR		NR		<17.8	U	NR		NR		<20.6	U
Aroclor 1232	NC	NC	NR		NR		NR		NR		NR		NR		NR		<17.8	U	NR		NR		<20.6	U
Aroclor 1242	NC	NC	NR		NR		NR		NR		NR		NR		NR		<17.8	U	NR		NR		<20.6	U
Aroclor 1248	NC	NC	NR		NR		NR		NR		NR		NR		NR		<17.8	U	NR		NR		<20.6	U
Aroclor 1254	NC	NC	NR		NR		NR		NR		NR		NR		NR		<17.8	U	NR		NR		<20.6	U
Aroclor 1260	NC	NC	NR		NR		NR		NR		NR		NR		NR		<12.5	U	NR		NR		<14.4	U
Total PCBs	100	1,000	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to th
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-25B		SB-25C		SB-26C		SB-26D		SB-27C		SB-28B		SB-28C		SB-30B		SB-30C		SB-31B		SB-31C	
Depth			0.5-3		3-7		3-7		7+		3-7		0.5-3		3-7		0.5-3		3-7		0.5-3		3-7	
Lab Sample ID			1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318		1107318	
Sampling Date			40745		40745		40745		40745		40745		40745		40745		40745		40745		40745		40745	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Soil		Soil	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1221	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1232	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1242	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1248	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1254	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1260	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		NR	
Total PCBs	100	1,000	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to th
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-32B		SB-32C		SB-32A		SB-32B		SB-33B		SB-33C		SB-34A		SB-35A		SB-35B		SB-35C		SB-36B	
Depth			0.5-3		3-7		0-0.5		0.5-3		0.5-3		3-7		0-0.5		0-0.5		0.5-3		3-7		0.5-3	
Lab Sample ID			1107318		1107318		1107319		1107319		1107319		1107319		1107319		1107319		1107319		1107319		1107319	
Sampling Date			40745		40745		40745		40745		40745		40745		40745		40745		40745		40745		40745	
Matrix			Solid		Solid		Solid		Solid		Solid		Soil		Soil		Solid		Solid		Soil		Soil	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		NR		NR		NR		NR		<21.0	U	NR		NR		NR		NR	
Aroclor 1221	NC	NC	NR		NR		NR		NR		NR		NR		<21.0	U	NR		NR		NR		NR	
Aroclor 1232	NC	NC	NR		NR		NR		NR		NR		NR		<21.0	U	NR		NR		NR		NR	
Aroclor 1242	NC	NC	NR		NR		NR		NR		NR		NR		<21.0	U	NR		NR		NR		NR	
Aroclor 1248	NC	NC	NR		NR		NR		NR		NR		NR		<21.0	U	NR		NR		NR		NR	
Aroclor 1254	NC	NC	NR		NR		NR		NR		NR		NR		<21.0	U	NR		NR		NR		NR	
Aroclor 1260	NC	NC	NR		NR		NR		NR		NR		NR		<14.6	U	NR		NR		NR		NR	
Total PCBs	100	1,000	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to th
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-36C		SB-36D		SB-37B		SB-37C		SB-38B		SB-38C		SB-39A		SB-39B		SB-39C		SB-39E		SB-40B	
Depth			3-7		7+		0.5-3		3-7		0.5-3		3-7		0-0.5		0.5-3		3-7		7+		0.5-3	
Lab Sample ID			1107319		1107319		1107319		1107319		118070		118070		118070		118070		118070		118070		118070	
Sampling Date			40745		40745		40745		40745		40758		40758		40758		40758		40758		40758		40758	
Matrix			Soil		Soil		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		<17.5	U
Aroclor 1221	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		<17.5	U
Aroclor 1232	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		<17.5	U
Aroclor 1242	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		<17.5	U
Aroclor 1248	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		<17.5	U
Aroclor 1254	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		<17.5	U
Aroclor 1260	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR		NR		NR		<12.2	U
Total PCBs	100	1,000	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to th
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-40C		SB-41B		SB-41C		SB-42A		SB-43B		SB-43C		SB-43E		SB-44A		SB-44B		SB-44C	
Depth			3-7		0.5-3		3-7		0-0.5		0.5-3		3-7		7+		0-0.5		0.5-3		3-7	
Lab Sample ID			118070		118070		118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date			40758		40758		40758		40758		40758		40758		40758		40758		40758		40758	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		NR		<17.5	U	NR		NR		NR		NR		NR		NR	
Aroclor 1221	NC	NC	NR		NR		NR		<17.5	U	NR		NR		NR		NR		NR		NR	
Aroclor 1232	NC	NC	NR		NR		NR		<17.5	U	NR		NR		NR		NR		NR		NR	
Aroclor 1242	NC	NC	NR		NR		NR		<17.5	U	NR		NR		NR		NR		NR		NR	
Aroclor 1248	NC	NC	NR		NR		NR		1100		NR		NR		NR		NR		NR		NR	
Aroclor 1254	NC	NC	NR		NR		NR		<17.5	U	NR		NR		NR		NR		NR		NR	
Aroclor 1260	NC	NC	NR		NR		NR		<12.2	U	NR		NR		NR		NR		NR		NR	
Total PCBs	100	1,000	0	U	0	U	0	U	1,100		0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to th
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-12
SUMMARY OF RESULTS OF ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS (PCBs)
JULY/AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID			SB-45B		SB-45C		SB-46B		SB-46C		SB-46E		SB-47A		SB-48A		SB-49A	
Depth			0.5-3		3-7		0.5-3		3-7		7+		0-0.5		0-0.5		0-0.5	
Lab Sample ID			118070		118070		118070		118070		118070		118070		118070		118070	
Sampling Date			40758		40758		40758		40758		40758		40758		40758		40758	
Matrix			Solid		Solid		Solid		Solid		Solid		Solid		Solid		Solid	
Units			µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg		µg/kg	
POLYCHLORINATED BIPHENYLS (PCBs)	Unrestricted Use SCO	Restricted-Residential Use SCO	Result		Result		Result		Result		Result		Result		Result		Result	
Aroclor 1016	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1221	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1232	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1242	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1248	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1254	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR	
Aroclor 1260	NC	NC	NR		NR		NR		NR		NR		NR		NR		NR	
Total PCBs	100	1,000	0	U	0	U	0	U	0	U	0	U	0	U	0	U	0	U

Notes:
µg/kg - micrograms per kilogram
J - Result is less than the RL but greater than or equal to th
U - Indicates the analyte was analyzed for but not detected
NA - Compound not analyzed
NC - No Criterion
NR - No result
SCO - Soil Cleanup Objective
Shading indicates result above SCO.

TABLE RWP-13
SUMMARY OF RESULTS OF ANALYSIS OF GROUND WATER SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		MW-1	MW-2	MW-3R	MW-12	MW-13	MW-14	MW-15D	MW-15S	MW-16D	MW-16S	MW-17D
Sampling Date		8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011
Matrix		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
SEMIVOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
2-Methylnaphthalene	NC	ND	ND	28.6	ND	ND	11.9 J	25.8	18.4	ND	ND	ND
3 & 4 Methylphenol	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.49 J	ND
Carbazole	NC	ND	ND	ND	ND	ND	ND	ND	3.09 J	ND	ND	ND
Cresols	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	50	ND	ND	ND	ND	ND	ND	1.23 J	1.99 J	ND	ND	ND
Naphthalene	10	ND	ND	23.2	ND	ND	ND	10.2	12.5	ND	ND	ND
Phenanthrene	50	ND	ND	ND	ND	ND	ND	1.49 J	ND	ND	ND	ND
Phenol	1	ND	ND	8.61	ND	ND	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total SVOC TICs	NC	80	16	67	5	ND	68	157	158	37	25	4

Notes:
µg/L - micrograms per liter
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
ND - Not detected.
NC - No Criterion
Shading shows where Class GA Values groundwater standards were exceeded.

TABLE RWP-13
SUMMARY OF RESULTS OF ANALYSIS OF GROUND WATER SAMPLES FOR SEMIVOLATILE ORGANIC COMPOUNDS
AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		GW-1	GW-2	LMW-2	LMW-4
Sampling Date		8/12/2011	8/12/2011	8/12/2011	8/17/2011
Matrix		Water	Water	Water	Water
Units		µg/L	µg/L	µg/L	µg/L
SEMIVOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result	Result	Result
2-Methylnaphthalene	NC	ND	ND	12.5	ND
3 & 4 Methylphenol	NC	ND	ND	ND	7.29
Acenaphthene	20	1.04	ND	2.34 J	ND
Carbazole	NC	ND	ND	ND	ND
Cresols	NC	ND	ND	ND	7.29 J
Fluorene	50	ND	ND	2.33 J	ND
Naphthalene	10	ND	ND	ND	ND
Phenanthrene	50	ND	ND	ND	ND
Phenol	1	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	5	ND	ND	2.56	ND
Total SVOC TICs	NC	25	21	ND	181

Notes:
µg/L - micrograms per liter
J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
ND - Not detected.
NC - No Criterion
Shading shows where Class GA Values groundwater standards were exceeded.

TABLE RWP-14
SUMMARY OF RESULTS OF ANALYSIS OF GROUND WATER SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		MW-1	MW-2	MW-3R	MW-12	MW-13	MW-14	MW-15D	MW-15S	MW-16D	MW-16S	MW-17D
Sampling Date		8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011	8/12/2011
Matrix		Water	Water	Water	Water	Water	Water	Water	Water	Water	Water	Water
Units		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
VOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result	Result
1,2,4-Trimethylbenzene	5	ND	ND	0.79 J	ND	ND	ND	1.49	83.2	1.44 J	ND	43.8
1,3,5-Trimethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	19.2	ND	ND	8.14
1,2,4,5-Tetramethylbenzene	5	ND	0.82 J	9.77	ND	ND	10.1	1.04	21.9	1.81 J	ND	10.9
Acetone	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	1	ND	ND	1.06 J	ND	ND	ND	ND	8.36	ND	ND	15.4
Carbon disulfide	60	ND	ND	ND	ND	ND	ND	ND	ND	10.5	ND	ND
Ethylbenzene	5	ND	ND	ND	ND	ND	ND	ND	7.1	ND	ND	7.52
Isopropylbenzene	5	ND	ND	4.02 J	ND	ND	ND	ND	8.44	ND	ND	4.44
m&p-Xylene	5*	ND	ND	ND	ND	ND	ND	ND	20.9	ND	ND	2.23
Napthlalene	10	ND	4.4 J	89.3	ND	ND	ND	ND	73.5	ND	ND	44
n-Butylbenzene	5	ND	ND	1.28 J	ND	ND	ND	ND	5.94	ND	ND	3.14
n-Propylbenzene	5	ND	ND	6.14	ND	ND	ND	ND	12.5	ND	ND	8.69
o-Xylene	5*	ND	ND	ND	ND	ND	ND	ND	15.5	ND	ND	ND
p-Diethylbenzene	NC	ND	ND	ND	ND	ND	ND	ND	22.7	ND	ND	11.2
p-Ethyltoluene	NC	ND	ND	ND	ND	ND	ND	ND	21.1	ND	ND	2.04
p-Isopropyltoluene	5	ND	ND	ND	ND	ND	ND	ND	5.13	ND	ND	2.51
sec-Butylbenzene	5	ND	ND	2.36 J	ND	ND	2.19 J	ND	4.95 J	ND	ND	2.29
Toluene	5	ND	ND	ND	ND	ND	ND	ND	0.86 J	ND	ND	0.98
Total VOC TICs	NC	ND	21	385	ND	ND	173	ND	738	37	ND	350

Notes:
µg/L - micrograms per liter

* There is no Standard or Guidance Value for total xylenes. The Standard for o-xylene, m-xylene, and p-xylene is 5 µg/L.
MDL and the concentration is an approximate value.
ND - Not detected.
NC - No Criterion
Shading shows where C;ass GA Values groundwater standards were exceeded.

TABLE RWP-14
SUMMARY OF RESULTS OF ANALYSIS OF GROUND WATER SAMPLES FOR VOLATILE ORGANIC COMPOUNDS
AUGUST 2011
FORMER CIBRO PETROLEUM TERMINAL SITE
BROWNFIELD CLEANUP SITE C130153
ISLAND PARK, NASSAU COUNTY, NEW YORK

Sample ID		GW-1	GW-2	LMW-2	LMW-4
Sampling Date		8/12/2011	8/12/2011	8/12/2011	8/17/2011
Matrix		Water	Water	Water	Water
Units		µg/L	µg/L	µg/L	µg/L
VOLATILE ORGANIC COMPOUNDS (VOCs)	Class GA Values	Result	Result	Result	Result
1,2,4-Trimethylbenzene	5	ND	ND	ND	ND
1,3,5-Trimethylbenzene	5	ND	ND	ND	ND
1,2,4,5-Tetramethylbenzene	5	1.5 J	ND	14.4	ND
Acetone	50	ND	ND	ND	83.3
Benzene	1	ND	ND	ND	ND
Carbon disulfide	60	ND	ND	ND	ND
Ethylbenzene	5	ND	ND	ND	ND
Isopropylbenzene	5	ND	ND	ND	ND
m&p-Xylene	5*	ND	ND	ND	ND
Napthlalene	10	ND	ND	ND	ND
n-Butylbenzene	5	ND	ND	ND	ND
n-Propylbenzene	5	ND	ND	ND	ND
o-Xylene	5*	ND	ND	ND	ND
p-Diethylbenzene	NC	ND	ND	ND	ND
p-Ethyltoluene	NC	ND	ND	ND	ND
p-Isopropyltoluene	5	ND	ND	ND	ND
sec-Butylbenzene	5	ND	ND	ND	ND
Toluene	5	ND	ND	ND	ND
Total VOC TICs	NC	ND	12	134	ND

Notes:
µg/L - micrograms per liter

* There is no Standard or Guidance Value for total xylenes. The Standard for o-xylene, m-xylene, and p-xylene is 5 µg/L.
MDL and the concentration is an approximate value.
ND - Not detected.
NC - No Criterion
Shading shows where C;ass GA Values groundwater standards were exceeded.

TABLE RWP-15

LISTING OF APPLICABLE PERMITS

FORMER CIBRO PETROLEUM TERMINAL SITE

BROWNFIELD CLEANUP SITE C130153

ISLAND PARK, NASSAU COUNTY, NEW YORK

Regulatory Agency	Permit/Activity Requiring Approval	Permit No.	Approval/Expiration Date	
NYSDEC	State Pollutant Discharge Elimination System (SPDES) General Permit	NYR10K975	*	NA
	Part 360 Solid Waste Registration	30W33R	11/29/2004	N/A
	Tidal Wetlands Permit	1-2820-01252/00009	8/13/2014	8/13/2019
	Water Quality Certification	1-2820-01252/00010	8/13/2014	8/13/2019
	Excavation or Placement of Fill in Navigable Waters	1-2820-01252/00011	8/13/2014	8/13/2019
NYSDOS	Feneral Consistency Concurrence Assessment	F2003-0125	2/21/2003	**
NCPC	Site Plan Approval		*	
NCDOH	Water Supply and Sanitary Design Approval		*	
NCDPW	Sewage Connection and Drainage Approval		*	
TOH Town Board	Rezone Property from Industrial District (Y) to Residential District (CA)	Resolution No. 395-2008	N/A	
		Resolution No. 484-2008		
ToHDOB	Site Plan Approval		*	
	Building Permit - Removal of Tank Pad/Concrete Foundations	App No. 201405120; Revised Permit App No. 201614540	9/21/2016	9/21/2017
	Building Permit - Removal of Retaining Wall	App No. 201405121; Revised Permit App No. 201614541	9/21/2016	9/21/2017
ToH Engineering Department	Roadway Permit		*	
TOHDCW	Structures in Waterway/Installation of Bulkhead and Maintainer Preexisting Pier 3929 and Amended 819		*	
Island Park Corporation	Water Supply Connection		*	
Oceanside Island Park Sewer Collection District	Sewage Connection and Drainage Approval		*	
USACE	Nationwide General Permit No. 3 for Bulkhead Replacement and Pier Reconstruction	Application No. NAN-2013-00505**	5/23/2013	**

Note: This list of permits only encompasses permits required for the street level and below. Permits for aboveground portions of the proposed development are not listed.

*Pending

**Renewal pending/Confirmation Required

NYSDEC - New York State Department of Environmental Conservation

NYSDOS - New York States Department of State

NCPC - Nassau County Planning Commission

NCDOH - Nassau County Department of Health

NCDPW - Nassau County Department of Public Works

ToH - Town of Hempstead

ToHDOB - Town of Hempstead Department of Building

ToHDCW - Town of Hempstead Department of Conservation and Waterways

USACE - United States Army Corps of Engineers

TABLE RWP-16

PROJECT MAILING LIST

FORMER CIBRO PETROLEUM TERMINAL SITE

BROWNFIELD CLEANUP SITE C130153

ISLAND PARK, NASSAU COUNTY, NEW YORK

1. The chief executive officer and planning board chairperson of each county, city, town and village in which the property is located:

County of Nassau:

Hon. Edward P. Mangano
Nassau County Executive
1550 Franklin Ave.
Mineola, New York 11501
(516) 571-3131

Nassau County Planning Commission
c/o William Nimmo, Deputy Commissioner
Nassau County Planning Department
1194 Prospect Avenue
Westbury, New York 11590

Trish Manzi
Nassau County Soil and Water Conservation District
District Manager
1864 Muttontown Road
Syosset, NY 11791

Lawrence E. Eisenstein, MD, FACP, Commissioner
Nassau County Department of Health
200 County Seat Drive
Mineola, New York 11501

Shila Shah-Gavnoudias, P.E., Commissioner
Nassau County Department of Public Works
Department of Public Works
1194 Prospect Avenue
Westbury, New York 11590

Legislature Denise Ford
Nassau County Legislature (District 4)
(516) 571-6204

Town of Hempstead (Harbor Isle unincorporated area):

Hon. Anthony J. Santino
Town of Hempstead Supervisor
Hempstead Town Hall
One Washington Street
Hempstead, NY 11550
(516) 489-5000

Honorable Members of the Hempstead Town Board
Hempstead Town Hall
One Washington Street
Hempstead, NY 11550

TABLE RWP-16

PROJECT MAILING LIST

FORMER CIBRO PETROLEUM TERMINAL SITE

BROWNFIELD CLEANUP SITE C130153

ISLAND PARK, NASSAU COUNTY, NEW YORK

Town of Hempstead (Harbor Isle unincorporated area) (cont.):

Town of Hempstead Department of Planning and Development
200 North Franklin Street
First Floor
Hempstead, NY 11550

Zoning Board of Appeals
c/o David P. Weiss, Chairman of the Board of Appeals
Hempstead Town Hall
One Washington Street
Hempstead, NY 11550

Other:

Joseph Brown, P.E., Regional Director
New York State Department of Transportation
Region 10
State Office Building
250 Veterans Memorial Highway
Hauppauge, New York 11788

Roger Evens, Regional Permit Administrator
NYSDEC Region 1 Office
SUNY @ Stony Brook
50 Circle Road
Stony Brook, New York 11790-3409

Hon. Andrew M. Cuomo
New York State Governor
NYS State Capitol Building
Albany, New York 11224
(518) 474-8390

Hon. Melissa Miller
New York State Assembly – District 20
2001 Park St.
Atlantic Beach, NY 11509
(516) 431-0500

Rep. Kathleen Rice
U.S. House of Representatives
District 4
229 7th Street
Suite 300
Garden City, NY 11530
(516) 739-3008

Hon. Charles Schumer
U.S. Senate
145 Pine Lawn Road, #300
Melville, NY 11747
(631) 753-0978

TABLE RWP-16

PROJECT MAILING LIST

FORMER CIBRO PETROLEUM TERMINAL SITE

BROWNFIELD CLEANUP SITE C130153

ISLAND PARK, NASSAU COUNTY, NEW YORK

<u>Other (cont.):</u>

Hon. Kirsten Gillibrand
U.S. Senate
155 Pinelawn Road
Suite 250 North
Melville, NY 11747
(631) 249-2825

Hon. Todd Kaminsky
New York State Senate
District 09th
55 Front Street
Rockville Centre, NY 11570
(516) 766-8383

Ms. Jane Fasullo
Sierra Club – Long Island Group
P.O. Box 172
W. Sayville, NY 11796
(631) 600-3324

Ms. Adrienne Esposito
Citizen's Campaign for the Environment
Long Island/Metro New York Group
225-A Main Street
Farmingdale, NY 11735
(516) 390-7150

Second Battalion Fire District
Island Park Fire Department
440 Long Beach Road
Island Park, NY 11558

2. Residents, owners, and occupants of the property and properties adjacent to the property:

Homeowner
76 Washington Ave
Island Park, NY 11558

Homeowner
1 Sheridan Pl
Island Park, NY 11558

Homeowner
68 Jefferson Ave
Island Park, NY 11558

Homeowner
2 Sheridan Pl
Island Park, NY 11558

TABLE RWP-16

PROJECT MAILING LIST

FORMER CIBRO PETROLEUM TERMINAL SITE

BROWNFIELD CLEANUP SITE C130153

ISLAND PARK, NASSAU COUNTY, NEW YORK

Residences/Properties Adjacent to Property (cont):

Homeowner
40 Island Pkwy S
Island Park, NY 11558

Homeowner
68 Madison Ave
Island Park, NY 11558

Homeowner
67 Madison Ave
Island Park, NY 11558

Homeowner
61 Island Pkwy S
Island Park, NY 11558

Homeowner
50 Sheridan Pl
Island Park, NY 11558

Homeowner
43 Island Park Pl
Island Park, NY 11558

Homeowner
44 Island Park Pl
Island Park, NY 11558

Homeowner
3 Sheridan Pl
Island Park, NY 11558

Homeowner
4 Sheridan Pl
Island Park, NY 11558

Homeowner
5 Sheridan Pl
Island Park, NY 11558

Homeowner
28 Suffolk Rd
Island Park, NY 11558

Homeowner
24 Suffolk Rd
Island Park, NY 11558

Homeowner
16 Suffolk Rd
Island Park, NY 11558

Homeowner
6 Suffolk Rd
Island Park, NY 11558

TABLE RWP-16

PROJECT MAILING LIST

FORMER CIBRO PETROLEUM TERMINAL SITE

BROWNFIELD CLEANUP SITE C130153

ISLAND PARK, NASSAU COUNTY, NEW YORK

3. Local news media from which the community typically obtains information.

Long Island Press
990 Stewart Ave.
Garden City, New York 11530
(519) 284-3300

Long Island Business News
c/o Robin Burgio
Public/ Legal Notice Coordinator
(631) 737-1700

LI Herald
2 Endo Boulevard
Garden City, NY 11530

News 12 Long Island
1 Media Crossways
Woodbury, New York 11797

Long Island Newsday
235 Pinelawn Road
Melville, New York 11747

4. The public water supplier which services the area in which the property is located.

American Water – Long Island
733 Sunrise Hwy
Lynnbrook, NY 11563
1-877-426-6999

5. Any person who has requested to be placed on the contact list.

We are unaware of any requests for inclusion on the contact list.

6. The administrator of any school or day care facility located on or near the property.

Island Park Public Schools
Attn: Superintendent Rosemarie T. Bovino
99 Radcliffe Road
Island Park, NY 11558

TABLE RWP-16

PROJECT MAILING LIST

FORMER CIBRO PETROLEUM TERMINAL SITE

BROWNFIELD CLEANUP SITE C130153

ISLAND PARK, NASSAU COUNTY, NEW YORK

7. The location of a document repository for the project (e.g., local library).

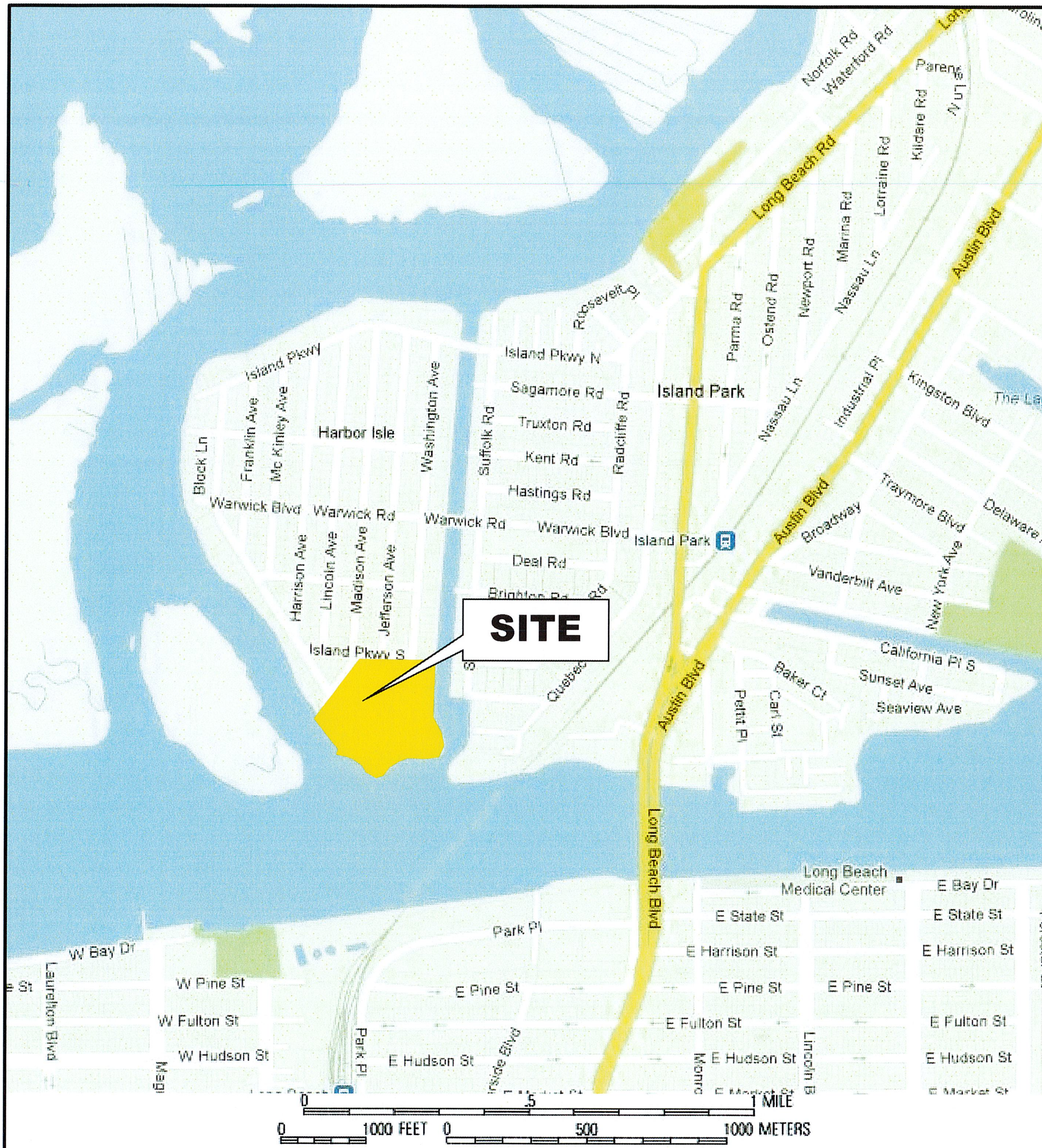
Island Park Public Library	NYSDEC Region 1 Office
176 Long Beach Road	SUNY @ Stony Brook
Island Park, NY 11558	50 Circle Road
(516) 432-0122	Stony Brook, New York 11790-3409

8. Any community board located in a city with a population of one million or more, if the proposed site is located within such community board's boundaries.

(*note: per the 2016 Census, New York City is the only city in NY with a population over one million)

N/A

Figures



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TRC

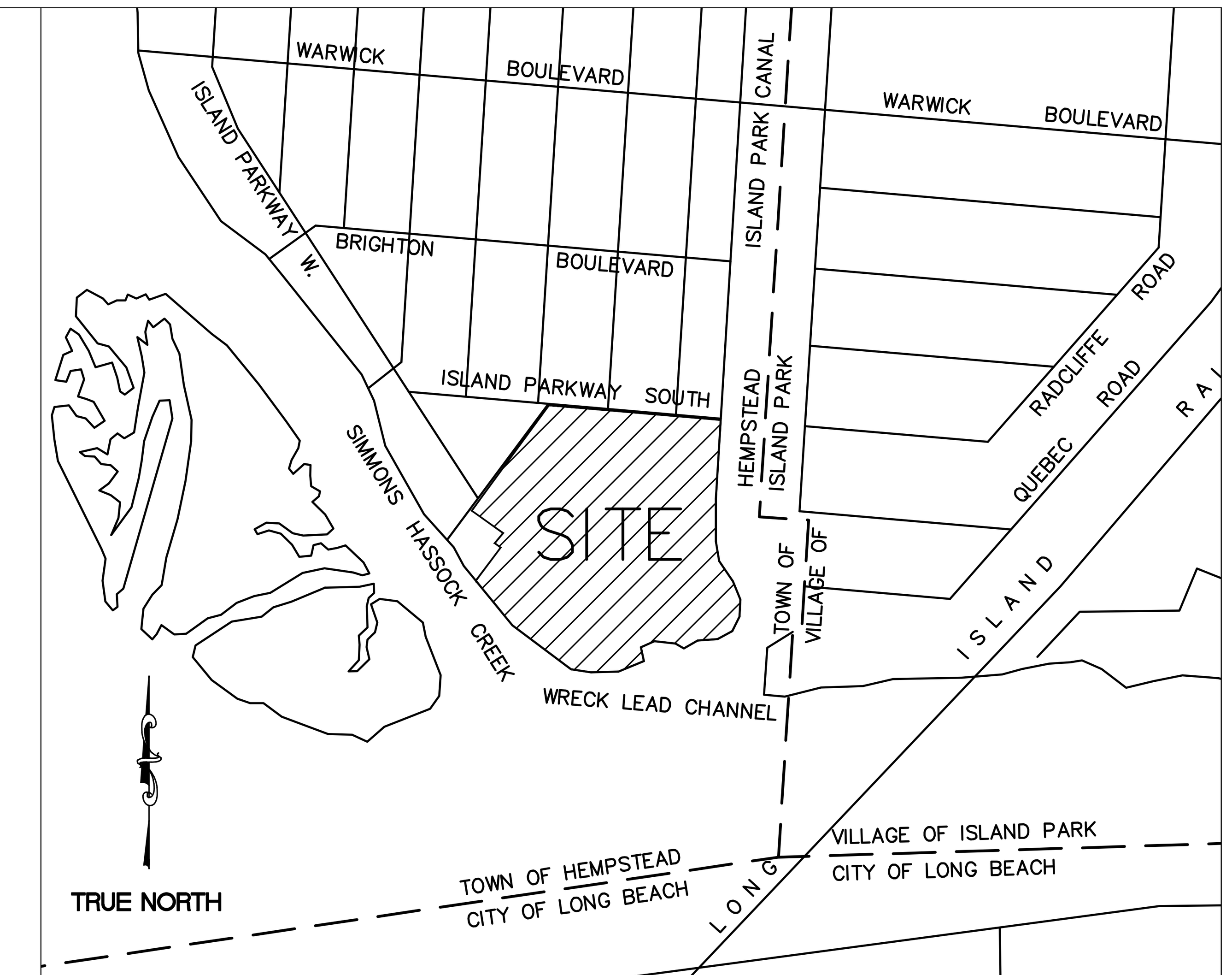
N

1430 Broadway, 10th Floor
New York, NY 10018
(212) 221-7822

QUADRANGLE LOCATION

FIGURE RWP-1: SITE LOCATION MAP

REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK
PROJECT NO: 163189.0100.0000
AUGUST 2012



LOCATION MAP

SCALE 1" = 500'

LEGEND (SYMBOLS NOT TO SCALE):

- EXISTING GRADE CONTOUR
- PROPERTY LINE
- STORMWATER INLETS
- TIDAL WETLAND AREA
- TIDAL WETLAND JURISDICTIONAL BOUNDARY

DRAWING SOURCE:

POSILLICO DEVELOPMENT CO. AT HARBOR ISLE
1750 NEW HIGHWAY, FARMINGDALE, NY 11735

REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK

TRC 1430 BROADWAY, 10TH FLOOR NEW YORK, NEW YORK 10018	DESIGNED BY: JM	DATE: AUGUST 2012
	DRAWN BY: HD	SCALE: AS SHOWN
FIGURE RWP-2	CHECKED BY: JM / SM	PROJECT NUMBER: 163189.0100.0000

DRAWING TITLE:

SITE PLAN WITH BOUNDARIES OF BCP SITE

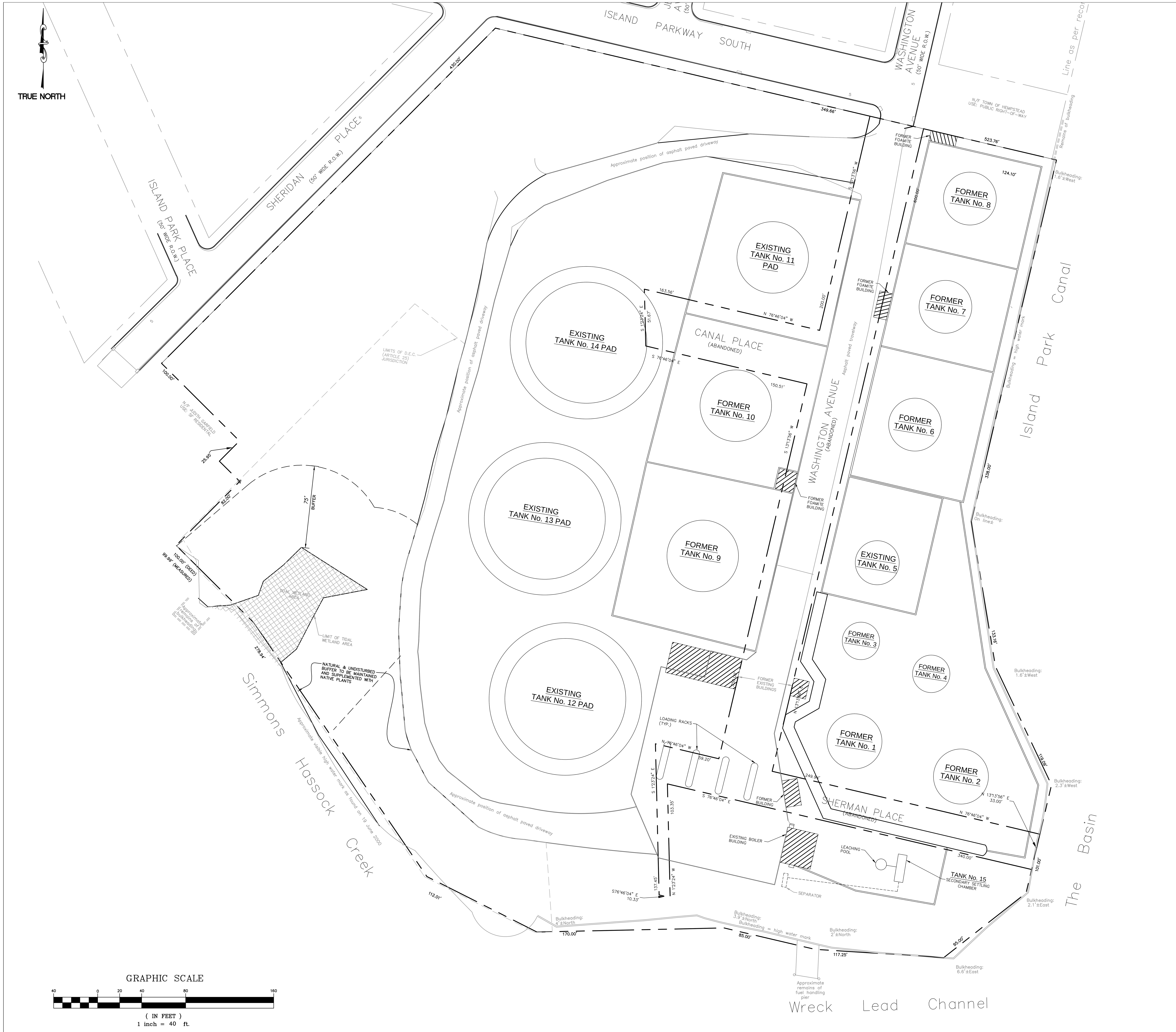
REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK

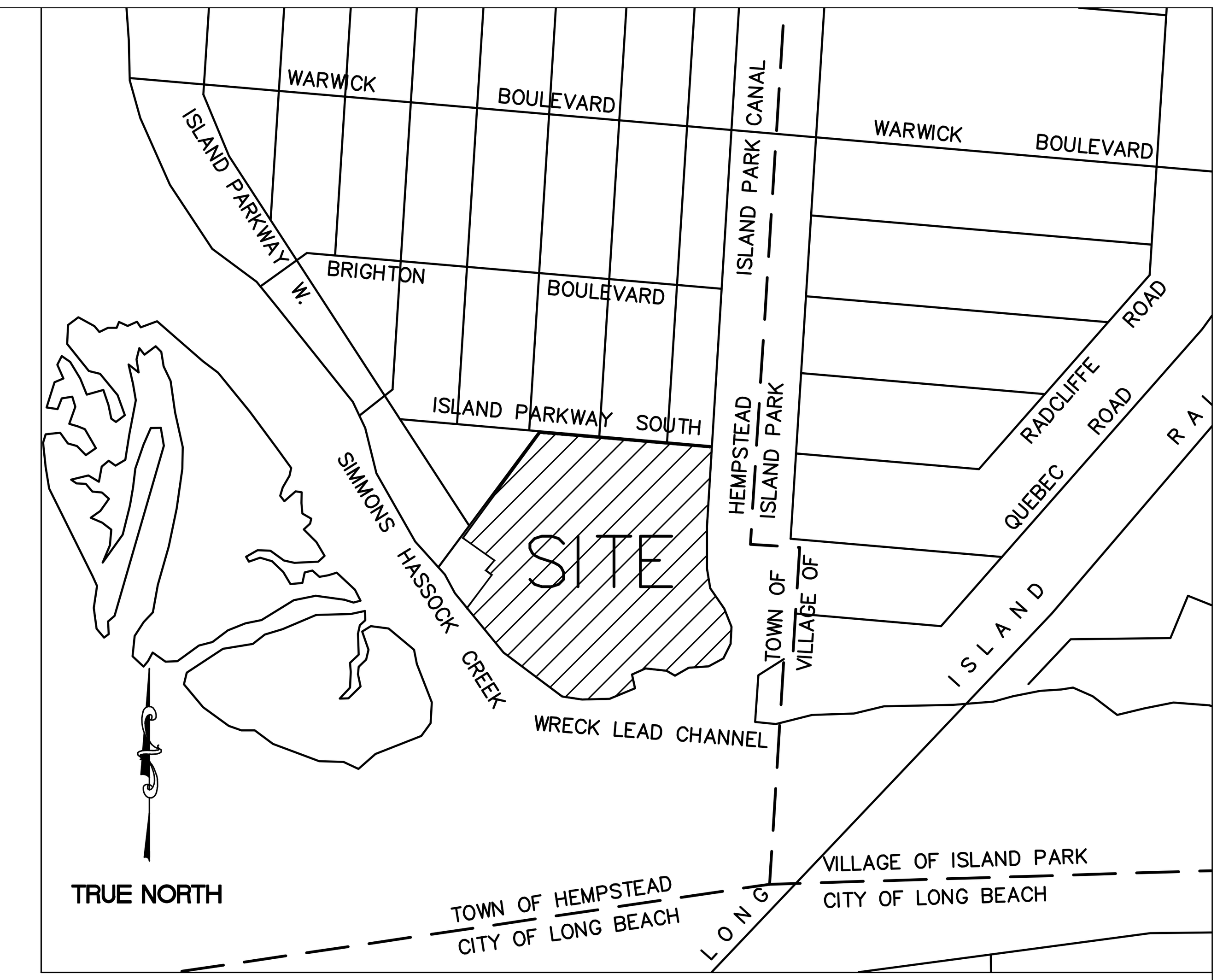
TRC
1430 BROADWAY, 10TH FLOOR
NEW YORK, NEW YORK 10018

DESIGNED BY: JM	DATE: AUGUST 2012
DRAWN BY: HD	SCALE: AS SHOWN
CHECKED BY: JM / SM	PROJECT NUMBER: 163189.0100.0000

FIGURE RWP-4

DRAWING TITLE:
SURROUNDING LAND USE AND
SENSITIVE ENVIRONMENTAL RECEPTORS





LOCATION MAP
SCALE 1" = 500'

LEGEND (SYMBOLS NOT TO SCALE):

- PROPERTY LINE
- TIDAL WETLAND AREA
- TIDAL WETLAND JURISDICTIONAL BOUNDARY

HISTORICAL USE	
1937-	OIL PRODUCTS CORP (OPC) BUYS LAND TO CONSTRUCT AND OPEERATE A FUEL OIL STORAGE TERMINAL. CONSTRUCTED 3,500,000 GALLONS OF CAPACITY BY 1955.
1955-	OPC GRANTED A 3,000,000-GALLON INCREASE IN STORAGE CAPACITY
1970+/-	CIBRO SOUTH SHORE TERMINAL (CSST) PURCHASED PROPERTY
1973-	CSST GRANTED INCREASE IN STORAGE TO 17,069,138 GALLONS, A 1,769,138-GALLON INCREASE, IN EXCHANGE FOR DISCONTINUING GASOLINE DISTRIBUTION AT THE TERMINAL. THE STORAGE CONSISTED OF 15 TANKS RANGING FROM 20,000 TO 300,000 GALLONS IN CAPACITY. THE TERMINAL OPERATED SIX DAYS A WEEK FROM 7 AM UNTIL 5 PM. 2-3 BARGES/WEEK WERE NEEDED TO REFILL THE TANKS.
1980+/-	OPERATIONS CEASED
LATE 1980s	CSST GOES BANKRUPT.
1985-1990	TANKS WERE DEMOLISHED.
1992	SMALL BUILDINGS WERE DEMOLISHED.
2001	BLUE WATER ENVIRONMENTAL PURCHASED PROPERTY.
2005-2006	TANK PADS Nos. 1 THROUGH 10 REMOVED.

TANK No.	PERMIT No.	DATE	PERMIT GALLONS	ACTUAL TANK CAPACITY / GALLONS	LAST KNOWN CONTENTS
1	850	3/19/37	500,000	490,820	SPDES TANK (GASOLINE)
2	959	5/28/40	500,000	503,517	SPDES TANK (GASOLINE)
3	1016	1/4/44	180,000	178,255	SPDES TANK (KEROSENE)
4	1016	1/4/44	180,000	179,077	SPDES TANK (#4 FUEL OIL)
5	1088	6/11/46	420,000	423,718	EMPTY (GASOLINE)
6	1432	10/24/50	500,000	631,503	EMPTY (#4 FUEL OIL)
7	1432	10/24/50	500,000	635,662	EMPTY (GASOLINE)
8	1432	10/24/50	500,000	630,872	EMPTY (GASOLINE)
9	1737	6/28/55	1,000,000	1,264,394	GASOLINE (# 2 FUEL OIL)
10	1737	6/28/55	1,000,000	1,264,475	GASOLINE (# 2 FUEL OIL)
11	1737	6/28/55	1,000,000	1,264,555	GASOLINE (# 2 FUEL OIL)
12	2070	12/26/61	3,000,000	3,404,797	No. 2 FUEL OIL
13	2070	12/26/61	3,000,000	3,401,274	No. 2 FUEL OIL
14	2070	12/26/61	3,000,000	3,406,996	No. 2 FUEL OIL
15	NONE	NONE	NONE	20,095	NOT USED (DIESEL)

NOTE: ( ) - INDICATES PREVIOUS CONTENTS DURING OPC's OWNERSHIP

REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK

TRC
1430 BROADWAY, 10TH FLOOR
NEW YORK, NEW YORK 10018

DESIGNED BY: JM	DATE: AUGUST 2012	
DRAWN BY: HD	SCALE: AS SHOWN	
FIGURE RWP-5	CHECKED BY: JM / SM	PROJECT NUMBER: 163189.0100.0000

DRAWING TITLE:

HISTORIC USES OF PROPERTY

LOCATION MAP

SCALE 1" = 500'

LEGEND (SYMBOLS NOT TO SCALE):

-2	TOP OF PEAT LAYER CONTOUR LINE
	INFERRED TOP OF PEAT LAYER CONTOUR LINE
SB-6 -1.3	2001 LAWGIBB SOIL BORING LOCATION WITH TOP OF PEAT ELEVATION (FEET MEAN SEA LEVEL)
N.E.	PEAT NOT ENCOUNTERED AT LOCATION

0 40 80 FT.
SCALE: 1"=40'

REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK

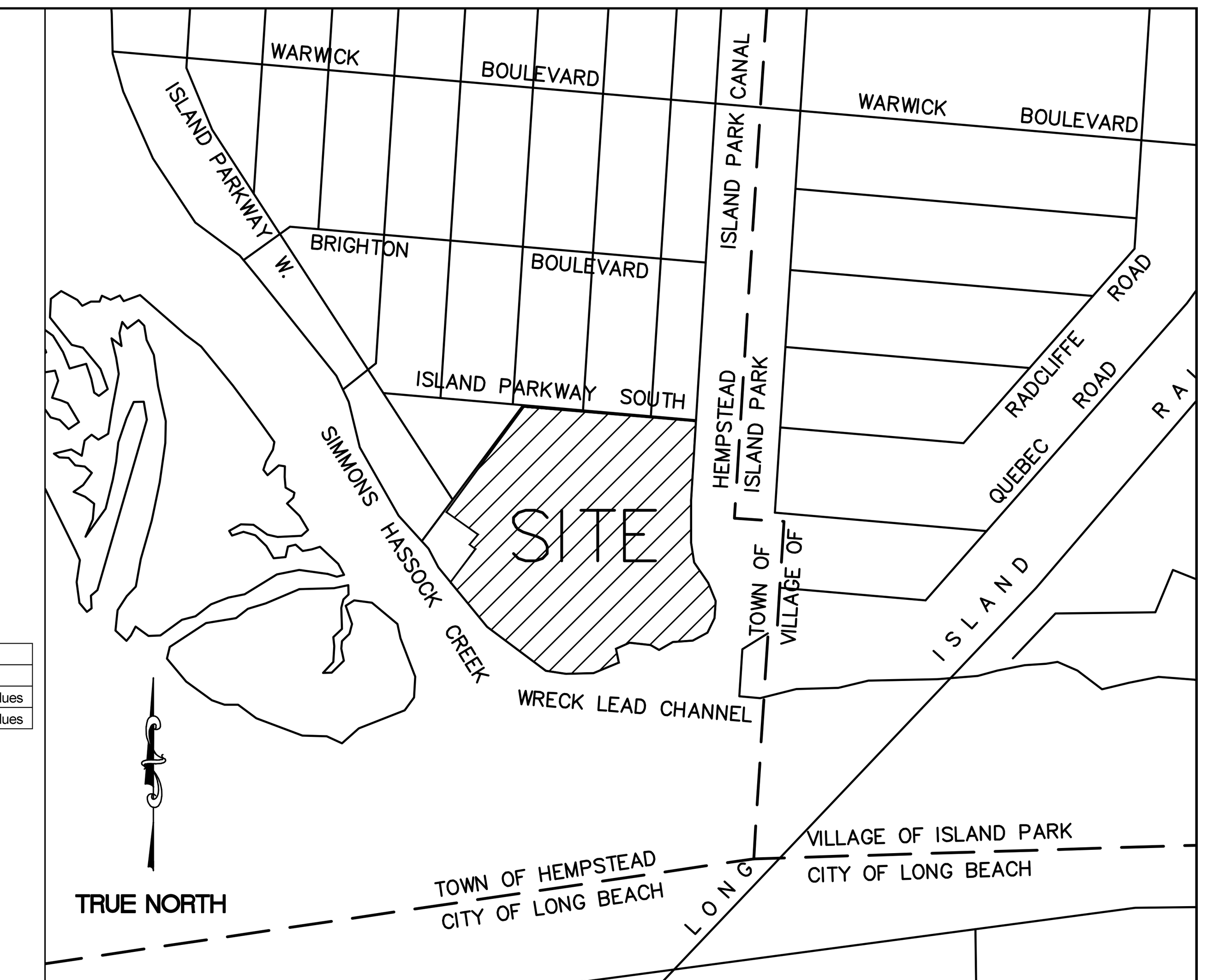
TRC
1430 BROADWAY, 10TH FLOOR NEW YORK, NEW YORK 10018

DESIGNED BY:	DATE:
JM	AUGUST 2012
DRAWN BY: HD	SCALE: AS SHOWN
CHECKED BY: JM / SM	PROJECT NUMBER: 163189.0100.0000

FIGURE RWP-6

DRAWING TITLE:
TOP OF PEAT LAYER ELEVATION CONTOURS

TRUE NORTH
LOCATION MAP
SCALE 1" = 500'
WARWICK BOULEVARD
ISLAND PARKWAY W.
BRIGHTON BOULEVARD
ISLAND PARKWAY SOUTH
ISLAND PARK CANAL
HEMPSTEAD ISLAND PARK
RADCLIFFE ROAD
QUEBEC ROAD
SITE
SIMMONS HASSOCK CREEK
WRECK LEAD CHANNEL
TOWN OF HEMPSTEAD
VILLAGE OF ISLAND PARK
CITY OF LONG BEACH
LEGEND (SYMBOLS NOT TO SCALE):
SS-X SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER (FEBRUARY 2001)
TPXX TEST PIT SAMPLE LOCATION AND IDENTIFICATION NUMBER (JULY 2007)
TP-X TEST PIT AREA LOCATION AND IDENTIFICATION NUMBER (MAY 2010)
SBXX SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER (JULY 2011)
ISLAND PARKWAY
EXISTING TANK PAD NO. 11
EXISTING TANK PAD NO. 12
EXISTING TANK PAD NO. 13
EXISTING TANK PAD NO. 14
EXISTING TANK PAD NO. 5
TREATED SOIL STOCKPILE
TP-7 BORINGS
Wreck Lead Channel
Simmons Hassock Creek
0 40 80 FT.
SCALE: 1"=40'
REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK
TRC
1430 BROADWAY, 10TH FLOOR NEW YORK, NEW YORK 10018
DESIGNED BY: JM
DATE: AUGUST 2012
DRAWN BY: HD
SCALE: AS SHOWN
FIGURE RWP-7
CHECKED BY: JM / SM
PROJECT NUMBER: 163189.0100.0000
DRAWING TITLE:
SITE-SPECIFIC SOIL CLEANUP OBJECTIVE EXCEEDANCES



LOCATION MAP
SCALE 1" = 500'

LMW-4				
CONSTITUENT	CLASS GA VALUES	1/8/2001	5/15/2001	8/12/2011
VOCs (ug/L)				
Acetone	50	≤Class GA Value	≤Class GA Value	**83.3**
SVOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values

W-11				
CONSTITUENT	CLASS GA VALUES	4/28/1994	1/9/2001	5/15/2001
VOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values
SVOCs (ug/L)				
Chrysene	0.002	≤Class GA Values	≤Class GA Value	**0.55**
Benzo[a]anthracene	0.002	≤Class GA Values	≤Class GA Value	**0.72**
Acenophthene	20	≤Class GA Values	≤Class GA Value	**37.5**

MW-16D		
CONSTITUENT	CLASS GA VALUES	8/12/2011
VOCs (ug/L)	Varies	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values

MW-16S		
CONSTITUENT	CLASS GA VALUES	8/12/2011
VOCs (ug/L)	Varies	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values

OW-1			
CONSTITUENT	CLASS GA VALUES	1/8/2001	5/15/2001
VOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values

MW-12				
CONSTITUENT	CLASS GA VALUES	1/9/2001	5/15/2001	8/12/2011
VOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values

MW-6		
CONSTITUENT	CLASS GA VALUES	1/9/2001
VOCs (ug/L)	Varies	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values

LMW-5		
CONSTITUENT	CLASS GA VALUES	1/8/2001
VOCs (ug/L)	Varies	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values

LMW-3			
CONSTITUENT	CLASS GA VALUES	1/10/2001	5/15/2001
VOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values

MW-13		
CONSTITUENT	CLASS GA VALUES	8/12/2011
VOCs (ug/L)	Varies	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values

LMW-2			
CONSTITUENT	CLASS GA VALUES	1/10/2001	8/12/2011
VOCs (ug/L)			
1,2,4-Trimethylbenzene	5	**123**	≤Class GA Value
1,3,5-Trimethylbenzene	5	**19.9**	≤Class GA Value
1,2,4,5-Tetramethylbenzene	5	≤Class GA Value	**14.4**
Ethylbenzene	5	**34.1**	≤Class GA Value
Isopropylbenzene	5	**8**	≤Class GA Value
m&p-Xylene	5	**20.5**	≤Class GA Value
n-Butylbenzene	5	**6.8**	≤Class GA Value
n-Propylbenzene	5	**12.1**	≤Class GA Value
p-Isopropyltoluene	5	**7.9**	≤Class GA Value
SVOCs (ug/L)			
Naphthalene	10	**148**	≤Class GA Value
6/4/12 - 0.03' measured Product Thickness			

MW-1					
CONSTITUENT	CLASS GA VALUES	4/28/1994	1/8/2001	5/15/2001	8/12/2011
VOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values	≤Class GA Values

GW-1		
CONSTITUENT	CLASS GA VALUES	8/12/2011
VOCs (ug/L)	Varies	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values

GW-2		
CONSTITUENT	CLASS GA VALUES	8/12/2011
VOCs (ug/L)	Varies	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values

MW-5		
CONSTITUENT	CLASS GA VALUES	4/28/1994
VOCs (ug/L)	Varies	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values

MW-14		
CONSTITUENT	CLASS GA VALUES	8/12/2011
VOCs (ug/L)		
1,2,4,5-Tetramethylbenzene	5	**10.1**
SVOCs (ug/L)	Varies	≤Class GA Values

MW-17D		
CONSTITUENT	CLASS GA VALUES	8/12/2011
VOCs (ug/L)		
1,2,4-Trimethylbenzene	5	**43.8**
1,3,5-Trimethylbenzene	5	**8.14**
1,2,4,5-Tetramethylbenzene	5	**10.9**
Benzene	1	**15.4**
Ethylbenzene	5	**7.52**
n-Propylbenzene	5	**8.69**
SVOCs (ug/L)		
Napthlalene	10	**44**

MW-2					
CONSTITUENT	Class GA Values	4/28/1994	1/8/2001	5/15/2001	8/12/2011
VOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values	≤Class GA Values

MW-15S		
CONSTITUENT	CLASS GA VALUES	8/12/2011
VOCs (ug/L)		
1,2,4-Trimethylbenzene	5	**83.2**
1,3,5-Trimethylbenzene	5	**19.2**
1,2,4,5-Tetramethylbenzene	5	**21.9**
Benzene	1	**8.36**
Ethylbenzene	5	**7.1**
Isopropylbenzene	5	**8.44**
m&p-Xylene	5	**20.9**
n-Butylbenzene	5	**5.94**
n-Propylbenzene	5	**12.5**
o-Xylene	5	**15.5**
p-Isopropyltoluene	5	**5.13**
SVOCs (ug/L)		
Naphthalene	10	**73.5**

MW-15D		
CONSTITUENT	CLASS GA VALUES	8/12/2011
VOCs (ug/L)	Varies	≤Class GA Values
SVOCs (ug/L)		
Naphthalene	10	**10.2**

W-2				
CONSTITUENT	CLASS GA VALUES	4/28/1994	1/10/2001	5/15/2001
VOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values
SVOCs (ug/L)	Varies	≤Class GA Values	≤Class GA Values	≤Class GA Values

MW-3R					
CONSTITUENT	CLASS GA VALUES	4/28/1994	1/9/2001	5/15/2001	8/12/2011
VOCs (ug/L)					
1,2,4,5-Tetramethylbenzene	5	≤Class GA Value	≤Class GA Value	≤Class GA Value	**9.77**
Benzene	1	≤Class GA Value	≤Class GA Value	**3.8**	**1.06J**
n-Propylbenzene	5	≤Class GA Value	**5.6**	≤Class GA Value	**6.14**
p-Isopropyltoluene	5	≤Class GA Value	**15.8**	≤Class GA Value	≤Class GA Value
SVOCs (ug/L)					
Naphthalene	10	≤Class GA Value	**118**	**67.3**	**89.3**

LMW-1		
CONSTITUENT	CLASS GA VALUES	1/9/2001
VOCs (ug/L)		
Benzene	5	**109**
Ethylbenzene	5	**48**
Isopropylbenzene	5	**23.3**
n-Propylbenzene	5	**28.5**
sec-Butylbenzene	5	**9.4**
p-Isopropyltoluene	5	**6.1**
n-Butylbenzene	5	**6.5**
MTBE	10	**15.9**
SVOCs (ug/L)		
Naphthalene	10	**420**

LEGEND (SYMBOLS NOT TO SCALE):

LMW-X	GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION NUMBER (FEBRUARY 2001)
MW-GWX	GROUNDWATER MONITORING WELL LOCATION AND IDENTIFICATION NUMBER (JULY 2011)
	GROUNDWATER CONTOUR LINE JUNE 5, 2012 LOW TIDE EVENT
	INFERRED GROUNDWATER CONTOUR LINE JUNE 5, 2012 LOW TIDE EVENT
5.213	GROUNDWATER ELEVATION
	INFERRED GROUNDWATER FLOW DIRECTION

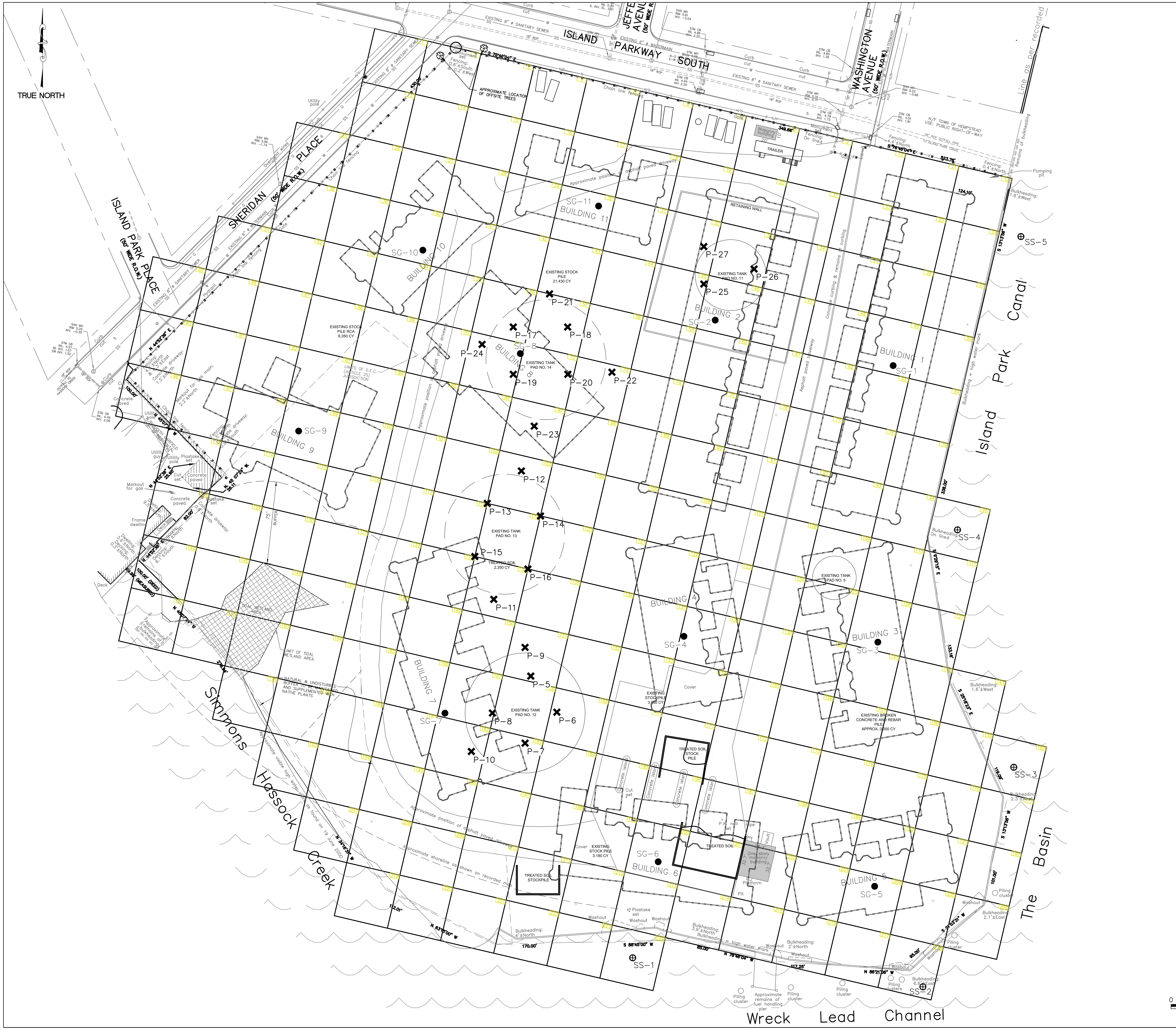
0 40 80 FT.
SCALE: 1"=40'

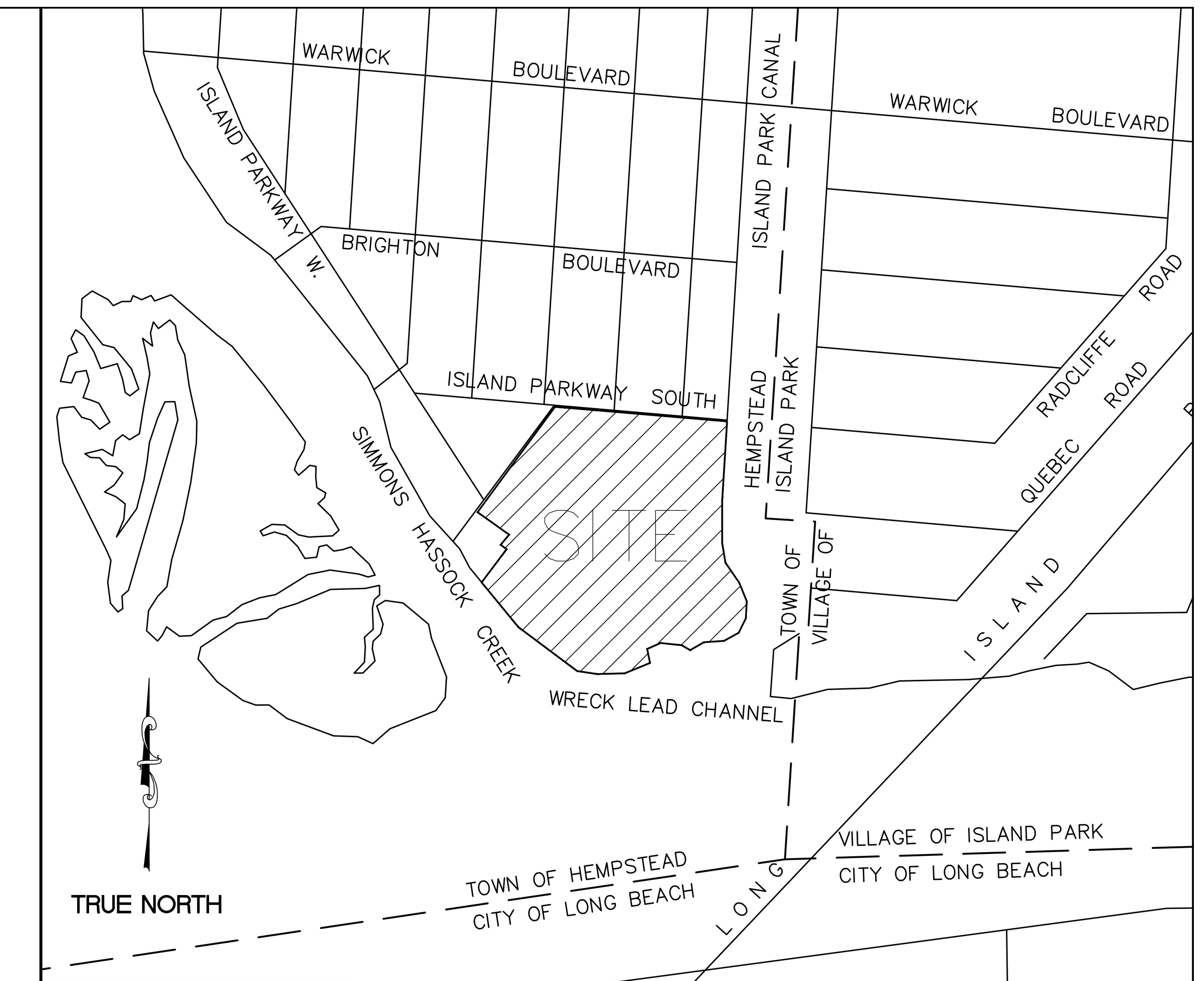
REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK

TRC
1430 BROADWAY, 10TH FLOOR
NEW YORK, NEW YORK 10018

DESIGNED BY: JM	DATE: AUGUST 2012	
DRAWN BY: HD	SCALE: AS SHOWN	
FIGURE RWP-8	CHECKED BY: JM / SM	PROJECT NUMBER: 163189.0100.0000

DRAWING TITLE:
GROUNDWATER SURFACE ELEVATION CONTOURS AND RESULTS OF ANALYSES OF GROUNDWATER SAMPLES





LOCATION MAP

SCALE 1" = 500'

LEGEND (SYMBOLS NOT TO SCALE):

- SITE BOUNDARY
- PROPOSED BUILDING FOOTPRINT
- SS-X PROPOSED SEDIMENT SAMPLE LOCATION AND IDENTIFICATION NUMBER
- SG-X PROPOSED SOIL GAS SAMPLE LOCATION AND IDENTIFICATION NUMBER
- P-X PROPOSED TANK PAD SAMPLE LOCATION AND IDENTIFICATION NUMBER

REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK

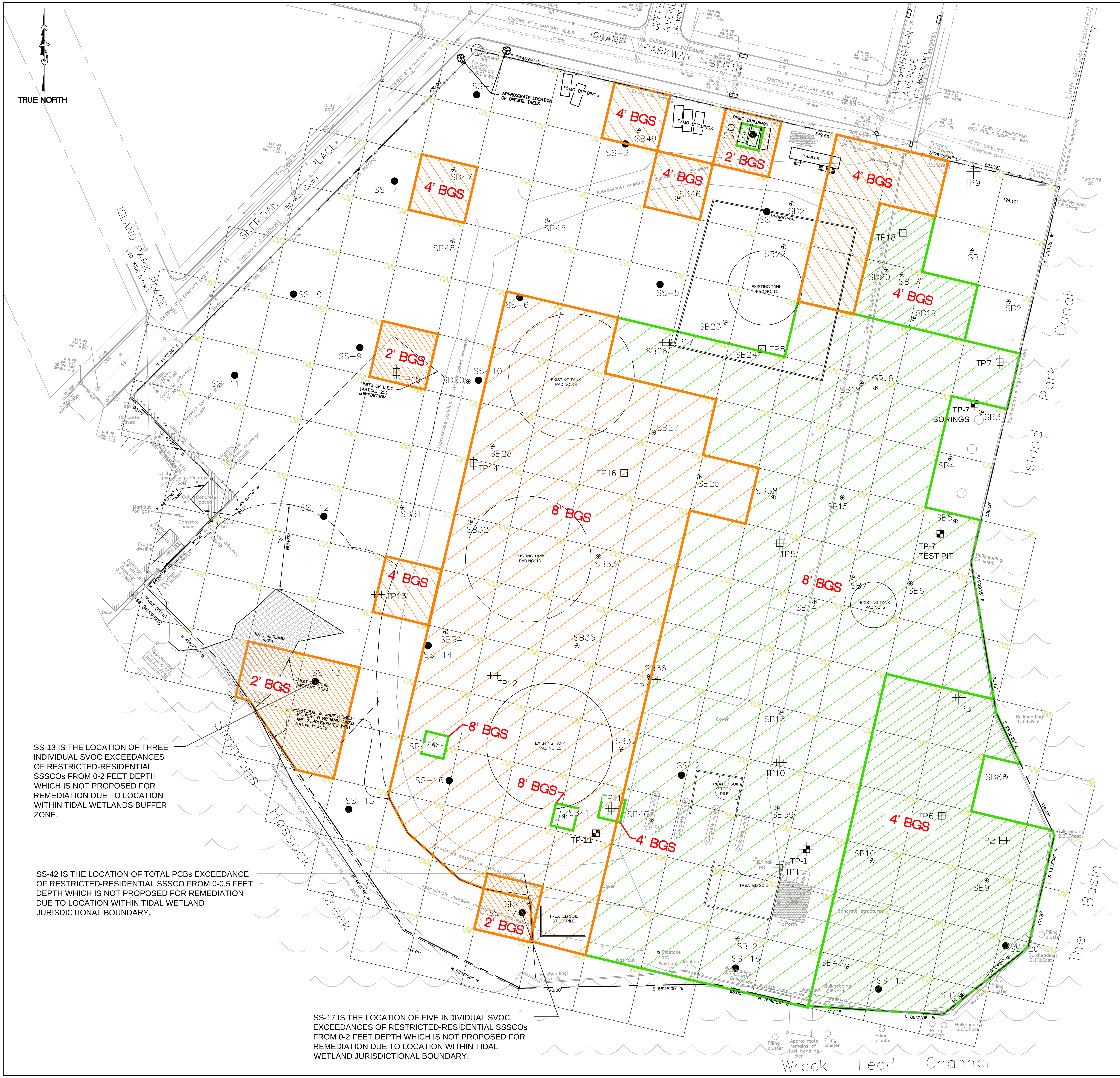
TRC
1430 BROADWAY, 10TH FLOOR
NEW YORK, NEW YORK 10018

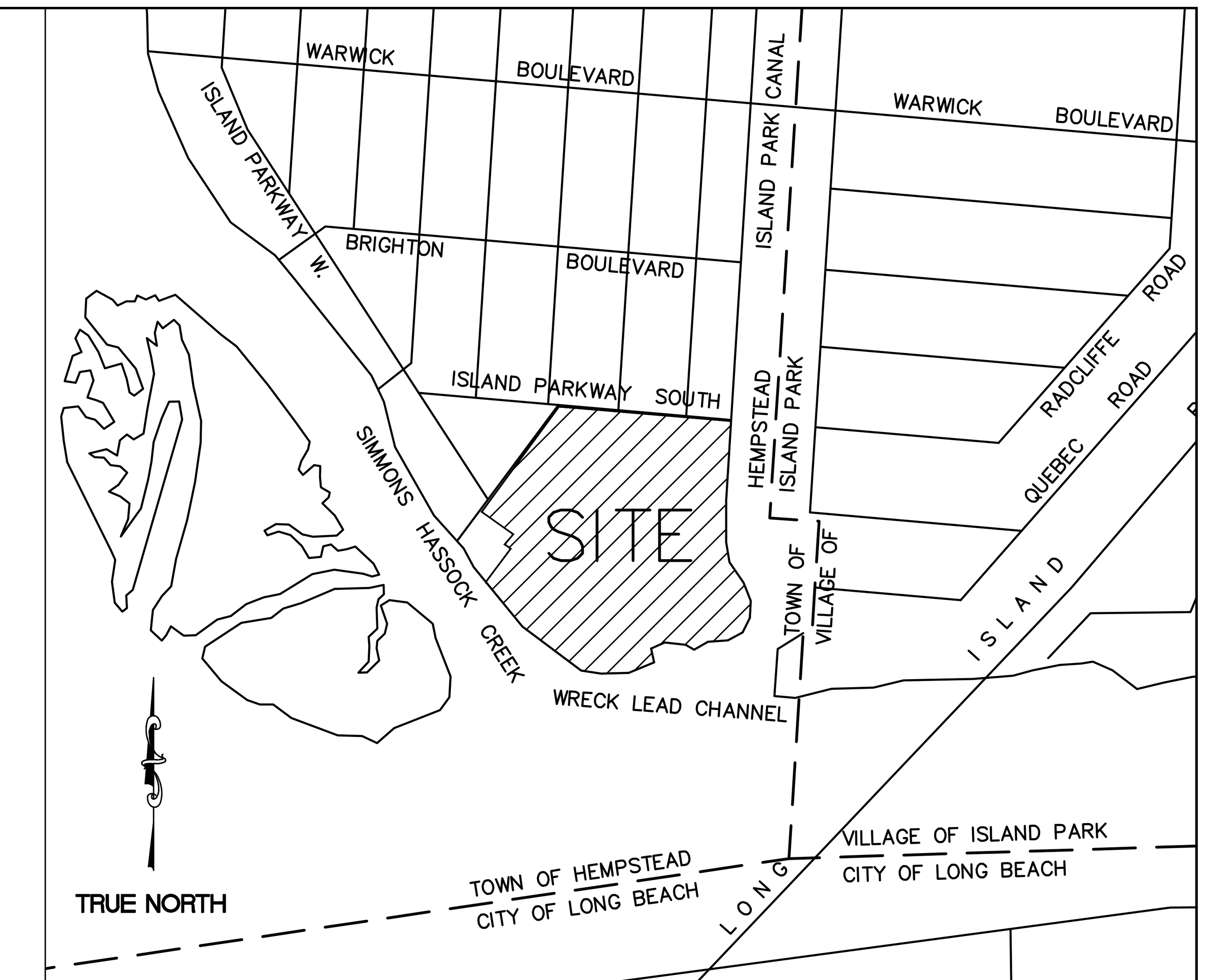
DESIGNED BY:	DATE:
JM	AUGUST 2017
DRAWN BY: HD	SCALE: AS SHOWN
CHECKED BY: JM / SM	PROJECT NUMBER: 163189.0100.0000

FIGURE RWP-9

DRAWING TITLE:

REMEDIAL PHASE INVESTIGATION LOCATION MAP





LOCATION MAP
SCALE 1" = 500'

LEGEND (SYMBOLS NOT TO SCALE):

- SS-X — SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER (FEBRUARY 2001)
- TPXX — TEST PIT SAMPLE LOCATION AND IDENTIFICATION NUMBER (JULY 2007)
- TP-X — TEST PIT AREA LOCATION AND IDENTIFICATION NUMBER (MAY 2010)
- SBXX — SOIL SAMPLE LOCATION AND IDENTIFICATION NUMBER (JULY 2011)
- ESTIMATED LIMITS OF REMEDIAL EXCAVATION TO SUPPORT RESTRICTED RESIDENTIAL USE
- ESTIMATED LIMITS OF ADDITIONAL REMEDIAL EXCAVATION TO SUPPORT UNRESTRICTED USE
- X' BGS — FEET BELOW GROUND SURFACE

NOTES:

1. THE EXTENT OF REMEDIAL EXCAVATIONS ARE ESTIMATED AND SUBJECT TO CHANGE BASED UPON FIELD OBSERVATION, SAMPLING AND LABORATORY ANALYSIS, AND OTHER FACTORS.
2. RWP PROPOSES RESIDENTIAL-RESTRICTED USE. THEREFORE, ADDITIONAL UNRESTRICTED AREAS ARE NOT PLANNED TO BE EXCAVATED.
3. RESTRICTED-RESIDENTIAL EXCAVATION AREAS WITHIN THE WETLAND JURISDICTIONAL BOUNDARY ARE SHOWN FOR COMPLETENESS, BUT NOT PROPOSED TO BE EXCAVATED AS PART OF THE REMEDY.

