CHAPTER 12: HAZARDOUS MATERIALS

12.1 Overview

The potential for impacts related to hazardous materials can occur when: elevated (i.e., above regulatory guidance values) levels of hazardous materials exist on a site and an action (e.g., construction) would create pathways for exposure, to either humans or the environment; or an action would introduce new activities or processes using hazardous materials and the risk of human and/or environmental exposure would be increased. This chapter identifies the nature and extent of hazardous materials within the Project Area and evaluates the potential impacts from hazardous materials due to implementation of the Proposed Action.

As detailed below, no significant adverse impacts are anticipated due to the Proposed Action. The proposed rezoning also would not result in significant adverse impacts on development sites identified with the potential to contain hazardous materials. No significant adverse hazardous materials impacts are anticipated as a result of the zoning map amendments because (E) Designations would be placed on the Zoning Map for all tax lots containing the potential to result in hazardous materials contamination.

12.2 Methodology

The methodology outlined in the *CEQR Technical Manual* is used to evaluate the Proposed Action's potential to lead to increased exposure of people or the environment to hazardous materials and whether the increased exposure would result in significant public health impacts or environmental damage.

12.2.1 Assessment Methods

In general it can be difficult to ascertain if a site contains elevated levels of hazardous materials, and, if suspected to contain elevated levels of hazardous materials, the extent of the potential contamination. For any sites with the potential to contain hazardous materials, an assessment of hazardous materials is appropriate, unless construction of the Proposed Action would not create a public health concern or introduce any new contaminants into the environment. Based on the scope and nature of the Proposed Action, it has been determined that a hazardous materials assessment would be appropriate. In addition, a site assessment for hazardous materials would also be appropriate if any future redevelopment of the property is among the actions included in Section 200 of the *CEQR Technical Manual* (e.g., rezoning from commercial to residential, development where underground and/or aboveground storage tanks are on or adjacent to the site). Selection of the types of assessment performed was dependent on the nature of the specific project element. To assess the Study Area, a Hazardous Materials Screening Study was performed to identify potential areas of environmental concern (AOCs). A Phase I Environmental Site Assessment (ESA) was performed on the Homeport Site to identify potential recognized environmental concerns (RECs) as defined by the American Society of Testing and Materials (ASTM) Standard Practice E 1527-00. For all Projected and Potential Development Sites identified within the

Rezoning Area preliminary screening assessment was conducted to identify potential hazardous material contamination; an (E) designation was recommended for the property if such potential contamination was identified. The different types of hazardous materials assessments performed are described below.

Hazardous Materials Screening Study

A Hazardous Materials Screening Study (HMSS) was performed to identify AOCs that could affect implementation of the Proposed Action. This review evaluated the Project and study area through of the review of available historic Sanborn Maps dating from 1898 to 1996, historic aerial photographs dating from 1943 to 1995, prior reports, regulatory agency records, and field reconnaissance. These sources were reviewed to develop prior use histories and identify sites whose occupants might have used, stored, generated, or disposed of hazardous materials. A field reconnaissance was performed to identify current land uses that could have the potential to result in the presence of hazardous materials. The results of the HMSS were subsequently applied to the Proposed Action to determine whether further investigation (e.g., sampling or other environmental surveys) would be required.

Phase I Environmental Site Assessment

The objective of a Phase I ESA is to identify the presence or likely presence, use, or release of hazardous substances or petroleum products, defined in the ASTM Standard Practice E 1527-00 as RECs. The Phase I ESA included a preliminary evaluation of other potential environmental issues or conditions that are not required by ASTM E 1527-00, such as radon, asbestos-containing material (ACM), lead-based paint (LBP) and polychlorinated biphenyl (PCB)-containing equipment. The Phase I ESA was performed for the former Stapleton Homeport site.

The Phase I ESA was conducted to determine past and present uses of the Homeport site and to identify potential sources of contamination based on historic and/or current land usage and/or as a result of incidents such as prior release events. This information was obtained through the review of historical maps, prior reports, regulatory agency records, reconnaissance of the site and adjoining properties, and interviews with persons familiar with property history and usage. Historical information sources for the Phase I ESAs included Sanborn Real Estate Atlases and Fire Insurance Maps (Sanborn Maps) from 1898 to 1996 and aerial photographs dating from 1943 to 1984. The U.S. Environmental Protection Agency (EPA) and New York State Department of Environmental Conservation (NYSDEC) records reviewed for these assessments included the following:

- National Priority List (NPL)
- Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) list
- Resource Conservation and Recovery Act (RCRA) hazardous waste treatment, storage, and disposal facilities list
- Inactive Hazardous Waste Disposal Sites list

- Major Oil Storage Facilities list (sites storing more than 400,000 gallons of petroleum products)
- Hazardous Waste Generators and Transporters list
- Historic Utility Facilities
- Chemical and Petroleum Bulk Storage Facilities list (under 400,000 gallons storage capacity)
- Hazardous Material Spills database
- Toxic Release Inventory Sites list
- Air and Toxic Wastewater Discharge Sites
- Civil Enforcement Docket sites (sites involved in environmental litigation).

ASTM E 1527-00 is the industry standard for environmental site assessments. The ASTM standard specifies the radial distances from each site for which database searches are performed.

The site reconnaissance included an assessment of the following elements: current use of building; type of heating system; current water and sanitary connections; the presence of vent pipes and fill caps associated with petroleum storage tanks; electrical transformers; areas of dumping or filling; potential ACM; potential LBP; chemical storage; groundwater monitoring wells; and fluorescent light fixtures.

Preliminary Screening Assessment

For all Projected and Potential Development Sites identified within the Rezoning Area, a preliminary screening assessment was conducted pursuant to Title 15, Rules of the City of New York, Chapter 24, Section 4. This evaluation was used to assess tax lots in the area subject to the Zoning Map Amendment and not under the control or ownership of the City. If the evaluation identified potential hazardous material contamination then an (E) Designation was recommended. An (E) Designation indicates that environmental requirements pertaining to potential hazardous material contamination have been established, which are incorporated into the provisions of a zoning map amendment. The conclusion of the preliminary screening assessment is that (E) Designations are warranted for properties expected to be redeveloped as a result of the proposed rezoning and which may contain the potential for hazardous materials contamination. The (E) Designation ensures that no significant adverse impact would result from the proposed rezoning, because the City requires appropriate measures be undertaken to mitigate potential hazardous materials impacts prior to construction activity. The preliminary screening assessment conducted for the Proposed Action included a review of historical and current land uses of the tax lot(s) included within the Projected and Potential Development Sites; adjacent (within 400 feet) lots were assessed as well. Regulatory agency databases were also reviewed for the listing of the aforementioned tax lots listings within the databases.

Development sites consist of properties within the area bound by Wave Street to the north, Thompson Street to the south, the SIR tracks to the west, and Front Street to the east.

12.2.2 Regulations and Guidance Values

The U.S. Occupational Safety and Health Administration (OSHA) has established permissible exposure limits for workers for airborne particulate, gas, and certain levels of organic and chemical vapors. Agencies, such as the New York City Department of Environmental Protection (NYCDEP), NYSDEC, New York State Department of Labor (DOL) and EPA, have set enforceable criteria to protect the public and the environment. Such agencies have established criteria for various chemical compounds, which vary depending upon the type of exposure. The soil and groundwater standards and reference values are generally based on the risks associated with either direct contact (ingestion, inhalation, or dermal contact) that could occur in a residential setting, or the potential impacts associated with groundwater that is used as a source of drinking water. Relevant standards and guidelines are summarized below and include federal hazardous waste regulations; various soil reference values promulgated by New York State agencies; New York State groundwater standards; and relevant regulations, standards, and guidelines for the removal of petroleum storage tanks, ACM, LBP, and PCBs.

OSHA Permissible Exposure Limits

The OSHA sets permissible exposure limits (PELs) to protect workers against the health effects of exposure to hazardous substances. PELs are enforceable regulatory limits on the amount or concentration of a substance in the air, and can also contain a skin designation. OSHA PELs are based on an eight-hour exposure. PELs for approximately 500 contaminants have been established and are contained in 29 CFR 1910.1000, the air contaminants standard.

