West 34th Street Development
555 West 34th Street
New York, New York
Block 706, Lot 1

BCP Site #C231049

REMEDIAL INVESTIGATION REPORT

VOLUME I

Prepared For:
Meushar 34th Street, LLC
c/o The Moinian Group
530 5th Ave, Suite 1800
New York, NY 10036
FLS Project Number: 10090-001

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, N.Y. 12233-7016

June 2007

Arnold F. Fleming, P.E. &

Fleming Lee Shue

Environmental Management & Consulting
158 West 29th Street, 9th Floor
New York, New York 10001
http://www.flemingleeshue.com

Professional Engineer's Certification

I, Arnold F. Fleming, certify that this report was prepared under my direct supervision.

REMEDIAL INVESTIGATION REPORT
(RIR)
West 34th Street Development
New York, NY

Brownfield Site
C231049

June 2007

It is a violation of New York State Law for any person, unless acting under the direction of a licensed professional engineer or land surveyor, to alter any item in any way. If an item bearing the seal of an engineer or land surveyor is altered, the altering engineer or land surveyor shall affix to the item his seal and notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

_____
Date

_____
Arnold F. Fleming, P.E.
NYS Professional Engineer
License Number 050411

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1.0 INTRODUCTION

Pursuant to the Brownfield Cleanup Agreement fully executed as of February 21, 2007 between Meushar 34th Street, LLC and the New York State Department of Environmental Conservation (NYSDEC), and on behalf of Meushar 34th Street, LLC, Arnold F. Fleming, P.E./Fleming-Lee Shue, Inc. (collectively FLS) has prepared a remedial investigation report (RIR) for the parcel of land known as the "West 34th Street Development" (hereafter referred to as "the Site"). The legal description of the Site is Block 706, Lot 1 (555 West 34th Street). The Site is located on the western portion of the city block bounded by West 34th Street to the south, 11th Avenue to the west and West 35th Street to the north, in the borough of Manhattan, City of New York, New York. A Site Location Map and a Site Plan are included as Figures 1 and 2, respectively.

This RIR summarizes the results of remedial investigations conducted by EnviroTrac, Ltd. (EnviroTrac) and Parsons Brinckerhoff (PB). The investigations were performed as part of due diligence testing by the former Site owner and as part of the investigations for the #7 Subway extension.

Lot 1 consists of a two story building which was wholly operated by Verizon as part of their installation and maintenance division. The Amtrak Empire Line is present beneath the northwest corner of the Site within an easement. (See Figure 2.) The western wall of the basement reflects the presence of the track.

The owner of the Site intends to demolish the existing Site structures in order to both create access for the construction of the 34th Street station of the No. 7 subway extension and construct a high-rise mixed-use building on the parcel of land. The No. 7 station will be located within the bedrock zone under 11th Avenue with access through the building on the Site. The proposed building will occupy the entire Site, as well as the adjacent Lot 55, with a footprint of approximately 46,900-square feet. Major potential uses include office, residential, hotel, retail and parking. Additional information regarding the proposed development is included in Section 1.3.

The Site appears on the City of New York Department of City Planning Zoning Map 8b. According to this map, the property is designated C6-3, which is designated as a general central commercial district. The New York City Department of Environmental Protection (NYCDEP) has placed an "e" designation on this Site. Development of an "e" designation site requires NYCDEP approval prior to issuance of a building permit by the New York City Department of Buildings (NYCDOB).

The parcel of land was previously zoned for general commercial use and was rezoned as part of a larger, City-led, rezoning project for the Hudson Yards District in Manhattan, New York. The Site is located within the Large-Scale Plan Sub-district in the Four Corners Sub-area. The rezoning was designed to allow the area to be developed for

commercial and residential uses. The Hudson Yards District Rezoning was completed in January 2005.

1.1 Summary of Historical Documentation and Reports

FLS reviewed available documentation regarding historical environmental and geotechnical investigations at the Site. The following reports regarding 555 West 34th Street were available for review:

- Phase I Environmental Site Assessment, prepared by Parsons Brinckerhoff, dated June 8, 2004.
- Phase I Environmental Site Assessment, prepared by EnviroTrac, Ltd., dated June 28, 2004.
- Subsurface Investigation Report, prepared by EnviroTrac, Ltd., dated September 9, 2005.
- Underground Storage Tank Removal Report, prepared by EnviroTrac, Ltd., dated March 9, 2006.
- Phase II Environmental Site Investigation Report, prepared by Parsons Brinckerhoff, dated April 2006.

1.2 Objectives

The remedial investigations conducted by EnviroTrac and PB were designed to investigate the soil and groundwater under the Site and to characterize the surface and subsurface soils and groundwater in areas where current and historic operations may have impacted the Site. The EnviroTrac investigation was performed as part of preparations to sell the property and close an open petroleum spill on the Site. The PB studies were prepared as part of the engineering for the extension of the No. 7 Subway, including a station access on this Site.

1.3 Proposed Development

The No. 7 line tunnel will be located within the bedrock zone outside the site boundaries. The subway tunnel waiting area will be constructed under 11th Avenue starting approximately 90 feet below grade (ft-bg), which is approximately 60 feet into bedrock. Access for construction will be provided through a 38 feet by 24 feet shaft located within the Site's boundaries. The shaft will extend to a depth of approximately 120 feet below grade (approximately 90 feet into rock), proceeding west to the location of the subway

tunnel and the 34th Street Station. This shaft will be used to remove rock from the tunnel and waiting area beyond the Site, as well as to bring in construction materials to construct the tunnel and station. The subway station, which will contain the main entrance and ticketing level, will be present on-Site to a depth of approximately 40 feet below grade with a portion approximately 50 feet below grade to allow for escalator operation. This is approximately 10 to 20 feet into bedrock. Proposed development plans for the No. 7 station are included in Appendix B.

Due to the construction of the No. 7 line station, the proposed building will be constructed approximately seven years after the Site excavation is completed. Details of the proposed building are based on the results of two zoning studies of the Site. The proposed 79-story building will occupy the entire Site, as well as the adjacent Lot 55, with a footprint of approximately 46,900-square feet. One to two below-grade floors will be constructed for parking, storage or mechanical rooms. The first floor will likely include lobbies, retail, loading docks and entrances to the No. 7 line ticketing level. Parking entry or mechanical use may also be present on the first floor. The upper floors are contemplated to be used for a combination of office, residential, hotel, retail, parking and support spaces. The bulkhead wall separating the basement from the Amtrak line will remain. Proposed development plans for the mixed-use building will be provided under separate cover.

2.0 SITE BACKGROUND

The Site is located very close to the original shoreline of the Hudson River, which was just across what is now 11th Avenue. The Hudson River has since been filled in to the current shore west of the West Side Highway. The Site has been developed with a variety of commercial, residential, and manufacturing facilities since approximately 1890.

2.1 Geology

The Site is mapped on the *40074-G1 Weehawken, NJ-NY* Quadrant 7.5 Minute Topographic Map, published by the United States Geological Survey (USGS) (Figure 1). Review of the topographic map revealed that the Site is located approximately 20 feet above sea level (USGS).