0 40 80 FT.
SCALE: 1"=40'

REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK

TRC 1430 BROADWAY, 10TH FLOOR NEW YORK, NEW YORK 10018	DESIGNED BY: JM	DATE: AUGUST 2012
	DRAWN BY: HD	SCALE: AS SHOWN
FIGURE RWP-10	CHECKED BY: JM / SM	PROJECT NUMBER: 163189.0100.0000

DRAWING TITLE:
ESTIMATED EXTENTS OF REMEDIAL EXCAVATION

REMEDIAL WORK PLAN
7 Washington Avenue, Harbor Isle, NY 11558
Posillico Development Co. at Harbor Isle
1750 New Highway, Farmingdale, NY 11735

TRC

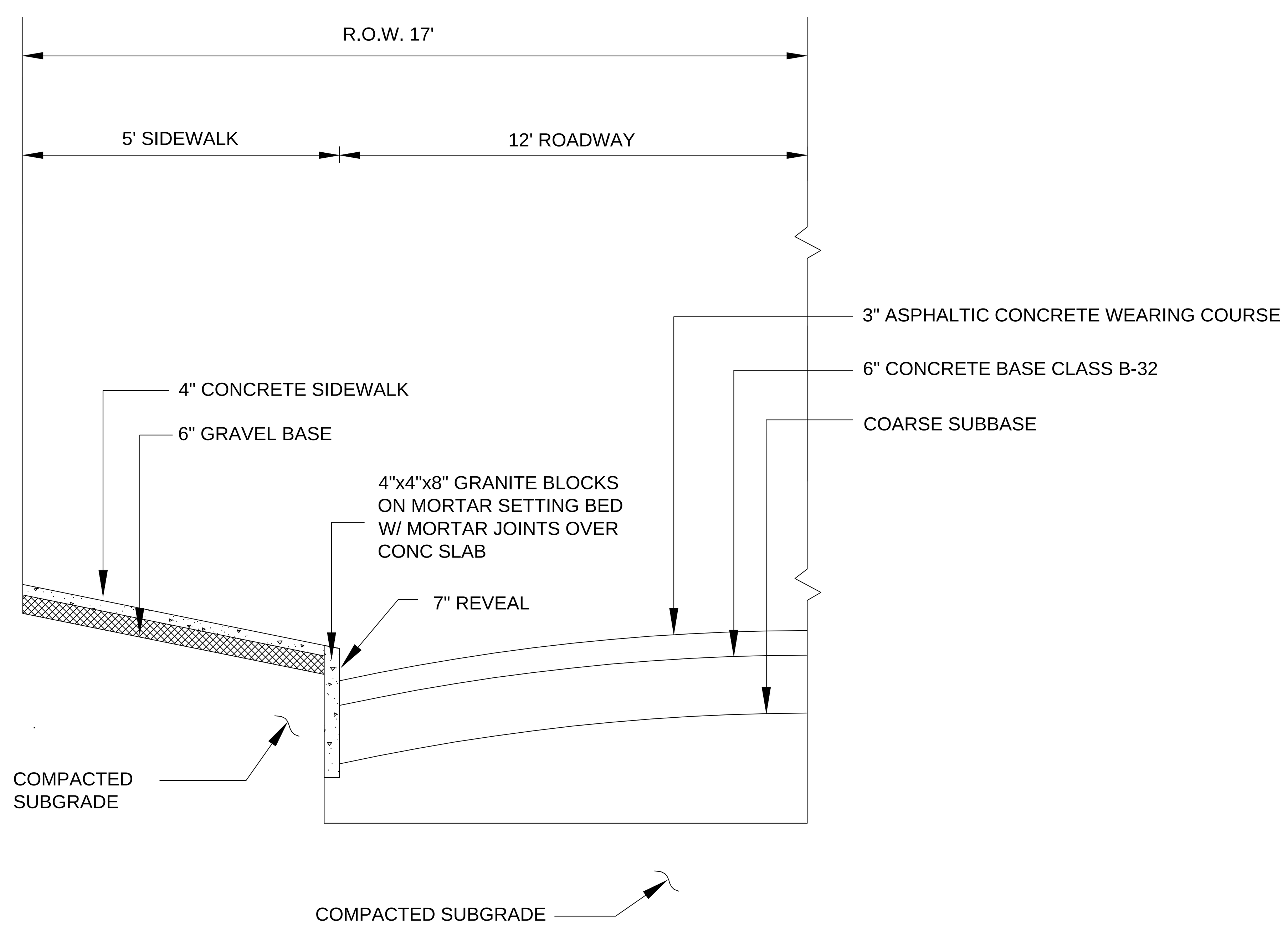
1430 BROADWAY, 10TH FLOOR
NEW YORK, NEW YORK 10018

PREPARED BY: SB
PROJECT NO.: 163189.0100.0000

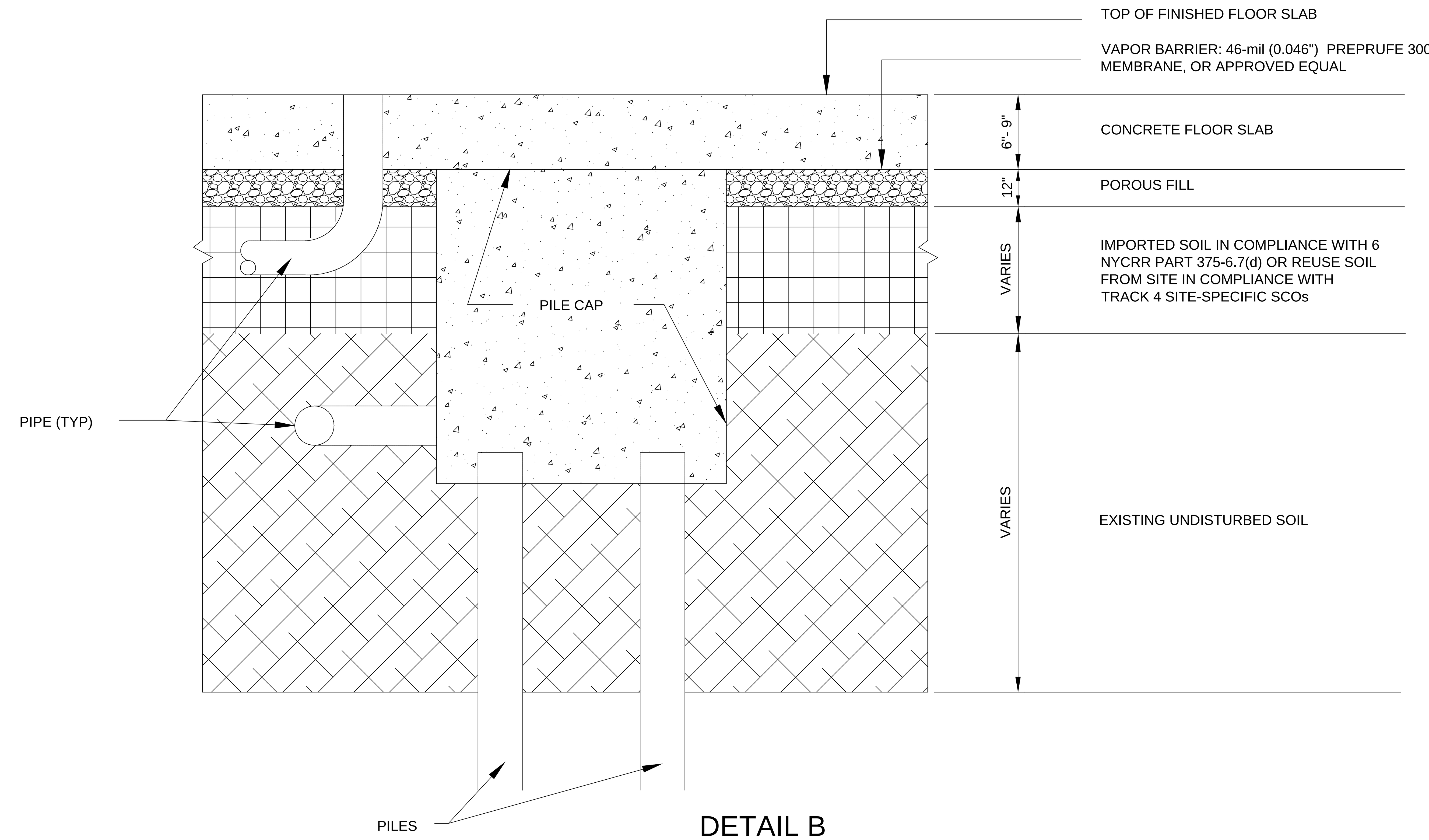
DATE: July 2012
FIGURE: RWP-11.

TRUCK ROUTE MAP

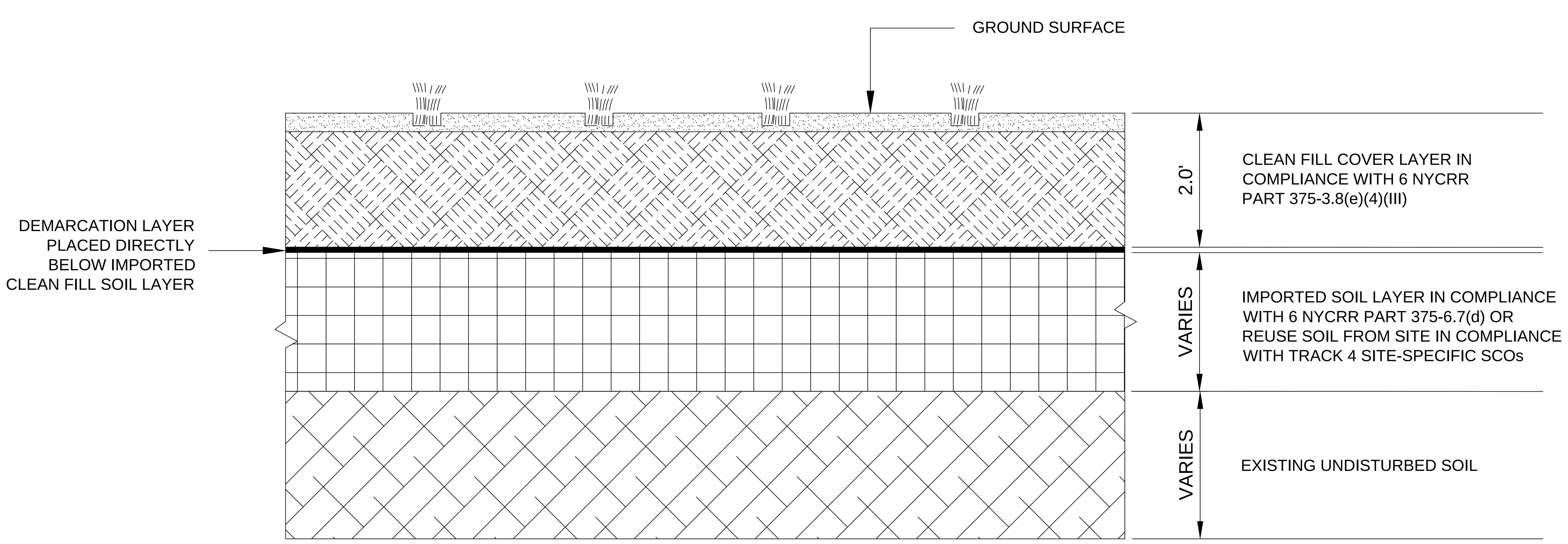
Directions:
-North on Washington Avenue
-East on Warwick Blvd
-North on Long Beach Rd to Sunrise Highway



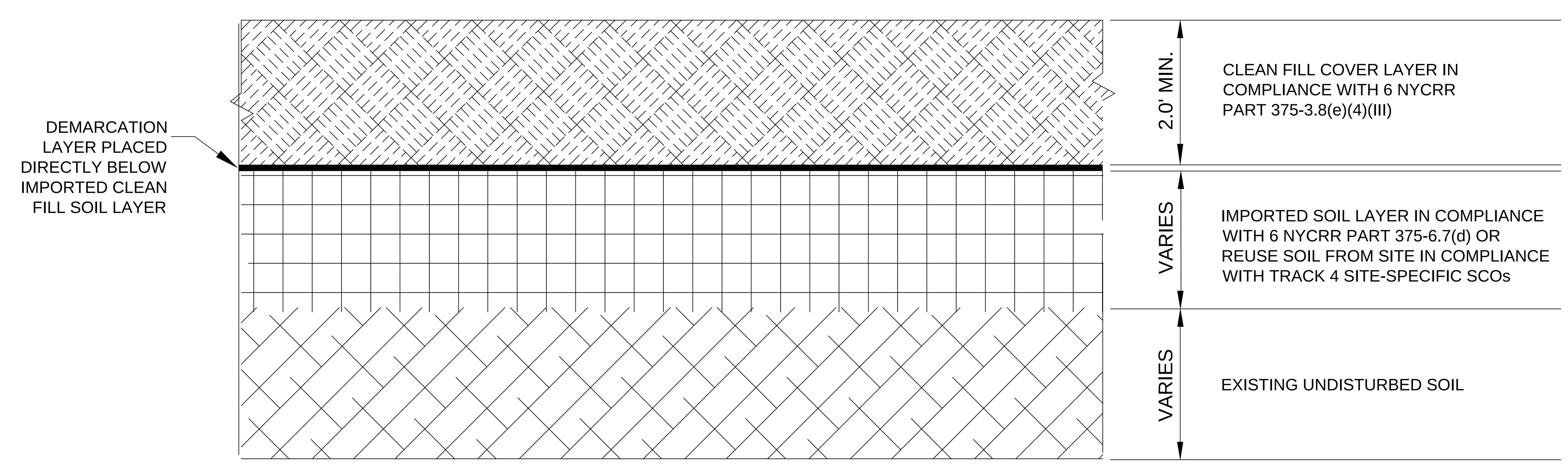
DETAIL A
ROAD RIGHT OF WAY TYPICAL SECTION
N.T.S.



DETAIL B
BUILDINGS
N.T.S.



DETAIL C
LANDSCAPE AREAS
N.T.S.



CLEAN FILL COVER LAYER DETAIL
N.T.S.

NOTES:

1. ALL BUILDINGS ARE ON-GRADE CONSTRUCTION.
2. DEMARCATION LAYER WILL NOT BE PLACED IN ROAD AND UTILITY CORRIDORS. REFER TO FIGURE RWP-5 FOR LOCATIONS.
3. TIDAL WETLANDS AND SURROUNDING JURISDICTIONAL AREAS ARE NOT TO BE DISTURBED. REFER TO FIGURE RWP-2 FOR LOCATION.

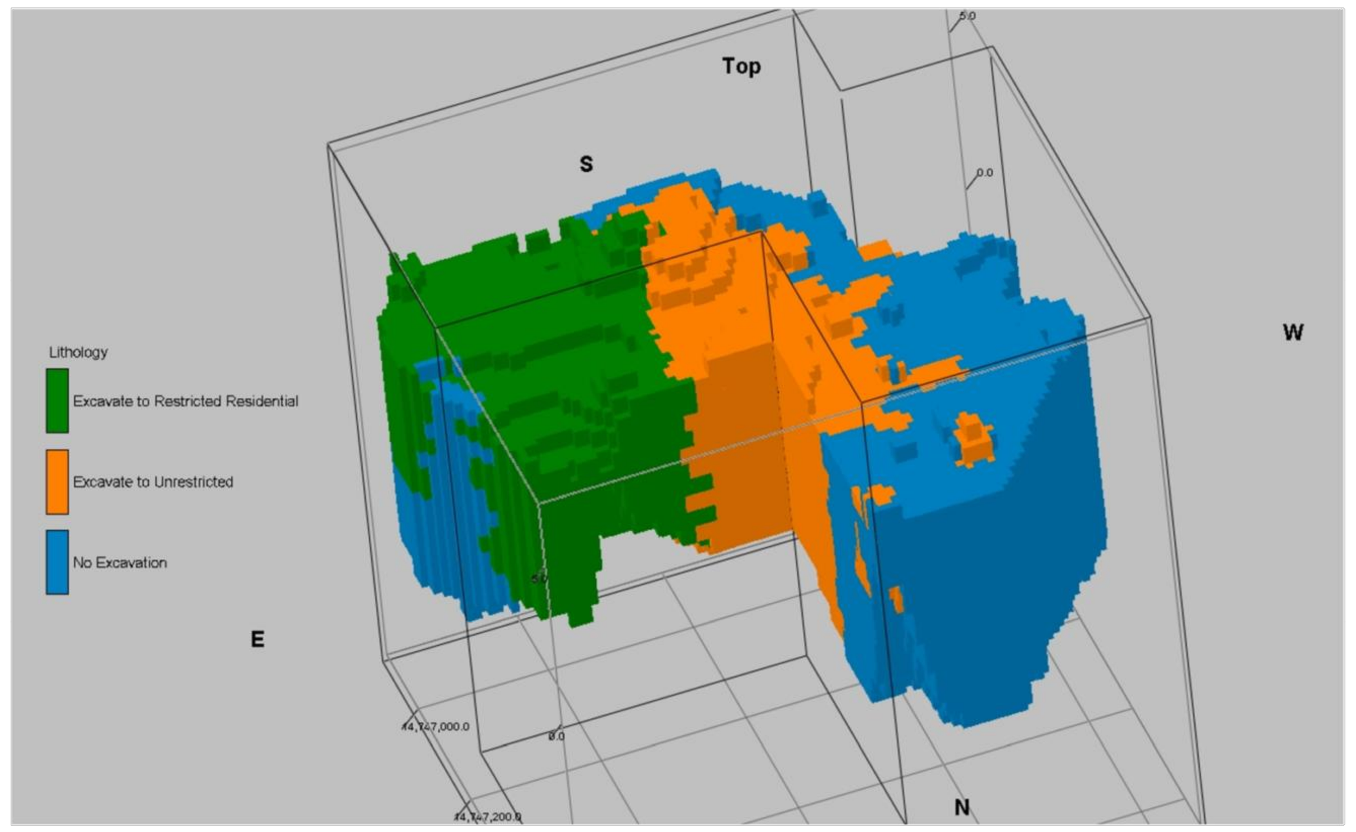
REMEDIAL WORK PLAN
BCP SITE NO. C130153
FORMER CIBRO PETROLEUM TERMINAL SITE
ISLAND PARK, NEW YORK

TRC
1430 BROADWAY, 10TH FLOOR
NEW YORK, NEW YORK 10018

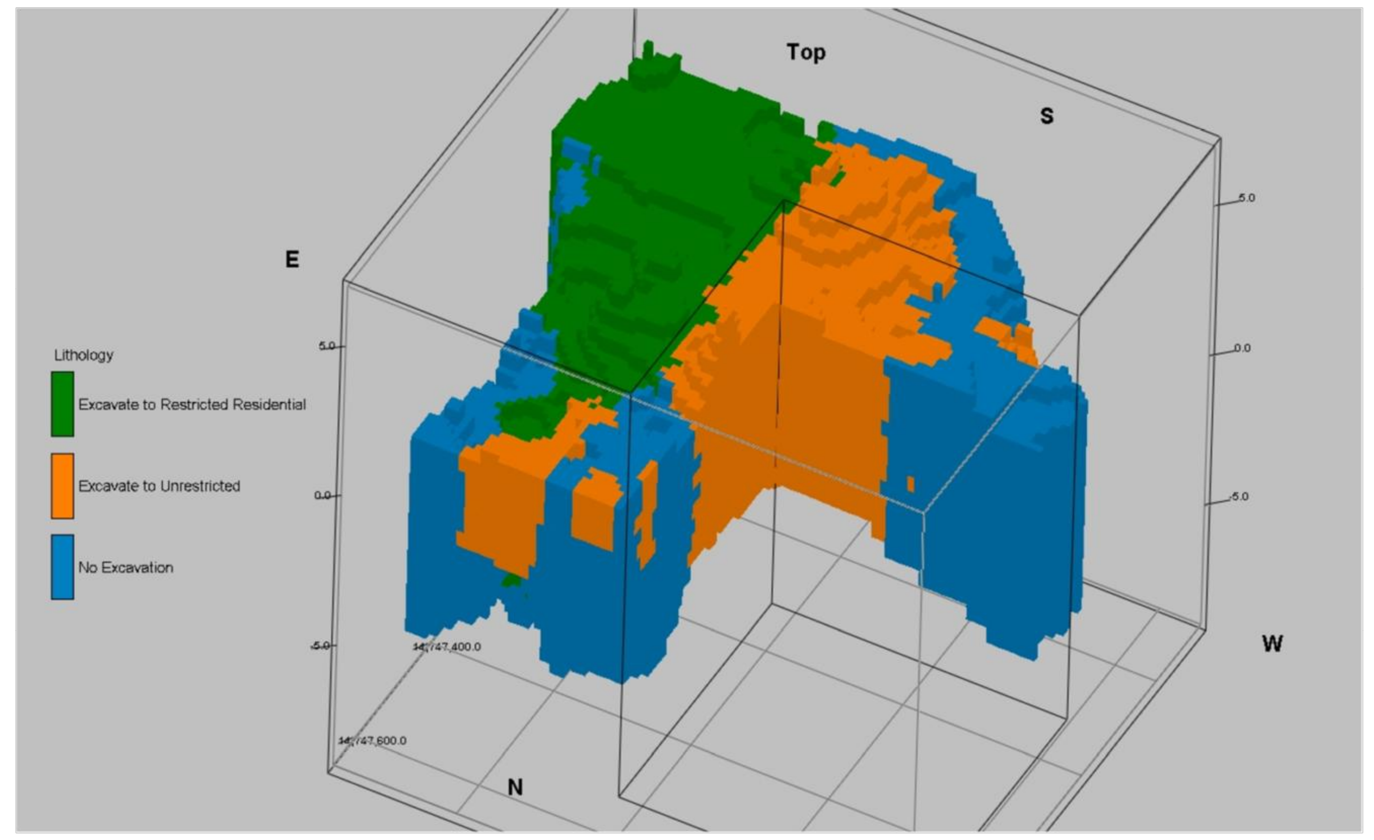
	DESIGNED BY: JM	DATE: AUGUST 2012
	DRAWN BY: HD	SCALE: AS SHOWN
FIGURE RWP-12	CHECKED BY: JM / SM	PROJECT NUMBER: 163189.0100.0000

DRAWING TITLE:

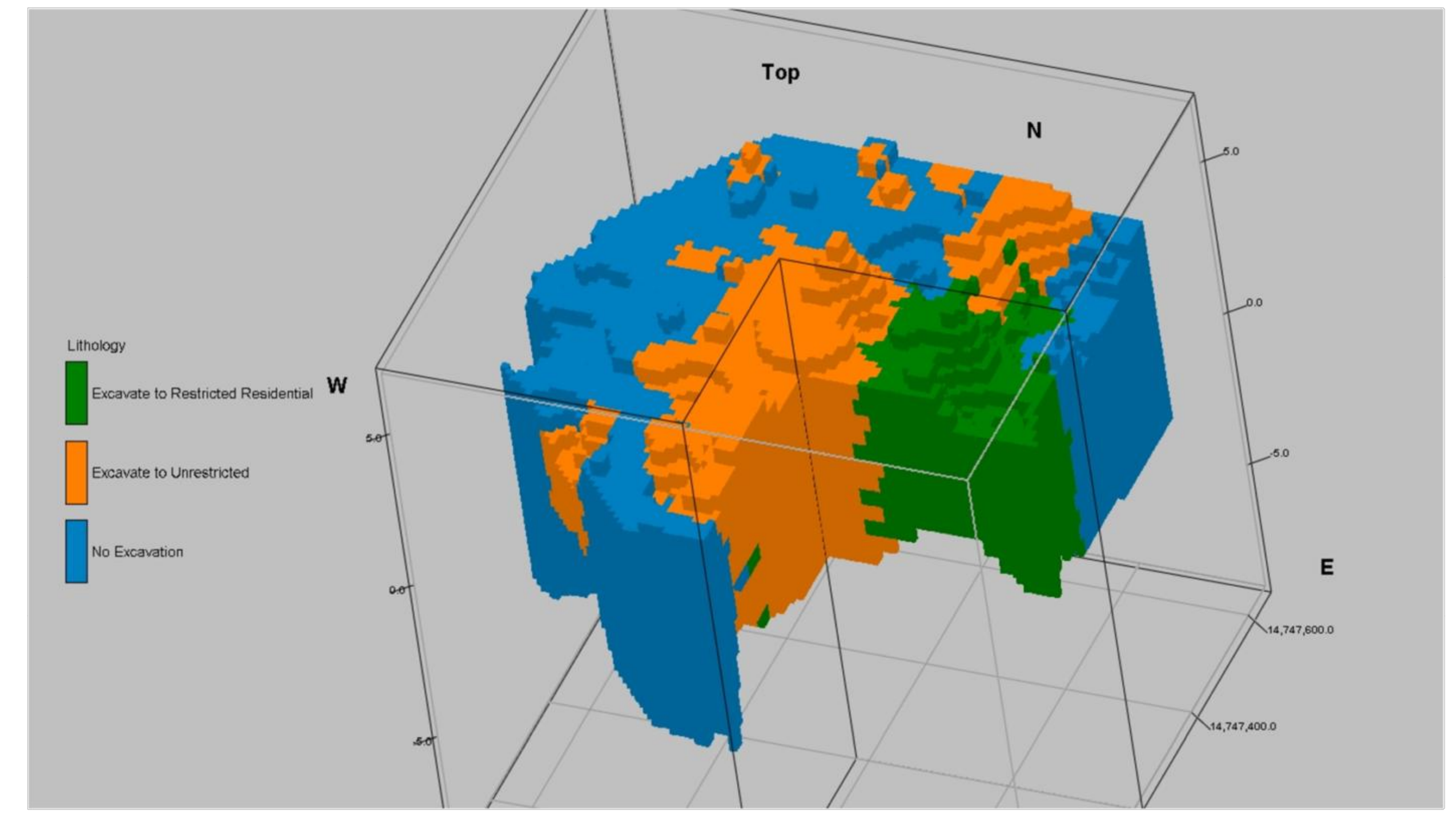
FINAL SITE DEVELOPMENT COVER DETAILS



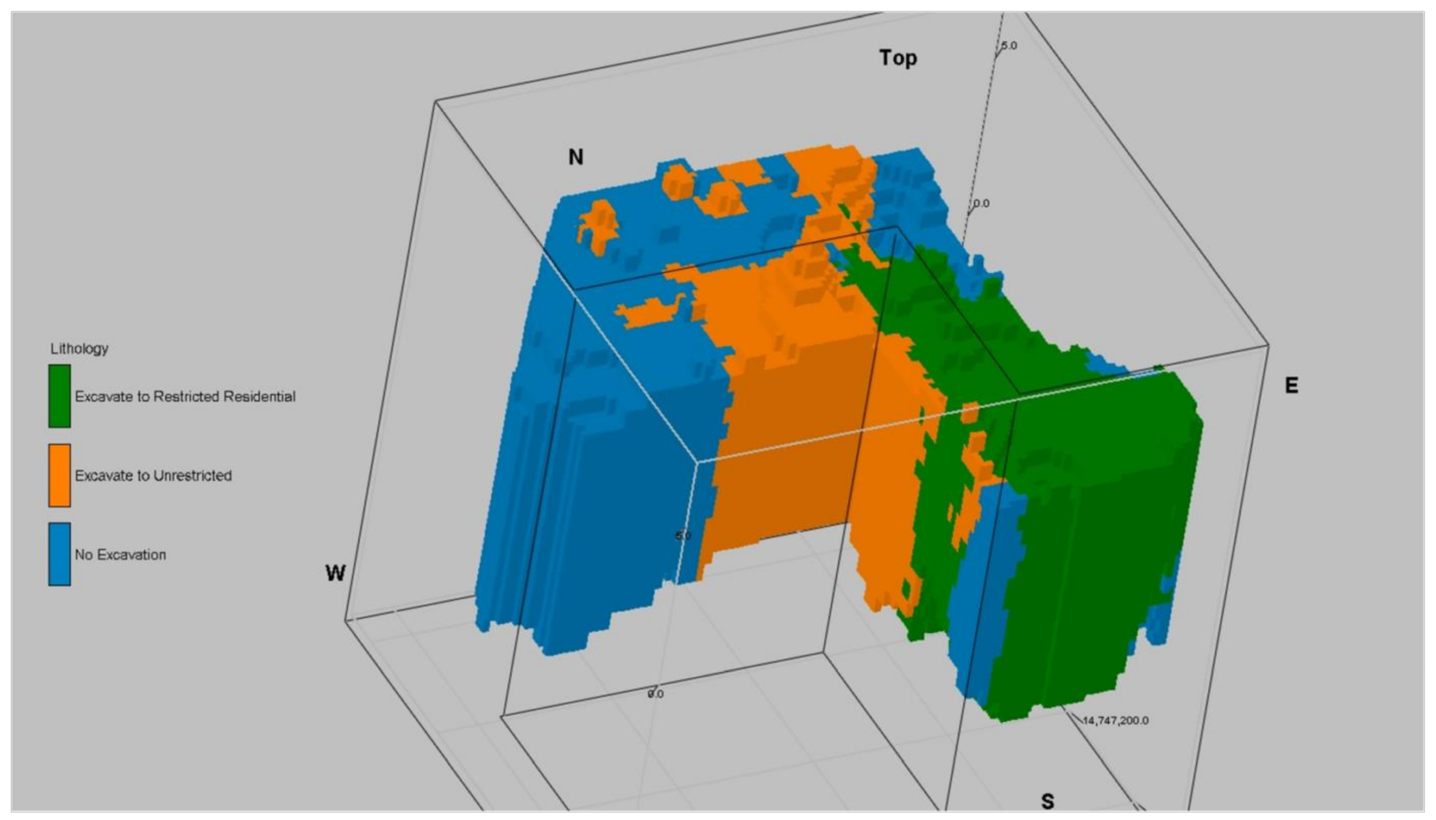
NORTHEAST CUTOUT



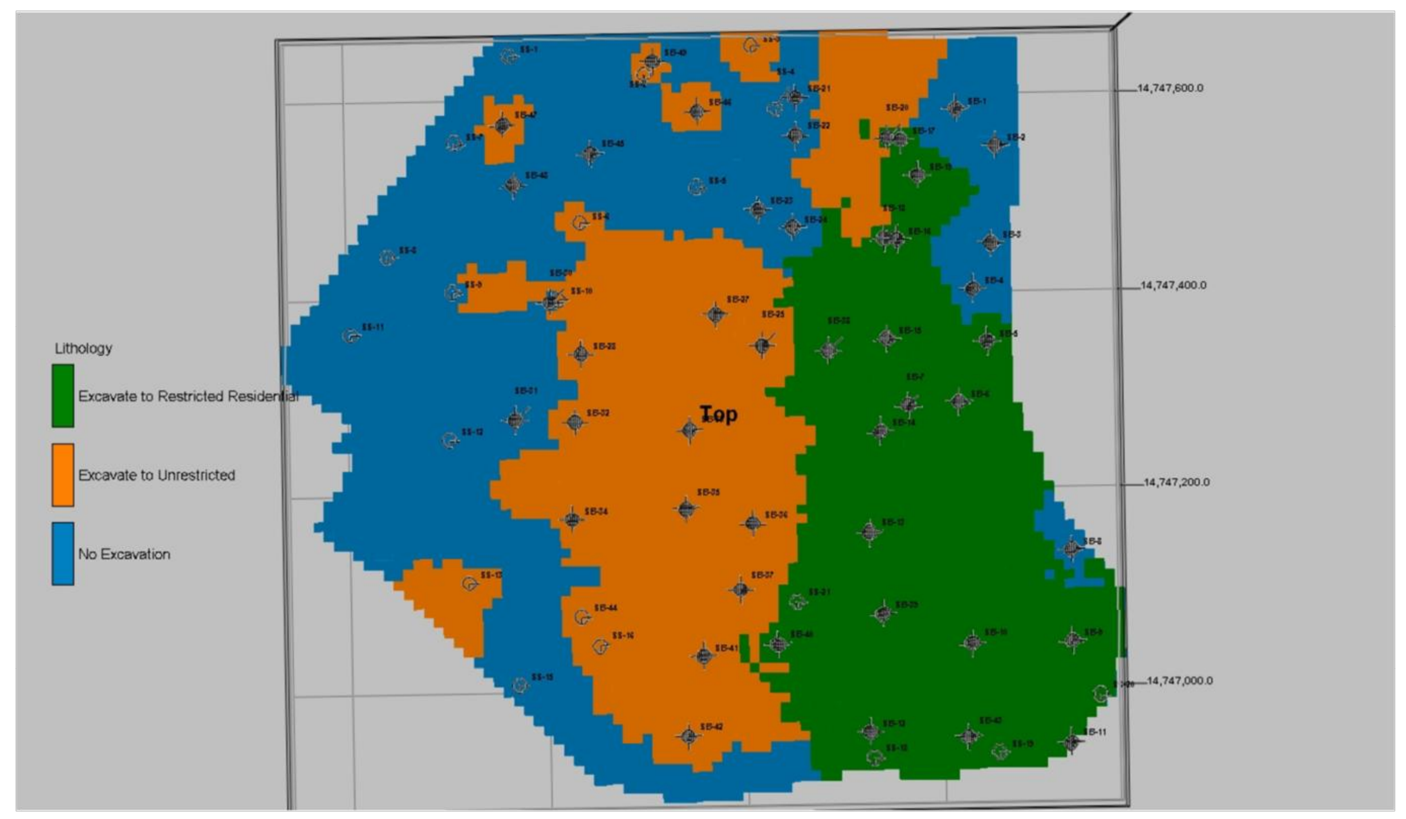
NORTHWEST COUTOUT



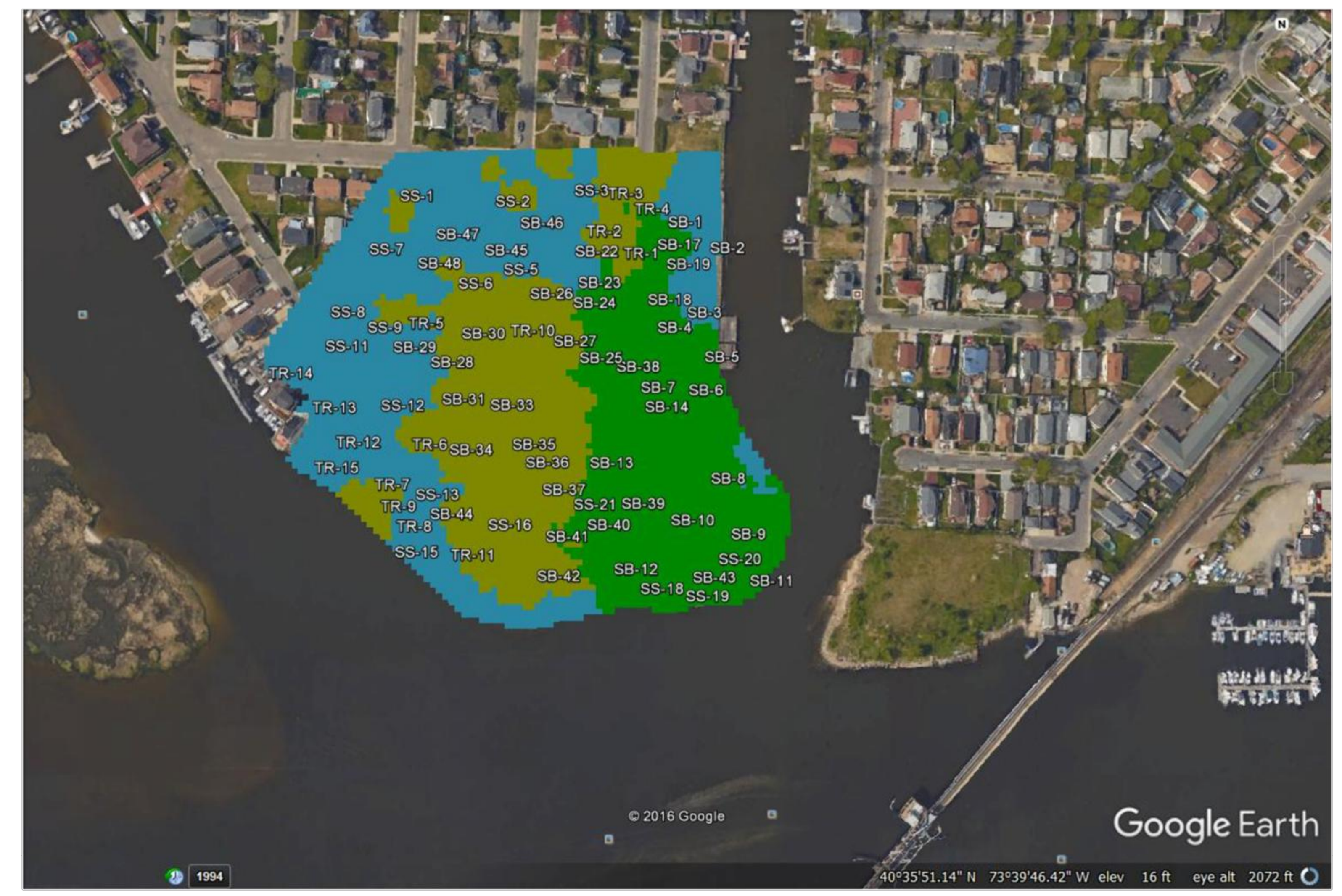
SOUTHEAST CUTOUT



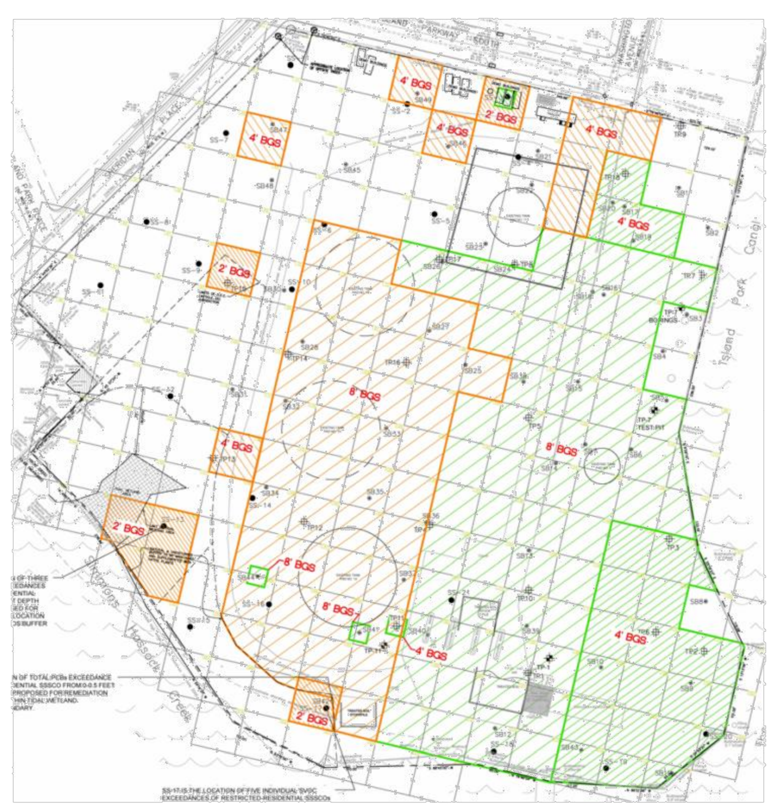
SOUTHWEST CUTOUT



EXCAVATION PLAN VIEW



EXCAVATION - GOOGLE EARTH OVERLAY



RAWP FIGURE 10 REMEDIAL EXCAVATION

NOTES

1. EXTENT OF REMEDIATION IS ESTIMATED AND BASED ON THE MODEL CALCULATIONS USING ROCKWORKS BY ROCKWARE, INC.
2. TOTAL ESTIMATED VOLUME OF SOIL EXCAVATION REQUIRED TO SUPPORT REMEDIAL ALTERNATIVE #3 IS 29,000 CUBIC YARDS.
3. MODEL USED REMEDIAL EXCAVATION AREAS DESIGNATED IN DRAWING RWP-10, BORING LOCATIONS FROM DRAWING RWP-7 AND PEAT MAPS FROM DRAWNG RWP-6.

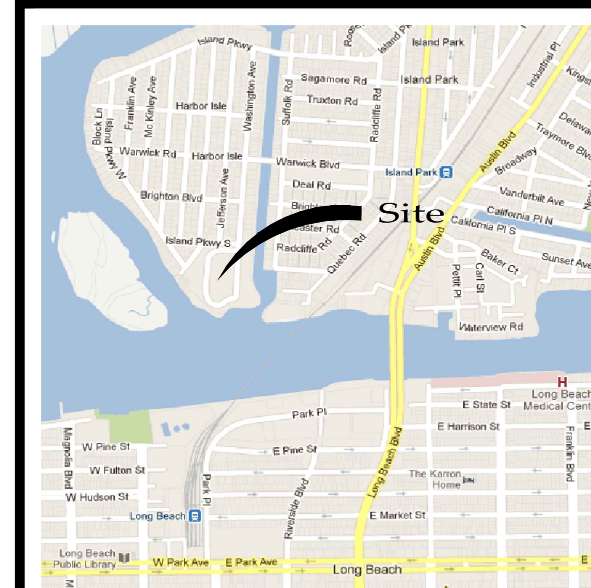
Revisions/Issues

No	Date	By	Description
			COMMENTS

Posillico We know how.

Posillico Civil

1750 New Highway
Farmingdale, NY 11735
(631) 249-1872



Stamp

Signature:________________ Date:____

Title
ESTIMATED VOLUME OF SOIL EXCAVATION FOR REMEDIAL ALTERNATIVE 3

Project
PDC @ HARBOR ISLE REMEDIATION

Date
OCTOBER 13, 2017

Scale
AS NOTED

Drawn by
BK/LK

Checked by
N/A

Drawing No
RWP-13

Appendix A
Site Survey and Metes and Bounds Description

FINAL PROPERTY LINE DESCRIPTION
Description of boundary lines after the inclusion of abandonments of Canal Place, Sherman Place, the southerly part of Washington Avenue, and the 10 foot wide strip of land purported for the use of ingress and egress between the southerly side of Sherman Place and the northerly side of Wreck Lead Channel.

All that certain plot, piece and parcel of land, situate, lying and being near the City of Long Beach, and the Incorporated Village of Island Park, in the Town of Hempstead, County of Nassau and State of New York, more particularly bounded and described as follows:

BEGINNING at a concrete monument set at the intersection of the easterly side of Sheridan Place with the southerly side of Island Parkway South;

THENCE from said point of beginning running easterly along the southerly side of Island Parkway South,
South 76 degrees 46 minutes 04 seconds East, a distance of 523.76 feet to the westerly side of Island Park Canal as agreed upon in a boundary line agreement between the Town of Hempstead and Cibro South Shore Terminal Corp. as shown in Liber 9068 Page 354;

THENCE running southerly along said line bounding the westerly side of Island Park Canal and The Basin, and running westerly along said line bounding the northerly side of Wreck Lead Channel and Simmons Hassock Creek the following eleven (11) courses and distances;

(1) South 13 degrees 13 minutes 56 seconds West, a distance of 338.00 feet;
(2) South 09 degrees 29 minutes 15 seconds East, a distance of 133.16 feet;
(3) South 25 degrees 18 minutes 23 seconds East, a distance of 119.09 feet;
(4) South 13 degrees 13 minutes 56 seconds West, a distance of 101.00 feet;
(5) South 51 degrees 53 minutes 31 seconds West, a distance of 95.00 feet;
(6) North 86 degrees 21 minutes 06 seconds West, a distance of 117.25 feet;
(7) North 76 degrees 46 minutes 04 seconds West, a distance of 85.00 feet;
(8) South 88 degrees 45 minutes 00 seconds West, a distance of 170.00 feet;
(9) North 63 degrees 15 minutes 00 seconds West, a distance of 112.01 feet;
(10) North 34 degrees 16 minutes 31 seconds West, a distance of 278.94 feet;
(11) North 45 degrees 07 minutes 24 seconds West, a distance of 100.00 feet to the easterly side of lot 50 as shown on Land & Tax Map, County of Nassau, Island Park, New York and/or lands now or formerly of Louis Cramer;

THENCE running northerly along the easterly side of said lot,
North 44 degrees 52 minutes 36 seconds East, a distance of 82.00 feet;

THENCE North 45 degrees 07 minutes 24 seconds West, a distance of 26.11 feet;

THENCE North 44 degrees 52 minutes 36 seconds East, a distance of 25.95 feet to the southerly side of lot 1A, Block 215 as shown on the file map of Island Park, Long Beach, sheet #19, Map No. 605, Filed May 21, 1926;

THENCE running westerly along the southerly side of said lot, North 45 degrees 07 minutes 24 seconds West, a distance of 100.00 feet to the easterly side of Sheridan Place;

THENCE running northerly along the easterly side of Sheridan Place, North 44 degrees 52 minutes 36 seconds East, a distance of 430.00 feet to the concrete monument or said POINT OR PLACE OF BEGINNING.

Appendix B
Site-Specific Health and Safety Plan (HASP)

Former CIBRO Petroleum Terminal Site
NYSDEC BCP Site Number: C130153
7 Washington Avenue
Island Park, Nassau County, New York

HEALTH AND SAFETY PLAN
REMEDIAL ACTION WORK PLAN

Prepared by:
TRC Engineers, Inc.
1430 Broadway, 10th Floor
New York, New York 10018
Phone: (212) 221-7822
TRC Project Number: 163189.0100.000

AUGUST 2012

DISCLAIMER

STRICT ADHERENCE TO THE HEALTH AND SAFETY GUIDELINES SET FORTH HEREIN WILL REDUCE, BUT NOT ELIMINATE, THE POTENTIAL FOR INJURY AT THI SITE. THE HEALTH AND SAFETY GUIDELINES IN THIS HEALTH AND SAFETY PLAN WERE PREPARED SPECIFICALLY FOR THIS PROJECT AND SHOULD NOT BE USED ON ANY OTHER SITE OR PROJECT WITHOUT PRIOR RESEARCH AND EVALUATION BY TRAINED HEALTH AND SAFETY SPECIALISTS.

APPROVALS

This Health and Safety Plan (HASP) has been prepared to address the site field activities associated with the Former CIBRO Petroleum Terminal Site, BCP Site C120153 in Harbor Island, New York.

By their signature below, the undersigned certify that this HASP will be utilized for the protection of the health and safety of the Remediation Contractor employees participating in activities associated with the Site remediation.

Project Manager:
Organization:
Address:

Approval Date: ____

Signature: ____

Health and Safety Officer:
Organization:
Address:

Approval Date: ____

Signature: ____

Section **Page**

FIGURES

Figure **Page**

TABLE

Table **Page**

Appendices

ACRONYMS

BZL	Breathing Zone Level
CGI	Combustible Gas Indicator
CRZ	Contamination Reduction Zone
DIC	Designated Incident Commander
EPA	Environmental Protection Agency
EZ	Exclusion Zone
HASP	Health and Safety Plan
HSO	Health and Safety Officer
LEL	Lower Explosive Limit
LOTO	Lockout/Tagout
NAAQS	National Ambient Air Quality Standard
NIOSH	National Institute of Occupational Safety and Health
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
PID	Photoionization Detector
PPE	Personal Protective Equipment
ppm	Parts Per Million
SSC	Site Safety Coordinator
SZ	Support Zone
VOCs	Volatile Organic Compounds

1.0 INTRODUCTION

This Health and Safety Plan (HASP) was designed to protect against occupational injuries and illnesses from workplace hazards, tasks and chemical exposures during remediation activities associated with the Former Cibro Petroleum Terminal Site, BCP Site C130153 (the Site).

All on-site personnel are required to read, review and strictly comply with this HASP. It is the Remediation Contractor's responsibility to ensure that the HASP is implemented and enforced. The HASP may contain sensitive or confidential information and therefore should not be disclosed to persons other than those working on site. The HASP was prepared in accordance with requirements established by the Occupational Safety and Health Administration (OSHA), the National Institute of Occupational Safety and Health (NIOSH), the Environmental Protection Agency (EPA), and New York City local laws.

The HASP will apply to remediation activities through placement of the barrier layer. Other disruptive work below the barrier layer will be subject to a HASP to be developed at a future date by the Applicants, property owner (and their contractor) or future property owners in accordance with the outline contained in the Site Management Plan (SMP).

1.1 Site Description

The Site is located at the southern terminus of Washington Avenue on Harbor Island, Nassau County, New York. It covers approximately 11.56 acres. The property is identified on Nassau County tax maps as Section 43, Block 381, Lot 35, 36, 102, 314, and 328. Surface water bodies border the Site on three sides: Island Park Canal to the east; Wreck Lead Channel to the south; and Simmons Hassock Creek to the west. Residential properties border the Site to the north and northwest, and an operating marina borders the Site to the southwest. There are no urban, commercial, industrial (other than the Site itself and marina), agricultural or recreational areas in proximity to the site on the Island Park side of Wreck Lead Channel. There are industrial and commercial uses on the south side of the Channel. The property was zoned Y Industrial District at the beginning of this BCP Project. In 2007, PDC received a zoning change from Y-Industrial to CA-Residential. Figure RAWP-1 shows the Site location.

1.2 Summary of Project Scope

The Former Cibro Brothers Terminal Facility is located at the southern terminus of Washington Avenue in Island Park, Town of Hempstead Nassau County, New York (hereinafter the "Site"). The 11.56 - acre property is identified on Nassau County tax maps as Section 43, Block 381, Lot 35, 36, 102, 314, and 328. Surrounding land use consists primarily of single-family residential properties and schools. Currently, the property is zoned Y Industrial District.

The Site was used for oil bulk storage and distribution facility from 1937 until site operations were terminated in or around 1990. Historic petroleum releases occurred during Cibro's former operations at the Site and have been investigated since 1988 when a New York State Department of Environmental Conservation (“NYSDEC”) Spill Number (#88-05691) was opened. Cibro filed for bankruptcy in the same year as the opening of the Spill Case.

Blue Island Development, LLC (“Blue Island”) purchased the property from the Bankruptcy Court on November 2, 2000. Posillico Development Company at Harbor Island, Inc. (“Posillico”) (“the Applicant”), entered into the NYSDEC Brownfield Cleanup Program (BCP). PDC seeks NYSDEC approval for development of residential and ancillary uses of the Site.
A Supplemental Remedial Investigation (SRI) was completed by Posillico for the BCP Sites in accordance with the NYSDEC-approved in 2011. The findings of the SRI, as well as previous investigations, are summarized in the Remedial Action Work Plan (RAWP).

The project scope is detailed in the Remedial Action Work Plan (RAWP), which has been prepared to address contamination present within the BCP Stie associated with historic use of the area as an oil storage facility. The overall objective of the remediation is to prepare the BCP Site for the contemplated use, including restricted residential use and to remediate environmental conditions at the BCP Site to the satisfaction of the NYSDEC and the New York State Department of Health (NYSDOH).

1.3 HASP Revision

This HASP shall apply to all remediation tasks associated with the Site. If site conditions or work scope changes, the Remediation Contractor shall re-evaluate this HASP and revise it or develop a task-specific HASP to address the current conditions at the site if and as required.

1.4 Safety Organization

1.4.1 Safety and Planning Meetings

For routine remediation tasks, a task-specific kick-off meeting to discuss safety issues will take place to review appropriate safety issues prior to starting fieldwork. This meeting will be held at an office location or occur in the field on the first day of work, depending on the complexity of issues to be discussed. The Remediation Contractor will prepare and maintain documentation of these meetings. Topics to be covered at these meetings will include:

- Safety plans and considerations for new job phases
- Results of safety inspections
- Review of accident history and the "Report of Accident/Incident" forms
- Any applicable safety training

Toolbox safety talks, field inspections and periodic training will help to keep workers and supervisors continually to be aware of safe work practices, hazardous site conditions, and changes in site conditions that could alter or impact established work practices. Additional safety and planning meetings will be scheduled as needed to adequately address ongoing safety issues for the remediation of the Site.

1.4.2 Project Planning and Analysis by Phase

The Remediation Contractor is responsible for planning and implementing work in accordance with this HASP. Before a job phase begins, the Remediation Contractor is responsible for having:

- A written, predetermined safe method to carry out the job,
- Properly trained employees,
- Licenses, permits and certifications in order,
- The right equipment present in good working condition, and
- All necessary PPE.

During any particular phase of work, should new or unanticipated hazards become apparent, each employee is responsible to directly communicate this information to the Remediation Contractor Project Management.

1.4.3 Report of Accidents and Emergencies

Incidents involving injuries or property damage shall be reported to the Remediation Contractor Project Management by the Site Safety Coordinator (SSC), and accident/incident reports will be completed for accidents and incidents by those Safety Coordinators. At a minimum, the information presented in the accident/incident report form (see Attachment 12) must be provided.

1.4.4 Coordination with Government Agencies

The Remediation Contractor will be responsible to contact the NYC Fire Department, NYC Police Department, NYC Department of Buildings and Building Enforcement Safety Team Squad, as needed, to identify local requirements and obtain permits of approvals required to complete the scope of work.

In the event that a City, State, or Federal official requests entry to a work location, the following should occur:

1. The senior Remediation Contractor on-site manager or supervisor should immediately be contacted for reception of the official.

2. The Remediation Contractor Health and Safety Officer (HSO) should receive immediate notification of an OSHA inspection or other safety related visit.

3. The official should be escorted to a meeting area and an opening interview should commence.

4. Should the official walk through the Site, the senior on-site manager/supervisor and Safety Coordinator/Site Safety Manager shall escort them.

5. Documentation of the site visit should be prepared by the senior on-site manager/supervisor and forwarded to Remediation Contractor Project Management.

2.0 ASSIGNMENT OF RESPONSIBILITIES

2.1 General

Activities on or around the Site are subject to this HASP. These activities include, but are not limited to, excavation, remediation, and other support activities.

Remediation Contractor personnel will be responsible for continuous adherence to the safety procedures during the performance of this work. Deviations from the procedures or intent of the HASP will not be allowed without express consent of the site HSO, who shall coordinate significant changes with Remediation Contractor Project Management. The Project Management and field supervisor staff is responsible for ensuring that their personnel follow the established procedures in this HASP. After appropriate warning and notification, Remediation Contractor personnel who violate health and safety procedures will be dismissed from site operations. It must be remembered that the person most responsible for the health and safety of an individual is the individual him/herself.

Remediation Contractor Project Management staff will participate in periodic health and safety inspections and accident investigations; attend periodic safety meetings; and coordinate on field-approach or project scope changes that could impact the project safety program. The HSO will be informed of any changes in approach that could impact existing safety protocols.

Remediation Contractor employees will be expected to sign the Employee Acknowledgement of Site Specific Health and Safety Plan Form (see Attachment 8). Project field personnel will be required to sign an acknowledgement form indicating that they have reviewed and are familiar with the applicable task-specific HASP prior to beginning the related work.

2.2 Remediation Contractor Responsibilities

The Remediation Contractor is responsible for setting safety policies as prescribed by local, state and federal jurisdictions for all work done. The Remediation Contractor will directly manage all environmental remediation activities and will be directly responsible for the implementation of the HASP for those activities.

2.2.1 Health and Safety Health Officer (HSO)

The Remediation Contractor HSO shall be responsible for providing overall technical and administrative oversight of the health and safety program, both on site and off site. Additionally, the HSO will have the following responsibilities:

- The HSO will review and approve the HASP and any changes to the plan.
- The HSO will review, if appropriate, all subcontractor HASPs for compliance with the Remediation Contractor HASP and coordinate with subcontractor personnel, as needed, on matters regarding safety program compliance.
- If appropriate, the HSO will receive and maintain documentation from subcontractor field supervisors or Site Safety Coordinators for all safety related matters, including accident record keeping, accident investigations, safety training and certifications.

2.2.2 Site Safety Coordinator (SSC)

The Remediation Contractor's Site Safety Coordinator (SSC) will be responsible for the day-to-day safety compliance of employees, during all field activities that the Remediation Contractor directly manages. The Remediation Contractor will provide a SSC for field investigation work and remediation work that the Remediation Contractor directly manages. The SSC is a full-time member of the Remediation Contractor's field staff. Depending on the complexity of the work; the Remediation Contractor's Field Supervisor may also serve as the SSC, or a separate member of the field staff will serve as SSC. The primary duties of the SSC will include:

- Directing and implementing requirements of the HASP.
- Weekly formal and daily site inspections.
- Confirming that Remediation Contractor project personnel have been adequately trained in the recognition and avoidance of unsafe site conditions, the content of this HASP, and regulations applicable to the work in order to control or eliminate hazards or other exposure to illness or injury.
- If appropriate, authorizing Stop Work Orders to subcontractors that shall be executed upon the determination of an imminent health and safety concern.

- Contacting the Remediation Contractor Project Manager and HSO on the issuance of the Stop Work Orders when the SSC has made the determination of an imminent health and safety concern.

- Authorizing work to resume upon approval from the Remediation Contractor Project Manager and the HSO.

- Directing activities as defined in this HASP during emergency situations, subject to restrictions identified in Section 6.

- The SSC will initiate evacuation procedures when necessary, subject to restrictions identified in Section 6.

The SSC will be responsible for assessing daily site activities for compliance with provisions of the HASP. Deviations will be noted, corrected, and reported to the Remediation Contractor Project Manager and HSO. The SSC or designee will ensure that required monitoring and hazard evaluations are performed. The SSC will also ensure that site safety inspection logs and documents are maintained for inspection at the jobsite as part of the Contractor's Safety Program Evaluation (see Section 2.2.4).

2.2.3 Maintenance of Records

The Remediation Contractor will maintain records pertinent to the overall safety program as described in this HASP, including meeting minutes, accident records, safety inspection records, subcontractor evaluations, records of applicable training, and records of accident investigations.

2.2.4 Contractor's Safety Program Evaluation

If appropriate, the Remediation Contractor will periodically evaluate subcontractor safety performance. Results of this evaluation may be discussed and corrected immediately or, if immediate correction is not possible, forwarded directly to the subcontractor's office for resolution. The Remediation Contractor's Project Management and the subcontractor's Project Management will receive copies of this evaluation. The Contractor's Safety Program Evaluation form can be found in Attachment 13.

2.3 Key Personnel and Emergency Telephone Numbers

The key personnel in this project and emergency phone numbers are included in Attachment 1.

2.4 Site Access and Site Security

Access to the Site will be controlled through gated entrances to the property. During remediation, personnel will be required to sign in/out when entering or leaving the Site remedial areas. After completion of remediation, there will be no required sign in/out when entering or leaving the Site. Barrier protection will be installed around work areas as needed, for delineation of and restricting access to the work areas. For work areas of limited size, barrier tape likely would be sufficient to delineate and restrict access. For larger worker areas, temporary fencing likely would be required.

If equipment and operations are carried on outside of property boundaries, the equipment must be secured to prevent injury and property damage. All moving, hot, or hazardous equipment should be secured. Access to such hazardous operations and equipment should be restricted via use of standard guard railing. If this is not possible, a watchman shall be posted for as long as the danger exists.

3.0 STANDARD OPERATING PROCEDURES

3.1 Standard Work Practices

The following work practices and engineering controls will be used during each phase of the project. The work practices are Standard Operating Procedures, and will not be deviated from without the consent of the HSO.

3.2 Safety Inspection Program

Safety inspections are a key to compliance with safety rules, and the maintenance of safe conditions. Accidents can be a direct result of whether or not these inspections have taken place. Safety inspections will take four forms:

- Everyday inspections – results of which are to be recorded by the SSC
- Weekly inspections – formal inspections that should be recorded on a form similar to the Safety Inspection Form located in Attachment 2
- Subcontractor Evaluations – as described in Section 2.2.4
- Unannounced audits performed by the HSO and/or the Remediation Contractor's Corporate Safety Director

3.3 Accident Investigations

The purpose of accident investigations is to determine the cause of an accident so that a similar accident will not occur in the future. The Remediation Contractor shall determine the nature of such accident, record the findings, and correct the cause. An Accident/Incident report form that includes an investigation similar to that attached in Attachment 12 will be completed and maintained in the project file.

3.4 Site Hazard Assessments

Hazard assessments will be performed when particular hazards are expected to exceed local, state or federal standards. Such assessments may involve the use of air sampling, or a site survey for exposure to chemicals and gases or other physical agents such as noise or electricity. During such a survey, Personal Protective Equipment (PPE) needs must be evaluated. Refer to Attachment 3 for the current Site Hazard Assessment.

3.5 Health Risks

Potential health risks will involve exposure to chemical and physical hazards. Chemical hazards may result from storage and use of caustics, oils and fuels on the Site, subsurface contaminants and gases, silica in concrete, and other hazards. Physical hazards result from exposure to falling debris, noise, construction or drilling equipment, electricity, vehicle and machinery movement, temporary utilities, general excavation risks, and risks associated with bodies of water. Work methods, when near such exposures will need pre-planning and use of exposure limiting controls such as use of a water mist when working in dusty environments, use of analytical equipment for detection of vapors and gases, as well as the use of PPE to aid in the control of many exposures.

3.6 Fire and Explosion Safety Hazards

There are moderate fire and explosion hazards currently present on the Site. Fire and explosion hazards include exposures to explosive levels of combustible gases, the possible presence of hydrogen sulfide (H_2S) and volatile organic compounds during excavation. Volatile organic compounds are present in the soil, groundwater and possibly soil gas. Vapor, H_2S and LEL/UEL monitoring will be necessary during all on-site activities where flammable/ combustible exposures exist.

3.7 Electrical Utilities

The majority of the anticipated remediation will occur in areas where there are no known active subsurface electrical utilities. In addition, Remediation Contractor's remediation follows structure demolition and hence disturbance of any electrical utilities. If utilities are identified or off-site work is conducted, the Remediation Contractor will implement the following subsurface utility clearance procedure:

- The Remediation Contractor will review available site plans for work involving activities at or near utilities.
- For environmental drilling and other environmental investigation work, Remediation Contractor utility mark-out personnel has conducted a geophysical survey around all

sampling locations to identify subsurface electric utilities and mark the centerline of underground lines.

- Drilling or excavation personnel will notify the NYC One Call Center at (800) 272-4480, in accordance with Code 753, a minimum of 5 working days prior to any drilling or excavation on streets and sidewalks.

Workers engaged in these activities shall wear tested approved rubber gloves with leather protectors certified for the applicable voltage. Workers shall be provided with any needed insulating materials including insulating sticks, sleeves and shoes, blankets and mats rated for the work being performed where a possibility for exposure to live equipment exists. The grounding wire of the tools shall be used and the tools shall be tested before using to verify grounding is adequate and the tolls are functioning properly.

3.8 Lockout-Tagout

This procedure establishes the requirements for the lockout/tagout (LOTO) of energy isolating devices in accordance with the OSHA electrical lockout and tagging requirements as specified in 29 CFR 1926.417. This procedure will be used, as possible, to ensure that all machines and equipment are isolated from potentially hazardous energy. If possible, equipment that could cause injury due to unexpected energizing, start-up, or release of stored energy will be locked/tagged, before field personnel perform work activities.

The Remediation Contractor's SSC will serve as the authorized lockout/tagout coordinator, implement the lockout/tagout procedure and will be responsible for working with authorized site representatives to locate, lock and tag valves, switches, etc.

SPECIAL NOTE: Project personnel will assume that all electrical equipment at surface, subsurface and overhead locations is energized, until equipment has been designated and confirmed as de-energized by an authorized site representative. The Remediation Contractor will notify the designated site representative prior to working adjacent to this equipment and will verify that the equipment is energized or de-energized in the vicinity of the work location.

No project work shall be performed by Remediation Contractor personnel on or near energized electrical lines or equipment unless hazard assessments are completed in writing, reviewed by the Remediation Contractor's HSO, and clearly communicated to the field personnel.

The SSC will conduct a survey to locate and identify all energy isolating devices. They should be certain which switches, valves or other isolating devices apply to the equipment. The lockout/tagout procedure involves, but is not limited to, electricity, motors, steam, natural gas, compressed air, hydraulic systems, digesters, sewers, etc. A description of the LOTO procedure is attached in Attachment 14.

3.9 Drilling Operations

Depending on the particular drill rig employed, drilling operations can present exposure to the following:

- Flying objects (chipped asphalt or concrete, soil) and dust. Measures used to control such exposures will include use of water misting apparatus to keep dust down, or use of a guard installed around the drill to protect against flying objects and dust.
- Underground utilities present fire, electrocution, burn and explosion hazards. Positions of gas, electric and steam utility lines will be verified as described in Section 3.7. If possible, all lines in the area of drilling will be de-energized, locked-out, and tested before work begins.
- Assembling and disassembling rigs, rotary and auger drilling, and grouting.
- Perimeter protection in the form of barricades is necessary for the protection of employees and the public. Such protection will meet requirements set forth in 29 CFR 1926, as well as in the New York City Building Code, Article 19.
- All subsurface utility lines in the area of drilling will be identified jointly with the Remediation Contractor utility mark-out personnel and NYC One-Call Center.

3.10 Fall Protection

Fall protection is required when a fall hazard or a hazard of falling objects exists 6 feet above the lower level. Areas that should be protected include ramps, runways, walkways, excavations, hoist areas, holes, leading edge work, unprotected sides and edges, roofing work, and wall openings. Control of these exposures will be provided via:

- Use of a "Controlled Access Zone" such as in bricklaying operations, where there exists a leading edge exposure. The zone may be anywhere from 6 to 25 feet from the edge. All, but authorized personnel will be restricted. The zone will be flagged or clearly marked off via use of a highly visible material that will sustain a stress of not less then 200 pounds. Control lines shall not be less than 39 inches at the lowest point or more than 45 inches at the highest point.

- Covers located in roadways and vehicular aisles that support at least twice the maximum axle load of the largest vehicle.

- Guardrail Systems – The standard guardrail shall have a top rail of 42 inches, a mid-rail of 21 inches or the installation of screens, mesh, intermediate vertical members, and a toe board. Such systems should be able to withstand a force of 200 pounds.

- Personal Fall Arrest Systems – These consist of an anchorage, connectors, and a body belt or harness. It will be rigged so that employees can neither free fall more than 6 feet or contact any lower level.

- Safety net systems as required under NYC local code, Article 19.

3.11 Confined Space Entry

The Remediation Contractor's confined space entry program has been established to set standard requirements for practices and procedures to protect employees from hazards of entry into confined spaces, as outlined in OSHA 29 CFR 1910.146. The Remediation Contractor's complete confined space entry program is included in Attachment 9.

All persons required to work in confined spaces will receive training at least annually in the following.

- Entry permit system
- Entry and rescue procedures
- Use of safety equipment
- General first aid
- Use of respirators
- Work practices as described in the Confined Space Entry Plan
- Monitoring results

Persons will be made aware of hazards associated with confined spaces. Before entering a confined space, work teams will prepare and review a Confined Space Entry Plan. Specific hazards of each confined space will be discussed.

3.12 Vehicular Traffic

When working in or near active streets, all project personnel shall wear orange safety vests. New York City requirements indicated in the codes on the work permit shall also be followed without deviation. Control procedures will include one or more of the following:

- Advance warning signs, warning flashers, message arrows or flashing arrows to alert motorists of physical conditions ahead;
- Manhole guard rails to protect personnel and pedestrians;
- Stanchions and boundary tape, barricades, cones to outline the boundaries of the work area and to limit public access;
- Signaling devices such as signal flags, signal lights and paddles to signal oncoming traffic;
- Safety vests worn by personnel to alert oncoming traffic to their presence; and
- Low intensity lights placed on barricades to outline excavations.

3.13 Protection of the Public

Provision shall be made for the care and maintenance of public thoroughfares. Sidewalks shall be kept clean and free of ice, snow and debris. Gates will open into the Site. Sidewalk sheds, and vertical and horizontal netting will be constructed in accordance with NYC Article 19 and maintained daily.

Flagmen will be utilized any time a construction vehicle interferes with traffic or crosses a sidewalk or a crane is used to lift materials over the sidewalk.

3.14 Hearing Conservation

Under the construction industry standard, the maximum permissible occupational noise exposure is 90 dbA (8-hour TWA), and noise levels in excess of 90 dbA will be reduced through feasible administrative and engineering controls (20 CFR 1926.52). To determine if noise levels have been exceeded, dosimetry for such exposures should be conducted. Attachment 15 provides information on these procedures.

3.15 Heat Stress

Heat stress is a result of a build-up of heat in the body. This can occur when the body produces heat at a greater rate than it is dispersed by conduction, radiation, and evaporation of sweat from the surface of the skin. The internal heat of the body is brought to the surface by blood. When heat build-up occurs, the body temperature is raised causing a fever. When this condition exists it produces a cycle that further aggravates the situation. The fever causes certain body functions to accelerate. This generates excess heat that must be dispersed in addition to the normal heat generated by a person's body. Heat loss from the body is slow during conditions of high temperature and high humidity, such as a hot, humid day. These conditions, however, can be artificially caused by the wearing of non-porous, protective clothing. Therefore, caution should be exercised during field activities performed within high temperature environments.

Based on the allowable work periods (minutes per hour), a work rest regimen will be established based upon ambient conditions at the start of the job, and the acclimatization of the workforce in those conditions. Temperature extremes, as determined by a globe thermometer device (WBGT or equivalent) will require scaling back work cycles within the regimen. Greater active work times are allowable, so long as no symptoms of heat stress are noted. Heat stress symptoms are discussed in detail below.

There are three classes or types of heat stress: heat exhaustion, heat cramps, and heat stroke.