Hazardous Waste Regulations

As defined by the Federal Resource Conservation and Recovery Act (RCRA), waste (e.g., excavated soil or building materials removed during demolition or renovation activities) can be classified as "hazardous waste" if it contains one of the federally "listed wastes" in the EPA's Code of Federal Regulations (40 CFR) 261 "Identification and Listing of Hazardous Waste," or if it possesses one of four hazardous characteristics ("D" wastes): ignitability, reactivity, corrosivity, or toxicity. The EPA has developed standard tests to measure these four characteristics. Three tests measure physical characteristics (ignitability, reactivity, and corrosivity) using numerical standards. The fourth, toxicity, the one most frequently exceeded by contaminated soils, is tested using the Toxicity Characteristic Leaching Procedure (TCLP), which provides a conservative estimate of the concentrations of contaminants that would leach into the groundwater if the material were disposed of in an unlined landfill. The RCRA toxicity characteristic regulatory limits are listed below in Table 12-1.

Soil Reference Values

Except for specific contaminants and circumstances, neither the Federal nor the New York State governments have promulgated a comprehensive set of numerical standards for the evaluation of environmental impacts caused by chemical contaminants in soils. Therefore, guidance or reference values are used to determine whether soils require management. The reference values have not undergone the rigorous analyses required for regulatory standards and, in many cases, might not be applicable to the situations found in the vicinity of the study area. In general, contaminants detected in soils are compared to the NYSDEC Division of Hazardous Waste Remediation's Technical and Administrative Guidance Memorandum (TAGM) #4046, "Determination of Soil Cleanup Objectives and Cleanup Levels," January 1994 (amended in December 2000). TAGM #4046 addresses contaminants in soil (i.e., volatile organic compounds [VOCs], semi-volatile organic compounds [SVOCs], metals, PCBs and pesticides and herbicides) from any potential source, and includes guidance values for chemicals of concern.

Table 12-1: RCRA Regulatory Limits

Volatile Organics	mg/l	Pesticides	mg/l
Benzene	0.5	Chlordane	0.03
Carbon Tetrachloride	0.5	Endrin	0.02
Chlorobenzene	100.0	Heptachlor	0.008
Chloroform	6.0	Heptachlor epoxide	0.008
1,2 Dichloroethane	0.5	Lindane	0.4
1,1 Dichloroethylene	0.7	Methoxychlor	10.0
Methyl ethyl ketone	200.0	Toxaphene	0.5
Tetrachloroethylene	0.7	**Herbicides**	**mg/l**
Trichloroethylene	0.5	2,4-D (Dichlorophenoxyacetic acid)	10.0
Vinyl chloride	0.2	2,4,5-TP (Silvex)	1.0
Acid Extractables	**mg/l**	**Metals**	**mg/l**
o-cresol	200.0	Arsenic	5.0
m-cresol	200.0	Barium	100.0
p-cresol	200.0	Cadmium	1.0
Cresol	200.0	Chromium	5.0
Pentachlorophenol	100.0	Lead	5.0
2,4,5-Trichlorophenol	400.0	Mercury	0.2
2,4,6- Trichlorophenol	2.0	Selenium	1.0
		Silver	5.0
Base Neutrals	**mg/l**	**Physical Characteristics**	**mg/l**
1,4 Dichlorobenzene	7.5	Ignitability (ºF)	140
2,4 Dinitrotoluene	0.13	Corrosivity (pH units)	2.0 to 12.5
Hexachlorobenzene	0.13	Reactivity to cyanide (mg/l)	250
Hexachlorobutadiene	0.5	Reactivity to sulfide (mg/l)	500
Hexachloroethane	3.0		
Nitrobenzene	2.0		
Pyridine	5.0		

Source*: 40 CFR §261*
Note: mg/l = milligrams per liter in leachate generated from toxicity characteristic leaching procedure.

Water Standards and Regulations

Contaminated groundwater could be encountered during excavation or dewatering activities. The NYSDEC has promulgated drinking water standards and uses them as

reference values for groundwater. These potable groundwater standards (also known as Class GA Standards) are among the most stringent in the nation. Although these standards are intended for public drinking water supplies, they are generally applied by the NYSDEC to groundwater and are also used to evaluate overall water quality.

New York State has also implemented the State Pollution Discharge Elimination System (SPDES), which provides permit requirements and effluent limitations for wastewater discharges to the waters of the State. The SPDES process was established to implement the Clean Water Act and water quality standards promulgated by the EPA. The NYCDEP's Bureau of Wastewater Pollution Control has established regulations limiting the concentrations of certain constituents in effluent discharged to the municipal sewer system. The NYCDEP's regulations are based, for the most part, on the effect of the contaminants on the receiving waters or treatment plant. Prior to discharging to the sewer, a permit from NYCDEP is required.

Petroleum Storage Tanks

Site clearing, excavating, and building demolition can lead to the discovery of underground and/or aboveground storage tanks. The removal of petroleum storage tanks is regulated by NYSDEC (6 NYCRR Part 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 must also be removed (6 NYCRR Part 611.6). Article 12 of the New York Navigation Law provides notification and management requirements for spills to the waters of the State.

Handling, Storage, Transportation, and Disposal of Hazardous Materials

Wastes containing hazardous materials require special handling, storage, transportation, and disposal methods to prevent releases that could impact human health or the environment. The NYSDEC requires the implementation of fugitive dust control measures at sites that contain elevated concentrations of SVOCs and metals (TAGM 4031, Fugitive Dust Suppression and Particulate Monitoring Program). To confirm the effectiveness of the dust control measures, Community Air Monitoring Plans that are approved by the New York State Department of Health are implemented if applicable.

Depending on the nature of the material, Federal, State, and local regulations require the use of special containers or construction of impoundments for on-site storage of the material to prevent the release of hazardous materials to the environment. The federal, State, and City Departments of Transportation (DOT) have requirements for transportation of wastes containing hazardous materials. The NYSDEC identifies hazardous waste and other waste management requirements in 6 NYCRR Parts 360 through 376. Facilities that receive hazardous materials require Federal, State, and local permits to accept the waste. The waste facilities require representative waste sampling and laboratory analysis prior to accepting material for disposal.

The study area for the analysis of hazardous materials comprises the Project Area as described in Chapter 1, "Project Description," and a buffer which extends 500 feet

landward from the Project Area. The study area contains all property, including lands under water, pier structures and the bulkhead, bounded generally by Hannah Street to the north, the SIR tracks and Bay Street to the west, Bay/Edgewater Streets to the south, and the U.S. Pierhead line to the east (including the waters of thee Upper New York Bay), and the geology and hydrogeology beneath the Project Area (see Figure 12-1).

12.3 Existing Conditions

Reconnaissance of the study area was performed on June 24, 2005 and November 17, 2005.

12.3.1 General Site History

Stapleton historically has been a port and industrial area situated along Staten Island's North Shore. Serving as a light industrial and brewery area during the late 19th through mid-20th centuries, Stapleton became the first U.S. foreign trade zone. A U.S. marine hospital was also located nearby the port.

