A. INTRODUCTION

This chapter assesses the potential for the presence of hazardous materials in the project site, the potential for exposure to hazardous materials during and following construction, and the specific measures that would be employed to protect public health, worker safety, and the environment. A "hazardous material" is generally defined as any substance that poses a threat to human health or the environment. It is often used interchangeably with "contaminated material," but should not be confused with the term "hazardous waste," which is a regulatory term.[1]

The project site has a long history of rail, industrial, storage, manufacturing, and commercial uses. Based on the site history, contaminants on the project site would be expected to include asbestos and lead-based paint (LBP) in buildings, as well as subsurface contamination (fill, soil, soil gas, and/or groundwater); the Phase 2 investigation has confirmed their presence. Migration from off-site sources onto the project site is also possible.

Development within the project site would involve the demolition of the existing structures and excavation, disturbance, and removal for off-site disposal of much of the existing fill and soil. Dewatering of groundwater is not anticipated. The presence of hazardous materials threatens human health or the environment only when exposure to those materials can occur. The most likely route of human exposure is through breathing volatile and semi-volatile compounds or particulate-laden air released during demolition, excavation, and construction activities. Following construction of the proposed project, the principal potential pathway of concern would be the intrusion of vapors into buildings from any volatile contamination remaining in the subsurface.

For the hazardous materials analysis, potential effects would be the same under both the residential mixed-use variation and the commercial mixed-use variation of the proposed project.

PRINCIPAL CONCLUSIONS

As described below, a two-stage process of Phase 1 and Phase 2 Environmental Site Assessments (ESAs) first identified the potential for contamination and then confirmed and characterized the contamination through sampling. This contamination was both in the subsurface (related primarily to localized current/former gas stations and historic fill) and inside buildings (primarily related to asbestos and LBP). However, with the implementation of a variety of remediation measures, no significant adverse impacts related to hazardous materials

[1] "Hazardous waste" is defined in both the Environmental Protection Agency (EPA) regulations (40 CFR Part 261) and New York State regulations (6 NYCRR Part 371) and refers to a subset of solid wastes that are either specific wastes listed in the regulations (listed wastes) or solid wastes possessing the characteristic of ignitability, reactivity, corrosivity or toxicity (characteristic wastes).

would be expected to occur as a result of construction of the proposed project. Following construction of the proposed project, there would be no further potential for significant adverse impacts.

B. METHODOLOGY

PHASE 1 ENVIRONMENTAL SITE ASSESSMENT (ESA)

A Phase 1 ESA for the entire project site was prepared to assess the potential for contaminated materials in buildings or the subsurface from past or present uses. The Phase 1 ESA study included a reconnaissance of the entire project site from public rights-of-way, as well as a review of historic maps, regulatory records, and available topographic and geologic/hydrogeologic data for the project site and surrounding area.

As of October 1, 2006, the project sponsors acquired or gained access to the majority of individual lots within the project site, and Phase 1 ESAs, including physical inspection, have been conducted for these specific lots. As shown in Figure 10-1, Phase 1 ESAs have been conducted for Block 927, Lots 1 and 16; Block 1118, Lots 1, 5, 21-25, and 27; Block 1119, Lots 1, 7, and 64; Block 1120, Lots 1 and 35; Block 1121, Lots 1 and 47; Block 1127, Lots 1, 10-13, 18-22, 29, 30, 43, 46, 48, 50, 54-56, 1001-1021 (formerly Lot 35), and 1101-1131 (formerly Lot 27); Block 1128, Lots 1, 2, and 88; and Block 1129, Lots 1, 3, 25, 43, 45, 46, 49, 50, 54, 62, and 81. These studies were conducted in accordance with the American Society for Testing and Materials (ASTM) Standard E1527-00. In each Phase 1 ESA, the following research was conducted:

- A visual inspection of the property and on-site facilities to identify current uses and assess existing conditions;
- Interviews with site owners, tenants, or staff whenever possible;
- A visual inspection, from public rights-of-way, of adjacent properties;
- An evaluation of land use history using available historical maps;
- A review of federal and state databases regarding hazardous materials for sites within the project site and for the surrounding area;
- A review of electronic New York City Department of Buildings (DOB) files for pertinent information, including historic and current petroleum tanks;
- A review of previous studies completed, whenever possible; and
- A review of available geologic, hydrologic, hydrogeologic, and topographic information from existing data sources.

As additional lots are acquired by the project sponsors, Phase 1 and Phase 2 ESAs are being performed.

Each lot, whether or not access was obtained, was studied to determine whether current or historical hazardous materials conditions may have affected the lot. Factors that were considered when making these determinations included the probability and probable severity of the potential hazardous materials conditions, as well as physical, geological, or hydrogeological (groundwater) conditions that may have affected the migration of hazardous materials.

POTENTIAL CONTAMINANTS OF CONCERN

Following the Phase 1 ESAs, a variety of potential contaminants of concern were identified.

Soil and groundwater can become contaminated as a result of past or current activities on the project site or on adjacent areas. Many industrial activities use, store, or generate contaminated materials that can be spilled, dumped, or buried nearby. Other activities common in mixed-use neighborhoods—such as gas stations and auto repair shops—can also result in contamination due to improper management of raw product and/or waste materials, or inadvertent spills.

Subsurface soil and groundwater contamination may remain undetected for many years, without posing a threat to nearby workers, residents, passersby, or other receptors. Excavation, earthmoving, dewatering, and other construction activities can, however, expose the contaminants, provide a pathway of exposure and, if such contaminants are not properly managed, introduce potential risk to construction workers and others nearby.

Demolition of existing structures that have asbestos-containing materials, LBPs or PCB-containing electrical equipment also has the potential to release contaminants, if these materials are not properly managed.

Based on the types of contaminants that are typically found in New York City—including those associated with rail yards—some of the potential contaminants of concern are described below. The list provides a summary of potential categories of contaminants and is not a comprehensive list of all contaminants that may be encountered:

- ***Volatile organic compounds (VOCs)*:** These include aromatic compounds—such as benzene, toluene, ethylbenzene, xylene (BTEX), and methyl tertiary butyl ether (MTBE), which are found in petroleum products (especially gasoline)—and chlorinated compounds, such as tetrachloroethene (also known as perchloroethylene or "perc") and tricholoroethene, which are common ingredients in solvents, degreasers, and cleansers. VOCs represent the greatest potential for contamination since, in addition to soil and groundwater contamination, they can generate organic vapors.
- ***Semivolatile organic compounds (SVOCs):*** The most common SVOCs in urban areas are polycyclic aromatic hydrocarbons (PAHs), which are constituents of partially combusted coal- or petroleum-derived products, such as coal ash and fuel oil. PAHs are commonly found in New York City urban fill material, which likely underlies much of the project site. In addition, petroleum-related SVOCs could be present and would be associated with buried tanks currently or formerly located on the project site.
- ***Polychlorinated biphenyls (PCBs)*:** Commonly used as a dielectric fluid in transformers, some underground, high-voltage electric pipelines, and hydraulically operated machinery, PCBs are of special concern at electrical transformer yards and rail yard/train maintenance locations where leakage into soil may have occurred. PCBs and/or PCB-containing materials were once widely used in manufacturing and industrial applications (e.g., hydraulic lifts, transformers, and plastics manufacturing). PCBs tend to travel only short distances in soil, except in unusual circumstances (e.g., large spills of PCB-containing oils over many years).
- ***Pesticides, herbicides, and rodenticides:*** These are commonly used to control rodents and/or insects and vegetation in vacant structures or in vegetated lots. They may be used in rail yards, particularly along the tracks.