<u>Heat Exhaustion</u>

Heat exhaustion is brought about by the concentration of blood in the vessels of the skin. This condition may lead to an inadequate return of blood to the heart and, eventually, to physical collapse. The symptoms are:

- General weakness
- Excessive perspiration
- Dizziness
- Appearance of having fainted

- Pale and clammy skin
- Weak pulse
- Rapid and shallow breathing

To treat for heat exhaustion, place the individual in a cool place and remove as much clothing as possible. The individual should drink cool water, "Gatorade", or other similar liquid. The individual should be fanned, however, do not over cool or allow chilling. Treat the individual for shock and remove to medical facility if condition persists.

Heat Cramps

Heat cramps are usually caused by loss of salt when an individual has perspired a great deal. Drinking iced liquids quickly or in large amounts can also cause cramps usually in the leg and abdominal muscles. The systems of heat cramps are as follows:

- Pain and cramps in legs or abdomen
- Faintness
- Profuse perspiration

Heat Stroke

Heat stroke is a breakdown of the body heat-regulating mechanism causing high fever and collapse. This condition can result in unconsciousness, convulsions, and even death. Persons in poor physical condition or of advanced age are particularly susceptible. The symptoms of heat stroke are:

- Muscle twitching or convulsions
- Dry hot skin
- Flushed skin
- Suddenness of condition
- High body temperature
- Loss of consciousness
- Deep breathing, then shallow or absent
- Dilated pupils

Heat stroke is a serious condition for which an individual should be transported to a medical facility as soon as possible. In the interim the following steps should be taken. The individual should be removed to a cool environment and the body temperature should be reduced promptly by dousing the body with water or by wrapping in a wet sheet. If ice is available, it should be placed under the arms and around the neck and ankles. Drinking water should be provided. Intake of these liquids will be monitored by supervision so as not to be excessive. Steps should be taken to protect patient from injury during convulsions, especially from biting the tongue.

To avoid problems from heat stress during conditions of high temperature and humidity, supervisors should insure that the employees drink plenty of fluids; should provide breaks in accordance with the previously outlined guidance and monitoring; and should revise work schedules as necessary to take advantage of the cooler parts of the day. Some basic guidelines for maintaining workers' body fluids at normal levels during conditions of high temperature and humidity are as follows:

- Have workers drink 16 ounces of fluid before beginning work.
- Have workers drink 4 to 8 ounces of fluid every 15 to 20 minutes, or at each scheduled break. A total of 1 to 1.6 gallons of fluid per day are recommended, but more may be necessary to maintain body weight.

To measure the effectiveness of the heat recovery rest periods, the employee heart rate should be monitored as follows:

- Count the pulse rate for the last 30 seconds of the first minute of a three-minute period, the last 30 seconds of the second minute, and the last 30 seconds of the third minute.
- Double the count to obtain an equivalent one-minute rate.

If the first rate is less than 100 beats/minute and the second two readings are at least 10 beats/minute less than the previous reading than the rest periods should be considered adequate. Otherwise, the rest periods should be extended.

Another method of measuring the effectiveness of the rest periods is to take oral temperatures. If body temperature exceeds 100°F, then the rest periods should be extended.

If heat stress may be a factor due to ambient temperature and humidity, then it is recommended that both methods be used. In addition, these tests should be performed in the morning prior to any work to establish a background level.

3.16 Cold Stress

The single most important aspect of hypothermia (cold stress) is the fall in the deep core temperature of the body. Workers should be protected from exposure to cold so that the deep core temperature does not fall below 36ºC (96.8ºF). Lower body temperatures will very likely result in reduced mental alertness, reduction in rational decision-making, or loss of consciousness.

Pain in the extremities may be the first early warning of danger to cold stress. During exposure to cold, maximum severe shivering develops when the body temperature has fallen to 35ºC (95ºF). This must be taken as a sign of danger to the workers and exposure to cold should be immediately terminated for all workers when severe shivering becomes evident. Useful physical or mental work is limited when severe shivering occurs.

Since prolonged exposure to cold air at temperatures well above freezing can lead to dangerous hypothermia, whole body protection must be provided. Adequate insulating clothing to maintain core temperatures above 36ºC must be provided to workers if work is performed in air temperatures below 4ºC (40ºF). In addition, it should be kept in mind that, the higher the wind speed and the lower the temperature in the work area, the greater the insulation value of the protective clothing required. Special protection of the hands is required to maintain manual dexterity for the prevention of accidents:

- If fine work is to be performed with bare hands for more than 10-20 minutes in an environment below 16ºC (60ºF), special provisions should be established for keeping the workers' hands warm. Metal handles or tools and control bars should be covered with thermal insulating material at temperatures below -1°C (30ºF).

- If the air temperature falls below 16ºC (60ºF) for sedentary, 4ºC (40ºF) for light, -7ºC (20ºF) for moderate work and fine manual dexterity is not required, then the workers must use gloves. Winter “Monkey-grip” gloves consisting of a cotton lining with a textured PVC coating are typically used in cold weather. To prevent contact frostbite, the workers should wear anti-contact gloves.

Provisions for additional body protection is required if work is performed in an environment at or below 4ºC (40ºF). The workers shall wear cold protective clothing appropriate for the level of cold and physical activity:

- If the air velocity at the job sites is increased by wind, draft, or artificial ventilating equipment, the cooling effect of the wind shall be reduced by shielding the work area, or by wearing an easily removable outer windbreak layer garment.

- If only light work is involved and if the clothing on the worker may become wet on the job site, the outer layer of the clothing in use may be of a type impermeable to water. With more severe work under such conditions, the outer layer should be water repellent and the outerwear should be changed as it becomes wetted. The SSC should assure that adequate replacement garments are available for use by the employees.

- If the available clothing does not give adequate protection to prevent hypothermia or frostbite, the SSC can suspend work on the Site until adequate clothing is available or until weather conditions improve.

- Workers handling evaporative liquids (gasoline, alcohols, solvents, etc.) at air temperatures below 4ºC (40ºF) shall take special precautions to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury due to evaporative cooling.

3.17 Biological Hazards

There may be a possible hazard arising from poisonous plants, such as poison ivy, and from some animals, such as snakes, rats, and insects such as ticks. Remediation Contractor personnel shall avoid all contact with animals.

All Remediation Contractor personnel will be trained to identify poison ivy during the preliminary site safety meetings.

Insects, including ticks, bees, wasps, hornets and spiders, may be present at the Site making the chance of a bite possible. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition. Personnel that have been bitten or stung by an insect at the Site should notify the Remediation Contractor HSO of such immediately. The following is a list of preventive measures:

- Apply insect repellent prior to fieldwork and or as often as needed throughout the shift.

- Wear proper protective clothing (work boots, socks and light colored pants).

- When walking in wooded areas, to the extent possible avoid contact with bushes, tall grass, or brush.

Field personnel who may have insect allergies (i.e., bee sting) should provide this information to the Remediation Contractor HSO or his designee prior to commencing work, and shall have allergy medication on Site.

The Remediation Contractor HSO will instruct the project personnel in the recognition and procedures for encountering potentially hazardous insects at the Site.

Mosquitoes infected with the West Nile Virus have been identified in the New York City Metropolitan area. Field personnel will acquaint themselves with the symptoms associated with West-Nile Virus and will contact a physician, as well as the Remediation Contractor HSO, if the disease is suspected.

Lyme disease is caused by infection from a deer tick that carries a spirochete. During the painless tick bite, the spirochete may be transmitted into the bloodstream, which could lead to the worker contracting Lyme disease. This flu like illness commonly happens between May and October when ticks are more active. Symptoms can include a stiff neck, chills, fever, sore throat, headache, fatigue and joint pain. Early signs may include an expanding skin rash and joint pain. If left untreated, Lyme disease can cause serious nerve or heart problems as well as a disabling type of arthritis. If personnel feel sick or have signs similar to those above, they should notify the HSO immediately.

It is recommended that personnel check themselves when in areas that could harbor deer ticks, wear light color clothing and visually check themselves and their buddy when coming from wooded or vegetation-covered areas. If a tick is found biting an individual, the HSO should be contacted immediately. The tick can be removed by pulling gently at the head with tweezers. The affected area should then be disinfected with an antiseptic wipe.

3.18 Working Over or Near Water

Remediation Contractor personnel working over or near water, where the danger of drowning exists, shall wear U.S. Coast Guard-approved life jacket or buoyant work vests. A warning indicator consisting of snow fence, string with flagging, or other approved equal shall generally be placed and maintained at a distance of approximately ten feet from the water’s edge in areas of bulkhead replacement. When the warning indicator needs to be removed (partially) to facilitate access for personnel or equipment performing a near water work activity, workers performing the subject work activity shall wear life jackets or buoyant work vests.

Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.

4.0 PERSONAL PROTECTIVE EQUIPMENT

Personal safety protection will be required during all site activities at most of the site locations unless information is obtained indicating that contaminants are not present. Conditions may develop that would require increased protective measures that would require the HSO/SSC to stop operations and evaluate the situation. Respirators may be needed on this project. It is anticipated that most work will be performed under Level D protection that consists of the following:

Level D

a) Work uniform (overalls)
b) Steel-toe work boots
c) Hard hat
d) Safety glasses
e) Hearing protection
f) Gloves
g) Orange Safety Vests (working in or near streets)

If excessive vapors are detected at action levels (See Section 8.2) or direct contact with grossly contaminated media is expected, workers will upgrade to Level C protection. Level C protection consists of the following:

Level C

a) Full body disposable suits appropriate for chemical resistant exposure
b) Chemical resistant work boots
c) Hard hat
d) Safety glasses
e) Hearing protection
f) Inner and outer chemical resistant gloves
g) Half-face or full-face Air Purifying Respirator, with appropriate cartridge
h) Orange Safety Vests (working in or near streets)

Level B protection is required when the atmospheric concentration of substances have been identified and require a high level of respiratory protection, but less skin protection. Level B protection consists of the following:

Level B

a) Full body disposable suits appropriate for chemical resistant exposure
b) Chemical resistant work boots
c) Hard hat
d) Safety glasses
e) Hearing protection
f) Inner and outer chemical resistant gloves
g) Pressure-demand, full-face piece SCBA or pressure-demand supplied-air respirator with escape SCBA
h) Two-way radio communication

Level A protection is required when the chemical substance requires the highest level of protection; and gases and vapors pose a hazard should skin contact occur. Level A protection consists of the following:

Level A

a) Fully encapsulating, chemical resistant suit
b) Chemical resistant work boots
c) Hard hat
d) Inner and outer chemical resistant gloves
e) Pressure-demand, full-face piece, SCBA or pressure-demand supplied-air respirator with escape SCBA
f) Two-way radio communication

All workers will change clothes at the end of the work shift to minimize bringing potentially contaminated soil off site and to reduce cumulative build-up in personal vehicles. Boots will be changed prior to leaving the site to reduce tracking of soil off-site. This procedure prevents workers from bringing impacted materials off site. Personal lockers or storage boxes for storage of work clothes are recommended. If disposable coveralls are used, they will be collected in 55-gallon drums on-site for periodic disposal, as specified in the Work Plan.

5.0 TRAINING

5.1 Site Training Requirements

The following training requirements shall be addressed for Remediation Contractor employees. Copies of all training rosters and agendas, and required training certificates shall be forwarded for the review of the HSO.

- HAZWOPER – for those employees involved in site remediation operations
- Hazard Communication Training
- Emergency Evacuation
- Respirator Protection – for those workers required to use respirators
- Confined Space Entry – for those workers involved in such situations
- Personal Protective Equipment Training
- Hearing Conservation
- Trade Specific Requirements

The HSO and SSC and other supervisory personnel must have attended additional site-specific training to:

- Ensure maximum regard for the health and safety of all employees, the public, and the environment;
- Comply with all laws, rules, and regulations required to safeguard the health and safety of all employees, the public, and the environment;
- Increase the ability of employees to react responsibly and safely under normal conditions and during emergency situations; and
- Educate personnel relative to potential site hazards, adverse chemical effects, and the importance of good safety and industrial hygiene practices.

Formal safety training programs will be held periodically to refresh employees' health and safety awareness.

5.1.1 HAZWOPER Training

Remediation Contractor employees involved in soil excavations and management must have 40-hour HAZWOPER Training as defined in OSHA 29 CFR 1926.65 and 29 CFR 1910 and based on a written site analysis. Certificates of completion of HAZWOPER training for those workers requiring it must be presented to the HSO, and maintained in the project file for the duration of the project. Copies of the training certificates will be placed in Attachment 4.

5.1.2 Hazard Communication Training

Workers will be trained prior to the start of a job in accordance with 29 CFR 1926.59. Workers will receive training for exposure to chemical contaminants, as well as for chemicals brought in on the job. Chemicals to be brought to the job must receive the approval of the Remediation Contractor Project Manager, HSO and SSC prior to use, including the provision of MSDS sheets prior to use. The SSC, HSO, and the Remediation Contractor Project Manager must be made aware of any changes made with regard to chemical use on the job. Refer to Attachment 10 for the formal Hazard Communication Plan.

5.1.3 Emergency Evacuation Training

In every location where a crew may be located, an emergency evacuation procedure must be in place. This means that at least two routes of egress from an area must be located, and a designated assembly area identified. The SSC or a field supervisor for each new location must relay this information to all workers before work begins.

5.1.4 Respirator Protection Training

In areas where respiratory protection is required, employees are required to have annual training and documentation completed. This is only a part of other requirements mandated to include a medical clearance and respirator fit testing. Please refer to Attachment 11 for the Respiratory Protection Program.

5.1.5 Confined Space Entry Training

Training required for workers involved with confined spaces is an annual requirement. Persons will be made aware of hazards associated with confined spaces. Before entering a confined space, work teams will prepare and review a Confined Space Entry Plan. Specific hazards of each confined space will be discussed. The Confined Space Entry Program is attached in Attachment 9.

5.1.6 Personal Protective Equipment Training

Workers are required to have this training at least initially before beginning work at a particular job requiring PPE. PPE training is again required when the job task changes and different chemical or physical exposures are encountered. Employers should keep records of all training and any updated training efforts. These records shall be available to the HSO for review.

5.1.7 Hearing Conservation Training

For those employees exposed to an 8-hour time-weighted average noise exposure of 90 dbA or more, hearing conservation training is required on an annual basis. Additionally, annual medical evaluations and engineering corrections and/or provision of hearing protection is necessary. Exposures to impulse/impact noise shall not exceed a 140 dbA peak sound pressure level.

5.1.8 Trade Specific Requirements

Specialized training shall be provided when serious hazards are present for which employees lack the specific training to do the job safely. Examples of this would include Electrical Safety training needed for the unusual circumstances presented in this project.

5.2 Tool Box Safety Talks

Toolbox safety talks will take place before the job begins, in order to review:

- Best methods used for tasks scheduled that day, tool selection, and anticipated problems.
- Each worker will be provided access to a copy of the site safety plan and the plan will be reviewed with each worker performing work on site.
- Workers assigned a respirator shall have been fit-tested with their individual respirator. Fit testing will be performed in accordance with 29 CFR 1926.1128. (Fit testing will occur only if it is determined that an upgrade to Level C PPE is required, and will occur prior to Level C work.).
- On-site personal hygiene will be reviewed to prevent contaminants from being brought off site on clothing or footwear.
- Decontamination procedures will be reviewed and demonstrated when necessary.

- Emergency procedures including emergency alarms and exits will be reviewed.

- A review of the area(s) that will be classified as restricted access area(s) and the methods employed to designate these areas.

6.0 EMERGENCY PROCEDURES

Should outside assistance be needed for accidents, fire, or release of hazardous substances, the emergency numbers will be available and posted at the site (see Attachment 1) where a readily accessible telephone is made available for emergency use.

Also, in the event of an incident where a team member becomes exposed or suffers from an acute symptom from contact with site materials and has to be taken to a hospital, a short medical data sheet for that individual will be made available to the attending physician. The medical data sheet will include the following:

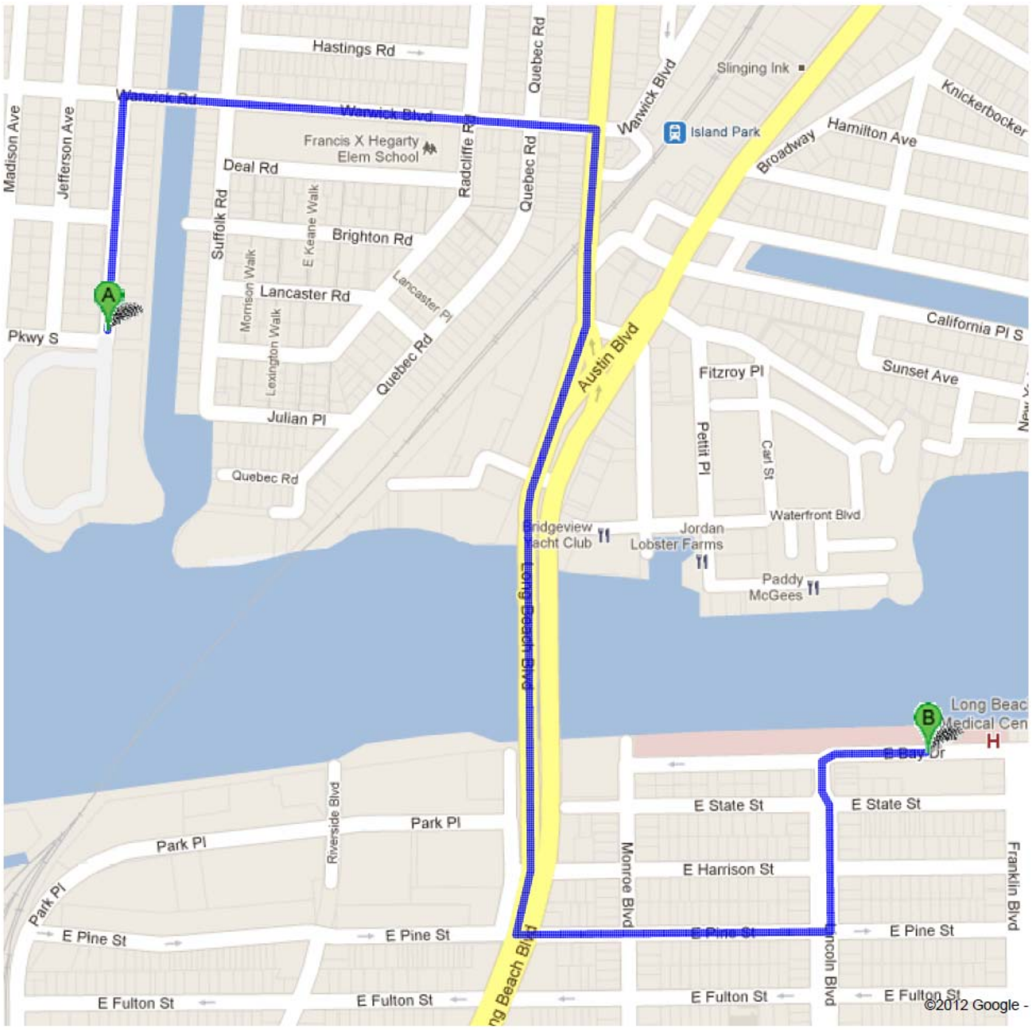
- Name, address, home phone
- Age, height, weight
- Name of person to be notified in case of an accident
- Allergies
- Particular sensitivities
- Does he/she wear contact lenses
- Short checklist of previous illness
- Name of personal physician and phone
- Name of company physician and phone
- Prescription and non-prescription medications currently used.

A sample medical data sheet is included in Attachment 5. A map showing the directions to the two nearest hospitals is included as Figure 6-1.

6.1 Emergency Site Evacuation Procedure

In the event that an emergency situation arises, including but not limited to fire, explosion or significant toxic gas release into the ambient atmosphere, the SSC will implement an immediate evacuation of all project personnel due to immediate or impending danger.

Figure 6-1
Directions to
Long Beach Medical Center
455 East Bay Drive
Long Beach, New York 11561
516.897.1000



Driving Directions:	**Distance (miles)**
1. Head north on Washington Ave toward Brighton Blvd	0.2 mi
2. Take the 1st right onto Warwick Blvd	0.4 mi
3. Turn right onto Long Beach Rd	0.6 mi
4. Turn left onto E Pine St	0.2 mi
5. Take the 2nd left onto Lincoln Blvd	0.1 mi
6. Turn right onto E Bay Dr, Destination will be on the right	

The SSC or Field Supervisor will serve as the Designated Incident Commander (DIC). After the emergency has been resolved, the DIC will indicate when staff should resume their normal duties. If dangers are present for those at the designated assembly point, another designated location of assembly will be established.

It will be the responsibility of the SSC or Field Supervisor to report a fire or emergency to Remediation Contractor Management, assess the seriousness of the situation, and initiate emergency measures until the arrival of local fire fighters or other first responders, should they be necessary. The SCC, working with Remediation Contractor Management, may also order the closure of the site for an indefinite period as long as it is deemed necessary.

Under no circumstances will incoming visitors be allowed to proceed to the area of concern, once an emergency evacuation has been implemented. Visitors or other persons present in the area of the emergency shall be instructed to evacuate the area. The SSC will ensure that access roads are not obstructed and will remain on site to provide stand-by assistance upon arrival of emergency personnel.

If it is necessary to temporarily control traffic in the event of an emergency, those persons controlling traffic will wear proper reflection warning vests until the arrival of police or fire personnel.

6.2 Alarms

Air horns shall be kept on site by each work crew or in each work area for use as an alarm system. Five short air horn blasts will be used to signal an emergency and immediate site evacuation at sites.

6.3 Routes of Egress

Exit facilities shall be indicated on site plans. At least two paths of egress shall be kept functional for all work locations, and these paths shall be discussed during the tool box meetings. Before a job begins in a new location, training shall be initiated to inform workers of at least 2 paths of egress.

6.4 Designated Assembly Locations

Personnel will evacuate the site and assemble at a designated assembly location. The assembly locations for each property will be communicated during the toolbox meetings.

6.5 Accounting for Personnel

Remediation Contractor supervisors are responsible for the accounting of all personnel assembled at the designed assembly areas. The Designated Incident Commander shall be notified if personnel are not found.

7.0 MEDICAL PROCEDURES

Remediation Contractor employees will be required to complete the Employee Medical Data Sheet (see Attachment 5). This sheet is especially useful should a worker become non-coherent as the result of an accident. It should be given to hospital staff providing them valuable medical data.

7.1 Physical Examination Documents

Employees whose work assignments require their presence at a hazardous work site will have a baseline medical evaluation prior to commencement of hazardous work activity. The baseline medical evaluation consists of the following [*=Required; •=Preferred]:

- * Medical and Occupational History
- * Physical Examination
- * Pulmonary Function
- * EKG (over 40 years of age)
- • Urinalysis
- • CBC (with differential and RCB) Chem 24 (SMAC)
- • RBC Cholinesterase
- • Urine Heavy Metal Panel
- • Blood Lead with zinc protoporphyrin (zpp)
- • Chest X-Ray (2-view)
- • Audiometry

The annual medical evaluation consists of the following [*=Required; •=Preferred]:

- * Physical Examination and History
- * Pulmonary Function
- • Urinalysis
- • CBC (with differential and RCB) Chem 24 (SMAC)
- • RBC Cholinesterase
- • Blood Lead with zpp
- • EKG (Over 40 years of age)
- • Audiometry

Additional tests that may be performed as part of the annual examination include the following [*=Required; •=Preferred]:

- Cholinesterase - plasma
- Urine - heavy metal
- Blood - PCB
- Chest X-Ray (2-view)

Based upon this examination and a review of the employee's job description, the physician identifies any medical restrictions that would affect an employee's ability to safely perform his/her job. If no restrictions are imposed, the physician certifies the employees as capable of full participation in the work program. A form such as the one attached in Attachment 6, Medical Evaluation Form, will be used.

If an employee suspects exposure to a toxic chemical or other hazard while performing project tasks, additional tests may be ordered immediately following the exposure period. Individuals are encouraged to discuss changes in their health status with their respective corporate safety manager and/or physician.

7.2 Access to Exposure and Medical Records

Instructions regarding the existence, location, availability of employee medical records shall be provided to the employee for all medical exams conducted as a result of their employment, and at least annually. Employee access to records shall be provided in a reasonable time, place and manner, but on no event later than fifteen days after the request is received.

7.3 Physical Examination and Respirator Approval

Each employee required to wear a respirator will obtain medical clearance from a physician for the respirator type to be used before wearing such respiratory protection. Additionally, each employer must select a respirator acceptable for use and that will provide the correct protection for the specific exposure. The employer is responsible for administering fit tests for all new respirators used by employees, and must administer training on a yearly basis.

7.4 Emergency First Aid

All accidents or near miss incidents will be dealt with in a manner to minimize further injury to the individual or others. In the event that an accident does occur, the following general procedures will be followed:

- First aid and other appropriate action shall be given by the qualified individual closest to the event.
- Contact hospital and arrange for ambulance if necessary.
- Should the individual require hospital treatment, forward a copy of the Employee Medical Data Sheet (see Attachment 5), to provide needed information to the medical staff.
- As soon as practicable, the incident shall be reported to the HSO and the Project Manager. The SSC and the HSO, shall be responsible for making all decisions concerning treatment, and/or other appropriate action.

The accident investigation reports/forms as provided in Attachment 12 will be completed and forwarded to the Remediation Contractor SSC and HSO and will be kept in the project file.

7.5 Emergency Medical Procedures

Should an accident occur during a job related activity in which personnel are injured, the following actions will be taken:

- The SSC will assume control, and will notify emergency personnel by calling 911 to request an ambulance.
- The SSC will designate a person to flag down the ambulance and direct it to the injured person.
- Companion personnel who are unaffected by the incident or personnel partially dressed in protective gear but outside the work zone will be alerted to rescue any workers whose health or safety is endangered.
- Under no circumstances shall rescue be attempted without first obtaining help, and re-assessment of hazardous conditions.

- The buddy system will be enforced. Victims will be located and their conditions will be assessed. If possible, the hazardous situation will be brought under complete or temporary control and victims will be assisted or removed from the area.

- The SSC will determine, based on the type and severity of the illness or injury, whether or not to decontaminate the victim, and whether the victim needs to be stabilized.

- Should the individual require hospital treatment, forward a copy of the Employee Medical Data Sheet, attached in Attachment 5, to provide needed information to the medical staff.

The SSC will insure that well-stocked first aid kits are present at the work site at all times. Portable eyewash units or low-pressure hoses will also be maintained at the work area.

7.6 Accident and Injury Report Forms

7.6.1 Accident/Incident Report

All injuries, no matter how slight, shall be reported to the SSC. An accident/incident report form (see Attachment 12) will be filled out on all accidents by the applicable Remediation Contractor supervision personnel or the SCC. Copies of all accident/incident reports shall be kept on site and available for review. Project personnel will be instructed on the location of the first-aid station, hospital, doctor and ambulance service near the job. The emergency telephone numbers will be conspicuously posted in site vehicles near the work zone. First-aid supplies will be centrally located and conspicuously posted between restricted and non-restricted areas to be readily accessible to all on the site.

7.6.2 First Aid Treatment Record

The form located in Attachment 7(GI) will be used for recording all non-lost-time injuries treated by the project first-aid attendant, the local physician or hospital will be entered in detail on this record. "Minor" treatment of scratches, cuts, etc. will receive the same recording attention as treatment of more severe injuries.

7.6.3 Occupational Injuries and Illnesses Form

A report of recordable occupational injuries and illnesses as required by the regulations issued under OSHA shall be recorded on the OSHA 300 form (see Attachment 7(G3)). A recordable injury or illness is one that requires more than first-aid treatment. Occupational injuries and illnesses shall be recorded within 48 hours of a recordable case as required by statute. This is the responsibility of the employer, and will be recorded by the SSC, or designate, in so far as reportable injuries/illnesses happen to on-site employees. Copies of OSHA 101 (see Attachment 7(G2)) forms shall be sent to the HSO. It shall be the responsibility of the HSO to complete and keep up to date the OSHA log 300 form (see Attachment 7(G3)) for their respective employees on-site. Entries into this form must be within 48 hours.

The HSO, SSC and Remediation Contractor Project Management staff reserves the right to review OSHA First Report of Injury and 300 forms.

8.0 ENVIRONMENTAL CONSIDERATIONS

8.1 Hazardous Substance Assessments

Hazardous Substance Assessments are to be completed for each phase of work as required by OSHA, 29 CFR 1926.65. Where there is a possibility of an exposure to employees of a hazardous discharge, procedures necessary to guard against an occurrence will be discussed at the weekly safety meetings.

8.2 Site Air Monitoring

An essential component in maintaining low exposure to site workers is air monitoring of work operations. The primary contaminants that have been identified at the Site during previous site investigations are constituents of weathered petroleum, specifically, non-targeted volatile organic compounds (VOCs) and non-targeted semivolatile organic compounds (SVOCs). Polycyclic aromatic hydrocarbons (PCBs), metals and have been detected and are expected to be present at drilling and excavation locations. At some isolated locations, targeted volatile organic compounds (VOCs), targeted semivolatile organic compounds (SVOCs), metals, and polychlorinated biphenyls (PCBs) have been found in the soil and/or groundwater. Real-time dust monitoring will be conducted using a Mini Real-Time Aerosol Monitor (Mini RAM), DataRAM or similar instrument. Site air monitoring also will include utilizing a Photoionization Detector (PID). Sampling will be performed upwind and downwind of the work area and will be recorded in the site log and used to determine if excessive dust levels are present on-site and off-site. The SSC or an air-sampling technician will perform air monitoring. Based on the results of the air monitoring, the HSO will decide on upgrading dust control measures.

8.2.1 Community Air Monitoring Plan

The proposed CAMP monitoring for the Site will be performed at the upwind and downwind perimeter of the Site during remediation phase ground intrusive activities. At both the upwind and downwind end of the Site, air monitoring will include continuous, real-time air monitoring for particulates measuring less than 10 micrometers in size (PM-10). At the downwind end of the Site, periodic, real-time air monitoring for VOCs will occur. In areas of VOC and SVOC contamination, real-time air monitoring for VOCs will be conducted continuously.

The response levels and actions for the air monitoring will follow the GCAMP protocol:

- If VOC levels > 5 part per million (ppm) over a 15-minute, running average = work activities to be temporarily halted;
- If VOC levels > 5 ppm but < 25 ppm of VOCs = work activities halted; source identified, and corrective actions taken to abate VOC emissions so that VOC levels are less than 5 ppm;
- If VOC levels >25 of VOCs = site activities will be shut down, and the source of the VOC contamination will be investigated and appropriate corrective action will be taken;
- If downwind PM-10 particulate levels >100 micrograms per cubic meter ($\mu g/m^3$) above background (upwind) = work stopped and resumed only after dust suppression measures are implemented and downwind PM-10 particulate levels are < 150 $\mu g/m^3$ above background; and,
- If downwind PM-10 particulate levels > 150 mcg/m3 above background after dust suppression, work will be stopped, and a reevaluation of activities initiated. Confirmatory air samples will be collected at the downwind and upwind site perimeter and analyzed for lead, arsenic, and PAHs.

If warranted by air monitoring results, additional dust suppression measures will be implemented. This could include any of the following:

- Applying water
- Wetting equipment
- Spraying work area
- Utilizing alternate methods

Background air monitoring will be performed prior to the start of the workday. Sampling will be performed at an upwind location at the property boundary for a minimum of fifteen minutes. Sampling will be performed continuously at downwind locations. Monitoring results will be kept in a logbook and used to initiate additional dust control measures as necessary.

8.2.2 Exclusion Zone Monitoring for Worker Health and Safety Determinations

Atmospheric air monitoring results are used to provide data when exclusion zones need to be established and when certain levels of personal protective equipment are required. For all instruments, there are site-specific action level criteria which are used in making field health and safety determinations. Other data, such as the visible presence of contamination or the steady state nature of air contaminant concentration, are also used in making field health and safety decisions. Therefore, the SSC, with the approval of the HSO, will establish an exclusion zone or require a person to wear PPE although atmospheric air concentrations are below established HASP Action Levels.

Real-time air monitoring will be conducted for volatile organic compounds (VOCs), combustible and toxic gases and vapors, oxygen, and dust levels. A photoionization detector (PID) will be used to monitor airborne VOC concentrations at breathing zone levels during intrusive work. A combustible gas indicator (CGI) will be used in conjunction with an oxygen/hydrogen sulfide/carbon monoxide detector to monitor for the presence of combustible/toxic gases and oxygen deficiency or enrichment when the work involves subsurface soil or confined space entry. Dust monitoring will be accomplished with a Mini RAM or Data RAM aerosol monitor during invasive procedures that have the potential for creating airborne dusts, such as coring and drilling, or excavation work. Toxic gas or vapor monitoring may be augmented by the use of direct reading air indicator tubes. Air monitoring will be the responsibility of the SSC or designee. Manufacturers' instructions for operation and calibration will be available on-site. The following table lists general air monitoring action levels. These action levels are subject to modification to accommodate site-specific and task-specific conditions.

Table 8-1
Air Monitoring Action Levels

Instrument	**Reading**	**Level of Personal Protective Equipment/Action**
Photoionization Detector (PID)	Background to 1 part per million (ppm) of total VOCs, non-transient above background at breathing zone level (BZL)	D
PID	> 1 ppm, non-transient above background of total VOCs in BZL	Use detector tube to measure benzene concentration
PID	1 to 5 ppm confirmed benzene concentrations with detector tubes, in BZL	C/notify HSO
PID	1 to 25 ppm of Total VOC, non-transient above background (confirmed absence of benzene) in BZL	D
PID	> 25 and ≤ 250 ppm of Total VOC (confirmed absence of benzene), non-transient above background in BZL	C/notify HSO
PID	> 250 ppm of Total VOC, non transient above background in BZL	B/institute vapor suppression measures
Combustible gas indicator (CGI) with oxygen (O_2) meter	> 5 % Lower Explosive Limit (LEL), < 10% Upper Explosive Limit (UEL), in borehole	Proceed with caution
CGI/ O_2 meter	> 10 % LEL in borehole	Stop work, allow to vent
CGI/ O_2 meter	> 5 % LEL, <10% UEL in BZL	Limit activities to those which

Table 8-1 Air Monitoring Action Levels		
Instrument	**Reading**	**Level of Personal Protective Equipment/Action**
		do not generate sparks
CGI/ O_2 meter	> 10 % LEL in BZL	Stop work, allow to vent
Aerosol monitor	Background to 50 micrograms per cubic meter ($\mu g/m^3$) 15 minute average	D
Aerosol monitor	> 50 $\mu g/m^3$ 15 minute average	C
Sound Level Meter	> 90 decibels, A scale (dbA)	Don hearing protection
Hydrogen Sulfide Meter	> 5 ppm	Stop work, allow to vent or change work practices

8.2.3 Personal Air Sampling Requirements

When exposure to chemical or physical contaminants are suspected due to employee proximity to the hazards, or due to a smell or appearance in areas of work, personal air sampling is required to evaluate employee exposure as part of a Hazard Assessment mandated by OSHA. Since air monitoring for specific chemicals involves the use of approved air monitoring methods and laboratory analysis, only qualified industrial hygienists or safety professionals should perform such measurements.

8.3 Demarcation of Zones

Site zones are intended to control the potential spread of contamination throughout the Site and to assure that only authorized individuals are permitted into potentially hazardous areas. A three-zone approach will be utilized. It shall include an exclusion zone (EZ), contamination reduction zone (CRZ), and a support zone (SZ). Specific zones will be established at the work site when operations begin. Appropriate barrier tape and signage will be used to designate exclusion zones.

8.3.1 Exclusion (Work) Zone

Work zones for activities that require demarcation by zones (i.e., EZ, CRZ and SZ) will be separated with appropriate barriers. Only authorized personnel will be allowed access into the work zones. Appropriate safety criteria associated with these zones will be followed.

8.3.2 Decontamination Zone

Decontamination areas where personnel and equipment decontamination procedures will be performed, if appropriate, will be located as close as possible to work areas. Appropriate barriers and signs will demarcate these areas and unauthorized personnel will be excluded. Decontamination could be necessary if contaminated materials are uncovered or spills occur.

8.3.3 Site Control

In the event of a chemical or hazardous substance release/spill, the DEC must be immediately notified. A spill cleanup will commence under the DEC's supervision. All personnel involved with spill response and notification must have the appropriate HAZWOPER training.

Any person working in an area where the potential to exposure to site contaminants exists will only be allowed to access that area after providing the SSC with proper training and medical evaluation documentation.

The zones will be based upon current knowledge of proposed Site activities. The zone configurations may be altered due to work plan revisions. The following shall be used as guidance in determining zone designations.

8.3.3.1 Support Zone

The SZ will be the field support area for most operations and will be located at the perimeter of the CRZ. The SZ provides for field team communications and emergency response. Appropriate support and safety equipment will be located in this zone. Potentially contaminated personnel and materials will not be allowed in this zone. The only exception will be appropriately packaged, decontaminated and labeled samples.

8.3.3.2 Contamination Reduction Zone

The CRZ is established between the EZ and the SZ. The CRZ contains the contamination reduction corridor and provides for an area for decontamination of personnel and portable hand-held equipment, tools and heavy equipment. A personnel decontamination area will be prepared at each exclusion zone. The CRZ will be used for exclusion zone access and egress, access for heavy equipment, and for emergency support services.

8.3.3.3 Exclusion Zone

All activities that may involve exposure to Site contaminants, hazardous materials or conditions, should be considered an EZ. This zone will be clearly delineated by cones, tape or other means. The SSC/SSM may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the SSC/SSM and shall allow adequate space for the activity to be completed, for field members and for emergency equipment.

8.4 Decontamination Procedures

Equipment decontamination will take place in designated areas only. The Remediation Contractor will construct a decontamination pad of heavy (10-mil) polyethylene plastic sheeting bolstered on the perimeter with wood, hay bales, or other materials so as to contain all decontamination water. The pad will be large enough to accommodate the equipment to be decontaminated and cleaning personnel and will adequately collect all decontamination fluids. It shall have a sump to collect water inside the pad.

8.4.1 Decontamination of Equipment

Decontamination equipment may include the following, as appropriate:

- Wash tubs (1 wash, 1 rinse)
- Several scrub brushes
- Disposable towels
- Seating to facilitate boot removal
- Decontamination solution (e.g., non-phosphate detergent)
- Duct tape
- Hand soap
- Skin wash water source
- Special rinse solutions for hand sampling tools
- Steam cleaner

8.4.2 Personal Decontamination Procedures

The following describes procedures to be employed for personal and equipment decontamination.

PERSONAL DECONTAMINATION PROCEDURES FOR LEVEL D PROTECTION	
1.	Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross-contamination. During hot weather operations, cool down stations may be set up within this area.
2.	Remove outer gloves and deposit in waste container.
3.	If clothing has become contaminated, remove it and place it into a poly bag.
4.	Remove inner gloves and deposit in container with liner.
5.	Wash hands and face.
6.	Re-dress (as necessary) or put on clean clothes.

PERSONAL DECONTAMINATION PROCEDURES FOR LEVEL C PROTECTION	
1.	Deposit equipment used on site (tools, sampling devices and containers, monitoring instruments, radios, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Segregation at the drop reduces the probability of cross-contamination. During hot weather operations, cool down stations may be set up within this area.
2.	Scrub outer boot covers and gloves with decontamination solution or detergent/ water.
3.	Rinse off decontamination solution from Station 2.
4.	Remove tape around boots and gloves and deposit in waste container.
5.	Remove boot covers and deposit in waste container.
6.	Remove outer gloves and deposit in waste container.
7.	If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers donned, and joints taped. Worker returns to duty.
8.	Remove safety boots and place in area with plastic liner.
9.	With assistance of helper, remove splash suit. Deposit in waste container.
10.	Remove respirator. Deposit in container with plastic liner. Avoid touching face with fingers.
11.	Remove inner gloves and deposit in waste container.

PERSONAL DECONTAMINATION PROCEDURES FOR LEVEL C PROTECTION	
12.	If inner clothing has become contaminated, remove it and place it into a poly bag.
13.	Wash hands and face if shower is not available.
14.	Put on clean clothes.

Attachment 1
Key Personnel and Emergency Phone Numbers

Key Personnel and Emergency Numbers

Nassau County Police Department, 4th Precinct	516-573-6400
Island Park Fire Department	516-431-1213
Long Beach Medical Center 455 East Bay Drive Long Beach, New York 11561	516-897-1000
Emergency Medical Service (ambulance)	911
Posillico Project Manager (Primary) John Soliman	631-390-5751 cell: 516-807-1847
Posillico Task Manager (Secondary) Jim Boulukos	631-390-5743 cell: 516-790-4270
Posillico Site Health and Safety Officer Angelo Occhiogrosso	516-315-1053
Posillico Corporate Safety Director Paul McKinney	631-390-5728 cell: 516-807-8077
National Response Center	(800) 424-8802
NYSDEC Spill Hotline	(800) 457-7362

Attachment 2
Safety Inspection Form

Posillico Safety Inspection Form

Date of Inspection ________________________ Inspector(s) ________________________

Description of Job ________________________

Building No. ________________________ Location within building ________________________

Area Location/Description (if outdoors) ________________________

ITEM	Y	N	N/A	Comments / Remarks
I. Personal Protective Equipment				
Hard hats are being worn when overhead, falling or flying hazards exist;				
Safety glasses or face shields are used for welding, cutting, nailing (including pneumatic), or when working with concrete and/or harmful chemicals;				
Proper shoes or boots are worn to lessen slipping hazards and prevent toe crushing and nail punctures; and				
Safety belts and/or harness systems are in use for fall protection				
II. Housekeeping & Access Around Site				
Walkways and stairways are kept clear of trash/debris and other materials such as tools and supplies to prevent tripping.				
Boxes, scrap lumber and other materials are picked up and put in a dumpster or trash/debris area to prevent fire and tripping hazards				
Enough light is provided to allow workers to see and to prevent accidents				
III. Stairs & Ladders				
Permanent or temporary guardrails are installed on stairs, before stairs are used for general access, between levels to prevent someone from falling or stepping off edges.				
Manufactured and job-made ladders are kept in good condition and free of defects.				
Ladders are inspected before use for broken rungs or other defects so falls do not happen. Defective ladders are discarded or repaired				

ITEM	Y	N	N/A	Comments / Remarks
III. Stairs & Ladders				
Ladders are secured near the top or at the bottom to prevent them from slipping and causing falls				
Ladders are secured on a stable and level surface, when they cannot be tied off, so they cannot be knocked over or their bottoms kicked out.				
Ladders are extended at least 3 feet above the landing to provide a handhold or for balance when getting on and off the ladder from other surfaces				
Ladders are only used for what they were made and not as a platform, runway, or as scaffold planks				
IV. Scaffolds & Other Work Platforms				
Ladders or stairs are provided to get on and off scaffolds and work platforms safely.				
Scaffolds and work platforms are kept free of debris. Tools and materials are kept as neat as possible on scaffolds and platforms. This will help prevent materials from falling and workers from tripping.				
Scaffolds are erected on firm and level foundations.				
First consider the use of finished floors to support the load and provide a stable base.				
Place scaffold legs on firm footing and secured from movement or tipping, especially surfaces on dirt or similar surfaces				
Erect and dismantle scaffolds under the supervision of a competent person.				
The competent person must inspect scaffolds before each use.				
Do not use blocks, bricks, or pieces of lumber to level or stabilize the footings. Manufactured base plates or "mud sills" made of hardwood or equivalent can be used.				
V. Planking				
Fully plank or use manufactured decking to provide a full work platform on scaffolds. The platform decking and/or scaffold planks must be scaffold grade and not have any visible defects.				

ITEM	Y	N	N/A	Comments / Remarks
V. Planking				
Extend planks or decking material at least 6" over the edge or cleat them to prevent movement. The work platform or planks must not extend more than 12" beyond the end supports to prevent tipping when stepping or working.				
Be sure that manufactured scaffold planks are the proper size and that the end hooks are attached to the scaffold frame.				
VI. Scaffold Guardrails				
Guard scaffold platforms that are more than 10 feet above the ground or floor surface with a standard guardrail. If guardrails are not practical, use other fall protection devices such as safety belts/harnesses and lanyards.				
Place the toprail approximately 42" above the work platform or planking with a midrail about half that high at 21".				
Install toe boards when other workers are below the scaffold.				
VII. Fall Protection - Floor and Wall Openings				
Install guardrails around open floors and walls when the fall distance is 6 feet or more. Be sure the toprails can withstand a 200 lb load.				
Construct guardrails with a toprail approximately 42" high with a midrail about half that high at 21".				
Install toeboards when other workers are below the work area.				
Cover floor openings larger than 2x2 (inches) with material to safely support the working load.				
Use other fall protection systems like slide guards, roof anchors or alternative safe work practices when a guardrail system cannot be used.				
Wear proper shoes or footwear to lessen slipping hazards.				
Train workers on safe work practices before performing work on foundation walls, roofs, trusses, or where performing exterior wall erections and floor installations.				

ITEM	Y	N	N/A	Comments / Remarks
VIII. Work on Roofs				
Inspect for and remove frost and other slipping hazards before getting onto roof surfaces.				
Wear Cover and secure all skylights and openings, or install guardrails to keep workers from falling through the openings.				
Install slide guards along the roof eave after the first 3 rows of roofing material are installed when the roof pitch is over 4:12 and up to 6:12.				
Use a safety harness system with a solid anchor point on steep roofs with pitch greater than 8:12 or if the ground to eave height exceeds 25 feet.				
Stop roofing operations when storms, high winds or other adverse weather conditions create unsafe conditions.				
IX. Excavations & Trenching - General				
Find the location of all underground utilities by contacting the local utility locating service before digging.				
Keep workers away from digging equipment and never allow workers in an excavation when equipment is in use.				
Keep workers from getting between equipment in use and other obstacles and machinery that can cause crushing hazards				
Keep equipment and the excavated dirt (spoils pile) back 2 feet from the edge of the excavation.				
Have a competent person conduct daily inspections and correct any hazards before workers enter a trench or excavation.				
Provide workers a way to get into and out of a trench or excavation. Ladders and ramps can be used and must be within 25 feet of the worker.				
For excavations and utility trenches over 5 feet deep, use shoring, shields (trench boxes), benching, or slope back the sides. Unless soil analysis has been completed, the earth's slope must be at least 1 1/2 horizontal to 1 vertical.				
Keep water out of trenches with a pump or drainage system, and inspect the area for soil movement and potential cave-ins.				

ITEM	Y	N	N/A	Comments / Remarks
IX. Excavations & Trenching - General				
Keep drivers in the cab and workers away when dirt and other debris are being loaded into dump trucks. Workers must never be allowed under any load and must stay clear of the back of vehicles.				
X. Foundations After the foundation walls are constructed, special precautions must be taken to prevent injury from cave-ins in the area between the excavation wall and the foundation wall				
The depth of the foundation/basement trench cannot exceed 7 1/2 feet deep unless other cave-in protection is provided.				
Keep the horizontal width of the foundation trench at least 2 feet wide. Make sure there is no earth vibration while workers are in the trench.				
Plan the foundation trench work to minimize the number of workers in the trench and the length of time they spend there.				
XI. Tools & Equipment				
Maintain all hand tools and equipment in safe condition and check regularly for defects. Broken or damaged tools and equipment must be removed from the jobsite.				
Use double insulated tools, or ensure the tools are grounded.				
Plan the foundation trench work to minimize the number of workers in the trench and the length of time they spend there.				
Use double insulated tools, or ensure the tools are grounded.				
Equip all power saws (circular, skill, table, etc.) with blade guards. Saws must be turned off when unattended.				
Provide training for workers before pneumatic or powder-actuated tools are used.				
Pneumatic and powder-actuated tools must only be used by trained and experienced personnel. Require proper eye protection for workers.				
Never leave cartridges for pneumatic or powder-actuated tools unattended. Keep equipment in a safe place, according to the manufacturers' instructions.				

ITEM	Y	N	N/A	Comments / Remarks
XII. Vehicles & Mobile Equipment				
Inform workers verbally and provide training to stay clear of backing and turning vehicles and equipment with rotating cabs.				
Maintain back-up alarms for equipment with limited rear view or use someone to help guide them back.				
Verify experience or provide training to crane and heavy equipment operators.				
Maintain at least a 10-foot clearance from overhead power lines when operating equipment.				
Block up the raised bed when inspecting or repairing dump trucks.				
Use a tag line to control materials moved by a crane.				
Provide flagmen with orange and red warning garments while working in vehicular traffic.				
XIII. Electrical				
Prohibit work on new and existing energized (hot) electrical circuits until all power is shut off and a positive "Lockout/Tagout System" is in place.				
Maintain all electrical tools and equipment in safe condition and check regularly for defects.				
Broken or damaged tools and equipment must be removed from the jobsite.				
Protect all temporary power (including extension cords) with Ground Fault Circuit Interrupters (GFCIs). Plug into a GFCI protected temporary power pole, a GFCI protected generator, or use a GFCI extension cord to protect against shocks.				
Locate and identify overhead electrical power lines. Make sure that ladders, scaffolds, equipment or materials never come within 10 feet of electrical power lines.				
XIV. Fire Prevention				
Provide fire extinguishers near all welding, soldering, or other sources of ignition.				

ITEM	Y	N	N/A	Comments / Remarks
XIV. Fire Prevention				
Avoid spraying of paint, solvents or other types of flammable materials in rooms with poor ventilation. Buildup of fumes and vapors can cause explosions or fires.				
Store gasoline and other flammable materials in a safety can outdoors or in an approved storage facility.				
Provide one fire extinguisher within 100 feet of employees for each 3,000 square feet of building.				
XV. Asbestos				
Conduct air monitoring where there may be asbestos exposure				
Where employees may be exposed to asbestos, establish a program which includes: a. Awareness training b. Health effects of asbestos exposure c. Caution labels and signs d. Use of appropriate respiratory protection e. Protective clothing f. Change areas for storage of work and street clothes g. Medical surveillance h. Recordkeeping i. Personnel certifications j. Contractor licensing				
Establish regulated areas if the permissible exposure limit (PEL) is likely to be exceeded				
Employ the following engineering controls to minimize asbestos fiber release: a. Local ventilation exhaust b. HEPA filtration and vacuuming c. Work area isolation d. Wet handling methods				

ITEM	Y	N	N/A	Comments / Remarks
XV. Asbestos				
Ensure all activities are being conducted in accordance with USEPA, USOSHA, USDOT, NYSDOL, NYCDEP, and NYCDOS rules and regulations.				
Ensure all power tools are equipped with HEPA filtered local exhaust ventilation.				
Ensure all asbestos waste is properly labeled and disposed of.				
XVI. Dusts, Gases, Fumes, and Mists				
Ensure material safety data sheets (MSDS) are maintained on each product in use at the construction site.				
Provide adequate ventilation				
Ensure proper protective equipment is used to protect against overexposure				
XVII. Silica				
Provide adequate exhaust to remove silica particles from the work area				
Provide respirators for employees who may be overexposed to silica dust particles				
XVIII. Noise				
Provide hearing protectors when noise levels exceed 90 decibels on the A weighted scale (dbA)				
Enforce the use of hearing protective equipment				
Establish administrative controls to reduce or eliminate excessive noise				
XIX. Respiratory Protection				
Have a written respiratory protection program in effect in accordance with 29 CFR 1910.134				
Selection of respirators should be based on the amount and type of toxin present, and should be comfortable to the user				

ITEM	Y	N	N/A	Comments / Remarks
XIX. Respiratory Protection				
The issuance of respiratory equipment should include the following: a. Instruction in the proper use of respiratory equipment b. Allowing the user to become familiar with the equipment prior to use c. Qualitative or quantitative fit testing d. Positive and negative pressure field testing prior to each use e. Maintenance of fit test records				
Ensure workers are properly trained in the use of respiratory protective equipment, and are familiar with the written respiratory protection program				
Ensure workers are familiar with the following: a. Cleaning of the respirator b. Storage of the respirator c. Inspecting of the respirator d. Procedures for ordering and installing replacement parts				
Ensure all workers who wear respirators have been medically cleared to wear such equipment				
Procedures are in place to monitor the work area environment to ensure proper respiratory equipment has been selected				
XX. Hazardous Materials				
Store flammable and combustible liquids in approved containers, and in approved fire cabinets when not in use				
Keep flammable and combustible liquids (except for storage in approved fire cabinets) at least 25 feet from any ignition source (smoking materials, open flames, electrical power, grinders, etc.)				
Use bonding straps on bare metal of containers when transferring flammable or combustible liquids between containers				
Use grounding straps on flammable or combustible liquid metal drums (when transferring liquid)				
Paint spray equipment that is bonded and grounded				

ITEM	Y	N	N/A	Comments / Remarks
XX. Hazardous Materials				
Store caustics, acids, flammables and combustibles, and oxidizers separately Compressed gas cylinders should be strapped in storage and transport, segregated by full or empty, and secured against falls				
Compressed gas cylinders should be tagged "empty" or "MT" when spent				
Hazardous material and chemical containers should be properly labeled (including squeeze bottles)				
Prohibit eating, smoking, drinking and applying cosmetics in hazardous materials storage and use areas				
Ensure a spill control and response program is in effect				
Store waste chemicals (including waste paint, solvents, etc), contaminated rags, debris (including paint cans, stir sticks, paper, plastic, etc) in accumulated storage as designated by the SSHO and as follows: a. Segregated containers labeled "Hazardous Waste" with a description of the waste b. Keep lids closed on containers c. Date full containers and arrange for removal from the site				
If waste water is being generated, ensure the following: a. Label containers as described above b. Store tanks in secondary contained areas as approved by the SSHO c. Date full containers and arrange for removal from the site d. Do not overfill tanks or mishandle the waste water				
Obtain MSDS for all new materials brought onto the site				
XXI. Confined Spaces				
Provide training for employees in confined space entry				
Provide proper and appropriate equipment				

ITEM	Y	N	N/A	Comments / Remarks
XXI. Confined Spaces				
In manholes, ensure that vehicular exhaust or carbon monoxide cannot permeate into the space				
Examine the space for decaying vegetation or animal matter which may produce methane				
Survey the space for possible industrial waste which may contribute to the accumulation of a toxic or combustible atmosphere				
If there is inadequate natural air movement and forced ventilation is not provided, test the atmosphere for combustible gases and air contaminants				
Ensure the space is ventilated to safe levels of toxic or combustible gases before employees enter				
If ventilation is not sufficient to remove the hazardous atmosphere, ensure the employees entering the space wear the proper and approved respiratory protective equipment prior to entering the space				
Ensure that employees are trained in the use of respirators				
Ensure that the confined space entry program is in effect, and that entry permits have been filled out				
Ensure constant communication with employees in the immediate vicinity who are not within the confined space				
Ensure that the internal atmosphere is tested for toxic and combustible gases				
XXII. Work Over or Near Water				
Ensure ring buoys with at least 90 feet of line are present every 200 feet along the bulkhead.				
Ensure that the water's edge warning indicator visible and present in all areas not subject to active work.				
Ensure that U.S. Coast Guard-approved life jacket or buoyant work vests available and utilized by workers when working over or near the water.				

Attachment 3
Site Hazard Assessment

ATTACHMENT 3

SITE HAZARD ASSESSMENT

1.0 POTENTIAL HAZARDS OF THE SITE

This section presents all assessment of the chemical, biological, and physical hazards that may be encountered during the tasks specified under the HASP. A detail on types of chemicals the Remediation Contractor anticipates to encounter at different locations during the remedial activities is listed per location in the Remedial Action Work Plan provided under a separate cover.

1.1 Properties of Chemical Contamination

Based on the results of the Final Remedial Investigation Report dated 2008 and the Supplemental Investigation Report dated 2011, the major contaminants of concern for the site soils are petroleum contamination and containing concentrations of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and metals above the proposed Site Specific Soil Cleanup Objectives (SSSCOs). Dissolved levels of petroleum constituents (e.g., benzene) and a petroleum product in the form of light non-aqueous phase liquid (LNAPL) represent the major contaminants of concern for the groundwater.

Volatile organic compounds (e.g., benzene) are a potential exposure concern during intrusive activities and acute exposure may cause short-term respiratory distress and irritation, lightheadedness, nausea, and headaches.

SVOCs are present at the Site in the form of weathered petroleum, naphthalene, and phenol. These compounds generally have a depressant effect on the Central Nervous System (CNS), may cause chronic liver and kidney damage, and some are suspected human carcinogens. Acute exposure may include headache, dizziness, nausea, and skin and eye irritation.

Arsenic and lead are naturally occurring toxic materials. Lead exposure can cause kidney disease, hypotension, anemia, and loss of weight. Relatively high doses of arsenic have been reported to cause bone marrow suppression in humans. The principal exposure pathway for each is probably inhalation of these metals adsorbed to particulates, but ingestion and possibly dermal exposure may also be common.

Combustible gas, if detected above the lower explosive limits is hazardous due to the potential to cause fires and explosions. Hydrogen sulfide may be a component of the combustible gas detected at the Site. Exposure to high levels of hydrogen sulfide can result in eye irritation, a sore throat, cough, shortness of breath and fluid in the lungs. These symptoms usually go away after the exposure stops. Long-term, low-level exposure may result in fatigue, loss of appetite, headaches, irritability, poor memory, and dizziness.

1.2 Biological Hazards

During the course of the project, there is a potential for workers to come into contact with biological hazards such as animals and insects.

1.2.1 Animals

During site operations, animals such as dogs, cats, pigeons, mice and rats may be encountered. Workers shall use discretion and avoid all contact with animals. Bites and scratches from dogs and cats can be painful and if the animal is rabid, the potential for contracting rabies exists. Contact with rat and mice droppings may lead to contracting Hantavirus. Inhalation of dried pigeon droppings may lead to psittacosis; cryptococcosis and histoplasmosis are also diseases associated with exposure to dried bird droppings but these are less likely to occur in this occupational setting.

1.2.2 Insects

Insects, including ticks, bees, wasps, hornets, mosquitoes, and spiders, may be present at the Site, particularly in areas that are warm, sheltered, have standing water or are not frequented by people. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition, in addition, mosquito bites may lead to St. Louis encephalitis or West Nile encephalitis and ticks may cause Lyme Disease and other tick-borne infections.

1.3 Physical Hazards

Most safety hazards are discussed in the hazard prevention and monitoring guidelines in Appendices C through F.

1.3.1 Temperature Extremes

Heat stress is a significant potential hazard, which is greatly exacerbated with the use of PPE, in hot environments. The potential hazards of working in hot environments include dehydration, cramps, heat rash, heat exhaustion, and heat stroke.

Workers may be exposed to the hazard of working in a cold environment. Potential hazards in cold environments include frostbite, trench foot or immersion foot, hypothermia, as well as slippery surfaces, brittle equipment, poor judgment, and unauthorized procedural changes.

1.3.2 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps and generators. Ear protection is required and should be used in designated areas of the Stations as indicated by the posted signs. Workers with 8-hour TWA exposures exceeding 90 dBA will be included in a Noise Control Plan.

1.3.3 Hand and Power Tools

In order to complete the various tasks for the project, personnel will utilize hand and power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Ground Fault Circuit Interrupters (GFCIs) are required for all portable tools.

1.3.4 Slips, Trips, and Falls

Working in and around the Site will pose slip, trip and fall hazards due to equipment, piping, slippery surfaces that may be oil covered, or from surfaces that are wet from rain or ice. Potential adverse health effects include falling to the ground and becoming injured or twisting an ankle. In addition, within the Waterside basement, several areas have low clearance and overhead piping, constituting an overhead hazard, where you could strike your head.

1.3.5 Fire and Explosion

All excavation/boring work shall be preceded by drawing review. No utilities are expected to be active in the remedial area because the demolition is complete. The possibility of encountering fire and explosion hazards exists from underground gases. Therefore, all excavation/boring equipment operated on the Site must be grounded.

1.3.6 Manual Lifting

Manual lifting of heavy objects may be required. Failure to follow proper lifting technique can result in back injuries and strains. Back injuries are a serious concern as they are the most common workplace injury, often resulting in lost or restricted work time, and long treatment and recovery periods.

1.3.7 Drill Rig Operations

In order to install and collect soil borings and to install monitoring wells, a hollow stem auger or air rotary drill rig will be used.

1.3.8 Vehicular Traffic

When performing sampling operations outside the facility, there is potential for encountering vehicular traffic hazards on Washington Avenue and other neighboring streets. Personnel and equipment could be struck by passing traffic resulting in damaged equipment and/or serious physical harm.

1.3.9 Working Over or Near Water

Remediation Contractor personnel working over or near water, where the danger of drowning exists, shall wear U.S. Coast Guard-approved life jacket or buoyant work vests.

Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations along the bulkhead. The distance between ring buoys shall not exceed 200 feet.

2.0 NATURE AND EXTENT OF CONTAMINATION

A Remedial Investigation was performed in the Site during 2008 and supplemental investigations occurred in 2011. Presented in this Section is a summary of the results compared to site-specific criteria. The applicants are proposing the use of a combination of established soil cleanup objectives, as follows:

Contaminant	Proposed SSSCO
Targeted Volatile Organic Compounds	Track 2 Restricted Residential, Protection of Public Health
Targeted Semivolatile Organic Compounds	Track 2 Restricted Residential, Protection of Public Health
10 Volatile Organic Tentatively Identified Compounds	10 ppm (total)
20 Semivolatile Organic Tentatively Identified Compounds	100 ppm (total)
Source Material	Removal of Gross Contamination and Free Product (As defined in 6 NYCRR 375-1.2(u)) and 6 NYCRR 375-1.2(ac)

Attachment 4
Certificates of Training

Attachment 5
Employee Medical Data Sheet

Attachment 5

EMPLOYEE MEDICAL DATA SHEET

In case of injury, this form is to accompany personnel to the hospital. It is designed to provide needed medical information in times of emergency.

This form is to be kept on-site under the care of the SSC or his designee.

Employee Name:____
Address:____
Home Telephone:____
Occupation:____
Age:________Height:__________ Weight:_______ Blood Type:__________

Name and Number of Emergency Contact:

1.) ____
2.) ____

Allergies and Sensitivities(*please list allergies to drugs or other materials*):

Medications (*please list any medications, prescription or non-prescription that you are presently using or expect to use*):

Medical Restrictions (*please list any current or past medical restrictions or significant illnesses experienced in the past):*

Your Doctor's name, address and phone number:

Attachment 6
Medical Evaluation Form

ATTACHMENT 6
MEDICAL EVALUATION FORM

Employee Name: __________________________ Employee Number: ________________

Office: ____________________________ Date of Exam: __________

________ Initial _________ Annual ____________ Exit Protocol

I have reviewed the results of the medical health history, physical examination, and laboratory tests prescribed by ___________________________: and certify that: the record is complete, and the following were not performed:

____

____

____

Based upon my examination, I certify that this employee:

______ Have no medical contraindications to the use of supplied air or self-contained breathing apparatus (SCBA) and air-purifying respirators.

______ Has a medical restriction in the use of respiratory equipment (describe below):

____

____

____

Based upon by examination, I certify that this employee:

______ Have no medical contraindications to full participation in hazardous waste site work, when conducted under the conditions of adequate training and a health and safety plan.

______ Have medical limitations that restrict full participation in hazardous waste site work. Describe work functions limitations (i.e., lifting, temporary limitation, pending medical follow-up work, etc.).

Comments: ____

____

____

ATTACHMENT 6

MEDICAL EVALUATION FORM (Continued)

______ Is medically restricted from any direct work with hazardous waste or hazardous waste sites, but **may** continue to perform office work.

Comments: ____

____

____

I have communicated the examination results to the employees and have informed the employee about medical conditions discovered during my examination that require further examination or treatment.

______________________ ______________________

Name of Physician Signature of Examining Physician

Address: ______________________________ Date: ____________

____

____

Attachment 7
Medical First Aid Treatment Record (G1)
OSHA 101 Form (G2)
OSHA 300 Log (G3)

Medical First Aid Accident Treatment Report

Complete this form for all accidents involving only first aid treatment, and which are non-reportable as defined by OSHA 29 CFR 1910.4.

______________________________ ______________________
Name of employee receiving treatment: Date of treatment

______________________________ ______________________
Occupation of employee receiving treatment Employer

____
Employee's home telephone number

____
Name of First Aid Provider

______________________________ ______________________
Time of accident Date of accident

____
Location of accident

Describe how the accident occurred (be specific; indicate the cause such as: debris, oil spill, ladder in poor condition or not tied-off)

____

____

Describe the injury:

____

____

Indicate First Aid measures taken:

____

____

What can be done to prevent future accidents of this kind?:

____

____

OSHA
Forms for Recording
Work-Related Injuries and Illnesses

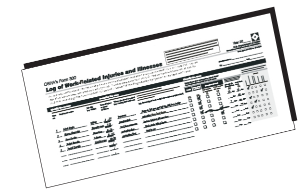
What's Inside...

In this package, you'll find everything you need to complete OSHA's *Log* and the *Summary of Work-Related Injuries and Illnesses* for the next several years. On the following pages, you'll find:

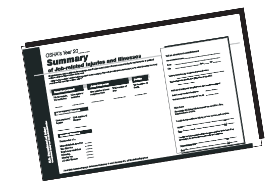
- ▼ ***An Overview: Recording Work-Related Injuries and Illnesses*** — General instructions for filling out the forms in this package and definitions of terms you should use when you classify your cases as injuries or illnesses.

- ▼ ***How to Fill Out the Log*** — An example to guide you in filling out the *Log* properly.

- ▼ ***Log of Work-Related Injuries and Illnesses*** — Several pages of the *Log* (but you may make as many copies of the *Log* as you need.) Notice that the *Log* is separate from the *Summary.*

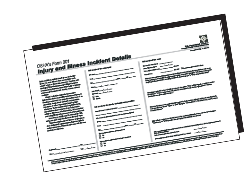


- ▼ ***Summary of Work-Related Injuries and Illnesses*** — Removable *Summary* pages for easy posting at the end of the year. Note that you post the *Summary* only, not the *Log*.



- ▼ ***Worksheet to Help You Fill Out the Summary*** — A worksheet for figuring the average number of employees who worked for your establishment and the total number of hours worked.

- ▼ ***OSHA's 301: Injury and Illness Incident Report*** — Several copies of the OSHA 301 to provide details about the incident. You may make as many copies as you need or use an equivalent form.



Take a few minutes to review this package. If you have any questions, ***visit us online at www.osha. gov*** or ***call your local OSHA office***. We'll be happy to help you.

U.S. Department of Labor
Occupational Safety and Health Administration

An Overview: Recording Work-Related Injuries and Illnesses

The Occupational Safety and Health (OSH) Act of 1970 requires certain employers to prepare and maintain records of work-related injuries and illnesses. Use these definitions when you classify cases on the Log. OSHA's recordkeeping regulation (see 29 CFR Part 1904) provides more information about the definitions below.

The *Log of Work-Related Injuries and Illnesses* (Form 300) is used to classify work-related injuries and illnesses and to note the extent and severity of each case. When an incident occurs, use the *Log* to record specific details about what happened and how it happened. The *Summary* — a separate form (Form 300A) — shows the totals for the year in each category. At the end of the year, post the *Summary* in a visible location so that your employees are aware of the injuries and illnesses occurring in their workplace.

Employers must keep a *Log* for each establishment or site. If you have more than one establishment, you must keep a separate *Log* and *Summary* for each physical location that is expected to be in operation for one year or longer.

Note that your employees have the right to review your injury and illness records. For more information, see 29 Code of Federal Regulations Part 1904.35, *Employee Involvement*.

Cases listed on the *Log of Work-Related Injuries and Illnesses* are not necessarily eligible for workers' compensation or other insurance benefits. Listing a case on the *Log* does not mean that the employer or worker was at fault or that an OSHA standard was violated.

When is an injury or illness considered work-related?

An injury or illness is considered work-related if an event or exposure in the work environment caused or contributed to the condition or significantly aggravated a preexisting condition. Work-relatedness is presumed for injuries and illnesses resulting from events or exposures occurring in the workplace, unless an exception specifically applies. See 29 CFR Part 1904.5(b)(2) for the exceptions. The work environment includes the establishment and other locations where one or more employees are working or are present as a condition of their employment. See 29 CFR Part 1904.5(b)(1).

Which work-related injuries and illnesses should you record?

Record those work-related injuries and illnesses that result in:

- ▼ death,
- ▼ loss of consciousness,
- ▼ days away from work,
- ▼ restricted work activity or job transfer, or
- ▼ medical treatment beyond first aid.

You must also record work-related injuries and illnesses that are significant (as defined below) or meet any of the additional criteria listed below.

You must record any significant work-related injury or illness that is diagnosed by a physician or other licensed health care professional. You must record any work-related case involving cancer, chronic irreversible disease, a fractured or cracked bone, or a punctured eardrum. See 29 CFR 1904.7.

What are the additional criteria?

You must record the following conditions when they are work-related:

- ▼ any needlestick injury or cut from a sharp object that is contaminated with another person's blood or other potentially infectious material;
- ▼ any case requiring an employee to be medically removed under the requirements of an OSHA health standard;
- ▼ tuberculosis infection as evidenced by a positive skin test or diagnosis by a physician or other licensed health care professional after exposure to a known case of active tuberculosis.

What is medical treatment?

Medical treatment includes managing and caring for a patient for the purpose of combating disease or disorder. The following are not considered medical treatments and are NOT recordable:

- ▼ visits to a doctor or health care professional solely for observation or counseling;
- ▼ diagnostic procedures, including administering prescription medications that are used solely for diagnostic purposes; and
- ▼ any procedure that can be labeled first aid. (*See below for more information about first aid.*)

What do you need to do?

1. Within 7 calendar days after you receive information about a case, decide if the case is recordable under the OSHA recordkeeping requirements.
2. Determine whether the incident is a new case or a recurrence of an existing one.
3. Establish whether the case was work-related.
4. If the case is recordable, decide which form you will fill out as the injury and illness incident report.

   You may use *OSHA's 301: Injury and Illness Incident Report* or an equivalent form. Some state workers compensation, insurance, or other reports may be acceptable substitutes, as long as they provide the same information as the OSHA 301.

How to work with the Log

1. Identify the employee involved unless it is a privacy concern case as described below.
2. Identify when and where the case occurred.
3. Describe the case, as specifically as you can.
4. Classify the seriousness of the case by recording the **most serious outcome** associated with the case, with column J (Other recordable cases) being the least serious and column G (Death) being the most serious.
5. Identify whether the case is an injury or illness. If the case is an injury, check the injury category. If the case is an illness, check the appropriate illness category.

U.S. Department of Labor
Occupational Safety and Health Administration

What is first aid?

If the incident required only the following types of treatment, consider it first aid. Do NOT record the case if it involves only:

- using non-prescription medications at non-prescription strength;
- administering tetanus immunizations;
- cleaning, flushing, or soaking wounds on the skin surface;
- using wound coverings, such as bandages, BandAids™, gauze pads, etc., or using SteriStrips™ or butterfly bandages.
- using hot or cold therapy;
- using any totally non-rigid means of support, such as elastic bandages, wraps, non-rigid back belts, etc.;
- using temporary immobilization devices while transporting an accident victim (splints, slings, neck collars, or back boards).
- drilling a fingernail or toenail to relieve pressure, or draining fluids from blisters;
- using eye patches;
- using simple irrigation or a cotton swab to remove foreign bodies not embedded in or adhered to the eye;
- using irrigation, tweezers, cotton swab or other simple means to remove splinters or foreign material from areas other than the eye;
- using finger guards;
- using massages;
- drinking fluids to relieve heat stress

How do you decide if the case involved restricted work?

Restricted work activity occurs when, as the result of a work-related injury or illness, an employer or health care professional keeps, or recommends keeping, an employee from doing the routine functions of his or her job or from working the full workday that the employee would have been scheduled to work before the injury or illness occurred.

How do you count the number of days of restricted work activity or the number of days away from work?

Count the number of calendar days the employee was on restricted work activity or was away from work as a result of the recordable injury or illness. Do not count the day on which the injury or illness occurred in this number. Begin counting days from the day after the incident occurs. If a single injury or illness involved both days away from work and days of restricted work activity, enter the total number of days for each. You may stop counting days of restricted work activity or days away from work once the total of either or the combination of both reaches 180 days.

Under what circumstances should you NOT enter the employee's name on the OSHA Form 300?

You must consider the following types of injuries or illnesses to be privacy concern cases:

- an injury or illness to an intimate body part or to the reproductive system,
- an injury or illness resulting from a sexual assault,
- a mental illness,
- a case of HIV infection, hepatitis, or tuberculosis,
- a needlestick injury or cut from a sharp object that is contaminated with blood or other potentially infectious material (see 29 CFR Part 1904.8 for definition), and
- other illnesses, if the employee independently and voluntarily requests that his or her name not be entered on the log.