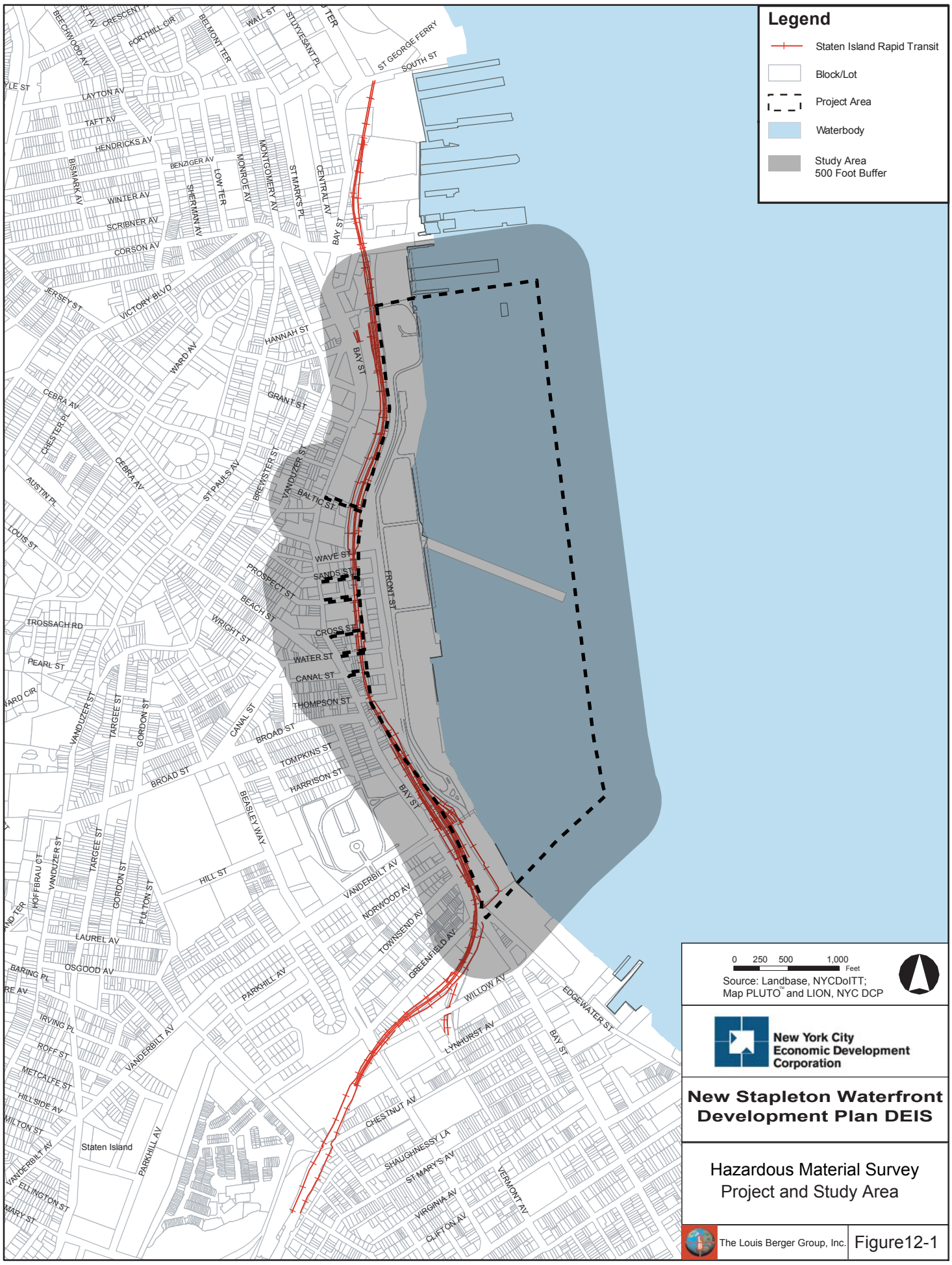
Prior to 1917, much the Project Area was located below sea level in New York Bay. Between 1917 and 1922, the area east of Front Street was filed in to expand the shoreline close to its present day location. During this time, piers and warehouses were constructed and the Project Area was used for the loading and unloading of goods. Through time, the Project Area was abandoned and remained unused from 1963 until the construction of Stapleton Homeport.

The former Stapleton Homeport was constructed in the early 1990s to serve as one of 21 homeports in the nation for the Navy. The site served as the homeport for the Navy's Northeast Surface Action Group. It consisted of eight buildings on approximately 35 acres of land. The Stapleton Homeport was decommissioned in 1994 as part of a series of base closings nationwide.

From 1898 through 1996 the study area consisted of industrial/commercial uses with interspersed residences. The study area has historically been developed with coal yards, a dry cleaner, auto repair facilities, petroleum storage tanks, railroad right-of-ways, and a railroad repair facility. Additionally, a Manufactured Gas Plant (MGP) was in operation in the southwest portion of the Study Area from at least 1898 until 1957.

12.3.2 Homeport Site

The redevelopment of the Homeport Site would include the construction of mixed-use development (residential and commercial) and infrastructure improvements. The redevelopment would result in the demolition of buildings, excavation of soil, and dewatering of excavations.


Legend
Staten Island Rapid Transit
Block/Lot
Project Area
Waterbody
Study Area
500 Foot Buffer
0 250 500 1,000
Feet
Source: Landbase, NYCDoITT;
Map PLUTO™ and LION, NYC DCP
New York City
Economic Development
Corporation
New Stapleton Waterfront
Development Plan DEIS
Hazardous Material Survey
Project and Study Area
The Louis Berger Group, Inc.
Figure12-1
Staten Island
ST GEORGE FERRY
SOUTH ST
BAY ST
FRONT ST
CENTRAL AV
MONTGOMERY AV
ST MARK'S PL
MONROE AV
BENZIGER AV
LOW TER
SHERMAN AV
BISMARK AV
WINTER AV
SCRIBNER AV
CORSON AV
HENDRICKS AV
TAFT AV
LAYTON AV
BELMONT TER
WALL ST
STUYVESANT PL
FORTHILL CIR
BEECHWOOD AV
CRESCENT AV
JERSEY ST
VICTORY BLVD
HANNAH ST
WARD AV
GRANT ST
CEBRA AV
CHESTER PL
AUSTIN PL
LOUIS ST
ST PAUL'S AV
BREWSTER ST
VANDUZER ST
BALTIC ST
WAVE ST
SANDS ST
PROSPECT ST
BEACH ST
WRIGHT ST
CROSS ST
WATER ST
CANAL ST
THOMPSON ST
BROAD ST
TOMPKINS ST
HARRISON ST
TROSSACH RD
PEARL ST
GORDON ST
TARGEE ST
BERSLEY WAY
HILL ST
VANDERBILT AV
NORWOOD AV
TOWNSEND AV
GREENFIELD AV
WILLOW AV
EDGEWATER ST
LYNHURST AV
CHESTNUT AV
SHAUGHNESSY LA
ST MARY'S AV
VIRGINIA AV
CLIFTON AV
VERMONT AV
PARKHILL AV
LAUREL AV
OSGOOD AV
BARING PL
IRVING PL
ROFF ST
METCALFE ST
HILLSIDE AV
MILTON ST
ELLINGTON ST
HOFFBRAU CT
FULTON ST

A review of historic records (including Sanborn Maps and aerial photographs) indicates that much of the Homeport Site was constructed on imported fill, which was used to expand the shoreline. The fill material is of unknown origin and may contain contaminants such as VOCs, SVOCs, and metals. Additionally, the filling in of wetlands may have resulted in the generation of methane in soil gas.

Review of regulatory agency records indicated that hazardous waste was generated and stored by the Navy at the Homeport Site. Information pertaining to the type of waste is not available and there is potential that undocumented releases of hazardous waste occurred at the site, impacting subsurface soil and groundwater with VOCs or metals. Additionally, there are nine petroleum storage tanks currently located at the site; seven are underground storage tanks (USTs) and two are aboveground storage tanks (ASTs). The combined storage capacity of the USTs and ASTs is approximately 290,000 gallons. Since the tanks were most likely installed when the Homeport Site was developed in the 1980's, these tanks are not expected to pose a concern; however, undocumented releases from these petroleum storage tanks have the potential to impact subsurface soil and groundwater with VOCs and SVOCs. Table 12-2, below, summarizes the petroleum storage at the Homeport Site identified through the site reconnaissance.