The following geologic information was obtained from EnviroTrac and PB.

The generalized subsurface profile consists of fill overlying sand and silt deposits, with bedrock at depths between 30 to 50 feet below grade (ft-bg). Descriptions of each soil stratum are given below.

Fill
Fill material was encountered in twenty-three of a total twenty-five borings conducted at the Site. The fill consists of brown, black grey and tan sands with some silts, gravel, concrete, brick fragments, rocks and cinders. The fill thickness ranges from about five to seventeen feet.

Sand and Silt
Sand was generally encountered below the fill with some instances of silts and clay. The sand layer consists of brown, reddish brown, black and grey, coarse to fine sand with varying amounts of silt and clay. The thickness of these native Holocene epoch soils ranged from 0 to 32 feet.

Bedrock
Bedrock was encountered in each boring. A depth-to-bedrock contour is included in Figure 4. Bedrock consisted of hard mica schist with some layers of pegmatite and amphibolite. Bedrock was found at depths ranging from about 13 to 40 ft-bg. In the one geotechnical boring, the bedrock was reported as weathered to 59 ft-bg. Core recoveries ranged from 96 to 100 percent, averaging 99.6 percent. Rock Quality Designation (RQD) values ranged from 80 to 100 percent, averaging 97 percent, indicating good to excellent quality rock. As expected, bedrock appears to be shallowest at the east end of the Site and slopes downward to the west toward the Hudson River.

2.2 Hydrogeology

The Site-specific hydrogeologic information was obtained from EnviroTrac's Subsurface Investigation Report, dated September 9, 2006, and PB's Phase II Environmental Site Investigation, dated April 2006. Further discussion of groundwater monitored as part of this RI is provided in Section 4.2.1.

General Hydrology

Groundwater is generally contained within the unconsolidated geologic materials and the fractured bedrock. The upper surface of the groundwater reservoir is marked by the groundwater-table surface, which fluctuates seasonally in response to precipitation events and tidally along the shorelines. Based on similar depths measured to both groundwater and bedrock, the groundwater detected in the unconsolidated zone may be perched water and not reflective of the true groundwater-table surface.

In most locations throughout Manhattan, the configuration of the water-table surface generally follows the local topography. Groundwater generally flows from areas of higher to lower topographic elevation or from inland areas to the shorelines. The topography of the Site dips from the west to the east; however, the Site topography has been altered to line up with the bridge structure that supports 11th Avenue. Therefore, the topography of the Site cannot be used to determine the groundwater flow direction. The bedrock at the Site is a better indicator of the original topography at the Site. As detailed in Section 2.1, the bedrock slopes westward towards the Hudson River. The topography of the surrounding area also slopes towards the Hudson River. Therefore, the groundwater flow direction, on average, beneath the Site can be inferred to flow in a westerly direction towards the Hudson River. Underground utilities, such as sewer, water and steam pipes, and other subsurface manmade objects, may locally impede and redirect the natural groundwater flow, or if the water or sewer lines leak, may cause localized mounding of the groundwater-table.

Groundwater flow directions were measured as part of the EnviroTrac Phase II as flowing to the west towards the Amtrak tunnel locally and the Hudson River generally.

Infiltration of incident precipitation to the water table in the project area is likely minimal due the extensive paving and structures that cover most of the ground surface. The vast majority of incident precipitation drains to City combined sewers and eventually to the North River wastewater treatment plant that serves this area of the City, or directly to tidal surface waters during overflow events. Rainwater that does infiltrate the ground percolates downwards towards the water table, where it enters the groundwater reservoir and flows towards the Hudson River.

Groundwater in the New York City area is not used as a potable (drinking) water source. New York City residents receive their drinking water supply from surface reservoirs located in upstate New York.

Site Groundwater Elevations
EnviroTrac and PB measured groundwater at depths between 17 and 32 ft-bg. Due to the altered Site topography, depth-to-water measurements do not accurately represent the Site groundwater elevations. Groundwater table elevations, which account for changes in Site topography, vary approximately 20 feet across the Site. However, one monitoring well, MW-4, appears to have anomalous readings. If the measurements for MW-4 are not incorporated, the groundwater table elevations vary approximately 13 feet across the Site. The groundwater table elevations confirm that the net groundwater flow is generally towards the west and northwest.

Surface Water
No surface water bodies exist on the Site. The closest surface water body is the Hudson River, located approximately 1,100 feet west of the Site.

2.3 Summary of Previous Investigations

Previous Site investigations performed by PB and EnviroTrac are summarized below. Documentation related to the PB and EnviroTrac investigations are provided in Appendices C through G.

2.3.1 PB Investigations

In a June 8, 2004 Phase I Environmental Site Assessment (ESA), PB identified three types of recognized environmental conditions (RECs) at the Site:

1. Historic uses of the Site and surrounding sites that may have impacted the subsurface environment. Based on historic Sanborn Fire Insurance maps, PB identified the following uses of the Site as RECs: unknown type of factory, a garage (with buried gasoline tanks), a blacksmith, a welding facility and a motor freight station. The following uses on surrounding properties were identified as RECs: a factory, a machine shop, a U.S. Post Office with buried gasoline tanks, a motor freight station and a Federal Express facility with fuel oil and gasoline tanks across 34th Street; a paper imaging company and an iron works adjacent to the east of the Site; and a foundry, multiple factories, a garage with buried gasoline tanks and a used auto parts facility across 35th Street.

2. Open spills identified by review of the state databases (NY Spills/LTANKS) which may have impacted the Site. The following five sites are located upgradient of and close to the Site and have a confirmed release of petroleum:
   - **538 West 34th Street**
   - 534 West 34th Street
   - 432 10th Avenue

- **436 10th Avenue** (Amoco station)

The two bolded properties also appeared on the Resource Conservation and Recover Information System (RCRIS) for Generators and Transporters.

In addition, PB identified an underground storage tank (UST) at 527 West 34th Street, which was reported to be leaking and which may not have been removed in compliance with NYSDEC regulations.

3. Storage tanks located at the Site. PB was not given full access to the Site; however, evidence of two 2,900-gallon capacity tanks containing unleaded gasoline was identified. In addition, four possible former remote fill ports were also identified. Based on the fact that these tanks were not listed in the Petroleum Bulk Storage (PBS) database, it is probable that they are not in compliance with NYSDEC regulations.

PB recommended a program of soil and groundwater sampling to determine if any of the RECs affected the Site. The PBS database was updated by EnviroTrac after removing the USTs in January 2006.

Subsequent to PB's Phase I ESA, additional environmental investigations were conducted by EnviroTrac, as detailed in Section 2.3.2, below. PB conducted soil and groundwater sampling in September and November 2005. PB detailed the sampling in an April 2006 Phase II Environmental Site Investigation Report. Additional information regarding the remedial investigation soil and groundwater sampling is included in Sections 3 and 4.

2.3.2 EnviroTrac Investigations

In a June 28, 2004 Phase I ESA, EnviroTrac identified six RECs on the Site.

1. Soil and groundwater sampling was recommended in the area of the in-ground hydraulic piston associated with a truck elevator.