You must not enter the employee's name on the OSHA 300 *Log* for these cases. Instead, enter "privacy case" in the space normally used for the employee's name. You must keep a separate, confidential list of the case numbers and employee names for the establishment's privacy concern cases so that you can update the cases and provide information to the government if asked to do so.

If you have a reasonable basis to believe that information describing the privacy concern case may be personally identifiable even though the employee's name has been omitted, you may use discretion in describing the injury or illness on both the OSHA 300 and 301 forms. You must enter enough information to identify the cause of the incident and the general severity of the injury or illness, but you do not need to include details of an intimate or private nature.

What if the outcome changes after you record the case?

If the outcome or extent of an injury or illness changes after you have recorded the case, simply draw a line through the original entry or, if you wish, delete or white-out the original entry. Then write the new entry where it belongs. Remember, you need to record the most serious outcome for each case.

Classifying injuries

An injury is any wound or damage to the body resulting from an event in the work environment.

Examples: Cut, puncture, laceration, abrasion, fracture, bruise, contusion, chipped tooth, amputation, insect bite, electrocution, or a thermal, chemical, electrical, or radiation burn. Sprain and strain injuries to muscles, joints, and connective tissues are classified as injuries when they result from a slip, trip, fall or other similar accidents.

U.S. Department of Labor
Occupational Safety and Health Administration

Classifying illnesses

Skin diseases or disorders

Skin diseases or disorders are illnesses involving the worker's skin that are caused by work exposure to chemicals, plants, or other substances.

Examples: Contact dermatitis, eczema, or rash caused by primary irritants and sensitizers or poisonous plants; oil acne; friction blisters, chrome ulcers; inflammation of the skin.

Respiratory conditions

Respiratory conditions are illnesses associated with breathing hazardous biological agents, chemicals, dust, gases, vapors, or fumes at work.

Examples: Silicosis, asbestosis, pneumonitis, pharyngitis, rhinitis or acute congestion; farmer's lung, beryllium disease, tuberculosis, occupational asthma, reactive airways dysfunction syndrome (RADS), chronic obstructive pulmonary disease (COPD), hypersensitivity pneumonitis, toxic inhalation injury, such as metal fume fever, chronic obstructive bronchitis, and other pneumoconioses.

Poisoning

Poisoning includes disorders evidenced by abnormal concentrations of toxic substances in blood, other tissues, other bodily fluids, or the breath that are caused by the ingestion or absorption of toxic substances into the body.

Examples: Poisoning by lead, mercury, cadmium, arsenic, or other metals; poisoning by carbon monoxide, hydrogen sulfide, or other gases; poisoning by benzene, benzol, carbon tetrachloride, or other organic solvents; poisoning by insecticide sprays, such as parathion or lead arsenate; poisoning by other chemicals, such as formaldehyde.

All other illnesses

All other occupational illnesses.

Examples: Heatstroke, sunstroke, heat exhaustion, heat stress and other effects of environmental heat; freezing, frostbite, and other effects of exposure to low temperatures; decompression sickness; effects of ionizing radiation (isotopes, x-rays, radium); effects of nonionizing radiation (welding flash, ultra-violet rays, lasers); anthrax; bloodborne pathogenic diseases, such as AIDS, HIV, hepatitis B or hepatitis C; brucellosis; malignant or benign tumors; histoplasmosis; coccidioidomycosis.

When must you post the Summary?

You must post the *Summary* only — not the *Log* — by February 1 of the year following the year covered by the form and keep it posted until April 30 of that year.

How long must you keep the Log and Summary on file?

You must keep the *Log* and *Summary* for 5 years following the year to which they pertain.

Do you have to send these forms to OSHA at the end of the year?

No. You do not have to send the completed forms to OSHA unless specifically asked to do so.

How can we help you?

If you have a question about how to fill out the *Log*,

❑ ***visit us online at www.osha.gov*** or

❑ ***call your local OSHA office.***

Optional

Calculating Injury and Illness Incidence Rates

What is an incidence rate?

An incidence rate is the number of recordable injuries and illnesses occurring among a given number of full-time workers (usually 100 full-time workers) over a given period of time (usually one year). To evaluate your firm's injury and illness experience over time or to compare your firm's experience with that of your industry as a whole, you need to compute your incidence rate. Because a specific number of workers and a specific period of time are involved, these rates can help you identify problems in your workplace and/or progress you may have made in preventing work-related injuries and illnesses.

How do you calculate an incidence rate?

You can compute an occupational injury and illness incidence rate for all recordable cases or for cases that involved days away from work for your firm quickly and easily. The formula requires that you follow instructions in paragraph (a) below for the total recordable cases or those in paragraph (b) for cases that involved days away from work, *and* for both rates the instructions in paragraph (c).

(a) *To find out the total number of recordable injuries and illnesses that occurred during the year,* count the number of line entries on your OSHA Form 300, or refer to the OSHA Form 300A and sum the entries for columns (G), (H), (I), and (J).

(b) *To find out the number of injuries and illnesses that involved days away from work,* count the number of line entries on your OSHA Form 300 that received a check mark in column (H), or refer to the entry for column (H) on the OSHA Form 300A.

(c) *The number of hours all employees actually worked during the year*. Refer to OSHA Form 300A and optional worksheet to calculate this number.

You can compute the incidence rate for all recordable cases of injuries and illnesses using the following formula:

Total number of injuries and illnesses ÷ Number of hours worked by all employees x *200,000 hours = Total recordable case rate*

(The 200,000 figure in the formula represents the number of hours 100 employees working 40 hours per week, 50 weeks per year would work, and provides the standard base for calculating incidence rates.)

You can compute the incidence rate for recordable cases involving days away from work, days of restricted work activity or job transfer (DART) using the following formula:

(Number of entries in column H + Number of entries in column I) ÷ Number of hours worked by all employees x *200,000 hours = DART incidence rate*

You can use the same formula to calculate incidence rates for other variables such as cases involving restricted work activity (column (I) on Form 300A), cases involving skin disorders (column (M-2) on Form 300A), etc. Just substitute the appropriate total for these cases, from Form 300A, into the formula in place of the total number of injuries and illnesses.

What can I compare my incidence rate to?

The Bureau of Labor Statistics (BLS) conducts a survey of occupational injuries and illnesses each year and publishes incidence rate data by various classifications (e.g., by industry, by employer size, etc.). You can obtain these published data at www.bls.gov or by calling a BLS Regional Office.

Worksheet

Total number of recordable injuries and illnesses in your establishment

[ ]

÷ X 200,000 =

[ ]

Hours worked by all your employees

Total recordable cases incidence rate

[ ]

Total number of recordable injuries and illnesses with a checkmark in column H or column I

[ ]

÷ X 200,000 =

[ ]

Hours worked by all your employees

DART incidence rate

[ ]

U.S. Department of Labor
Occupational Safety and Health Administration

How to Fill Out the Log

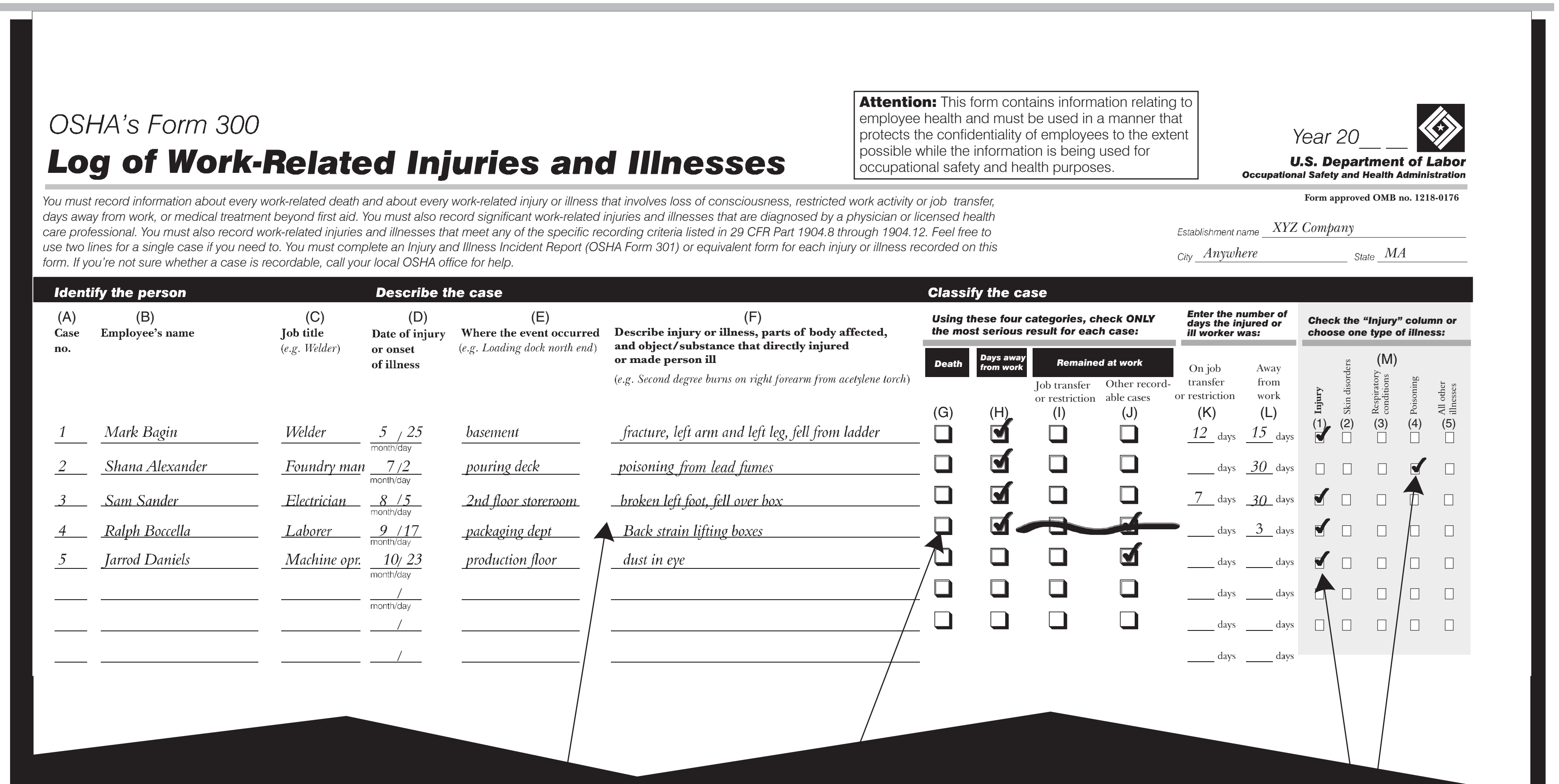
The *Log of Work-Related Injuries and Illnesses* is used to classify work-related injuries and illnesses and to note the extent and severity of each case. When an incident occurs, use the *Log* to record specific details about what happened and how it happened.

If your company has more than one establishment or site, you must keep separate records for each physical location that is expected to remain in operation for one year or longer.

We have given you several copies of the *Log* in this package. If you need more than we provided, you may photocopy and use as many as you need.

The *Summary* — a separate form — shows the work-related injury and illness totals for the year in each category. At the end of the year, count the number of incidents in each category and transfer the totals from the *Log* to the *Summary*. Then post the *Summary* in a visible location so that your employees are aware of injuries and illnesses occurring in their workplace.

You don't post the Log. You post only the Summary at the end of the year.



OSHA's Form 300

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20__ __

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name XYZ Company

City Anywhere State MA

Identify the person			Describe the case			Classify the case										
						Using these four categories, check ONLY the most serious result for each case:				Enter the number of days the injured or ill worker was:		Check the "Injury" column or choose one type of illness: (M)				
						Death	Days away from work	Remained at work								
(A) Case no.	(B) Employee's name	(C) Job title (e.g. Welder)	(D) Date of injury or onset of illness	(E) Where the event occurred (e.g. Loading dock north end)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (e.g. Second degree burns on right forearm from acetylene torch)	(G)	(H)	(I) Job transfer or restriction	(J) Other record-able cases	(K) On job transfer or restriction	(L) Away from work	(1) Injury	(2) Skin disorders	(3) Respiratory conditions	(4) Poisoning	(5) All other illnesses
1	Mark Bagin	Welder	5 / 25 month/day	basement	fracture, left arm and left leg, fell from ladder	☐	✓	☐	☐	12 days	15 days	✓	☐	☐	☐	☐
2	Shana Alexander	Foundry man	7 /2 month/day	pouring deck	poisoning from lead fumes	☐	✓	☐	☐	days	30 days	☐	☐	☐	✓	☐
3	Sam Sander	Electrician	8 /5 month/day	2nd floor storeroom	broken left foot, fell over box	☐	✓	☐	☐	7 days	30 days	✓	☐	☐	☐	☐
4	Ralph Boccella	Laborer	9 /17 month/day	packaging dept	Back strain lifting boxes	☐	✓	~~☐~~	~~✓~~	days	3 days	✓	☐	☐	☐	☐
5	Jarrod Daniels	Machine opr.	10/ 23 month/day	production floor	dust in eye	☐	☐	☐	✓	days	days	✓	☐	☐	☐	☐
			/ month/day			☐	☐	☐	☐	days	days	☐	☐	☐	☐	☐
			/			☐	☐	☐	☐	days	days	☐	☐	☐	☐	☐
			/							days	days					

Be as specific as possible. You can use two lines if you need more room.

Revise the log if the injury or illness progresses and the outcome is more serious than you originally recorded for the case. Cross out, erase, or white-out the original entry.

Choose ONE of these categories. Classify the case by recording the most serious outcome of the case, with column J (Other recordable cases) being the least serious and column G (Death) being the most serious.

Note whether the case involves an injury or an illness.

U.S. Department of Labor
Occupational Safety and Health Administration

OSHA's Form 300

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20__ __

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name ______________________

City ______________ *State* __________

Identify the person			Describe the case			Classify the case										
						Using these four categories, check ONLY the most serious result for each case:				Enter the number of days the injured or ill worker was:		Check the "Injury" column or choose one type of illness: (M)				
						Death	Days away from work	Remained at work								
(A) Case no.	(B) Employee's name	(C) Job title (e.g., *Welder*)	(D) Date of injury or onset of illness	(E) Where the event occurred (*e.g., Loading dock north end*)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (*e.g., Second degree burns on right forearm from acetylene torch*)	(G)	(H)	Job transfer or restriction (I)	Other record-able cases (J)	On job transfer or restriction (K)	Away from work (L)	Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	All other illnesses (5)
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
___	___	___	___/___ month/day	___	___	☐	☐	☐	☐	___ days	___ days	☐	☐	☐	☐	☐
					Page totals ➤	___	___	___	___	___	___	Injury (1) ___	Skin disorder (2) ___	Respiratory condition (3) ___	Poisoning (4) ___	All other illnesses (5) ___

Be sure to transfer these totals to the Summary page (Form 300A) before you post it.

Public reporting burden for this collection of information is estimated to average 14 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

OSHA's Form 300A

Summary of Work-Related Injuries and Illnesses

Year 20__ __

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no work-related injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete and accurate before completing this summary.

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the Log. If you had no cases, write "0."

Employees, former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR Part 1904.35, in OSHA's recordkeeping rule, for further details on the access provisions for these forms.

Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
______	______	______	______
(G)	(H)	(I)	(J)

Number of Days

Total number of days of job transfer or restriction	Total number of days away from work
______	______
(K)	(L)

Injury and Illness Types

Total number of . . .
(M)

(1) Injuries ______

(2) Skin disorders ______

(3) Respiratory conditions ______

(4) Poisonings ______

(5) All other illnesses ______

Post this Summary page from February 1 to April 30 of the year following the year covered by the form.

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instructions, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any other aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Avenue, NW, Washington, DC 20210. Do not send the completed forms to this office.

Establishment information

Your establishment name ______________________________

Street ______________________________

City ____________________ State ______ ZIP ________

Industry description (*e.g., Manufacture of motor truck trailers*)

____

Standard Industrial Classification (SIC), if known (*e.g., SIC 3715*)

___ ___ ___ ___

Employment information

(If you don't have these figures, see the Worksheet on the back of this page to estimate.)

Annual average number of employees ________

Total hours worked by all employees last year ________

Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

______________________________ ________
Company executive Title

( ) - / /
Phone Date

Optional

Worksheet to Help You Fill Out the Summary

At the end of the year, OSHA requires you to enter the average number of employees and the total hours worked by your employees on the summary. If you don't have these figures, you can use the information on this page to estimate the numbers you will need to enter on the Summary page at the end of the year.

How to figure the average number of employees who worked for your establishment during the year:

❶ ***Add*** the total number of employees your establishment paid in all pay periods during the year. Include all employees: full-time, part-time, temporary, seasonal, salaried, and hourly.

The number of employees paid in all pay periods = ❶ ________

❷ ***Count*** the number of pay periods your establishment had during the year. Be sure to include any pay periods when you had no employees.

The number of pay periods during the year = ❷ ________

❸ ***Divide*** the number of employees by the number of pay periods.

❶ / ❷ ________ = ❸ ________

❹ ***Round the answer*** to the next highest whole number. Write the rounded number in the blank marked *Annual average number of employees.*

The number rounded = ❹ ________

For example, Acme Construction figured its average employment this way:

For pay period...	Acme paid this number of employees...
1	10
2	0
3	15
4	30
5	40
▼	▼
24	20
25	15
26	+10
	830

Number of employees paid = 830 ❶

Number of pay periods = 26 ❷

$\frac{830}{26} = 31.92$ ❸

31.92 rounds to 32 ❹

32 is the annual average number of employees

How to figure the total hours worked by all employees:

Include hours worked by salaried, hourly, part-time and seasonal workers, as well as hours worked by other workers subject to day to day supervision by your establishment (e.g., temporary help services workers).

Do not include vacation, sick leave, holidays, or any other non-work time, even if employees were paid for it. If your establishment keeps records of only the hours paid or if you have employees who are not paid by the hour, please estimate the hours that the employees actually worked.

If this number isn't available, you can use this optional worksheet to estimate it.

Optional Worksheet

________ ***Find*** the number of full-time employees in your establishment for the year.

X ________ ***Multiply*** by the number of work hours for a full-time employee in a year.

________ This is the number of full-time hours worked.

\+ ________ ***Add*** the number of any overtime hours as well as the hours worked by other employees (part-time, temporary, seasonal)

________ ***Round*** the answer to the next highest whole number. Write the rounded number in the blank marked *Total hours worked by all employees last year.*

OSHA's Form 301
Injury and Illness Incident Report

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

This *Injury and Illness Incident Report* is one of the first forms you must fill out when a recordable work-related injury or illness has occurred. Together with the *Log of Work-Related Injuries and Illnesses* and the accompanying *Summary*, these forms help the employer and OSHA develop a picture of the extent and severity of work-related incidents.

Within 7 calendar days after you receive information that a recordable work-related injury or illness has occurred, you must fill out this form or an equivalent. Some state workers' compensation, insurance, or other reports may be acceptable substitutes. To be considered an equivalent form, any substitute must contain all the information asked for on this form.

According to Public Law 91-596 and 29 CFR 1904, OSHA's recordkeeping rule, you must keep this form on file for 5 years following the year to which it pertains.

If you need additional copies of this form, you may photocopy and use as many as you need.

Completed by ______________________________

Title ______________________________

Phone (_______)________--___________ **Date** ____/ ____/ ____

Information about the employee

1) **Full name** ______________________________

2) **Street** ______________________________

City ____________________ **State** ________ **ZIP** __________

3) **Date of birth** _____ / _____ / _____

4) **Date hired** _____ / _____ / _____

5) ☐ **Male**
☐ **Female**

Information about the physician or other health care professional

6) **Name of physician or other health care professional** ______________________________

____

7) **If treatment was given away from the worksite, where was it given?**

Facility ______________________________

Street ______________________________

City ____________________ **State** ________ **ZIP** __________

8) **Was employee treated in an emergency room?**
☐ **Yes**
☐ **No**

9) **Was employee hospitalized overnight as an in-patient?**
☐ **Yes**
☐ **No**

Information about the case

10) **Case number from the *Log*** __________________ *(Transfer the case number from the Log after you record the case.)*

11) **Date of injury or illness** _____ / _____ / _____

12) **Time employee began work** __________________ **AM / PM**

13) **Time of event** __________________ **AM / PM** ☐ **Check if time cannot be determined**

14) ***What was the employee doing just before the incident occurred?*** **Describe the activity, as well as the tools, equipment, or material the employee was using. Be specific. *Examples:* "climbing a ladder while carrying roofing materials"; "spraying chlorine from hand sprayer"; "daily computer key-entry."**

15) ***What happened?*** **Tell us how the injury occurred. *Examples:* "When ladder slipped on wet floor, worker fell 20 feet"; "Worker was sprayed with chlorine when gasket broke during replacement"; "Worker developed soreness in wrist over time."**

16) ***What was the injury or illness?*** **Tell us the part of the body that was affected and how it was affected; be more specific than "hurt," "pain," or sore." *Examples:* "strained back"; "chemical burn, hand"; "carpal tunnel syndrome."**

17) ***What object or substance directly harmed the employee?*** ***Examples:*** **"concrete floor"; "chlorine"; "radial arm saw."** ***If this question does not apply to the incident, leave it blank.***

18) ***If the employee died, when did death occur?*** Date of death _____ / _____ / _____

If You Need Help...

If you need help deciding whether a case is recordable, or if you have questions about the information in this package, feel free to contact us. We'll gladly answer any questions you have.

- **Visit us online at www.osha.gov**
- **Call your OSHA Regional office and ask for the recordkeeping coordinator**

  or
- **Call your State Plan office**

Federal Jurisdiction

Region 1 - 617 / 565-9860
Connecticut; Massachusetts; Maine; New Hampshire; Rhode Island

Region 2 - 212 / 337-2378
New York; New Jersey

Region 3 - 215 / 861-4900
DC; Delaware; Pennsylvania; West Virginia

Region 4 - 404 / 562-2300
Alabama; Florida; Georgia; Mississippi

Region 5 - 312 / 353-2220
Illinois; Ohio; Wisconsin

Region 6 - 214 / 767-4731
Arkansas; Louisiana; Oklahoma; Texas

Region 7 - 816 / 426-5861
Kansas; Missouri; Nebraska

Region 8 - 303 / 844-1600
Colorado; Montana; North Dakota; South Dakota

Region 9 - 415 / 975-4310

Region 10 - 206 / 553-5930
Idaho

State Plan States

Alaska - 907 / 269-4957

Arizona - 602 / 542-5795

California - 415 / 703-5100

*Connecticut - 860 / 566-4380

Hawaii - 808 / 586-9100

Indiana - 317 / 232-2688

Iowa - 515 / 281-3661

Kentucky - 502 / 564-3070

Maryland - 410 / 767-2371

Michigan - 517 / 322-1848

Minnesota - 651 / 284-5050

Nevada - 702 / 486-9020

*New Jersey - 609 / 984-1389

New Mexico - 505 / 827-4230

*New York - 518 / 457-2574

North Carolina - 919 / 807-2875

Oregon - 503 / 378-3272

Puerto Rico - 787 / 754-2172

South Carolina - 803 / 734-9669

Tennessee - 615 / 741-2793

Utah - 801 / 530-6901

Vermont - 802 / 828-2765

Virginia - 804 / 786-6613

Virgin Islands - 340 / 772-1315

Washington - 360 / 902-5554

Wyoming - 307 / 777-7786

*Public Sector only

U.S. Department of Labor
Occupational Safety and Health Administration

U.S. Department of Labor
Occupational Safety and Health Administration

Have questions?

If you need help in filling out the *Log* or *Summary*, or if you have questions about whether a case is recordable, contact us. We'll be happy to help you. You can:

- Visit us online at: **www.osha.gov**
- Call your regional or state plan office. You'll find the phone number listed inside this cover.

First Aid Accident Report

Complete this form for all accidents involving only first aid treatment, and which are non-reportable as defined by OSHA 29 CFR 1910.4.

Name of employee receiving treatment: ______________________

Date of treatment ______________________

Occupation of employee receiving treatment ______________________

Employer ______________________

Employee's home telephone number ______________________

Name of First Aid Provider ______________________

Time of accident ______________________

Date of accident ______________________

Location of accident ______________________

Describe how the accident occurred (be specific; indicate the cause such as: debris, oil spill, ladder in poor condition or not tied-off)

____

____

Describe the injury:

____

____

Indicate First Aid measures taken:

____

____

What can be done to prevent future accidents of this kind?:

____

____

Attachment 8
Employee Acknowledgement of SSHSP

ATTACHMENT 8
EMPLOYEE ACKNOWLEDGEMENT OF SITE SPECIFIC HEALTH AND SAFETY PLAN

Remediation Contractor management is committed to the safety of our employees. It is the responsibility of management and supervision to see that every employee is provided with safety instructions for this job, information, the location and opportunity to review the Site Health and Safety Plan. It is also the responsibility of management to provide a safe work environment and observe all safety regulations. No management policy can be effective, however, if each employee does not also have a commitment to the safety policies of the company. To ensure the safety and health of Company employees, the company has developed, and shall implement, the following disciplinary policies.

Any infraction of the Remediation Contractor safety policies and/or Federal, State, or local regulations by a Remediation Contractor employee will result in disciplinary actions.

- A first infraction will result in a verbal warning and the infraction will be documented and become part of the employee's work record. If, during investigation, it is determined that the employee's first infraction causes or could cause serious harm to himself and/or another employee, the result may be other disciplinary actions, including dismissal.

- A second infraction may result in suspension from work. The duration of the suspension will be determined on a case-by-case basis and will be commensurate with the seriousness of the infraction, and may result in dismissal. The infraction will be documented and become part of the employee's work record.

- A third infraction may result in dismissal. This will be documented and become part of the employee's work record, and the employee's name shall be placed on a not-for-rehire list maintained by the company. All information and documentation will be retained by the Company and will not be available to other employers.

Remediation Contractor safety policies and regulations were developed to protect each employee, however, **it is every employee's responsibility to observe and follow the company's safety policies.**

I have been notified of, received, and understand Remediation Contractor safety policies and acknowledge the disciplinary actions that may be taken as a result of non-compliance with such policies.

Date: ______________________

____________________________________	______________________________
Employee Name	Employee Signature

____
Remediation Contractor Supervisor

Attachment 9
Confined Space Entry Program

CONFINED SPACE ENTRY

1.0 SCOPE AND APPLICATION

This procedure has been established to set standard requirements for practices and procedures to protect our employees from the hazards of entry into permit required confined spaces, as outlined in OSHA 29 CFR 1910.146.

1.1 Definition

A confined space is defined as an area which:

- Has adequate size and configuration for employee entry;
- Has limited means of access or egress; and
- Is not designed for continuous employee occupancy.

Examples are storage tanks, boilers, sewers, tank cars, and septic tanks.

1.2 Permit Required Confined Space

Is defined as a space that presents, or has potential to present hazards related to atmospheric conditions toxic, flammable asphyxiating, engulfment, configuration or any other recognized serious hazard. The following regulations must be adhered to, once it has been established that the above conditions exist:

- Employees must be informed of confined spaces through the use of signs or other equally effective means, and unauthorized entry must be prevented.
- The Remediation Contractor shall provide specified equipment to all employees involved in confined space entry.
- An attendant must be stationed outside the permitted space during entry.
- Procedures for summoning rescuers and prevention of unauthorized personnel from attempting rescues must be established for different working locations.
- Prepare and sign written permits and order corrective measures for time of entry and will extend only for the duration of the task defined on the entry permit.

1.2.1 Permit System

Entry permits for confined spaces are mandatory. An entry supervisor must authorize entry, prepare and sign written permits and order corrective measures, if needed, and/or cancel permits when work is completed. Permits must be available to permit space entrants at time of entry and will extend only for the duration of the task. They will be retained for one year to facilitate the confined space program.

1.2.2 Training

Initial and refresher training will be held to provide necessary understanding, skills and knowledge for performing the job safety to affected employees. Training will be conducted whenever an employees duties change, when identifying hazards in the confined space, or when evaluation on the confined space entry program identifies hazards in the confined space, or when an evaluation of the confined space entry program identifies inadequacies in the employees knowledge. Records will be maintained as to certify training of affected employees.

1.2.3 Authorized Entrants

Entrants must know potential hazards; recognize signs or symptoms of exposure and understand the consequences of exposure to hazards. Entrants must also know how to use needed equipment; communication with attendants as required; alert attendants to the warning signs or the existence of possible hazardous conditions; and exit as quickly as possible whenever ordered or alerted, by alarm, warning signs, or prohibited conditions, to do so.

1.2.4 Attendants

Attendants must know potential hazards of confined spaces; be aware of behavioral effects of exposure; maintained continuous identification of authorized attendants; must remain outside the space until relieved, and communicate with entrants as required to monitor activities inside and outside permitted space; order exit if required; summon rescuers if necessary; prevent unauthorized entry and perform non-entry services, if required. They may not perform other duties that interfere with their primary duty to monitor and protect safety of authorized entrants.

1.2.5 Entry Supervisor

Responsible for issuing confined space permits. Must know the hazards of confined spaces and verify that all tests have been conducted; procedures and equipment are in place and in good working condition before endorsing permits; terminate entry if required and verify rescue services are available and able to contact. They must also determine when shifts and entry supervisors change, and that acceptable conditions, as specified in the permit, continue.

1.2.6 Rescue Services

Rescue services may be provided by on-site employees or an off-site service. On-site teams must be properly trained and have complete knowledge in the use of personal protective and rescue equipment, and first aid, including CPR. Outside services will be made aware of the hazards of confined spaces; must be provided with adequate information in a permitted space hazard exposure situation to aid in rescue and treatment of employees.

1.2.7 Contractors

Host employees must provide information to contractors on permitted spaces program; procedures; and likely hazards the contractor might encounter. Joint entries must be coordinated; and the contractor debriefed at the conclusion of the entry operations.

2.0 PRACTICES AND PROCEDURES

2.1 Definitions

Acceptable Entry Conditions: The conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

Attendant: An individual stationed outside one or more permit spaces, who monitors the authorized duties assigned in the employer's permit space program.

Authorized Entrant: An employee who is authorized by the employer to enter a permit space.

Blanking or Binding: The absolute closure of a pipe, line, or duct by the fastening of a solid place (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Double Block and Bleed: The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

Emergency: Any occurrence, including any failure of hazard control or monitoring equipment, or event internal or external to the permit space that could endanger entrants.

Engulfment: The surrounding and effective capture of person by liquid of finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or they can exert enough force on the body to cause death by strangulation, constriction, or crushing.

Entry: The action by which a person passes through an opening into a permit-required confined space. Entry includes ensuring work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

Entry Permit: The written or printed document that is provided by the employer to allow and control entry into permit space.

Entry Supervisor: The person, such as the employer, foreman, or crew chief, responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this section.

NOTE: An Entry Supervisor also may serve as an attendant or as authorized entrant, as long as that person is trained and equipped, as required by this section, for each role he or she fills. In addition, the duties of Entry Supervisor may be passed from one individual to another during the course of entry operation.

Hazardous Atmosphere: An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to set-rescue, cause injury, or acute illness from one or more of the following causes:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

2. Airborne combustible dust at a concentration that meets or exceeds its LFL;

NOTE: This concentration may be approximated as a condition in which the dust obscures visions at a distance of 5 feet (1.52m) or less.

3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit which could result in employee exposure in excess of its dose or permissible limit.

Hot Work Permit: The employer's written authorization to perform operations (for example, riveting, welding, cutting, burning, and heating) capable of providing a source of ignition.

Immediately Dangerous to Life or Health: (IDLH) Any condition that poses an immediate or delayed threat to life that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape from a permit space.

Inerting: The displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

Isolation: The intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic materials, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Non-Permit Confined Space: A confined space that does not contain, or with respect to atmospheric hazards, have potential to contain any hazard capable of causing death or serious physical harm.

Oxygen Deficient Atmosphere: An atmosphere containing less than 19.5 percent oxygen by volume.

Oxygen Enriched Atmosphere: An atmosphere containing more than 23.5 percent oxygen by volume.

Permit-Required Confined Space: A confined space that has one or more of the following by volume:

1. Contains or has potential to contain a hazardous atmosphere;

2. Contains a material that has the potential for engulfing an entrant;

3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or

4. Contains any other recognized serious safety or health hazard.

Prohibited Conditions: Any condition in a permit space that is not allowed by this permit during the period when entry is authorized.

Retrieval System: The equipment which is comprised of a retrieval line, chest or full-body harness, whistles, if appropriate, and a lifting device or anchor, used for non-entry rescue of persons from permit space.

Testing: The process by which the hazards that may confront entrance of a permit space are identified and evaluated. Testing includes specifying the tests that are to be performed in the permit space.

3.0 PROCEDURES FOR ATMOSPHERIC TESTING

Atmospheric testing is required for two distinct purposes; evaluation of the hazards of the permit space and verification that acceptable entry conditions for entry into that space exist.

1. Evaluation Testing: The atmosphere of a confined space should be analyzed using equipment of sufficient sensitivity and specificity to identify and evaluate any hazardous atmosphere that may exist or arise, so that appropriate permit entry procedures can be developed and acceptable entry conditions stipulated for that space. Evaluation and interpretation of these data, and development of the entry procedure, should be done by, or reviewed by a technically qualified professional (e.g., OSHA consultant service, or certified industrial hygienist, registered safety engineer, certified safety professional, etc.) based on evaluation of all serious hazards.

2. Verification Testing: The atmosphere should be tested for residues of all contaminants identified by evaluation testing using permit specified equipment to determine that residual concentrations at the time of testing and entry within the range of acceptable entry conditions. Results of testing (i.e. actual concentration, etc.) should be recorded on the permit in the space provided adjacent to the stipulated acceptable entry condition.

3. Duration of Testing: Measurement of valves for each atmospheric parameter should be

made for at least the minimum response time of the test instrument specified by the manufacturer.

4. Testing Stratified Atmosphere: When monitoring for entries involving a descent into atmosphere that may be stratified, the atmospheric envelope should be tested to a distance of approximately 4 feet (1.22m) in the direction of travel and to each side. If sampling probe is sent, the entrant's rate of progress should be slowed to accommodate the sampling speed and detector response.

4.0 SPACE ENTRY PROCEDURES: SEWERS/TANKS

- Presence of Toxic Gasses - Equal to or more than 10 ppm hydrogen sulfide. If the presence of other toxic contaminants is suspected. Entry will be denied until abated.

- Presence of Explosive/Flammable Gases - Equal to or greater than 10% of the lower flammable limit (LFL). Entry will be denied until abated.

- Oxygen Deficiency - A concentration of oxygen in the atmosphere equal to or less than 19.5% by volume. Entry will be denied until acceptable levels are reached.

4.1 Entry without Permit/Attendant

Certification - Confined space may be entered without the need for a written permit or attendant provided that:

1. The space is determined not to be a permit required space, or

2. The space can be maintained in a safe condition for entry by mechanical ventilation alone.

All spaces shall be considered permit-required confined spaces until the pre-entry procedures demonstrate otherwise. Any employee required or permitted to pre-check or enter an enclosed/confined space shall have successfully completed, at a minimum, the training as required by the sections of these procedures. A written copy of operating and rescue procedures as required by these procedures shall be at the work site for the duration of the job. The Confined Space Pre-Entry Checklist must be completed by the Entry Supervisor before entry into a confined space. (The Confined Space Permit form will be used as a checklist in this situation). This list verifies completion of items listed below. This checklist shall be kept at the job site for the duration of the job. If circumstances dictate an interruption in the work, permit space must be re-evaluated and a new checklist must be completed.

4.2 Control of Atmospheric and Engulfment Hazards

- Pumps and Lines: All pumps and lines which may reasonably cause contaminants to flow into the space shall be disconnected, blinded and locked out, or effectively isolated by other means to prevent development of dangerous air contamination or engulfment. Not all laterals to sewers or storm drains require blocking. However, where experience or knowledge of industrial use indicates there is a reasonable potential for contamination of air or engulfment into occupied space, then all affected laterals shall be blocked. If blocking and/or isolation require entry into the space the provisions for entry into a permit-required confined space must be implemented.

- Surge Flow and Flooding: Sewer crews should develop and maintain liaison, to the extent possible, with the local weather bureau and fire and emergency services in their area so that sewer work may be delayed or interrupted and entrants withdrawn whenever sewer lines might suddenly flood by rain or fire suppression activities, or whenever flammable or other hazardous materials are released into space during emergencies by industrial transportation accidents.

- Surveillance: The surrounding areas shall be surveyed to avoid hazards such as drifting vapors from the tanks, piping, or sewers.

- Testing: The atmosphere within the space will be tested to determine whether dangerous air contamination and/or oxygen deficiency exists. An alarm only type gas monitor may be used. Testing shall be performed by the lead Worker who has successfully completed the Gas Detector training for the monitor he will use. The minimum parameters to be monitored are oxygen deficiency, LFL, and hydrogen sulfide concentration. A written record of the pre-entry test results shall be made and kept at the work site for the duration of the job. The supervisor will certify in writing, based upon the results of the pre-entry testing, that all hazards have been eliminated. Affective employees shall be able to review the testing results. The most hazardous conditions shall govern when work is being performed in two adjoining areas.

- Entry Procedures: If there are no non-atmospheric hazards present and if the pre-entry tests show there are no dangerous air contamination and/or oxygen deficiency within the space and there is no reason to believe that any is likely to develop, entry into work within may proceed. Continuous testing of the atmosphere in the immediate vicinity of the workers within the space when any of the gas monitors alarm set points are reached as defined. Workers will not return to the area until the **Supervisor** who has completed the gas detector training has used a direct reading detector to evaluate the situation and has determined that it is safe to enter.

- Rescue: Arrangements for rescue services are not required where an entry permit is not required. See the rescue portion for instructions regarding rescue planning where an entry is required.

4.3 Entry Permit Required

- Permits: Confined Space Entry Permit. All spaces shall be considered permit required confined spaces until the pre-entry procedures demonstrate otherwise. Any employee required or permitted to pre-check or enter a permit-required confined space shall have successfully completed, as a minimum, the training as required by the following sections of these procedures. A written copy of the operating and rescue procedures as required by these procedures. A written copy of the operating and rescue procedures shall be at the work site for the duration of the job.

The Confined Space Entry Permit must be completed before approval can be given to enter a permit-required confined space. This permit verifies completion of items listed below. This permit shall be kept at the job site for the duration of the job. If circumstances cause an interruption in the work or change the alarm condition for which entry was approved, a new Confined Space Entry Permit must be completed.

4.3.1 Control of Atmosphere and Engulfment Hazards

- Surveillance: The surrounding area shall be surveyed to avoid hazards such as drifting vapors from tanks, piping or sewers.

- Atmospheric Monitoring: Entrants must be trained in the use of, and be equipped with, atmospheric monitoring equipment which sounds an audible alarm, in addition to its visual readout, whenever one of the following conditions is encountered: Oxygen concentration less than 19.5 percent; flammable limit (LFL); or hydrogen sulfide or carbon monoxide at or above their PEL (10 ppm or 50 ppm, respectively); or, if broad range sensor device is used, at 100 ppm as characterized by its response to toluene. Normally, the oxygen sensor/broad range sensor instrument is best suited for space entry. However, substance specified devices should be used whenever actual contaminants in space line work to monitor the atmosphere be carried and used by the entrant of any deterioration of atmospheric conditions. Where several entrants are working together in the same immediate location, one instrument, used by the lead entrant, is acceptable.

- Space Ventilation: Mechanical ventilation systems, where applicable, shall be set at 100% outside air. Where possible, open additional manholes to increase air circulation. Use portable blowers to augment natural circulation if needed. After a suitable ventilating period, repeat the testing. Entry may not begin until testing has demonstrated that the hazardous atmosphere has been eliminated.

- Testing demonstrates the existence of dangerous or deficient conditions and additional ventilation cannot reduce concentrations to safe levels;

- The atmosphere tests as safe but unsafe conditions can reasonably be expected to develop;

  - It is not feasible to provide for ready exit from spaces equipped with automatic fire suppression systems to deactivate such systems; or

- An emergency exists and it is not feasible to wait for pre-entry procedures to take effect.

All personnel must be trained. A self-contained breathing apparatus (SCBA) shall be worn by any person entering the space. At least one worker shall stand by the outside of the space ready to give assistance in case of emergency. The standby worker shall have an SCBA available for immediate use. There shall be at least one additional worker within sight or call of the standby worker. Continuous powered communications shall be maintained between the worker within the confined space and standby personnel.

If at any time there is any questionable or non-movement by the worker inside, a verbal check will be made. If there is no response, the worker will be moved immediately. Exception: If the worker is disabled due to falling or impact, he/she shall not be removed from the confined space unless there is immediate danger to his/her life. Local fire department rescue personnel shall be notified immediately. The standby worker may only enter the confined space in case of an emergency (wearing the SCBA) and only after being relieved by another worker. Safety belt and harness with attached lifeline shall be used by all workers entering the space with the free end of the line secured outside the entry opening. The standby worker shall attempt to remove a disabled worker via his lifeline entering the space.

When dangerous air contamination is attributable to flammable and/or explosive substances, lighting and electrical equipment shall be Class 1, Division 1 rated per National Electrical Code and no ignition sources shall be introduced to the area.

Continuous gas monitoring shall be performed during all confined space operations. If alarm conditions change adversely, entry personnel shall exit the confined space and a new confined space permit issued.

Rescue: Call the fire department services for rescue. Where immediate hazards to injured personnel are present, workers at the site shall implement emergency procedures to fit the situation.

Special Equipment: Entry into large bore sewers may require use of special equipment. Such equipment might include such items as atmospheric monitoring devices with automatic audible alarms, escape SCBA with approved self-rescuer, and waterproof flashlights, and may also include boats and rafts, radios and rope stand-offs for pulling around bends and corners as needed.

EXHIBIT 1
VESSEL OR CONFINED SPACE ENTRY PERMIT

NAME OF VESSEL OR CONFINED SPACE:

____

LOCATION:
____

PURPOSE OF ENTRY: ____

DATE & TIME: ____

PREPARATIONS	YES	NO	HAZARDOUS	YES	NO
Forced Ventilation	_______	_______	Rail Car Motion	_______	_______
Breathing Air (Full face & escape cylinder)	_______	_______	Toxic Material	_______	_______
Acid Suit	_______	_______	Flammable Materials	_______	_______
Vapor Proof Suit	_______	_______	Hot Material	_______	_______
Coveralls/Goggles	_______	_______	Welding/Burning	_______	_______
Harness and Life Line	_______	_______	Internal Plugs	_______	_______
Air Analyzer	_______	_______	External Fume Source	_______	_______
Chemical Gloves	_______	_______	External Fire Source	_______	_______
Ear Protection	_______	_______		_______	_______
Lighting/Flashlight	_______	_______		_______	_______
Barricades	_______	_______	**ELECTRICAL**	_______	_______
Safety Shower Checked	_______	_______	Ground Vessel	_______	_______
Scaffold (Inside Vessel)	_______	_______		_______	_______
Ground Fault Interrupter	_______	_______		_______	_______
Entry Ladder	_______	_______		_______	_______
Vapor Proof Lighting	_______	_______		_______	_______
V/C.S. Video	_______	_______		_______	_______

PREPARATIONS	YES	NO	HAZARDOUS	YES	NO
Disconnect Elect. Tracing	______	______		______	______

EVACUATION	YES	NO	ISOLATION	YES	NO
	(Mark and N/A When Not Applicable				
Safety Person - No. Required	______	______	Lock Out Valves	______	______
Call Person - No. Required	______	______	Disconnect Pipes	______	______
Breathing Air (SCBA)	______	______	Blank Pipes	______	______
Escape Respirator	______	______	Disconnect Agitator Coup	______	______
Air Horn	______	______	Pull Fuses	______	______
Flashlight	______	______	Disconnect Motor Leads	______	______
Hoist/Pulley	______	______	Remove Changing Chute	______	______
Litter/Stretcher	______	______	Remove Stack	______	______
2 way Radios	______	______		______	______

EXHIBIT 2
VESSEL OR CONFINED SPACE ENTRY PERMIT
AIR ANALYSIS
(With Forced Ventilation Shut Off)

TIME/INITIAL	OXYGEN	FLAME	TOXIC

CONTINUOUS AIR TESTING (WHEN PERSON IS IN CHAMBER)

SIGNATURE PERSON(S)	SAFETY PERSON(S)	CALL PERSON(S)	ENTERING

***WAIVER REQUIRED: (EXPLAINED BELOW)**

PERSONNEL LIST		
AREA OWNER	TELEPHONE NUMBER.	TIME/DATE
ENGINEER/COORDINATOR	TELEPHONE NUMBER.	TIME/DATE
CRAFT SUPERVISOR	TELEPHONE NUMBER.	TIME/DATE
SAFETY	TELEPHONE NUMBER.	TIME/DATE

APPROVALS TO ENTER VESSELS OR CONFINED SPACE

Attachment 10
Hazard Communication Program

ATTACHMENT 10
HAZARD COMMUNICATION PROGRAM

This program has been developed to maintain compliance with 29 CFR 1926.59, the Hazard Communication Standard for the Construction Industry, 29 CFR 1910.1200, the Hazard Communication Standard for the General Industry, 29 CFR 1926.65, the Hazardous Waste Operations and Emergency Response Regulations for the Construction Industry and 29 CFR 1910.120, the Hazardous Waste Operations and Emergency Response Regulations for the General Industry. This Hazard Communication Program applies to all hazardous chemicals used at job sites, however it does not apply to Hazardous Waste as defined by the Solid Waste Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency (EPA).

1.0 LABELS AND OTHER FORMS OF WARNING:

1) All containers of hazardous chemicals must be labeled, tagged, or marked with:

   a. The identity of the hazardous chemical contained therein;

   b. Appropriate hazard warnings.

   No employee shall remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

2) The contents of all storage tanks are identified by the Tank Numbers on the storage tanks. The Tank Numbers will also be noted on the appropriate MSDS.

3) If the required information is not conveyed on the existing labeling of an incoming container, immediately notify the Manager of Regulatory Affairs in order to have new labels affixed.

4) Portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer, are not required to be labeled.

2.0 MATERIAL SAFETY DATA SHEETS:

1) A copy of the Material Safety Data Sheet (MSDS) that meets the requirements of 29CFR 1910.1200 (g)(2) for every hazardous chemical, used at the job site, must be kept in each appropriate work area.

2) If no MSDS is on file for a hazardous chemical in use, or does not arrive with first shipment, immediately notify the Safety Officer so one may be obtained.

3) Should new significant health information become available for a hazardous chemical, an updated MSDS will immediately be requested from the manufacturer by the Safety Manager.

3.0 EMPLOYEE INFORMATION AND TRAINING:

1) Employees shall be informed of:

   a. The requirements of the Hazard Communication Standards (29 CFR 1926.59 and 1910.1200);

   b. Any operations in their work area where hazardous chemicals are present;

   c. The location and availability of this written program, the required list of hazardous chemicals, and MSDSs.

2) Employee training shall include:

   a. Methods and observations to be used to detect the presence or release of a hazardous chemical;

   b. The physical and health hazards of the chemicals in the work area;

   c. Measures or procedures the employee can take to protect themselves from exposure to hazardous chemicals (i.e. standard work practices, emergency procedures, appropriate safety equipment);

d. The details of this program, including an explanation of the labeling system and MSDSs, and how employees can obtain and use the appropriate information.

3) All training will be conducted by the Environmental Safety/Compliance Manager, or his designee.

4) Training will be presented by:

a. A slide presentation covering classes, labels, and marking of hazardous chemicals and the hazard communication requirements - "Classes/Labels/Markings of Hazardous Chemicals" along with a handout supplying definitions of the various physical and chemical hazards.

b. A review of the site’s written Hazard Communication Program covering the locations of the written program; the location and appropriate hazards and protective equipment to be used for each hazardous chemical at job sites, and how to read and understand an MSDS.

5) Training will be performed for new employees prior to their initial assignment. In addition, employee's training will be updated whenever a new hazard is introduced into the workplace through regular weekly safety meetings.

4.0 CONTRACTORS:

Contractors will be notified of all chemical hazards in their work area, any special instructions and all required safety equipment as outlined in the CONTRACTOR NOTIFICATION PROCEDURE (Attachment A).

5.0 HAZARDS FOR NON-ROUTINE TASKS - CONFINED SPACE ENTRY:

Anyone entering a confined space will follow the Confined Space Entry Procedures as described in Attachment 9 of this HASP, and be informed of the hazards to be encountered in the confined space, prior to entry, by the person completing the confined space entry permit.

RIGHT TO KNOW LAW

(180 Laws of New York - Chapter 551)

The "Right To Know" Law maintains that workers have an inherent right to know all of the health hazards associated with their exposure to toxic substances for two reasons:

1) Employees have a right to make an informed decision about the possible costs of employment to health and life.

2) Employees can observe symptoms of toxicity in themselves, understand the relationship between the symptoms and exposure, and can therefore evaluate the need for any corrective action.

6.0 EMPLOYEE RIGHTS:

- Employees or their representatives may request and must receive, upon request, all information concerning the hazards of toxic substances in the workplace.
- An employee may refuse to work with a toxic substance if he has requested information about it and has not received the written reply within 72 hours (3 working days, excluding weekends and public holidays) of its receipt by the employer.
- An employee may exercise any right pursuant to, or directly related to, the "Right To Know" Law without fear of any discrimination what so ever.
- An employee must not be required to waive any rights under the "Right To Know" Law as a condition of employment.
- An employee may file a complaint with the Department of Labor if he or she has been discriminated against in violation of the "Right To Know" Law.

MSDS COPY REQUEST

Name: _______________________________________

The substance to which I am routinely exposed, and for which I am requesting a copy of a Material Safety Data Sheet is:

____

____

(Employee must use a separate request for each Material Safety Data Sheet requested)

My reason for requesting this information is:

____

____

____

______________________________ ______________________________

(Employee Signature) (Date)

□ I have received a copy of the MSDS, which I requested. ______________________________

(Employee Signature/Date)

□ A copy of the MSDS for ____________________which you have requested is not available. We are making every effort to obtain a copy from our supplier.

______________________________ ______________________________

(Compliance Manager (Safety) (Date)

_____________________________ ______________________________

(Employee Signature) (Date)

GENERAL TOXICOLOGY PRINCIPALS

ACUTE EFFECTS: Health effects from exposure to a toxin for less than 24 hours, and it usually refers to a single continuous exposure to a high concentration of a chemical. Acute exposures to chemicals are rapidly absorbed and is likely to produce immediate toxic effects, but acute effects can also produce delayed toxicity that may or may not be similar to the toxic effects of chronic exposure.

CHRONIC EFFECTS: Health effects from repeated exposures to a toxin for more than three months. Chronic effects tend to occur at a delayed time after the exposure, which is known as the latency period.

DISTINCTION BETWEEN TOXICITY AND HAZARD: An extremely toxic chemical that is sealed in a container and stored properly poses very little hazard. On the other hand, drinking five gallons of water, which is not toxic, in one sitting could be very hazardous.

DOSE-RESPONSE RELATIONSHIP: Refers to the measurement and analysis of the doses, or levels of exposure, at which toxic effects will occur.

HAZARD: The degree of probability that an injury or illness will occur under the specified conditions of use of a product.

HAZARDOUS CHEMICALS: Any chemical which is a physical or health hazard?

HEALTH HAZARD: A chemical for which there is significant evidence that acute or chronic health effects may occur in exposed employees.

LATENCY PERIOD: The period of time between the initial exposure and the onset of symptoms related to the toxic effects of the exposure. Toxins associated with long latency periods are of a concern since the lack of an immediate effect generates a lack of caution when it comes to wearing personal protective equipment.

LD50: A single dose of a material, which on a basis of laboratory tests, is expected to kill 50% of a group of test animals. The LD50 is usually expressed as milligrams of materials per kilogram of animal body weight (mg/Kg).

LC50: The concentration of a material in air, which, on the basis of laboratory tests, is expected to kill 50% of a group of test animals when administered as a single exposure. The LC50 is expressed as parts of a material per million parts of air, by volume (ppm) for gases and vapors, or as milligrams of material per cubic meter of air (mg/m^3) for dusts, mists, and fumes.

PHYSICAL HAZARD: A chemical that is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive), or water reactive.

SUBCHRONIC EFFECTS: Health effects from repeated exposures to a toxin for less than three months.

TOXICITY: The ability of a chemical to produce harmful effects.

HEALTH HAZARDS

CARCINOGEN: Causes cancer

CORROSIVE: A chemical that causes visible destruction of, or irreversible alterations to living tissue (i.e. hydrochloric acid, sulfuric acid).

EXTREMELY TOXIC: A chemical that has:

1) An LD50 single oral dose for rats of less than 1 milligram per kilogram (mg/Kg) of body weight, or;

2) An LC50 4-hour vapor exposure for rats of less than 10 parts per million (ppm), or;

3) An LD50 skin exposure to rabbits of less than 5 mg/Kg of body weight, or;

4) A probable lethal dose to humans of less than 1 grain (one taste).

HIGHLY TOXIC: A chemical that has:

1) An LD50 single oral dose for rats of greater than 1 mg/Kg of body weight, but less than 50 mg/Kg of body weight, or;

2) An LC50 4-hour vapor exposure for rats of greater than 10 ppm, but less than 100 ppm, or;

3) An LD50 skin exposure to rabbits of greater than 5 mg/Kg of body weight, but less than 43 mg/Kg of body weight, or;

4) A probable lethal dose to humans of greater than 1 grain (1 taste), but less than 4 cubic centimeters (cc) (1 teaspoon).

IMMEDIATELY DANGEROUS TO LIFE OR HEALTH (IDLH): Any condition that poses an immediate or delayed threat to life that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape from a permit space.

IRRITANT: A substance that produces an irritating effect when it contacts skin, eyes, nose, or respiratory system (e.g. tear gas).

SENSITIZER: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

TARGET ORGAN EFFECTS: Effects on specific body organs by certain chemicals (i.e. carbon tetrachloride - causes liver damage).

TOXIC: A chemical that has:

1) An LD50 single oral dose for rats of greater than 50 mg/Kg of body weight, but less than 5,000 mg/Kg of body weight, or;

2) An LC50 4-hour vapor exposure for rats of greater than 100 ppm, but less than 10,000 ppm, or;

3) An LD50 skin exposure to rabbits of greater than 43 mg/Kg of body weight, but less than 2,810 mg/Kg of body weight, or;

4) A probable lethal dose to humans of greater than 4 cc (1 teaspoon), but less than 1 pint (250 grams).

COMBUSTION DEFINITIONS AND PROPERTIES

AUTOIGNITION TEMPERATURE: The temperature at which a material will ignite without an external source of ignition.

BOILING LIQUID EXPANDING VAPOR EXPLOSION (BLEVE): Occurs when a liquefied flammable gas containers is heated up and causes the liquid to boil and change to a gas, which expands and causes the container to explode.

DEFLAGRATION: An explosion, which occurs slower than the speed of sound, and produces no shock wave.

DETONATION: An explosive chemical reaction with a rate of less than 1/100th of a second.

EXOTHERM: Any material which is capable of releasing energy when it burns.

EXPLOSION: Effect produced by the sudden and violent expansion of gases, which may or may not be accompanied by shock waves, or disruption of the enclosing materials.

FIRE POINT: The temperature, usually about five to ten degrees above the flash point at which the ignitable mixture will continue to burn.

FLAMMABILITY/EXPLOSIVE LIMITS:

Lower Flammable Limit (LFL): The point at which an air and vapor mixture is too lean for combustion.

Upper Flammable Limit (UFL): The point at which an air and vapor mixture is too rich for combustion.

Lower Explosive Limit (LEL): When the concentration of a material is too small for an explosion to occur.

Upper Explosive Limit (LEL): The level at which there is too much material present for an explosion to occur.

FLASH POINT: The lowest temperature at which a material gives off enough vapors to form an ignitable mixture.

SPONTANEOUS COMBUSTION: Occurs when combustible solids are heated to the ignition point by an internal source of heating.

PHYSICAL HAZARDS

COMBUSTIBLE LIQUID: Having flash points at or above 100 □F but below 200 □F (e.g. fuel oils, ethylene glycol).

COMPRESSED GAS: A gas having a pressure exceeding 40 psi at 70 □F or;

$ A gas having a pressure exceeding 40 psi at 130 □F regardless of the pressure at 70 □F or;

$ A liquid having a vapor pressure exceeding 40 psi at 100 □F (e.g. LP Gas, acetylene, hydrogen).

EXPLOSIVE: A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

FLAMMABLE:

Aerosol: Yields a flame projection exceeding 18 inches at full valve opening or a flashback at any degree of valve opening.

Gas: Forms a flammable mixture with air at a concentration of 13% by volume or less, or forms a range of flammable mixtures with air wider than 12% by volume, regardless of the lower limit.

Liquid: Has a flash point below 100 □F (e.g. acetone, gasoline, methyl alcohol)

Solid: A solid, other than blasting agent or explosive, that is liable to cause fire through friction, absorption, moisture, spontaneous chemical change, or retained from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard (e.g., magnesium powder).

ORGANIC PEROXIDE: A chemical that is explosively sensitive to heat, shock, or friction and is potentially toxic (e.g., benzoyl peroxide).

OXIDIZER: A chemical other than a blasting agent or explosive, that initiates or promotes combustion in other materials, there by causing fire either of itself or through the release of oxygen or other gases (e.g., ammonium nitrate fertilizer, hydrogen peroxide solution).

PYROPHORIC: A chemical that will ignite spontaneously in air at a temperature of 130 °F or below (e.g., aluminum alkyls, alkyl boranes).

UNSTABLE (REACTIVE): A chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure, or temperature (e.g., picric acid).

WATER REACTIVE: A chemical that reacts with water to release a gas that is either flammable or presents a health hazard (e.g., sodium metal, potassium metal).

NO SMOKING REGULATIONS

Smoking represents a dual hazard in a hazardous waste handling operational area. The first hazard is the flammability danger posed by smoking in areas where flammable materials are stored or handled. The second hazard is the contamination danger whereby toxic materials can be transferred from hands (gloves) to cigarettes and inhaled or ingested during smoking.

PRECAUTIONS:

- Do not smoke in operational areas.
- ***Always wash hands prior to smoking (or eating).***

HAZARDOUS CHEMICALS

HAZARDOUS CHEMICALS	HAZARD
Arsenic (Inorganic compounds, as As)	Metal, silver gray or tin-white, brittle, odorless solid. Noncombustible solid in bulk form, but a slight explosion hazard of dust when exposed to flame. **Lung and lymphatic carcinogen** OSHA PEL 8-hr TWA – 0.010 mg/m^3; **IDLH – 5 mg/m^3** *PPE: Use rubber glove and safety shoes, full-body coverall (Tyvek suit), High Efficiency Particulate P100 respirator, face shield, if exposure is over 10 times the OSHA Permissible Exposure Limit (PEL) use any self-contained breathing apparatus that has a full facepiece and is operated in a pressure demand mode.*
Benzene	Class 1B flammable liquid, flash point below 73^0F and boiling point above 100^0F. Inhalation, skin absorption and ingestion hazard, exhibits toxic effects on the eyes, skin, respiratory system, blood, central nervous system, and bone marrow. Symptoms include irritation to the eyes, skin, nose and respiratory system; giddiness; headache, nausea, staggered walk; fatigue, anorexia, weakness, exhaustion; dermatitis; bone marrow depressant; possibly leukemia. OSHA PEL 8-hr TWA - 1 ppm; 15 min STEL 5 ppm *PPE: Use rubber glove and safety shoes, full-body chemical protective clothing, full-face powered air purifying respirator with organic vapor cartridge. If exposure is over 10 times the OSHA Permissible Exposure Limit (PEL) use any self-contained breathing apparatus that has a full facepiece and is operated in a pressure demand mode*
Chlorinated hydrocarbons (CHC)	Normally combustible liquids with low vapor pressures. Inhalation, ingestion, and skin absorption hazard, exhibits toxic effects on the eyes, skin, respiratory system, and central nervous system, liver and kidneys. Symptoms include eye and nose irritation, drowsiness, dermatitis, chemical pneumonia, narcosis, and cracked skin, potential liver and kidney carcinogens. OSHA Permissible Exposure Limit: Varies with compound *PPE: Use full body chemical protective clothing, organic vapor cartridge respirator, rubber gloves, safety glasses, or goggles. If over 10 times PEL, any self-contained breathing apparatus in pressure demand mode.*
Lead	Non-combustible metal. Exhibits toxic effects to the gastrointestinal tract, central nervous system, kidneys, blood, gum tissue, and the eyes. Symptoms include weakness, exhaustion, insomnia, facial pallor, anorexia, weight loss, malnutrition, constipation, abdominal pain, colic, anemia, gum lead line, tremor, paralysis of the wrist and ankles, encephalopathy, kidney disease, eye irritation, low birth weight in the female, infertility in the male, and hypertension. OSHA PEL 8-hr TWA – 50.0 μg/m^3; Action Level 8-hr TWA - 30.0 μg/m^3 *PPE: Use rubber glove and safety shoes, full-body coverall (Tyvek suit), High Efficiency Particulate P100 respirator and face shield, if exposure is over 10 times the OSHA Permissible Exposure Limit (PEL) use any self-contained breathing apparatus that has a full facepiece and is operated in a pressure demand mode*

HAZARDOUS CHEMICALS	HAZARD
Mercury	Metal, non-combustible liquid. Inhalation, skin absorption and ingestion hazard. Exhibits toxic effects to the eyes, skin, and respiratory system. Central nervous system, and kidneys. Symptoms include irritation to the eyes and skin; cough, chest pain, dyspnea (difficulty breathing), bronchitis, pneumonitis; tremors; insomnia, irritability, indecision, headaches, fatigue, weakness, stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss, proteinuria OSHA Permissible Exposure Ceiling Limit: 8-hr TWA: 0.1 mg/m^3 **Immediately Dangerous to Life and Health at 100 x OSHA Permissible Exposure limit (PEL)** *PPE: Use rubber glove and safety shoes, full-body chemical protective clothing. Up to OSHA PEL, full face air purifying respirator with mercury cartridge filter; up to 10 x PEL, full face powered air purifying respirator with mercury cartridge filter; over 10 x PEL, use any self-contained breathing apparatus that has a full facepiece and is operated in a pressure demand mode*
Naphthalene (Tar comphor, white tar)	Organic solid. Colorless to brown solid with an odor of mothballs (normally shipped as a molten solid). Combustible solid, but will take some effort to ignite. OSHA PEL 8-hr TWA – 50 mg/m^3; **IDLH – 250 mg/m^3** *PPE: Use rubber glove and safety shoes, full-body coverall (Tyvek suit), Chemical cartridge respirator in combination with High Efficiency Particulate P100 respirator, face shield, if exposure is over 10 times the OSHA Permissible Exposure Limit (PEL) use any self-contained breathing apparatus that has a full facepiece and is operated in a pressure demand mode.*
Petroleum Based Hydrocarbons	Flammable liquids. Inhalation, ingestion, and skin absorption hazard, exhibits toxic effects on the eyes, skin, respiratory system, and central nervous system, liver and kidneys. Symptoms include eye and nose irritation, drowsiness, dermatitis, chemical pneumonia, narcosis, and cracked skin. OSHA Permissible Exposure Ceiling Limit: 8-hr TWA: 500 ppm **Immediately Dangerous to Life and Health at 10% LEL, approximately 2.2 x OSHA Permissible Exposure limit (PEL)** *PPE: Use full body chemical protective clothing, organic vapor cartridge respirator, rubber gloves, safety glasses, or goggles. If over 10 times PEL, any self-contained breathing apparatus in pressure demand mode.*
Volatile Organic Compounds (VOC)	Flammable hydrocarbons with low vapor pressures. Inhalation, ingestion, and skin absorption hazard, exhibits toxic effects on the eyes, skin, respiratory system, and central nervous system, liver and kidneys. Symptoms include eye and nose irritation, drowsiness, dermatitis, chemical pneumonia, narcosis, cracked skin, chlorinated VOCs may be potential liver and kidney carcinogens. *PPE: Use full body chemical protective clothing, organic vapor cartridge respirator, rubber gloves, safety glasses, or goggles. If over 10 times PEL, any self-contained breathing apparatus in pressure demand mode.*

POTENTIALLY HAZARDOUS OPERATIONS, ASSOCIATED AIR CONTAMINANTS AND RECOMMENDED PPE

Process Type	***Contaminant Examples***	***Recommended PPE***
Solid Operations: Pouring; Mixing; Separations; Extraction; Crushing; Conveying; Loading; Bagging	*Dusts:* Arsenic, Lead; Mercury; Cement; Quartz (free silica); Fibrous glass	Employ engineering controls such as work area containment and ventilation. PPE: Use rubber glove and safety shoes, full-body coverall (Tyvek suit), High Efficiency Particulate P100 respirator, face shield, if exposure is over 10 times the OSHA Permissible Exposure Limit (PEL) use any self-contained breathing apparatus that has a full facepiece and is operated in a pressure demand mode. If Mercury is present use mercury chemical cartridge in combination with P100 and OV filters.

ATTACHMENT A

CONTRACTOR NOTIFICATION PROCEDURE

In order to ensure the safety of contractors performing work at this facility, the following procedures must be followed:

- At the time a contractor is hired, the attached Contractor's Notice (Attachment A) must be delivered to the contractor informing them of the rules that must be followed at this facility.
- The Facility Notification of Contractor Work (Attachment B) must be completed and forwarded to the Corporate Safety Officer by the person hiring the contractor.
- The bottom portion of the FACILITY NOTIFICATION will then be completed, signed, and returned to the originator indicating any special instructions or safety equipment required. This information is to be relayed to the contractor by the person hiring them prior to the contractor beginning work.
- A new FACILITY NOTIFICATION must be completed prior to the contractor working in an area different than was authorized in the notification.
- A copy of the authorized FACILITY NOTIFICATION with any special instructions and/or additional safety equipment will be forwarded to the Site Safety Officer. The Site Safety Officer will verify that all contractors' employees have the required safety equipment as outlined in the FACILITY NOTIFICATION before being allowed access to the facility.
- The Site Safety Officer will not admit any contractor without an authorized FACILITY NOTIFICATION.
- Prior to allowing a contractor access to the facility, the Site Safety Officer will contact the Department Manager or Foreman for the area the work is to be performed. (Note: This will be indicated on the FACILITY NOTIFICATION). The Department Manager or Foreman will complete and sign the WORK PERMIT (Attachment C) authorizing the contractor to work in the specified area for that immediate work shift indicating any special instructions for the contractor on the permit.
- The contractor will retain the WORK PERMIT until the end of the shift. He will then return it to the Site Safety Officer when signing out.

ATTACHMENT B

FACILITY NOTIFICATION OF CONTRACTOR WORK

CONTRACTOR: ______________________________

ADDRESS: ______________________________

APPROXIMATE NUMBER OF EMPLOYEES PERFORMING WORK FOR THE REMEDIATION CONTRACTOR: ______________________________

DATE WORK IS TO BEGIN: ______________________________

AREA(S) WHERE WORK IS TO BE PERFORMED: ______________________________

____

WORK TO BE PERFORMED: ______________________________

____

APPROXIMATE DURATION OF PROJECT: ______________________________

PERSON HIRING CONTRACTOR: ______________________________

SPECIAL INSTRUCTIONS: ______________________________

____

ADDITIONAL SAFETY EQUIPMENT REQUIRED: ______________________________

____

CHEMICAL HAZARDS IN WORK AREA: ______________________________

____

AUTHORIZATION: ______________ ______________________________

DATE: ______________________________

ATTACHMENT C

WORK PERMIT

DATE: ____

SHIFT: ____

CONTRACTOR: ______________________________________

WORK AREA: _______________________________________

SPECIAL INSTRUCTIONS:

____

____

____

____

DEPARTMENT MANAGER: ______________________________

ATTACHMENT D

SAFETY ORIENTATION - AWARENESS TRAINING

FOR AUTHORIZED EMPLOYEES AND SUBCONTRACTORS

NAME OF JOB-SITE:
PRESENTED BY:
DATE/TIME/LOCATION:

AWARENESS TRAINING OUTLINE REVIEWED WITH ACKNOWLEDGMENT SHEET ATTACHED:

I. INTRODUCTION

1) Corporate Safety Statement

2) Safety Program Synopsis

3) Conduct on Customers Property

4) Fitness for Duty Program

5) Brief review of following sections of Subpart C - General Safety and Health Provisions:

   - 1926.20(a) Contractor requirements: Must maintain site free of conditions that are "unsanitary, hazardous, or dangerous to health or safety". OSHA's definition of a "Competent Person".
   - 1926.21 Safety Training and Education: employees must be instructed in recognition, avoidance and prevention of unsafe conditions.
   - 1926.23 First Aid & Medical Attention. Access to medical records and confidentiality.
   - 1926.25 Housekeeping

6) Brief review of the following sections of Subpart D:

   - 1926.51 Sanitation; Potable/non-potable water; toilets/washing facilities; Food handling.
   - 1926.1101 Asbestos; only certified personnel may handle asbestos containing materials.

$ 1926.65 Hazardous Materials - only certified personnel may handle hazardous materials.

II. HAZARD COMMUNICATION (1926.59; 1910.1200)

1) Purpose of standard

2) Sources of information: Material Safety Data Sheets (MSDS), labels

3) Material Safety Data Sheets:

- Materials for which required
- Definition of basic terminology:
  - flammable/combustible liquids
  - flash point
  - corrosive
  - chronic/acute exposures
  - routes of entry (give examples, particularly of inhalation)
  - target organs
- Review sample MSDS
- Right of access and location of MSDS

4) Labeling

- Requirements for labeling - all containers must be labeled.
- Alternative methods (signs, placards, batch ticket, etc.)

5) Process Safety Management (1926.64; 1910.119)

- Prevent catastrophic releases hazardous chemicals

III. PERSONAL PROTECTIVE EQUIPMENT (1926 SUBPART E)

1) Head Protection (1926.100; 1910.135)

- General requirements - hard hats required at all times
- ANSI standards
- Care for and inspection

2) Hearing Protection (1926.101; 1926.52; 1910.95)

- Brief review of Occupational Noise Exposure requirements (decibel levels, effect on hearing, audiometric exams)
- Hearing protection types; noise reduction ratings
- Signs for posted areas

3) Eye and Face Protection (1926.102, 1910.133)

- ANSI Safety Glasses required at all times (Z-87)
- Review selection guide for types of protection

4) Respiratory Protection (1926.103, 1910.134)

- Proper use and limitations of respirators (half and full face)
- Requirements for fit testing and ability to wear determination
- Fit check procedures when donning
- Care for, cleaning, inspection, and storage

5) Other

- Safety shoes
- Gloves
- Protective clothing and chemical protection
- Electrical protection

IV. FIRE PROTECTION (1926 SUBPART F)

Remediation Contractor Personnel are not fire fighters. Use of extinguishers is for inception stage only. Immediately call for professional firefighters.

1) Concept of fire triangle

2) Classes of fire

3) Extinguisher types appropriate for hazard

4) Hands on demonstration of use (when permissible)

5) Flammable/combustible liquid storage

6) Approved safety cans for flammable liquids

7) Quantities limitations for storage

8) Bonding/grounding requirements

9) Maintain access to exits, emergency equipment

10) Hot Work Permits

11) Temporary heating devises (1926.154)

V. FALL PROTECTION (1926 SUBPART M)

1) Six (6) foot elevation requirement

2) Design specifications for lifelines and lanyards

3) Show how to wear harness properly

4) Inspection if the responsibility of worker to be performed prior to putting on

5) Ladders

- Condition of ladders
- Proper pitch and securing/tie off
- Rails extend 36" above landing

6) Guarding floor and wall openings (1926.500)

- General description of when guardrail protection is required

7) Crane suspended personnel platforms (1926.550 (g) - If used

8) Aerial lifts (1926.556)

- Fall protection requirements must comply when stepping foot within basket
- Only full body harness acceptable (no use of safety “belts”)

VI. CONFINED SPACE ENTRY (1910.146)

1) Definition of and examples

2) Permit required/non-permit required spaces

3) Atmospheric testing requirements

4) Rescue plans, retrieval devises

5) Safety monitor responsibilities

VII. LOCKOUT/TAGOUT (1910.147)

1) Applies to all energy sources

2) General purpose & examples of when required

3) Use of lock box technique

4) Must be aware of plant specific procedures

VIII. DEMOLITION (1926 SUBPART T)

1) Engineering Survey

2) Shoring/bracing of walls and floors

3) Utility services/process line disconnects

4) Presence of hazardous materials

- Asbestos; certified workers required
- Lead; requirements to check lead content, work practices and training based on presence of lead.
- Cadmium; requirements to check cadmium content, work practices and training based on presence of cadmium.