Table 12-2: Petroleum Storage at the Homeport Site

Tank Type	Capacity (gallons)	Contents	Location	Status
AST	280,500	No. 2 Fuel Oil	North of Boiler Room/Utility Building	Active
AST	10,000	No. 2 Fuel Oil	East of Boiler Room/Utility Building	Closed
UST	4,200	Diesel Fuel	Boiler Room/Utility Building	Active
UST	2,000	Waste Oil	SIMA Building	Closed
UST	1,000	Waste Oil	SIMA Building	Closed
UST	1,000	Waste Oil	SIMA Building	Closed
UST	1,000	Waste Oil	SIMA Building	Closed
UST	1,000	Waste Oil	SIMA Building	Closed
UST	2,000	No. 2 fuel oil	Arnie's Building	Active

Source: The Louis Berger Group, Inc. 2006

The former Clifton Manufactured Gas Plant (MGP) Site is located upgradient of the Homeport Site on Willow Avenue. The former Clifton MGP Site was operated by Richmond County Gas Light from 1856 until 1957. The MGP consisted of a plant building and gas holders. This MGP site was investigated by the property owner (Keyspan) through the excavation of test pits, advancement of soil borings, installation of monitoring wells, and collection of soil and groundwater samples for laboratory analyses. Keyspan prepared reports presenting the results of the investigations, which were

submitted to the NYSDEC. Based on their investigations, the historic operations at this site have resulted in the disposal and/or leaking of hazardous wastes, including coal tar containing benzene, toluene, ethylbenzene, xylene, and polycyclic aromatic hydrocarbons. Dense Non-Aqueous Phase Liquid (DNAPL) or tar was detected to depths of 80 feet below the ground surface. The wastes have contaminated soil and groundwater, which requires remediation. The NYSDEC issued a Record of Decision in March 2004, which reported the remedies chosen to eliminate or mitigate the identified contamination at OU-1. The remedies chosen include: the installation of a vertical barrier to prevent DNAPL migration through subsurface soil and contact with groundwater; the installation of a low permeability cap over the OU-1 area to prevent exposure and limit infiltration of precipitation; the installation of extraction wells for passive recovery of DNAPL; a soil gas survey; and institutional controls including environmental easements that will limit the future groundwater and land use, the development and implementation of a soil management plan and long-term groundwater and DNAPL monitoring. As per conversations with the NYSDEC, the project has been halted due to community opposition to the noise of the installation of the vertical barrier. The NYSDEC is researching noise reduction alternatives before construction is restarted; the barrier installation is less than 5 percent complete.

In January 2006 the NYSDEC prepared a Remedial Action Plan for OU-2, which includes: demolition of existing buildings and removal of former MGP-related structures (e.g., coal tar-impacted foundations); the installation of vertical cutoff walls in the subsurface to prevent off-site migration of contaminants; excavation of source material (e.g., coal tar-impacted soil and Separate phase materials) and replacing it with clean soil; the installation of recovery wells for collection, treatment and disposal of DNAPL; institutional controls including environmental easements that will limit the future groundwater and land use; and development and implementation of a site management plan.

Due to the industrial character of the properties surrounding the Homeport Site, there exists the potential that releases of petroleum and hazardous materials have occurred and have impacted subsurface conditions (e.g., soil, soil gas, and groundwater) at the Homeport Site with VOCs, SVOCs, and metals.

Additionally, ACM, LBP, and PCB-containing equipment may be present throughout the buildings on the Homeport Site. Prior to completing the FEIS, appropriate site investigations will be conducted to more fully characterize possible contamination in the area and to identify any further action, investigation or mitigation that would be required if the Proposed Action were to proceed. Section 12.7 of this chapter includes preventative and management procedures that will be followed in order to minimize human contact with the aforementioned potential contaminants during the construction work associated with the Proposed Action.

12.3.3 West of Front Street (Current and Historic Conditions)

Table 12-3 includes a block and lot list for the Projected and Potential Development Sites situated West of Front Street between Wave and Thompson Streets, as illustrated in

Figure 12-2. As described in Chapter 2, "Analytical Framework," not all of the Projected and Potential Development Sites are expected to be developed; however, they were evaluated and assessed for land uses that indicate the potential presence of hazardous materials. Additionally, regulatory agency databases were searched to determine if the addresses of the sites were listed on databases such as those listed in Section 12.2, Methodology.

Table 12-3: Projected and Potential Development Sites

PROJECTED DEVELOPMENT SITES					PROJECTED DEVELOPMENT SITES				
Site No.	**Block**	**Lot(s)**	**Site**	**Address**	**Site No.**	**Block**	**Lot(s)**	**Site**	**Address**
1	489	25	C1	308 Front Street	12	493	12	C5	Water Street
2	490	24	C2	Sands Street	13	494	18	C6	44 Canal Street
3	490	37	C2	328 Front Street	14	494	19	C6	42 Canal Street
4	490	26	C2	320 Front Street	15	494	21	C6	36 Canal Street
5	490	45	C2	15 Prospect Street	16	494	30	C6	440-450 Front Street
6	491	29	C4	14 Prospect Street	POTENTIAL DEVELOPMENT SITES				
7	491	32	C3	10 Prospect Street	**Site No.**	**Block**	**Lot(s)**	**Site**	**Address**
8	491	37	C4	346 Front Street	1	492	31	P1	1 Water Street
9	491	41	C4	350 Front Street	2	492	29	P1	370 Front Street
10	491	42	C4	354 Front Street	3	494	24	P2	Front Street
11	491	46	C4	366 Front Street					

Source: The Louis Berger Group, Inc. 2006

The following are descriptions of the historical and/or current land uses identified on each of the Potential and Projected Development Sites and the type of contamination (either non-petroleum or petroleum related) that could be present at the Site.

Projected Development Sites

Parcel C1: Projected Development Site 1

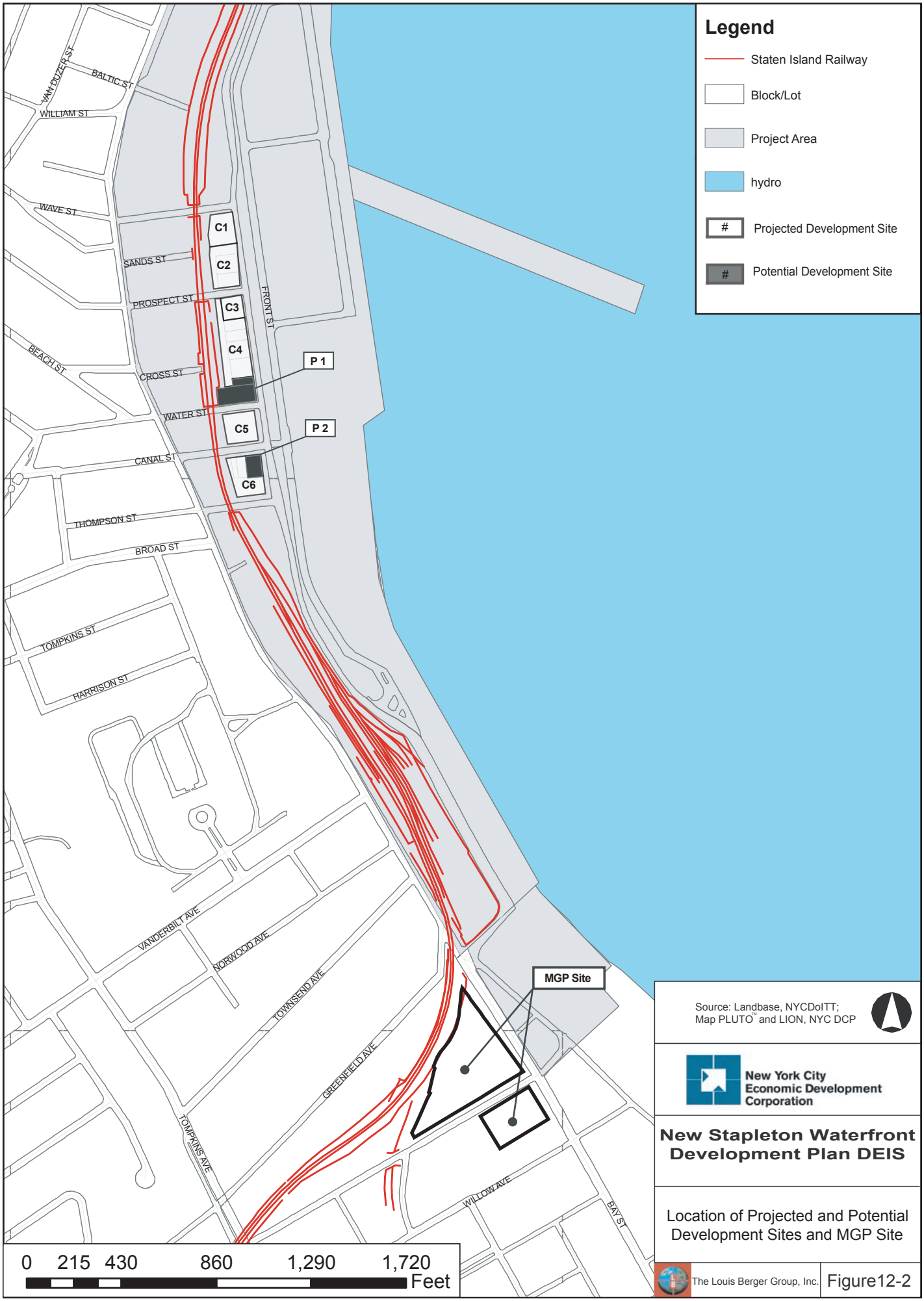
Block 489 Lot 25 is currently occupied by a commercial building, a garage, and a parking lot containing used automobiles. Historically, this site was occupied by a parking lot and auto repair facility. As a result, there is potential for petroleum contamination on the site.