2. Eight 550 gallon underground storage tanks (USTs) of unknown contents had been closed in place by Lexicon Environmental Associates (Lexicon) in 1996. While residual contamination was present in the post-excavation samples, the New York State Department of Environmental Conservation (NYSDEC) closed the spill.

The residual contamination is detailed in Lexicon's Underground Storage Tank Closures report, dated March 27, 1996, and referenced in the EnviroTrac Phase I. FLS has not reviewed this report. EnviroTrac reports that semi-volatile organic compounds (SVOCs) were detected above the NYSDEC Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values for fuel oil contaminated soils. Lexicon also removed two leaking 4,000 gallon gasoline

USTs and approximately 105 tons of contaminated soil. Post-excavation samples indicated that all gasoline-contaminated soil was removed from this area.

3. An active spill associated with the installation of a soil boring by the New York City Transit Authority.

The soil boring identified in REC 4 is a geophysical boring, PE-19, installed by PB in 2003 (not in association with the Phase I ESA or Phase II investigation).

4. A geophysical survey and subsurface investigation were recommended to investigate USTs shown on historical Sanborn Fire Insurance maps in the southeast corner of the Site.

The review of the Sanborn Fire Insurance maps also indicated multiple commercial uses, as well as residential use, at the Site. The maps are dated from 1890 to 1996. Commercial uses included a building materials facility, a wagon house, a hay and feed company, the Fleischman Company, a garage, a blacksmith and welding company, a laundry, an electrical supply, general warehousing facilities, the Empire Carriers Corporation and the New York Telephone Company, which was later renamed Verizon (the last tenant).

5. The NYSDEC Petroleum Bulk Storage sites database contained incorrect data on the Site. In addition, two 2,000 gallon capacity USTs were reportedly removed from the Site, but the location is unknown.

The database incorrectly listed only five 550-gallon USTs. As detailed in Lexicon's March 27, 1996 Underground Storage Tank Closures report, eight 550-gallon USTs were registered and closed in place, as shown on Figure 5. In addition, EnviroTrac states that the listed installation date, June 1, 1994, is incorrect. The correct installation date is not noted in the EnviroTrac report. The PBS database was updated by EnviroTrac after removing the USTs in January 2006.

6. Possible presence of lead-based paint (LBP), asbestos-containing materials (ACMs) and polychlorinated biphenyls (PCBs).

However, based on the recommendations in their Phase I ESA, EnviroTrac conducted a geophysical survey over the Site, as well as a soil and groundwater sampling program. The results of these activities are detailed in EnviroTrac's September 9, 2005 Subsurface Investigation Report. The geophysical survey did not indicate the presence of any USTs in the southeastern corner of the Site. However, a sub-cellar was located which housed an out-of-service boiler and an oil-water separator (see Figure 5). Approximately 75 gallons of liquids were removed from the oil-water separator when it was cleaned out. Additional

information regarding the remedial investigation soil and groundwater sampling is included in Sections 3 and 4.

EnviroTrac's March 9, 2006 Underground Storage Tank Removal Report details the removal of two 3,000 gallon gasoline USTs, as well as the appurtenant dispensers and remote fill ports. The remote fill ports associated with the previously-removed leaking 4,000 gallon gasoline USTs were also removed. Elevated levels of benzene were detected in one post-excavation sample west of the 3,000 gallon USTs. Excavations conducted to remove the remote fill ports were extended to remove associated contaminated soil. With the exception of SVOCs associated with fill material, not petroleum contamination, elevated levels of contaminants were not present.

3.0 SAMPLING METHODOLOGY OF PREVIOUS INVESTIGATIONS

This section details the methodology employed to conduct the various remedial investigation (RI) activities conducted by EnviroTrac and PB. The findings of the RIs are discussed in Section 4.0.

3.1 EnviroTrac Sampling Methodology

The RI included the installation and sampling of borings using a hand-operated Geoprobe® unit in the elevator shaft and installation of groundwater monitoring wells using hollow stem auger (HSA) and air rotary drilling methods.

Soil and groundwater sampling in the elevator shaft was conducted on June 3 and July 28, 2005. Eight soil borings (SB-1 through SB-8) were advanced to depths ranging from 2 to 8 feet below the basement floor, with the majority to approximately 4 feet. One to two soil samples were collected at each boring location. The soil boring locations are presented on Figure 3.

3.1.1 Soil Boring and Temporary Monitoring Well Installation

Borings were installed using a hand-operated Geoprobe® unit by Associated Environmental Services, Ltd. on June 3 and July 28, 2005. A hand-operated unit was necessary due to access issues. Based on monitoring well survey elevations, FLS has determined that the basement floor is approximately 12 feet below the first floor slab.

Borings were conducted to refusal.

3.1.2 Soil Sample Collection

The soil borings were installed to a maximum depth of 8 feet below the concrete floor; the majority of the borings were only advanced to approximately 4 feet due to refusal. Refusal was most likely due to bedrock. Soil boring logs are provided in Appendix A and soil boring locations are shown on Figure 3. Sample SB-1 was collected on June 3, 2005. Based on the results of the soil and groundwater sample collected, detailed in Section 4.1, the remaining borings were conducted on July 28, 2005. The soil samples were screened for volatile organic vapors using an organic vapor meter (OVM).

One soil samples were collected from each boring with the exception of SB-5 from which two soil samples were collected. All samples were submitted for laboratory analysis. The following table details the dates, depth intervals (below the concrete slab and ft-bg), OVM readings (in parts per million), depth to water (DTW) and total depth (TD) for all borings

Boring	SB-1*	SB-2	SB-3	SB-4	SB-5		SB-6	SB-7
Date	6/3/05	7/28/05	7/28/05	7/28/05	7/28/05		7/28/05	7/28/05
Depth Interval	3.5'-5.5' 15.5'-17.5'	0'-2' 12'-14'	0'-2' 12'-14'	0'-4.5' 12'-16.5'	0'-4' 12'-16'	4'-8' 16'-20'	0'-2' 12'-14'	0'-3' 12'-15'
OVM	432	113	127	43	98	512	77	92
DTW	6'	--	--	--	8'		--	--
TD	6.5'	2'	2'	4.5'	8'		2'	3'

*Oil-saturated soil was present in boring SB-1 from 8 inches to 2.5 ft-bg. A sample was collected for product fingerprinting.

Each soil sample was submitted to EcoTest Laboratories, Inc., a New York State certified laboratory. Soil sample SB-1 was analyzed for the following:

- Target Compound List (TCL) volatile organic compounds (VOCs) by Environmental Protection Agency (EPA) Method 8260,
- Spill Technology and Remediation Series Memo #1 (STARS List) SVOCs by EPA Method 8270 and
- Petroleum fingerprint analysis.

Soil samples SB-2 through SB-7 were analyzed for the following:

- TCL VOCs by EPA Method 8260,
- TCL SVOCs by EPA Method 8270 and
- Target Analyte List (TAL) Metals.

Soil sampling results are summarized in Tables 1 through 4. The petroleum fingerprint analysis indicated that the sample contained lubricating oil (e.g., hydraulic oil).