5) Protection of floor/wall openings and entrances

IX. GENERAL SAFE WORK PRACTICES

1) Proper body mechanics and lifting techniques

2) Project Emergency and Evacuation Plan

3) Emergency telephone numbers posted in job-site office/trailer.

X. SITE SPECIFIC HAZARDS/TOPICS

SITE SAFETY AND HEALTH ORIENTATION AWARENESS & ACKNOWLEDGMENT

DECLARATION OF UNDERSTANDING
NAME OF JOB-SITE:
PRESENTED BY:
DATE/TIME/LOCATION:

The undersigned have participated in; acknowledge, understand and will follow the safety procedures, rules and guidelines covered during the Remediation Contractor Orientation/Safety Training (copy of topics attached). I understand that copies of all procedures are available to me at any time and I have received copies of all requested procedures. By signing below I understand these safety rules are for my own protection and I will follow them to protect my co-workers the environment and me. I understand these safety rules are a condition of employment and failure to follow safe work practices may result in disciplinary action and/or loss of employment. If I ever believe an unsafe condition may exist I will stop work immediately and contact my foreman/supervisor/project manager.

	NAME	SIGNATURE	EMPLOYEE ID #	DATE
1				
2				
3				
4				
5				
6				
7				

Attachment 11
Respiratory Protection Program

RESPIRATORY PROTECTION PROGRAM

1.0 PURPOSE

The standard established uniform guidelines for complying with the requirements of the Occupational Safety and Health Administration (OSHA) for Respiratory Protection, Title 29, Part 1910, Section 134 of the Code of Federal Regulations, and provides organization-wide procedures for the proper selection, use and care of respiratory protective equipment.

2.0 SCOPE

This standard applies to all remediation projects with which there is a potentially elevated airborne exposure above regulatory permissible exposure limits.

3.0 POLICY

Every consideration will be given to the use of effective administrative and engineering controls to eliminate or reduce exposure to respiratory hazards to the point where respirators are not required in controlling toxic substances, appropriate respiratory protective equipment will be provided by the company at no charge to the employee.

Respiratory protective devices will be appropriate for the hazardous material(s) involved, and the extent and nature of the work requirements and conditions.

Employees required to use respirators will be properly fitted, appropriately tested, medically screened, and thoroughly trained in their use.

4.0 CODES AND REGULATIONS

General applicability of Codes and Regulations. Except to the extent that requirements that are more stringent are written directly into this standard, all applicable codes and regulations have the same force and effect as if copied directly into this standard.

Federal Regulations: Those standards governing the development of this program include, but are not limited to, the following:

- Asbestos Regulations - Industrial

- Title 29, Part 1910 Section 1001 of the Code of Federal Regulations
- Asbestos Regulations - Construction
- Title 29, Part 1926, Section 1101 of the Code of Federal Regulations
- Lead Regulations - Construction
- Title 29, Part 1926, Section 62 of the Code of Federal Regulations
- Respiratory Protection
- Title 29, Part 1910, Section 134 of the Code of Federal regulations, as revised April 8, 1998.
- Access to Employee Exposure and Medical Records
- Title 29, Part 1910, Section 20 of the Codes of Federal Regulations
- NIOSH Approvals for Respirators
- Title 42 CFR 84, of the Code of Federal Regulations, as revised April 8. 1998.
- American National Standards Institute (ANSI)
- American National Standard: Practices for respiratory Protection, Z88, 2-1980, revised 1992.

5.0 DESIGNATION OF ADMINISTRATOR

The designated program administrator if the Corp. Safety Officer who has the responsibility for implementation of, and the adherence to, the provisions of this respiratory protection program. The Corp. Safety Officer will designate a person who is responsible for the enforcement of the program at each job site. This will be the site supervisor/foreman, the ESS or on-site safety coordinator.

In order to comply with OSHA=s Acompetent person@ requirements, the person designated must have two qualifications. He or she must have experience in identifying and controlling exposures, and authority to promptly prevent and correct hazardous conditions.

6.0 PURCHASE OF APPROVED EQUIPMENT

In order to comply with the provisions of OSHA=s Standard on Respiratory Protection, 29 CFR 1910.134, all respiratory protective equipment purchased by the Remediation Contractor will have been tested by the National Institute of Occupational Safety and Health (NIOSH) and will carry a joint NIOSH/MSHA approval number for that specific respirator assembly. All respiratory protective equipment purchased after October 8, 1998 will have been tested by NIOSH and will carry a NIOSH specified approval number for that specific respirator assembly.

7.0 RESPIRATORY SELECTION

In selecting the correct respirator for a given circumstance the following factors must be taken into consideration:

- **Nature of the Hazard** - In order to make subsequent decisions, the nature of the hazard must be identified to ensure that an over exposure does not occur. These include oxygen deficiency, physical properties of the hazard, actual concentrations of the toxic substances, the Permissible Exposure Limits (PEL), and the warning characteristics.
- **Nature of the Hazardous Operations** - For proper respirator selection, it is necessary to know the details of the operations, which require employees to use devices. These include operations or process characteristics, and work characteristics, which may necessitate alternate respirator selection.
- **Location of the Hazardous Area** - This is important in the selection process so that a backup system may be planned, if necessary. Respirable or emergency operations may be planned.
- **Time Respiratory Protection is Required** - The length of time a respirator will have to be worn by an employee is a factor, which must be evaluated. This is most pronounced when using SCBA equipment where, by definition, the air supply is limited. However, time is also a factor during routine use of air purifying respirators when the employee=s breathing and comfort become affected by clogged filter cartridges which may need changing.
- **Employee=s Health** - Effective usage of a respirator is dependent on an individual=s ability to wear a respirator as determined by a physician. Most respiratory devices increase physical stress on the body, especially the heart and lung. Care should be taken to ensure that medical determination has been made that an individual is capable of wearing a respirator for the duration of the work assignment (See Section 11.0 of the Standard).
- **Work Activity** - The type of work activities to be performed while wearing a respirator is vitally important in the respirator selection. The proper respirator will be one, which is least disruptive to the task being conducted, yet providing the desired protection.
- **Respirator Characteristics, Capabilities, and Limitations** - The tables in Exhibits 1 and 2 have been reproduced from ANSI Z99.2-1992. They provide a description of various respirator characteristics, capabilities, and limitations.
- **Protection Factors** - The protection afforded by respirators is dependent upon the seal of the face piece to the face. The degree of protection may be ascertained and a relative safety factor as designed. Protection factors are only applicable if all elements of an effective respirator program are in place and being enforced.

7.1 Selection

Where respirators are used, the Remediation Contractor will select and provide, at no cost to the employees, the appropriate respirator, as specified in the following charts, and will ensure that the employee uses the respirator provided.

Exhibit 3 - Selection Chart for Routine Respirator Use

7.2 Comfort

Once the type of respirator has been selected, that is applicable and suitable for the purpose intended, the selection process should give consideration to the fit and comfort of the respirator. The employee should be given the opportunity to select a respirator, which provides the most comfortable fit. Since each respirator represents a different size and shape, a respirator, which fits better during selection, will provide better protection after fit testing. For this purpose, the employee should be shown how to access a comfortable device and should eliminate those, which are obviously ill fitting.

An assessment of comfort should include the following points:

Chin properly placed
Positioning of mask on nose
Strap tension
Room to talk
Cheeks filled out
Fit across nose bridge
Room for safety glasses
Distance from nose to bridge
Tendency to slip
Hindrance to movement

8.0 ISSUANCE OF EQUIPMENT

When practical, respirators should be assigned to individual employees for their exclusive use and labeled for identification in such a way as not to affect the performance of the respirator.

8.1 Fitting

After the employee has been shown how to assess a respirator, he/she should be shown how to don a respirator, how it should be positioned on the face, how to set strap tension, and how to determine a proper fit.

Note: The instruction should take the form of a review and should not be considered the employee’s formal training.

The employee should hold each face piece up to the face and eliminate those, which obviously do not give a comfortable or proper fit. Normally, fitting should start with a half-face mask and if a good fit cannot be found, the employee should then try a full-face mask.

8.2 Familiarization

Once the proper fitting respirator has been selected, the employee should don the device, adjusting the face piece and tension straps. He/she should wear the mask for as least five minutes before taking it off and putting it on several times, adjusting the straps each time to become familiar with the respirator and adept at setting the proper tension on the straps.

8.3 Fit-Testing Requirements

OSHA requires that respirators be fitted properly and that they be tested for their face piece to face seal. There are currently two methods acceptable for conducting these tests. Qualitative and Quantitative Fit Testing. The Qualitative method is a fast, easily conducted test that can be performed almost anywhere, while the Quantitative method requires the use of bulky test chambers and very expensive electronic equipment. The Qualitative method applies only to negative pressure non-powered air-purifying respirators. Due to numerous field locations in which fit testing must be accomplished, the Qualitative fit test shall be utilized throughout the Remediation Contractor's organization.

Qualitative fit testing is based on the wearer's subjective response to the test agent of chemical of which the two most popular tests are: the odorous vapor test, and the taste test. (See Exhibit 5 procedures). The following represents a brief summary of how to conduct each of these tests.

8.3.1 Odorous Vapor Test

The odorous vapor test relies on the respirator wearer's ability to detect odorous materials, usually isoamyl acetate saturated material around the outside of the respirator. If the wearer is unable to smell the chemical, then a satisfactory fit is assumed to be achieved.

When an air-purifying respirator is tested by this method, it should be equipped with an inorganic vapor cartridge, which removes the test vapor from the air.

Note: This test is solely dependent upon the employee's honest response, there is no involuntary reaction. For that reason, it is the preferred test method.

8.3.2 Taste Test

The taste test relies upon the wearer's ability to detect a chemical substance, usually sodium saccharin, by tasting it inside the respirator. The test performed by placing an enclosure over the respirator wearer's head and shoulders, and spraying the test agent into the enclosure with a nebulizer. If the wearer is unable to taste the chemical, then a satisfactory fit is assumed to be achieved.

Note: This test is totally dependent on the wearer's honest indication of taste. There is no involuntary response and therefore is not preferred as the method of testing. When conducting this type of test, the person being tested must not be allowed to eat, drink, chew gum or tobacco, or smoke.

8.4 Field Test

There are two tests that are used in the field to check the seal of the respirator. These are known as the positive and negative pressure sealing tests. Each of these two tests must be performed every time a respirator is put on, and prior to entering a contaminated area.

Note: Although both the positive and negative pressure tests are considered essential to a good respiratory protection program and should always be used prior to entering an area of exposure, they are recognized solely as a field test and cannot be substituted for the qualitative fit test.

8.4.1 Positive Pressure Test

1. This test only applies to those respirators, which have an exhalation valve, which can be blocked. The exhalation valve may have to be removed for the test.
2. Close or Ablock off@ the exhalation valve.
3. Exhale gently into face pieces.
4. If a slight pressure is built up, with no apparent outward leakage around face pieces to face, seal is assumed to be satisfactory.

8.4.2 Negative Pressure Test

1. Close the inlet opening or hose of the respirator face pieces with the hand(s), tape or the other means.
2. Inhale gently so that the face pieces collapse slightly and hold the breath for ten seconds.
3. If the face piece remains slightly collapsed and no inward leakage occurs, then the face piece to seal is assumed satisfactory.

8.5 Record Keeping of Test Results

A summary of the test results for each employee on whom a qualitative fit test was conducted will be documented on the Respirator Test Summary (See Exhibit 6). This record will then become a part of the employee=s medical record and will be retained for the same time period as the medical records.

9.0 TRAINING

Respirators will not be issued to individuals (including company officials, subcontractors, or visitors) who have not received appropriate training and medical clearance.

9.1 Training Program

The extent and frequency of employee training depends primarily on the nature and extent of the hazard. As a minimum, all employees and supervisory personnel will be trained in basic respirator practices. It must be remembered that respirators are effective only when they are acceptable to the employee and worn properly by him/her. Because proper use depends especially upon the wearer's motivation, it is important that the need for the respirator be explained fully.

The basic respirator-training program must include:

- A discussion of the nature of airborne contaminants against which the employee must be protected and why engineering and/or administrative controls have not been effective in controlling exposure to the point where respirators are not required.
- A discussion of why the respirator, which has been selected for this job, is the proper device for this particular purpose.
- Instruction on the respirator=s limitations, emphasizing such things as oxygen deficiency, toxic contaminants which are immediately dangerous to life or health, and the need for

changing filter cartridges when indicated to do so by testing, or when breathing resistance increases to an uncomfortable level.

- Instructions on how to inspect the respirator and ensure that it is in proper working condition.
- Instructions on how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to wear the respirator comfortably.
- Instructions on the method of fit-testing used and the proper way to conduct positive and negative pressure test each time the respirator is put on. During this instruction, the wearer must be made to understand that the respirator cannot be used when conditions prevent a satisfactory face piece to face seal. If this condition cannot be corrected, the employee cannot be allowed into the area requiring the use of a respirator.
- Instructions in the proper care and maintenance of the respirator.
- A discussion on the value of medical surveillance and air sample exposure monitoring.
- Field training to recognize and cope with any type of emergency while using the respirator.

9.2 Respirator Training Record

Upon completion of the basic respirator training program, the employee will be required to read and sign the Respirator Training Record (See Exhibit 5) attesting to the fact that they have received the basic training program and feel confident in their ability to use the respirator properly. The signed and dated Respiratory Training Record will then become part of the employee's medical records and will be retained for the same period of time as those records.

10.0 CARE AND MAINTENANCE

Personnel involved in respirator maintenance must be thoroughly trained. Substitution of parts from different brands or type of respirators invalidate approval of the device. Repairs and adjustments should never be made beyond the manufacturer's recommendations.

10.1 Cleaning the Respirator

Respirators must be cleaned and disinfected after each day's use when they are assigned to one individual or after each use if they are assigned to more than one person. The following procedures are recommended for cleaning and disinfecting the respirator:

- If required, remove and discard filters or cartridges.
- Wash face piece and breathing tube in detergent and warm water (120^0F) or cleaner/disinfectant solution. Use a soft brush to facilitate removal of dirt. Cleaner/disinfectant solutions are available from respirator manufacturers or it can be made

using a solution of water and household chemicals such as two tablespoons of chlorine bleach to one gallon of water or one teaspoon or tincture of iodine solution is sufficient for disinfecting. <u>Do not use an alcohol-based solution to clean and disinfect a respirator face piece.</u>
- Rinse completely in clean warm water.
- Air-dry in clean air.
- Clean out other parts, as recommended by the manufacturer.
- Inspect the valves, head straps, and other parts - replace with new parts if defective.
- Place face piece in a plastic bag or container for storage in an assigned area.
- Insert new filters or cartridges prior to use, making sure the seals are tight.

10.2 Storing the Respirator

When they are not being used, respirators should be individually sealed in plastic bags and stored at convenient locations in order to protect them against dust, sunlight, extreme temperatures, excessive moisture, or damaging chemicals. They should be stored in such a way that the face piece and exhalation valve are not being distorted.

10.3 Inspecting the Respirators

All respirators should be inspected before and after use, and at least monthly by a competent person to assure that they are in satisfactory working condition. A general inspection checklist should include:

- Tightness of connections
- Conditions of face piece straps, connecting tubes, and cartridge
- Condition of exhalation and inhalation valves: If the side of the exhalation valve gaps even slightly, it must be replaced with a new valve.
- Pliability and flexibility of rubber parts: Deteriorated rubber parts must be replaced, unused rubber parts should be worked, stretched and manipulated, with a massaging action.
- Proper function of regulations and warning devices

Respiratory protection is no better than the condition of the respirator in use, even though it is worn conscientiously. Frequently, random inspections must be conducted by a qualified individual to assure that the respirators are properly selected, fitted, used, cleaned, and maintained.

On the inside of the respirator face piece, the manufacturer is required to affix a stamp indicating the production date of the face piece. Respirator face pieces have a life expectancy of three years, therefore, face pieces should be replaced after every three years of use.

Note: For a detailed respirator checklist, refer to the Respirator Inspection Chart in Exhibit 7.

10.4 Care and Maintenance Records

A written record should be maintained of the Care and Maintenance program within each individual company. Information contained on this record should include inspection reports, replacement parts used, dates of repair, cleaning and type of disinfectant used and the names of persons doing the work. The respirator should be identified by manufacturer, model, and approval number. Records should be retained for a period of five years.

11.0 MEDICAL REQUIREMENTS

Remediation Contractor employees will not be assigned to tasks requiring the use of a respirator unless it has been determined that they are physically able to perform work, and use the respirator.

11.1 Medical Examinations

Employees who are working at or above the Action Level[1] of a toxic substance for thirty (30) days or more per year, or who are using a negative pressure respirator, will be required to undergo a medical evaluation of the following frequency:

- Prior to assignment of a respirator for those employees who will be issued a negative pressure respirator.
- At least annually thereafter.

Each procedure of the medical examination and evaluation will be performed by or under the supervision of a licensed physician and will include, as a minimum, a chest x-ray both posterior and anterior, a medical and work history and special emphasis directed to the pulmonary, cardiovascular, and gastrointestinal systems to determine the presence of any possible respiratory

[1] There is no Action level associated with asbestos exposure; therefore, workers assigned to asbestos work areas will be issued respirators independent of employee exposure levels.

diseases. A pulmonary function test which will include both the maximum amount of air that can be expired from the lungs after full inhalation (FVC) and maximum amount of air forcibly expired in one second after exhalation (FEV10).

The only exception to this requirement, for an initial medical examination, is if the employee or company can provide adequate records/documentation to show that he/she has been examined in accordance with the provision of this program within the past one (1) year period.

11.2 Medical Forms

When conducting the initial medical examination, the standard medical questionnaire must be used. During the annual re-examination, the abbreviated standardized medical questionnaire should be used.

In addition to the standardizing questionnaires, the physician must also be furnished with a copy of the latest OSHA standards governing the type of exposure the employee will be involved in. A description of the employee's duties as they relate to the exposure, the anticipated exposure level, a description of the respiratory protection equipment to be used, and any available information from the previous medical examinations of the employee must also be furnished to the physician.

At the conclusion of the examination, the physician will submit a written opinion to the Remediation Contractor. This will contain the results of the examination, and conditions discovered by the physician that will prohibit the employee from using a respirator and any recommendations from the physician regarding the employee's limitations. It will also contain a statement from the physician that he/she has informed the employee of the results of the examination. A copy of the physician's opinion must be furnished to the employee by the company within thirty (30) days of its receipt by the company.

11.3 Maintenance Records

All records pertaining to the employee's medical examination must be retained for a period of thirty (30) years.

12.0 WORK AREA SURVEILLANCE

As of October 8, 1998, the Respiratory Protection Standard 29 CFR 1910.134, requires the employer to monitor the continued effectiveness and appropriateness of the respirators selected for a particular work area. This includes identification of work area containment(s), the nature of the hazards, concentration at the breathing zone and, if appropriate, biological monitoring. The industrial hygienist who is conducting the air sampling should carefully document any apparent deficiencies in surveillance necessary to the respirator program.

13.0 VOLUNTARY USE OF RESPIRATORS[2]

The Remediation Contractor will periodically perform Negative Exposure Assessments (NEA) in order to document worker exposure and ensure the proper selection of respirators. If the NEA indicates that a specific work practice does not require the use of respirators, then the employees assigned to such tasks will not be issued respirators. However, if employees voluntarily decide to wear respirators, they must participate in the Remediation Contractor Medical Surveillance Program.

14.0 PROGRAM EVALUATION

The program administration should periodically assess the effectiveness of the respiratory protection program during all phases of operation in which respiratory protection is being used. Frequent walk-through inspections during these activities should be conducted to monitor and document supervisor and worker compliance with the requirements of the program. In addition to specific evaluations of the respirator cleaning, inspection, maintenance, desired results of these operations are consistently achieved.

15.0 VIOLATION AND DISCIPLINARY ACTION

Respiratory protection is a crucial part of the company's overall safety program. As such, mandatory compliance with all aspects of this program, by those employees required to use a respirator, is a condition of continuing employment.

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2 As of October 8, 1998, Respiratory Protection Programs must include provisions for voluntary use of respirators.

15.1 Disciplinary Action

When it has come to the attention of a supervisor that an employee has deliberately removed his/her respirator or broken the face piece to the seal while in the contaminated area, the employee will be immediately suspended from work and instructed to leave the job site pending a final disposition. Random spot checks will be conducted to determine the effectiveness of the employee's fit test. Should the check, which will be a positive or negative pressure test conducted under the direction of a supervisor, indicated that the employee's respirator does not have satisfactory seal, the employee will be advised accordingly and instructed to leave the contaminated area. A written citation will be issued to the employee the first time he/she fails a random check. Two such citations on the same job will be sufficient cause for dismissal.

16.0 REPORTING RESPIRATOR PROBLEMS

Occasionally, the company may find a defect in the design or performance of a respirator. The best course to follow is to report these findings to the administrator of the company's respiratory protection program, which in turn, should report to the Remediation Contractor's Safety Officer. The respirator carries with it the approval of the National Institute of Occupational Safety and Health (NIOSH), the Corporate Safety Officer will report the findings to the respirator's manufacturer and to NIOSH.

This will be done by notifying the manufacturer of the defect in a report format and forwarding a copy of the report to NIOSH. The report will include the following:

- The name, address, and telephone number of the Remediation Contractor
- The name of the respirator's manufacturer
- Model number of the respirator
- The name and part number (if possible) of the defective part
- A brief description of the respirator's use when the defect was discovered
- A description of the defect
- A description of the defects adverse effect on the respirator's performance

This report should be addressed to the NIOSH Division of Safety Research, testing and Certification Branch, 944 Chestnut Ridge Road, Morgan Town, West Virginia 26595.

EXHIBIT 1
CLASSIFICATION AND DESCRIPTION OF RESPIRATOR BY MODE OF OPERATION

1.0 ATMOSPHERE-SUPPLYING RESPIRATORS

A respirable atmosphere independent of the ambient air is supplied to the wearer.

Self-Contained Breathing Apparatus (SCBA). A supply of oxygen, or oxygen-generating material is carried by the wearer. Normally equipped with full-face piece, but may be equipped with a quarter-mask face piece, half-mask, helmet, hood or mouthpiece, and nose clamp.

1.1. Closed-Circuit SCBA (Oxygen only, negative pressure or positive pressure)

1.1.1 Compressed or Liquid Oxygen Type

Equipped with a face piece or mouthpiece and nose clamp. High-pressure oxygen from a gas cylinder passes through a high pressure-reducing valve and, in some designs, through a low-pressure admission valve to a breathing bag or container. Liquid oxygen is converted to low pressure gaseous oxygen and delivered to the breathing bag. The wearer inhales from the bag, through a corrugated tube connected to a mouthpiece or face piece and a one-way check valve. Exhaled air passed through check valve and tube into a container of carbon dioxide removing chemical or as the bag deflates sufficiently to actuate an admission valve. A pressure-relief system is provided; and a manual bypass system and saliva trap may be provided depending upon the design.

1.1.2 Compressed or Liquid Oxygen Type

Equipped with a face piece or mouthpiece and nose clamp. Water vapor in the exhaled breath reacts with chemicals in the canister to release oxygen to the breathing bag. The wearer inhales from the bag through a corrugated tube and one-way check valve at the face piece. Exhaled air passes through a second check valve breathing tube assembly into the canister. The oxygen-release rate is governed by the volume of exhaled air. Carbon dioxide in the exhaled breath is removed by the canister fill.

1.2. Open-Circuit SCBA (Compressed air, compressed oxygen, liquid air, liquid oxygen)

A bypass system is provided in case of regulator failure, except on escape-type units.

1.2.1 Demand Type C

Equipped with a face piece or mouthpiece and nose clamp. The demand valve permits oxygen or airflow only during inhalation. Exhaled breath passes to ambient atmosphere through a valve(s) in the face piece.

1.2.2 Pressure-Demand Type D

Equipped with a face piece only. Positive pressure is maintained in the face piece. The apparatus may have provisions for the wearer to select the demand or pressure-demand mode of operation, in which case the demand mode should be used only when donning or removing the apparatus.

1.3. Supplied-Air Respirator

1.3.1 Hose Mask

Equipped with a face piece, breathing tube, rugged safety harness, and a large diameter heavy-duty non-kinking air supply hose. The breathing tube and air-supply hose are securely attached to the harness. The face piece is equipped with an exhalation valve. The harness has provisions for attaching a safety line.

1.3.2 Hose Mask with Blower

Air is supplied by a motor driven or hand operated blower. The wearer can continue to inhale through the hose if the blower fails. Up to 200 feet (91 meters) of hose length is permissible.

1.3.3 Hose Mask without Blower

The wearer provides motivating force to pull air through the hose. The hose inlet is anchored and filled with a funnel or like object covered with a fine mesh screen to prevent entrance of coarse particulate matter. Up to 75 feet (23 meters) of hose length permissible.

1.4 Air-Line Respirator

Respirable air is supplied through a small diameter hose from a compressor or compressed air cylinder(s). The hose is attached to the wearer by a belt or other suitable means and can be detached readily in an emergency. A flow-control valve or orifice is provided to govern the rate of air to the wearer. Exhaled air passes to the ambient atmosphere through a valve(s) or opening(s) in the enclosure (face piece, helmet, hood or suit). Up to 300 feet (91 meters) of hose length is permissible.

1.4.1 Continuous-Flow Class

Equipped with a face piece, hood, helmet, or suit. At least 115 liters (4 cubic feet) of air per minute to light-fitting face pieces and 170 liters (6 cubic feet) of air per minute to loose-fitting helmets, hoods, and suits are required. Air is supplied to a suit through a system of internal tubes to the head, trunk, and extremities through valves located in appropriate parts of then suit.

1.4.2 Demand Type C

Equipped with a face piece only. The demand valve permits the flow of air only during inhalation.

1.4.3 Pressure Demand Type D

Equipped with a face piece only. A positive pressure is maintained in the face piece.

1.4.4 Combination Air-Line Respirators with Auxiliary Self-Contained Air Supply

Include an airline respirator with an auxiliary self-contained air supply. To escape from a hazardous atmosphere in the event the primary air supply fails to operate, the wearer switches to the auxiliary self-contained air supply. Devices approved for both entry into and escape from dangerous atmospheres has a low-pressure warning alarm and contain at least 15-minute self-contained air supply.

1.4.5 Combination Atmosphere-Supply and Air-Purifying Respirators

Provide the wearer with the option of using either of two different modes of operation:

1. An atmosphere-supplying respirator with an auxiliary air purifying attachment which provides protection in the event the air supply fails; or
2. An air-purifying respirator with an auxiliary self-contained air supply which is used when the atmosphere may exceed safe conditions for use of an air-purifying respirator.

2.0 AIR-PURIFYING RESPIRATORS

Ambient air, prior to being inhaled, is passed through a filter, cartridge or canister which removes particles, vapors, gases, or a combination of these contaminants. The breathing action of the wearer operates the non-powered type of respirator. The power type contains a blower - stationary or carried by the wearer - which passes ambient air through an air-purifying component and then supplies purified air to the respirator inlet covering.

The non-powered type is equipped with a face piece or mouthpiece and nose clamp. The powered type is equipped with a face piece, helmet, hood, or suit.

2.1. Vapor – and Gas – Removing Respirator

Equipped with cartridge(s) or canister(s) to remove a single vapor or gas (for example, chlorine gas), a single class of vapors or gases (for example: dust and fume), from air. Filter may be a replaceable part of a permanent part of the respirator. Filter may be the single-use or the reusable type.

2.2. Particulate-Removing Respirators

Equipped with filter(s) to remove a single type of particulate matter (for example: dust), or a combination of two or more types of particulate matter (for example: dust and fume), from air. Filter may be a replaceable part of a permanent part of the respirator. Filter may be the single-use or the reusable type.

2.3. Combination Particulate – and Vapor – and Gas – Removing Respirator

Equipped with cartridge(s) or canister(s) to remove particulate matter, vapors, and gases from air. The filter may be a permanent part, or replacement part of a cartridge or canister.

A. Device procedures negative pressure on respiratory inlet covering during inhalation

B. Device procedures positive pressure on respiratory inlet covering during both inhalation and exhalation.

C. Equipped with a demand valve that is activated on initiation of inhalation and permits the flow of breathing atmosphere to the face piece. On exhalation, pressure in the face piece becomes positive and the demand valve is deactivated.

D. A positive pressure is maintained in the face piece by a spring loaded or balanced regulator and exhalation valve.

EXHIBIT 2
CAPABILITIES OF RESPIRATORS

1.0 ATMOSPHERE-SUPPLYING RESPIRATORS

Atmosphere-supplying respirators provide protection against deficiency and toxic atmospheres. The breathing atmosphere is independent of ambient atmospheric conditions.

1.1. General Limitation

Except for some airline suits, no protection is provided against skin irritation by material such as ammonia and hydrogen chloride, or against sorption of materials such as hydrogen cyanide, tritium, or organic phosphate pesticides through the skin. Face pieces present special problems to individuals required to wear prescriptive lenses (See 9.1). Use of atmosphere-supplying respirators in atmospheres immediately dangerous to life or health is limited to specific devices under specified conditions (See Table 5 and 9.3 and 9.4).

1.2. Self Contained Breathing Apparatus (SCBA)

The wearer carries his/her own breathing atmosphere.

1.2.1 Limitations

The period over which the device will provide protection is limited by the amount of air or oxygen in the apparatus, the ambient atmospheric pressure (service life of open-circuit devices is cut in half by a doubling of the atmospheric pressure), and the type of work being performed. Some SCBA devices have a short service life (less than 15 minutes) and are suitable only for escape (self-rescue) from an irrespirable atmosphere.

Chief limitations of SCBA devices are their weight or bulk, or both, limited service life, and the training required for their maintenance and sale use.

1.3 Closed-Circuit SCBA

The closed-circuit operation conserves oxygen and permits longer service life at reduced weight. The negative pressure type produces a negative pressure in the respiratory -inlet covering during inhalation, and this may permit leakage of contaminants, whereas the positive pressure type always maintains a positive pressure in the respiratory-inlet covering, and is less apt to permit inward leakage of contaminants.

1.3.1 Open-Circuit SCBA

The demand type produces a negative pressure in the respiratory-inlet covering during inhalation, whereas the pressure-demand type maintains a positive pressure in the respiratory-inlet covering during inhalation, and is less apt to permit inward leakage of contaminants.

1.3.2 Supplied-Air Respirators

The respirable air supply is not limited to the quantity the individual can carry, and the devices are lightweight and simple.

1.2.1.1 Limitations

Limited to use in atmospheres from which the wearer can escape unharmed without the aid of the respirator. The wearer is restricted in movement by the hose and must return to a respirable atmosphere by re-tracing his/her route of entry. The hose is subject to being severed or pinched off.

1.3.□ Hose Mask

The hose inlet or blower must be located and secured in a respirable atmosphere.

1.3.1 Hose Mask with Blower

If the blower fails, the unit still provides protection, although a negative pressure exists in the face piece during inhalation.

1.3.2 Hose Mask without Blower

Maximum hose length may restrict application of device.

1.4 Air-Line Respirator (Continuous Flow, Demand, and Pressure-Demand Types)

The demand type produces a negative pressure in the face piece on inhalation, whereas continuous-flow and pressure-demand types maintain a positive pressure in the respiratory-inlet covering and are less apt to permit inward leakage of contaminants. Airline suits may protect against atmospheres that irritate the skin or that may be absorbed through unbroken skin.

1.4.1 Limitations

Airline respirators provide no protection if the air supply fails. Some contaminants, such as tritium, may penetrate the material of an airline suit and limit its effectiveness. Other contaminants, such as fluorine, may react chemically with the material on an airline suit and damage it.

1.4.2 Combination Air-Line Respirators with Auxiliary SC Air Supply

The advantages and disadvantaged, expresses above, of the mode of operation being used will govern. The mode with greater limitations (air-purifying mode) will mainly determine the overall capabilities and limitation of the respirator, since the wearer may for some reason fail to change the mode of operation even though conditions would require such a change.

2.0 AIR-PURIFYING RESPIRATORS

2.1 General Limitations

Air purifying respirators do not protect against oxygen-deficient atmospheres, or against skin irritations by, or sorption through the skin, of airborne contaminants. The maximum contaminant concentration against which an air-purifying respirator will protect is determined by the design efficiency and capacity of the cartridge, canister, or filter, and face piece-to-face seal on the user. For gases and vapors, the maximum concentration for which the air-purifying element is designated is specified by the manufacturer or is listed on labels of cartridges and canisters.

Non-powered air purifying will not provide the maximum design protection specified unless the face piece or mouth piece/nose clamp is carefully fitted to the wearer's face to prevent inward leakage (See 7.4). The time period over which protection is provided is dependent on canister, cartridge, or filter type; concentration of contaminant; humidity levels in the ambient atmosphere; and the wearer's respiratory rate.

The proper type of canister, cartridge, or filter must be selected for the particular atmosphere and conditions. Non-powered air-purifying respirators may cause discomfort, due to noticeable resistance to inhalation. This problem is minimized in powered respirators. Respirators face piece present special problems to individual required to wear prescription lenses (See 9.1). These devices do have the advantage of being small, light, and simple in operation. Use of air-purifying respirators in atmosphere immediately dangerous to life or health is limited to specific devices under specific conditions (See Table 5 and 9.3 and 9.4).

2.1 Vapor and Gas-Removing Respirators

2.1.1 Limitations

No protection is provided against particulate contaminants. A rise in canister or cartridge temperature indicates that a gas vapor is being removed from the inspired air. An uncomfortably high temperature indicates a high concentration of gas or vapor and requires and immediate return to fresh air.

Use should be avoided in atmosphere where the contaminant(s) lacks sufficient warning properties (that is: odor, taste, or irritation at a concentration in air at or above the (permissible exposure limit). Vapor-and-gas-removing respirators are not approved for contaminants that lack adequate warning properties.

Not for use in atmospheres immediately dangerous to life or health unless the device is a powered-type respirator with escape provisions (See Table 5).

- Full Face Piece Respirator provides protection against eye irritation, in addition to respiratory protection.
- Quarter-mask and Half-mask Face Piece Respirator provides a fabric covering (face let) available from some manufacturers shall not be used.
- Mouthpiece Respirator shall be used only for escape applications. Mouth breathing detection of contaminant by odor. Nose clamps must be securely in place to prevent nasal breathing.
- Limitations include no protection is provided against particulate contaminants. A rise in canister or cartridge temperature indicates that a gas or vapor is being removed from the inspired air.

3.0 PARTICULATE-REMOVING RESPIRATORS

3.1 Limitations

Protection against non-volatile particles only. No protection against gases and vapors. Not for use in atmosphere immediately dangerous to life or health unless the device is a powered-type respirator with escape provisions (See Table 5).

3.1.1 Full Face Piece Respirator

Provide protection against eye irritation, in addition to respiratory protection.

3.1.2 Quarter-Mask and Half-Mask Face Piece Respirator

A fabric covering (facelet) available from some manufacturers shall not be used unless approved for use with respirator.

3.1.3 Mouth Piece Respirator

Shall be used only for escape application. Mouth breathing prevents detection of contaminant by odor. Nose clamp must be securely in place to prevent nasal breathing.

3.2 Combination Particulate-and-Vapor-and-Gas Removing Respirators

The advantages and disadvantages of the component sections of the combinations respirator as described above apply.

EXHIBIT 3
SELECTION CHART FOR ROUTINE RESPIRATOR USE

Airborne Concentration of Contaminant	**Required Respirator**
< Permissible Exposure Limit (PEL) over 8-hour Time Weighted Average (TWA)[3]	Respirators not required
≥ PEL but < 10 x PEL	Half-mask air-purifying respirator other than a disposable respirator, equipped with appropriate filter cartridge and/or canister.
≥ 10 x PEL but < 50 x PEL	Full-face piece air-purifying respirator other than a disposable respirator, equipped with appropriate filter cartridge and/or canister.
≥ 50 x PEL but < 100 x PEL	Full-face piece powered air-purifying respirator other than a disposable respirator, equipped with appropriate filter cartridge and/or canister. or Full-face piece supplied-air respirator operated in the continuous flow mode.
≥ 100 x PEL but < 1,000 x PEL	Full-face piece supplied-air respirator operated in the pressure demand mode.
≥ 1,000 x PEL or any unknown concentration	Full-face piece supplied-air respirator operated in the pressure demand mode equipped with a full-face piece self-contained supplied-air escape unit.

3 If at or above the Action Level (normally set at one-half the PEL), medical and employee exposure monitoring is required, as well as the issuance of proper respiratory protection.

EXHIBIT 4
PROCEDURES FOR CONDUCTING A QUALITATIVE FIT-TEST

Part I. OSHA-Accepted Fit Test Protocols

A. Fit Testing Procedures -- General Requirements

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both QLFT and QNFT.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.
3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.
5. The more acceptable face pieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:
   (a) Position of the mask on the nose
   (b) Room for eye protection
   (c) Room to talk
   (d) Position of mask on face and cheeks
7. The following criteria shall be used to help determine the adequacy of the respirator fit:
   (a) Chin properly placed;
   (b) Adequate strap tension, not overly tightened;
   (c) Fit across nose bridge;
   (d) Respirator of proper size to span distance from nose to chin;
   (e) Tendency of respirator to slip;
   (f) Self-observation in mirror to evaluate fit and respirator position.
8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B-1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and retested if the test subject fails the user seal check tests.

9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns, which cross the respirator-sealing surface.
10. Any type of apparel, which interferes with a satisfactory fit, shall be altered or removed.
11. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.
12. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be retested.
13. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.
14. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use, which could interfere with respirator fit.
15. Test Exercises. (a) The following test exercises are to be performed for all fit testing methods prescribed in this appendix, except for the CNP method. A separate fit testing exercise regimen is contained in the CNP protocol. The test subject shall perform exercises, in the test environment, in the following manner:
    (1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.
    (2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.
    (3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.
    (4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).
    (5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

    Rainbow Passage

    When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(7) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist. (8) Normal breathing. Same as exercise (1).

(a) Each test exercise shall be performed for one minute except for the grimace exercise, which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

Qualitative Fit Test (QLFT) Protocols

1. General

(a) The employer shall ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment is in proper working order.

(b) The employer shall ensure that QLFT equipment is kept clean and well maintained so as to operate within the parameters for which it was designed.

2. Isoamyl Acetate Protocol

Note: This protocol is not appropriate to use for the fit testing of particulate respirators. If used to fit test particulate respirators, the respirator must be equipped with an organic vapor filter.

(a) Odor Threshold Screening

Odor threshold screening, performed without wearing a respirator, is intended to determine if the individual tested can detect the odor of isoamyl acetate at low levels.

(1) Three 1-liter glass jars with metal lids are required.

(2) Odor-free water (e.g., distilled or spring water) at approximately 25 deg. C (77 deg. F) shall be used for the solutions.

(3) The isoamyl acetate (IAA) (also known at isopentyl acetate) stock solution is prepared by adding 1 ml of pure IAA to 800 ml of odor-free water in a 1 liter jar, closing the lid and shaking for 30 seconds. A new solution shall be prepared at least weekly.

(4) The screening test shall be conducted in a room separate from the room used for actual fit testing. The two rooms shall be well ventilated to prevent the odor of IAA from becoming evident in the general room air where testing takes place.

(5) The odor test solution is prepared in a second jar by placing 0.4 ml of the stock solution into 500 ml of odor-free water using a clean dropper or pipette. The solution shall be shaken for 30 seconds and allowed to stand for two to three minutes so that the IAA concentration above the liquid may reach equilibrium. This solution shall be used for only one day.

(6) A test blank shall be prepared in a third jar by adding 500 cc of odor-free water.

(7) The odor test and test blank jar lids shall be labeled (e.g., 1 and 2) for jar identification. Labels shall be placed on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.

(8) The following instruction shall be typed on a card and placed on the table in front of the two test jars (i.e., 1 and 2): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also contains a small amount of banana oil. Be sure the covers are on tight, and then shake each bottle for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains banana oil."

(9) The mixtures used in the IAA odor detection test shall be prepared in an area separate from where the test is performed, in order to prevent olfactory fatigue in the subject.

(10) If the test subject is unable to correctly identify the jar containing the odor test solution, the IAA qualitative fit test shall not be performed.

(11) If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.

(b) Isoamyl Acetate Fit Test

(1) The fit test chamber shall be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, a similar chamber shall be constructed using plastic sheeting. The inside top center of the chamber shall have a small hook attached.

(2) Each respirator used for the fitting and fit testing shall be equipped with organic vapor cartridges or offer protection against organic vapors.

(3) After selecting, donning, and properly adjusting a respirator, the test subject shall wear it to the fit testing room. This room shall be separate from the room used for odor threshold screening and respirator selection, and shall be well ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.

(4) A copy of the test exercises and any prepared text from which the subject is to read shall be taped to the inside of the test chamber.

(5) Upon entering the test chamber, the test subject shall be given a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA. The test subject shall hang the wet towel on the hook at the top of the chamber. An IAA test swab or ampule may be substituted for the IAA wetted paper towel provided it has been demonstrated that the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.

(6) Allow two minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of his/her cooperation, and the purpose for the test exercises; or to demonstrate some of the exercises.

(7) If at any time during the test, the subject detects the banana-like odor of IAA, the test is failed. The subject shall quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.

(8) If the test is failed, the subject shall return to the selection room and remove the respirator. The test subject shall repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure described in (b) (1) through (7) above. The process continues until a respirator that fits well has been found. Should the odor sensitivity test be failed, the subject shall wait at least 5 minutes before retesting. Odor sensitivity will usually have returned by this time.

(9) If the subject passes the test, the efficiency of the test procedure shall be demonstrated by having the subject break the respirator face seal and take a breath before exiting the chamber.

(10) When the test subject leaves the chamber, the subject shall remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration buildup in the chamber during subsequent tests. The used towels shall be kept in a self-sealing plastic bag to keep the test area from being contaminated.

3. Saccharin Solution Aerosol Protocol

The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste threshold screening. The saccharin taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of saccharin.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a 3/4-inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold-screening test, the test subject shall breathe through his/her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a sweet taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nozzle is directed away from the nose and mouth of the person. This nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The threshold check solution is prepared by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. It can be prepared by putting 1 ml of the fit test solution (see (b) (5) below) in 100 ml of distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely, then released and allowed to fully expand.

(7) Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted. If the test subject reports tasting the sweet taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the saccharin is not tasted after 30 squeezes (step 10), the test subject is unable to taste saccharin and may not perform the saccharin fit test.

Note to paragraph 3. (a): If the test subject eats or drinks something sweet before the screening test, he/she may be unable to taste the weak saccharin solution.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Saccharin solution aerosol fit test procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure described in 3. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected in section I. A. of this appendix. The respirator shall be properly adjusted and equipped with a particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 83 grams of sodium saccharin to 100 ml of warm water.

(6) As before, the test subject shall breathe through the slightly open mouth with tongue extended, and report if he/she tastes the sweet taste of saccharin.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of saccharin fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste

response as noted during the screening test. A minimum of 10 squeezes is required.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this exhibit.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the original number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of saccharin is detected. If the test subject does not report tasting the saccharin, the test is passed.

(11) If the taste of saccharin is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

(12) Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

4. Bitrex™ (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol

The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste Threshold Screening.

The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure shall have a \3/4\ inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold-screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.

(7) An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Bitrex Solution Aerosol Fit Test Procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure as that described in 4. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected according to section I. A. of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.

(6) As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this exhibit.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

(11) If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

5. Irritant Smoke (Stannic Chloride) Protocol

This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.

(a) General Requirements and Precautions

(1) The respirator to be tested shall be equipped with high efficiency particulate air (HEPA) or P100 series filter(s).

(2) Only stannic chloride smoke tubes shall be used for this protocol.

(3) No form of test enclosure or hood for the test subject shall be used.

(4) The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor shall take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Care shall be taken when performing the sensitivity screening checks that determine whether the test subject can detect irritant smoke to use only the minimum amount of smoke necessary to elicit a response from the test subject.

(5) The fit test shall be performed in an area with adequate ventilation to prevent exposure of the person conducting the fit test or the build-up of irritant smoke in the general atmosphere.

(b) Sensitivity Screening Check

The person to be tested must demonstrate his or her ability to detect a weak concentration of the irritant smoke.

(1) The test operator shall break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator shall cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.

(2) The test operator shall advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep his/her eyes closed while the test is performed.

(3) The test subject shall be allowed to smell a weak concentration of the irritant smoke before the respirator is donned to become familiar with its irritating properties and to determine if he/she can detect the irritating properties of the smoke. The test operator shall carefully direct a small amount of the irritant smoke in the test subject's direction to determine that he/she can detect it.

(c) Irritant Smoke Fit Test Procedure

(1) The person being fit tested shall don the respirator without assistance, and perform the required user seal check(s).

(2) The test subject shall be instructed to keep his/her eyes closed.

(3) The test operator shall direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator shall begin at least 12 inches from the facepiece and move the smoke stream around the whole perimeter of the mask. The operator shall gradually make two more passes around the perimeter of the mask, moving to within six inches of the respirator.

(4) If the person being tested has not had an involuntary response and/or detected the irritant smoke, proceed with the test exercises.

(5) The exercises identified in section I.A. 14. of this exhibit shall be performed by the test subject while the respirator seal is being continually challenged by the smoke, directed around the perimeter of the respirator at a distance of six inches.

(6) If the person being fit tested reports detecting the irritant smoke at any time, the test is failed. The person being retested must repeat the entire sensitivity check and fit test procedure.

(7) Each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation) shall be given a second sensitivity screening check, with the smoke from the same smoke tube used during the fit test, once the respirator has been removed, to determine whether he/she still reacts to the smoke. Failure to evoke a response shall void the fit test.

(8) If a response is produced during this second sensitivity check, then the fit test is passed.

B. Quantitative Fit Test (QNFT) Protocols

The following quantitative fit testing procedures have been demonstrated to be acceptable: Quantitative fit testing using a non-hazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS], or sodium chloride) generated in a test chamber, and employing instrumentation to quantify the fit of the respirator; Quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit; Quantitative fit testing using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a facepiece to quantify the respirator fit.

1. General

(a) The employer shall ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and ensure that test equipment is in proper working order.

(b) The employer shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed.

2. Generated Aerosol Quantitative Fit Testing Protocol

(a) Apparatus.

(1) Instrumentation. Aerosol generation, dilution, and measurement systems using particulates (corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS] or sodium chloride) as test aerosols shall be used for quantitative fit testing.

(2) Test chamber. The test chamber shall be large enough to permit all test subjects to perform freely all required exercises without disturbing the test agent concentration or the measurement apparatus. The test chamber shall be equipped and constructed so that the test agent is effectively isolated from the ambient air, yet uniform in concentration throughout the chamber.

(3) When testing air-purifying respirators, the normal filter or cartridge element shall be replaced with a high efficiency particulate air (HEPA) or P100 series filter supplied by the same manufacturer.

(4) The sampling instrument shall be selected so that a computer record or strip chart record may be made of the test showing the rise and fall of the test agent concentration with each inspiration and expiration at fit factors of at least 2,000. Integrators or computers that integrate the amount of test agent penetration leakage into the respirator for each exercise may be used provided a record of the readings is made.

(5) The combination of substitute air-purifying elements, test agent and test agent concentration shall be such that the test subject is not exposed in excess of an established exposure limit for the test agent at any time during the testing process, based upon the length of the exposure and the exposure limit duration.

(6) The sampling port on the test specimen respirator shall be placed and constructed so that no leakage occurs around the port (e.g., where the respirator is probed), a free air flow is allowed into the sampling line at all times, and there is no interference with the fit or performance of the respirator. The in-mask sampling device (probe) shall be designed and used so that the air sample is drawn from the breathing zone of the test subject, midway between the nose and mouth and with the probe extending into the facepiece cavity at least 1/4 inch.

(7) The test setup shall permit the person administering the test to observe the test subject inside the chamber during the test.

(8) The equipment generating the test atmosphere shall maintain the concentration of test agent constant to within a 10 percent variation for the duration of the test.

(9) The time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) shall be kept to a minimum. There shall be a clear association between the occurrence of an event and its being recorded.

(10) The sampling line tubing for the test chamber atmosphere and for the respirator sampling port shall be of equal diameter and of the same material. The length of the two lines shall be equal.

(11) The exhaust flow from the test chamber shall pass through an appropriate filter (i.e., high efficiency particulate filter) before release.

(12) When sodium chloride aerosol is used, the relative humidity inside the test chamber shall not exceed 50 percent.

(13) The limitations of instrument detection shall be taken into account when determining the fit factor.

(14) Test respirators shall be maintained in proper working order and be inspected regularly for deficiencies such as cracks or missing valves and gaskets.

(b) Procedural Requirements.

(1) When performing the initial user seal check using a positive or negative pressure check, the sampling line shall be crimped closed in order to avoid air pressure leakage during either of these pressure checks.

(2) The use of an abbreviated screening QLFT test is optional. Such a test may be utilized in order to quickly identify poor fitting respirators that passed the positive and/or negative pressure test and reduce the amount of QNFT time. The use of the CNC QNFT instrument in the count mode is another optional method to obtain a quick estimate of fit and eliminate poor fitting respirators before going on to perform a full QNFT.

(3) A reasonably stable test agent concentration shall be measured in the test chamber prior to testing. For canopy or shower curtain types of test units, the determination of the test agent's stability may be established after the test subject has entered the test environment.

(4) Immediately after the subject enters the test chamber, the test agent concentration inside the respirator shall be measured to ensure that the peak penetration does not exceed 5 percent for a half mask or 1 percent for a full facepiece respirator.

(5) A stable test agent concentration shall be obtained prior to the actual start of testing.

(6) Respirator restraining straps shall not be over-tightened for testing. The straps shall be adjusted by the wearer without assistance from other persons to give a reasonably comfortable fit typical of normal use. The respirator shall not be adjusted once the fit test exercises begin.

(7) The test shall be terminated whenever any single peak penetration exceeds 5 percent for half masks and 1 percent for full facepiece respirators. The test subject shall be refitted and retested.

(8) Calculation of fit factors.

a. The fit factor shall be determined for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration measured inside the respirator for each test exercise except the grimace exercise.

b. The average test chamber concentration shall be calculated as the arithmetic average of the concentration measured before and after each test (i.e., 7 exercises) or the arithmetic average of the concentration measured before and after each exercise or the true average measured continuously during the respirator sample.

c. The concentration of the challenge agent inside the respirator shall be determined by one of the following methods:

d. ***(A)*** Average peak penetration method means the method of determining test agent penetration into the respirator utilizing a strip chart recorder, integrator, or computer. The agent penetration is determined by an average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers that calculate the actual test agent penetration into the respirator for each exercise will also be considered to meet the requirements of the average peak penetration method.

(B) Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recordings of the test. The highest peak penetration for a given exercise is taken to be representative of average penetration into the respirator for that exercise.

(C) Integration by calculation of the area under the individual peak for each exercise except the grimace exercise. This includes computerized integration.

(D) The calculation of the overall fit factor using individual exercise fit factors involves first converting the exercise fit factors to penetration values, determining the average, and then converting that result back to a fit factor. This procedure is described in the following equation:

$PV_1 = ff_1/Conc._{out}$

$PV_2 = ff_2/Conc._{out}$

$PV_3 = ff_3/Conc._{out}$

$PV_{Avg} =(PV_1+ PV_2+ PV_3)/3$

$Off = Conc._{out}/ PV_{Avg}$

Where PV_1, PV_2, PV_3, etc. are the penetration values for exercises 1, 2, 3;

$Conc._{out}$ is the ambient (outside face mask) air concentration;

Where ff_1, ff_2, ff_3, etc. are the fit factors for exercises 1, 2, 3; and

Off is the overall fit factor

(9) The test subject shall not be permitted to wear a half mask or quarter facepiece respirator unless a minimum fit factor of 100 is obtained, or a full facepiece respirator unless a minimum fit factor of 500 is obtained.

(10) Filters used for quantitative fit testing shall be replaced whenever increased breathing resistance is encountered, or when the test agent has altered the integrity of the filter media.

2. Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing protocol.

3. The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Portacount TM) protocol quantitatively fit tests respirators with the use of a probe. The probed respirator is only used for quantitative fit tests. A probed respirator has a special sampling device, installed on the respirator that allows the probe to sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that the employer uses and can be obtained from the respirator manufacturer or distributor. The CNC instrument manufacturer, TSI Inc., also provides probe attachments (TSI sampling adapters) that permit fit testing in an employee's own respirator. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full facepiece negative pressure respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Portacount Fit Test Requirements.

(1) Check the respirator to make sure the sampling probe and line are properly attached to the facepiece and that the respirator is fitted with a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test (e.g., NIOSH 42 CFR 84 series 100, series 99, or series 95 particulate filter) per manufacturer's instruction.

(2) Instruct the person to be tested to don the respirator for five minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This individual shall already have been trained on how to wear the respirator properly.

(3) Check the following conditions for the adequacy of the respirator fit: Chin properly placed; Adequate strap tension, not overly tightened; Fit across nose bridge; Respirator of proper size to span distance from nose to chin; Tendency of the respirator to slip; Self-observation in a mirror to evaluate fit and respirator position.

(4) Have the person wearing the respirator do a user seal check. If leakage is detected, determine the cause. If leakage is from a poorly fitting facepiece, try another size of the same model respirator, or another model of respirator.

(5) Follow the manufacturer's instructions for operating the Portacount and proceed with the test.

(6) The test subject shall be instructed to perform the exercises in section I. A. 14. of this exhibit

(7) After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried.

(b) Portacount Test Instrument.

(1) The Portacount will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.

(2) Since the pass or fail criterion of the Portacount is user programmable, the test operator shall ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this Appendix.

(3) A record of the test needs to be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style, and size of respirator used; and date tested.

4. The CNP protocol provides an alternative to aerosol fit test methods.

The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator facepiece to generate and then maintain a constant negative pressure inside the facepiece. The rate of air exhaust is controlled so that a constant negative pressure is maintained in the respirator during the fit test. The level of pressure is selected to replicate the mean inspiratory pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, airflow out of the respirator is equal to airflow into the respirator. Therefore, measurement of the exhaust stream that is required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage airflow into the respirator. The CNP fit test method measures leak rates through the facepiece as a method for determining the facepiece fit for negative pressure respirators. The CNP instrument manufacturer Dynatech Nevada also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator. To perform the test, the test subject closes his or her mouth and holds his/her breath, after which an air pump removes air from the respirator facepiece at a pre-selected constant pressure. The facepiece fit is expressed as the leak rate through the facepiece, expressed as milliliters per minute. The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately five seconds. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum fit factor of at least 500 is required for a full facepiece respirator. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) CNP Fit Test Requirements.

(1) The instrument shall have a non-adjustable test pressure of 15.0 mm water pressure.

(2) The CNP system defaults selected for test pressure shall be set at -- 15 mm of water (-0.58 inches of water) and the

modeled inspiratory flow rate shall be 53.8 liters per minute for performing fit tests.

(**Note:** CNP systems have built-in capability to conduct fit testing that is specific to unique work rate, mask, and gender situations that might apply in a specific workplace. Use of system default values, which were selected to represent respirator wear with medium cartridge resistance at a low-moderate work rate, will allow inter-test comparison of the respirator fit.)

(3) The individual who conducts the CNP fit testing shall be thoroughly trained to perform the test.

(4) The respirator filter or cartridge needs to be replaced with the CNP test manifold. The inhalation valve downstream from the manifold either needs to be temporarily removed or propped open.

(5) The test subject shall be trained to hold his or her breath for at least 20 seconds.

(6) The test subject shall don the test respirator without any assistance from the individual who conducts the CNP fit test.

(7) The QNFT protocol shall be followed according to section I.C.1. of this exhibit with an exception for the CNP test exercises.

(b) CNP Test Exercises.

(1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject needs to hold head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply for 1 minute, being careful not to hyperventilate. After the deep breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during test measurement.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his or her head from side to side between the extreme positions on each side for 1 minute. The head shall be held at each extreme momentarily so the subject can inhale at each side. After the turning head side to side exercise, the subject needs to hold head full left and hold his or her breath for 10 seconds during test measurement. Next, the subject needs to hold head full right and hold his or her breath for 10 seconds during test measurement.

(4) Moving head up and down. Standing in place, the subject shall slowly move his or her head up and down for 1 minute. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling). After the

moving head up and down exercise, the subject shall hold his or her head full up and hold his or her breath for 10 seconds during test measurement. Next, the subject shall hold his or her head full down and hold his or her breath for 10 seconds during test measurement.

(5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1 minute. After the talking exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(6) Grimace. The test subject shall grimace by smiling or frowning for 15 seconds.

(7) Bending Over. The test subject shall bend at the waist as if he or she were to touch his or her toes for 1 minute. Jogging in place shall be substituted for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement.

(8) Normal Breathing. The test subject shall remove and re-don the respirator within a one-minute period. Then, in a normal standing position, without talking, the subject shall breathe normally for 1 minute. After the normal breathing exercise, the subject shall hold his or her head straight ahead and hold his or her breath for 10 seconds during the test measurement. After the test exercises, the test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of a respirator shall be tried.

(c) CNP Test Instrument.

(1) The test instrument shall have an effective audio warning device when the test subject fails to hold his or her breath during the test. The test shall be terminated whenever the test subject failed to hold his or her breath. The test subject may be refitted and retested.

(2) A record of the test shall be kept on file, assuming the fit test was successful. The record must contain the test subject's name; overall fit factor; make, model, style and size of respirator used; and date tested.

Part II. New Fit Test Protocols

A. Any person may submit to OSHA an application for approval of a new fit test protocol. If the application meets the following criteria, OSHA will initiate a rulemaking proceeding under section 6(b)(7) of the OSH Act to determine whether to list the new protocol as an approved protocol in this Exhibit.

B. The application must include a detailed description of the proposed new fit test protocol. This application must be supported by either:

A test report prepared by an independent government research laboratory (e.g., Lawrence Livermore National Laboratory, Los Alamos National Laboratory, the National Institute for Standards and Technology) stating that the laboratory has tested the protocol and had found it to be accurate and reliable; or

An article that has been published in a peer-reviewed industrial hygiene journal describing the protocol and explaining how test data support the protocol's accuracy and reliability.

C. If OSHA determines that additional information is required before the Agency commences a rulemaking proceeding under this section, OSHA will so notify the applicant and afford the applicant the opportunity to submit the supplemental information. Initiation of a rulemaking proceeding will be deferred until OSHA has received and evaluated the supplemental information.

RECORD KEEPING

The Respirator Test Summary, shown in Exhibit 6, must be completed after each fit-test.

EXHIBIT 5
RESPIRATOR FIT-TEST AND TRAINING RECORD

Employee=s Name: ____ Social Security No.: _______-_____-
Project Name: ____ Job Number:
RESPIRATOR FIT-TEST SUMMARY (*Must be conducted for each negative pressure respirator used*)
Fit-Test Date: ______________ Person Conducting Fit-Test:
Respirator Selected:
Manufacturer: _______________________ Model:
Respirator Size: ______________________ NIOSH Approval No.:
Was Rainbow Passage Used: ___ Yes ___ No Was Face piece-to-face Seal Obtained: ___ Yes __ No
Signature of person conducting Fit-Test: ____

RESPIRATOR TRAINING RECORD

Your signature on the respirator Training Record will attest to your having received and understood the following respirator training information which both OSHA and the Remediation Contractor require as part of their Respiratory Protection Program.

The required respirator training consists of the following:

- An explanation of the problems involved in misusing or inter-changing parts of the respirator.
- A discussion of why engineering controls could not prevent the use of respiratory protection.
- How and why this make and model was chosen for this specific project.
- The limitations of this make and model was chosen for this specific project.
- How to put on this respirator and properly adjust the face piece and tension straps.
- How to wear this respirator properly.
- What the essential points of the care and maintenance of this respirator are.
- How to recognize and handle emergencies which may occur while using this respirator.
- How to properly inspect, clean, and disinfect this respirator.
- How to properly use an Air Purifying Respirator.
- When a Type-C Supplied-air respirator is required.
- The purpose of medical evaluation.
- How the Remediation Contractor conducts a proper respirator fit-test.
- That a Powered Air Purifying Respirator (PAPR) is available to you upon request, as long as it meets the protection factor for the hazard involved.

Employee=s Signature: _________________________________ Date:

EXHIBIT 6
QUALITATIVE RESPIRATOR FIT TESTING

Date:
Employee Name: ____ (Last, First, Middle Intl.)
Age: _________ Sex:
Years Experience: ________ Frequency: _____________ **See Key
Mask Now Using: _____________ Usual Conditions: ___________ **See Key
Mask Selected: ______________________________ (i.e. MSA, Half Mask, Medium)
Qualitative Tests: (PP) _____ (NP) _______ (IA) ______ (IS)
(1) = Passed (2) = Failed (3) = Did Not Run
IAA Sensitivity Test: ______ (Pass) or (Fail)
Smoke Sensitivity Test: ______ (Pass) or (Fail)
Respirator Selection: 1st Choice: ______________________________ (Pass) or (Fail)
2nd Choice: ______________________________ (Pass) or (Fail)
3rd Choice: ______________________________ (Pass) or (Fail)
Final Selection: ___________________________ (Pass) or (Fail)
(Manufacturer/Size)
Test Instructor: ________________________ Employee Signature:
Comments: Facial Conditions:

() Wrinkles () Wide-Bridge
() Broken Nose () Shallow-Bridge
() Deep Nostrils () Small Face
() Narrow Face () Wide Face
() Other

Frequency: How many times used during a week:
(1) Less than 1/Week
(2) 2-5 Times/Week
(3) 5-10 Times/Week
(4) 1-4 Times/Day

Usual Conditions:
(1) Beard/Heavy
(2) Beard/Light
(3) Scars
(4) Wrinkles
(5) Glasses
(6) Several Days Beard Growth

Qualitative Tests:
PP - Positive Pressure
NP - Negative Pressure
IA - Isoamyl Acetate
IS - Irritant Smoke

EXHIBIT 7

RESPIRATOR INSPECTION CHART

Item	Half Face APR	Full Face APR	PAPR	Type C	SCBA
FACE PIECE	X	X	X	X	X
Dirt or debris	X	X	X	X	X
Cracks, tears or holes	X	X	X	X	X
Distortion	X	X	X	X	X
Cracked or scratched lens		X	X	X	X
Looseness of parts					
HEAD STRAPS	X	X	X	X	X
Break or tears	X	X	X	X	X
Loss of elasticity	X	X	X	X	X
Broken or malfunctioning buckles					
VALVES	X	X	X	X	X
Dirt or dust	X	X	X	X	X
Detergent residue	X	X	X	X	X
Distortion	X	X	X	X	X
Missing Pieces	X	X	X	X	X
Fit of valve set					
FILTER/CARTRIDGES	X	X	X	X	X
Proper one for intended use	X	X	X	X	X
Approval designation	X	X	X	X	X
Missing or worn gasket	X	X	X	X	X
Worn threads on filter	X	X	X	X	X
Worn threads on face piece	X	X	X		X
Cracks or dents	X	X	X		X
Missing or loose hose clamps					

RESPIRATORY PROTECTION PROGRAM

Item	Half Face APR	Full Face APR	PAPR	Type C	SCBA
COMPRESSORS				X	
Air Quality				X	
Breaks or kinks in supply hose				X	
Supply hose fittings				X	
Connections				X	
Regulator set properly and working				X	
Valves working correctly				X	
Carbon monoxide alarms				X	
High Temperature alarm					
Air-purifying elements					
TANKS					X
Regulator					X
Valves					X
Reserves air system					X
Harness					
PUMPS			X		
Motors			X		
Charging units			X		
Hoses			X		
Batteries			X		
Test gauges			X		
Power cords			X		
Belt holder					

Attachment 12

REPORT OF ACCIDENT/INCIDENT

NAME OF AFFECTED EMPLOYEE:____DATE_____________

EXACT LOCATION:____

CONTRACTOR:_______________________________________SUPERVISOR:________________________________

INJURY DATE:____________________TIME:________________DATE REPORTED:_________________________
ACCIDENT LOCATION:____
DATE DIS. BEGAN:______________________________________

INJURY AND BODY PART AFFECTED:____

SUPERVISOR / SAFETY COORDINATOR:

- REVIEW, SIGN AND RETAIN FOR RECORDS ON SITE
- COMPLETE WITHIN 48 HOURS

SAFETY EQUIPMENT: □WORN □NOT WORN □NOT APPLICABLE

DESCRIBE OCCURRENCE (HOW, WHAT, **CAUSE** FACTORS; *see attached page*):

____
____
____
____

Attachment 12
Report of Accident/Incident

EXTENT OF DAMAGE TO EQUIPMENT AND / OR FACILITIES

____

____

____

____

DEFICIENCIES NOTED (EQUIPMENT / PROCEDURES)

____

____

____

____

CORRECTIVE ACTION TAKEN TO PREVENT RE-OCCURRENCE (FWR. RTE OR MEMO)

____

____

____

____

SUPERVISOR / SAFETY COORDINATOR SIGNATURE: ______________________________DATE: ____________

PRINT NAME:____

PROJECT MANAGER SIGNATURE:____DATE: ____________

PRINT NAME:____

Accident Analysis Form

Instructions:

To Determine the **Accident Cause**:

1. Determine if the accident circumstances are in the areas of ***People, Equipment, Environment, or Management***.
2. If there are circumstances in a particular section, ask a series of "why ?" questions to determine the reasons for every set of circumstances.
3. When you have run out of "why?" questions, analyze the result. Eliminate any unlikely causes or circumstances that you *cannot control*. Identify the accident cause.
4. Determine what management system needs to be in place to assure that the accident does not happen again.

People

O Lack of procedures
O Procedures not followed
O Procedures not known or understood
O Task too difficult to perform
O PPE not used or not available
O People not trained
O Training inadequate
O Distraction, Emotions, or Fatigue

Equipment

O Equipment not maintained
O Wrong equipment used
O Poor equipment design
O Correct equipment not available

Environment

O Location of employee
O Temperature extremes
O Poor lighting
O Poor housekeeping
O Inadequate ventilation
O Excessive vibration
O Excessive noise
O Condition of work surface

Management

O No management system in place to control hazard
O Supervision did not detect unsafe conditions or behaviors
O Supervision did not take action to correct unsafe conditions or behaviors
O Lack of supervisor training
O Lack of accountability for safety

Attachment 13
Contractor’s Safety Program Evaluation Form

Attachment 13
CONTRACTOR'S SAFETY PROGRAM EVALUATION FORM

Contractor Name:_______________________________________ Date:____________________

Job Location: ____

Supervisor / Foreman: / PM ____

	Good	Needs Improvement	Comments
□Safety Coordinator	□	□	________________
□Competent Person	□	□	________________
□Barrier / Perimeter Protection	□	□	________________
□Housekeeping	□	□	________________
□OSHA LOG / First Aid	□	□	________________
□Accident Investigation	□	□	________________
□Safety Inspections	□	□	________________
□Safety Training	□	□	________________
□Emergency Evacuation	□	□	________________
□Fall Protection	□	□	________________
□Traffic Safety	□	□	________________
□Hearing Conservation	□	□	________________
□Dust monitoring	□	□	________________
□PPE	□	□	________________
□Medical Evaluations	□	□	________________
□LOTO	□	□	________________
□Confined Space Program	□	□	________________

Attachment 14
Lockout-Tagout

Attachment 14
Lockout-Tagout Procedures

Controls that are to be deactivated during the course of work on energized or de-energized equipment or circuits shall be tagged.

Equipment or circuits that are de-energized shall be rendered inoperative and shall have tags attached at all points where such equipment or circuits can be energized.

Tags shall be placed to identify plainly the equipment or circuits being worked on.

The isolating devices locked and tagged must include all of the devices that control energy, must be singularly used and must not be used for any other purpose.

Locks, hasps and tags must be able to withstand any kind of adverse environment in which they may be used. Tags which are to be located in adverse conditions must not deteriorate making the message illegible.

Lockout requirements are not met by removal of fuses.

Locks and tags are not to be removed by any person other than the individual who applied the locks.

No employee shall rely on another employee's lock and tag.

A Lockout/Tagout Log is to be completed before beginning any work, in accordance with Con Edison procedures. The log shall include the following information:

- Date & time of installation and removal of locks and tags;
- Name of the employee who applied the lock and tag;
- Name of the employee's employer;
- Machine or apparatus being disconnected and locked out;
- Purpose for locking and tagging system(s);
- Lock number;
- Authorization to proceed with work duties.

Notify all project employees that a lockout/tagout system is going to be used and the reason for it. The on-site health representative shall know the type and magnitude of energy connected to the machine or equipment and understand the hazards. If the machine or equipment is operating, shut it down by normal stopping procedures (depress stop button, open toggle switch, etc.). Operate all switches, valves, or other energy isolating devices so that the equipment is totally isolated from its energy sources. Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding, disconnecting, etc. Place a lock on each isolating device. Only authorized Con Edison employees may attach the locks. The locks must hold the energy isolating devices in a "safe" or "off" position. Attach "Danger - Do Not Operate" tags to each lock. On the tag, write the name of employee, employer, and date of attachment.

If more than one individual is required to lockout and tag the equipment, each person must place a separate lock and tag on each energy-isolating device. When an energy-isolating device cannot accept multiple locks or tags, a multiple lock hasp must be used. Individual locks are removed as each person no longer needs to maintain lockout protection.

NO EMPLOYEE MAY REMOVE THE LOCK OF ANOTHER EMPLOYEE

After verifying that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate. The system is now properly locked out. CAUTION: Return operating control(s) to "neutral" or "off" position after the test. Implement a tagout system, if a lock cannot be utilized. The tag is to be attached so it will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited. Employees are to be trained in the following limitations of the tagout system:

- Tags are warning devices and do not provide the physical restraint a lock does;
- Tags are not to be removed without authorization of the authorized person responsible for them;
- Tags must be legible, understandable and made of a material which will withstand anticipated environmental conditions; and
- Tags are to be securely attached so that they cannot be inadvertently or accidentally detached during use.
- Where a tag cannot be attached directly to the energy-isolating device, the tag is to be located as close as safely possible to the device in a position immediately obvious to anyone attempting to operate the device.

No employee may remove the lock and tag of another employee. The only exception to this is if an employee has forgotten to remove a lock and is not available to do so. The designated Con Edison lockout/tagout coordinator is the only person who may remove a lock or tag and then only after it is verified that:

- It is safe to restore the energy to the machine or equipment;
- The authorized employee who applied the device is not at the facility;
- All reasonable efforts are made to contact the authorized employee;
- The authorized employee knows his or her lock and tag was removed before he she resumes work at that facility.

Attachment 15
Hearing Conservation

NOISE CONTROL PLAN

1.0 SCOPE AND APPLICATION.

All Contractors and subcontractors shall ensure protection of its employees to occupational noise in accordance with the OSHA Occupational Noise Exposure Standard in the Construction Industry (29 CFR 1926.52). Protection against the effects of noise exposure shall be provided when the sound levels exceed the OSHA permissible exposure limits shown in Table 1 when measured on the A-scale of a standard sound level meter at slow response. When employees are subjected to sound levels exceeding those listed in Table 1, feasible administrative or engineering controls shall be utilized.

If such controls fail to reduce sound levels within the levels of Table 1, personal protective equipment, shall be provided and used to reduce sound levels within the levels of the table. The selected hearing protection devices will reduce the noise levels in accordance with the United States Environmental Protection Agency Noise Reduction Rating (USEPA NRR). If the variations in noise level involve maxima at intervals of 1 second or less, it is to be considered continuous. In all cases where the sound levels exceed the values shown herein, a continuing, effective hearing conservation program shall be administered.

2.0 PERMISSIBLE EXPOSURE LIMITS

TABLE 1

PERMISSIBLE NOISE EXPOSURES

Duration in Hours Per Day	Sound Level dbA Slow Response
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
1/4 or less	115

Impulse or Impact Noise	140 peak sound pressure level

When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. Exposure to different levels for various periods of time shall be computed according to the formula below.

$F_{(e)}=(T_{(1)}/L_{(1)})+(T_{(2)}/L_{(2)})+ ... + (T_{(n)}/L_{(n)})$ where:

$F_{(e)}$= The equivalent noise exposure factor.

T = The period of noise exposure at any essentially constant level.

L = The duration of the permissible noise exposure at the constant level (from Table 1).