Parcel C2: Projected Development Site 2

Block 490 Lot 24 is currently a vacant lot adjacent to a commercial building. Historically, this site was occupied by an office and a used car lot. As a result, there is potential for petroleum contamination on the site.

Projected Development Site 4

Block 490 Lot 26 is currently occupied by Unique Electric Inc., a commercial building. Historically, this site was a vacant lot. The site is located adjacent to (within 400 feet) of historic petroleum storage on Block 490, Lot 24 and the machine shop on Block 490, Lot 45. As a result, there is potential for petroleum and non-petroleum contamination on the site.


Legend
Staten Island Railway
Block/Lot
Project Area
hydro
Projected Development Site
Potential Development Site
VAN DUZER ST
BALTIC ST
WILLIAM ST
WAVE ST
SANDS ST
PROSPECT ST
BEACH ST
CROSS ST
WATER ST
CANAL ST
THOMPSON ST
BROAD ST
TOMPKINS ST
HARRISON ST
FRONT ST
C1
C2
C3
C4
C5
C6
P 1
P 2
MGP Site
VANDERBILT AVE
NORWOOD AVE
TOWNSEND AVE
GREENFIELD AVE
TOMPKINS AVE
WILLOW AVE
BAY ST
0 215 430 860 1,290 1,720
Feet
Source: Landbase, NYCDoITT;
Map PLUTO™ and LION, NYC DCP
New York City
Economic Development
Corporation
New Stapleton Waterfront
Development Plan DEIS
Location of Projected and Potential
Development Sites and MGP Site
The Louis Berger Group, Inc.
Figure12-2

Projected Development Site 3
Block 490 Lot 37 is currently occupied by the garage and storage area of ACME Industrial Incorporated. Historically, the site was used for tractor washing and storage. The site is located adjacent to (within 400 feet) of the ACME machine shop on Block 490, Lot 45. As a result, there is potential for both petroleum and non-petroleum contamination on the site.

Projected Development Site 5
Block 490 Lot 45 is currently occupied by the machine shop of ACME Industrial Incorporated. Historically, the site was used as a machine shop. As a result, there is potential for petroleum and non-petroleum contamination on the site.

Parcel C3
Projected Development Site 7
Block 491 Lot 32 is currently occupied by a vacant building. Historically, this site was occupied by a restaurant and garage for Railway Express Agency Inc. The site is adjacent to (within 400 feet) of the machine shop located on Block 490 Lot 45 and historic auto repair shop on Block 491, Lot 29. As a result, there is potential for petroleum and non-petroleum contamination on the site.

Parcel C4
Projected Development Site 6
Block 491 Lot 29 is currently occupied by the rear portion of furniture and lighting warehouses, and by a vacant restaurant. Historically, the northern portion of this site was occupied by an auto repair shop. Prior to the presence of an auto repair shop, the site was occupied by Brady Brothers Coal, Wood, Flour and Feed. As a result, there is potential for petroleum and non-petroleum contamination on the site.

Projected Development Site 8
Block 491 Lot 37 is currently occupied by a light-bulb fixture warehouse. Historically, the site was occupied by a garage. The site is adjacent to (within 400 feet) of the former auto repair shop on Block 491 Lot 29 and the machine shop on Block 490 Lot 45. As a result, there is potential for petroleum and non-petroleum contamination on the site.

Projected Development Site 9
Block 491 Lot 41 is currently occupied by a furniture warehouse. Historically, this site was occupied by a garage. The site is adjacent to (within 400 feet) of the former auto repair shop on Block 491 Lot 29 and machine shop on Block 490 Lot 45. As a result, there is potential for petroleum and non-petroleum contamination on the site.

Projected Development Site 10
Block 491 Lot 42 is currently occupied by a furniture warehouse. Historically, this site was occupied by an iron works. As a result, there is potential for non-petroleum contamination on the site.

Projected Development Site 11
Block 491 Lot 46 is currently occupied by a furniture warehouse. Historically, this site was occupied by an auto repair shop, garage and machine shop. As a result, there is potential for petroleum and non-petroleum contamination on the site.

Parcel C5
Projected Development Site 12
Block 493 Lot 12 is currently an unpaved lot with stockpiled soil. Historically, this site was occupied by multiple unidentified buildings and subsequently by a parking lot. The site is adjacent to (within 400 feet) the former auto repair facility located on Block 494 Lot 21. As a result, there is potential for petroleum contamination on the site.

Parcel C6
Projected Development Site 13
Block 494 Lot 18 is currently occupied by a vacant auto repair facility. Historically, this site was occupied by an auto repair facility. As a result, there is potential for petroleum contamination on the site.

Projected Development Site 14
Block 494 Lot 19 is currently occupied by a vacant iron foundry. Historically, this site was occupied by B.M. Iron Works, an iron foundry. As a result, there is potential for non-petroleum contamination on the site.

Projected Development Site 15
Block 494 Lot 21 is currently occupied by a vacant auto repair facility. Historically, this site was occupied by an auto repair facility. As a result, there is potential for petroleum contamination on the site.

Projected Development Site 16
Block 494 Lot 30 is currently occupied by two vacant buildings. Historically, one of the buildings was used as an oil refinery and for car repairs. Historically, the second building was occupied by two oil tanks, bakery machine manufacturing and then a motor freight terminal. As a result, there is potential for petroleum and non-petroleum contamination on the site.

Potential Development Sites
Parcel P1: Potential Development Site 1
Block 492 Lot 31 is currently a vacant lot. Historically, this site was occupied by a government office building. The site is adjacent to (within 400 feet) the former auto repair facilities located on Block 491, Lot 29 and Block 491, Lot 46. As a result, there is potential for petroleum contamination on the site.

Parcel P1: Potential Development Site 2
Block 492 Lot 29 is currently occupied by the Ocean Yacht Club. Prior to its construction, this site was historically occupied by a vacant lot. The site is adjacent to (within 400 feet) of the machine shop on Block 490, Lot 45 and the former auto repair

facilities on Block 491, Lot 29 and Block 491, Lot 46. As a result, there is potential for petroleum and non-petroleum contamination on the site.

Parcel P2: Potential Development Site 3

Block 494 Lot 24 is currently occupied by a parking lot and a small structure. Historically, this site was occupied by a hotel. The site is adjacent to (within 400 feet) of the former auto repair facilities on Block 494, Lot 21 and Block 494, Lot 30. As a result, there is potential for petroleum contamination on the site.

12.3.4 Potential Contaminants of Concern

The subsurface could contain contaminants associated with historical uses and prior releases. Certain contaminants, such as petroleum products, could have been released from surface spills or from leaking petroleum storage tanks. Other contaminants, such as VOCs, SVOCs, metals, and PCBs could have resulted from spills along the SIR tracks and other types of industrial or commercial facilities. Pesticides and herbicides could have been applied to undeveloped properties or along railroad lines. The MGP site has documented subsurface impacts of heavy metals, and coal tar (process wastes and byproducts).