3.1.3 Temporary Monitoring Well Groundwater Sample Collection

Two borings were advanced to the groundwater table without encountering refusal in the elevator shaft. Sample SB-1 was collected on June 3, 2005. Sample SB-5 was conducted on July 28, 2005. Both samples were collected by a bailer from a machine-slotted polyvinyl chloride (PVC) screen. Figure 6 summarizes the results of this sampling round.

Each groundwater sample was submitted to EcoTest Laboratories, Inc., a New York State certified laboratory. Groundwater sample SB-1 was analyzed for the following:

- TCL VOCs by EPA Method 8260 and
- STARS List SVOCs by EPA Method 8270.

Groundwater sample SB-5 was analyzed for the following:

- TCL VOCs by EPA Method 8260,

EnviroTrac was not able to obtain enough groundwater at SB-5 to sample for TCL SVOCs by EPA Method 8270 as originally planned.

3.1.4 Monitoring Well Installation

Between June 22 and 29, 2005, monitoring wells MW-1 through MW-4 were installed as shown on Figure 3. Based on the results of the groundwater samples collected from monitoring wells MW-1 through MW-4, four additional monitoring wells, MW-5 through MW-8, were installed between July 28 and August 11, 2005, as shown on Figure 3. The monitoring wells were installed by Aquifer Drilling and Testing, Inc. (ADT). Each location was pre-cleared with a vactron and then drilled using a combination HSA/air rotary drilling rig. Note that monitoring wells MW-7 and MW-8 may have been installed by Dragin Drilling, Inc., using a water-rotary drilling technique.

A machine-slotted, 2-inch diameter PVC well screen was installed several feet into the saturated zone. A No. 1 or No. 2 Morie sand pack was tremied into the annular space outside the well screen to a minimum 2-foot above the top of the well screen. A minimum 2-foot bentonite seal was installed above the gravel pack with the exception of monitoring well MW-6, where the bentonite seal was 1-foot thick due to depth constraints. Any remaining annular space was sealed with Portland cement mix. A surface completion consisting of a flush-mounted, watertight manhole was cemented into the pavement or floor above the well. The monitoring wells were developed and gauged for depth to water and free-phase petroleum. The wells were allowed to sit for a minimum of one week prior to sampling the groundwater.

Nelson & Pope LLP (Nelson & Pope) of Melville, NY, surveyed the location and elevation of each monitoring well throughout the Site. Each location was surveyed at the top of the PVC liner and at the top of the rim of the flush-mounted manhole. The elevations are to a Site-specific reference point. However, geotechnical boring PE-19 was surveyed by both Nelson & Pope for EnviroTrac and a surveyor for PB. Based on these two data points, the Site-specific elevations are 64.237 feet above the National Geodetic Survey (NGS) Datum of 1929 (U.S. Coast and Geodetic Survey Datum) mean sea level, Sandy Hook, New Jersey.

3.1.5 Monitoring Well Groundwater Sample Collection

On July 8, 2005, groundwater samples were collected from monitoring wells MW-1 through MW-4 and PE-19. Each groundwater sample was submitted to EcoTest Laboratories, Inc., a New York State certified laboratory. Figure 7 summarizes the results of this sampling round. The groundwater samples were analyzed for:

- TCL VOCs by EPA Method 8260 and
- STARS List SVOCs by EPA Method 8270.

On August 17, 2005, groundwater samples were collected from monitoring wells MW-1 through MW-8 and PE-19. Each groundwater sample was submitted to EcoTest Laboratories, Inc., a New York State certified laboratory. Figure 8 summarizes the results of this sampling round. The groundwater samples were analyzed for:

- TCL VOCs by EPA Method 8260,
- TCL SVOCs by EPA Method 8270 and
- TAL Metals.

Note that the sample collected from monitoring well MW-6 did not yield enough water for the full analysis. Therefore, TAL Metals and a portion of the TCL SVOCs list were not analyzed.

Groundwater sampling results are summarized in Tables 5 through 7.

3.2 Parsons Brinckerhoff Sampling Methodology

The RI included the installation and sampling of borings using a hand-operated Geoprobe® and hand auger in the elevator shaft and a truck-mounted and track-mounted Geoprobe® unit in the eastern parking garage. In addition, four existing monitoring wells were sampled.

Soil sampling was conducted on September 27, 2005 in the basement. Six soil borings (B-1 through B-6) were advanced to depths ranging from 3 to 5 ft-bg, with the majority to approximately 4 ft-bg. One soil sample was collected at each boring location. The soil boring locations are presented on Figure 3.

Soil sampling was conducted on September 28 and November 5, 2005 in the eastern parking area. Four soil borings (GP-1 through GP-4) were advanced to depths ranging from 13 to 20 ft-bg. One to two soil samples were collected at each boring location. The soil boring locations are presented in Figure 3.

Groundwater sampling was conducted on September 27, 2005 from monitoring wells sampled by EnviroTrac and detailed in Section 3.1. The groundwater samples were labeled GW-1 through GW-4, corresponding to monitoring wells MW-8, MW-3, MW-2 and PE-19, respectively.

3.2.1 Soil Boring Installation

Borings in the elevator shaft (B-1 through B-6) were installed using a hand-operated Geoprobe® unit and hand auger by Precision Sampling, Inc. on September 27, 2005. Borings in the eastern parking garage (GP-1 through GP-4) were installed using a truck-mounted Geoprobe® on September 28, 2005 and a track-mounted Geoprobe® on November 5, 2005, by ZEBRA Environmental Corporation

A 2-inch macrocore sampler with disposable acetate liners was used to obtain undisturbed soil cores in borings conducted within the eastern parking garage (GP-1 through GP-4). All borings were conducted to refusal. The liners prevent any cross-contamination between soil samples and borings.

3.2.2 Soil Sample Collection

The soil borings were installed to a maximum depth of 20 ft-bg. Refusal was most likely due to bedrock. Soil boring logs are provided in Appendix A and soil boring locations are shown on Figure 3. The soil samples were screened for volatile organic vapors using a photoionization detector (PID).

Three samples – a composite of soil from B-1 and B-3, soil from B-2 and a composite of soil from B-4 through B-6 – were collected on September 27, 2005 from the bucket of the hand auger. One sample, GP-4 (0-16 feet), was collected on September 28, 2005. Four samples [GP-1 (13-14 feet), GP-2 (10-20 feet), GP-3 (5-13 feet) and GP-3 (11-13 feet)] were collected on November 5, 2005. All samples were submitted for laboratory analysis.

Each soil sample was submitted to American Analytical Laboratories LLC, a New York State certified laboratory for analysis of the following:

- TCL VOCs by EPA Method 8260,
- TCL SVOCs by EPA Method 8270,
- TAL Metals,
- Pesticides/Herbicides (only for those samples collected within 6' of the surface),
- PLM Asbestos, and
- PCBs.

One composite sample from the borings collected in the elevator shaft and one composite sample from the borings collected in the eastern parking garage were analyzed for RCRA Waste Characteristics.

Soil sampling results are summarized in Tables 1 through 4.

3.2.3 Monitoring Well Groundwater Sample Collection

On September 27, 2005, groundwater samples were collected from monitoring wells MW-8, MW-3, MW-2 and PE-19 and were labeled GW-1 through GW-4, respectively. Figure 9 summarizes the results of this sampling round.