- ***Metals (including lead, arsenic, cadmium, chromium, and mercury*):** Metals are often used in smelters, foundries, and metal works and are found as components in paint, ink, petroleum products, and coal ash. These metals tend not to migrate far in soil; therefore, they would be of greatest concern at the site where they were generated. Metals at levels above natural background levels are frequently present in fill material throughout the New York metropolitan area.
- ***Fuel oil and gasoline from storage tanks*:** Numerous residences and businesses within the project site currently have, or once had, both known and undocumented above-ground storage tanks (ASTs) and/or underground storage tanks (USTs) for fuels, including heating oil and gasoline. Some of these tanks may have been removed, and others, although no longer in use, may remain buried in place. Fueling facilities are also frequently associated with rail yards. Some of the tanks are known to have leaked, and others have possibly leaked despite no record of a spill to date. Some of the spills have been cleaned up in accordance with state regulations, but others have not because they have not yet been discovered or because cleanup, which can take several years, is ongoing.
- ***Fill materials of unknown origin*:** In the past, waste materials, including coal and incinerator ash, demolition debris, and industrial wastes, were commonly used as fill in urban areas. Even fill material consisting primarily of soil may exhibit elevated levels of PAHs, metals, PCBs, and other contaminants. Such materials are potentially present throughout the project site.
- ***Asbestos:*** Asbestos is a common component of building materials, especially insulation, fireproofing, tile flooring, plaster, sheetrock, tile ceiling, mastic, and roofing materials. In addition to materials within existing structures, subsurface utility lines may be coated with asbestos or encased in "transite," an asbestos-containing material (ACM). Asbestos was widely used before 1980. Because of the age of many of the buildings on the project site, ACMs are almost certainly present.
- ***Lead-based paint (LBP)*:** The use of LBP in New York City residential buildings was banned in 1960. Its use in other buildings and outdoors was severely restricted by the Consumer Products Safety Commission in 1977. LBP that is released as dust (or as a fume if heated) is potentially hazardous, especially to children. Older buildings in the project site are likely to contain LBP.

PHASE 2 ENVIRONMENTAL SITE ASSESSMENT

Using the findings of the Phase 1 ESAs and noting the identified contaminants of concern, further study in the form of "intrusive" (building and subsurface) investigations, also known as "Phase 2" investigations, was conducted. The approximate locations of subsurface sampling (and properties where no access has been obtained for sampling or only a Phase 1 ESA has been conducted to date) are shown in Figure 10-1. The scope of work included:

- Collection of over 350 soil samples, including a minimum of two subsurface sampling locations per accessible property and more samples where the results of the Phase 1 ESA indicated potential concern, with laboratory analysis of the samples;
- Collection and analysis of at least one sample of groundwater from each accessible property, where possible;

- Collection and analysis of samples of soil gas from 26 locations along the perimeter of the project site to determine the potential for contaminants to migrate either on- or off-site;
- Geophysical surveys at 16 properties suspected to contain subsurface structures, e.g., USTs;
- Collection and analysis of samples of paint from 29 properties to determine the presence of LBP;
- Collection and analysis of samples of suspected ACMs from 29 properties; and
- Inspection of fluorescent light fixtures to determine the potential presence of PCB ballasts.

Table 10-1 shows the Phase 1 and Phase 2 ESA results by block and lot. It also details on-site issues besides those pertaining to historic fill, fluorescent lights, asbestos, and lead. See Figure 10-2 for a map showing the blocks and lots within the project site.

C. EXISTING CONDITIONS

TOPOGRAPHY, GEOLOGY, AND GROUNDWATER

The surface topography of the project site varies from 45 to 80 feet above mean sea level and generally slopes down to the west along Atlantic Avenue, with the exception of the rail yard, which varies from approximately 0 to 25 feet below street level. Historic fill is present immediately beneath the surface and varies in thickness from approximately 2 feet to 15 feet. The historic fill beneath the site is of unknown origin and, like most fill material historically used in New York City, contains varying amounts of debris. The historic fill layer is generally thicker moving toward the western side of the site and surrounding subsurface structural features such as basements. Beneath the layer of historic fill lies native material generally consisting of sands with varying amounts of silt, gravel, cobbles, and boulders. The approximate average depth to bedrock is 250 feet below the surface.

The depth to groundwater across the site ranges between approximately 75 feet below the surface on the eastern side of the site and 30 feet below the surface on the western side of the site. The elevation of the groundwater table is approximately 4 feet to 7.5 feet above mean sea level and stays relatively flat across the site. The steep gradient in the depth to groundwater is the result of the east to west downward slope in site topography. Groundwater generally flows from southeast to northwest across the site area. However, the subway tunnels that extend into the water table along Flatbush Avenue likely act as a groundwater drain and affect groundwater flow on the western portion of the site. Localized groundwater flow on the western side of the site, influenced by the tunnels, likely flows directly toward Flatbush Avenue, i.e., toward the east beneath Block 927, and toward the west on blocks located east of the subway tunnels (principally Block 1118, Block 1119, and Block 1127).

SITE HISTORY AND CURRENT CONDITIONS

Former and existing uses on the various project blocks are detailed in Chapter 3, "Land Use, Zoning, and Public Policy." Historic uses are also discussed in Chapter 7, "Cultural Resources."

Based on the sitewide Phase 1 ESA, and using the information from the individual Phase 1 ESAs and the Phase 2 ESA, the next section describes the findings common to all blocks. Table 10-1 also contains a summary, broken down by tax block, of known and potential environmental conditions. Additional environmental conditions are anticipated to be of a similar nature and

could be present on properties where site inspections associated with lot-specific Phase 1 ESAs and/or Phase 2 ESA subsurface or building interior sampling have not yet been conducted. As properties are acquired by the project sponsors, these Phase 1 and Phase 2 ESAs are being conducted.

The findings of the laboratory analysis of soil and groundwater samples, as presented in the Phase 2 ESA report (and summarized in Table 10-1), are based on numerical comparisons with a set of screening criteria. As discussed more fully in Section 4.1 of the Phase 2 ESA report, these criteria were established by selecting the lowest New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) concentration values for each medium (soil, groundwater, soil vapor), even though some of these criteria were developed based on exposure scenarios that do not currently exist at the project site and/or would not exist for the proposed project. For example, the groundwater criteria are drinking water standards, but groundwater at the site is not and would not be used for potable water supply. Thus, exceedance of a particular criterion does not necessarily represent a concern, and the construction of the proposed project would, in any event, remove the existing buildings, and much of the site's soils and address the potential for exposure to any remaining subsurface contamination as described below in Section F, "Site Remediation."

FINDINGS COMMON TO ALL BLOCKS

Some of the findings were common to all blocks. These findings are organized by those related to buildings and those related to the subsurface media (soil, groundwater, and soil gas).

Buildings

Sampling in buildings identified the presence of LBP, ACMs, and potentially PCB-containing fluorescent light ballasts.