When contaminants migrate to adjacent properties, it is typically via groundwater flow. Proximity to Project Area that will require subsurface disturbance is the primary factor when determining the potential for impacts from hazardous materials. The closer a known or suspected contaminated site is to a construction area, the greater the potential is for encountering the subsurface contamination. Contaminated sites located hydraulically upgradient to groundwater flow have a greater potential to cause impacts when disturbed, since groundwater may act as a conduit for the transport of subsurface contaminants. While groundwater throughout the Project Area typically flows east toward the New York Bay, local variations are possible due to tidal fluctuations. The characteristics of potential contaminants are discussed below.

<u>Volatile Organic Compounds (VOCs)</u>

VOCs include petroleum-associated compounds such as benzene, toluene, ethylbenzene, and xylene (BTEX); methyl-tertiary-butyl-ether (MTBE); and chlorinated compounds such as tetrachloroethene and tricholoroethene, which are found in solvents, degreasers, and cleaners. Methane, produced by the decomposition of organic matter from natural and anthropogenic sources, could also be present as a result of landfilling areas that were formerly inundated. Methane, in itself, is not considered toxic; however, it can be potentially explosive when present in significant concentrations in confined spaces such as basements. When present with other VOCs, methane can pose a health and safety risk.

VOCs in soil gas have the potential to affect worker and public health and safety when inhaled. Exposure to VOC vapors can be as harmful as direct contact with, or ingestion of, VOC-contaminated soil or groundwater. Dry cleaning operations, properties with petroleum storage tanks, and the former MGP sites are the potential sources for VOC contamination.

Semi-Volatile Organic Compounds (SVOCs)

SVOCs can include naphthalene, anthracene, fluorine and pyrene, which are constituents of diesel fuel. The most commonly encountered SVOC compounds are polycyclic aromatic hydrocarbons (PAHs), which are constituents of partially combusted coal, petroleum, and petroleum-based products such as asphalt. These compounds are commonly found throughout New York City, particularly in areas where historic fill material is present. SVOCs are generally not readily soluble in water and therefore are not likely to migrate far from their source. In most instances, they do not pose a significant threat to human health unless there is direct contact (e.g., dermal contact).

Metals

Metals were used in foundries, smelters, and metalwork facilities, and can be found in paints, inks, petroleum product additives, and coal ash. Although many metals are naturally occurring, elevated metal concentrations are often found in areas primarily comprised of fill material. Metals generally do not migrate significantly in the subsurface environment, and therefore would usually only be of concern on sites where the contaminant was generated. Metals can remain undisturbed in subsurface soils if the ground surface is covered by an impervious surface (i.e., asphalt, concrete, etc.), and the metal concentrations and characteristics present are not such that groundwater could be contaminated.

Polychlorinated Biphenyls (PCBs)

Commonly present in dielectric fluid from transformers and feeder cables, PCBs are of concern at rail yards, train maintenance facilities, and electric transformer locations where leakage into soil could have occurred. Occasionally, PCB-containing waste oils were applied in rail yards to limit vegetation; these waste oils were also used on coal piles and dirt roads as a dust suppressant. PCBs are also present in transformers, electrical feeder cables, hydraulic equipment, and fluorescent light ballasts that were manufactured prior to 1978. Disposal of such items must be in accordance with applicable Federal and State regulations, so as to minimize human and environmental contact with PCBs. PCBs do not readily break down in the environment, and thus could remain in place for long periods of time. With regard to construction, PCBs can present risks to workers and public health and safety, through direct contact or ingestion of soil containing PCBs.

Pesticides and Herbicides

These compounds are used to control rodents, insects, and vegetation at undeveloped properties or along railroad tracks. Pesticides and herbicides are generally not widespread in subsurface urban soils and groundwater.

Cyanide

Cyanide was produced as a process waste at MGP sites. In many instances, MGP waste products were disposed of on-site by using the waste as landfill of low-lying areas of the site.

Naturally Occurring Contaminants in Soil Gas

In addition to contaminants from releases of hazardous materials, naturally occurring contaminants, such as radon and methane, may be present in soil gas; especially within the area of the shoreline that was historically filled in. Radon is a colorless, odorless radioactive gas that results from the natural breakdown of uranium minerals in soil, rock, and water. If present, it can concentrate in buildings, entering through cracks and other penetrations of a building foundation. Radon concentrations vary City-wide, reflecting subsurface conditions.

Methane, produced by the decomposition of organic matter from natural and anthropogenic sources, may also be present as a result of historic shoreline filling. Methane, in itself, is not considered toxic; however, it can be potentially explosive when present in significant concentrations. When present with other VOCs, methane can pose a health and safety risk.

Asbestos-Containing Materials (ACM)

Building materials used in the construction of existing buildings could contain asbestos. Asbestos fibers are potentially harmful if they become airborne and are inhaled. The EPA prohibited the use of asbestos in spray-on fireproofing in 1972 and in thermal insulation in 1978. In addition, normally non-friable asbestos-containing products (i.e., those that when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure) that are typically stable could be damaged during the abatement process, and would be considered friable ACM thereafter.

Lead-Based Paint (LBP)

Buildings and other structures constructed or re-painted prior to 1960 may contain LBP. It has been determined that dust from LBP may cause learning disabilities and other adverse health effects when inhaled or ingested. Although the use of LBP in residences was banned by the Consumer Products Safety Commission in 1978 and by New York City in 1960, the use of LBP was common in New York City prior to this ban.

12.3.5 Location of Potential Sources of Contaminants in Study Area

Table 12-4, below, identifies locations of potential sources of contaminants within the study area based on their site history or on known spills.

Table 12-4: Summary of Potential Sources of Contaminants within Study Area

BLOCK	LOT	ADDRESS	USAGE	POTENTIAL CONTAMINANT
487	110	355 FRONT STREET	Stapleton Homeport Site	VOCs, SVOCs
489	22	SANDS STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
489	24	WAVE STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
489	25	308 FRONT STREET	House of Billiards, Garage, and Used Car Lot	VOCs, SVOCs, Metals
490	22	SANDS STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
490	24	SANDS STREET	Vacant Lot behind Unique Electric Inc.	SVOCs, Metals
490	37	328 FRONT STREET	ACME Industrial Inc.	VOCs, SVOCs, Metals
490	45	15 PROSPECT STREET	ACME Industrial Inc.	VOCs, SVOCs, Metals
490	26	320 FRONT STREET	Unique Electric inc.	Metals
490	47	PROSPECT STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
491	26	PROSPECT STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
491	29	14 PROSPECT STREET	Rear of properties on Front St. between Prospect St. and Water St.	VOCs, SVOCs, Metals
492	16	CROSS STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
492	31	1 Water Street	Vacant Lot	Metals
493	10	WATER STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
493	11	WATER STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
494	15	CANAL STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
494	18	44 CANAL STREET	Gene's Auto Tops Sunroofs and Upholstery (Vacant)	SVOCs, Metals
494	19	42 CANAL STREET	B.M. Iron Works (Vacant)	Metals
494	21	36 CANAL STREET	Johnny’s Auto Shop (Vacant)	VOCs, SVOCs, Metals
494	24	FRONT STREET	Vacant lot associated with Johnny’s Auto Shop	VOCs, SVOCs, Metals
494	30	440-450 FRONT STREET	Tony's Car Repair and Jaburo Bros. Buildings (Vacant)	VOCs, SVOCs, Metals
494	41	THOMPSON STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
494	42	THOMPSON STREET	MTA/SIR	VOCs, SVOCs, Metals, Pesticides, Creosote
2822	1	951 BAY STREET	Hess Gasoline Station	VOCs, SVOCs, Metals, Pesticides, Creosote
2841	91	25 Bay Street	Former Clifton MGP Site	VOCs, SVOCs, Cyanide
2842	50	25 Bay Street	Former Clifton MGP Site	VOCs, SVOCs, Cyanide