Each groundwater sample was submitted to American Analytical Laboratories LLC, a New York State certified laboratory for analysis of the following:

- TCL VOCs by EPA Method 8260,
- TCL SVOCs by EPA Method 8270,

- TAL Metals and
- PCBs.

According to the title of the table in the PB report, the samples were tested for total metals indicating that the samples were not filtered. In addition, one groundwater sample was analyzed for NYCDEP Limitations for Effluent to Sanitary or Combined Sewers.

Groundwater sampling results are summarized in Tables 5 through 7.

4.0 FINDINGS

The following section describes the results of the soil and groundwater sampling, as well as observations made during soil boring and monitoring well installation. Summaries of the laboratory analytical data are provided in Tables 1 through 7. A summary and description of the qualifiers used by the laboratory is given in Table 8. A Data Usability Summary Report (DUSR) will be provided under separate cover.

4.1 Soil

4.1.1 Soil Characterization

The Site surface at each boring location was covered by approximately 8 inches of concrete. Most of the soil at the Site is urban fill material, extending to depths ranging from 5 to 17 ft-bg. The fill consisted of mixtures of gravel, concrete, brick fragments, rocks, cinders and silt in a matrix of sand. Native soils (sands and silts) are found beneath the fill. The soil becomes wet at approximately 20; however, the depth ranged from 11 to 30 ft-bg. Borings were terminated at the apparent bedrock, ranging from 13 to 40 ft-bg. Soil boring logs are included in Appendix A.

No visual or olfactory evidence of petroleum contamination was observed in any of the borings except those conducted by EnviroTrac in the elevator shaft, MW-4 and PE-19. Oil staining was present in boring SB-1 from 8 inches to 2.5 ft-bg. OVM readings in the seven borings ranged from 43 (SB-4) to 512 (SB-5). A spill was reported to the NYSDEC Spill Hotline on June 17, 2005 for a release of hydraulic oil (Spill #05-03270). A petroleum odor was noted in MW-4 at 36 ft-bg. PID or OVM readings were not recorded. A petroleum odor was noted in PE-19 between 25 and 32 ft-bg. PID readings were recorded up to 100 ppm. A spill was reported to the NYSDEC Spill Hotline on July 28, 2003 (Spill # 03-04463). Soil PID readings are presented in the soil boring logs in Appendix A.

4.1.2 Soil Sample Analytical Results

Soil samples were analyzed for a combination of VOCs, SVOCs, metals, pesticides, and PCBs. Soil analytical results are provided in Tables 1 through 4. Analytical results, where applicable, were compared to the Unrestricted Use Soil Cleanup Objectives (UUSCOs) listed in Table 375-6.8(a) of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (NYCRR).

VOCs

Laboratory analytical results for VOCs in soil are summarized in Table 1. VOCs were detected in sixteen samples out of a total of twenty-four samples, which

were analyzed for VOCs. Total VOC concentrations range from 3.7 ug/kg in sample GP-4 (0-16 feet) to 262,450 ug/kg in sample SB-5 (16-20 feet).

Individual VOC results were compared to the UUSCOs.

Benzene was detected in a total of four samples. Benzene was detected at a concentration of 226 ug/kg (i.e., above the UUSCO of 60 ug/kg) in a sidewall sample collected from the West Wall of the UST excavation.

Ethylbenzene was detected in a total of ten samples. Five samples contained ethylbenzene above the UUSCO of 100 ug/kg: SB-5 (16-20 feet) at a concentration of 14,000 ug/kg, GP-3 (5-13 feet) at a concentration of 6,900 ug/kg, GP-3 (11-13 feet) at a concentration of 840 ug/kg, SB1 (15.5-17.5 feet) at a concentration of 510 ug/kg and a sidewall sample collected from the West Wall of the UST excavation at a concentration of 129 ug/kg.

Xylenes were detected in a total of ten samples. Five samples contained xylenes above the UUSCO of 1,200 ug/kg, including SB-1 (15.5-17.5 feet), SB-5 (16-20 feet), GP-3 (5-13 feet), GP-3 (11-13 feet) and a sidewall sample collected from the West Wall of the UST excavation. The highest concentration, 77,000 ug/kg, was detected in sample SB-5 (16-20 feet).

Naphthalene was detected in a total of ten samples. One sample, SB-5 (16-20 feet), slightly exceeded the UUSCO of 12,000 ug/kg at a concentration of 15,000 ug/kg.

1,2,4-Trimethylbenzene (1,2,4-TMB) was detected in a total of twelve samples. Four samples contained 1,2,4-TMB above the UUSCO of 3,600 ug/kg, including SB-1 (15.5-17.5 feet), SB-5 (16-20 feet), GP-3 (5-13 feet) and GP-3 (11-13 feet). The highest concentration, 84,000 ug/kg, was detected in sample SB-5 (16-20 feet).

1,3,5-Trimethylbenzene (1,3,5-TMB) was detected in a total of ten samples. Two samples contained 1,3,5-TMB above the UUSCO of 8,400 ug/kg: SB-5 (16-20 feet) and GP-3 (5-13 feet) at concentrations of 24,000 ug/kg and 42,000 ug/kg, respectively.

Seven samples contained n-propylbenzene. One sample, SB-5 (16-20 feet) contained n-propylbenzene at a concentration of 13,000 ug/kg, which is above the UUSCO of 3,900 ug/kg.

Five samples contained sec-butylbenzene. One sample, GP-3 (5-13 feet) contained sec-butylbenzene at a concentration of 40,000 ug/kg, which is above the UUSCO of 11,000 ug/kg.

Acetone, a common laboratory contaminant, was detected in three samples. All three samples: B-4, B-5, B-6 Composite at 490 ug/kg; SB-2 (12-14 feet) at 70 ug/kg; and SB3 (12-14 feet) at 110 ug/kg contained acetone at concentrations above the UUSCO of 50 ug/kg.

Methylene chloride, also a common laboratory contaminant, was detected in five of six samples collected during the November 2005 sampling round. It was also detected in the trip blank. Two samples, GP-3 (5-13 feet) and GP-3 (11-13), contained acetone above the UUSCO of 50 ug/kg at concentrations of 1,900 ug/kg and 1,700 ug/kg, respectively.

SVOCs

Laboratory analytical results for SVOCs in soil are summarized in Table 2. SVOCs were detected in all eighteen samples that were analyzed for SVOCs. Total SVOC concentrations ranged from 520 ug/kg in sample GP-3 (5-13 feet) to 60,370 ug/kg in sample SB-5 (12-16 feet).

Individual SVOC results were compared to the UUSCOs. SVOCs were detected in nine of the eighteen soil samples at levels exceeding the UUSCOs, as follows: SB-2 (12-14 feet); SB-3 (12-14 feet); SB-5 (12-16 feet); SB-6 (12-14 feet); B-1, B-3 Composite; B-4, B-5, B-6 Composite; GP-1 (13-14 feet) and the North Bottom and South Bottom samples collected from the Remote Fill excavations. The seven SVOCs exceeding their respective UUSCOs include: benzo (a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene.