Soil

Consistent with the Phase 1 ESA projections, almost the entire project site, including the rail yard, has some (on average less than 10 feet) historic fill immediately below the buildings or paving. This fill, as occurs throughout New York City, generally contains levels of metals (including arsenic and lead), SVOCs, and pesticides above the most stringent guidance values for surface soils at residential sites. In general, deeper soils, below the fill materials at the site, had lower levels of contaminants, with the exception of some soils in the vicinity of current or former gas stations, which showed some exceedances for petroleum-related compounds. With the exception of one shallow soil sample from the rail yard (western end of Block 1120 near the 6th Avenue bridge), and one shallow soil sample collected beneath the sidewalk of Block 1127 Lot 1, where elevated levels of lead were found, laboratory analysis of soil samples did not indicate exceedances of hazardous waste regulatory thresholds. In general, soil conditions identified at the rail yard were not materially different from the rest of the project site.

No testing was performed in the streets within the project site because of the logistical and physical challenges of doing so. However, testing was completed in sidewalks adjacent to project streets and test results did not indicate any unique concerns. Subsurface conditions beneath these areas could have been locally affected by historic fill and/or releases related to petroleum storage (tanks are sometimes located beneath sidewalks and fill lines for tanks in or under buildings are frequently located in the sidewalk) or utility lines. In addition, contaminant

migration from adjacent properties could affect the subsurface condition beneath project site streets and sidewalks.

Groundwater

Groundwater under the site and flowing onto the site from upgradient, as is common elsewhere in Brooklyn, generally does not meet potable water standards since it exceeds drinking water standards for chlorinated VOCs (particularly trichloroethene and tetrachloroethene, also known as perchloroethene or "perc," two common solvents). In general, exceedances of these standards were less than ten-fold, with the higher levels generally toward the eastern end of the site. Metals in unfiltered and filtered groundwater samples generally exceeded drinking water standards. However, filtered samples are more representative of true groundwater conditions because suspended soil particles are removed. In the filtered samples, it was only the typically naturally occurring metals (such as sodium and manganese) that exceeded drinking water standards site-wide, and exceedances were generally less than ten-fold. On the western end of the site, consistent with gasoline station releases, gasoline-related VOCs were found in groundwater samples at levels exceeding drinking water standards, with some exceedances more than 100 times the standard. Groundwater in Brooklyn is not used as a source of drinking water.

Soil Gas

Soil gas sampling was conducted around the site perimeter only. As would be expected, the soil gas samples generally contained petroleum-related VOCs in areas near current or former gasoline filling stations. Chlorinated VOCs exceeded guidance values near the eastern site perimeter, consistent with the finding of chlorinated solvents in the groundwater beneath and around the site. Many soil vapor samples on the site perimeter also indicated generally lesser exceedances of guidelines for petroleum-related VOCs where there was no obvious source of soil or groundwater contamination findings by individual block.

Findings by block are detailed in Table 10-1. The known and potential contaminants identified above are typical of those found in urban areas, especially in areas where gas stations and other auto-related uses are present. The primary concerns for this project, related to potential contaminants, are worker and community health and safety, and managing the products of demolition and excavation in an appropriate manner. The preventive measures that would be employed to address these concerns are discussed later in the chapter.

Table 10-1
Existing Uses and Environmental Conditions by Block and Lot

Block	Lot	Interior Access/ Testing	Site Uses and Phase 1 ESA Issues	Phase 2 ESA Findings
927	**1**	No/Yes	'Site 5.' 1-story commercial structure and parking lot, built in 1998. A Phase 1 was performed in 1997, before construction of current building; site was a parking lot at the time. Possible on-site current/historic fuel oil storage.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Groundwater exceedances for metals, one SVOC, and two chlorinated VOCs, characteristic of regional groundwater conditions.
927	**16**			
1118	**1**	Yes/Yes	Vacant 1-story building and paved yard. Formerly occupied by an auto repair shop and gasoline filling station. Historic USTs, hydraulic lifts, grease pit and oil-water separator/drainage structures, all potentially still present. Monitoring well on Flatbush Avenue sidewalk.	Elevated VOCs primarily in intermediate and deep soil samples and groundwater, consistent with historic gasoline station and auto repair shop. SVOCs, pesticides, lead exceedances in deep soil samples that were potentially mobilized from shallower soils by descending gasoline or solvents. Phase 2 confirmed USTs still present.
1118	**5**	Yes/No	2-story commercial building with basement, currently occupied by a restaurant. Building was renovated in 2001. No potential issues identified.	No testing.
1118	**6**	No/Yes	Open lot used as a staging area by MTA. Contains a hazardous materials storage trailer, drums, generator/tank, and storage of additional hazardous and general materials. Historic uses of potential concern include a machine shop, used auto lot, and a subway station/facility.	Exceedances of SVOCs, metals, and pesticides in the soil samples, characteristic of historic fill. One groundwater sample was collected and contained exceedances of VOCs, SVOCs, and one pesticide, characteristic of regional groundwater conditions.
1118	**21**	Yes/Yes	These combined lots contain a vacant 4-story residential building with a basement and ground-floor commercial use, known as the Underberg Building. Former restaurant equipment supply business on first floor. Posted registration of 1 aboveground fuel oil tank. Potentially additional ASTs or USTs. Large portions of the building were inaccessible to inspection, due to structural instability. Buildings have since been demolished.	. Exceedances of metals, pesticides and SVOCs in the shallow soil samples, characteristic of historic fill. Deep samples contained exceedances of metals. One groundwater sample was collected and contained exceedances of metals, and one VOC, characteristic of regional groundwater conditions.
1118	**22**			
1118	**23**			
1118	**24**			
1118	**25**			
1118	**27**			
1119	**1**	Yes/Yes	"U-Haul site." This property is occupied by a U-Haul truck rental facility consisting of an open lot and 1-story office building. Routine vehicle maintenance performed. Site drainage structures unknown. A known spill associated with known USTs on the site. Lot 1 was historically occupied by a gasoline filling station, and a metal working facility, including electroplating (1900s-1940s). Lot 64 was historically occupied by commercial uses and was vacant.	All Phase 2 samples were collected on Lot 1 portion of U-Haul site. Gasoline-related VOCs and SVOCs found in intermediate and deep soil samples, and VOCs in groundwater samples. Phase 2 survey located seven potential USTs.
1119	**64**			
1119	**7**	Yes/Yes	Portion of LIRR rail yard for 100+ years. Electrical substation, converters, transformers, and electric shed with floor-staining on this lot. Currently most transformers are non-PCB containing. Miscellaneous debris and localized surface soil-staining along rail tracks. Three containers with spare electric parts and fluorescent ballasts. Historic structure labeled "Car Shed and Ash Dump," and historic rubber company. Combined LIRR rail yards listed for closed-status hydraulic oil release.	Two minor PCB soil exceedances. Exceedances of pesticides in shallow soils possible from pest control measures or historic fill. Low-level SVOCs in two groundwater samples; one deep soil sample showed SVOC exceedances. Three groundwater samples showed exceedances for petroleum-related VOCs.