Source**:** The Louis Berger Group, Inc. 2006

12.3.6 Additional Investigations

Phase II Environmental Site Investigations (ESIs) described below, would be undertaken, as appropriate, to determine the nature and extent of contamination at the site, and could include regulatory agency document research, as well as soil, soil gas, and/or groundwater sample collection. Projected and Potential Development Sites will be investigated by the property owner prior to construction. Potentially contaminated areas to be developed by the City would also receive Phase II ESIs prior to construction. If physical testing is deemed necessary, sampling protocols would be prepared that include sampling locations based on the site's potential to have caused contamination and the site's location relative to proposed construction activities for the Proposed Action. The following summarizes elements that the protocol used to conduct subsurface investigations could include:

- Illustrations that show the site location, the planned boring and monitoring well locations, and the field activities schedule.
- Site background information, such as known subsurface conditions, historical site information, and information from previous environmental investigations.
- A description of the sampling plan, which would determine sample locations based on the proposed construction activities and facility design, as well as geology (e.g., depth of construction and location of groundwater). At a minimum, sampling would be conducted in areas where the greatest amount of soil disturbance would occur, as well as in areas identified as warranting further analysis. Additional sampling could be conducted in areas that exhibit no known evidence of environmental impairments.
- The collection of soil and/or groundwater. Work plans that discuss the soil and/or groundwater sample collection and analysis procedures will be submitted to and approved by EDC and NYCDEP.
- The collection of sub-slab vapor samples; sampling will be performed in conformance with New York State Department of Health (NYSDOH) Draft Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated February 2005 (Draft Guidance).
- "Quality Assurance/Quality Control Project Plan" that would detail the quality assurance and quality control program (QA/QC). This program would be based on the NYSDEC's QA/QC, as well as on EPA requirements. This plan would describe laboratory methods, field quality control sampling, sample custody procedures, and field decontamination procedures.
- Details for management of investigation-derived wastes, including drill cuttings, drilling fluids, decontamination fluids, and monitoring well purge fluids.
- A Health and Safety Plan (HASP) would be generated for use as the primary measure to safeguard onsite workers and nearby residents during intrusive investigations. Additional details regarding the HASP are presented below.

After completion of the subsurface investigation a detailed report would be prepared summarizing the findings of field activities and comparing the analytical results to the appropriate Federal, State, and City standards and guidelines.

12.4 No Build Condition

Under the No Build Condition, none of the Proposed Action elements described in Chapter 1, "Project Description," would be undertaken. The No Build Condition assumes that the Project Area would generally continue in its current condition; however, some level of residential and commercial redevelopment is expected to occur, as described in Chapter 2, "Analytical Framework."

If the Proposed Action were not implemented, potentially hazardous materials would remain in place. Hazardous materials may be encountered through the residential and commercial redevelopment, as these projects would progress separately from the Proposed Action. For these sites, hazardous materials would be managed by the developers in accordance with Federal, State and local regulations. Sites would not receive (E) Designations without the proposed rezoning in place. The area of the former MGP Site is under NYSDEC's control and would still be remediated if the Proposed Action were not implemented. Section 12.4.2 discusses the proposed remedial measures.

12.5 Build Condition

Hazardous materials in soil, soil gas, groundwater, and building materials present within the Project Area will be managed, isolated, and/or removed during the construction phase in accordance with applicable NYSDEC and NYCDEP requirements as discussed below. As a result, no significant adverse impacts related to hazardous materials are anticipated from the Proposed Action. Contaminated groundwater will be treated on-site prior to discharge in accordance with requirements of the NYSDEC- and/or NYCDEP-issued permits. Contaminated soil will be removed through excavation or isolated through the use of impermeable materials (e.g., concrete, asphalt, geotextiles, etc.) as appropriate. Hazardous building materials will be abated or managed prior to demolition activities, thus preventing the release of hazardous materials during demolition activities.

There is potential for significant adverse impacts related to hazardous materials resulting from the presence of underground storage tanks, subsurface contamination resulting from on- and off-site sources, ACM, LBP, PCB-containing materials and hazardous waste, if improperly managed. Construction activities in the area proposed for development could disturb hazardous materials and increase pathways for human and environmental exposure. To avoid significant adverse impacts, (E) Designations will be placed on the zoning map for Projected and Potential Development Sites denoting the tax lots presented below in Table 12-5. The list includes tax lots for the development sites and the contaminants that could be encountered during construction activities associated with their development thus triggering the need for the (E) Designation.

EDC would enter into a Memorandum of Understanding (MOU) with the NYCDEP to ensure that management measures to handle hazardous and/or contaminated materials,

pertaining to the parcels to be sold within the Homeport Site during the Proposed Action, are implemented. The MOU would also ensure that additional testing and/or sampling, if deemed necessary, would be performed on the aforementioned properties. For these parcels, a Restrictive Declaration would be issued to detail that hazardous and/or contaminated materials are present and that measures need to be taken prior to sites' development. It is anticipated that (E) Designations would be issued for the Projected and Potential Development Sites (properties west of Front Street and between Wave and Thomson Streets) as defined in Title 15, Rules of the City of New York, Chapter 24, Section 4.

12.6 Management Measures

Management measures have been developed to address potential hazardous materials that may be encountered through implementation of the Proposed Action. These measures include the implementation of management plans (listed below) to handle hazardous and/or contaminated materials during construction of the Proposed Action. The development and implementation of the specific management plans are designed to protect worker and public health and safety plans and manage hazardous and/or contaminated materials during construction. These plans, listed below, will be prepared by contractors responsible for construction of the Proposed Action.

- Health and Safety Plan
- Soil Management Plan
- Soil Gas Management Plan
- Groundwater Management Plan
- Petroleum Storage Tanks Management Plan

The management plans will establish proper management of hazardous materials (i.e., soil, soil gas, groundwater, and building materials) that could be encountered during construction and/or demolition associated with the Proposed Action. The management plans will include provisions for the transport and disposal of hazardous and/or contaminated materials in accordance with all applicable Federal, State and local regulations (e.g., RCRA and Toxic Substances Control Act).

12.6.1 Health and Safety Plan (HASP)

HASPs would include measures to manage exposure to hazardous and/or contaminated materials during construction associated with the Proposed Action. The HASP would include provisions for the handling of documented hazardous and/or contaminated materials, as well as contingency measures to be taken if unanticipated contamination is encountered. For many of the activities associated with the Proposed Action, the regulations and guidelines that would be included in the HASP are provided by the OSHA.

Implementation of the HASP would be the principal means of protecting the workers and general public from exposure to hazardous and/or contaminated materials. Contingencies

to address potential hazards would also be included. Workers that have the potential to come in contact with hazardous and/or contaminated materials would be required to read, understand, and implement the procedures specified in the HASP. These procedures include health and safety guidelines and work practices to prevent exposure. The procedures would be developed through evaluation of the suspect contaminants and the work to be performed. Sampling and monitoring for the presence of contaminants would be included in the HASP and implemented during construction of the Proposed Action in accordance with OSHA regulations and guidelines. Monitoring of suspect hazardous and/or contaminated materials would be performed through the analyses of air, soil, and water to identify the presence of contamination and the need for additional testing.

As a requirement of the HASP, personnel that have the potential to come into contact with hazardous and/or contaminated materials would have specific training to assist them in identifying the presence of potential health and safety hazards. The HASP would include medical monitoring, certification, and training requirements for workers with the potential to encounter certain hazardous and/or contaminated materials (e.g., lead, hazardous waste, etc.).

12.6.2 Soil Management Plan

In general, the soil management plan would present the type of soil handling and disposal that would be utilized during construction activities. For contaminated soils that would remain in place, health and safety would be achieved through isolation. For contaminated soil that is excavated from the Project Area, off-site disposal would occur. Isolation involves the construction of a barrier that prevents direct contact with, or migration of, contaminated soil. The use of impermeable barriers such as concrete and asphalt would also prevent percolation of surface water through subsurface soil, thus limiting the potential for contaminants to leach from soil to groundwater. Concrete and asphalt coverage serves as an effective isolation barrier. In-place isolation is a useful method of addressing contaminants such as metals, SVOCs, and PCBs, which are generally immobile. A layer of clean soil fill could be used to construct an isolation barrier in landscaped areas that would not be covered by impervious materials.