Metals

Laboratory analytical results for metals in soil are summarized in Table 3. Metals were detected in all sixteen samples which were analyzed for metals. Individual metals detected above the UUSCOs included arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel and zinc. Calcium and magnesium are common earth materials and are considered a lower risk to human health and the environment compared to the other metals detected in the soil.

Arsenic was detected above the UUSCO of 13 mg/kg in two samples, SB-3 (12-14 feet) at a concentration of 14 mg/kg and B-4, B-5, B-6 Composite at a concentration of 53.5 mg/kg.

Cadmium was detected above the UUSCO of 2.5 mg/kg in two of the sixteen total samples collected. SB-3 (12-14 feet) and B4, B-5, B-6 Composite contained concentrations of 2.7 mg/kg and 12.8 mg/kg, respectively.

The sixteen samples were analyzed for total chromium; however, UUSCOs were promulgated for trivalent (III) chromium and hexavalent (VI) chromium at levels of 30 mg/kg and 1 mg/kg, respectively. Naturally-occurring chromium contains a

lower percentage of hexavalent chromium than trivalent chromium. Fifteen of sixteen samples contain total chromium above the UUSCO of 1 mg/kg for hexavalent chromium, the exception being the sample collected from B1, B2, B3 Composite which contained chromium at a concentration of 0.011 mg/kg. Only one sample, B4, B5, B6 Composite, at a concentration of 40.6 mg/kg, contained total chromium above the UUSCO of 30 mg/kg for trivalent chromium.

Copper was detected above the UUSCO of 50 mg/kg in three of sixteen samples collected, at concentrations ranging from 150 mg/kg in B-2 (12-15 feet) to 319 mg/kg in B-4, B-5, B-6 Composite.

Lead was detected above the UUSCO of 63 mg/kg in eight of sixteen samples collected, at concentrations ranging from 150 mg/kg in SB-6 (12-14 feet) to 1,220 mg/kg in B4, B5, B6 Composite.

Manganese was detected above the UUSCO of 1,600 mg/kg in one sample: SB-3 (12-13 feet) at a concentration of 1,700 mg/kg.

Mercury was detected above the UUSCO of 0.180 mg/kg in four of sixteen samples collected, at concentrations ranging from 0.287 mg/kg in B-2 (12-15 feet) to 0.814 mg/kg in GP-1 (13-14 feet).

Nickel was detected above the UUSCO of 30 mg/kg in four of sixteen samples collected, at concentrations ranging from 31.6 mg/kg in GP-3 (11-13 feet) to 47.6 mg/kg in GP-1 (13-14 feet).

Zinc was detected above the UUSCO of 109 mg/kg in five of sixteen samples collected, at concentrations ranging from 120 mg/kg in SB-6 (12-14 feet) to 357 mg/kg in B-4, B-5, B-6 Composite.

Pesticides

Laboratory analytical results for pesticides in soil are summarized in Table 4. Pesticides were detected in four of seven soil samples collected, with total pesticide concentrations ranging from 17.5 ug/kg in sample B-2 (12-15 feet) to 490 ug/kg in sample B-4, B-5, B-6 Composite.

4-4'-DDD was detected above the UUSCO of 3.3 ug/kg at a concentration of 36 ug/kg in sample B4, B5, B6 Composite.

4-4'-DDE was detected above the UUSCO of 3.3 ug/kg in samples B4, B5, B6 Composite and B1, B3 Composite at concentrations of 64 ug/kg and 6.8 ug/kg, respectively.

4,4'-DDT was detected in four samples above the UUSCO of 3.3 ug/kg. Concentrations ranged from 15 ug/kg in sample B-2 (12-15 feet) to 390 ug/kg in sample B4, B5, B6 Composite.

PCBs

PCBs were analyzed in eight samples. PCBs were not detected in any sample above the method detection limit (MDL).

4.2 Groundwater Results

Groundwater samples were analyzed for VOCs, SVOCs, total and dissolved metals, PCBs and pesticides. Groundwater analytical results are provided in Tables 5 through 7. Analytical results were compared to the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. Class GA Groundwater Standards (Class GA Standards).

Temporary monitoring wells were sampled on June 3 and July 28, 2005. Both locations were located in the elevator shaft.

Permanent monitoring wells were sampled on July 8, August 17, September 27, 2005 and January 11, 2006.

4.2.1 Groundwater Analytical Results

VOCs

Laboratory analytical results for VOCs in groundwater are summarized in Table 5. A total of twenty-one samples were collected from eleven locations. Acetone, chloroform and methylene chloride, all common laboratory contaminants, were detected above the Class GA standards. Petroleum-related compounds, including benzene; toluene; ethylbenzene; xylenes; methyl-tert-butyl-ether (MTBE); naphthalene; 1,2-dichlorobenzene and 1,2,4-trimethylbenzene were detected above the Class GA standard.

Acetone was detected above the Class GA standard of 50 ug/L in two samples: SB-5 (7/28/05) at a concentration of 51 ug/L and MW-3 (7/8/05) at a concentration of 270 ug/L.

Chloroform was detected above the Class GA standard of 7 ug/L in one sample, MW-4 (7/8/05) at a concentration of 14 ug/L.

Methylene chloride was detected above the Class GA standard of 5 ug/L in two samples: MW-2 (7/8/05) at a concentration of 19 ug/L and MW-3 (7/8/05) at a concentration of 48 ug/L.

Benzene was detected above the Class GA standard of 0.7 ug/L in thirteen samples at eight locations. Benzene was not detected in monitoring wells MW-1, MW-5 and MW-7 above the Class GA standards. Both temporary well points, SB-1 (6/3/05) and SB-5 (7/28/05), exceeded the Class GA standard at concentrations of 200 ug/L and 150 ug/L, respectively. Monitoring well PE-19 contained benzene above the Class GA standard in all three samples, PE-19 (7/8/05), PE-19 (8/17/05) and PE-19 (9/27/05) at concentrations of 85, 56 and 42 ug/L, respectively. The remaining six samples contained concentrations of benzene up to 35 ug/L, detected in monitoring well MW-4 (8/17/05).

Toluene was only detected above the Class GA standard of 5 ug/L in the three samples collected from monitoring well PE-19. Concentrations ranged from 81 ug/L in sample PE-19 (9/27/05) to 130 ug/L in sample PE-19 (7/8/05).

Ethylbenzene was detected above the Class GA standard of 5 ug/L in ten samples at seven locations. Ethylbenzene was not detected in monitoring wells MW-1, MW-2, MW-5 and MW-7 above the Class GA standards. Both temporary well points, SB-1 (6/3/05) and SB-5 (7/28/05), exceeded the Class GA standard at concentrations of 110 ug/L and 850 ug/L, respectively. Monitoring well PE-19 contained ethylbenzene above the Class GA standard in all three samples, PE-19 (7/8/05), PE-19 (8/17/05) and PE-19 (9/27/05) at concentrations of 550, 660 and 510 ug/L, respectively. The remaining five samples contained concentrations of ethylbenzene up to 180 ug/L, detected in monitoring well MW-4 (7/8/05).