Table 10-1 (cont'd)
Existing Uses and Environmental Conditions by Block and Lot

Block	Lot	Interior Access/ Testing	Site Uses and Phase 1 ESA Issues	Phase 2 ESA Findings
1120	**1**	Yes/Yes	Portion of LIRR rail yard for 100+ years. Contains miscellaneous drums, kerosene, grease, solvent and other containers, and a pile of soil from various repair operations, wheel oilers/greasers with associated soil-staining, and a 1-story office building with suspected petroleum tank(s). Combined LIRR rail yards listed for closed-status hydraulic oil release.	Shallow soil samples indicative of historic fill and potentially pest control and rail maintenance practices. One soil sample tested as hazardous waste (for lead) adjacent to a NYCDOT bridge with likely LBP. No PCB exceedances found. Groundwater had exceedance for one pesticide.
1120	**19**	No/No	Occupied by a 3-story vacant commercial building (built 1908) with associated vent and fill pipe. DOB records of both historic gasoline and fuel oil tank(s). Historic warehouse, manufacturing, and 'American Railway Express' facility.	No testing.
1120	**28**	No/No	Occupied by 6-story vacant warehouse/commercial building with associated vent pipes [suspected fuel oil tank(s)]. Contains a side-alley with a dumpster. Historic manufacturing facility, including gas fixtures foundry and acid room. DOB records of a fuel oil tank, a vacancy/unsafe complaint, and fire damage.	No testing.
1120	**35**	Yes/Yes	Historic gasoline station (mid 1960's – 2003) with known spills and remediation. Tanks were removed and spills closed after investigation/removal activities. Currently a vacant lot with one drum of unknown contents. DOB records of historic fuel oil tank (1906). Historic warehouse and blacksmith prior to 1960's.	Sampling showed no indication of remaining petroleum-related groundwater contamination; however one shallow soil sample contained petroleum-related exceedances.
1121	**1**	Yes/Yes	Portion of LIRR rail yard and NYCT storage yard for inactive buses. Lot contains train maintenance bays, equipment storage such as ASTs, storage trailers, oil-water separator, and drums. Drainage gutter in maintenance bays discharges to a sump. Two known spills (closed) lube oil and hydraulic oil (associated with general LIRR Yard facility). Debris, discarded drums, and housekeeping violations; soil staining along tracks and on paved bus yard; and historic paints/machine room.	Shallow soils contain exceedances of pesticides, metals, SVOCs, generally typical of historic fill or possibly rail yard usage and former pest control practices. Groundwater exceedances for SVOCs and one pesticide. No PCB exceedances found.
1121	**42**	No/No	Active gasoline station with 1-story structure. Current and historic USTs, application to upgrade tanks in 2003. Closed spill for a car wash possibly at this address. Historic blacksmith.	No testing.
1121	**47**	Yes/Yes	Active gasoline and auto service station with USTs, since 1950's. Upgraded tanks circa 2002, with DOB housekeeping complaints. Known spills (status closed). Historic paint facility.	One soil sample on the Vanderbilt Avenue sidewalk (east-adjacent Lot 47) indicated presence of gasoline-related VOCs.
1127	**1**	Yes/Yes	Active gasoline and auto service station undergoing remediation under New York State Department of Environmental Conservation (NYSDEC) Spill Program. DOB records of historic fuel oil tank(s). Three service bays include hydraulic lifts and storage of auto repair fluids. Oily sheen observed in catch basin and on paved surfaces. Historic printing use. Lot has a NYC E-designation for hazardous materials.	On-site environmental quality data for soil and groundwater obtained from regulatory program file. Known petroleum-related soil and groundwater contamination, including floating gasoline. Site is undergoing remediation under NYSDEC Spills Program. In addition, two shallow soil borings completed on sidewalk contained exceedences of metals, SVOCs, and pesticides; deep samples contained exceedances of metals. One shallow soil sample tested as hazardous waste (for lead). Exceeedances in soil are generally typical of historic fill.
1127	**10**	Yes/No	Occupied by 4-story residential building with ground-floor holistic care center. Interior was renovated in 2001. Historic fuel oil storage.	No testing.

Table 10-1 (cont'd)
Existing Uses and Environmental Conditions by Block and Lot

Block	Lot	Interior Access/ Testing	Site Uses and Phase 1 ESA Issues	Phase 2 ESA Findings
1127	**11**	Yes/Yes	Occupied by 2-story residential building facing Flatbush Ave, and 2-story loft (store and apartment) facing Pacific Street. Two buildings share a basement. Basement contains typical building maintenance supplies and a sump. Evidence of historic fuel oil storage; no tank observed, but one room in basement was inaccessible.	.Exceedances of SVOCs, metals, and pesticides in shallow soil samples, characteristic of historic fill (only shallow samples were collected from the basement).
1127	**12**	Yes/Yes	3-story vacant residential/commercial building and 1-story vacant building on lot. Site was formerly occupied by offices of NYCT engineers.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill (only shallow soil sampling performed).
1127	**13**	Yes/Yes	Vacant fenced lot. Occupied by commercial use until 1980's. Likely partially unpaved and a concrete slab on portion sinking into former basement. Possible on-site fuel oil storage according to DOB records.	Some SVOC, metals, and pesticides exceedances in deeper soil samples and exceedances of SVOCs, metals and VOCs in groundwater samples.
1127	**18**	Yes/No	3-story residential building. Fuel oil AST in basement. Vacant for several years prior to 1999, when gut renovations were completed without a permit.	No testing.
1127	**19**	YesYes	2-story vacant commercial building. Evidence of former use for auto repair (debris and drums were present, and illegal auto repair reported). Potential historic gasoline tanks and fuel oil tank. Building has since been demolished.	Exceedances of metals, pesticides, SVOCs primarily in the shallow soils, characteristic of historic fill. Groundwater exceedances of SVOCs and one VOC, characteristic of regional groundwater conditions.
1127	**20**	Yes/Yes	1-story vacant garage with basement. Building in poor condition. Appears to have been associated with illegal auto repair on Lot 19 with drums in a basement pit and abandoned cars. No access to inspect the basement. Current or historic fuel oil storage (DOB records). Building has since been demolished.	Exceedances of metals, SVOCs, pesticides primarily in the shallow soils. Groundwater contained no exceedances except one VOC, and metals, characteristic of regional groundwater conditions.
1127	**21**	Yes/Yes	4-story residential building with ground-floor and basement formerly occupied by a perfume distributor. Historic fuel oil tank records, but no evidence of a current tank.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill (only shallow soil sampling performed).
1127	**22**	Yes/Yes	1-story building used as a construction field office. Building formerly a provisions manufacturing company. Known on-site fuel oil AST and spill (closed). Historic manufacturing and parking. Lot has NYC E-designation for hazardous materials.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Groundwater exceedances (monitoring well on adjacent sidewalk) for metals, SVOCs, and chlorinated VOCs, characteristic of regional groundwater conditions.
1127	**1101-1131 (formerly Lot 27)**	Yes/Yes	8-story condo building and landscaped yard. Possible fuel oil storage tank (DOB oil burner record and boiler room inaccessible). Complaint of an illegal auto repair on property (1993). Historic warehouse and vacant lot/auto parking. Lot has NYC E-designation for hazardous materials.	Pesticide exceedances in shallow soil samples may be indicative of former pest control practices. Exceedances of metals and SVOCs in shallow soil samples, characteristic of historic fill.
1127	**29**	Yes/Yes	2-story commercial building used as office/warehouse for an importer. No evidence of storage tanks. Historic blacksmith. Lot has a NYC E-designation for hazardous materials.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Groundwater exceedances for metals, SVOC, and chlorinated VOCs, characteristic of regional groundwater conditions.
1127	**30**	Yes/Yes	3-story commercial building occupied by small-scale print shop and residence. Fuel oil AST in basement. Small amounts of stored chemicals/solvents. Potential additional historic fuel oil storage (DOB records). Historic manufacturing, laboratory (with historic tank), metalworking, and commercial printer. Lot has a NYC E-designation for hazardous materials.	Only shallow soil sampling performed. Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill.