If the value of $F_{(e)}$ exceeds unity (1) the exposure exceeds permissible levels.

A sample computation showing an application of the formula is as follows. An employee is exposed at these levels for these periods:

110 dbA 1/4 hour.

100 dbA 1/2 hour.

90 dbA 1 1/2 hours.

$F_{(e)}=(T_{(1)}/L_{(1)})+(T_{(2)}/L_{(2)})+ ... + (T_{(n)}/L_{(n)})$

$F_{(e)} = (0.25/0.5) + (0.5/2) + (1.5/8)$

$F_{(e)} = 0.5 + 0.25 + 0.1875$

$F_{(e)} = 0.9375$

Since the value of $F_{(e)}$ is less than 1, the total exposure did not exceed permissible limits.

3.0 NOISE MONITORING

3.1 Purpose

The 8-hour permissible exposure limit in the OSHA Occupational Noise Standard for the Construction Industry is 90 dbA. In order to determine if exposures are at or above this level, it may be necessary to measure or monitor the actual noise levels in the workplace and to estimate the noise exposure or "dose" received by employees during the workday.

Noise monitoring or measuring must be conducted only when exposures are at or above 90 dbA. Factors, which suggest that noise exposures in the workplace may be at this level, include employee complaints about the loudness of noise; indications that employees are losing their hearing, or noisy conditions that make normal conversation in the area difficult.

3.2 Noise Measurement

There are two different instruments to measure noise exposures: the sound level meter and the dosimeter. A sound level meter is a device that measures the intensity of sound at a given moment. Since sound level meters provide a measure of sound intensity at only one point in time, it is generally necessary to take a number of measurements at different times during the day to estimate noise exposure over a workday. If noise levels fluctuate, the amount of time noise remains at each of the various measured levels must be determined.

To estimate employee noise exposures with a sound level meter it is also generally necessary to take several measurements at different locations within the workplace. After appropriate sound level meter readings are obtained, a map of the sound levels within different areas of the workplace will be developed. From the sound level map coupled with information on employee locations throughout the day, an estimate of individual exposure levels can be developed. This measurement method is referred to as area noise monitoring.

A dosimeter is like a sound level meter except that it stores sound level measurements and integrates these measurements over time, providing an average noise exposure reading for a given period of time, such as an 8-hour workday. With a dosimeter, a microphone is attached to the employee's clothing and the exposure measurement is simply read at the end of the desired time period. A reader may be used to read-out the dosimeter's measurements. Since the dosimeter is worn by the employee, it measures noise levels in those locations in which the employee travels. A sound level meter can also be positioned within the immediate vicinity of the exposed worker to obtain an individual exposure estimate. Such procedures are referred to as personal noise monitoring.

Area monitoring provides better estimates to noise exposure when the noise levels are relatively constant and employees are not mobile. In workplaces where employees move about in different areas or where the noise intensity tends to fluctuate over time, noise exposure is generally more accurately estimated by the personal monitoring approach. For the building demolition activities, personal monitoring with dosimeters would provide more accurate sound level exposure data.

For personal monitoring with a dosimeter, the microphone is located on the shoulder and remains in that position for the entire workday. If a sound level meter is used, the microphone is stationed near the employee's head, and the instrument is usually held by an individual who follows the employee as he or she moves about. Therefore, using a sound level meter to measure occupational noise exposure on a demolition site would tend to be more difficult to implement.

Manufacturer's instructions, contained in dosimeter and sound level meter operating manuals, should be followed for calibration and maintenance. To ensure accurate results, it is considered good professional practice to calibrate instruments before and after each use.

3.3 Monitoring Frequency

Monitoring should be repeated when there are significant changes in machinery, tools or demolition processes that may result in increased noise levels. Re-monitoring must be conducted to determine whether additional employees may be at risk to elevated noise exposure levels. The OSHA construction standard for occupational noise exposure does not stipulate a monitoring schedule, however, Contractors will re-monitor periodically once every year.

Appendix C
Quality Assurance Project Plan (QAPP)

QUALITY ASSURANCE PROJECT PLAN

For the

Former Cibro Petroleum Terminal Site
5 Washington Avenue
Island Park, Nassau County, New York 11558

BCP Site No. C130153, BCA Index No. W1-1075-05-09

Submitted to
New York State Department of Environmental Conservation.
Region 1, Stony Brook, New York

Prepared for
Posillico Development Company at Harbor Island, Inc.
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Farmingdale, New York 11735

Prepared by
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TRC Project No. 163189

AUGUST 2012

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1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) presents the organization, objectives, planned activities, and specific quality assurance/quality control (QA/QC) procedures for the Former Cibro Brothers Terminal Site located at 5 Washington Avenue, Island Park, New York (BCP Site No. C130153, BCA Index No. W1-1075-05-09). Task-specific addenda to this QAPP will be provided for future investigations or remediation elements, as appropriate.

The QAPP describes specific protocols for field sampling, sampling handling and storage, chain- of-custody, laboratory analysis, and data handling and management. Preparation of the Plan was based on United States Environmental Protection Agency (USEPA) QAPP guidance documents, including:

- *USEPA Requirements for Quality Assurance Project Plans (EPA QA/R-5, March 2001), and*
- *Guidance for Quality Assurance Project Plans (EPA QA/G-5, December 2002).*

The data generated from the analysis of samples will be used to determine the nature and extent of contamination. A list of the potential parameters to be analyzed, including quantitation limits (QLs), and data quality levels (DQLs), is shown in Tables 1A through 1D.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

TRC Engineers, Inc. (TRC) Project Manager – Ms. Jennifer Miranda, will coordinate and manage the sampling and analysis program, data reduction, QA/QC, data validation, analysis, and reporting.

The TRC Project QA Officer will be Ms. Elizabeth Denly. Ms. Elizabeth Denly, TRC's QA Chemist, will insure that the QAPP is implemented and will oversee laboratory data management. Ms. Denly will provide oversight and technical support for the sampling and analytical procedures. Ms. Denly has the broad authority to approve or disapprove project plans, specific analyses, and final reports. The TRC Project QA Officer is independent from the data generation activities. In general, the QA Officer will be responsible for reviewing and advising on all QA/QC aspects of this program.

Test America Laboratories of Edison, New Jersey will provide analyses of all soil, sediment, groundwater and soil gas samples. Test America is a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory. The laboratory will communicate directly with TRC regarding the analytical results and reporting. Test America will be responsible for providing all labels, sample jars, field blank water, trip blanks, shipping coolers, and laboratory documentation.

3.0 QA OBJECTIVES FOR DATA MANAGEMENT

Investigative and remedial analytical data will be provided by the laboratory using the New York State Analytical Services Protocol (ASP) Category B deliverable format. Analytical data generated only for the purpose of waste classification and off-site disposal will be submitted in accordance with New York State ASP Category A deliverable format requirements.

All analytical measurements will be made so that the results are representative of the media sampled (soil, groundwater, sediment, and soil gas) and the conditions measured. Data will be reported in consistent dry weight units for solid samples [i.e., micrograms per kilogram (µg/kg) and/or milligrams per kilogram (mg/kg)], micrograms per liter (µg/L) or milligrams per kilogram (mg/L) for aqueous samples, and in micrograms per cubic meter (µg/m^3) and ppbV for soil gas samples. Table 2 presents the proposed samples, sampling and analytical parameters, analytical methods, sample preservation requirements and containers for the investigation and remediation.

Quantitation Limits (QLs) are laboratory-specific and reflect those values achievable by the laboratory performing the analyses (i.e., laboratory reporting limit). Data Quality Levels (DQLs) are those reporting limits required to meet the objectives of the program (i.e., program action levels, cleanup standards, etc.). Data Quality Objectives (DQOs) define the quality of data and documentation required to support decisions made in the various phases of the data collection activities. The DQOs are dependent on the end uses of the data to be collected and are also expressed in terms of objectives for precision, accuracy, representativeness, completeness, and comparability.

The analytical methods to be used at this site provide the highest level of data quality and can be used for purposes of risk assessment, evaluation of remedial alternatives and verification that cleanup standards have been met. However, in order to ensure that the analytical methodologies are capable of achieving the DQOs, measurement performance criteria have been set for the analytical measurements in terms of accuracy, precision, and completeness.

The overall QA objective is to develop and implement procedures for field sampling, chain-of-custody, laboratory analysis, and reporting which will provide results that are scientifically valid, and the levels of which are sufficient to meet DQOs. Specific procedures for sampling, chain of custody, laboratory instrument calibration, laboratory analysis, reporting of data, internal quality control, and corrective action are described in other sections of this QAPP.

Tables 3A through 3C present precision and accuracy requirements for each parameter and matrix to be analyzed. For quantitation limits for parameters associated with soil and sediment samples, the laboratory will be required to attempt to meet or surpass the parameter-specific limits listed in 6 NYCRR Part 375: Table 375-6.8(b):Restricted Use Soil Cleanup Objectives (Restricted-Residential).

For quantitation limits for parameters associated with groundwater samples, the laboratory will be required to attempt to meet or surpass the parameter-specific limits for groundwater in the Division of Water Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS). In certain instances, if the TOGS criteria are not achievable due to analytical limitations, the laboratory will report the lowest possible quantitation limit.

For quantitation limits for VOCs associated with soil gas samples, the laboratory will be required to report the lowest possible quantitation limits. There are currently no soil gas criteria which need to be achieved, with respect to identified contaminants of concern.

The QA objectives are defined as follows:

- ***Accuracy*** is the closeness of agreement between an observed value and an accepted reference value. The difference between the observed value and the reference value includes components of both systematic error (bias) and random error.

  Accuracy in the field is assessed through the adherence to all field instrument calibration procedures, sample handling, preservation, and holding time requirements, and through the collection of equipment blanks prior to the collection of samples for each type of equipment being used (e.g., split spoons, groundwater sampling pumps).

  The laboratory will assess the overall accuracy of their instruments and analytical methods (independent of sample or matrix effects) through the measurement of "standards," materials of accepted reference value. Accuracy will vary from analysis to analysis because of individual sample and matrix effects. In an individual analysis, accuracy will be measured in terms of blank results, the percent recovery (%R) of surrogate compounds in organic analyses, or %R of spiked compounds in matrix spikes (MSs), matrix spike duplicates (MSDs) and/or laboratory control samples (LCSs). This gives an indication of expected recovery for analytes tending to behave chemically like the spiked or surrogate compounds. Tables 3A through 3C summarize the laboratory accuracy requirements.

- ***Precision*** is the agreement among a set of replicate measurements without consideration of the "true" or accurate value (i.e., variability between measurements of the same material for the same analyte). Precision is measured in a variety of ways including statistically, such as calculating variance or standard deviation.

  Precision in the field is assessed through the collection and measurement of field duplicates (one extra sample in addition to the original field sample). With the exception of samples collected for disposal characterization, field duplicates will be collected at a frequency of **one per twenty** investigative samples per matrix per analytical parameter. Precision will be measured through the calculation of relative percent differences (RPDs). The resulting information will be used to assess sampling and analytical variability. Field duplicate RPDs must be ≤50 for soil and sediment samples and ≤30 for aqueous samples. These criteria apply only if the sample and/or duplicate results are >5x the quantitation limit; if both results are ≤5x the quantitation limit, the criterion will be doubled. Due to the uncertainty of available representative soil gas volume, field duplicates will not be collected for this matrix.

  Precision in the laboratory is assessed through the calculation of RPD for duplicate samples. For organic soil and water analyses, laboratory precision will be assessed through the analysis of MS/MSD samples and field duplicates. MS/MSD samples or laboratory duplicates will be performed at a frequency of **one per twenty** investigative samples per matrix per parameter. Tables 3A through 3C summarize the laboratory precision requirements.

- ***Completeness*** is a measure of the amount of valid data obtained from a measurement system compared to the amount that was expected to be obtained under normal conditions. "Normal conditions" are defined as the conditions expected if the sampling plan was implemented as planned.

  Field completeness is a measure of the amount of (1) valid measurements obtained from all the measurements taken in the project and (2) valid samples collected. The field completeness objective is greater than 90 percent.

  Laboratory completeness is a measure of the amount of valid measurements obtained from all valid samples submitted to the laboratory. The laboratory completeness objective is greater than 95 percent.

- ***Representativeness*** is a qualitative parameter which expresses the degree to which data accurately and precisely represents either a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition within a defined spatial and/or temporal boundary. To ensure representativeness, the sampling locations have been selected to provide coverage over a wide area and to highlight potential trends in the data. In addition, field duplicate samples will provide an additional measure of representativeness at a given location.

Representativeness is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the Work Plan and QAPP are followed and that proper sampling, sample handling, and sample preservation techniques are used.

Representativeness in the laboratory is ensured by using the proper analytical procedures, appropriate methods, and meeting sample holding times.

- ***Comparability*** expresses the confidence with which one data set can be compared to another. Comparability is dependent upon the proper design of the sampling program and will be satisfied by ensuring that the Work Plan and QAPP are followed and that proper sampling techniques are used. Maximization of comparability with previous data sets is expected because the sampling design and field protocols are consistent with those previously used. Comparability is dependent on the use of recognized EPA or equivalent analytical methods and the reporting of data in standardized units. Laboratory procedures are consistent with those used for previous sampling efforts.

Table 1A Soil/Sediment Sampling Chemical Parameters, Quantitation Limits and Data Quality Levels		
Parameter	**QL**	**DQL[1]**
Volatile Organic Compounds (µg/kg)		
1,1,1,2-Tetrachloroethane	1.0	NC
1,1,1-Trichloroethane	1.0	100,000
1,1,2,2-Tetrachloroethane	1.0	NC
1,1,2-Trichloroethane	1.0	NC
1,1,2-Trichlorotrifluoroethane	1.0	NC
1,1-Dichloroethane	1.0	26,000
1,1-Dichloroethene	1.0	100,000
1,1-Dichloropropene	1.0	NC
1,2,3-Trichlorobenzene	1.0	NC
1,2,3-Trichloropropane	1.0	NC
1,2,4-Trichlorobenzene	1.0	NC
1,2,4-Trimethylbenzene	1.0	52,000
1,2-Dibromo-3-chloropropane	1.0	NC
1,2-Dibromoethane	1.0	NC
1,2-Dichlorobenzene	1.0	100,000
1,2-Dichloroethane	1.0	3100
1,2-Dichloropropane	1.0	NC
1,3,5-Trimethylbenzene	1.0	52,000
1,3-Dichlorobenzene	1.0	49,000
1,3-Dichloropropane	1.0	NC
1,4-Dichlorobenzene	1.0	13,000
1,4-Dioxane	50	13,000
2,2-Dichloropropane	1.0	NC
2-Butanone	10	100,000
2-Chloroethylvinylether	1.0	NC
2-Chlorotoluene	1.0	NC
2-Hexanone	10	NC
4-Chlorotoluene	1.0	NC
4-Isopropyltoluene	1.0	NC
4-Methyl-2-pentanone	10	NC
Acetone	10	100,000
Acrylonitrile	50	NC
Benzene*	1.0	4800
Bromobenzene	1.0	NC
Bromochloromethane	1.0	NC
Bromodichloromethane	1.0	NC

Table 1A
Soil/Sediment Sampling
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Bromoform	1.0	NC
Bromomethane	1.0	NC
c-1,2-Dichloroethene	1.0	100,000
c-1,3-Dichloropropene	1.0	NC
Carbon disulfide	1.0	NC
Carbon Tetrachloride	1.0	2400
Chlorobenzene	1.0	100,000
Chloroethane	1.0	NC
Chloroform	1.0	49,000
Chloromethane	1.0	NC
Cyclohexane	1.0	NC
Dibromochloromethane	1.0	NC
Dibromomethane	1.0	NC
Dichlorodifluoromethane	1.0	NC
Ethylbenzene*	1.0	41,000
Hexachlorobutadiene	5.0	NC
Isopropylbenzene	1.0	NC
m,p-xylene*	2.0	100,000[A]
Methyl t-butyl ether	1.0	100,000
Methylene Chloride	1.0	100,000
Methyl Cyclohexane	1.0	NC
n-Butylbenzene	1.0	100,000
n-Propylbenzene	1.0	100,000
Naphthalene	1.0	NC
o-xylene*	1.0	100,000[A]
sec-Butylbenzene	1.0	100,000
Styrene	1.0	NC
t-1,2-Dichloroethene	1.0	100,000
t-1,3-Dichloropropene	1.0	NC
TAME	1.0	NC
tert-Butylbenzene	1.0	100,000
Tertiary butyl alcohol	20	NC
Tetrachloroethene	1.0	19,000
Toluene*	1.0	100,000
Trichloroethene	1.0	21,000
Trichlorofluoromethane	1.0	NC
Vinyl Chloride	1.0	900
Top 10 VOC TICs (summation)	NA	10,000[C]

Table 1A
Soil/Sediment Sampling
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Semivolatile Organic Compounds (µg/kg)		
1,2,4-Trichlorobenzene	33	NC
1,2-Dichlorobenzene	330	NC
1,3-Dichlorobenzene	330	NC
1,4-Dichlorobenzene	330	NC
2,3,4,6-Tetrachlorophenol	330	NC
2,4,5-Trichlorophenol	330	NC
2,4,6-Trichlorophenol	330	NC
2,4-Dichlorophenol	330	NC
2,4-Dimethylphenol	330	NC
2,4-Dinitrophenol	1000	NC
2,4-Dinitrotoluene	67	NC
2,6-Dinitrotoluene	67	NC
2-Chloronaphthalene	330	NC
2-Chlorophenol	330	NC
2-Methylnaphthalene*	330	NC
2-Methylphenol	330	100,000
2-Nitroaniline	670	NC
2-Nitrophenol	330	NC
3+4-Methylphenol	330	100,000
3,3’-Dichlorobenzidine	670	NC
3-Nitroaniline	670	NC
4,6-Dinitro-2-methylphenol	1000	NC
4-Bromophenyl phenyl ether	330	NC
4-Chloro-3-methylphenol	330	NC
4-Chloroaniline	330	NC
4-Chlorophenyl phenyl ether	330	NC
4-Nitroaniline	670	NC
4-Nitrophenol	1000	NC
Acenaphthene*	330	100,000
Acenaphthylene*	330	100,000
Aniline	330	NC
Anthracene*	330	100,000
Benzidine	330	NC
Benzo(a)anthracene*	33	1000
Benzo(a)pyrene*	33	1000
Benzo(b)fluoranthene*	33	1000

Table 1A
Soil/Sediment Sampling
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Benzo(g,h,i)perylene*	330	100,000
Benzo(k)fluoranthene*	33	3900
Benzoic acid	330	NC
Benzyl alcohol	330	NC
bis(2-Chloroethoxy)methane	330	NC
bis(2-Chloroethyl)ether	33	NC
bis(2-Chloroisopropyl)ether	330	NC
bis(2-Ethylhexyl)phthalate	330	NC
Butyl benzyl phthalate	330	NC
Carbazole	330	NC
Chrysene*	330	3900
Di-n-butyl phthalate	330	NC
Di-n-octyl phthalate	330	NC
Dibenz(a,h)anthracene*	33	330
Dibenzofuran	330	NC
Diethyl phthalate	330	NC
Dimethyl phthalate	330	NC
Fluoranthene*	330	100,000
Fluorene*	330	100,000
Hexachlorobenzene	33	1200
Hexachlorobutadiene	67	NC
Hexachlorocyclopentadiene	330	NC
Hexachloroethane	33	NC
Indeno(1,2,3-cd)pyrene*	33	500
Isophorone	330	NC
N-Nitrosodi-n-propylamine	33	NC
N-Nitrosodimethylamine	330	NC
N-Nitrosodiphenylamine	330	NC
Naphthalene*	330	100,000
Nitrobenzene	33	NC
Pentachlorophenol	1000	6700
Phenanthrene*	330	100,000
Phenol	330	100,000
Pyrene*	330	100,000
Pyridine	330	NC
Top 20 SVOC TICs (summation)	NA	100,000[C]
Metals (mg/kg)		

Table 1A
Soil/Sediment Sampling
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Arsenic	1.0	16
Cadmium	1.0	43
Chromium (total)	2.0	110[B]
Copper	5.0	270
Lead	1.0	400
Mercury	0.033	0.81
Nickel	8.0	310
Silver	2.0	180
Zinc	6.0	10,000
TOC (mg/kg)		
Total Organic Carbon	100	NC

QL = Quantitation Limit is the Test America Laboratory Reporting Limit
DQL = Data Quality Level is the Part 375 Restricted Use Soil Cleanup Objectives, Restricted-Residential
NC = No Criterion
NA = Not Applicable
[A] = The Restricted Use SCO for Total Xylenes is 0.26 mg/kg
[B] = The Restricted Use SCO for Hexavalent Chromium is used.
[C] = Site-Specific Soil Clean-up Objectives
*** Sediment samples will be analyzed for these select VOCs and SVOCs.**

Table 1B
Soil Sampling for Disposal Characterization
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Volatile Organic Compounds (µg/kg)		
1,1,1,2-Tetrachloroethane	1.0	TBD
1,1,1-Trichloroethane	1.0	TBD
1,1,2,2-Tetrachloroethane	1.0	TBD
1,1,2-Trichloroethane	1.0	TBD
1,1,2-Trichlorotrifluoroethane	1.0	TBD
1,1-Dichloroethane	1.0	TBD
1,1-Dichloroethene	1.0	TBD
1,1-Dichloropropene	1.0	TBD
1,2,3-Trichlorobenzene	1.0	TBD
1,2,3-Trichloropropane	1.0	TBD
1,2,4-Trichlorobenzene	1.0	TBD
1,2,4-Trimethylbenzene	1.0	TBD
1,2-Dibromo-3-chloropropane	1.0	TBD
1,2-Dibromoethane	1.0	TBD
1,2-Dichlorobenzene	1.0	TBD
1,2-Dichloroethane	1.0	TBD
1,2-Dichloropropane	1.0	TBD
1,3,5-Trimethylbenzene	1.0	TBD
1,3-Dichlorobenzene	1.0	TBD
1,3-Dichloropropane	1.0	TBD
1,4-Dichlorobenzene	1.0	TBD
1,4-Dioxane	50	TBD
2,2-Dichloropropane	1.0	TBD
2-Butanone	10	TBD
2-Chloroethylvinylether	1.0	TBD
2-Chlorotoluene	1.0	TBD
2-Hexanone	10	TBD
4-Chlorotoluene	1.0	TBD
4-Isopropyltoluene	1.0	TBD
4-Methyl-2-pentanone	10	TBD
Acetone	10	TBD
Acrylonitrile	50	TBD
Benzene	1.0	TBD
Bromobenzene	1.0	TBD
Bromochloromethane	1.0	TBD
Bromodichloromethane	1.0	TBD

Table 1B
Soil Sampling for Disposal Characterization
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Bromoform	1.0	TBD
Bromomethane	1.0	TBD
c-1,2-Dichloroethene	1.0	TBD
c-1,3-Dichloropropene	1.0	TBD
Carbon disulfide	1.0	TBD
Carbon Tetrachloride	1.0	TBD
Chlorobenzene	1.0	TBD
Chloroethane	1.0	TBD
Chloroform	1.0	TBD
Chloromethane	1.0	TBD
Cyclohexane	1.0	TBD
Dibromochloromethane	1.0	TBD
Dibromomethane	1.0	TBD
Dichlorodifluoromethane	1.0	TBD
Ethylbenzene	1.0	TBD
Hexachlorobutadiene	5.0	TBD
Isopropylbenzene	1.0	TBD
m,p-xylene	2.0	TBD
Methyl t-butyl ether	1.0	TBD
Methylene Chloride	1.0	TBD
Methyl Cyclohexane	1.0	TBD
n-Butylbenzene	1.0	TBD
n-Propylbenzene	1.0	TBD
Naphthalene	1.0	TBD
o-xylene	1.0	TBD
sec-Butylbenzene	1.0	TBD
Styrene	1.0	TBD
t-1,2-Dichloroethene	1.0	TBD
t-1,3-Dichloropropene	1.0	TBD
TAME	1.0	TBD
tert-Butylbenzene	1.0	TBD
Tertiary butyl alcohol	20	TBD
Tetrachloroethene	1.0	TBD
Toluene	1.0	TBD
Trichloroethene	1.0	TBD
Trichlorofluoromethane	1.0	TBD
Vinyl Chloride	1.0	TBD

Table 1B
Soil Sampling for Disposal Characterization
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Semivolatile Organic Compounds (µg/kg)		
1,2,4-Trichlorobenzene	33	TBD
1,2-Dichlorobenzene	330	TBD
1,3-Dichlorobenzene	330	TBD
1,4-Dichlorobenzene	330	TBD
2,3,4,6-Tetrachlorophenol	330	TBD
2,4,5-Trichlorophenol	330	TBD
2,4,6-Trichlorophenol	330	TBD
2,4-Dichlorophenol	330	TBD
2,4-Dimethylphenol	330	TBD
2,4-Dinitrophenol	1000	TBD
2,4-Dinitrotoluene	67	TBD
2,6-Dinitrotoluene	67	TBD
2-Chloronaphthalene	330	TBD
2-Chlorophenol	330	TBD
2-Methylnaphthalene	330	TBD
2-Methylphenol	330	TBD
2-Nitroaniline	670	TBD
2-Nitrophenol	330	TBD
3+4-Methylphenol	330	TBD
3,3'-Dichlorobenzidine	670	TBD
3-Nitroaniline	670	TBD
4,6-Dinitro-2-methylphenol	1000	TBD
4-Bromophenyl phenyl ether	330	TBD
4-Chloro-3-methylphenol	330	TBD
4-Chloroaniline	330	TBD
4-Chlorophenyl phenyl ether	330	TBD
4-Nitroaniline	670	TBD
4-Nitrophenol	1000	TBD
Acenaphthene	330	TBD
Acenaphthylene	330	TBD
Aniline	330	TBD
Anthracene	330	TBD
Benzidine	330	TBD
Benzo(a)anthracene	33	TBD
Benzo(a)pyrene	33	TBD
Benzo(b)fluoranthene	33	TBD

Table 1B
Soil Sampling for Disposal Characterization
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Benzo(g,h,i)perylene	330	TBD
Benzo(k)fluoranthene	33	TBD
Benzoic acid	330	TBD
Benzyl alcohol	330	TBD
bis(2-Chloroethoxy)methane	330	TBD
bis(2-Chloroethyl)ether	33	TBD
bis(2-Chloroisopropyl)ether	330	TBD
bis(2-Ethylhexyl)phthalate	330	TBD
Butyl benzyl phthalate	330	TBD
Carbazole	330	TBD
Chrysene	330	TBD
Di-n-butyl phthalate	330	TBD
Di-n-octyl phthalate	330	TBD
Dibenz(a,h)anthracene	33	TBD
Dibenzofuran	330	TBD
Diethyl phthalate	330	TBD
Dimethyl phthalate	330	TBD
Fluoranthene	330	TBD
Fluorene	330	TBD
Hexachlorobenzene	33	TBD
Hexachlorobutadiene	67	TBD
Hexachlorocyclopentadiene	330	TBD
Hexachloroethane	33	TBD
Indeno(1,2,3-cd)pyrene	33	TBD
Isophorone	330	TBD
N-Nitrosodi-n-propylamine	33	TBD
N-Nitrosodimethylamine	330	TBD
N-Nitrosodiphenylamine	330	TBD
Naphthalene	330	TBD
Nitrobenzene	33	TBD
Pentachlorophenol	1000	TBD
Phenanthrene	330	TBD
Phenol	330	TBD
Pyrene	330	TBD
Pyridine	330	TBD

Table 1B
Soil Sampling for Disposal Characterization
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Metals (mg/kg)		
Aluminum	40	TBD
Antimony	2	TBD
Arsenic	1	TBD
Barium	40	TBD
Beryllium	0.4	TBD
Cadmium	1	TBD
Calcium	1000	TBD
Chromium (total)	2	TBD
Cobalt	10	TBD
Copper	5	TBD
Iron	30	TBD
Lead	1	TBD
Magnesium	1000	TBD
Manganese	3	TBD
Mercury	0.033	TBD
Nickel	8	TBD
Potassium	1000	TBD
Selenium	2	TBD
Silver	2	TBD
Sodium	1000	TBD
Thallium	2	TBD
Vanadium	10	TBD
Zinc	6	TBD
Pesticides (µg/kg)		
4,4’-DDD	6.7	TBD
4,4’-DDE	6.7	TBD
4,4’-DDT	6.7	TBD
Aldrin	6.7	TBD
alpha–BHC	6.7	TBD
alpha-Chlordane	6.7	TBD
beta-BHC	6.7	TBD
delta-BHC	6.7	TBD
Dieldrin	6.7	TBD
Endosulfan I	6.7	TBD
Endosulfan II	6.7	TBD

Table 1B
Soil Sampling for Disposal Characterization
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Endosulfan Sulfate	6.7	TBD
Endrin	6.7	TBD
Endrin Aldehyde	6.7	TBD
Endrin Ketone	6.7	TBD
gamma-BHC (Lindane)	6.7	TBD
gamma-Chlordane	6.7	TBD
Heptachlor	6.7	TBD
Heptachlor Epoxide	6.7	TBD
Methoxychlor	6.7	TBD
Toxaphene	67	TBD
Polychlorinated Biphenyls (PCBs) (µg/kg)		
Aroclor-1016	67	TBD
Aroclor-1221	67	TBD
Aroclor-1232	67	TBD
Aroclor-1242	67	TBD
Aroclor-1248	67	TBD
Aroclor-1254	67	TBD
Aroclor-1260	67	TBD
Aroclor-1262	67	TBD
Aroclor-1268	67	TBD
TCLP VOCs (µg/L)		
Benzene	1.0	500[2]
2-Butanone	5.0	200,000[2]
Carbon Tetrachloride	1.0	500[2]
Chlorobenzene	1.0	100,000[2]
Chloroform	1.0	6000[2]
1,4-Dichlorobenzene	1.0	7500[2]
1,2-Dichloroethane	1.0	500[2]
1,1-Dichloroethene	1.0	700[2]
Tetrachloroethene	1.0	700[2]
Trichloroethene	1.0	500[2]
Vinyl chloride	1.0	200[2]
TCLP SVOCs (µg/L)		
1,4-Dichlorobenzene	40	7500[2]
Hexachloroethane	4.0	3000[2]

Table 1B
Soil Sampling for Disposal Characterization
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Nitrobenzene	4.0	2000[2]
Hexachlorobutadiene	8.0	500[2]
2,4,6-Trichlorophenol	40	2000[2]
2,4,5-Trichlorophenol	40	400,000[2]
2,4-Dinitrotoluene	8.0	130[2]
Hexachlorobenzene	4.0	130[2]
Pentachlorophenol	120	100,000[2]
Pyridine	40	5000[2]
2-Methylphenol	40	200,000[2]
3&4-Methylphenol	40	200,000[2]
TCLP Pesticides (µg/L)		
Gamma-BHC (Lindane)	0.5	400[2]
Chlordane	5.0	30[2]
Endrin	0.5	20[2]
Heptachlor	0.5	8[2]
Heptachlor epoxide	0.5	8[2]
Methoxychlor	0.5	10,000[2]
Toxaphene	5.0	500[2]
TCLP Herbicides (µg/L)		
2,4-D	16.65	10,000[2]
2,4,5-TP (Silvex)	16.65	1000[2]
TCLP Metals (µg/L)		
Arsenic	5.0	5000[2]
Barium	200	100,000[2]
Cadmium	5.0	1000[2]
Chromium	10	5000[2]
Lead	5.0	5000[2]
Mercury	0.2	200[2]
Selenium	10	1000[2]
Silver	10	5000[2]
RCRA Characteristics		
Ignitability	NA	Flashpoint <60°C (140°F)[2]
Corrosivity	NA	pH $\leq$ 2 or $\geq$12.5[2]

Table 1B
Soil Sampling for Disposal Characterization
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Reactive Cyanide (mg/kg)	25	250[2]
Reactive Sulfide (mg/kg)	20	500[2]

[1]DQL To Be Determined based on disposal facility acceptance criteria.
[2]DQL based on TCLP standards (SW-846 Chapter 7, Table 7-1) and RCRA characteristics of hazardous waste.
QL = Quantitation Limit is the Test America Laboratory Reporting Limit

Table 1C Groundwater Sampling Chemical Parameters, Quantitation Limits and Data Quality Levels		
Parameter	**QL**	**DQL[1]**
Volatile Organic Compounds (µg/L)		
1,1,1,2-Tetrachloroethane	1.0	5
1,1,1-Trichloroethane	1.0	5
1,1,2,2-Tetrachloroethane	1.0	5
1,1,2-Trichloroethane	1.0	1
1,1,2-Trichlorotrifluoroethane	1.0	5
1,1-Dichloroethane	1.0	5
1,1-Dichloroethene	1.0	5
1,1-Dichloropropene	1.0	5
1,2,3-Trichlorobenzene	1.0	10
1,2,3-Trichloropropane	**1.0**	**0.04**
1,2,4-Trichlorobenzene	1.0	10
1,2,4-Trimethylbenzene	1.0	5
1,2-Dibromo-3-chloropropane	**1.0**	**0.04**
1,2-Dibromoethane	**1.0**	**0.0006**
1,2-Dichlorobenzene	1.0	3
1,2-Dichloroethane	**1.0**	**0.6**
1,2-Dichloropropane	1.0	1
1,3,5-Trimethylbenzene	1.0	5
1,3-Dichlorobenzene	1.0	3
1,3-Dichloropropane	1.0	5
1,4-Dichlorobenzene	1.0	3
1,4-Dioxane	50	NC
2,2-Dichloropropane	1.0	5
2-Butanone	5.0	50
2-Chlorotoluene	1.0	5
2-Hexanone	5.0	50
4-Chlorotoluene	1.0	5
4-Isopropyltoluene	1.0	5
4-Methyl-2-pentanone	5.0	NC
Acetone	5.0	50
Acrylonitrile	2.0	5
Benzene	1.0	1
Bromobenzene	1.0	5
Bromochloromethane	1.0	5
Bromodichloromethane	1.0	50
Bromoform	1.0	50

Table 1C
Groundwater Sampling
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Bromomethane	1.0	5
c-1,2-Dichloroethene	1.0	5
c-1,3-Dichloropropene	**1.0**	**0.4**[a]
Carbon disulfide	1.0	60
Carbon Tetrachloride	1.0	5
Chlorobenzene	1.0	5
Chloroethane	1.0	5
Chloroform	1.0	7
Chloromethane	1.0	5
Cyclohexane	1.0	NC
Dibromochloromethane	1.0	50
Dibromomethane	1.0	5
Dichlorodifluoromethane	1.0	5
Ethylbenzene	1.0	5
Hexachlorobutadiene	**1.0**	**0.5**
Isopropylbenzene	1.0	5
m,p-xylene	2.0	5
Methyl t-butyl ether	1.0	10
Methylene Chloride	1.0	5
Methyl Cyclohexane	1.0	NC
n-Butylbenzene	1.0	5
n-Propylbenzene	1.0	5
Naphthalene	1.0	10
o-xylene	1.0	5
sec-Butylbenzene	1.0	5
Styrene	1.0	5
t-1,2-Dichloroethene	1.0	5
t-1,3-Dichloropropene	**1.0**	**0.4**[a]
TAME	1.0	NC
tert-Butylbenzene	1.0	5
Tertiary butyl alcohol	20	NC
Tetrachloroethene	1.0	5
Toluene	1.0	5
Trichloroethene	1.0	5
Trichlorofluoromethane	1.0	5
Vinyl Chloride	1.0	2

Table 1C
Groundwater Sampling
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Semivolatile Organic Compounds (µg/L)		
1,2,4-Trichlorobenzene	1.0	5
1,2-Dichlorobenzene	**10**	**3**
1,3-Dichlorobenzene	**10**	**3**
1,4-Dichlorobenzene	**10**	**3**
2,3,4,6-Tetrachlorophenol	**10**	**1**
2,4,5-Trichlorophenol	**10**	**1**
2,4,6-Trichlorophenol	**10**	**1**
2,4-Dichlorophenol	**10**	**5**
2,4-Dimethylphenol	10	50
2,4-Dinitrophenol	**30**	**10**
2,4-Dinitrotoluene	2.0	5
2,6-Dinitrotoluene	2.0	5
2-Chloronaphthalene	10	10
2-Chlorophenol	**10**	**1**
2-Methylnaphthalene	10	NC
2-Methylphenol	**10**	**1**
2-Nitroaniline	**20**	**5**
2-Nitrophenol	**10**	**1**
3+4-Methylphenol	**10**	**1**
3,3'-Dichlorobenzidine	**20**	**5**
3-Nitroaniline	**20**	**5**
4,6-Dinitro-2-methylphenol	**30**	**1**
4-Bromophenyl phenyl ether	10	NC
4-Chloro-3-methylphenol	**10**	**1**
4-Chloroaniline	**10**	**5**
4-Chlorophenyl phenyl ether	10	NC
4-Nitroaniline	**20**	**5**
4-Nitrophenol	**30**	**1**
Acenaphthene	10	20
Acenaphthylene	10	NC
Aniline	**10**	**5**
Anthracene	10	50
Benzidine	**20**	**5**
Benzo(a)anthracene	**1.0**	**0.002**
Benzo(a)pyrene	1.0	ND
Benzo(b)fluoranthene	**1.0**	**0.002**
Benzo(g,h,i)perylene	10	NC

Table 1C
Groundwater Sampling
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]
Benzo(k)fluoranthene	**1.0**	**0.002**
Benzoic acid	50	NC
Benzyl alcohol	10	NC
bis(2-Chloroethoxy)methane	**10**	**5**
bis(2-Chloroethyl)ether	1.0	1
bis(2-Chloroisopropyl)ether	**10**	**5**
bis(2-Ethylhexyl)phthalate	**10**	**5**
Butyl benzyl phthalate	10	50
Carbazole	10	NC
Chrysene	**10**	**0.002**
Di-n-butyl phthalate	10	50
Di-n-octyl phthalate	10	50
Dibenz(a,h)anthracene	1.0	NC
Dibenzofuran	10	NC
Diethyl phthalate	10	50
Dimethyl phthalate	10	50
Fluoranthene	10	50
Fluorene	10	50
Hexachlorobenzene	**1.0**	**0.04**
Hexachlorobutadiene	**2.0**	**0.5**
Hexachlorocyclopentadiene	**10**	**5**
Hexachloroethane	1.0	5
Indeno(1,2,3-cd)pyrene	**1.0**	**0.002**
Isophorone	10	50
N-Nitrosodi-n-propylamine	1.0	NC
N-Nitrosodimethylamine	10	NC
N-Nitrosodiphenylamine	10	50
Naphthalene	10	10
Nitrobenzene	**1.0**	**0.4**
Pentachlorophenol	**30**	**1**
Phenanthrene	10	50
Phenol	**10**	**1**
Pyrene	10	50
Pyridine	10	50

Table 1C
Groundwater Sampling
Chemical Parameters, Quantitation Limits and Data Quality Levels

Parameter	QL	DQL[1]

QL = Quantitation Limit is the Test America Laboratory Reporting Limit
DQL = Data Quality Level is the TOGS Class GA Groundwater Quality Standards and Guidance Values
NC = No Criterion
(a) = 0.4 µg/L applies to the sum of cis- and trans-1,3-dichloropropene
ND = Class GA Value is any detected concentration
Shading indicates QL is higher than DQL.

Table 1D
Chemical Parameters, Quantitation Limits and Data Quality Levels for Soil Gas Samples

Parameter	QL	DQL
Volatile Organic Compounds (ppbV) –TO15		
Dichlorodifluoromethane	0.5	NC
Freon 22	0.5	NC
1,2-Dichlorotetrafluoroethane	0.2	NC
Chloromethane	0.5	NC
n-Butane	0.5	NC
Vinyl chloride	0.2	NC
1,3-Butadiene	0.2	NC
Bromomethane	0.2	NC
Chloroethane	0.5	NC
Bromoethene (Vinyl Bromide)	0.2	NC
Trichlorofluoromethane	0.2	NC
Freon TF	0.2	NC
1,1-Dichloroethene	0.2	NC
Acetone	5	NC
Isopropyl alcohol	5	NC
Carbon disulfide	0.5	NC
3-Chloropropene	0.5	NC
Methylene Chloride	0.5	60
tert-Butyl alcohol	5	NC
Methyl tert-butyl ether	0.2	NC
trans-1,2-Dichloroethene	0.2	NC
n-Hexane	0.2	NC
1,1-Dichloroethane	0.2	NC
Methyl Ethyl Ketone	0.5	NC
cis-1,2-Dichloroethene	0.2	NC
1,2- Dichloroethene, Total	0.2	NC
Chloroform	0.2	NC
Tetrahydrofuran	5	NC
1,1,1-Trichloroethane	0.2	NC
Cyclohexane	0.2	NC
Carbon tetrachloride	0.2	NC
2,2,4-Trimethylpentane	0.2	NC
Benzene	0.2	NC
1,2-Dichloroethane	0.2	NC
n-Heptane	0.2	NC
Trichloroethene	0.2	5

Table 1D
Chemical Parameters, Quantitation Limits and Data Quality Levels for Soil Gas Samples

Parameter	QL	DQL
Methyl methacrylate	0.5	NC
1,2-Dichloropropane	0.2	NC
1,4-Dioxane	5	NC
Bromodichloromethane	0.2	NC
Cis-1,3-Dichloropropene	0.2	NC
Methyl Isobutyl Ketone	0.5	NC
Toluene	0.2	NC
Trans-1,3-Dichloropropene	0.2	NC
1,1,2-Trichloroethane	0.2	NC
Tetrachloroethene	0.2	100
Methyl Butyl Ketone (2-Hexanone)	0.5	NC
Dibromochloromethane	0.2	NC
1,2-Dibromoethane	0.2	NC
Chlorobenzene	0.2	NC
Ethylbenzene	0.2	NC
m,p-Xylene	0.5	NC
Xylene, o-	0.2	NC
Xylene (total)	0.2	NC
Styrene	0.2	NC
Bromoform	0.2	NC
Cumene	0.2	NC
1,1,2,2-Tetrachloroethane	0.2	NC
n-Propylbenzene	0.2	NC
4-Ethyltoluene	0.2	NC
1,3,5-Trimethylbenzene	0.2	NC
2-Chlorotoluene	0.2	NC
Tert-Butylbenzene	0.2	NC
1,2,4-Trimethylbenzene	0.2	NC
Sec-Butylbenzene	0.2	NC
4-Isopropyltoluene	0.2	NC
1,3-Dichlorobenzene	0.2	NC
1,4-Dichlorobenzene	0.2	NC
Benzyl chloride	0.2	NC
n-Butylbenzene	0.2	NC
1,2-Dichlorobenzene	0.2	NC
1,2,4-Trichlorobenzene	0.5	NC
Hexachlorobutadiene	0.2	NC
Naphthalene	0.5	NC

Table 1D
Chemical Parameters, Quantitation Limits and Data Quality Levels for Soil Gas Samples

Parameter	QL	DQL

QL=Quantitation Limit
DQL=Data Quality Level is the NYSDOH Air Guidance Value
NC=No Criterion

Table 2
Soil, Sediment, Groundwater, and Soil Gas
Analytical Parameters, Methods, Preservation and Container Requirements

Sample Matrix	Analytical Parameter	Sample Type	No. of Samples[1]	EPA Analytical Method	Sample Preservation	Holding Time[2]	Sample Container[3,4]
Soil	VOCs	Grab	TBD	SW-846 Method 8260B	Cool to 4^0 C; 2 EnCores extruded into DI, 1 EnCore extruded into methanol	48 hours to preservation, 14 days to analysis	(3) 5 gram En-core samplers; (1) 4 oz. glass jar
Sediment	BTEX	Grab	TBD	SW-846 Method 8260B	Cool to 4^0 C; no headspace	48 hours to preservation, 14 days to analysis	(3) 5 gram En-core samplers; (1) 4 oz. glass jar
Soil	SVOCs	Grab	TBD	SW-846 Method 8270D	Cool to 4^0 C	14 days to extract; 40 days to analysis	(1) 8 oz. glass jar
Sediment	PAHs	Grab	TBD	SW-846 Method 8270D	Cool to 4^0 C	14 days to extract; 40 days to analysis	(1) 8 oz. glass jar
Soil/Sediment	Metals	Grab	TBD	SW-846 Method 6010C	Cool to 4^0 C	6 months to analysis	(1) 8 oz. glass jar
Soil/Sediment	Mercury	Grab	TBD	SW-846 Method 7471B	Cool to 4^0 C	28 days to analysis	(1) 8 oz. glass jar
Soil	PCBs	Grab	TBD	SW-846 Method 8082A	Cool to 4^0 C	14 days to extract; 40 days to analysis	(1) 8 oz. glass jar
Soil	Pesticides	Grab	TBD	SW-846 Method 8081B	Cool to 4^0 C	14 days to extract; 40 days to analysis	(1) 8 oz. glass jar
Groundwater	VOCs	Grab	TBD	SW-846 Method 8260B	pH < 2 with HCl; Cool to 4^0 C; no headspace	14 days to analysis	(3) 40 mL VOA vials
Groundwater	SVOCs	Grab	TBD	SW-846 Method 8270D	Cool to 4^0 C	7 days to extract; 40 days to analysis	(2) 1 L amber glass jars
Sediment	Total Organic Carbon	Grab	TBD	Lloyd Kahn Method, EPA Region 2	Cool to 4^0 C	14 days to analysis	(1) 300 mL amber glass jar

Table 2
Soil, Sediment, Groundwater, and Soil Gas
Analytical Parameters, Methods, Preservation and Container Requirements

Sample Matrix	Analytical Parameter	Sample Type	No. of Samples[1]	EPA Analytical Method	Sample Preservation	Holding Time[2]	Sample Container[3,4]
Soil	TCLP VOC	Grab	TBD	SW 846 Methods 1311/8260B	Cool to 4^0 C; no headspace	14 days to TCLP extraction; 14 days from TCLP extraction to analysis	(1) 60 ml VOC vial
Sediment	Grain size	Grab	TBD	ASTM Method D422 (with hydrometer)	None	None	(1) 500 mL polyethylene jar or 16 oz. Ziploc bag
Soil	TCLP SVOC	Grab	TBD	SW 846 Methods 1311/ 8270D	Cool to 4^0 C	14 days to TCLP extraction; 7 days from TCLP extraction to SVOC extraction; 40 days from SVOC extraction to analysis	(1) 950 mL amber glass jar
Soil	TCLP Pesticides	Grab	TBD	SW-846 Methods 1311/8081B	Cool to 4^0 C	14 days to TCLP extraction; 7 days from TCLP extraction to pesticide extraction; 40 days from pesticide extraction to analysis	(1) 950 mL amber glass jar
Soil	TCLP Herbicides	Grab	TBD	SW-846 Methods 1311/8151A	Cool to 4^0 C	14 days to TCLP extraction; 7 days from TCLP extraction to herbicide extraction; 40 days from herbicide extraction to analysis	(1) 950 mL amber glass jar

Table 2
Soil, Sediment, Groundwater, and Soil Gas
Analytical Parameters, Methods, Preservation and Container Requirements

Sample Matrix	Analytical Parameter	Sample Type	No. of Samples[1]	EPA Analytical Method	Sample Preservation	Holding Time[2]	Sample Container[3,4]
Soil	TCLP Metals	Grab	TBD	SW 846 Methods 1311/ 6010C/7470A	Cool to 4^0 C	Hg: 28 days to TCLP extraction; 28 days from TCLP extraction to analysis Other Metals: 6 months to TCLP extraction; 6 months from TCLP extraction to analysis	(1) 500 mL amber glass jar
Soil	Ignitability	Grab	TBD	SW-846 Method 1010/1030	Cool to 4^0 C	None specified	(1) 500 mL amber glass jar
Soil	Corrosivity	Grab	TBD	SW-846 Method 9045D	Cool to 4^0 C	As soon as possible (within 3 days of collection)	(1) 500 mL amber glass jar
Soil	Reactive cyanide	Grab	TBD	SW-846 Chapter 7, Section 7.3.3	Cool to 4^0 C; no headspace	As soon as possible (within 3 days of collection)	(1) 500 mL amber glass jar
Soil	Reactive sulfide	Grab	TBD	SW-846 Chapter 7, Section 7.3.4	Cool to 4^0 C; no headspace	As soon as possible (within 3 days of collection)	(1) 500 mL amber glass jar
Soil Gas	VOCs	Grab	TBD	EPA Method TO-15	None	30 days to analysis	(1) Pre-cleaned, evacuated stainless steel canister

[1] Actual number of samples may vary depending on field conditions, sample material availability, and field observations
[2] From date of sample collection
[3] I-Chem Series 300 bottles
[4] MS/MSDs require duplicate volume for all parameters for solid matrices; MS/MSDs require triplicate volume for organic parameters for aqueous matrices
TBD = To Be Determined

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
VOCs	SW-846 Method 8260B	Soil/Sediment	Surrogates	% Rec.	Surrogates: All samples, standards, QC samples	Field Duplicates		Field Duplicates: One per 20 per matrix
			1,2-Dichloroethane-d4	70-130				
			4-Bromofluorobenzene	70-130		RPD ≤50		
			Toluene-d8	70-130				
			Matrix Spikes		Matrix Spikes: One per 20 per matrix	MS/MSDs	RPD	MS/MSDs: One per 20 per matrix
			Chloromethane	50-151		Chloromethane	30	
			Bromomethane	54-142		Bromomethane	30	
			Vinyl chloride	67-133		Vinyl chloride	30	
			Chloroethane	56-146		Chloroethane	30	
			Methylene Chloride	74-137		Methylene Chloride	30	
			Acetone	27-164		Acetone	30	
			Carbon disulfide	72-128		Carbon disulfide	30	
			Trichlorofluoromethane	61-139		Trichlorofluoromethane	30	
			1,1-Dichloroethene	71-126		1,1-Dichloroethene	30	
			1,1-Dichloroethane	76-125		1,1-Dichloroethane	30	
			trans-1,2-Dichloroethene	75-122		trans-1,2-Dichloroethene	30	
			cis-1,2-Dichloroethene	80-120		cis-1,2-Dichloroethene	30	
			Chloroform	77-120		Chloroform	30	
			2-Butanone	77-117		2-Butanone	30	
			1,2-Dichloroethane	76-118		1,2-Dichloroethane	30	
			1,1,1-Trichloroethane	78-117		1,1,1-Trichloroethane	30	
			Carbon tetrachloride	79-118		Carbon tetrachloride	30	
			Benzene*	77-117		Benzene*	30	
			Bromoform	59-125		Bromoform	30	
			Styrene	82-122		Styrene	30	
			m&p-Xylene*	81-121		m&p-Xylene*	30	
			o-Xylene*	82-122		o-Xylene*	30	
			Ethylbenzene*	81-121		Ethylbenzene*	30	
			Chlorobenzene	80-120		Chlorobenzene	30	
			Cyclohexane	80-121		Cyclohexane	30	
			Isopropylbenzene	65-129		Isopropylbenzene	30	

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
			2-Hexanone	70-122		2-Hexanone	30	
			MTBE	78-120		MTBE	30	
			Freon TF	73-123		Freon TF	30	
			2-Chloroethyl vinyl ether	74-120		2-Chloroethyl vinyl ether	30	
			1,4-Dioxane	69-131		1,4-Dioxane	30	
			Trichloroethene	79-119		Trichloroethene	30	
			Toluene*	75-115		Toluene*	30	
			trans-1,3-Dichloropropene	67-121		trans-1,3-Dichloropropene	30	
			4-Methyl-2-pentanone	68-120		4-Methyl-2-pentanone	30	
			cis-1,3-Dichloropropene	80-123		cis-1,3-Dichloropropene	30	
			1,2-Dichlorobenzene	80-120		1,2-Dichlorobenzene	30	
			1,3-Dichlorobenzene	80-120		1,3-Dichlorobenzene	30	
			1,4-Dichlorobenzene	80-120		1,4-Dichlorobenzene	30	
			1,2,4-Trichlorobenzene	80-120		1,2,4-Trichlorobenzene	30	
			1,2,3-Trichlorobenzene	75-121		1,2,3-Trichlorobenzene	30	
			1,2-Dichloropropane	82-122		1,2-Dichloropropane	30	
			Methylcyclohexane	78-118		Methylcyclohexane	30	
			Tetrachloroethene	80-120		Tetrachloroethene	30	
			1,2-Dibromo-3-Chloropropane	74-118		1,2-Dibromo-3-Chloropropane	30	
			1,1,2,2-Tetrachloroethane	79-122		1,1,2,2-Tetrachloroethane	30	
			1,1,2-Trichloroethane	73-118		1,1,2-Trichloroethane	30	
			Dibromochloromethane	68-120		Dibromochloromethane	30	
			1,2-Dibromoethane	75-117		1,2-Dibromoethane	30	
			Dichlorodifluoromethane	52-144		Dichlorodifluoromethane	30	
			TBA	65-119		TBA	30	
			Bromochloromethane	74-125		Bromochloromethane	30	
			Acrylonitrile	71-130		Acrylonitrile	30	
			Bromodichloromethane	79-119		Bromodichloromethane	30	
			Naphthalene	78-119		Naphthalene	30	
			1,1-Dichloropropene	78-118		1,1-Dichloropropene	30	
			Hexachlorobutadiene	72-120		Hexachlorobutadiene	30	
			1,1,1,2-Tetrachloroethane	60-126		1,1,1,2-Tetrachloroethane	30	

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits	Accuracy Frequency Requirements	Precision (RPD) Control Limits	Precision Frequency Requirements
			1,2,3-Trichloropropane 80-120		1,2,3-Trichloropropane 30	
			1,2,4-Trimethylbenzene 81-121		1,2,4-Trimethylbenzene 30	
			1,3,5-Trimethylbenzene 82-122		1,3,5-Trimethylbenzene 30	
			1,3-Dichloropropane 77-116		1,3-Dichloropropane 30	
			2,2-Dichloropropane 77-120		2,2-Dichloropropane 30	
			2-Chlorotoluene 81-121		2-Chlorotoluene 30	
			4-Chlorotoluene 82-122		4-Chlorotoluene 30	
			Bromobenzene 80-120		Bromobenzene 30	
			Dibromomethane 79-118		Dibromomethane 30	
			N-Propylbenzene 81-121		N-Propylbenzene 30	
			p-Isopropyltoluene 82-122		p-Isopropyltoluene 30	
			sec-Butylbenzene 82-122		sec-Butylbenzene 30	
			tert-Butylbenzene 82-122		tert-Butylbenzene 30	
			n-Butylbenzene 82-122		n-Butylbenzene 30	
			Tert-amyl methyl ether 79-119		Tert-amyl methyl ether 30	
SVOCs	SW-846 Method 8270D	Soil/Sediment	Surrogates % Rec.	Surrogates: All samples, standards, QC samples	Field Duplicates	Field Duplicates One per 20 per matrix
			Phenol-d5 41-118			
			2-Fluorophenol 37-125		RPD ≤50	
			2,4,6-Tribromophenol 10-120			
			Nitrobenzene-d5 38-105			
			2-Fluorobiphenyl 40-109			
			Terphenyl-d14 16-151			
			Matrix Spikes	Matrix Spikes: One per 20 per matrix per batch	MS/MSDs RPD	MS/MSDs: One per 20 per matrix per batch
			Phenol 54-115		Phenol 30	
			2-Chlorophenol 56-110		2-Chlorophenol 30	
			2-Methylphenol 54-117		2-Methylphenol 30	
			3 & 4 Methylphenol 47-103		3 & 4 Methylphenol 30	
			Bis(2-chloroethyl)ether 44-101		Bis(2-chloroethyl)ether 30	
			bis (2-chloroisopropyl) ether 45-102		bis (2-chloroisopropyl) ether 30	
			N-Nitrosodi-n-propylamine 42-107		N-Nitrosodi-n-propylamine 30	
			Nitrobenzene 42-106			

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
			Hexachloroethane	45-90		Nitrobenzene	30	
			Isophorone	48-97		Hexachloroethane	30	
			2-Nitrophenol	55-101		Isophorone	30	
			2,4-Dimethylphenol	56-112		2-Nitrophenol	30	
			2,4-Dichlorophenol	58-115		2,4-Dimethylphenol	30	
			Benzoic acid	10-137		2,4-Dichlorophenol	30	
			Bis(2-chloroethoxy)methane	51-100		Benzoic acid	30	
			N-Nitrosodimethylamine	40-84		Bis(2-chloroethoxy)methane	30	
			Naphthalene*	53-94		N-Nitrosodimethylamine	30	
			4-Chloroaniline	10-96		Naphthalene*	30	
			Hexachlorobutadiene	45-98		4-Chloroaniline	30	
			1,3-Dichlorobenzene	47-84		Hexachlorobutadiene	30	
			1,4-Dichlorobenzene	47-85		1,3-Dichlorobenzene	30	
			4-Chloro-3-methylphenol	55-117		1,4-Dichlorobenzene	30	
			1,2-Dichlorobenzene	48-87		4-Chloro-3-methylphenol	30	
			2-Methylnaphthalene*	51-98		1,2-Dichlorobenzene	30	
			Hexachlorobenzene	43-104		2-Methylnaphthalene*	30	
			Hexachlorocyclopentadiene	24-98		Hexachlorobenzene	30	
			2,4,6-Trichlorophenol	53-118		Hexachlorocyclopentadiene	30	
			2,4,5-Trichlorophenol	50-115		2,4,6-Trichlorophenol	30	
			2-Chloronaphthalene	51-102		2,4,5-Trichlorophenol	30	
			1,2,4-Trichlorobenzene	48-94		2-Chloronaphthalene	30	
			2-Nitroaniline	51-109		1,2,4-Trichlorobenzene	30	
			2,6-Dinitrotoluene	51-115		2-Nitroaniline	30	
			Dimethyl phthalate	52-112		2,6-Dinitrotoluene	30	
			Acenaphthylene*	51-103		Dimethyl phthalate	30	
			3-Nitroaniline	32-104		Acenaphthylene*	30	
			Acenaphthene*	46-100		3-Nitroaniline	30	
			4-Nitrophenol	45-114		Acenaphthene*	30	
			2,4-Dinitrophenol	10-129		4-Nitrophenol	30	
			Dibenzofuran	52-106		2,4-Dinitrophenol	30	
			Diethyl phthalate	52-114		Dibenzofuran	30	

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
			Fluorene*	51-108		Diethyl phthalate	30	
			Fluoranthene*	49-108		Fluorene*	30	
			Di-n-butyl phthalate	50-108		Fluoranthene*	30	
			2,4-Dinitrotoluene	53-110		Di-n-butyl phthalate	30	
			4-Chlorophenyl phenyl ether	50-106		2,4-Dinitrotoluene	30	
			4-Nitroaniline	45-106		4-Chlorophenyl phenyl ether	30	
			4,6-Dinitro-2-methylphenol	10-110		4-Nitroaniline	30	
			4-Bromophenyl phenyl ether	44-102		4,6-Dinitro-2-methylphenol	30	
			Anthracene*	50-107		4-Bromophenyl phenyl ether	30	
			Carbazole	49-104		Anthracene*	30	
			Phenanthrene*	48-108		Carbazole	30	
			Pentachlorophenol	19-113		Phenanthrene*	30	
			Pyrene*	49-116		Pentachlorophenol	30	
			Chrysene*	45-114		Pyrene*	30	
			Benzo[k]fluoranthene*	35-115		Chrysene*	30	
			Benzo[g,h,i]perylene*	43-106		Benzo[k]fluoranthene*	30	
			Benzo[b]fluoranthene*	33-96		Benzo[g,h,i]perylene*	30	
			Benzidine	10-61		Benzo[b]fluoranthene*	30	
			Benzo[a]pyrene*	36-89		Benzidine	30	
			Benzo[a]anthracene*	46-112		Benzo[a]pyrene*	30	
			N-Nitrosodiphenylamine	49-106		Benzo[a]anthracene*	30	
			Butyl benzyl phthalate	49-117		N-Nitrosodiphenylamine	30	
			Bis(2-ethylhexyl) phthalate	49-119		Butyl benzyl phthalate	30	
			Di-n-octyl phthalate	40-106		Bis(2-ethylhexyl) phthalate	30	
			Indeno[1,2,3-cd]pyrene*	43-109		Di-n-octyl phthalate	30	
			Dibenz(a,h)anthracene*	43-107		Indeno[1,2,3-cd]pyrene*	30	
			3,3'-Dichlorobenzidine	24-105		Dibenz(a,h)anthracene*	30	
			2,3,4,6-Tetrachlorophenol	70-130		3,3'-Dichlorobenzidine	30	
			Pyridine	12-74		2,3,4,6-Tetrachlorophenol	30	
			Aniline	35-90		Pyridine	30	
			Benzyl alcohol	51-104		Aniline	30	
						Benzyl alcohol	30	

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
PCBs	SW-846 Method 8082A	Soil	Surrogates Decachlorobiphenyl	% Rec. 30-150	Surrogates: All samples, standards, QC samples	Field Duplicates RPD ≤50		Field Duplicates: One per 20
			Matrix Spikes Aroclor 1016 Aroclor 1260	 60-144 63-143	Matrix Spikes: One per 20 per batch	MS/MSDs Aroclor 1016 Aroclor 1260	RPD 30 30	MS/MSDs: One per 20 per batch

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
Pesticides	SW-846 Method 8081B	Soil	Surrogates	% Rec.	Surrogates: All samples, standards, QC samples	Field Duplicates		Field Duplicates: One per 20
			Decachlorobiphenyl	53-150				
			Tetrachloro-m-xylene	40-150		RPD ≤50		
			Matrix Spikes		Matrix Spikes: One per 20 per batch	MS/MSDs	RPD	MS/MSDs: One per 20 per batch
			Aldrin	58-143		Aldrin	30	
			alpha-BHC	58-138		alpha-BHC	30	
			beta-BHC	60-139		beta-BHC	30	
			delta-BHC	60-141		delta-BHC	30	
			gamma-BHC (Lindane)	58-136		gamma-BHC (Lindane)	30	
			Chlordane	62-150		Chlordane	30	
			4,4'-DDD	63-150		4,4'-DDD	30	
			4,4'-DDE	58-150		4,4'-DDE	30	
			4,4'-DDT	57-150		4,4'-DDT	30	
			Dieldrin	55-128		Dieldrin	30	
			Endosulfan I	60-138		Endosulfan I	30	
			Endosulfan II	59-133		Endosulfan II	30	
			Endosulfan sulfate	56-133		Endosulfan sulfate	30	
			Endrin	61-150		Endrin	30	
			Endrin aldehyde	55-122		Endrin aldehyde	30	
			Endrin ketone	62-139		Endrin ketone	30	
			Heptachlor	58-137		Heptachlor	30	
			Heptachlor epoxide	59-136		Heptachlor epoxide	30	
			Methoxychlor	42-150		Methoxychlor	30	
			Toxaphene	70-130		Toxaphene	30	
			gamma-Chlordane	45-147		gamma-Chlordane	30	
			alpha-Chlordane	49-143		alpha-Chlordane	30	

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
Metals	SW-846 Methods 6010C/ 7470A	Soil/Sediment				Field Duplicates RPD ≤50		Field Duplicates: One per 20 per matrix
			Matrix Spikes 75-125% recovery		Matrix Spikes: One per 20 per matrix per batch	Matrix Duplicates RPD ≤30		Matrix Duplicates: One per 20 per matrix per batch
TCLP VOCs	SW-846 Methods 1311/8260B	Soil	Surrogates	% Rec.	Surrogates: All samples, standards, QC samples			
			1,2-Dichloroethane-d4	70-130				
			4-Bromofluorobenzene	70-130				
			Toluene-d8	70-130				
			Matrix Spikes		Matrix Spikes: One per 20 per batch	MS/MSDs	RPD	MS/MSDs: One per 20 per batch
			1,1-Dichloroethene	61-143		1,1-Dichloroethene	30	
			1,2-Dichloroethane	76-116		1,2-Dichloroethane	30	
			2-Butanone	61-108		2-Butanone	30	
			Chloroform	85-125		Chloroform	30	
			Carbon Tetrachloride	76-116		Carbon Tetrachloride	30	
			Benzene	84-124		Benzene	30	
			Trichloroethene	82-122		Trichloroethene	30	
			Tetrachloroethene	80-142		Tetrachloroethene	30	
			Chlorobenzene	85-125		Chlorobenzene	30	
			Vinyl chloride	54-138		Vinyl chloride	30	
			1,4-Dichlorobenzene	70-130		1,4-Dichlorobenzene	30	

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
TCLP SVOCs	SW-846 Methods 1311/8270D	Soil	Surrogates Phenol-d5 2-Fluorophenol 2,4,6-Tribromophenol Nitrobenzene-d5 2-Fluorobiphenyl Terphenyl-d14	% Rec. 10-48 10-65 46-122 56-112 53-108 50-122	Surrogates: All samples, standards, QC samples			
			Matrix Spikes Hexachloroethane Nitrobenzene Hexachlorobutadiene 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2,4-Dinitrotoluene Hexachlorobenzene Pentachlorophenol Pyridine 2-Methylphenol 3&4-Methylphenol	 61-112 49-92 56-113 67-115 66-120 67-126 24-98 50-124 14-55 41-90 30-87	Matrix Spikes: One per 20 per batch	MS/MSDs Hexachloroethane Nitrobenzene Hexachlorobutadiene 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2,4-Dinitrotoluene Hexachlorobenzene Pentachlorophenol Pyridine 2-Methylphenol 3&4-Methylphenol	RPD 30 30 30 30 30 30 30 30 30 30 30	MS/MSDs: One per 20 per batch
TCLP Pesticides	SW-846 Methods 1311/8081B	Soil	Surrogates Decachlorobiphenyl Tetrachloro-m-xylene	% Rec. 65-150 51-143	Surrogates: All samples, standards, QC samples			
			Matrix Spikes Gamma-BHC Heptachlor Heptachlor epoxide Endrin Methoxychlor Technical Chlordane Toxaphene	 61-150 86-150 67-150 51-150 34-150 53-150 38-147	Matrix Spikes: One per 20 per batch	MS/MSDs Gamma-BHC Heptachlor Heptachlor epoxide Endrin Methoxychlor Technical Chlordane Toxaphene	RPD 30 30 30 30 30 30 30	MS/MSDs: One per 20 per batch

Table 3A
Soil/Sediment Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits	Accuracy Frequency Requirements	Precision (RPD) Control Limits	Precision Frequency Requirements
TCLP Herbicides	SW-846 Methods 1311/8151A	Soil	Surrogates — % Rec. 2,4-DCAA — 87-150 Matrix Spikes 2,4-D — 52-154 2,4,5-TP — 67-142	Surrogates: All samples, standards, QC samples Matrix Spikes: One per 20 per batch	MS/MSDs — RPD 2,4-D — 30 2,4,5-TP — 30	MS/MSDs: One per 20 per batch
TCLP Metals	SW-846 Methods 1311/6010C/7470A	Soil	Matrix Spikes 75-125% recovery	Matrix Spikes: One per 20 per batch	Matrix Duplicates RPD ≤20	Matrix Duplicates: One per 20 per batch
Ignitability	SW-846 Method 1010	Soil	Not Applicable	Not Applicable	Matrix Duplicates RPD ≤46	Matrix Duplicates: One per 20 per matrix
Corrosivity	SW-846 Method 9045C	Soil	Not Applicable	Not Applicable	Matrix Duplicates RPD ≤5	Matrix Duplicates: One per 20 per matrix
Reactive cyanide	SW-846 Chapter 7, Section 7.3.3	Soil	Matrix Spikes 10-100% recovery	Not Applicable	Matrix Duplicates RPD ≤10	Matrix Duplicates: One per 20 per matrix
Reactive sulfide	SW-846 Chapter 7, Section 7.3.4	Soil	Matrix Spikes 70-130% recovery	Not Applicable	Matrix Duplicates RPD ≤10	Matrix Duplicates: One per 20 per matrix

* Sediment samples will be analyzed for these select VOCs and SVOCs.