Total xylenes were detected above the Class GA standard of 5 ug/L in eleven samples at seven locations. Xylenes were not detected in monitoring wells MW-1, MW-2, MW-5 and MW-7 above the Class GA standards. Both temporary well points, SB-1 (6/3/05) and SB-5 (7/28/05), exceeded the Class GA standard at concentrations of 830 ug/L and 3,380 ug/L, respectively. Monitoring well PE-19 contained xylenes above the Class GA standard in all three samples, PE-19 (7/8/05), PE-19 (8/17/05) and PE-19 (9/27/05) at concentrations of 820, 1,198 and 527 ug/L, respectively. Monitoring well MW-4 also contained xylenes above the Class GA standard in all three samples, MW-4 (7/8/05), MW-4 (8/17/05) and MW-4 (1/11/06) at concentrations of 601, 306 and 222.2 ug/L, respectively. The remaining three samples contained concentrations of xylenes up to 530 ug/L, detected in monitoring well MW-6 (8/17/05).

MTBE was detected above the Class GA standard (April 2000 Addendum) of 10 ug/L in the three groundwater samples collected immediately downgradient of the former gasoline USTs. Temporary monitoring well SB-5 (7/28/05) contained MTBE at a concentration of 16 ug/L. Monitoring wells MW-3 and MW-4 contained MTBE above the Class GA standard in all three samples collected from each monitoring well. Concentrations ranged from 75 ug/L in sample MW-4 (7/8/05) to 290 ug/L in sample MW-3 (7/8/05).

Naphthalene was detected above the Class GA standard of 10 ug/L in ten samples at seven locations. Naphthalene was not detected in monitoring wells MW-1, MW-3, MW-5 and MW-7 above the Class GA standards. Both temporary well points, SB-1 (6/3/05) and SB-5 (7/28/05), exceeded the Class GA standard at concentrations of 56 ug/L and 270 ug/L, respectively. Monitoring well PE-19 contained naphthalene above the Class GA standard in all three samples, PE-19 (7/8/05), PE-19 (8/17/05) and PE-19 (9/27/05) at concentrations of 260, 240 and 210 ug/L, respectively. The remaining five samples contained concentrations of ethylbenzene up to 100 ug/L, detected in monitoring well MW-4 (7/8/05).

1,2-Dichlorobenzene was detected in one sample slightly above the Class GA standard of 4.7 ug/L, SB-1 (6/3/05) at a concentration of 7 ug/L.

1,2,4-TMB was detected above the Class GA standard of 5 ug/L in twelve samples at seven locations. 1,2,4-TMB was not detected in monitoring wells MW-1, MW-5, MW-7 and MW-8 above the Class GA standards. Both temporary well points, SB-1 (6/3/05) and SB-5 (7/28/05), exceeded the Class GA standard at concentrations of 220 ug/L and 820 ug/L, respectively. Monitoring well PE-19 contained 1,2,4-TMB above the Class GA standard in all three samples, PE-19 (7/8/05), PE-19 (8/17/05) and PE-19 (9/27/05) at concentrations of 450, 510 and 440 ug/L, respectively. Monitoring well MW-4 also contained 1,2,4-TMB above the Class GA standard in all three samples, MW-4 (7/8/05), MW-4 (8/17/05) and MW-4 (1/11/06) at concentrations of 670, 93 and 286 ug/L, respectively The remaining four samples contained concentrations of xylenes up to 420 ug/L, detected in monitoring well MW-6 (8/17/05).

SVOCs

Laboratory analytical results for SVOCs in groundwater are summarized in Table 6. A total of nineteen samples were collected from nine locations. Total SVOC concentrations ranged from 0 ug/L [MW-1 (7/8/2005)] to 289 ug/L [MW-6 (8/17/05)]. Two petroleum-related compounds, naphthalene and 2-methylnaphtalene, as well as the polyaromatic hydrocarbons (PAHs) benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene and benzo(a)pyrene were detected above the Class GA standard.

Concentrations of naphthalene are similar to those reported in the VOC scan.

2-Methylnaphthalene was detected in one sample slightly above the Class GA standard of 50 ug/L, MW-6 (8/17/05) at a concentration of 81 ug/L.

Chlorinated PAHs were only detected in one sample, MW-6 (8/17/05) of the nineteen total collected. The Class GA standard for all four compounds is 0.002 ug/L. Benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene and

benzo(a)pyrene were detected at concentrations of 12, 8.5, 8.5 and 7 ug/L, respectively.

Metals

Laboratory analytical results for total metals (unfiltered samples) in groundwater are summarized in Table 7. Samples were collected from monitoring wells MW-1 through MW-5, MW-7, MW-8 and PE-19 on July 8, 2005. Samples were collected from monitoring wells MW-2, MW-3, MW-8 and PE-19 on September 27, 2005. The method detection limits (MDL) for some compounds in the September 2005 sampling round are above the Class GA standard and therefore may not accurately reflect exceedances. Specifically, the MDL exceeded the Class GA standard for antimony, beryllium, cadmium, chromium, lead, selenium and thallium.

Barium, cadmium, iron, lead, magnesium, manganese and sodium exceeded the Class GA standards. Magnesium and manganese are common earth materials and are considered a lower risk to human health and the environment compared to the other metals detected in the groundwater.

Barium was detected above the Class GA standard of 1,000 ug/L in three samples. The two highest concentrations, 4,390 ug/L and 4,100 ug/L, were collected from PE-19. Barium was also detected above the Class GA standard in sample MW-4 (7/8/05) at a concentration of 1,200 ug/L.

Cadmium was detected above the Class GA standard of 5 ug/L in samples collected from MW-4, MW-5, MW-7 and PE-19 in July 2005. The highest concentration was detected in sample PE-19 (7/8/05) at a concentration of 10 ug/L.

Iron was detected above the Class GA standard of 25 ug/L in the samples collected from MW-2, MW-3, MW-8 and PE-19 in September 2005. The highest concentration was detected in sample PE-19 (9/27/05) at a concentration of 160,000 ug/L.

Lead was detected above the Class GA standard of 25 ug/L in all eight samples collected in July 2005. The highest concentration was detected in sample PE-19 (7/8/05) at a concentration of 97,000 ug/L.

Magnesium was detected above the Class GA standard of 35,000 ug/L in nine of twelve samples collected. The highest concentration was detected in sample MW-7 (7/8/05) at a concentration of 270,000 ug/L. Samples collected from PE-19 contained concentrations of 150,000 ug/L and 253,000 ug/L.

Manganese was detected above the Class GA standard of 300 ug/L in every sample except for MW-1 (7/8/05). The highest concentrations were detected in samples collected from PE-19 at concentrations of 26,100 ug/L and 28,000 ug/L.

Sodium was detected above the Class GA standard of 20,000 ug/L in every groundwater sample. The highest concentration was detected in sample PE-19 (9/27/05) at a concentration of 1,380,000 ug/L.

PCBs

PCBs were not detected in any of the groundwater samples collected during this investigation.

5.0 CONCLUSIONS

The following conclusions are based on the findings of the soil and groundwater investigation described above.