Table 10-1 (cont'd)
Existing Uses and Environmental Conditions by Block and Lot

BLOCK	LOT	INTERIOR ACCESS/ TESTING	Site Uses and Phase 1 ESA Issues	Phase 2 ESA Findings
1127	33	No/No	2-story New York City Fire Department (FDNY) property with a likely closed/removed diesel tank in cellar.	No testing.
1127	1001-1021 (formerly Lot 35)	Yes/Yes	4-story condominium building, newly renovated. Historic manufacturing (until 1990s), former on-site gasoline storage and possible former on-site fuel oil storage. Fill port in sidewalk. No evidence of tanks in building.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Groundwater sample collected on adjacent sidewalk had exceedances for chlorinated VOCs, characteristic of regional groundwater conditions.
1127	43	Yes/No	Two attached residential buildings with basement, ground-floor restaurant. Basement of 485 Dean Street contains two fuel oil ASTs and sump.	No testing.
1127	45	No/No	3-story (plus garden level) residential building. Possible on-site fuel oil storage (DOB records).	No testing.
1127	46	Yes/Yes	3-story (plus garden level) residential building. One fuel oil AST and sump in basement.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Groundwater exceedances for metals, SVOC, and chlorinated VOCs, characteristic of regional groundwater conditions.
1127	47	No/No	Paved parking lot, and historically residential.	No testing.
1127	48	Yes/Yes	6-story commercial and residential building with paved parking lot and 1-story (inaccessible) structure. Historic manufacturing use. First floor contains fine art/woodworking studio with loading dock in rear. Fuel oil AST in basement, replaced older tank in 2002, and sump in basement. Suspected former fill port and concrete patch in parking lot. Transformers in building.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Groundwater exceedances for metals, SVOC, and chlorinated VOCs, characteristic of regional groundwater conditions.
1127	50	Yes/No	4-story residential building in front, and 2-story residential in rear with center paved and vegetated yard. Fuel oil UST beneath center yard. UST associated with closed spill when tank was overfilled; some staining still present. 2-story building not accessed.	No testing.
1127	51	No/No	1-story institutional (union hall) building and paved parking lot. Possible on-site or historic fuel oil storage (DOB records prior to current building's construction). Historic uses were vacant and residential.	No testing.
1127	54	Yes/Yes	2-story vacant commercial building.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Groundwater exceedances (sample collected from adjacent sidewalk) for metals, SVOC, and chlorinated VOCs, characteristic of regional groundwater conditions.
1127	55	Yes/Yes	Two vacant 3- and 4-story residential buildings and yard. In 4-story building, one current and one historic fuel oil AST in basement; unfinished concrete floor. 3-story building inaccessible (poor condition). Historic manufacturing and printing. Buildings have since been demolished.	Exceedances of metals, pesticides and SVOCs primarily in shallow soil samples, characteristic of historic fill. Groundwater exceedances for metals, and one VOC, characteristic of regional groundwater conditions.
1127	56	Yes/Yes	4-story vacant residential building with overgrown yard. No on-site issues. Building has since been demolished.	Exceedances of metals, pesticides, SVOCs primarily in shallow samples, characteristic of historic fill. Groundwater exceedences for metals, one pesticide, and one VOC, characteristic of regional groundwater conditions.
1128	1	Yes/Yes	Lots 1 and 2 are combined as a paved parking lot with trash, debris, and dumped material, historically occupied by two residential buildings destroyed in fire circa 1970.	Exceedances of metals, pesticides, SVOCs primarily in shallow samples characteristic of historic fill. Groundwater exceedances for one metal, one pesticide, and one VOC, characteristic of regional groundwater conditions.

Table 10-1 (cont'd)
Existing Uses and Environmental Conditions by Block and Lot

BLOCK	LOT	INTERIOR ACCESS/ TESTING	Site Uses and Phase 1 ESA Issues	Phase 2 ESA Findings
1128	**2**	Yes/Yes		
1128	**4**	No/No	3-story commercial building. Historic transformer manufacturing company and printing. Known solvent use and other hazardous waste generation. Possible on-site fuel oil storage. Lot has NYC E-designation for hazardous materials.	No testing.
1128	**85**	No/No	2-story residential building. No apparent issues.	No testing.
1128	**86**	No/No	4-story residential building. No apparent issues.	No testing.
1128	**87**	No/No	3-story vacant residential building. Possible on-site fuel oil storage (DOB records). Complaint of debris in yard and vacant/open property.	No testing.
1128	**88**	Yes/No	3-story residential building. Fuel oil AST with staining on neck of storage tank in cellar of building. Miscellaneous equipment and machinery in cellar and build-out located in rear of building.	No testing.
1128	**89**	No/No	3-story residential building with ground-floor commercial. No apparent issues.	No testing.
1129	**1**	Yes/Yes	Lots 1, 3, and 4 combined are a paved parking lot surrounded by fence and roll-up doors. Abandoned and damaged vehicles, debris, trash, drum, wood pallets. Minor staining on asphalt. Historically vacant and residential.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Groundwater exceedances for metals and chlorinated VOCs, characteristic of regional groundwater conditions.
1129	**3**	Yes/Yes		
1129	**4**	No/No	Contiguous to Lots 1 and 3. See above.	No testing.
1129	**5**	No/No	Vacant paved lot with abandoned cars and debris. Historic manufacturing use.	No testing.
1129	**6**	No/No	Unpaved parking lot with trailer/office and two dumpsters, occupied by moving and storage company. Historic machine shop. Possible former fuel oil storage.	No testing on property. Monitoring well installed on west-adjacent sidewalk contained chlorinated VOCs, characteristic of regional groundwater conditions.
1129	**13**	No/No	Vacant 1-story structure and vacant 6-story commercial structure. Historic manufacturing use and known spills from transformer vaults. Historic use indicated as a typewriter ribbon/carbon paper manufacturer.	No testing.
1129	**21**	No/No	Occupied by a 5-story commercial building. Vent and fill pipe outside, likely petroleum storage tank(s). Historic manufacturing and 'spraying'.	No testing.
1129	**25**	Yes/Yes	Occupied by 3- to 5-story building plus 2-story garage. Vacant and mostly gutted. Historic commercial bakery and garage (with fueling/auto repair). Known and suspected gasoline USTs and fuel oil ASTs. Hydraulic lifts in garage; exhaust stack. Transformer vault on adjacent sidewalk.	Two shallow soil samples showed VOCs consistent with petroleum release. Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill.
1129	**39**	No/No	5-story commercial building, now document storage. Historic garage with three gasoline USTs and possible fuel oil tanks.	No testing.
1129	**43**	Yes/Yes	4-story residential building with basement and rear yard containing debris. Fuel oil AST.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Only shallow soils samples were collected.