Table 3B
Groundwater Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
VOCs	SW-846 Method 8260B	Groundwater	Surrogates	% Rec.	Surrogates: All samples, standards, QC samples	Field Duplicates:		Field Duplicates:
			1,2-Dichloroethane-d4	70-130		RPD ≤30		One per 20
			Toluene-d8	70-130				
			Bromofluorobenzene	70-130				
			Matrix Spikes		Matrix Spikes:	Matrix Spikes	RPD	MS/MSDs:
			Chloromethane	58-146	One per 20	Chloromethane	30	One per 20
			Bromomethane	55-153		Bromomethane	30	
			Vinyl chloride	61-144		Vinyl chloride	30	
			Chloroethane	69-145		Chloroethane	30	
			Methylene Chloride	79-119		Methylene Chloride	30	
			Acetone	45-156		Acetone	30	
			Carbon disulfide	58-139		Carbon disulfide	30	
			Trichlorofluoromethane	69-147		Trichlorofluoromethane	30	
			1,1-Dichloroethene	56-139		1,1-Dichloroethene	30	
			1,1-Dichloroethane	78-122		1,1-Dichloroethane	30	
			trans-1,2-Dichloroethene	75-122		trans-1,2-Dichloroethene	30	
			cis-1,2-Dichloroethene	80-120		cis-1,2-Dichloroethene	30	
			Chloroform	82-123		Chloroform	30	
			1,2-Dichloroethane	74-118		1,2-Dichloroethane	30	
			2-Butanone	65-114		2-Butanone	30	
			1,1,1-Trichloroethane	74-128		1,1,1-Trichloroethane	30	
			Carbon tetrachloride	73-120		Carbon tetrachloride	30	
			Bromodichloromethane	79-119		Bromodichloromethane	30	
			1,2-Dichloropropane	80-120		1,2-Dichloropropane	30	
			cis-1,3-Dichloropropene	80-120		cis-1,3-Dichloropropene	30	
			Trichloroethene	78-119		Trichloroethene	30	
			Dibromochloromethane	80-120		Dibromochloromethane	30	
			1,1,2-Trichloroethane	79-119		1,1,2-Trichloroethane	30	
			Benzene	83-124		Benzene	30	
			trans-1,3-Dichloropropene	78-118		trans-1,3-Dichloropropene	30	

Table 3B
Groundwater Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits	Accuracy Frequency Requirements	Precision (RPD) Control Limits	Precision Frequency Requirements
			Bromoform 73-123		Bromoform 30	
			4-Methyl-2-pentanone 53-120		4-Methyl-2-pentanone 30	
			2-Hexanone 53-121		2-Hexanone 30	
			Tetrachloroethene 68-139		Tetrachloroethene 30	
			1,1,2,2-Tetrachloroethane 74-126		1,1,2,2-Tetrachloroethane 30	
			Toluene 80-120		Toluene 30	
			Chlorobenzene 81-121		Chlorobenzene 30	
			Ethylbenzene 79-126		Ethylbenzene 30	
			Styrene 69-112		Styrene 30	
			m&p-Xylene 76-120		m&p-Xylene 30	
			o-Xylene 78-118		o-Xylene 30	
			Freon TF 47-139		Freon TF 30	
			TBA 49-112		TBA 30	
			Acrylonitrile 48-135		Acrylonitrile 30	
			MTBE 71-115		MTBE 30	
			Cyclohexane 58-133		Cyclohexane 30	
			1,2-Dibromoethane 78-118		1,2-Dibromoethane 30	
			1,3-Dichlorobenzene 81-126		1,3-Dichlorobenzene 30	
			1,4-Dichlorobenzene 83-123		1,4-Dichlorobenzene 30	
			1,2-Dichlorobenzene 82-122		1,2-Dichlorobenzene 30	
			Naphthalene 69-126		Naphthalene 30	
			Dichlorodifluoromethane 46-145		Dichlorodifluoromethane 30	
			1,1-Dichloropropene 75-120		1,1-Dichloropropene 30	
			1,2,4-Trichlorobenzene 66-120		1,2,4-Trichlorobenzene 30	
			Hexachlorobutadiene 50-130		Hexachlorobutadiene 30	
			1,4-Dioxane 52-126		1,4-Dioxane 30	
			1,1,1,2-Tetrachloroethane 81-121		1,1,1,2-Tetrachloroethane 30	
			1,2,3-Trichlorobenzene 76-123		1,2,3-Trichlorobenzene 30	
			1,2,3-Trichloropropane 77-114		1,2,3-Trichloropropane 30	
			1,2,4-Trimethylbenzene 68-120		1,2,4-Trimethylbenzene 30	
			1,2-Dibromo-3-Chloropropane 70-116		1,2-Dibromo-3-Chloropropane 30	
			1,3,5-Trimethylbenzene 69-118		1,3,5-Trimethylbenzene 30	

Table 3B
Groundwater Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits	Accuracy Frequency Requirements	Precision (RPD) Control Limits	Precision Frequency Requirements
			1,3-Dichloropropane 77-117 2,2-Dichloropropane 73-139 2-Chlorotoluene 80-128 4-Chlorotoluene 82-128 Bromobenzene 80-122 Bromochloromethane 80-121 Dibromomethane 79-119 Isopropylbenzene 80-125 N-Propylbenzene 67-130 p-Isopropyltoluene 47-138 sec-Butylbenzene 64-124 tert-Butylbenzene 65-116 n-Butylbenzene 77-129 Methylcyclohexane 61-129 Tert-amyl methyl ether 57-135		1,3-Dichloropropane 30 2,2-Dichloropropane 30 2-Chlorotoluene 30 4-Chlorotoluene 30 Bromobenzene 30 Bromochloromethane 30 Dibromomethane 30 Isopropylbenzene 30 N-Propylbenzene 30 p-Isopropyltoluene 30 sec-Butylbenzene 30 tert-Butylbenzene 30 n-Butylbenzene 30 Methylcyclohexane 30 Tert-amyl methyl ether 30	
SVOCs	SW-846 Method 8270D	Groundwater	Surrogates % Rec Phenol-d5 10-48 2-Fluorophenol 10-65 2,4,6-Tribromophenol 46-122 Nitrobenzene-d5 56-112 2-Fluorobiphenyl 53-108 Terphenyl-d14 50-122 Matrix Spikes/LCSs Phenol 12-44 2-Chlorophenol 53-101 2-Methylphenol 40-90 3 & 4 Methylphenol 30-75 2-Nitrophenol 65-107 2,4-Dimethylphenol 55-100 2,4-Dichlorophenol 64-107 4-Chloro-3-methylphenol 57-106	Surrogates: All samples, standards, QC samples Matrix Spikes: One per 20	Field Duplicates RPD ≤30 MS/MSDs RPD Phenol 30 Chlorophenol 30 2-Methylphenol 30 3 & 4 Methylphenol 30 2-Nitrophenol 30 2,4-Dimethylphenol 30 2,4-Dichlorophenol 30 4-Chloro-3-methylphenol 30	Field Duplicates: One per 20 MS/MSDs: One per 20

Table 3B
Groundwater Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
			2,4,6-Trichlorophenol	67-111		2,4,6-Trichlorophenol	30	
			2,4,5-Trichlorophenol	67-114		2,4,5-Trichlorophenol	30	
			2,4-Dinitrophenol	19-113		2,4-Dinitrophenol	30	
			4-Nitrophenol	10-44		4-Nitrophenol	30	
			4,6-Dinitro-2-methylphenol	58-115		4,6-Dinitro-2-methylphenol	30	
			Pentachlorophenol	55-116		Pentachlorophenol	30	
			Benzoic acid	10-21		Benzoic acid	30	
			N-Nitrosodimethylamine	24-66		N-Nitrosodimethylamine	30	
			Bis(2-chloroethyl)ether	62-108		Bis(2-chloroethyl)ether	30	
			1,3-Dichlorobenzene	54-97		1,3-Dichlorobenzene	30	
			1,4-Dichlorobenzene	59-98		1,4-Dichlorobenzene	30	
			1,2-Dichlorobenzene	57-98		1,2-Dichlorobenzene	30	
			N-Nitrosodi-n-propylamine	70-109		N-Nitrosodi-n-propylamine	30	
			Hexachloroethane	50-99		Hexachloroethane	30	
			Nitrobenzene	66-106		Nitrobenzene	30	
			Isophorone	68-108		Isophorone	30	
			Bis(2-chloroethoxy)methane	69-108		Bis(2-chloroethoxy)methane	30	
			1,2,4-Trichlorobenzene	58-98		1,2,4-Trichlorobenzene	30	
			Naphthalene	63-101		Naphthalene	30	
			4-Chloroaniline	58-105		4-Chloroaniline	30	
			Hexachlorobutadiene	52-99		Hexachlorobutadiene	30	
			2-Methylnaphthalene	66-102		2-Methylnaphthalene	30	
			Hexachlorocyclopentadiene	40-105		Hexachlorocyclopentadiene	30	
			2-Chloronaphthalene	65-107		2-Chloronaphthalene	30	
			2-Nitroaniline	73-116		2-Nitroaniline	30	
			Dimethyl phthalate	69-111		Dimethyl phthalate	30	
			Acenaphthylene	67-107		Acenaphthylene	30	
			2,6-Dinitrotoluene	68-114		2,6-Dinitrotoluene	30	
			3-Nitroaniline	59-108		3-Nitroaniline	30	
			Acenaphthene	66-108		Acenaphthene	30	
			Dibenzofuran	68-105		Dibenzofuran	30	
			2,4-Dinitrotoluene	65-113		2,4-Dinitrotoluene	30	

Table 3B
Groundwater Samples
Data Quality Objectives for Precision and Accuracy

Parameter	Method	Matrix	Accuracy Control Limits		Accuracy Frequency Requirements	Precision (RPD) Control Limits		Precision Frequency Requirements
			Diethyl phthalate	66-109		Diethyl phthalate	30	
			4-Chlorophenyl phenyl ether	68-105		4-Chlorophenyl phenyl ether	30	
			Fluorene	68-105		Fluorene	30	
			4-Nitroaniline	49-119		4-Nitroaniline	30	
			N-Nitrosodiphenylamine	71-121		N-Nitrosodiphenylamine	30	
			4-Bromophenyl phenyl ether	66-110		4-Bromophenyl phenyl ether	30	
			Hexachlorobenzene	65-107		Hexachlorobenzene	30	
			Phenanthrene	68-110		Phenanthrene	30	
			Anthracene	68-108		Anthracene	30	
			Carbazole	67-110		Carbazole	30	
			Di-n-butyl phthalate	68-111		Di-n-butyl phthalate	30	
			Fluoranthene	68-108		Fluoranthene	30	
			Pyrene	61-110		Pyrene	30	
			Benzidine	10-127		Benzidine	30	
			Butyl benzyl phthalate	66-115		Butyl benzyl phthalate	30	
			3,3'-Dichlorobenzidine	69-129		3,3'-Dichlorobenzidine	30	
			Benzo[a]anthracene	65-106		Benzo[a]anthracene	30	
			Chrysene	68-112		Chrysene	30	
			Bis(2-ethylhexyl) phthalate	66-114		Bis(2-ethylhexyl) phthalate	30	
			Di-n-octyl phthalate	51-115		Di-n-octyl phthalate	30	
			Benzo[b]fluoranthene	65-111		Benzo[b]fluoranthene	30	
			Benzo[k]fluoranthene	66-114		Benzo[k]fluoranthene	30	
			Benzo[a]pyrene	58-101		Benzo[a]pyrene	30	
			Indeno[1,2,3-cd]pyrene	68-121		Indeno[1,2,3-cd]pyrene	30	
			Dibenz(a,h)anthracene	67-124		Dibenz(a,h)anthracene	30	
			Benzo[g,h,i]perylene	65-134		Benzo[g,h,i]perylene	30	
			Pyridine	12-62		Pyridine	30	
			Aniline	39-89		Aniline	30	
			Benzyl alcohol	40-91		Benzyl alcohol	30	
			bis (2-chloroisopropyl) ether	68-107		bis (2-chloroisopropyl) ether	30	
			2,3,4,6-Tetrachlorophenol	70-130		2,3,4,6-Tetrachlorophenol	30	

Table 3C
Test America Laboratories Data Quality Objectives: Precision and Accuracy: Soil Gas Samples

Parameter	Method	Matrix	Accuracy Control Limits	Accuracy Frequency Requirements	Precision (RPD) Control Limits	Precision Frequency Requirements
VOCs	EPA Method TO-15	Soil Gas	LCS All target compounds 70-130%	LCS: one per analytical batch	Matrix Duplicates RPD $\leq$25	Matrix Duplicates One per 20

4.0 SOIL, SEDIMENT, GROUNDWATER, AND SOIL GAS SAMPLING PLAN

Environmental sampling for the remedial investigation and action of the Former Cibro Petroleum Terminal Site will include soil, sediment, groundwater, and soil gas. Direct push methods will be the preferred method for obtaining subsurface soil and installing groundwater monitoring wells; however, other drilling methods including hollow stem auger or hand augering may also be used if warranted by site conditions.

4.1 Soil Sampling

4.1.1 Post-Tank Foundation Removal Soil Sampling

Post-tank foundation removal soil sampling will be performed to investigate soil adjacent to and below the remaining tank foundations not previously characterized. After the removal of the remaining tank foundations, samples will be collected one (1) per 100 linear feet of tank circumference and one (1) per 2,500 square feet of tank foundation area, with a minimum of two foundation area samples per tank. Boring locations will be biased towards areas with indications of potential contamination, stained concrete, or deteriorated concrete.

At each boring location, direct-push equipment will be used to advance 4- or 5-foot long 2-inch diameter macro-core samplers to collect soil samples continuously from ground surface to the termination depth of each boring. Borings will be advanced to the top of the peat layer or if the peat layer is not encountered, to four feet below the current water table.

The soil samples will be screened for organic vapors utilizing a portable photoionization detector (PID). Field observations, including evidence of contamination (i.e., odors, staining, separate phase hydrocarbons, etc.), debris (i.e., concrete, brick, asphalt, wood), PID readings, and geological descriptions of each soil sample will be recorded in a field logbook. Soil samples will be selected from the 6-inch interval exhibiting the highest concentration of VOC vapors or where other evidence of contamination (i.e., odors, staining, fill material, etc.) is noted. If none of the soil exhibits evidence of contamination, the sample interval from 0 to 1 foot below the current water table elevation will be analyzed. Samplers will wear phthalate-free gloves such as nitrile (no latex will be used) and will avoid contact of the gloves with the sample. Using the EnCore® samplers, three aliquots of sample will be collected directly from the sampler as soon as possible for VOC analysis, and then immediately placed on ice. This will be performed prior to the collection of samples for other parameters. These soil samples will be analyzed for VOCs + 10 TICs and SVOCs+ 20 TICs. The analytical methods and lists of analytes are included in Tables 1 and 2.

4.1.2 Soil/Material Reuse Sampling

Reuse sampling will be performed on material (soil, concrete, and recycled concrete aggregate) to be reused on-Site. Stockpile sizes will be limited to 1,000 cubic yards or less. One composite material/soil sample will be collected and analyzed for SVOCs + 20 TICs and two discrete (grab) soil samples will be collected and analyzed for VOCs + 10 TICs for every 1,000 cubic yards of soil. The analytical methods and lists of analytes are included in Tables 1 and 2.

The existing on-Site stockpiles of soil, concrete, and recycled concrete aggregate will be sampled at the same frequency and for the same parameters as described above if the material originated from the project Site following the sorting and screening of the material. For the existing on-Site stockpiles which did not originate from the Site, the composite reuse sample will also be analyzed for TAL metals, PCBs, and pesticides. The analytical methods and lists of analytes are included in Tables 1 and 2.

4.1.3 Post-Excavation Soil Sampling

Post-excavation soil sampling will be performed on a 50-foot by 50-foot grid. Post-excavation samples will consist of one grab sample from the bottom of each 50-foot by 50-foot grid and one grab sample for each side of the 50-foot by 50-foot grid that abuts the property boundary or a change in elevation (i.e., sidewalls were the base of excavation changes). These soil samples will be analyzed for VOCs + 10 TICs and SVOCs+ 20 TICs. The analytical methods and lists of analytes are included in Tables 1 and 2.

4.1.4 Soil/Material Import Sampling

This section presents the requirements for sampling of soil/material to be imported to the Site. Materials from virgin sources will be tested initially, and will consist of collecting and analyzing one sample for the parameters described below. Materials from non-virgin sources will be tested initially at a frequency one five point composite and two discrete VOC samples for every 1,000 cubic yards of imported material. If, based on the initial analytical results, the material is suitable for import, a lesser frequency of testing may be proposed to the NYSDEC for approval on a case-by-case basis.

The exception to the composite sampling will be the portion of each sample that will be submitted for analysis for VOCs, which will not be homogenized and will consist of a grab sample. The parameters to be analyzed for include TCL VOCs, TCL SVOCs, TCL pesticides/polychlorinated biphenyls (PCBs), TCL herbicides, and TAL metals.

4.2 Groundwater Sampling

Post-remediation performance groundwater monitoring will consist of groundwater sampling for characterization of the dissolved phase constituents in post-remediation groundwater. It is expected that during soil removal activities, many, if not all of the existing wells that were installed as part of historic remedial investigations will be removed or damaged. Therefore, as soon as possible, following the completion of the remedial activities, monitoring wells necessary for performance groundwater monitoring will be installed and sampled as described below.

Groundwater sampling is described according to the following distinct phases of this work: well construction, well purging, and well sampling.

4.2.1 Well Construction

It is expected that during soil removal activities, many, if not all of the existing wells that were installed as part of historic remedial investigations will be removed or damaged. Therefore, following the completion of the remedial activities, monitoring wells necessary for performance groundwater monitoring will be installed and sampled as described below. It is anticipated that the performance monitoring well system will also be used for the long-term monitoring program described in the Site Management Plan. Therefore, the locations of the wells need to be accessible once the site is redeveloped. To accomplish this, monitoring wells will be located in one upgradient location, one mid-site location and two downgradient locations as close as possible to existing wells that had dissolved constituents in the recent samples.
The construction of these wells is intended to replicate their original design (i.e., screened intervals). These wells will be allowed to equilibrate for approximately one week following the installation prior to sampling.

Groundwater monitoring wells will be constructed of threaded two-inch or four-inch-diameter PVC well casing and 10-slot well screen. Clean silica sand, Morie No. 1, or equivalent, will be placed in the annular space around the well to a minimum of one foot above the top of the well screen, two feet being optimal. Solid PVC riser, attached to the well screen, will extend to grade or above if the well is a stick-up. For a two-inch diameter well, the annular space for the filter pack should be between 2 to 4 inches thick. (The 4 ¼ inside diameter hollow stem augers will have to be retracted as the filter pack is installed to yield the required annular space.) A two-foot thick bentonite seal will then be placed above the sand pack and moistened with potable water for a minimum of 15 minutes before backfilling the remaining space with a cement-bentonite grout. If warranted by depth, filling will be completed using a tremie pipe placed below the surface of the grout. A stick-up or flush-mount protective casing with a locking well cap will then be installed and a measuring point marked on each PVC well riser. Well construction diagrams will be prepared for each well.

4.2.2 Well Purging

The objective is to purge monitoring wells until turbidity stabilizes to a level as low as possible and this parameter will be given the greatest weight in determining when groundwater sampling may begin. With this objective in mind, a low-flow pump will be used to avoid entrainment of particulates within the well or from the formation. Groundwater from each well will be purged until parameters have stabilized. A turbidity level of fifty NTUs or less is the well purging goal, but not an absolute value before sampling. Other field parameters including temperature, conductivity, pH, and dissolved oxygen (DO) will also be monitored. As practical, all field measurements will be taken from the flow cell and will be recorded during and after purging, and before sampling. Field parameters should generally be within ±10 percent for three consecutive readings, one minute apart, prior to sampling.

Upon opening each monitoring well and point, the concentration of VOCs in the headspace will be measured using a PID and water level measurements will be recorded using an electronic oil-water interface probe. The depth to product (if present), depth to water, and the total depth will be measured from the top of the marked PVC casings. Water level and free product measurements will first be made and the volume of water in the well determined. The volume of water in the well will be calculated so that the number of well volumes purged and an estimate of the time required to purge the well can be made. Before sampling, the wells will be purged utilizing a low-flow submersible stainless steel pump using dedicated Teflon® or Teflon®-lined polyethylene tubing connected to a flow cell. Very low purging rates are proposed, on the order of 100 ml/minute to 500 ml/minute, to minimize suspension of particulate matter in the well.

Purging will be done with the pump intake placed at the midpoint of the well screen or the midpoint of the water column (to be determined based on the depth and length of the screen interval) to insure that all stagnant water in the well is removed, while not stirring up sediment that may have accumulated on the bottom of the well. Equipment will be lowered into the well very carefully to prevent suspension of bottom sediment and subsequent entrainment onto sampling equipment. Surging will be avoided. Tubing will be replaced between each well. Pumps must be carefully cleaned between wells according to the procedures specified in Section 4.10. It is anticipated that no more than three well volumes will be purged in order for turbidity to reach a minimum and the other parameters to stabilize. Ideally, pumping rates will be at a rate so that no drawdown of the groundwater level occurs (i.e., pumping rate is less than recharge rate). During purging, TRC will actively monitor and track the volume of water purged and the field parameter readings. Data will be recorded in the field logbook. For example, TRC will record the running total volume purged from each well and note the readings for the corresponding field parameters.

4.2.3 Well Sampling

Once groundwater conditions have stabilized and groundwater levels have recovered, samples for VOC and SVOC analysis will be collected using a low-flow pump used or purging. All sampling equipment will be cleaned according to the procedures specified in Section 4.10.

The VOC vials must be filled so a meniscus forms over the mouth of the vial. This ensures no air bubbles or headspace will be formed after it has been capped. Ensure the lack of air bubbles and headspace by turning the vial upside down and tapping it lightly. If any bubbles are observed, discard the sample and collect a new sample. The acid must be added to the vials before sample collection.

The samples will be collected in sample bottles (pre-preserved, if appropriate), placed in iced coolers and removed from light <u>immediately</u> after collection. In addition, <u>all</u> samples bottles must be filled to the top so that no aeration of the samples occurs during transport. All bottles will be filled so as to avoid cascading and aeration of the samples, the goal being to minimize any precipitation of colloidal matter.

4.3 Sediment Sampling

A ten foot long vibacore sampler will be used to collect sediment core samples from five locations. The sampler will be advanced to 10 feet below sediment surface or refusal, whichever is encountered first. The sediment cores will be photographed and inspected for evidence of potential petroleum contamination (e.g., discoloration, sheen or product, or elevated PID readings).

- If no evidence of petroleum impacts are encountered and the core appears to be composed of consistent material throughout, the core will be composited and a sample submitted for laboratory analysis.
- If evidence of potential petroleum impacts are encountered in any core or any core appears to be composed of more than one type of sediment, then up to two depth intervals that exhibit the highest potential for contamination (based on field observations) will be selected for analysis. If there is no evidence of contamination, samples from 0 to 6 inches and 1 to 2 feet below sediment surface will be submitted for analysis.

The samples selected for laboratory analysis will be analyzed for the following:

- Grain Size (ASTM Method D41/D42)
- Total Organic Carbon (USEPA 9060A)
- Metals (USEPA Method 6010B/7470): As, Hg, Cd, Pb, Cr, Ni, Ag, Zn, and Cu
- Total PAHs (USEPA 8270)
- Total BTEX and Benzene (USEPA 8021, 8260B)

The samples will be examined for staining, discoloration, odors, and debris indicative of contamination (ash, coal fragments, wood chips, cinders, petroleum staining, etc.) The samples will be collected with a decontaminated steel, stainless steel, or aluminum trowel, spoon, or knife and homogenized in a decontaminated stainless steel pan before being placed in the sample bottles. Samples collected for analysis for VOCs will be placed directly into the sample containers without homogenization. Samplers will wear phthalate-free gloves such as nitrile (no latex will be used) and will avoid contact of the gloves with the sample. Only clean metal instruments will be allowed to touch the sample.

Each sample selected for laboratory analysis will be homogenized separately by thoroughly mixing in a clean stainless steel pan using a clean stainless steel, aluminum or Teflon® sampling tool. The exception to this will be the portion of each sample that will be submitted for analysis for VOCs which will not be homogenized.

4.4 Soil Gas Sampling

After soil excavation and backfilling is complete, post-remediation soil gas sampling will be performed. Soil gas sampling will be conducted in accordance with the NYSDOH document titled, "Guidance for Evaluating Soil Vapor Intrusion in the State of New York". After each soil gas sample is collected, the location will be field screened for methane using a landfill gas meter.

A direct-drive rig will be utilized to drive rods with a decontaminated stainless steel probe through six-mil plastic sheeting to the desired sample depth, which will be approximately 1.5 feet above the capillary fringe, which will typically be encountered at a depth of 3 to 4 feet bgs. The soil gas probe will then be purged at a flow rate not greater than 0.2 liters/minute to evacuate one to three volumes using a PID with an integrated vacuum pump (PhotoVac 2020 or appropriate alternate). No PID readings will be taken prior to sample collection. Following the stabilization period, each probe will be connected to an evacuated laboratory-supplied passivated stainless steel canister that has been cleaned and certified contaminant-free by the contract laboratory. Each canister will be shipped to the sampling site under a high vacuum (30" Hg) to ensure that the canister remains free of contaminants prior to use. After connecting the canister to the soil gas probe, a regulator valve on the canister will be opened and the vacuum will slowly draw the sample into the canister over a period of 30 minutes. The samples will not be drawn at greater than 0.2 liters per minute. After collecting the soil gas sample, the valve will be closed and disconnected from the soil gas probe. The soil-gas samples will be shipped overnight to a New York ELAP certified laboratory for TO-15 analysis.

A tracer gas (e.g., helium, butane, or sulfur hexafluoride) will be utilized prior to sample collection to evaluate the potential for infiltration of outdoor air into the sample. Subsequent rounds of soil gas sampling would include the use of tracer gas only if the initial round of sampling indicates that outdoor air has the potential to influence soil gas sample results.

When soil vapor samples are collected, the following conditions that may influence the interpretation of results will be documented:

- Identification of any nearby commercial or industrial buildings that likely uses volatile organic compounds;
- A sketch of the Site, showing streets, neighboring commercial or industrial facilities (with estimated distances to the Site, and soil-gas sampling locations);
- Weather conditions (e.g., precipitation, outdoor temperature, barometric pressure, wind speed and direction); and
- Any pertinent observations, such as odors or readings from field instrumentation.

4.5 Solid Waste

Solid sampling methods include utilizing dedicated stainless steel or Teflon® scoops/shovels, triers, and thiefs. Scoops and shovels are the preferred method for sampling solids from piles or containers. Stainless steel triers are similar to a scoop and are used for the collection of a core sample of a solid material. Thiefs are long hollow tubes, with an inner tube, and are used for sampling of dry free running solids (e.g., pile of fine sand). To sample solid material at varying depths, a hollow stem auger or a core sampler in conjunction with an auger can be utilized (See Soil Sampling Section).

4.6 Liquid Waste

Liquid sampling methods include utilizing dedicated dippers, glass tube samplers, pump and tubing, kemmerer bottles, and Bacon Bomb samplers. Dippers are used to collect samples from the surface of the liquid, and are appropriate for wastes that are homogeneous. Glass tube samplers consist of glass tubes of varying length and diameter used to collect a full-depth liquid sample from a drum or similar container. Pump and tubing (e.g., bladder pump or peristaltic pump) are used to collect liquid samples from a depth (up to approximately 20 feet below grade), and are typically relied upon for sampling subsurface structures, such as underground storage tanks. To minimize the loss of volatile organic components in the liquid, the lowest achievable flow rate is utilized for collecting the sample by this method. Kemmerer bottles and Bacon Bomb samplers are discrete-depth samplers. These samplers are lowered into the liquid and opened to collect a sample at a desired depth.

4.7 Grab and Composite Sampling

Waste characterization of a liquid or a solid can involve grab or composite sampling depending upon the homogeneity and the volume of the waste. Grab sampling consists of collecting discrete sample or samples of a material, and submitting each sample for separate analysis. Grab sampling is appropriate for characterizing small quantities of waste as well as waste streams of varying content (e.g., drums of different contents). Composite sampling consists of taking discrete grab samples of a material and combining them into a smaller number of samples for analysis. Composite sampling generally is appropriate for large volumes of a homogenous waste material, such as a pile of soil or construction debris. The specific number of composite and grab samples largely will depend upon the size and nature of the waste as well as the analysis required for characterization of the waste.

4.8 QC Sample Collection

QC samples will include equipment blanks, trip blanks, field duplicates and MS/MSDs.

Equipment blanks will consist of distilled water and will be used to check for potential contamination of the equipment which may cause sample contamination. Equipment blanks will be collected by routing the distilled water through the sampling equipment prior to sample collection. Equipment blanks will be submitted to the laboratory at a frequency of one per 20 samples per matrix per type of non-dedicated equipment being used per parameter. Equipment blanks will not be collected with samples submitted for TCLP parameters, samples collected for disposal characterization purposes, soil gas samples, and samples collected for grain size analysis.

Trip blanks will consist of distilled water (supplied by the laboratory) for groundwater samples and will be used to assess the potential for volatile organic compound contamination of groundwater samples due to contaminant migration during sample shipment and storage. Trip blanks will be transported to the site unopened, stored with the investigative samples, and kept closed until analyzed by the laboratory. Trip blanks will be submitted to the laboratory at a frequency of one per cooler which contains VOC groundwater samples.

Field duplicates are an additional aliquot of the same sample submitted for the same parameters as the original sample. Field duplicates will be used to assess the sampling and analytical reproducibility. Field duplicates will be collected by alternately filling sample bottles from the source being sampled. Field duplicates will be submitted at a frequency of one per 20 samples for all matrices and all parameters with the exception of TCLP parameters, samples collected for disposal characterization purposes, soil gas samples, and samples collected for grain size analysis. It should be noted that due to the uncertainty of acceptable representative soil gas volume, field duplicates are not planned for this matrix.

MSs and MSDs are two additional aliquots of the same sample submitted for the same parameters as the original sample. However, the additional aliquots are spiked with the compounds of concern. Matrix spikes provide information about the effect of the sample matrix on the measurement methodology. MS/MSDs will be submitted at a frequency of one per 20 investigative samples per matrix for organic parameters for soil, sediment and groundwater. MSs will be submitted at a frequency of one per 20 investigative samples per matrix for inorganic parameters.

Refer to Table 4 for a summary of QC sample preservation and container requirements.

4.9 Sample Preservation and Containerization

The analytical laboratory will supply the sample containers for the chemical samples. These containers will be cleaned by the manufacturer to meet or exceed all analyte specifications established in the latest U.S. EPA's *Specifications and Guidance for Contaminant-Free Sample Containers*. Certificates of analysis are provided with each bottle lot and maintained on file to document conformance to EPA specifications. The containers will be pre-preserved, where appropriate (See Table 2).

4.10 Equipment Decontamination

4.10.1 Sampling Equipment

Re-usable Teflon®, stainless steel, and aluminum sampling equipment shall be cleaned <u>between each use</u> in the following manner:

- Wash and scrub with Alconox and water mixture
- Tap water rinse

- Wash/scrub with a biodegradable degreaser ("ZEP") if there is oily residue on equipment surface
- Tap water rinse
- Distilled/deionized water rinse
- Air dry

Cleaned equipment shall be wrapped in aluminum foil if not used immediately after air-drying.

Groundwater sampling pumps will be cleaned by washing and scrubbing with an Alconox/water mixture, rinsing with tap water and irrigating with deionized water.

Table 4
Soil, Sediment, Groundwater and Soil Gas
QC Sample Preservation and Container Requirements

Sample Matrix	Analytical Parameter	Sample Type	No. of Samples	EPA Analytical Method	Sample Preservation	Holding Time[1]	Sample Container[2]
Soil	VOCs	Field Duplicate	1 per 20	SW-846 Method 8260B	Cool to 4^0 C; 2 EnCores extruded into DI, 1 EnCore extruded into methanol	48 hours to preservation, 14 days to analysis	(3) 5 gram En-core samplers; (1) 4 oz. glass jar
Sediment	BTEX	Field Duplicate	1 per 20	SW-846 Method 8260B	Cool to 4^0 C; 2 EnCores extruded into DI, 1 EnCore extruded into methanol	48 hours to preservation, 14 days to analysis	(3) 5 gram En-core samplers; (1) 4 oz. glass jar
Soil	SVOCs	Field Duplicate	1 per 20	SW-846 Method 8270D	Cool to 4^0 C	14 days to extract; 40 days to analysis	(1) 8 oz. glass jar
Sediment	PAHs	Field Duplicate	1 per 20	SW-846 Method 8270D	Cool to 4^0 C	14 days to extract; 40 days to analysis	(1) 8 oz. glass jar
Soil/Sediment	Metals	Field Duplicate	1 per 20	SW-846 Method 6010C	Cool to 4^0 C	6 months to analysis	(1) 8 oz. glass jar
Soil/Sediment	Mercury	Field Duplicate	1 per 20	SW-846 Method 7471B	Cool to 4^0 C	28 days to analysis	(1) 8 oz. glass jar
Groundwater	VOCs	Field Duplicate	1 per 20	SW-846 Method 8260B	pH < 2 with HCl; Cool to 4^0 C; no headspace	14 days to analysis	(3) 40 mL VOA vials
Groundwater	SVOCs	Field Duplicate	1 per 20	SW-846 Method 8270D	Cool to 4^0 C	7 days to extract; 40 days to analysis	(2) 1 L amber glass jars
Aqueous	VOCs	Equipment Blank (for groundwater sampling)	1 per 20	SW-846 Method 8260B	pH < 2 with HCl; Cool to 4^0 C; no headspace	14 days to analysis	(3) 40 mL VOA vials

Table 4
Soil, Sediment, Groundwater and Soil Gas
QC Sample Preservation and Container Requirements

Sample Matrix	Analytical Parameter	Sample Type	No. of Samples	EPA Analytical Method	Sample Preservation	Holding Time[1]	Sample Container[2]
Aqueous	SVOCs	Equipment Blank (for groundwater sampling)	1 per 20	SW-846 Method 8270D	Cool to 4^0 C	7 days to extract; 40 days to analysis	(2) 1 L amber glass jars
Aqueous	VOCs	Trip Blank (for groundwater sampling)	1 per cooler with VOCs	SW-846 Method 8260B	pH < 2 with HCl; Cool to 4^0 C; no headspace	14 days to analysis	(3) 40 mL VOA vials
Aqueous	VOCs (including BTEX)	Equipment Blank (for soil or sediment sampling)	1 per 20 per matrix	SW-846 Method 8260B	pH < 2 with HCl; Cool to 4^0 C; no headspace	14 days to analysis	(2) 40 mL VOA vials
Aqueous	SVOCs (including PAHs)	Equipment Blank (for soil or sediment sampling)	1 per 20 per matrix	SW-846 Method 8270D	Cool to 4^0 C	7 days to extract; 40 days to analysis	(2) 1 L amber glass jars
Aqueous	Metals	Equipment Blank (for sediment sampling)	1 per 20	SW-846 Method 6010C/7470A	pH < 2 with HNO_3; Cool to 4^0 C	28 days to analysis for Hg; 6 months to analysis for other metals	(1) 1 L polyethylene container

[1] From date of sample collection
[2] I-Chem Series 300 bottles
TBD = To Be Determined

5.0 DOCUMENTATION AND CHAIN-OF-CUSTODY

5.1 Sample Collection Documentation

5.1.1 Field Notes

Field team members will keep a field logbook to document all field activities. Field logbooks will provide the means of recording the chronology of data collection activities performed during the investigation. As such, entries will be described in as much detail as possible so that a particular situation could be reconstructed without reliance on memory.

The logbook will be a bound notebook with water-resistant pages. Logbook entries will be dated, legible, and contain accurate and inclusive documentation of the activity. The title page of each logbook will contain the following:

- Person to whom the logbook is assigned,
- The logbook number,
- Project name and number,
- Site name and location,
- Project start date, and
- End date.

Entries into the logbook will contain a variety of information. At the beginning of each entry, the date, start time, weather, and names of all sampling team members present will be entered. Each page of the logbook will be signed and dated by the person making the entry. All entries will be made in permanent ink, signed, and dated and no erasures or obliterations will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark which is signed and dated by the sampler. The correction shall be written adjacent to the error.

Field activities will be fully documented. Information included in the logbook will include, but may not be limited to the following:

- Chronology of activities, including entry and exit times,
- Names of all people involved in sampling activities,
- Level of personal protection used,
- Any changes made to planned protocol,

- Names of visitors to the site during sampling and reason for their visit,
- Sample location and identification,
- Changes in weather conditions,
- Dates (month/day/year) and times (military) of sample collection,
- Measurement equipment identification (model/manufacturer) and calibration information,
- Sample collection methods and equipment,
- Sample depths,
- Whether grab or composite sample collected,
- How sample composited, if applicable,
- Sample description (color, odor, texture, etc.)
- Sample identification code.
- Tests or analyses to be performed,
- Sample preservation and storage conditions,
- Equipment decontamination procedures,
- QC sample collection,
- Unusual observations,
- Record of photographs,
- Sketches or diagrams, and
- Signature of person recording the information.

Field logbooks will be reviewed on a daily basis by the Field Team Leader. Logbooks will be supported by standardized forms.

5.1.2 Chain-of-Custody Records

Sample custody is discussed in detail in Section 5.2 of this Plan. Chain-of-custody (COC) records are initiated by the samplers in the field. The field portion of the custody documentation should include: (1) the project name; (2) signatures of samplers; (3) the sample number, date and time of collection, and whether the sample is grab or composite; (4) signatures of individuals involved in sampling; and (5) if applicable, air bill or other shipping number. Sample receipt and log-in procedures at the laboratory are described in Section 5.2.2 of this Plan.

On a regular basis (daily or on such a basis that all holding times will be met), samples will be transferred to the custody of the respective laboratories, via third-party commercial carriers or via laboratory courier service. Sample packaging and shipping procedures, and field chain-of-custody procedures are described in Section 5.2.1 of this Plan.

5.1.3 Sample Labeling

Immediately upon collection, each sample will be labeled with a pre-printed adhesive label, which includes the date and time of collection, sampler's initials, tests to be performed, preservative (if applicable), and a unique identifier. The following identification scheme will be used:

A. The sample ID number will include the soil or monitoring well location, along with the sample depth, sample interval, and the depth interval at which it was collected.

Example:

Sample TRC-PX-S1(7) indicates the sample was taken by TRC and at post-excavation soil sample location S1, from 7 feet below ground surface.

Duplicate samples will be labeled as blind duplicates by giving them sample numbers indistinguishable from a normal sample.

Blanks should be spelled out and identify the associated matrix, (e.g., Equipment Blank).

Examples:

Duplicate Sample: TRC-PX-S1A(7)
Equipment Blank Sample: GW Equip Blank 1
Trip Blank: Trip Blank 1

MS/MSDs will be noted in the comments column of the COC.

B. The job number will be the number assigned to the particular site.

Example: 163189

C. The analysis required will be indicated for each sample.

Example: VOC

D. Date taken will be the date the sample was collected, using the format: MM-DD-YY.

Example: 07-24-12

E. Time will be the time the sample was collected, using military time.

Example: 1335

F. The sampler's name will be printed in the "Sampled By" section.

G. Other information relevant to the sample.

Example: Equipment Blank

An example sample label is presented below:

Site Name:	Former Cibro Petroleum Terminal
Client:	TRC
Sample No:	TRC-PX-S1(7)
Matrix:	Soil
Date Taken:	07/24/12
Time Taken:	1335
Sampler:	J. Miranda
Analysis:	VOC

Job No. ______________________________
Client: ______________________________
Sample Number ______________________________
Date ______________________ Sample Time ______________________
Sample Matrix ______________________________
Grab or Composite (explain) ______________________________
Preservatives ______________________________
Analyses ______________________________
Sampler Signature ______________________________

This sample label contains the authoritative information for the sample. Inconsistencies with other documents will be settled in favor of the vial or container label unless otherwise corrected in writing from the field personnel collecting samples or the TRC Project QA Officer.

5.1.4 Sample Custody

Custody is one of several factors that are necessary for the admissibility of environmental data as evidence in a court of law. Custody procedures help to satisfy the two major requirements for admissibility: relevance and authenticity. Sample custody is addressed in three parts: field sample collection, laboratory analysis, and final evidence files.

A sample or evidence file is considered to be under a person's custody if:

- the item is in the actual possession of a person;
- the item is in the view of the person after being in actual possession of the person;

- the item was in the actual physical possession of the person but is locked up to prevent tampering; and
- the item is in a designated and identified secure area.

5.1.5 Field Custody Procedures

Samples will be collected following the sampling procedures documented in Section 4.0 of this Plan. Documentation of sample collection is described in Section 5.1 of this Plan. Sample chain-of-custody and packaging procedures are summarized below. These procedures will ensure that the samples will arrive at the laboratory with the chain-of-custody intact.

- The field sampler is personally responsible for the care and custody of the samples until they are transferred or dispatched properly. Field procedures have been designed such that as few people as possible will handle the samples.

- All bottles will be identified by the use of sample labels with sample numbers, sampling locations, date/time of collection, and type of analysis. The sample numbering system is presented in Section 5.1.3 of this Plan.

- Sample labels will be completed for each sample using waterproof ink unless prohibited by weather conditions. For example, a logbook notation would explain that a pencil was used to fill out the sample label because the pen would not function in wet weather.

- Samples will be accompanied by a properly completed chain-of-custody form. The sample numbers and locations will be listed on the chain-of-custody form. When transferring the possession of samples, the individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents the transfer of custody of samples from the sampler to another person, to a mobile laboratory, to the permanent laboratory, or to/from a secure storage location.

- All shipments will be accompanied by the chain-of-custody record identifying the contents. The original record will accompany the shipment, and copies will be retained by the sampler and placed in the project files.

- Samples will be properly packaged for shipment and dispatched to the appropriate laboratory for analysis, with a separate signed custody record enclosed in and secured to the inside top of each sample box or cooler. Shipping containers will be secured with strapping tape and custody seals for shipment to the laboratory. The custody seals will be attached to the front right and back left of the cooler and covered with clear plastic tape after being signed by field personnel. The cooler will be strapped shut with strapping tape in at least two locations.

- If the samples are sent by common carrier, the air bill will be used. Air bills will be retained as part of the permanent documentation. Commercial carriers are not required to sign off on the custody forms since the custody forms will be sealed inside the sample cooler and the custody seals will remain intact.

- Samples remain in the custody of the sampler until transfer of custody is completed. This consists of delivery of samples to the laboratory sample custodian, and signature of the laboratory sample custodian on chain-of-custody document as receiving the samples and signature of sampler as relinquishing samples.

5.1.6 Laboratory Custody Procedures

Samples will be received and logged in by a designated sample custodian or his/her designee. Upon sample receipt, the sample custodian will:

- Examine the shipping containers to verify that the custody tape is intact,
- Examine all sample containers for damage,
- Determine if the temperature required for the requested testing program has been maintained during shipment and document the temperature on the chain-of-custody records,
- Compare samples received against those listed on the chain-of-custody,
- Verify that sample holding times have not been exceeded,
- Examine all shipping records for accuracy and completeness,
- Determine sample pH (if applicable) and record on chain-of-custody forms,
- Sign and date the chain-of-custody immediately (if shipment is accepted) and attach the air bill,
- Note any problems associated with the coolers and/or samples on the cooler receipt form and notify the Laboratory Project Manager, who will be responsible for contacting the TRC Project QA Officer,
- Attach laboratory sample container labels with unique laboratory identification and test, and
- Place the samples in the proper laboratory storage.

Following receipt, samples will be logged in according to the following procedure:

- The samples will be entered into the laboratory tracking system. At a minimum, the following information will be entered: project name or identification, unique sample numbers (both client and internal laboratory), type of sample, required tests, date and time of laboratory receipt of samples, and field ID provided by field personnel.

- The Laboratory Project Manager will be notified of sample arrival.

- The completed chain-of-custody, air bills, and any additional documentation will be placed in the final evidence file.

6.0 CALIBRATION PROCEDURES

6.1 Field Instruments

Field instruments will be calibrated according to the manufacturer's specifications. All calibration procedures performed will be documented in the field logbook and will include the date/time of calibration, name of person performing the calibration, reference standard used, temperature at which the readings were taken, and the readings.

6.2 Laboratory Instruments

Calibration procedures for a specific laboratory instrument will consist of initial calibrations, initial calibration verifications, and/or continuing calibration verification. Detailed descriptions of the calibration procedures for a specific laboratory instrument are included in the laboratory's standard operating procedures (SOPs), which describe the calibration procedures, their frequency, acceptance criteria, and the conditions that will require recalibration. These procedures are as required in the respective analytical methodologies (summarized in Table 2 of this Plan). The initial calibration associated with all analyses must contain a low-level calibration standard which is less than or equal to the quantitation limit.

7.0 SAMPLE PREPARATION AND ANALYTICAL PROCEDURES

No field analyses are anticipated for this program. If site conditions were to warrant field analysis, TRC will prepare an addendum establishing the field analytical procedures. Analyses of all soil, sediment, groundwater and soil gas samples will be performed by Test America Laboratories in Edison, New Jersey. Table 2 summarizes the analytical methods to be used during this remedial investigation and action.

8.0 DATA REDUCTION, VALIDATION, AND REPORTING

Appropriate QC measures will be used to ensure the generation of reliable data from sampling and analysis activities. Proper collection and organization of accurate information followed by clear and concise reporting of the data is a primary goal in this project. Complete data packages suitable for data validation to support the generation of a Data Usability Summary Report (DUSR) according to New York State ASP Category B deliverable format requirements will be provided by the analytical laboratory for all investigation and post-excavation analytical data.

Project-specific procedures will be used to validate approximately 10% of the investigation and post-excavation analytical laboratory data. The investigation and post-excavation analytical data will also be submitted in the EQuIS™ electronic data deliverable (EDD) format. Analytical data generated only for the purpose of waste classification and off-site disposal will be submitted in accordance with New York State ASP Category A deliverable format requirements; no EDDs will be required for these data.

For all analyses, the laboratory will report results which are below the laboratory's reporting limit; these results will be qualified as estimated (J) by the laboratory. The laboratory will be required to report tentatively identified compounds (TICs) for the VOC and SVOC analyses of soil and groundwater sample analyses. For VOC analyses, the top 10 TICs will be reported. For SVOC analyses, the top 20 TICs will be reported.

8.1 Data Evaluation/Validation

8.1.1 Field Data Evaluation

Measurements and sample collection information will be transcribed directly into the field logbook or onto standardized forms. If errors are made, results will be legibly crossed out, initialed and dated by the person recording the data, and corrected in a space adjacent to the original (erroneous) entry. Daily reviews of the field records by the Field Team Leader will ensure that:

- Logbooks and standardized forms have been filled out completely and that the information recorded accurately reflects the activities that were performed.

- Records are legible and in accordance with good record keeping procedures, i.e., entries are signed and dated, data are not obliterated, changes are initialed, dated, and explained.

- Sample collection, handling, preservation, and storage procedures were conducted in accordance with the protocols described in the Plan, and that any deviations were documented and approved by the appropriate personnel.

8.1.2 Analytical Data Validation

TRC will be responsible for performing an independent validation of the analytical data. Project-specific procedures will be used to validate approximately 10% of the investigation and post-excavation analytical laboratory data. Analytical data collected for the purpose of waste classification and off-site disposal will not be validated. The basis for the validation will be the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA-540-R-08-01, (June 2008) and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-10-011 (January 2010), modified to accommodate the criteria in the analytical methods used in this program, and Region II Standard Operating Procedures (SOPs) for data validation. Tables 1A-1D, 2, 3A-3C and 4 highlight the QC criteria and holding time requirements for all analyses conducted under this program. These criteria will be used to evaluate and qualify the data during validation.

Validation will include all technical holding times, as well as QC sample results (blanks, surrogate spikes, laboratory duplicates, MS/MSDs, and LCSs), tunes, internal standards, calibrations, target compound identification, and results calculations.

The overall completeness of the data package will also be evaluated by the data validator. Completeness checks will be administered on all data to determine whether full data deliverables were provided. The reviewer will determine whether all required items are present and request copies of missing deliverables.

Upon completion of the validation, a report will be prepared. This report will summarize the samples reviewed, elements reviewed, any nonconformance with the established criteria, and validation actions. Data qualifiers will be consistent with EPA National Functional Guidelines. This report will be in a format consistent with NYSDEC's DUSR.

8.1.3 Identification and Treatment of Outliers

Any data point which deviates markedly from others in its set of measurements will be investigated; however, the suspected outlier will be recorded and retained in the data set. One or both of the following tests will be used to identify outliers.

Since an outlier may result from unique circumstances at the time of sample analysis or data collection, those persons involved in the analysis and data reduction will be consulted. This may provide an experimental reason for the outlier. Further statistical analysis may be performed with and without the outlier to determine its effect on the conclusions. In many cases, two data sets may be reported, one including, and one excluding the outlier.

In summary, every effort will be made to include the outlying values in the reported data. If the value is rejected, it will be identified as an outlier, reported with its data set and its omission noted.

9.0 INTERNAL QUALITY CONTROL

The subcontracting laboratory Quality Assurance Project Plan will identify the supplemental internal analytical quality control procedures to be used. At a minimum, this will include:

- Matrix spike and/or matrix spike duplicate samples
- Matrix duplicate analyses
- Laboratory control samples
- Instrument calibrations
- Instrument tunes for SW-846 8260B and 8270D and EPA Method TO-15 analyses
- Method and/or instrument blanks
- Surrogate spikes for organic analyses
- Internal standard spikes SW-846 8260B and 8270D and EPA Method TO-15 analyses
- Quantitation limit determination and confirmation by analysis of low-level calibration standard

Field quality control samples will include:

- Equipment blanks as outlined in Table 4
- Field duplicate samples as outlined in Table 4
- Trip blanks as outlined in Table 4
- MS/MSDs described in Section 4.8

10.0 CORRECTIVE ACTION

The entire sampling program will be under the direction of TRC's Project QA officer. The emphasis in this program is on preventing problems by identifying potential errors, discrepancies, and gaps in the data-collection-laboratory-analysis-interpretation process. Any problems identified will be promptly resolved. Likewise, follow-up corrective action is always an option in the event that preventative corrective actions are not totally effective.

The acceptance limits for the sampling and analyses to be conducted in this program will be those stated in the method or defined by other means in the Plan. Corrective actions are likely to be immediate in nature and most often will be implemented by the contracted laboratory analyst or the TRC Program Manager. The corrective action will usually involve recalculation, reanalysis, or resampling.

10.1 Immediate Corrective Action

Corrective action in the field may be needed when the sample network is changed (i.e., more/less samples, sampling locations other than those specified in the Plan), or when sampling procedures and/or field analytical procedures require modification, etc. due to unexpected conditions. The field team may identify the need for corrective action. The Field Team Leader will approve the corrective action and notify the TRC Program Manager. The TRC Program Manager will approve the corrective measure. The Field Team Leader will ensure that the corrective measure is implemented by the field team.

Corrective actions will be implemented and documented in the field record book. Documentation will include:

- A description of the circumstances that initiated the corrective action,
- The action taken in response,
- The final resolution, and
- Any necessary approvals.

No staff member will initiate corrective action without prior communication of findings through the proper channels.

Corrective action in the laboratory may occur prior to, during, and after initial analyses. A number of conditions such as broken sample containers, omissions or discrepancies with chain-of-custody documentation, low/high pH readings, and potentially high concentration samples may be identified during sample log-in or just prior to analysis. Following consultation with laboratory analysts and Laboratory Section Leaders, it may be necessary for the Laboratory QA Manager to approve the implementation of corrective action. The laboratory SOPs specify some conditions during or after analysis that may automatically trigger corrective action or optional procedures. These conditions may include dilution of samples, additional sample extract cleanup, automatic reinjection/reanalysis when certain QC criteria are not met, loss of sample through breakage or spillage, etc.

The analyst may identify the need for corrective action. The Laboratory Section Leader, in consultation with the staff, will approve the required corrective action to be implemented by the laboratory staff. The Laboratory QA Manager will ensure implementation and documentation of the corrective action. If the nonconformance causes project objectives not to be achieved, the TRC Project QA Officer will be notified. The TRC Project QA Officer will notify the TRC Program Manager, who in turn will contact all levels of project management for concurrence with the proposed corrective action.

These corrective actions are performed prior to release of the data from the laboratory. The corrective action will be documented in both the laboratory's corrective action files, and the narrative data report sent from the laboratory to the TRC Program Manager. If the corrective action does not rectify the situation, the laboratory will contact the TRC Program Manager, who will determine the action to be taken and inform the appropriate personnel.

If potential problems are not solved as an immediate corrective action, the contractor will apply formalized long-term corrective action, if necessary.

Appendix D
Storm Water Pollution Prevention Plan (SWPPP)

Former CIBRO Petroleum Terminal Site
NYSDEC BCP Site Number: C130153
7 Washington Avenue
Island Park, Nassau County, New York

STORM WATER POLLUTION PREVENTION PLAN

Prepared by:
TRC Engineers, Inc.
1430 Broadway, 10^{th} Floor
New York, New York 10018
Phone: (212) 221-7822
TRC Project Number: 163189.0100.0000

AUGUST 2012

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LIST OF ACRONYMS

BCP	Brownfield Cleanup Program
BMPs	Best Management Practices
CFR	Code of Federal Regulations
DEC	Department of Environmental Conservation
ESDC	Empire State Development Corporation
GP	General Permit
GPP	General Project Plan
MSDS	Material Safety Data Sheet
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NYCRR	New York Code of Rules and Regulations
NYCDEP	New York City Department of Environmental Protection
NYCDOH	New York City Department of Health
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
QWD	Queens West Development
QWDC	Queens West Development Corporation
SOCONY	Standard Oil Company of New York
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SWPPP	Storm Water Pollution Prevention Plan
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VCP	Voluntary Cleanup Program

1.0 INTRODUCTION

1.1 Background

Posillico Development Company at Harbor Island, Inc. (Posillico) entered into New York State Department of Environmental Conservation ("NYSDEC") Brownfield Cleanup Program ("BCP") Agreement (Index Number W1-1075-05-09), BCP Site C130153. This document presents the Storm Water Pollution Prevention Plan ("SWPPP") for remedial activities to be performed by Posillico in connection with the BCP Site, and supersedes any previous SWPPPs applicable to the BCP Site. In accordance with the request of the NYSDEC Region 1, Division of Remediation, Posillico will submit a Notice of Intent ("NOI") to the NYSDEC Division of Water notifying NYSDEC of Posillico's intent to conduct the RAWP work in accordance with the requirements of the applicable NYSDEC State Pollutant Discharge Elimination System ("SPDES") General Permit for Storm Water Discharges from Construction Activity, General Permit No. GP-0-10-001 ("General Permit" or "GP").

The former Cibro Petroleum Terminal Site ("site") is located at 7 Washington Avenue in the Village of Island Park, Nassau County, New York, and covers approximately 11.56 acres. The property is identified on Nassau County tax maps as Section 43, Block 381, Lot 35, 36, 102, 314, and 328. Figure SWPPP-1 presents the Cibro Terminal Site location on portions of the United States Geological Survey ("USGS") Lawrence, NY 7.5-minute topographical quadrangle maps.

Surface water bodies border the Site on three sides: Island Park Canal to the east; Wreck Lead Channel to the south; and Simmons Hassock Creek to the west. As noted above, residential properties border the Site to the north and northwest, and an operating marina borders the Site to the southwest. There are no urban, commercial, industrial (other than the site itself and marina), agricultural or recreational areas in proximity to the site on the Island Park side of Wreck Lead Channel. There are industrial and commercial uses on the south side of the Channel. The property was zoned Y Industrial District at the beginning of this BCP Project. In 2007, PDC received a zoning change from Y-Industrial to CA-Residential.

This SWPPP identifies the Best Management Practices (BMPs) to be implemented during remedial activities to minimize impacts to the environment (i.e., soil erosion and sediment control measures, landscaping and site restoration, storm water controls, etc.). This SWPPP has been developed to support compliance with requirements of the General Permit. The General

Permit covers discharges that are associated with remedial construction activities, including activities that result in the disturbance of one (1) acre or more of total land area. This SWPPP covers the remediation activities, with the exception of demolition activities, as described in the RAWP for the Site:[1] The existing SWPPP covered under SPDES General Permit for Storm Water Discharges from Construction Activity General Permit No. GP-02-01 with a permit identification number of NYR 10K975 will apply to demolition activities including concrete tank containments and foundation slabs, and pavements.

Guidance for BMPs applicable to the BCP Site was obtained from the following regulations and documents:

- Title 6, New York Code of Rules and Regulations ("NYCRR") Part 750 *et seq.*, also known as the State Pollutant Discharge Elimination System (SPDES) regulations;
- *New York State Standards and Specifications for Erosion and Sediment Control*, August 2005; and
- *New York State Stormwater Management Design Manual*, August 2003 ("DEC Design Manual").

Posillico will be responsible for implementing the provisions of the SWPPP At the completion of remedial activities, soil erosion and sediment control measures will be left in place. Key steps and responsibilities associated with the implementation of this SWPPP are highlighted below:

1. Maintain a copy of the SWPPP at the Posillico field offices.
2. Implement the erosion and sediment controls for remedial activities as set forth in the SWPPP.
3. Routinely inspect and maintain the erosion and sediment controls and Best Management Practices identified in the SWPPP during the remediation period, and prepare and maintain inspection reports with authorized signatures.
4. If warranted, update/prepare revisions to the SWPPP to accurately reflect site changes and control measure changes as described in Section 7.4.
5. Notify, as appropriate, the emergency response contractor, local emergency responders (police, fire, ambulance), and appropriate regulatory agency staff (Nassau County Department of Health, , NYSDEC, and the National Response Center (NRC), and, if required, the United States Environmental Protection Agency (USEPA)) as soon as

[1] Authorization for these activities is not sought hereunder.

knowledge is obtained of a discharge equal to or greater than the Reportable Quantity for oil or a hazardous substance.

6. Modify the SWPPP within 14 days of knowledge of the release of a Reportable Quantity, including a description of the release of oil or hazardous substance, the circumstances leading up to the release, an estimate of the amount of the release, and the steps that will be taken in response to the release.
7. Retain the SWPPP and all related remedial activities records for a period of at least three years following final stabilization. The General Permit states, "'Final Stabilization' means that all soil disturbing activities at the site have been completed, and that a uniform, perennial vegetative cover with a density of 80% has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures".

The remainder of this document outlines the structural and non-structural controls that will be implemented during remedial activities. BMPs were chosen to address the site-specific erosion and sediment control issues and site-specific contaminants of concern during remedial activities.

1.2 Plan Organization

The major sections of the SWPPP are as follows:

- Plan Certifications (Section 2.0)
- Site Description (Section 3.0)
- Remedial Activities and Schedule (Section 4.0)
- Soil Erosion and Sediment Control Practices (Section 5.0)
- Inspection Requirements and Maintenance Plan (Section 6.0)
- Record Keeping and Reporting (Section 7.0).

2.0 CERTIFICATIONS

OPERATOR AGENT AND QUALIFIED PROFESSIONAL WITH RESPONSIBILITY FOR PREPARING THIS STORM WATER POLLUTION PREVENTION PLAN

Operator Agent and Qualified Professional: Steven D. Meersma, P.E., NY License No. 076572-1

Responsibilities:

Certify that Posillico has read or been advised of the conditions of and understands the SPDES General Permit. Verify that the storm water pollution prevention control measures described in the SWPPP are fully supported by the management of Posillico and will be implemented as herein. Confirm that the SWPPP for the Project has been developed in a manner that will assure compliance with water quality standards and with the substantive intent of the SPDES General Permit.

Certification:

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-10-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Under Article 145 (Engineering), Section 7209(2) of the New York State Education Law, it is unlawful for any person to alter any item of this plan, unless acting under the direction of a licensed professional engineer. If any item is altered, the altering licensed professional engineer shall affix to the item his seal and the notation “altered by” followed by his signature and the date of such alterations, and a specific description of the alteration.

OPERATOR AGENT AND QUALIFIED PROFESSIONAL WITH RESPONSIBILITY FOR PREPARING THIS STORM WATER POLLUTION PREVENTION PLAN (CONTINUED)

____

Signature

Steven D. Meersma, P.E.

Name

Director, NYC Environmental Compliance, TRC Engineers, Inc.

Title

New York License No. 076572-1

Professional Engineer Registration Number

July 31, 2012

Date

CONTRACTOR RESPONSIBLE FOR DAY-TO-DAY OPERATIONAL CONTROL OVER SWPPP COMPLIANCE ACTIVITIES

Contractor and Subcontractor(s): Posillico Environmental Inc.

Responsibilities:

Ensure that the SWPPP for the BCP Site is implemented, maintained and updated, as appropriate, to address site conditions throughout the remediation process. The Contractor and Subcontractor(s) are required to certify that they understand the permit conditions and their responsibilities. Any Contractor or Subcontractor performing an activity that involves soil disturbance shall provide a signed copy of this certification to the Owner/Operator prior to performing any Contract work.

Day-to-day operational control of the BCP Site, including the implementation, monitoring and maintenance of controls identified in the SWPPP, except as otherwise noted in the plan.

Certification:

I certify under penalty of perjury that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from remedial construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and is a crime in the State of New York and could subject me to criminal, civil and/or administrative proceedings.

______________________	**Posillico Environmental Inc.**
Signature	***Company Name***
______________________	**1610 New Highway, Farmingdale, NY 11735**
Name	***Company Address***
______________________	**(631) 752-2145**
Title	***Company Phone No.***
______________________	**(631) 752-0780**
Date	***Company Fax No.***

3.0 SITE DESCRIPTION

3.1 Site History

The site is a former industrial petroleum tank farm and terminal that is currently not in use. There is documented on-site petroleum contamination on site. Historical use of the property as a petroleum tank farm for fifty plus years from the 1940's until approximately 1990 resulted in releases of petroleum-related chemicals that have been the subject of several environmental investigations and the currently planned Remedial Action Work Plan to be implemented within the Brownfield Cleanup Program. Formerly, the property contained fourteen aboveground storage tanks (AST) totaling 17,675,000 gallons, and one, 3000-gallon underground storage tank (UST). Petroleum soil and groundwater contamination, especially on the eastern side of the site have been documented. Spill number 88-05691 was opened on the site in 1988, the year Cibro Petroleum, the former tank farm owner and operator of the site from 1973, became bankrupt.

Prior to sale of the site, Cibro Petroleum demolished all of the aboveground storage tanks (ASTs). The on-site 3000-gallon site underground storage tank (UST) may or may not still exist. Subsequently, by a certified application dated March 18, 2005, Posillico Development Company at Harbor Island, Inc. (PDC), the contract vendee for the Site, with an address at 1610 New Highway, Village of Farmingdale, Nassau County, New York submitted a request to participate in the Brownfield Cleanup Program relative to the site.

3.2 Physical Characteristics of the Site

3.2.1 Site Vicinity

The Site is located at the southern terminus of Washington Avenue on Harbor Island, Town of Hempstead, Nassau County, New York (see Figure SWPPP-1) and covers approximately 11.56 acres. The property is identified on Nassau County tax maps as Section 43, Block 381, Lot 35, 36, 102, 314, and 328. Surface water bodies border the Site on three sides: Island Park Canal to the east; Wreck Lead Channel to the south; and Simmons Hassock Creek to the west. As noted above, residential properties border the Site to the north and northwest, and an operating marina borders the Site to the southwest. There are no urban, commercial, industrial (other than the site itself and marina), agricultural or recreational areas in proximity to the site on the Island Park side of Wreck Lead Channel. There are industrial and commercial uses on the south side of the Channel. The property is zoned CA-Residential.

3.2.2 Surface Features, Topography and Storm Water Runoff

The Site layout is shown on Figure SWPPP-2. The site is currently not in active use. One, small building exists in the southern portion of the Site. The southwestern portion of the site contains an area of tidal wetlands and other natural vegetation and is not planned to be disturbed. The remainder of the Site is primarily covered by vegetation, soil stockpiles, recycled concrete aggregate stockpiles, or bare soil. A bulkhead exists on the eastern and southern boundaries of the property.

The Site is relatively flat, with the exception of the stockpiles and locations of depressions created through removal of the concrete bases of former, large aboveground petroleum storage tanks. Stormwater presently 1) ponds in depressions where it infiltrates the ground surface or evaporates, or 2) flows overland and discharges off the site to the surrounding surface water bodies.

3.2.3 Geology

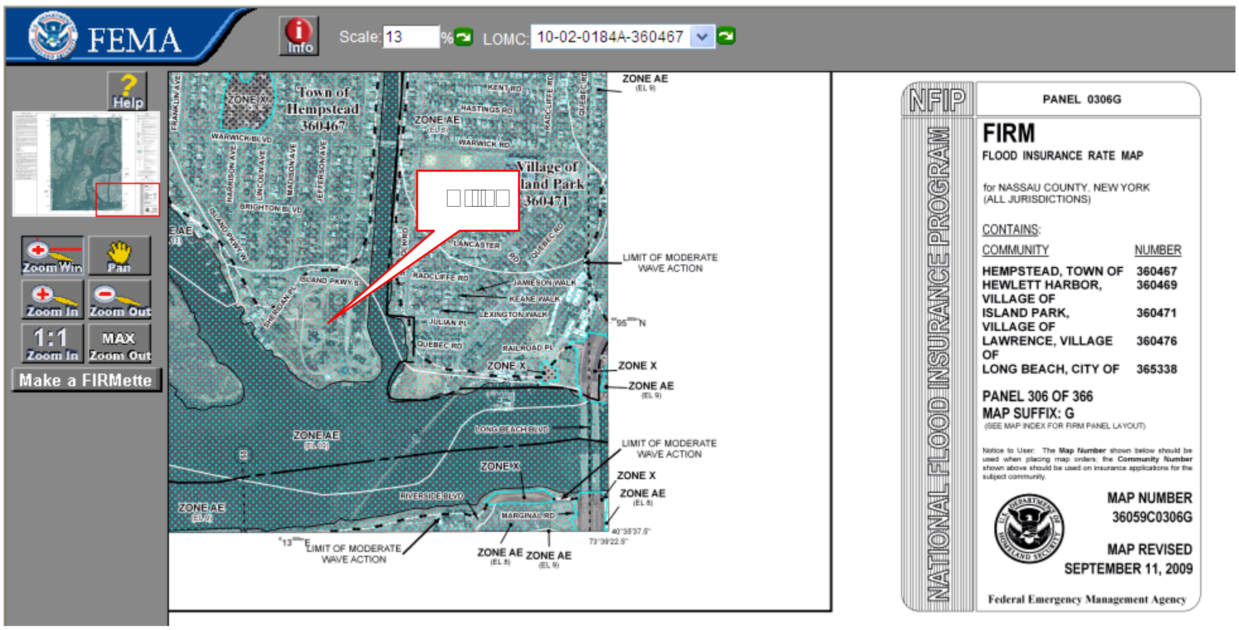
The Site is underlain by Cretaceous and Quaternary sediments, which rest unconformably on weathered Precambrian-aged biotite schist and gneissic bedrock. Depth to bedrock in the Long Island area ranges between 200 and 1,800 feet below grade. The late Cretaceous deposits are predominately associated with the Raritan and Magothy Formations, consisting of interbedded sand, gravel, silt and clay. Quaternary sediments of Pleistocene and younger age form the surficial deposits throughout the region and consist of sand, gravel, glacial till and associated outwash.

Site-specific hydrogeologic conditions consist of a tidally influenced, unconfined aquifer within the shallow fill and glacial fluvial deposits underlying the property. Prior investigations encountered a peat layer approximately nine feet below grade. Depth to the water table varies as a result of tidal effects, but is approximately four to six feet below grade. Groundwater generally flows from the northwest corner of the property towards the east-southeast, and diffuses into the adjacent saltwater bodies.

3.2.4 Floodplain

A review of the Flood Insurance Rate Map (see Figure below) for Nassau County, New York effective September 11, 2009, indicates that the Site is located within a Special Flood Hazard

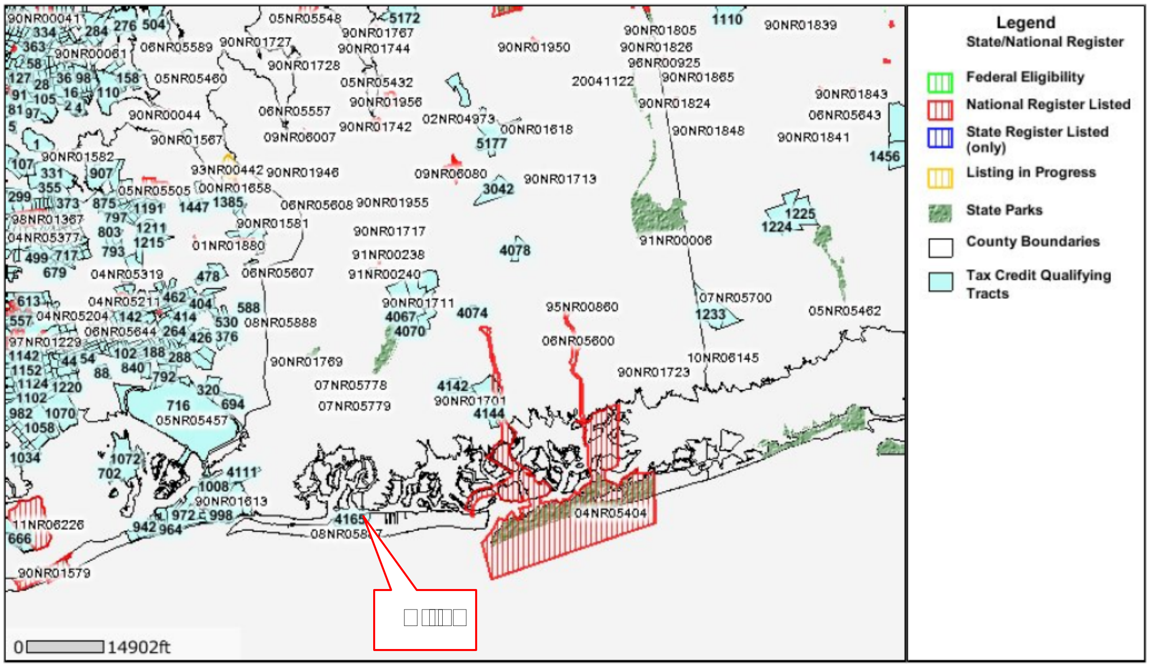
Area subject to inundation by the 1% annual chance flood. The 1% annual flood (100-year flood), also known as a base flood, is a flood that has a 1% chance of being equaled or exceeded in any given year. The base flood elevation for this Special Flood Hazard Area elevation is 10 feet. The majority of the Site is also subject to moderate wave action.



Floor Insurance Rate Map

3.2.5 Historical

A review of the New York State Parks, Recreation and Historical Preservation GIS Database indicates that neither the site nor contiguous sites are listed on the New York State nor National Registers of Historic Places (see Figure below).



July 18, 2012

Disclaimer: This map was prepared by the New York State Parks, Recreation and Historic Preservation National Register Listing Internet Application. The information was compiled using the most current data available. It is deemed accurate, but is not guaranteed.

New York State Register of Historic Places

4.0 REMEDIAL ACTIVITIES AND SCHEDULE

This SWPPP covers the following remediation activities, as described in the RAWP for the Site:[2] The existing SWPPP (permit identification number NYR 10K975) will cover demolition activities including buildings, concrete tank containments and foundation slabs, and pavements.

1. Install new sheeting at bulkhead to stabilize soils and mitigate potential for contaminated groundwater to migrate off-site.

2. Existing stockpiles of recycled concrete aggregate/soil, concrete with rebar and pilot study soil - segregate by size and type via manual sorting and screening. Recycle recovered metals off-site. Crush concrete on-site to reduce size. Composite sample and test soil for comparison to SSSCOs. Incorporate soils meeting SSSCOs into site backfill. Manage soils not meeting SSSCOs as described below for contaminated soils.

3. Once the concrete tank containments and foundation slabs and pavements have been removed – handle as described above for stockpiled material.

4. 3,000-gallon No. 4 fuel oil underground storage tank near the filling racks (Spill Number 88-05691) – Following slab and pavement removal, perform magnetometer survey to attempt to locate the tank. Register any tanks located by investigation or during planned soil excavation and close by removal in accordance with DEC and Nassau County requirements.

5. Petroleum-contaminated soil above and below the water table – excavate if practicable, process soil to reduce volume, remove debris, and homogenize to evenly distribute various size and contaminated fractions, then treat via chemical oxidation (RegenOx) utilizing existing pugmill. Composite sample and test soil for comparison to SSSCOs. If SSSCOs are achieved in an appropriate timeframe, then incorporate into site backfill. Soils not meeting SSSCOs in an appropriate timeframe will be disposed off-site.

6. Place any additional fill meeting the requirements of 6 NYCRR § 375-6.7(d) to raise the grade for proposed future development.

7. Place and vegetate a two feet thickness of soil cover of or buildings, pavement and sidewalks as part of the Site development consistent with the requirements of the RWP.

8. Groundwater – Remove source material in soil and groundwater during the performance of the work described above.

[2] Authorization for these activities is not sought hereunder.

The estimated volume of contaminated soil requiring removal is approximately 46,000 cubic yards (in-place volume) or 75,000 tons. The estimated quantity of soil to be imported into the Site for backfill and cover is between approximately 140,000 tons. The estimated quantity of soil/fill expected to be reused/relocated on the Site is approximately 90,000 tons.

The duration of the project is expected to be approximately 12 months from pre-excavation soil sampling through placement of the barrier layer and establishment of temporary vegetation. The schedule for performance of the remedial work has been broken down into Remedial Action elements based on elapsed time from approval by NYSDEC of the RAWP. The following is a summary of the schedule.

Phase	Relative Location	Start Date	Completion Date
1	Bulk head replacement and adjacent areas in the eastern and southern portion of the site	01/02/2012	6/15/2013
2	Western and northern portion of the site	6/16/2013	10/15/2013

Remedial construction in Phase 2 cannot begin until remedial construction in Phase 1 is complete and stabilized with temporary vegetation or mulch.

PHASE 1 (Bulk head replacement and adjacent areas in the eastern and southern portion of the site) – 4.89 acres

1. Implement required soil erosion and sediment control measures
2. Clearing and grubbing
3. Process existing stockpiles
4. Excavate soil for remediation
5. Backfill excavations to proposed finish grade
6. Establish temporarily vegetation

PHASE 2 (Western and northern portion of the site) – 4.84 acres

7. Implement required soil erosion and sediment control measures
8. Clearing and grubbing
9. Process existing stockpiles

10. Excavate soil to facilitate bulkhead installation
11. Backfill along new bulkhead
12. Excavate soil for remediation
13. Backfill excavations to proposed finish grade
14. Establish temporarily vegetation

5.0 SOIL EROSION AND SEDIMENT CONTROL PRACTICES

During remedial activities, the potential for soil erosion and sedimentation will be controlled with temporary soil erosion and sediment control devices. These devices will be designed and installed in accordance with New York State Standards and Specifications for Erosion and Sediment Control dated August 2005.

The soil erosion and sediment control plan will minimize the downstream erosion hazard by controlling runoff at its source, minimizing runoff from disturbed areas and de-concentrating storm water runoff. The objectives of the erosion control plan will be achieved through the management of storm water runoff during remedial activities.

Remedial activities at the Site will commence in January 2013, after the submission of the Notice of Intent, on or about December 31, 2012 (see schedule in Section 4.0). The remedial activities will proceed in a series of overlapping phases. On-going inspections and maintenance of erosion and sediment controls will be conducted until the remedial activities at the Site are complete.

The proper sequencing of the remedial construction activities represents a key element in the Project's SWPPP. For example, the BMPs for sediment and erosion control will be implemented prior to the start of major remedial activities. Within the Site, the BMPs will include, but are not limited to, stockpile management, installation of stabilized construction entrances/exits and installation of perimeter silt fence barriers.

5.1 Potential Sources of Pollution in Stormwater Discharges

Potential sources of pollution which may reasonably be expected to affect the quality of stormwater discharges are contaminated environmental media and oil and chemicals used during remedial activities.

5.1.1 Contaminants in Environmental Media

The findings of the RI indicate the following are present:

- Potential underground storage tank and buried piping;
- Elevated levels of petroleum in soil in the form of gross contamination at and below the water table with associated petroleum odor were historically reported;
- Volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), especially in the form of TICs, in soil;

- No significant levels of metals and PCBs;
- VOCs and SVOCs in groundwater.

5.1.2 Oil and Chemical Use During Remedial Activities

The table below summarizes the oil and types of chemicals likely to be required on the Site to support remedial construction activities.