5.1 Soil

Petroleum-related VOC contaminants were detected in two areas of the Site. These contaminants include benzene; toluene; ethylbenzene; xylenes; naphthalene; 1,2,4-TMB; 1,3,5-TMB, n-propylbenzene and sec-butylbenzene. Two samples, SB-1 (15.5-17.5 feet) and SB-5 (16-20 feet), were collected above bedrock from within the elevator pit. Petroleum-contaminated soil in this area has been fully delineated.

In the area of the removed gasoline tanks, three samples, at two locations, contained petroleum-related VOC contaminants including both samples from GP-3 (5-13 feet and 11-13 feet) and one post-excavation sample collected from the western wall. Petroleum-contaminated soil in this area has been fully delineated.

It appears that the VOC contaminants in soil are localized to these two areas.

The seven SVOCs exceeding the UUSCOs include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene. These SVOCs are PAHs, which are a class of compounds found in some petroleum products, asphalt and as byproducts of combustion. The type and levels of SVOCs are typical of urban fill material (such as that found on the Site), which often contains cinders, ash, and other combustion by-products. With the exception of sample SB-5 (16-20 feet), collected in the elevator pit, the soil samples collected from the areas of elevated PAHs did not contain elevated levels of petroleum-related PAHs, such as naphthalene or 2-methylnaphthalene. Therefore, the detected PAH contamination does not appear to be related to a specific release, but is likely related to fill materials at the Site. The elevated level of naphthalene in boring SB-5 is discussed above.

Elevated levels (relative to the UUSCOs) of the metals arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel and zinc in varying combinations were detected in most of the soil samples. Manganese is a common earth material and is considered to pose a lower risk to human health and the environment compared to the other metals detected in the soil. The presence of the other metals may reflect the presence of on-Site fill material. The elevated levels of chromium, lead, mercury and zinc may be associated with paints/coatings entrained in the construction and demolition (C&D) fill observed in this area.

Three pesticides (4,4'-DDD; 4,4'-DDE and 4,4'-DDT) were detected above the UUSCOs. The highest concentrations were detected in sample B4, B5, B6 Composite.

5.2 Groundwater

The acetone, chloroform and methylene chloride exceedances in groundwater are most likely laboratory contaminants. The following VOC and SVOC petroleum-related compounds have been detected in groundwater above the Class GA standards: benzene, toluene, ethylbenzene and total xylenes (BTEX) as well as methyl-tert butyl ether (MTBE); 1,2-dichlorobenzene (1,2-DCB); 1,2,4-trichlorobenzene (1,2,4-TMB); naphthalene and 2-methylnaphthalene.

Generally, three groundwater plumes have been identified by the groundwater monitoring at the Site. The first, in the area of monitoring wells MW-3, MW-4 and upgradient monitoring well MW-8, is related to the gasoline USTs and remote fill ports formerly present at the Site. The second, in the area of temporary monitoring wells SB-1 and SB-5 as well as monitoring wells MW-2 and MW-6, is related to a spill in the elevator pit. The third is in the area of geotechnical boring PE-19 located immediately off-Site to the north of the Verizon facility.

The highest concentrations in the groundwater plume in the area of the removed USTs and fill ports are in monitoring well MW-4. Contaminants of concern included benzene, ethylbenzene, total xylenes, naphthalene, MTBE and 1,2,4-TMB. Monitoring well MW-3, slightly downgradient and possibly crossgradient from MW-4, generally contains concentrations of similar compounds one to two orders of magnitude lower than those in MW-4. Monitoring MW-8, upgradient of the gasoline UST excavation, contains low levels of ethylbenzene, naphthalene and total xylenes.

The highest concentrations in the groundwater plume emanating from the elevator pit were detected in temporary monitoring well SB-5. Contaminants of concern include: benzene; ethylbenzene; total xylenes; naphthalene; MTBE; 1,2-DCB and 1,2,4-TMB. Similar contaminants, at generally lower concentrations, were detected in temporary monitoring well SB-1. The presence of MTBE is evidence that the plume from the area of the former USTs and fill ports is commingling with this plume. Concentrations similar to SB-1 were present in monitoring well MW-6; however, MTBE and 1,2-DCB were not detected. Low levels of benzene, xylenes, naphthalene and 1,2,4-TMB were detected in monitoring well MW-2.

Elevated levels of BTEX compounds, naphthalene and 1,2,4-TMB were detected in samples collected from PE-19. Based on the assumed groundwater flow direction, west to northwest, as well as lack of on-Site areas of concern upgradient of PE-19, the exceedances in this sample are most likely related to an off-Site source.

Barium, cadmium, iron, lead, magnesium, manganese and sodium exceeded the Class GA standards in multiple groundwater samples. Magnesium and manganese are common earth materials and are considered a lower risk to human health and the environment compared to the other metals detected in the groundwater. The other metals exceedances in the groundwater are likely related to the metals detected in the historic urban fill and

C&D fill at the Site. Filtered samples were not collected at the Site; therefore, the concentration of dissolved metals in the groundwater at the Site is unknown.

5.3 Fish and Wildlife Resources Impact Analysis

Using the hydrogeology of the Site and the groundwater concentrations, FLS has prepared two Fish and Wildlife Resources Impact Analysis Keys (NYSDEC Draft DER-10 Technical Guidance, Appendix 3C), attached to this document as Appendix H. The only possible habitat for fish and wildlife resources that could be impacted by contamination present at the Site is the Hudson River through groundwater transport.

The petroleum-related contamination in the groundwater at the Site is classified as a "discharge or spill event." Based on the distance from the Site to the Hudson River (approximately 1,100 feet west of the Site), the types and concentrations of contaminants present at the Site and the hydrogeology of the area, the petroleum contaminants do not have the potential to migrate to the Hudson River. Therefore a Fish and Wildlife Resources Impact Analysis is not necessary for the petroleum-related contamination.

Elevated levels of PAHs and metals, associated with historic fill at the Site, are also contaminants of concern. There is no discharge or erosion of contamination to surface water (the Hudson River) or the potential for discharge or erosion of contamination. Therefore, a Fish and Wildlife Resources Impact Analysis is not necessary for the elevated levels of PAHs and metals.

5.4 Qualitative Human Health Exposure Assessment/Environmental Assessment

A Qualitative Human Health Exposure Assessment/Environmental Assessment was performed to assess the potential for the Site to impact site workers or residents, workers or the public in general either currently, during construction or after the completion of the redevelopment. As presented in Attachment I, the assessment concludes that there is no current exposure pathway. During construction, a Site Specific Health and Safety Plan (HASP) and Site Operations Plan (SOP) will minimize the exposure of site workers to the contamination on the Site. In addition, off-site exposure during construction will be minimized by the use of a Community Air Monitoring Plan (CAMP) that will stop work if excessive releases of volatile organic compounds, contaminated dust or odors are found to be leaving the Site. After completion of the redevelopment, all contaminants will have been removed from the Site. Waterproofing around the building foundation will serve as a vapor barrier, preventing any contaminated off-Site soil or groundwater from recontaminating the Site after remediation has been completed. Information regarding the HASP, SOP, CAMP and waterproofing/vapor barrier is included in the Remedial Action Work Plan (RAWP).