Table 10-1 (cont'd)
Existing Uses and Environmental Conditions by Block and Lot

BLOCK	LOT	INTERIOR ACCESS/ TESTING	Site Uses and Phase 1 ESA Issues	Phase 2 ESA Findings
1129	**44**	No/No	4-story residential building. No apparent issues.	No testing.
1129	**45**	Yes/Yes	1-story auto repair shop with suspected UST(s). Fill and vent for 1 tank observed. Machine tools and auto repair equipment/fluids on first floor and storage in basement. Historic machine shop/scrap metal facility.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. No deep soil or groundwater sampling. Only shallow soil samples were collected.
1129	**46**	Yes/Yes	1-story vacant restaurant and 3-story commercial/residential building and paved parking lot. Historic gasoline station with gasoline USTs, evidence of closure in-place. Current and historic auto repair operations in building. Service bays formerly contained hydraulic lifts. Fuel oil AST in cellar of 3-story building. Abandoned cars, auto-repair related debris and containers in nearly all portions of both buildings and lot. Lot has NYC E-designation for hazardous materials.	Exceedances of metals and SVOCs primarily in shallow soils characteristic of historic fill. VOCs exceedances in intermediate soils consistent with historic gasoline station and auto repair shop operations. Groundwater exceedances for one metal, and VOCs, characteristic of regional groundwater quality.
1129	**49**	Yes/Yes	4-story residential with rear yard. Closed fuel oil AST present in basement.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Only shallow soil samples were collected.
1129	**50**	Yes/Yes	1-story auto repair garage and fenced rear yard. Fuel oil AST and three other ASTs (waste and motor oil) in cellar and rear yard. Hydraulic lifts and maintenance pit, some staining. Historic closed waste oil UST and historic gasoline UST (status unknown). Lot has NYC E-designation for hazardous materials.	Exceedances of metals, predominantly in the shallow samples. Groundwater exceedances for metals and one VOC, characteristic of regional groundwater quality.
1129	**54**	Yes/Yes	5-story vacant structure, with 1-story addition, and paved fenced parking lot. Part of former commercial bakery on Lot 25. Most recently document storage. Evidence of two potential fuel oil tanks, and additional suspected UST. Suspected tank piping next to off-site auto repair.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Monitoring well installed across the street contained chlorinated VOCs, characteristic of regional groundwater conditions.
1129	**62**	Yes/No	2-story commercial/warehouse building occupied by a wood support producer and supply warehouse. Small containers of glues and wood treatment products. Historic hydrogen peroxide manufacturer; rag sorting and bailing facility. Possible former fuel oil storage.	No testing.
1129	**76**	No/No	2-story institutional use. Historic manufacturing facility with machine shop and metalworking. Gasoline, kerosene, and possibly fuel oil storage.	No testing.
1129	**81**	Yes/Yes	2-story warehouse. First floor is a furniture distributor and remainder vacant. Fuel oil AST on first floor. Some staining near two suspected sumps, drum of oil, and discarded equipment. Building has since been demolished.	Exceedances of metals, pesticides and SVOCs in shallow soil samples, characteristic of historic fill. Groundwater exceedances for metals and chlorinated VOCs.

D. FUTURE WITHOUT THE PROPOSED PROJECT

Without the proposed project, the project site is not anticipated to experience substantial change because of the existence of the open rail yard and the low-density industrial zoning regulations. However, it is possible that some of the more intact residential and commercial buildings that were occupied prior to purchase by the project sponsors would be reoccupied. In the event that projects independent of the proposed project were to occur on any lot that has the potential for hazardous material contamination, such development could result in the exposure of construction workers and nearby residents to hazardous materials. E-designations for hazardous materials apply to the following properties: Block 1127, Lots 1, 22, 27, 29, and 30; Block 1128, Lot 4; and Block 1129, Lots 46 and 50. An E-designation for hazardous materials is a mechanism that requires a developer to obtain approval from the New York City Department of Environmental Protection (DEP) for the issuance of building permits where contamination is known or suspected. Typically, Phase 1 and Phase 2 ESAs and, if necessary, remediation and/or implementation of health and safety plans, are required for renovation or redevelopment of E-designated properties.

Investigation and remediation of the active gasoline station spill (Block 1127, Lot 1) is already underway with the oversight of the NYSDEC and would continue, though likely at a slower pace than if construction were undertaken for the proposed project. A second active spill, at the U-Haul facility (Block 1119, Lots 1 and 64), is already known to NYSDEC but, according to NYSDEC records, no recent activity has taken place either to close the spill or to remediate the property. The extent of remediation on both these properties might be less without the proposed project, as soil removal underneath roadways and adjacent properties is not usually required as part of site cleanups. However, without the proposed project there would likely be no potential exposure to such soils. The remediation of contamination at sites where spills have not been reported, or for which there is no E-designation for hazardous materials, would likely take place only if contamination were encountered during development of that site.

Overall, without the proposed project, there would be a lower potential for disturbance of hazardous materials, but, unlike conditions in the future with the proposed project (where remediation would be performed under construction health and safety plans and would include remediation of contamination under the streets and on adjacent properties), there would be less extensive remediation of hazardous materials.

E. PROBABLE IMPACTS OF THE PROPOSED PROJECT—2010

Construction of the proposed project would involve both demolition of existing structures (which are known to contain LBP, ACMs, and PCB-containing electrical components) and a variety of earthmoving/excavating activities that would encounter contamination within fill and soil. Groundwater is not expected to be encountered.

The presence of hazardous materials threatens human health or the environment only when exposure to those materials occurs, and, even then, a health risk requires both a complete exposure pathway to the contaminants and a sufficient dose to produce adverse health effects. In order to prevent such exposure pathways and doses, the proposed project would include appropriate health and safety and investigative/remedial measures (conducted in compliance with all applicable laws and regulations and conforming to appropriate engineering practice) that would precede or govern both demolition and soil disturbance activities. These measures are discussed more fully in the next section, but would include:

- Procedures for pre-demolition removal of asbestos and appropriate management of LBP and of PCB-containing equipment.
- Additional subsurface investigation, both to study sites not yet investigated and to better characterize soils to be removed for project excavation.
- Development of a Construction Health and Safety Plan (CHASP) for site remediation and excavation that would include detailed procedures for managing both known contamination issues (e.g., tank removal and soil and groundwater remediation of existing gasoline stations) and any unexpectedly encountered contamination issues. The CHASP would also include procedures for avoiding the generation of dust that could affect the surrounding community as well as the monitoring necessary to ensure that no such impacts are occurring.

F. SITE REMEDIATION

EXISTING STRUCTURES

Asbestos-Containing Materials (ACM) Management Plan

Proper handling, removal and disposal of ACM is governed by federal requirements (Occupational Safety and Health Administration 29 CFR 1926.1101, Department of Transportation 49 CFR 171-173, and EPA 40 CFR 61), New York State requirements (Labor Law Article 30 - Asbestos or Products Containing Asbestos Licensing and 12 NYCRR Part 56 Asbestos Regulations) and New York City requirements (Rules of the City of New York Title 15—Handling and Disposal of Asbestos). Appropriate engineering controls (e.g., wetting and other dust control measures) to minimize asbestos exposure would be implemented prior to and throughout demolition/renovation.