Oil and Chemical Materials Likely Needed to Support Remedial Construction Activities		
Oil and/or Chemical	**Anticipated Daily On-Site Quantity**	**Container and Storage Description**
Hydraulic Oil	< 25 gallons	Manufacturer's retail containers
Lubricants	< 25 gallons	Manufacturer's retail containers
Diesel Fuel	≤ 375 gallons	Construction equipment and trucks (no full-time storage; refueling truck will be utilized, as needed)
Rusmar Long Duration Foam	400 gallons	Drums

Equipment for remedial activities will include, but not be limited to, a large excavator with bucket attachment (e.g., Caterpillar 345), a small excavator with bucket attachment (e.g., Komatsu PC 308), a small loader (e.g., Caterpillar 966), a bulldozer (Caterpillar D-6), a roller/compactor (Ingersoll Rand SD-100 or equivalent), truck wash, truck scale, and dump trucks. Periodically, cranes, drill rigs, and sheet pile drivers will be utilized. Prior to remedial construction, the Remediation Contractor will prepare and implement a Site-specific Health and Safety Plan.

5.2 Erosion and Sediment Controls

Soil erosion and sediment control procedures will be in place and functional prior to beginning any intrusive work. Trap sediment on-site will be the primary soil erosion and sediment control strategy that will be applied to the Site during remedial activities.

The temporary soil erosion and sediment control measures will include a stabilized construction entrance/exit, installation and maintenance of silt fencing, storm drain inlet protection, and stockpile protection.

Additional requirements regarding stormwater pollution prevention are listed below:

- Barriers will be installed and inspected at least once every seven (7) calendar days. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs will be made immediately.
- Accumulated sediments will be removed as required to keep the barriers functional.
- All undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials.
- Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.
- Erosion and sediment control measures will be inspected to confirm that they are operating correctly. Where discharge locations or points are accessible, they will be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.
- Silt fencing will be installed around the entire perimeter of the remediation area (with the exception of the Site access points which will be protected with stabilized trucking pads).
- All stockpiles will be stabilized with secured tarps or vegetation and surrounded with silt fences or hay bales, as necessary.
- On-site storage of excavated material stockpiles will be limited; any stockpiles of excavated material will be removed from the Site as quickly as practicable.
- Prior to any predicted severe storm event and following all severe storm events, all soil erosion and sediment controls will be inspected and reinforced/repaired, as necessary.

The measures will be implemented prior to and during all stages of remediation in the locations shown on Figures SWPPP-2 and where field conditions dictate. Detailed descriptions of each of the measures that will be employed on the project are included in the sections below.

5.2.1 Structural Controls

Structural controls will be used to minimize the discharge of pollutants from exposed soil areas of the Site. The soil erosion and sediment controls to be implemented on the Site, as presented on the Soil Erosion and Sediment Control Plan, include but are not limited to erosion and sediment control measures in accordance with the <u>New York Standards and Specifications for Erosion and Sediment Control</u>.

For the Site, appropriate structural controls include, but are not limited to, the following:

- Stabilized construction entrances/exits;
- Truck cleaning areas;
- Silt fence sediment barriers;

- Secured tarps on stockpiles;
- Turbidity curtain; and
- Storm drain inlet protection and sediment traps.

Descriptions of the structural control measures that will be used at the Site follow.

5.2.1.1 Stabilized Construction Entrances/Exits

A stabilized construction entrance/exit will be provided at the construction vehicle entrance/egress on Washington Avenue at Island Parkway South. The length of the construction entrance will not be less than 50 feet. The width of the construction entrance will be a minimum of 24 feet, but not less than the full width of points where ingress or egress occurs. The pad will consist of a bed of 1- to 4-inch stone approximately 6-inches deep underlain by filter cloth across the access road, in accordance with New York Standards and Specifications for Erosion and Sediment Control. This is provided to reduce off-site transport of soil from the Site.

The internal unpaved Site access drive(s) will be covered with recycled concrete aggregate or crushed stone, as appropriate, to prevent rutting. The stabilized construction entrance/exit coupled with use of recycled concrete aggregate or crushed stone along the internal unpaved Site access drives will limit the potential for off-site tracking of soil by remediation vehicles.

5.2.1.2 Truck Cleaning

When required, construction vehicle wheels will be swept or washed at a designated area at the Site prior to entrance on public rights-of–way or entrance to an already remediated section. The decontamination procedure for the removal of the remaining soil will consist of brooming off excess soil and, if necessary, steam cleaning or washing of the vehicles and equipment with water and detergent. In addition, a wet spray power sweeper or similar equipment may be used on adjacent paved public roadways and walkways affected by the work (if and when necessary). Wastewater generated by the decontamination process will be recycled, discharged to the dewatering treatment system, or collected for characterization and off-site disposal. Soil generated by the gross removal and decontamination process will be stockpiled at a designated area of the Site for on-site reuse or off-site disposal. Dry power sweeping is prohibited; however dry broom sweeping will be performed to keep areas neat wherever effective. All soil washed, dropped, spilled or tracked outside the limit of disturbance or onto public rights-of-way will be removed immediately.

5.2.1.3 Silt Fence

Silt fences consisting of posts with filter fabric will be installed around the entire perimeter of the Site and surrounding stockpiles as shown on Figures SWPPP-2 and SWPPP-5. Runoff passes through the openings in the fabric, while sediment is trapped and settles on the uphill side.

5.2.1.4 Soil Stockpiling

Excavated soil (excluding odorous soil) and imported clean fill material will be stockpiled. Based on the dynamic nature of the remediation, specific stockpile locations cannot be identified. The Remediation Contractor will endeavor whenever possible to place stockpiles on a dry level area and not near the boundaries of the Site, with sediment and erosion control measures, including vegetation or tarp coverings, and silt fencing and/or hay bales installed around them. Soil stockpile specifications and standard erosion protection are depicted in Figure SWPPP-3.

Presented below is a description of stockpile methods:

- On-site storage of excavated material stockpiles will be limited; any stockpiles of excavated material will be removed from the Site as quickly as practicable.
- Stockpiles will be inspected daily and after every storm event. Results of inspections will be recorded in a logbook, maintained at the Site and made available for inspection by NYSDEC.
- Stockpiles will be placed on heavy duty tarps and kept covered at all times with appropriately anchored tarps or vegetation (except when actively in use). Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.
- Soil stockpiles will be surrounded with silt fences, as depicted on Figure SWPPP-3. Hay bales will be used as needed near catch basins, surface waters and other discharge points.
- A dedicated water truck will be available on-site for dust control.

5.2.1.5 Turbidity Curtain

A turbidity curtain of not more than 200 feet in length shall be employed sequentially such that active work areas are contained within its limits, as the bulkhead replacement work proceeds in a phased manner. The curtain shall be of sufficient height to account for tidal variations in the bottom and surface water elevations. Due to the anticipated surface water conditions, the turbidity curtain shall be fitted with both a system of floats and anchors to maintain its function.

5.2.1.6 Storm Drain Inlet Protection and Sediment Traps

Before the start of remediation work within the Site, temporary storm water inlet protection, such as FloGard® T-Bag™, Gullywasher Brand®, or equivalent temporary inlet protection will be placed under the cover of catch basins at Washington Avenue and Island Parkway South adjacent to the Site. Any inlets on site leading to pipelines that transport stormwater off site will also be proected. SlopeGard™3 or equivalent will be placed around off-site catch basins (which could potentially be impacted by Site remediation activities) to reduce or eliminate sediment entering the storm drainage system. Figure SWPPP-3 presents details for FloGard® T-Bag™ and SlopeGard™3 type installations. Not less than one week prior to the start of remediation work, the Remediation Contractor will conduct an assessment/inspection of the inlet and catch basin protections to confirm that they are in place and functioning. Accumulated sediment will be removed periodically from inlet protection devices and analyzed for potential pollution constituents. Collected sediments will then be disposed at an appropriate off-site facility.

5.2.2 Site Stabilization

Erosion and sediment structural control measures will be constructed prior to initiating land disturbing activities and will not be removed at completion of the remedial activities. Such practices include use of silt fence and stabilized construction entrances/exits. Maintenance will be performed, as necessary, to ensure continued stabilization. During remediation, soil will be excavated to varying depths ranging from the ground surface to approximately nine feet deep. Once the remediation is completed, a clean layer of fill will be applied. Fill will be applied to raise the grade to the elevations indicated on Figure SWPPP-2.

Temporary stabilization of fill will be performed within seven (7) days of placing fill, compacting fill, and moving the tent enclosure. Temporary stabilization means covering or maintaining an existing cover over soil. Cover can be vegetative (e.g., hydroseed, mulch, etc.) or non-vegetative (e.g., gravel or recycled concrete, erosion control blankets, etc.).

This SWPPP applies only to the remedial activities described in Section 4.0 above to be conducted by Posillico and its subcontractors, not the future proposed redevelopment of the Site.

5.2.3 Seeding and Soil Stabiliztion

As part of the compliance required for obtaining authorization to disturb greater than five (5) of soil at any one time, Posillico shall install and/or implement al temporary and/or permanent soil stabilization measures on all disturbed areas of the Site within seven (7) days from the date the solid disturbance activity ceased. The various temporary and/or permanent soil stabilization methods to be made available are described below.

5.2.3.1 Temporary Seeding

Temporary seeing of exposed areas should be applied as follows:

- Spring/summer/early fall Ryegrass (annual or perennial) at a rate of 30 lbs/acre (approximately 1 lb/1000 sq. ft.).
- Late fall/early winter Certified "Aroostook" winter rye (cereal rye) at a rate of 100 bls/acre (2.5 lbs/1000 sq. ft.)

Mulch shall be used to provide initial erosion control until the seed is established, or shall be used alone for temporary stabilization in non-growing months. Mulch materials include small grain straw, wood chips or shavings, jute twisted yarn, gravel, crushed stone or slag and hydromulch. Mulches and mulch anchoring shall be applied in accordance with the requirements on Pages 3.29-3.31 of the New York State Standards and Specifications for Erosion and Sediment Control.

5.2.3.1 Hydoseeding

Hydroseeding will be the primary means of providing temporary and permanent stabilization. The see, fertilizer, water, and mulch will be applied as a mixture utilizing power equipment. The mix will be applied in two equal applications. Non-toxic, vegetable dyes will be used to determine the extent of coverage upon application. After grass has appeared, those areas that fail to show a uniform stand of grass will be re-seeded. This process will be repeated until all areas are covered with satisfactory growth. Seed mixtures appropriate to the soils, slopes, and uses will be selected as described above.

5.2.3.1 Hydromulch

Hydromulch shall be the one of the primary means of stabilizing areas of disturbed earth during the non-growing (winter) months. Hydromulch is composed of a combination of cellulose (partially digested wood fibers) and crimped polyester fibers in a gum-based tackifier and is mixed with water. The ingredients are non-toxic, biodegradable, photodegradable and environmentally safe. Like hydroseeding, hydromulch is applied from a tank truck using power equipment.

Hydromulches shall be applied in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, with the top two inches of compacted or crusted soil loosened prior to application. After application, the hydromulch will be continuously inspected and maintained as required for ultimate effectiveness.

5.2.3.1 Soil Stabilizers

Another option for stabilizing areas of disturbed earth during the non-growing (winter) months is the use of soil stabilizers. Like hydromulch, soil stabilizers are applied directly to exposed soils from a tank truck using power equipment to develop intimate soil contact.

Soil stabilizers used on the project shall be Class IV, Type A or C as specified in Section 713-07 of the NYSDOT Standard Specifications of May 1, 2008:

- Type A, Bonded Fiber Matrix (BFM) A cementitious soil binder which is added to wood cellulose fiber mulch and is intended to form a thick, heavy-bodied crust or mat-like barrier that controls water and wind induced erosion. BFMs last up to six months and require a cure time up to 48 hours, without rain, to develop intimate soil contact.

- Type C, Flexible Growth Medium (FGM) A soil binder made up of wood fibers, interlocking fibers, polymers and hydro-colloid tackifiers intended to form a thick, heavy-bodied crust or mat-like barrier that controls water and wind induced erosion. FGMs last up to a year and require no cure time to develop intimate soil contact.

Specific types and brands of soil stabilizers shall be submitted for approval and will be accepted on the basis of the product appearing on the NYSDOT Materials and Equipment Approved List.

A material certification that the product is the same as the one appearing on the Approved List and that it conforms to this specification shall be provided.

5.2.4 Other Best Management Practices

In addition to the erosion and sedimentation controls discussed above, additional controls/ practices will be undertaken to reduce potential pollution in storm water runoff. Best management practices will be designed and maintained in accordance with the New York Standards and Specifications for Erosion and Sediment Control. The additional controls to protect the quality of storm water runoff from the Project include:

- Utilizing dust suppression practices;
- Proper storage and handling of materials on-site;
- Proper disposal of sanitary waste;
- Proper disposal of solid waste;
- Proper management of any hazardous waste generated on-site; and
- Implementing spill prevention and control measures.

The Best Management Practices that will be used at the Site are described below.

5.2.4.1 Dust Suppression

In order to prevent dust erosion from disturbed soil surfaces, which may cause off-site damage, health hazards, and traffic safety problems, dust control measures will be implemented. These measures may include sprinkler, hose directly off hydrant, water truck with water cannon, and/or pump and hose for remote spraying. The equipment will be used as necessary to apply water during earthwork operations in order to minimize sediment transport and maintain acceptable air quality conditions. Repetitive treatments will be implemented as necessary.

Dust management during invasive work on the Site, will include, at a minimum, the items listed below:

- Dust suppression will be achieved by wetting exposed soil during dry conditions. The truck used will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Recycled concrete aggregate or crushed stone, as appropriate, will be used on roadways to provide a dust-free road surface.

On-site traffic flow will be limited in total area to minimize the area required for water truck sprinkling.

5.2.4.2 Proper Material Handling Practices

Remedial action materials will be stored in a manner that minimizes exposure to precipitation and runoff, where appropriate, or otherwise to prevent the contamination of storm water. For contaminated materials that must be kept dry, indoor storage, temporary shelters, storage trailers, tarpaulins, and other means will be employed. Materials that are normally allowed to be exposed to precipitation while being stored will be placed in upland areas away from all storm water conveyances in a manner that will not concentrate runoff. Stockpiles of earthen materials will be stored away from storm water conveyance areas and in a manner that prevents erosion and transport of sediments, as described above. The Remediation Contractor will make best efforts to remove excavated material from the Site as excavation proceeds via direct loading to off-site transportation trucks. Limited on-site stockpiles of non-odorous excavated soil will be removed as soon as practicable after excavation.

5.2.4.3 Sanitary Wastes

A licensed sanitary waste management contractor, as required by local regulations, will collect all sanitary waste from on-site portable units.

5.2.4.4 Solid Waste

The Remediation Contractor will implement a solid waste management program and evaluate recycling opportunities. Recycling will be encouraged and supported through the on-site placement of appropriate containers. Solid waste and debris that cannot be recycled, reused or salvaged will be stored in on-site containers for off-site disposal.

5.2.4.5 Hazardous Waste

It is anticipated that hazardous waste will not be generated. If hazardous waste is generated, it will be separated from other waste through segregation of storage areas, characterized in accordance with appropriate standards, and stored in suitable containers with proper labels. Waste will be removed from the Site by licensed contractors in accordance with all applicable regulatory requirements and disposed at approved/licensed facilities. Among the steps to be taken with respect to non-hazardous and hazardous wastes are the following:

- The Implementing Contractor will confirm that hazardous waste transporters servicing the project have required permits prior to receiving hazardous wastes. Transporters of non-hazardous waste will also have proper permits in place.
- The Implementing Contractor will follow accurate record-keeping requirements as to the quantity and nature of non-hazardous and hazardous wastes generated on-site, and maintain a file of Material Safety Data Sheets (MSDS) for on-site chemicals.
- Hazardous waste will be transported under a cradle-to-grave system of manifests. Transportation of non-hazardous waste will be properly tracked and documented.
- Appropriate storage and transportation containers will be used, along with secondary containment measures where applicable.

5.2.4.6 Spill Prevention and Control Measures

The following material management practices will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff during the remediation period.

Good Housekeeping

The following practices will be followed:

- All material stored on-site will be stored in a neat, orderly manner in appropriate containers.
- Products will be kept in their original containers with the original manufacturer’s label, unless the containers are not re-sealable. All containers will be clearly labeled in accordance with applicable requirements.
- Original labels and Material Safety Data Sheets will be retained for the period of time that the product is being utilized on-site in accordance with all applicable Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1926.33).
- Manufacturer’s recommendations for proper use and disposal will be followed.
- A representative from the Remediation Contractor’s staff will conduct weekly inspections to confirm the continued proper use and disposal of on-site materials and containers.
- Substances will not be mixed unless necessary for the remediation activity and as recommended by the manufacturer.
- Whenever possible, all of a product in a container will be used before proper disposal of the container.
- All on-site construction vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the risk of leakage. Petroleum products that are not

in vehicles will be stored in tightly sealed containers that are clearly labeled. Equipment fueling will be conducted with extreme care, under continual surveillance and away from conveyance channels. Drip pans will be used and a supply of absorbent pads will be maintained on hand and utilized, as required. In the unlikely event of a release, all spills will be promptly cleaned up.

Product Specific Practices

The following practices will be adhered to:

- *Petroleum*: All on-site construction vehicles will be monitored for leaks and receive regular preventative maintenance to reduce the risk of leakage. Equipment fueling will be conducted with extreme care, under continual surveillance and away from conveyance channels. Drip pans will be used and a supply of absorbent pads will be maintained on hand and utilized, as required. In the unlikely event of a release, all spills will be promptly cleaned up.
- *Chemicals*: All chemicals will be kept tightly sealed and neatly stored out of conveyance channels when not in use. Excess chemicals will be disposed of according to manufacturers' instructions and all applicable regulations.

5.3 Permanent Storm Water Controls

Upon completion of remedial activities at the Site, Posillico will not develop the Site, and development-phase storm water management will be conducted by the Developers. Therefore, permanent storm water controls are not addressed by this plan.

6.0 INSPECTION REQUIREMENTS AND MAINTENANCE PLAN

6.1 Conformance with NYS Site Inspection Requirements

As of the effective date of the General Permit, site inspections are required for all remedial construction activities except as noted in Part IV.C.la of GP-0-10-001. The inspections required for this project will be conducted as follows:

1. Pasillico shall have a “qualified inspector” conduct an assessment of the site prior to the commencement of remedial construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP and required by the General Permit have been adequately installed or implemented to ensure overall preparedness of the site for the commence3ment of remedial construction. “Qualified Inspector”, such as a Licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), licensed Landscape Architect, or other Department endorsed individual(s). It also means someone working under the direct supervision of the licensed Professional Engineer or licensed Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that an individual performing a site inspection has received four (4) houses of training, endorsed by the Department, from a Soil and Water Conservation District, CPESC, Inc. or other Department endorsed entity in proper erosion and sediment principles no later than two (2) years from the date the General Permit is issued.
2. Posillico will have a qualified inspector conduct an assessment of the Site prior to the commencement of remedial construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP and required by the General Permit have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of remedial construction.
3. Following the commencement of remedial construction, the qualified inspector will conduct at least one (1) site inspection every seven (7) calendar days. The Contractors will also implement a maintenance inspection schedule to ensure continuous and effective operation of the erosion and sediment control practices.
4. Where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the qualified inspector will conduct a site inspection at least once every thirty (30) calendar days. Posillico will notify the NYSDEC remediation contact person in writing prior to reducing the frequency of inspections.
5. Where soil disturbance activities have been shut down with partial project completion, the qualified inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization (all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established).

6. Prior to filing a Notice of Termination ("NOT") or the end of permit term, Posillico will have the qualified inspector perform a final site inspection. The qualified inspector will certify that all disturbed areas have achieved final stabilization and all temporary, structural erosion and sediment control measures have been removed by signing the "Final Stabilization" certification statement on the NOT. The completed NOT will be signed by the owner/operator and submitted to the NYSDEC remediation contact person.

6.2 Inspection Reports and Record Keeping

The qualified inspector will prepare inspection reports subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

1. Date and time of inspection;
2. Name and title of person(s) performing inspection;
3. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
4. A description of the condition of the runoff at all points of discharge from the remedial construction site. This shall include identification of any discharges of sediment from the remedial construction site. Include discharges from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
5. Identification of all erosion and sediment control practices that need repair or maintenance;
6. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
7. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
8. Current phase of remedial construction of all post-remedial construction stormwater management practices and identification of all remedial construction that is not in conformance with the SWPPP and technical standards; and
9. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the remedial construction of the post-remedial construction stormwater management practice(s).

All inspection reports shall be signed by the qualified inspector pursuant to Part II.C.2 of GP-0-10-001, the inspection reports shall be maintained on site with the SWPPP. Within one (1) business day of the completion of an inspection, the qualified inspector shall notify the owner/operator and appropriate contractor (or subcontractor) of any corrective actions that need to be taken. The contractor (or subcontractor) shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

In accordance with the requirements of the General Permit, Posillico will maintain a record of all inspection reports. The reports will be maintained on-site and be made available to the permitting authority on request.

6.3 Maintenance Plan

The following maintenance procedures are to be performed as noted.

- Exposure of litter, debris, and chemicals to storm water will be prevented, and appropriate measures will be taken to prevent litter, debris, and chemicals from becoming a pollutant source. A daily walkover of the BCP Site to identify exposure of potential pollutants to storm water will be performed.
- Structural control measures receiving flows from active work areas will be inspected at the end of each BCP Site work day.
- Structural control measures receiving flows from areas that have not been permanently stabilized will be inspected once each week and prior to any predicted severe storm event.
- Built-up sediment will be removed from silt fences and returned to the Site when it has reached one-third of the aboveground height of a silt fence.
- Silt fences will be inspected for depth of sediment, tears or sags in the fabric, and to confirm the fabric is securely attached to the posts. Posts will also be inspected to confirm that they are firmly set in the ground.
- Replacement of deteriorated silt fences will be initiated as soon as the condition is discovered.
- Conveyance structures will be maintained so as to operate as designed. When necessary, velocity attenuating devices, such as riprap or other means, will be used to accomplish the desired result. Foreign debris will not be allowed to accumulate in swales and drainage ditches.
- Vehicle tire cleaning devices will be maintained to ensure their proper operation.
- Maintenance of storm drain inlet protections shall be performed in accordance with the following:
    - The Remediation Contractor will have overall responsibility for monitoring and maintaining the inlet and catch basin protection such that the inlets and catch basins will not be adversely affected by storm water runoff, if any, from the BCP Sites.
    - Storm water inlet and catch basin protections will be maintained as per their product specifications and will be removed and washed monthly at a minimum, or more

frequently if needed based on the regular inspection schedule. Washing will take place in the truck wash area, to ensure that silt in the wash water does not enter the catch basin or discharge onto remediated areas. Collected sediments will be analyzed for potential pollution constituents and appropriately disposed at an off-site facility.

6.4 Revisions to the SWPPP

The SWPPP must be amended whenever:

- There is a change in design, remediation, operation or maintenance which will have a significant effect on the potential for the discharge of pollutants to the waters of the State of New York;
- The SWPPP proves to be ineffective in eliminating or significantly minimizing pollutants in storm water runoff; or
- The SWPPP is proven to be ineffective in achieving the general objectives of controlling pollutants from the remedial storm water system.

6.5 Completion of Remedial Activities

Upon completion of remedial activities at the Site, temporary soil erosion and sediment control measures will be left in place.

7.0 RECORD KEEPING AND REPORTING

7.1 Record Keeping

Records regarding storm water pollution prevention activities will be maintained at the remediation site. The records will be retained by Posillico for a period of 5 years from final stabilization. Records to be retained will include:

- SPDES General Permit for Storm Water Discharges from Construction Activity;
- Storm Water Pollution Prevention Plan (SWPPP) and modifications thereto;
- MS4 Acceptance Letter, if received;
- NYSDEC Notice of Intent (NOI);
- NYSDEC Notice of Acknowledgement, if received;
- Contractor/Subcontractor SPDES General Permit Certifications (signed copy);
- Inspection reports (Appendix A), refer to Section 6.2;
- Remedial activity records indicating dates of remedial construction milestones and storm water management and pollution prevention control installations;

Spill reports/notifications; and,

- NYSDEC Notice of Termination (NOT).

Posillico will retain copies of the above documents in compliance with the General Permit for a period of at least five (5) years from the date of the Project completion.

7.2 Releases of Reportable Quantities of Hazardous Substances or Oil

Posillico is responsible for making contacts with local, state, and federal agencies for a reportable spill within the Site. Within two hours of becoming aware of a land-based spill, the NYSDEC will be notified by telephoning the NYSDEC hotline at 1-800-457-7362. After becoming aware of a discharge to a sewer or waterway, Posillico will immediately notify the NYSDEC and the National Response Center (NRC).

Posillico will initiate the contact to the appropriate agencies when a release of a reportable quantity of a hazardous substance or oil exists, or, if any of the following conditions exist for a release of a lesser quantity of a hazardous substance or oil:

- Such release results, or may reasonably be expected to result, in a fire with potential off-site impacts;

- Such release causes, or may reasonably be expected to cause, an explosion;
- Such release causes, or may reasonably be expected to cause, a contravention of air quality standards;
- Such release results, or may reasonably be expected to result, in vapors, dust and/or gases that may cause illness or injury to persons beyond those at the release origin; or
- Runoff from fire control or dilution waters that may cause or contribute to a contravention of water quality standards.

Posillico will notify the NYSDEC of a suspected or probable release of a hazardous substance unless an investigation shows that a release has not occurred or does not need to be reported. Reports must be made to the NYSDEC hotline upon discovery of any of the following conditions:

- Test, sampling, or monitoring results from a release detection method that indicate a release may have occurred;
- Unusual operating conditions such as the erratic behavior of product dispensing equipment, the sudden loss of product from a storage tank, unexpected presence of water in a tank, or the physical presence of a hazardous substance or an unusual level of vapors that are of unknown origin;
- Impacts in the surrounding area, such as evidence of hazardous substances or resulting vapors in soils, basements, sewer and utility lines, and nearby surface waters; or
- Any other conditions or indications of a suspected release.

When reporting the spill, Posillico will provide all of the following information to the NYSDEC, when available:

- Name of the person making such report and his/her relationship (agent, employee, etc.) to any person (corporation, company, etc.) which might be responsible for causing such discharge;
- Time and date of the discharge;
- Probable source of the discharge;
- Location of the discharge, both geographic and in relation to bodies of water;
- Type of substance discharged;
- Possible health or fire hazards resulting from the discharge;
- Amount of substance discharged;
- Actions that are being taken or will be taken to clean up and remove the discharge;
- Personnel presently on the scene; and

- Other government agencies that have been or will be notified.

When appropriate, Posillico will contact local and county authorities (e.g., health department, fire department, police department) as knowledge of a major spill or release becomes available. Prompt reporting allows quick response, which may reduce any adverse impacts to human health and the environment.

In the event that a spill has reached navigable waters in “harmful quantities,” in accordance with federal regulations (40 CFR Section 110.6), the Emergency Coordinator or person with any knowledge of such conditions must **immediately** notify the federal National Response Center at 1-800-424-8802 (24 hours per day). When contacting the NRC, the following information should be provided:

- Time, location, and source of the spill;
- Type and quantity of material spilled;
- Cause and circumstances of the spill;
- Hazards associated with the spill;
- Personal injuries;
- Corrective action taken or planned to be taken;
- Name and telephone number of individual reporting the spill; and
- Any additional pertinent information.

In addition, Posillico will immediately notify the Environmental Protection Agency, Region II at (732) 548-8730 (24 hours per day) in the event that a spill has reached navigable waters in “harmful quantities,” in accordance with federal regulations (40 CFR Section 110.6).

7.3 Notification to Local Emergency Responders

Local authorities (e.g., fire department, police department) will be notified of any major spills as soon as knowledge of a major spill or release becomes available. Prompt reporting allows quick response, which may reduce any adverse impacts to human health and the environment.

7.4 Revisions to the SWPPP

The SWPPP will be amended whenever:

- There is a change in design, remedial construction, operation or maintenance which will have a significant effect on the potential for the discharge of pollutants to the waters of the State of New York;

- The SWPPP proves to be ineffective in eliminating or significantly minimizing pollutants in storm water runoff; or
- The SWPPP is proven to be ineffective in achieving the general objectives of controlling pollutants from the remedial construction site's storm water system.

FIGURES

APPENDIX A

INSPECTION/MAINTENANCE REPORT FORM

Inspection Report and Compliance Audit Checklist

The following preliminary compliance audit checklist is provided as a template for the Inspector(s) to document that ongoing tasks/activities are being performed in a safe, timely manner and that compliance with regulatory permits, approvals, and certificates is being monitored and/or tracked. This preliminary checklist needs to be revised over time to reflect actual stages of construction and/or facility operation. Compliance acceptability will be noted by the Environmental Inspector(s) in the corrective action/compliance documentation and/or comments column.

Compliance Location/Subject Area	Date	Inspected/Reviewed (Yes /No /NA)	Corrective Action	Comments
I. General				
A copy of the SWPPP is kept on-site at all times				
Contractor Spill Contingency Plan prepared and implemented				
Ensure MSDS sheets updated and available at specified locations				
Confirm that all Contractors are aware of and knowledgeable of Spill Contingency Plan and SWPPP				
II. Stormwater Management				
Silt fence and/or hay bale sediment barriers are intact				
Construction entrances/exits are stabilized				
Storm drain inlets are protected (if and where necessary)				
Inspections occurring after each storm event and necessary repairs are being performed (if and when necessary)				
III. Soils Management				
Excavation plan is being implemented properly				
Soil and mud are kept off public roadways with proper implementation of stabilized construction exits and truck wash ramps				
Appropriate dust suppression practices (i.e., surface wetting) are being implemented on-site				
Soil stockpiles are adequately stabilized with sediment trapping measures (i.e., silt fence around perimeter, located				

Inspection Report and Compliance Audit Checklist

Compliance Location/Subject Area	Date	Inspected/Reviewed (Yes /No /NA)	Corrective Action	Comments
within existing excavation area, etc.)				
Cut and fill slopes are adequately stabilized				
Sediment barriers (silt fences, hay bales, inlet protection, etc.) are being maintained properly				
IV. Hazardous and Non-Hazardous Waste				
Posillico and/or its contractors are knowledgeable of all hazardous chemicals being handled and stored on-site				
MSDS sheets are available on the Site				
Posillico and/or its contractors are characterizing hazardous materials in accordance with proper standards				
Posillico and/or its contractor's label tag or mark each container of hazardous chemicals properly				
Hazardous waste is properly stored and disposed off-site using a bill of lading or manifest tracking system				
V. Tank and Equipment Draining Activities				
Each equipment/tank work area is demarcated with caution tape and identified as a restricted work area				
A dike system is established around each equipment/tank work area being drained in the event of a spill				

Additional Comments:____
Verbal/Written notification given to: ____

Report by (name and title):
Date and time of inspection:
Weather conditions:
Soil conditions (dry, wet, saturated):
Location and description of any petroleum or chemical spills:

Inspection Report and Compliance Audit Checklist

Description and sketch of areas that are disturbed and areas that have been stabilized:

Appendix E
Community Air Monitoring Plan (CAMP)

Appendix 1A
New York State Department of Health
Generic Community Air Monitoring Plan

Overview

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 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 DEC/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 baling/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, particularly if wind direction changes. 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.

1. 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.

2. 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.

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

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) 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.

1. 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.

2. 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.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix F
Resumes

STEVEN D. MEERSMA, P.E.

EDUCATION
B.S., Civil Engineering, University of Michigan, 1985

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS
Professional Engineer, New York, (#076572), 1999
Professional Engineer, New Jersey, (#GE37355), 1992
Professional Engineer, Delaware, (#8200), 1991

AREAS OF EXPERTISE
Mr. Steven D. Meersma, P.E. has a 30-year record of providing high-quality consulting services to a broad range of government agencies and private sector concerns primarily in New Jersey and New York. Mr. Meersma has been employed by TRC for over 18 years. Through his many years of extensive experience Mr. Meersma has program management and technical expertise in the following general areas:

- Remedial Design and Construction
- Environmental Assessments
- Regulatory Compliance
- Demolition Engineering
- Project Management
- Construction Management
- Stormwater Management
- Underground Storage Tank Management
- Solid Waste Management
- EH&S Auditing
- Emergency Response

Based in TRC's New York City office, Mr. Meersma serves as the Director of Environmental Compliance and as Quality Coordinator and manages a staff of engineers and scientists in TRC's Environmental Practice.

REPRESENTATIVE EXPERIENCE
Spectra Energy Partners, Algonquin Gas Transmission, LLC, Algonquin Incremental Market and Atlantic Bridge Pipeline Facility Projects, Stormwater Pollution Prevention Plans – Rockland and Westchester Counties, New York
Mr. Meersma served as the Task Manager and Engineer of Record for the preparation of Stormwater Pollution Prevention Plans (SWPPPs) for the construction of below ground pipeline and above ground natural gas transmission facilities in Rockland, Westchester and Putnam Counties, New York. SWPPPs addressed erosion and sediment control practices to be employed during construction and through permanent stabilization, and included comprehensive post-construction stormwater management practices for a total of six permanent above ground facilities. The two projects include the removal of approximately 20 miles of existing 26-inch diameter pipeline and installation of 42-inch diameter pipeline. Total soil disturbance of the two projects is estimated at approximately

275 acres, much of it in hilly and rocky terrain. Specific supplementary measures were developed for approximately six miles of the project located within New York City's East of Hudson Watershed that provides drinking water to over 8 million New Yorkers. Project activities included:

- Developed detailed project construction phasing plans.
- Developed over twenty detailed, site-specific wetland and water body crossing Erosion and Sediment Control plans.
- Coordinated review and acceptance of the SWPPPs by the NYSDEC, Municipal Separate Storm Sewer Systems, the NYCDEP, County representatives, and the New York Attorney General's Office. Generated formal response to comment letters.
- Prepared stormwater and restoration-related documentation for a New York City Department of Environmental Protection Land Use Permit application.
- Obtain authorization for coverage under the NYSDEC's SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-0-15-002.
- Prepared and electronically filed Notices of Intent for the various elements comprising the Projects.
- Prepared SWPPP training materials and provided SWPPP training to Spectra and construction contractor personnel.
- Developed amendments to the SWPPPs based on changes to construction or erosion and sediment control practices.
- Reviewed and certified twice-weekly construction inspection reports. Provided technical support to the Environmental Lead.

Queens West Development Corporation, Stage 2 Remediation – Long Island City, NY
Mr. Meersma served as Project Manager and Engineer of Record for the $25 million fast-track remediation of operable units (OUs) 1 and 2 of the Queens West Development – Stage 2 Site, an approximately 12-acre portion of the former oil refinery and industrial site in Long Island City, Queens. The remediation of OUs 1 and 2 was performed under the Voluntary Cleanup Program. Remediation and environmental conditions included contaminated sediments, separate phase free product, buried former refinery systems, heavy metals contamination in soil, volatile organic contamination of soil and groundwater, and site-wide urban fill. Mr. Meersma also served as technical reviewer for the design of active sub-slab depressurization systems for two high-rise residential buildings at the site, and he has supervised implementation of the site management plans for OUs 1 and 2.

New York City Department of Parks & Recreation, Ferry Point Park Golf Course Development – Bronx, NY

Mr. Meersma provided over ten years of continuous, on-going technical and managerial services in connection with the solid waste permitting, remediation, site/civil and environmental engineering, and construction oversight at Ferry Point Park, a 220-acre former landfill being developed into a $100 million golf course and community and waterfront parks in the Bronx, New York. Mr. Meersma served as the Program Manager for multiple contracts with the New York City Department of Parks and Recreation valued at $12 million related to NYSDEC Part 360 Permit compliance and cover material fill import, engineering design, and construction management. Mr. Meersma oversaw the design and construction of an approximately two mile-long vent trench to isolate landfill gases from the neighboring community. He developed the Soil Management Program and other environmental aspects of the Engineering Plan, detailing the sampling, analytical laboratory testing and on-site management of two million cubic yards of imported fill material and cover layer material to re-grade and cover the landfill. Mr. Meersma also supervised the investigations and design of a site-wide landfill gas control system and sub-slab depressurization systems for several park-related buildings being constructed on the former landfill. Mr. Meersma also oversaw the geotechnical and site/civil aspects of the investigations and design, as well as the ongoing golf course construction.

Consolidated Edison, First Avenue Properties/Waterside Steam Station – Manhattan, NY

Mr. Meersma served as Professional Engineer of Record for the $103 million decommissioning, demolition and soil and groundwater remediation of the four individual properties in Midtown Manhattan, totaling nine acres, comprising the former Consolidated Edison Waterside Steam Station, which has been slated for residential and commercial redevelopment. Former site uses included a 100-year old steam generating station, a manufactured gas plant, a petroleum storage terminal, a fleet fueling depot and an office building. The project was performed under the Voluntary Cleanup Program (NYSDEC VCP Site Nos. V00429-V00432), with TRC as a Volunteer. As the Regulatory Compliance Officer, Mr. Meersma was responsible for the review and approval of detailed task-specific work plans for all elements of the work and regulatory and safety management of the program.

Engineering and Consulting Services for Abatement, Decommissioning, and Deconstruction: Charles Poletti Power Plant – Astoria, NY

Mr. Meersma serves as the Engineer of Record for the engineering design and the construction phase for the abatement, decommissioning and deconstruction of the Charles Poletti Power Plant. The Charles Poletti Power Plant was a steam-electric 825 megawatt facility capable of firing natural gas and fuel oil. NYPA purchased Poletti from Con Edison in 1974 while it was still under construction. NYPA ceased operations at Poletti in January 2010. In June 2010, TRC was contracted to provide engineering services during the abatement, decommissioning and deconstruction of the Charles Poletti Power Plant.

Mr. Meersma also provided engineering support for temporary winterization of the Poletti Plant, the relocation of electrical connections, and the procurement of a New Electric Fire Water Pump System. Mr. Meersma performed a physical inspection of the power plant and associated structures, and oversaw the development of contract documents in the form of drawings, specifications, and Engineer's cost estimate for the decommissioning and demolition of the power plant, and site restoration. During the construction phase of the project, Mr. Meersma reviewed contractor work plans and shop drawings, responded to Requests for Information, and performed periodic inspections of the work.

Engineering and Consulting Services for Abatement, Decommissioning, and Demolition: Glenwood Power Station, Glenwood Landing – NY and Far Rockaway Power Station - Far Rockaway, Queens, NY
Mr. Meersma serves as the Engineer of Record for the engineering design and the construction phase for abatement, decommissioning and demolition of two of National Grid's oldest, most inefficient plants in New York City and Long Island. The Far Rockaway and Glenwood power plants went into service between 1900 and the 1950s and ceased operation July 2012. Mr. Meersma performed a physical inspection of the power plant and associated structures, and oversaw the development of contract documents in the form of drawings, specifications, and Engineer's cost estimate for the decommissioning and demolition of the power plant, and site restoration. During the construction phase of the project, Mr. Meersma reviewed critical contractor work plans and shop drawings, responded to Requests for Information, and performed periodic inspections of the work.

NJ Transit, Comprehensive Environmental Services for the Design and Construction of the New Jersey Transit Hudson-Bergen Light Rail Transit System – Jersey City, Bayonne and Hoboken, NJ
Mr. Meersma served as the Project Manager for the environmental aspects of the design and construction of the New Jersey Transit (NJT) Hudson-Bergen Light Rail Transit System (H-BLRTS). In this capacity, Mr. Meersma was responsible for the day-to-day management of a large multi-disciplined professional staff and a multi-million-dollar budget. The 20-mile long project corridor is located in a highly urbanized area and involved construction of a large maintenance and storage facility, 13 passenger stations, and six bridges. Historic waste disposal activities had resulted in widespread soil and groundwater contamination of the project corridor. Under a Memorandum of Agreement, NJT was responsible for remediating the areas impacted by the construction of the H-BLRTS. During the Initial Operating Segment construction phase of the project, Mr. Meersma was responsible for the oversight of all hazardous materials remediation activities including: closure of approximately 25 underground storage tanks, remediation of soil and groundwater impacted by leaking underground storage tanks, decontamination and demolition of over 40 buildings and structures, management of contaminated groundwater, and management of over 500,000 cubic yards of hazardous and contaminated soil and debris.

Middlesex County Utility Authority, Construction Management and Permitting for Sanitary Sewerage System Improvements – Carteret, Woodbridge and Perth Amboy, NJ

Mr. Meersma performed construction permitting, bid administration, claims management, and engineering of design changes in support of the construction management of a $40M sewage collection system involving five separate federally-funded contracts for a New Jersey municipality. He held primarily responsibility for the preparation of over thirty environmental permits and over fifty construction change orders. Mr. Meersma coordinated weekly progress meetings with each of four contractors.

Engineering and Consulting Services for Abatement, Decommissioning, and Demolition: Former Municipal Incinerator – Glen Cove, NY

Mr. Meersma served as the Engineer of Record for the engineering design phase for the abatement, decommissioning and deconstruction of the former Incinerator Plant. The design was complicated by the presence of a wastewater treatment facility and a recycling facility immediately adjacent to the incinerator. These active facilities share common utility and roadway infrastructure. Mr. Meersma performed a physical inspection of the incinerator, and oversaw the development of contract documents in the form of drawings and specifications for the decommissioning and demolition of the incinerator and site restoration.

Hazardous Materials Consulting, New Jersey Department of Transportation, Various Sites

Project manager for a non-intrusive investigation to classify the anticipated risk of hazardous waste contamination along two proposed roadway rights of way. Activities included field reconnaissance, review of available governmental agency records, and generation of a comprehensive summary report complete with recommendations for further intrusive investigations as required to support project objectives. Served as Senior Technical Manager on two other transportation projects: one a hazardous waste screening, and the other involving health and safety oversight and waste management for a geotechnical investigation involving 12,000 linear feet of soil borings.

Various Projects, Consolidated Edison Company of New York, Inc., New York, New York

Mr. Meersma served as Program Manager for multiple environmental, health and safety services contracts with Consolidated Edison. The On-Call Subject Matter Expert contract involved providing senior-level technical specialists for a wide variety of assignments including Safety Inspection Program Assessment and Development, EH&S support at the 54th Street and 79th Street generating facilities, SEQR EAF Long Form completion for divestiture of the Mid-Hudson properties, property acquisition and divestiture support. Assignments on the Corporate Procedures Support contract included updating existing Corporate Environmental Procedures (CEP), development of DOT Hazardous Materials

Management CEPs, developing a reportable quantity matrix for common hazardous substances, developing training materials and assisting facilities and organizations in developing compliance documents and programs. Participated in high-level scoping and development meetings, develop assignment scopes of work and budgets, administer the contract financial aspects, identify and mobilize SMEs, provide senior-level review of project deliverables.

Starwood Capital Group, Environmental Services for Redevelopment of the Former United Hospital Site, Port Chester, NY
Mr. Meersma serves as the Environmental Task Manager for this multi-task project. The site consists of a century-old former hospital comprised of 17 different buildings and an occupied apartment building. Responsible for performing a Phase I Environmental Site Assessment and a limited Hazardous Building Materials Assessment. On the basis of the findings associated with these activities and the planned redevelopment, prepared an Environmental Impact Statement in accordance with SEQRA regulations with respect to hazardous materials. Presented existing conditions, potential impacts, and mitigation measures. Recommended mitigation measures include closure of abandoned and active underground and aboveground storage tanks and associated soil and groundwater remediation and abatement of hazardous materials prior to building demolition.

Trap Rock Industries, WSCT-Falls Landfill Closure Design — Colts Neck, NJ
Performed engineering evaluation of key landfill closure issues which included height restriction, disruption hazards, receptor protection, cut and fill volumes, access and maintenance, permitting requirements, control of landfill gas emissions, sudden and long-term subsidence, landfill leachate, and stormwater runoff and infiltration.

National Standard, Athenia Steel Division, Building Demolition and Landfill Closure – Clifton, NJ
Prepared cost estimates, disruption and closure permit application, and assisted in the design of a landfill closure for an unclassified seven-acre landfill at a former steel processing plant in northern New Jersey. This ECRA project included preparation of construction plans, specifications, cost estimates, and regulatory report plans and figures of the decommissioning of the facility, including, asbestos-containing materials, landfill regrading and closure, building foundation and underground pipeline removal. Mr. Meersma also provided ECRA consulting assistance to a small manufacturing facility. Developed De Minimus quantity exemption, General Information Submission, and Site Evaluation Submission applications to the NJDEP. Provided general technical support throughout the ECRA approval process.

PCB Release Emergency Response Services for the Power Generating Station and Transformer Storage Area, Arthur Kill, Staten Island NY

A fire destroyed a transformer causing it to release 2,200 gallons of PCB-contaminated dielectric fluid onto the adjacent property and wetland area. Mr. Meersma served as the Assistant Project Manager and was called upon to coordinate and oversee the large-scale remediation effort that included:

- Extensive soil and asphalt remediation,
- Decontamination of interior and exterior buildings, gathering and laboratory analysis of over 700 samples,
- Overseeing the dismantling of the transformer to ascertain the cause of the fire,
- Overseeing and coordinating the remediation of the impacted cooling system tunnel and discharge flume, and
- Overseeing the remediation of the sediments in Arthur Kill using vacuum methods to remove contaminated sediments.

The level of effort was challenging in that it involved 24 hour, 7 days a week staffing for weeks at a time. Coordinated and planned TRC resources from multiple offices and project phases.

Confidential Utility Company, Due Diligence Support for Acquisition of Twenty Power Generating Facilities – NY, PA, and NJ
Lead engineer responsible for the fast-track evaluation of existing environmental data pertaining to over twenty power generating facilities being considered for acquisition. Mr. Meersma prepared a confidential report of findings presenting a summary of the identified and potential environmental concerns and estimated costs for corrective actions.

Public Service Electric and Gas, Linden Generating Station Wastewater Treatment Study – Linden, NJ
Performed a sludge production and disposal cost minimization for a major New Jersey utility company. He evaluated the current sludge production rates and associated disposal costs, and the potential savings of more effective dewatering technologies. Recommendation to the client resulted in a low cost modification to the existing treatment train, which greatly reduced total sludge disposal cost.

Preparation of Stormwater Pollution Prevention Plans for Construction Operations, Various New York State Locations
Professional Engineer responsible for the preparation and certification for the SWPPP associated with construction projects including natural gas pipelines, landfill distruptions, soil remediation projects in accordance with New York State Department of Environmental Conservation requirements and standards and the General Permit associated with Construction Projects. Was also responsible for the certification of regular inspections in accordance with the General Permit.

Preparation of Spill Control and Countermeasures Plans, Multiple Locations, NY and CT
Professional Engineer responsible for the preparation and certification for SPCC Plans in accordance with USEPA regulations for office buildings, airports, a waste water treatment plant, and a wood recycling facility. The Plans addressed the presence and management of petroleum products associated with standby generators and fuel oil above ground storage tanks. Also evaluated related compliance issues with respect to state regulations and local codes and made recommendations for necessary corrective actions.

Spill Plan Preparation, Army Corps of Engineers, Philadelphia District, Defense Preparedness Support Center Facility, Philadelphia, PA
Project Manager and Professional Engineer of record for the preparation of a Spill Plan for a large and diverse military support facility located in a major urban center. Reviewed available information provided by the facility. Planned site inspections and personal interviews, reviewed the results of the site investigations, and evaluated the regulatory requirements for the Plan. Identified deficient on-site activities and recommended possible compliance scenarios. Coordinated and critically reviewed the preparation of draft and final versions of the Plan.

Railroad Right of Way Investigation and Remedial Design, Southeastern Pennsylvania Transportation Authority (SEPTA), Media to West Chester, Pennsylvania
Developed and administered a sampling and final remediation plan for PCB-contaminated soil and ballast associated with railroad right-of-way track and signal improvements. Remediation phase services included health and safety plan evaluation, field inspection, disposal facility evaluation, and disposal documentation review and tracking.

L'Oréal USA, Inc., Environmental Consulting Master Services Agreement – Various Locations, North America and Caribbean
Mr. Meersma served as Project Manager for this task order contract involving due diligence, compliance auditing, spill response, permitting, air and wastewater treatment design, investigation and remediation at various locations at the request of L'Oréal. In one case, Mr. Meersma responded on an emergency basis to a chemical release to a nearby waterway and supervised the initial and long-term response to the incident. For his work on this project, Mr. Meersma received a letter of accommodation from the client. Project sites typically consist of operating cosmetics facilities and distribution warehouses operated by L'Oreal or potential acquisition targets. Participated in project scoping meetings, develop detailed assignment scopes of work and budgets, administered the contract financial aspects, identified and mobilized multi-office and multi-discipline project staffing, and provide senior-level review of all project deliverables.

Long Island Railroad, Asbestos and Remediation General Engineering Consulting Contract

Project Manager for this multi-year, task order contract. Responsible for the remediation of petroleum contamination at the Morris Park Yard, Richmond Hill, Queens. Primary remediation components include a multi-million dollar bioventing/soil vapor extraction and passive free product recovery system. Assignment involved supplemental field investigations and pilot studies, system design, preparation of construction plans and specifications, construction management and operations support over a six-year period. Mr. Meersma also managed the on-going, site-wide groundwater monitoring program and the remedial investigation of CFC and chlorinated solvents in groundwater.

Metro-North Railroad, Spill Response Consulting Services, Hudson Line Beacon to Poughkeepsie, New York

Project Manager for emergency spill response consulting services on the Metro-North Railroad (MNR). Loram's track maintenance equipment, KM108, released approximately 200 gallons of hydraulic oil while traveling along MNR's Hudson line between the Beacon and Poughkeepsie passenger stations in Dutchess County, New York. This release caused the visual staining of the railroad ballast and ties over a width of one to two feet, a depth of several inches, and a distance of approximately eleven miles. The spill was reported to the New York State Department of Environmental Conservation (NYSDEC) and issued a spill case number. Coordinated oversight and documentation of the physical removal of the impacted ballast, coordinating the scope of required clean-up with MNR's environmental representatives and NYSDEC, and preparation of a spill closure report. Provided oversight during the clean-up work, which was conducted with Loram on-track equipment during late-night and early morning hours due to MNR operational considerations. Removal and disposal of the impacted ballast was documented and presented in a spill closure report to the NYSDEC. On the basis of the response actions and the spill closure report, NYSDEC closed the spill case.

New York City Economic Development Corporation (NYCEDC)

Technical Director for removal and disposal of over 50 drums and miscellaneous containers filled with various, unidentified wastes at sites in Brooklyn and the Bronx. Developed and implemented a drum characterization plan for the drums, prepared a drum sampling report, developed the drum removal plans and specifications, provided oversight and management of the drum removal and disposal activities. Engineer of record for the remediation of soil and groundwater contamination of a former rail yard in Staten Island, New York being developed into a waterfront park and minor league baseball stadium.

NYC School Construction Authority (NYCSCA), Industrial & Environmental Hygiene Services in Connection with Hazardous Materials, Various Locations Citywide

Assisted in the design and implementation of a multi-year, multi-million dollar pilot study to evaluate the extent and distribution of PCBs as well as appropriate remedial methods in five NYC Public Schools. Pilot studies focused on primary sources of PCBs including caulk, light ballasts, and contaminated soil. Interacted with USEPA on the implementation of the program. Primary author for the Pilot Study Remedial Investigation Work Plan, Interim Remedial Investigation Report, and Feasibility Study. Co-author for the Final Remedial Investigation Report and Summary Report recommending the proposed Citywide Remedy. Developed presentation materials and participated in numerous meetings to inform the public and other interested stakeholders of the scope and results of the study.

BQ Energy LLC, Patterson Landfill Solar Project - Patterson, NY
Mr. Meersma serves as the Engineer-of-Record for the site/civil design plans and Stormwater Pollution Prevention Plan associated with the construction of a 2.3 megawatt (MW) direct current (DC) solar array being constructed on the face of a closed sanitary waste landfill located in the New York City watershed. Met with NYCDEP and NYSDEC to discuss and negotiate the project requirements. Prepared detailed work plans and reports to obtain required regulatory approvals for the construction activities and changed end use of the landfill. Developed Stormwater Pollution Prevention Plan in accordance with NYSDEC and NYCDEP requirements. Overseeing related issues through the construction phase of the project. Preparing a certification report to document the completion of construction in accordance with the NYSDEC approval conditions.

Littlefield Township, Municipal Landfill Closure Design and Construction Management, Landfill – Littlefield, MI
Prepared plans, specifications and an engineer's cost estimate for closure of a twenty-two acre landfill site. Mr. Meersma subsequently provided construction surveying, field engineering, quality control, and contract administration services during the closure. Construction activities included site grading and compaction, installation of two lifts of compacted clay and placement of the vegetative layer. Quality control responsibilities included grade checks and field measurement of lift thickness, moisture content and percent compaction.

Oliver Brothers, Sanitary Landfill Design – Central MI
Designed and prepared plans and specifications for the construction of three separate sanitary landfills. The designs incorporated composite cover and liner systems, leachate collection systems, methane gas control systems, and storm water control systems. Presented details of the designs to state regulatory agencies and negotiated final design requirements. Work included the preparation of an Environmental Impact Statement, an Engineering Report, and an Operations and Maintenance Plan for one of the facilities.

Edison Township, Landfill Gas Control and Recovery Consulting – Edison, NJ

Mr. Meersma was responsible for the development and implementation of a gas collection and treatment system preliminary design investigation at a municipal solid waste landfill. He prepared a report of findings presenting the necessary design basis information including total anticipated gas volume, gas composition, and gas production rate. Recommended appropriate full-scale landfill gas treatment/disposal technologies for further detailed technical and cost evaluation.

Mid-Atlantic Utilities Corporation, Geotechnical Consulting – Mt. Arlington, NJ

Assisted in a subsurface investigation and prepared a report presenting recommended subsurface control measures to allow for the construction of a proposed treatment works. Of primary interest were the implications of high groundwater and an abutting steep grade on excavation and shoring methods. Work included well and piezometer installation, aquifer pumping studies, laboratory geotechnical testing and slope stability analysis. Performed an analysis of soil boring data to estimate available on-site soil material quantities associated with the construction of a 100,000 square foot disposal bed system. Evaluated and interpreted the approved NJDEP-DGW construction permit and prepared the geotechnical portions of the construction specifications. Mr. Meersma assisted in the inspection of geotechnical portions of the construction of the disposal bed system.

United States Army Corps of Engineers, Water Distribution System Correction and Improvement Study Project Definition Report – Fort Hamilton, Brooklyn, NY

Mr. Meersma served as Project Manager for performance and preparation of a Water Distribution System Correction and Improvement Study Project Definition Report for the U.S. Army Garrison, Fort Hamilton facility in Brooklyn, New York. The report described the investigation phase which involved review of historical drawings and records; interviews with Fort Hamilton personnel familiar with the system; a survey the system's physical condition; collection of water samples for water quality analysis; performance of fire-flow tests; and application of computer modeling to simulate the system performance under various conditions. The report also included an evaluation of the system for compliance with applicable federal, state, army and local rules and regulations for historical and current water quality; fire fighting capabilities; and physical condition. Recommendations and cost estimates for system improvements and modifications were also included.

Jersey Central Power and Light, Water Resources Environmental Audit –

Ocean County, NJ
Project Manager for a wastewater discharge investigation to characterize the nature of historic and present discharges to the environment form two electric utility regional maintenance facilities located in New Jersey. Reviewed the applicable regulations to determine requirements, if any, to bring the discharges into regulatory compliance. Mr. Meersma reviewed historical data such as correspondence, site plans, and reports to identify potential discharges. He supervised a site inspection to verify known discharges emanating from the sites. Prepared summary reports to the client with recommendations for required compliance activities including subsurface sampling and permitting.

AIG Environmental Management, Inc., Technical and Cost Evaluation Services – Philadelphia, PA
Mr. Meersma served as Technical Director for two technical and cost evaluations of portfolios under consideration for Cleanup Cost Cap and Pollution Liability Insurance coverage. As part of the evaluation, he completed initial liability reviews of a company's portfolio of sites and their associated cleanup costs. The liability reviews summarized the site name, the facility type and site usage, the site characterization, the remedy design, the regulatory status, the cost evaluation, uncertainties, and recommendations. The evaluation summarized proposed total cleanup costs for each site, as provided by the potential insured, as well as initial estimates of potential cost add-ons and reasonable maximum costs.

International Paper Co., Site Investigation and Remediation – Alden, PA
Project Manager for the investigation and remediation of groundwater and soil contamination associated with the improper closure of two, 15,000-gallon fuel oil USTs and disposal of hazardous wastes at this former industrial facility. He designed a health-based risk assessment strategy to develop proposed site specific priority pollutant metals soil cleanup standards. These higher site-specific standards were presented to the state regulatory agency and ultimate accepted, thereby avoiding additional soil remediation. Litigation support services to the client included technical evaluation of engineering reports, preparation of a comprehensive site and project history, and a sworn deposition.

Pfizer, UST System and Transfer Facility Design and Construction Management – Parsippany, NJ
Prepared construction drawings and specifications for a flammable liquid underground storage tank and contained transfer facility for a major pharmaceutical facility. The double-walled UST system incorporated state-of-the-art inventory controls, leak detection, overfill protection, and corrosion prevention systems. Dedicated piping systems allowed the liquids to be routed to the USTs, process tanks, or a spill collection tank.

SPECIALIZED TRAINING

- 10-Hour OSHA Construction Safety Training
- 40-Hour OSHA Hazardous Waste and Emergency Response Training
- 8-Hour OSHA Hazardous Waste and Emergency Response Training
- Supervisory OSHA Hazardous Waste and Emergency Response Training
- 120-Hour Project Manager/ Mentoring Training
- Total Quality Management Basic and Leadership Training
- New York State Regulations Seminar
- New York City Building Code Seminar
- NEPA Compliance Course
- Storm Water Management Seminars

Appendix G
Cost Estimate

Former Cibro Petroleum Terminal Site
ENVIRONMENTAL CLEAN-UP COST ESTIMATE

ITEM DESCRIPTION	TOTAL COST
BOOM\MAINTENANCE	$ 3,000.00
ASBESTOS ABATEMENT	$ 5,000.00
3000-GAL TANK REMOVAL	$ 15,000.00
BULKHEAD RECONSTRUCTION	$ 2,000,000.00
SOIL EXCAVATION AND DISPOSAL	$ 3,007,875.00
DEMOLITION AND REUSE	$ 750,000.00
GROUNDWATER MANAGEMENT	$ 3,000.00
FILL FOR EXCAVATIONS	$ 150,000.00
FILL TO RAISE GRADE	$ 714,000.00
CLEAN FILL COVER	$ 1,800,000.00
INSITU WATER TREATMENT(ORC) - CONTINGENCY	$ 60,000.00
SAMPLING AND LABORATORY ANALYSIS	$ 150,000.00
MONITORING WELLS (SHALLOW)	$ 6,000.00
CONSULTING ENGINEERING	$ 125,000.00
FER/SMP/EA	$ 50,000.00

TOTAL ESTIMATED ENVIRONMENTAL CLEAN-UP COSTS $ 8,890,000.00

Appendix H

NYSDEC Approval Letter

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau A, 12th Floor
625 Broadway, Albany, New York 12233-7015
Phone: (518) 402-9620 • **Fax:** (518) 402-9022
Website: www.dec.ny.gov

Joe Martens
Commissioner

May 27, 2014

Mr. Michael Posillico
Posillico Development Company at Harbor Island
1750 New Highway
Farmingdale, NY 11735

Re: Former Cibro Terminal
Site ID No. C130153
Washington Avenue, Island Park
Remedial Work Plan & Decision Document

Dear Mr. Posillico:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health (NYSDOH) have reviewed the Revised Remedial Work Plan (RWP) for the Former Cibro Terminal site dated October 2013 and prepared by TRC Engineers, Inc. on behalf of the Posillico Development Company at Harbor Island. The RWP is hereby approved. Please ensure that a copy of the approved RWP is placed in the document repository(ies). The draft plan should be removed.

Attached is a copy of the Department's Decision Document for the site. The remedy is to be implemented in accordance with this Decision Document. Please ensure that a copy of the Decision Document is placed in the document repository(ies).

Please contact the Department's Project Manager, Nick Acampora at (631) 444-0322 or njacampo@gw.dec.state.ny.us at your earliest convenience to discuss next steps. Please recall the Department requires seven days notice prior to the start of field work.

Sincerely,

James B. Harrington, PE
Director
Remedial Bureau A
Division of Environmental Remediation

Enclosure

DECISION DOCUMENT

Former Cibro Petroleum Terminal Site
Brownfield Cleanup Program
Island Park, Nassau County
Site No. C130153
May 2014

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - DECISION DOCUMENT

Former Cibro Petroleum Terminal Site
Brownfield Cleanup Program
Island Park, Nassau County
Site No. C130153
May 2014

Statement of Purpose and Basis

This document presents the remedy for the Former Cibro Petroleum Terminal Site site, a brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Former Cibro Petroleum Terminal Site site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

The alternatives developed for the site and evaluation of the remedial criteria are presented in the alternative analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375. The remedy proposed is a Track 4: Restricted use with site-specific soil cleanup objectives remedy and is referred to as the Ex-Situ Soil Washing & Treatment and/or Excavation/Off-Site Disposal remedy.

The elements of the proposed remedy including the removal of impacted soil based on visual, olfactory and/or field instrumentation will be completed in two phases as depicted in Figure 2. The first phase will be to remove the impacted soil within the "Soil Wash Plant Excavation Area" (depicted in blue) with the soil properly staged on a liner on site Upon completion of the Soil Wash Plant, the previously stockpiled soil and soil from "Bulkhead Excavation Area" (depicted in red) will then undergo treatment. Once complete, the second phase will be the removal and treatment of impacted soil from the remainder of the site (depicted in yellow). All excavated soils will be processed/treated through the Soil Wash Plant.

Remedy will consist of several components to allow Track 4 Restricted Residential use including:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. This will include a community air monitoring and odor control program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation and Treatment or Off-site Disposal:

Grossly contaminated soils will be excavated based on visual, olfactory and/or field instrumentation (until readings of 250 ppm or below are attained). Excavated soil will be treated on-site by an Ex-situ Soil Washing System. Soil that does not meet restricted residential Soil Clean-up Objectives (SCOs) will be disposed of off-site. The estimated volume of soil to be excavated is 50,000 cubic yards. The soil washing process consists of mechanical and hydraulic grain size separation, removing the petroleum from the soil granules using surfactants and mechanical abrasion, and hydraulic sorting of the untreatable fraction of soil for subsequent disposal at a licensed facility.

Existing stockpiles of recycled concrete aggregate and soil will be sorted prior to sampling and screening against restricted residential use SCOs. If contaminants in the soil are detected above the SSCOs or if it is found to be grossly contaminated, the soil will be treated as described below. Soil that meets the SCOs and is not grossly contaminated will be reused as backfill during site restoration. Concrete tank contents, foundation slabs and underground storage tank (presumed to be present on the site) will be removed.

3. Bulkhead Replacement. The existing bulkhead will be removed and a new bulkhead will be constructed.

After bulkhead replacement, soil will be excavated and the excavated material will be treated through the on-site soil washing system for placement as reusable backfill if the timeframe to reduce the contamination to the SCOs does not impede the construction schedule. Otherwise the excavated material will be transported and properly disposed of off-site. Groundwater extracted during excavation (i.e., for dewatering) will be treated prior to discharge in accordance with applicable surface water discharge requirements.

4. Cover System

A site cover will be required to allow for restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs or exhibits gross contamination). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

5. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);
- allows the use and development of the controlled property for restricted residential (which allows restricted-residential use, commercial use or industrial use) as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH and;
- requires compliance with the Department approved Site Management Plan.

6. A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
Institutional Controls: The Environmental Easement is discussed above.
Engineering Controls: The site cover and bulk head replacement is discussed above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater and/or surface water use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed or reoccupied on the site, including provision for implementing actions

recommended to address exposures related to soil vapor intrusion

- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to

- monitoring of groundwater to assess and confirm the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings developed or reoccupied on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

<u>Declaration</u>

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

May 27, 2014	
Date	James B. Harrington, PE Director, Remedial Bureau A

DECISION DOCUMENT

Former Cibro Petroleum Terminal Site
Island Park, Nassau County
Site No. C130153
May 2014

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

Island Park Public Library
Attn: Island Park Public Library
176 Long Beach Road
Island Park, NY 11558
Phone: 516-432-0122

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Former Cibro Petroleum Terminal Site is comprised of approximately 11.6 acres located in an urban portion of Island Park, Nassau County, Long Island.

Site Features: The main site features include foundations of the former above ground tanks and truck racks; one masonry structure at the southeast corner of the parcel previously used as an equipment and boiler room; bulkheads; an asphalt roadway (Washington Avenue extension) and temporary office trailers at the north end of the parcel. It is fenced to prevent unauthorized entry.

Current Zoning and Land Use: The site is essentially vacant land zoned Residential C-A. The site is bounded on three sides by Wreck Lead Channel and a canal identified on some maps as The Basin, and on the north by dense residential development. The surrounding area consists of a combination of residential; light industrial and commercial/retail establishments. Since 2003, the site has been utilized for the storage of clean soil, crushed rock and concrete.

Past Use of the Site: The site was used as a petroleum storage facility from the 1940's thru 1988 when the facility was closed and all related infrastructure(tanks, truck racks etc.) was removed over the subsequent 2 years. Between 1990 and 2003 the site remained vacant. Past use of the site has resulted in petroleum contamination to the soil and groundwater primarily at the eastern and southern portions of the site.

Site Geology and Hydrology: Site-specific hydrogeologic conditions consist of a tidally-influenced, unconfined aquifer within the shallow fill and glacial fluvial deposits underlying the property. Prior investigations encountered a peat layer approximately nine feet below grade. Depth to the water table varies as a result of tidal effects, but is approximately four to six feet below grade. Groundwater flows from the northwest comer of the property towards the east-southeast, and diffuses into the adjacent saltwater bodies.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

The Applicant(s) under the Brownfield Cleanup Agreement is a/are Volunteer(s). The Applicant(s) does/do not have an obligation to address off-site contamination. However, the Department has determined that this site does not pose a significant threat to public health or the environment; accordingly, no enforcement actions are necessary.

The Applicant under the Brownfield Cleanup Agreement is a Volunteer. While the BCA requires the Volunteer to investigate the extent of off-site impacts, if remedial actions are warranted, they would be completed by the Department. As a result, the Remedial Action Work Plan includes the collection of sediment samples from the sea floor of the surface water body known as The Basin; where leaching of petroleum was previously identified. The Department will then determine if further investigatory and/or remedial actions will be necessary.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- surface water
- soil

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

Petroleum Products

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

The primary contaminants of concern at the site known at this time include constituents normally associated with petroleum and a small area of low level PCB contamination.

Previous investigations indicate that petroleum hydrocarbons have impacted the soil throughout the site. However, the majority of the soil contamination is located on the eastern half of the parcel from the northern property line extending to the southern boundary where the Washington Avenue extension bisects the property. Although Constituents of Concern (COCs) generally meet the Soil Clean-up Objectives (SCOs), significant concentrations of Tentatively Identified Compounds (TICs)for both Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs) are present. Both visual(staining)and olfactory evidence of petroleum contamination is present at the site, particularly in the eastern half.

The low level PCB contamination (generally less than 1 ppm)is located at the south western section of the property within the tidal wetland boundary. Marine Habitat Protection staff has indicated that any disturbance in this area would not be beneficial to the environment and have recommended that the area remain undisturbed.

Previous groundwater sampling indicated the presence of COCs consistent with petroleum contamination throughout the site. However, recent groundwater sampling (August 2011) indicated a decrease in these constituents to levels slightly above groundwater standards, likely due to natural attenuation. Again, the most significant amount of ground water contamination was located at the eastern half of the site.

The surface water of Wreck Lead Channel and The Basin had been previously impacted by petroleum leaching thru the bulkhead, although recent inspections have not indicated any leaching at this time.

As indicated earlier, while there may not be any current exceedances of SCOs at this time, high concentrations of VOC and SVOC TICs and physical evidence (visual and olfactory) of petroleum contamination exists throughout the site, but primarily along the eastern half of the site.

The site historically presented an environmental threat due to the ongoing releases from the source area soils to ground and surface waters. However, recent site inspections conducted by this office and monthly inspections by the Volunteer have not shown any ongoing leaching based on visual observations. Although soil data does indicate the presence of heavy petroleum contamination including TICs, groundwater data only indicates the presence of COCs (VOCs and SVOCs)either slightly above, at or below their respective groundwater standards.

6.4: <u>Summary of Human Exposure Pathways</u>

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

People are not drinking the contaminated groundwater because the area is served by a public water supply that obtains its water from a different source. The site is fenced and people are not expected to come into contact with contaminated groundwater or subsurface soils unless they dig below the ground surface. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because there is no occupied building on-site, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a concern for the site in its current condition. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development. In addition, sampling indicates soil vapor intrusion is not a concern for off-site buildings.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Surface Water

RAOs for Public Health Protection

- Prevent surface water contamination which may result in fish advisories.

RAOs for Environmental Protection

- Prevent impacts to biota from ingestion/direct contact with surface water causing toxicity and impacts from bioaccumulation through the marine or aquatic food chain.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 4: Restricted use with site-specific soil cleanup objectives remedy.

The selected remedy is referred to as the Ex-Situ Soil Washing & Treatment and/or Excavation/Off-Site Disposal remedy.

The elements of the selected remedy, as shown in Figure 2, are as follows:

The alternatives developed for the site and evaluation of the remedial criteria are presented in the alternative analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375. The remedy proposed is a Track 4: Restricted use with site-specific soil cleanup objectives remedy and is referred to as the Ex-Situ Soil Washing & Treatment and/or Excavation/Off-Site Disposal remedy.

The elements of the proposed remedy including the removal of impacted soil based on visual, olfactory and/or field instrumentation will be completed in two phases as depicted in Figure 2. The first phase will be to remove the impacted soil within the "Soil Wash Plant Excavation Area" (depicted in blue) with the soil properly staged on a liner on site Upon completion of the Soil Wash Plant, the previously stockpiled soil and soil from "Bulkhead Excavation Area" (depicted in red) will then undergo treatment. Once complete, the second phase will be the removal and treatment of impacted soil from the remainder of the site (depicted in yellow). All excavated soils will be processed/treated through the Soil Wash Plant.

Remedy will consist of several components to allow Track 4 Restricted Residential use including:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. This will include a community air monitoring and odor control program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- ostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation and Treatment or Off-site Disposal:

Grossly contaminated soils will be excavated based on visual, olfactory and/or field instrumentation (until readings of 250 ppm or below are attained). Excavated soil will be treated on-site by an Ex-situ Soil Washing System. Soil that does not meet restricted residential Soil Clean-up Objectives (SCOs) will be disposed of off-site.

The estimated volume of soil to be excavated is 50,000 cubic yards. The soil washing process consists of mechanical and hydraulic grain size separation, removing the petroleum from the soil granules using surfactants and mechanical abrasion, and hydraulic sorting of the untreatable fraction of soil for subsequent disposal at a licensed facility.

Existing stockpiles of recycled concrete aggregate and soil will be sorted prior to sampling and screening against restricted residential use SCOs. If contaminants in the soil are detected above the SSCOs or if it is found to be grossly contaminated, the soil will be treated as described below. Soil that meets the SCOs and is not grossly contaminated will be reused as backfill during site restoration. Concrete tank contents, foundation slabs and underground storage tank (presumed to be present on the site) will be removed.

3. Bulkhead Replacement. The existing bulkhead will be removed and a new bulkhead will be constructed.

After bulkhead replacement, soil will be excavated and the excavated material will be treated through the on-site soil washing system for placement as reusable backfill if the timeframe to reduce the contamination to the SCOs does not impede the construction schedule. Otherwise the excavated material will be transported and properly disposed of off-site. Groundwater extracted during excavation (i.e., for dewatering) will be treated prior to discharge in accordance with applicable surface water discharge requirements.

4. Cover System

A site cover will be required to allow for restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs or exhibits gross contamination). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

5. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for restricted residential (which allows restricted-residential use, commercial use or industrial use) as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH and;
- requires compliance with the Department approved Site Management Plan.

6. A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
Institutional Controls: The Environmental Easement is discussed above.

Engineering Controls: The site cover and bulk head replacement is discussed above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater and/or surface water use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed or reoccupied on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or

engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to

- monitoring of groundwater to assess and confirm the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings developed or reoccupied on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

FIGURE 1 - Site Location Map

[ii] As defined by ECL §27-1405 and DER-10

[iii] Final extents of excavations for removal of Gross Contamination will be based on field observations and the definitions found in the applicable statutes and regulations.

[iv] Testing of imported fill will be conducted in accordance with Section 5.6.9.

[v] Placement of the Cover Layer will be the final requirement for issuance of Certificates of Completion.