Lead-Based Paint (LBP) Management Plan

If lead-coated surfaces are present, an exposure assessment would be performed to determine whether lead exposure would occur during the demolition. If the exposure assessment were to indicate the potential to generate airborne dust or fumes with lead levels exceeding health-based standards, a higher personal protection equipment standard would be employed to counteract the exposure. In all cases, appropriate methods to control dust and air monitoring, as required by OSHA, would be implemented during demolition activities.

PCB-Containing Equipment

Suspected PCB-containing equipment (e.g., transformers, electrical feeder cables, hydraulic equipment, and fluorescent light ballasts) would be surveyed and evaluated prior to building demolition or utility relocation. PCB-containing equipment that would be disturbed by the work would be removed and disposed of in accordance with applicable federal (40 CFR Part 761), state (6 NYCRR Parts 360 – 376), and local regulations. Unless suspected PCB-containing equipment is labeled to be "non-PCB," it must be tested or assumed to be PCB-containing and disposed of at properly licensed facilities.

SUBSURFACE DISTURBANCE

As described under "Existing Conditions," and in Table 10-1, in addition to the identified areas of known contamination (e.g., the gas stations and two spot locations with lead levels exceeding hazardous waste thresholds) the entire project site has some potential for the presence of

subsurface hazardous materials. The shallow soil (0 feet to 15 feet below grade) has low levels of metals, SVOCs, and pesticides consistent with urban historic fill. The deeper soil below the current and former gasoline filling stations (e.g., Block 1118, Lot 1) is impacted by petroleum-related compounds. The proposed excavation depth of up to approximately 46 feet below grade (average 30 feet) would remove the majority of these soils from the site. Additionally, minor excavations in other areas within the site to depths of approximately 6 feet are anticipated for the installation of utilities. Because of the depth of groundwater, dewatering is not anticipated. Any remaining impacted soil would be isolated by the concrete slabs and foundations of the proposed buildings.

Detailed procedures would be incorporated into the project's construction documents to govern excavation and other activities that would entail subsurface disturbance. For the various types of materials (e.g., petroleum-contaminated soils, historic fill, or native materials), the types of commitments that would be included in the specifications (both to meet all applicable legal requirements and to minimize potential impacts) are described below. Preventive measures would be undertaken to protect the safety of the public, community residents, and construction workers, as well as the larger environment. These measures would include subsurface investigations at properties that have not yet been investigated. All work would be performed in accordance with applicable City, state, and federal requirements.

Sites Not Yet Investigated

At lots where it has not been undertaken already, and as access becomes available, a Phase 1 ESA would be conducted, followed by subsurface testing (to guide health and safety procedures and measures necessary to protect both workers and the community, and to indicate whether special handling or disposal of soils or excavated materials is likely to be required during development). A summary report would be prepared following the completion of each sampling program. The report would document field activities, present field and laboratory data, and discuss conclusions and recommendations drawn from the results of the investigation. The report would compare the analytical results with appropriate City, state, and federal standards and guidelines. Further investigation and/or remediation would occur, as necessary, prior to and/or during construction. As noted under "Findings Common to All Blocks," subsurface sampling of the streetbeds has not been performed as part of the Phase 2 ESA subsurface sampling. For the streetbeds that would be used by the proposed project, subsurface investigations would be performed. The protocols for further investigation and/or remediation would be presented in site-specific Sampling and/or Remediation Plans, as necessary, which would include Health and Safety Plans (HASPs).

Construction Health and Safety Plan (CHASP)

Prior to site excavation, a Construction Health and Safety Plan (CHASP) would be prepared to address both the known contamination issues (based on the Phase 1 and Phase 2 studies) and contingency items (e.g., finding unexpected petroleum storage tanks or petroleum-contaminated soil). The CHASP would describe in detail the health and safety procedures to minimize exposure of hazardous materials to workers and the public. The hazards across the project site would be evaluated by determining the subsurface contaminants of concern and their chemical and physical characteristics, and health hazards would be considered within the potential exposure associated with the work to be performed. The CHASP would be developed in accordance with OSHA regulations and guidelines. The CHASP is expected to include the elements described below:

Appropriate personnel would be designated to ensure that all requirements of the CHASP are implemented, including a Health and Safety Officer (HSO) and an on-site Site Safety Officer (SSO). The HSO would oversee the SSO and be responsible for coordinating and reporting all health and safety activities. The HSO would have completed a 40-hour training course, supervisory training and updated annual refresher courses that meet OSHA requirements codified in 29 CFR Part 1910, Occupational Safety and Health Standards. The SSO would be a competent person responsible for the implementation of the CHASP, who would have completed either the 24-hour training course for an Occasional Hazardous Waste Site Worker or the 40-hour training course for the Hazardous Waste Operations Worker that meets OSHA requirements codified in 29 CFR Part 1910. The SSO would have stop-work authorization, which he/she would execute on his/her determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the HSO is to be absent from the site, he/she would designate a suitably qualified replacement who is familiar with the health and safety plan.

The CHASP would require that on-site personnel are qualified and have received the required training. All those who enter the work area while intrusive activities are being performed must receive instruction regarding the potential hazards to health and safety. All construction personnel upon entering the site must attend a training meeting, its purpose being to:

- Make workers aware of the potential hazards they may encounter;
- Provide the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- Make workers aware of the purpose and limitations of safety equipment; and
- Ensure that they can safely avoid or escape from emergencies.

Each member of the construction crew would be instructed in these objectives before he/she goes onto the site. The HSO, SSO or other suitably trained individuals would be responsible for conducting the training program. Others who enter the site must be accompanied by a suitably trained construction worker.

The CHASP would include contingency response plans. All excavation would be continuously monitored for the presence of buried tanks, drums or other containers, sludges, or soil which shows evidence of potential contamination, such as discoloration, staining, or odors. If any of these are detected, excavation in the area would be halted, and appropriate personnel would be notified, including the HSO and New York State Department of Environmental Conservation (NYSDEC). The affected area would be cordoned off and no further work would be performed at that location until the appropriate contingency response plan described in the CHASP is implemented. All contingency response actions would be carried out in accordance with special contingency Health and Safety procedures.

An emergency response plan would also be included in the event that monitoring data indicate a potential major hazard, and protocols for reporting spills or other concerns to relevant governmental agencies would be defined.

To prevent the potential off-site transport of dust, dust control measures would be implemented during all earth-disturbing operations. Water would be available on-site for sprinkling/wetting to suppress dust in dry weather or as necessary. Water would be used to suppress dust on haul roads, to wet equipment and excavation faces, and would be sprayed on buckets during excavation and dumping. All haul trucks would have tarp covers, and dust or mud would be

removed from tires before leaving the site. Vehicle speeds would be limited to 5 mph on the project site. Any stockpiled excavated material would be securely covered with tarps or plastic sheeting to prevent dust or run-off.

To protect the public, the CHASP would require the Community Air Monitoring Plan (CAMP) procedures of the New York State Department of Health (NYSDOH) to be implemented during excavation. A site-specific CAMP would be prepared based on the most recent NYSDOH guidance documents. The current guidance document is titled "Generic Community Air Monitoring Plan" and is published as Appendix 1A to NYSDEC's guidance DER-10, Technical Guidance for Site Investigation and Remediation (draft December 2002). At the start of work, air monitoring stations would be established at the perimeter upwind of the work activities and at the downwind perimeter of the work zone. Monitoring for VOCs and PM_{10} at the upwind and downwind stations would be conducted when soil is disturbed. If levels exceed the CAMP action levels specified by the NYSDOH guidance at the downwind perimeter station, the prescribed control measures would be immediately implemented, and continuous monitoring at the downwind perimeter station would be conducted until air monitoring levels are re-established below the CAMP action levels. Background readings and any readings that trigger response actions would be recorded in the project logbook, which would be available on-site for agency review.

In accordance with New York City requirements, air monitoring would also be performed during all abatement of friable asbestos-containing materials. Air monitoring for asbestos is performed by an independent third-party monitor not associated with the abatement contractor. All monitoring must be performed by New York State-licensed asbestos project air sampling technicians. Air monitoring is generally performed before, during, and after abatement activities. Pre-abatement monitoring establishes baseline background levels. Monitoring during abatement is intended to detect any airborne asbestos which escapes from the containment systems used to enclose the abatement area. If asbestos concentrations exceeding action levels are detected, work is stopped while barriers are inspected and restored, and any surfaces impacted by fugitive asbestos are cleaned. Post-abatement monitoring is performed to confirm that no airborne asbestos is present prior to the start of demolition work.

Community air monitoring for lead is not generally required during building demolition. When conducting demolition, (unlike lead abatement work) lead-based paint is generally not stripped from surfaces. Structures are disassembled or broken apart with most paint still intact. Normal dust control measures (spraying the building with water) will be used during demolition. The lead content of any resulting dust is therefore expected to be low, and normal dust control measures are sufficient to prevent off-site impacts. Work zone air monitoring for lead may be performed during certain demolition activities with a high potential for releasing airborne lead-containing particulates in the immediate work zone, such as manual demolition of walls with lead paint, or cutting of steel with lead-containing coatings. This monitoring would be intended to ensure that workers performing these activities are properly protected against lead exposure.

WASTE MANAGEMENT

The CHASP would also address procedures for stockpiling, testing, loading, transporting (including truck routes), and properly disposing of all excavated material. It is anticipated that the majority of excavated material would be characterized "in-situ," i.e., sufficient sampling would be performed to classify the material (e.g., as hazardous waste, petroleum-contaminated wastes, historic fill containing construction/demolition debris, or uncontaminated native soils)

before it is excavated. The extent and parameters of this testing are dependent on the requirements of the waste disposal facilities, each of which may have different requirements for representative waste sampling and laboratory analysis prior to accepting material for disposal.

This approach would minimize the need for stockpiling and double-handling of material, which can increase the generation of dust. All excavated material would be handled and disposed of properly to comply with federal, state, and local environmental laws. Among the pertinent regulatory requirements are those found in 6 NYCRR Parts 360 through 376, which identify hazardous waste and other waste management requirements. Any waste disposal that would occur outside of New York State would be regulated by similar federal and individual state requirements. According to Toxic Characteristic Leaching Procedure (TCLP) results of soil testing performed as a part of the Phase 2 ESA, the soil did not exceed the EPA threshold for hazardous waste, except for lead in two samples.

Wastes containing hazardous materials require special handling, storage, transportation, and disposal methods to prevent releases that could impact human health or the environment. Depending on the nature of the material, federal, state, and local regulations require the use of special containers or stockpiling practices for on-site storage of the material to prevent the release of hazardous materials to the environment. The federal, state, and local departments of transportation have requirements for transportation of wastes containing hazardous materials. Facilities that receive hazardous materials require federal, state, and local permits to accept the waste, and generally require that specific representative waste sampling and laboratory analysis protocols be conducted prior to accepting material for disposal.

Petroleum Storage Tanks

All of the known, and any unexpected, aboveground or underground petroleum storage tanks would be removed in order to complete the proposed project. The removal is regulated by NYSDEC (6 NYCRR Section 613.9), which requires that tanks no longer in use be closed in place or removed according to specific requirements. Contaminated soils surrounding the tanks, separate phase product on the water table, or contaminants dissolved in the groundwater are also subject to NYSDEC regulations (6 NYCRR Section 611.6). Article 12 of the New York Navigation Law provides notification and management requirements for spills to the waters of the state.

The gasoline station on Block 1127, Lot 1, and the U-Haul facility on Block 1119, Lots 1 and 64, both have active petroleum spill numbers on file with NYSDEC. Remediation of these spills would be completed (with all work performed under appropriate health and safety plans including air monitoring), all underground storage tanks would be removed, and all documentation would be provided to properly "close" these spills with NYSDEC.

Groundwater and Vapor Control

As discussed above in Section C, "Existing Conditions," groundwater sampling indicated a range of contaminants including petroleum-related VOCs (primarily at the western end of the site in the areas with current and former petroleum storage tanks) and chlorinated VOCs (across the site with generally higher levels at the eastern end of the site, but characteristic of regional groundwater conditions). Since groundwater is not used as a source of drinking water in Brooklyn, the potential concern associated with this contamination is that VOCs could migrate up from the groundwater, through the subsurface, into the proposed buildings. However, the designs of the proposed buildings would incorporate elements that provide safeguards against

such migration. The residential and community facility uses would be located either above ventilated underground facilities or above the platform over the ventilated rail yard.

In addition to the safeguards incorporated into the buildings' design, it is anticipated that levels of petroleum-related VOCs would decline over time as the onsite sources of groundwater contamination (e.g., petroleum storage tanks and contaminated soil/fill) would mostly be removed by the project's excavation activities (however, the levels of chlorinated VOCs, to the extent they are associated with regional conditions, would not be expected to be significantly reduced by excavation activities). Finally, NYSDEC, which has regulatory control over petroleum spill-related groundwater contamination, may require petroleum-related groundwater cleanup (as is currently occurring at Block 1127, Lot 1). Cleanup would typically consist of removal of any separate-phase petroleum floating on the water table (e.g., by pumping or vacuuming), followed by in-situ treatment (e.g., injection into the groundwater of an oxygen supply compound, such as a dilute hydrogen peroxide solution, to enhance the growth of naturally occurring bacteria that accelerate petroleum hydrocarbon biodegradation rates).

E-Designations for Lots with Hazardous Materials

The following properties currently have UST-related hazardous materials E-designations on file with the New York City Department of Buildings (DOB): Block 1127, Lots 1, 22, 27, 29, and 30; Block 1128, Lot 4; and Block 1129, Lots 46 and 50. The tanks would be removed in accordance with DEP E-designation standards.

CONCLUSIONS

Contamination in the subsurface (related primarily to localized current or former gas stations and historic fill) and inside buildings (primarily related to asbestos and LBP) has been identified. However, with the implementation of a variety of measures set out above under "Site Remediation," no significant adverse impacts related to hazardous materials would be expected to occur as a result of construction and operation of the proposed project. Although some hazardous materials would likely still remain in the subsurface following construction of the proposed project, with the groundwater and vapor control measures outlined above, there would be no exposure pathways and thus no further potential for significant adverse impacts.

G. PROBABLE IMPACTS OF THE PROPOSED PROJECT—2016

Projections out to 2016 would not result in impacts significantly different from those presented above under "Probable Impacts of the Proposed Project—2010." Following the excavation and removal of the currently existing fill, the construction of open space portions of the proposed project would be performed using imported clean fill. The same procedures for assessing and managing contamination, and measures to avoid impacts, would be implemented during the Phase II work. Therefore, no significant adverse impacts would occur. ✷