The presence of elevated VOC concentrations in subsurface soils would limit the applicability of isolation, since vapors could migrate upward into building structures. Prior to selecting isolation for subsurface soils, soil sampling and laboratory analyses would be performed to assess the VOC concentrations, and the applicability of isolation would be confirmed by the NYSDEC.

To protect workers and the general public during site preparation and construction activities, dust control measures would be undertaken. These include fine sprays of water, mist curtains, and some chemical foams. Tarpaulins can be used to cover stockpiled or staged soils.

Table 12-5: Sites to Receive (E) Designations

SITE NO.	BLOCK	LOT(S)	ADDRESS	POTENTIAL CONTAMINATION	ENVIRONMENTAL CONCERN LEADING TO (E) DESIGNATION	CURRENT LAND USE	HISTORIC LAND USE
PROJECTED DEVELOPMENT SITES							
1	489	25	308 FRONT STREET	Petroleum	Petroleum storage, Historic Auto Repair	Commercial building, Garage, and Used Car Parking Lot	Storage Sheds for Wood and Hay, and Auto Repair
2	490	24	SANDS STREET	Petroleum, Non-Petroleum	Historical Petroleum Storage	Vacant Lot behind Unique Electric Inc.	Office and Used Car Lot
3	490	37	328 FRONT STREET	Petroleum, Non-Petroleum	Adjacent to Machine Shop	ACME Industrial Inc.	Tractor washing and storage
4	490	26	320 FRONT STREET	Petroleum, Non-Petroleum	Within 400 feet of historic Petroleum Storage on Block 490, Lot 24 and the Machine Shop on Block 490, Lot 45	Commercial building occupied by Unique Electric Inc.	Vacant lot
5	490	45	15 PROSPECT STREET	Petroleum, Non-Petroleum	Machine Shop	ACME Industrial Inc.	Machine Shop
6	491	29	14 PROSPECT STREET	Petroleum, Non-Petroleum	Historic Auto Repair	Vacant Lot occupying rear portion of Block 490, Lots 32, 37, 41, 42, 46 and Block 492, Lot 29 (Public Furniture Warehouse, Light Bulb Fixture Warehouse, and Vacant Storefront)	Auto repair shop in northern portion of lot. Prior to the auto repair shop, the site was occupied by Brady Brothers Coal, Wood, Flour, and Feed.
7	491	32	10 Prospect Street	Petroleum, Non-Petroleum	Within 400 feet of the Machine Shop on Block 490, Lot 45 and historic Auto Repair on Block 491, Lot 29	Vacant Storefront	Restaurant and Garage for Railroad Express Agency Inc.
8	491	37	346 Front Street	Petroleum, Non-Petroleum	Within 400 feet of the Machine Shop on Block 490, Lot 45 and historic Auto Repair on Block 491, Lot 29	Light Bulb Fixture Warehouse	Garage

SITE NO.	BLOCK	LOT(S)	ADDRESS	POTENTIAL CONTAMINATION	ENVIRONMENTAL CONCERN LEADING TO (E) DESIGNATION	CURRENT LAND USE	HISTORIC LAND USE
PROJECTED DEVELOPMENT SITES (CONTINUED)							
9	491	41	350 Front Street	Petroleum, Non-Petroleum	Within 400 feet of the machine shop on Block 490, Lot 45 and historic Auto Repair on Block 491, Lot 29	Public Furniture Warehouse	Garage
10	491	42	354 Front Street	Non-Petroleum	Historical Iron Works	Public Furniture Warehouse	Iron Works
11	491	46	366 Front Street	Petroleum	Historical Auto Repair and Machine Shop	Public Furniture Warehouse	Garage, Auto Repair, and Machine Shop
12	493	12	WATER STREET	Petroleum	Within 400 feet of the historic Auto Repair on Block 494, Lot 21.	Vacant Lot (unpaved) with Stockpiled Soil	Multiple unidentified buildings, and subsequently occupied by a parking lot
13	494	18	44 CANAL STREET	Petroleum	Historic Auto Repair	Vacant Auto Repair Shop	Gene's Auto Tops Sunroofs and Upholstery
14	494	19	42 CANAL STREET	Non-Petroleum	Historic Iron Foundry	Vacant Iron Shop	B.M. Iron Works
15	494	21	36 CANAL STREET	Petroleum	Historic Auto Repair	Vacant Auto Repair Shop	Johnny's Auto Shop
16	494	30	440-450 FRONT STREET	Petroleum	Petroleum Storage, Machine Manufacturing, Historic Auto Repair	Vacant one-story Auto Repair Shop and Vacant Jaburo Brothers Building	Oil refinery followed by Tony's Car Repair occupied vacant one-story building. The Jaburo Brothers building was occupied by two oil tanks, bakery machine manufacturing and a motor freight terminal

SITE NO.	BLOCK	LOT(S)	ADDRESS	POTENTIAL CONTAMINATION	ENVIRONMENTAL CONCERN LEADING TO (E) DESIGNATION	CURRENT LAND USE	HISTORIC LAND USE
POTENTIAL DEVELOPMENT SITES							
1	492	31	1 Water Street	Petroleum	Within 400 feet of the historic Auto Repair shops on Block 491, Lot 29 and Block 491, Lot 46	Vacant Lot	Government Office building
2	492	29	370 Front Street	Petroleum, Non-Petroleum	Within 400 feet of the Machine Shop of Block 490, Lot 45 and the historic Auto Repair shops on Block 491, Lot 29 and Block 491, Lot 46	Ocean Yacht Club	Vacant Lot
3	494	24	FRONT STREET	Petroleum	Within 400 feet of the historic Auto Repair shops on Block 494, Lot 21 and Block 494 Lot 30	Parking Lot	Hotel

Note: Adjacent indicates site is within 400 feet.

Source: The Louis Berger Group, Inc. 2006

Contaminated soil that is excavated during construction of the Proposed Action would be removed from the Project Area and disposed of in permitted facilities approved to accept the material. These facilities would either treat the soils so that the contaminants present would become immobile or reduced sufficiently such that the material no longer presents a public health concern, or dispose of them in permitted landfills constructed to contain the contaminants. For example, soil contaminated with petroleum could be treated by an asphalt batching plant. Representative samples of soil would be analyzed by a laboratory prior to being transported off-site, in order to document that they meet the facility's permit requirements. The off-site transport of petroleum-contaminated soils would be performed in accordance with Federal, State, and local regulations.

If excavated soil contains contaminants that make it unsuitable for asphalt batching, the soil would be disposed of off-site at a permitted disposal site or landfill. The type of landfill would be determined by the type and concentrations of contaminants present in the soil. Landfill types include both hazardous and non-hazardous facilities, and each facility is permitted to accept only specific types of contaminants. To confirm the type and concentrations of contaminants, representative samples of soil would be analyzed by a laboratory prior to being taken off-site.

Contaminated soil that is disposed of off-site would be transported in accordance with federal, State and local regulations. These regulations pertain to types of vehicles and containers permitted to transport the waste, the preparation and maintenance of manifests that document the type and quantity of waste being transported, and the truck routes that would be used to transport the waste. The vehicles and containers are designed to prevent the release of the waste material while it is being transported (i.e., trucks beds are enclosed with a tight fitting cover, roll-offs are sealed, etc.).

Dust generated by construction activities and/or from excavations would be suppressed by spraying water during dry weather, cleaning vehicles and other equipment prior to leaving the site, placing gravel on areas of exposed soil used for vehicle activities, covering the trucks with a tarp prior to leaving the site, and sequencing construction activities to minimize areas of exposed soil.

12.6.3 Soil Gas Management Plan

During construction activities, air monitoring, performed in accordance with the HASP's requirements, would be performed to assess the presence of contaminated soil gas. If present, contaminated soil gas (e.g., methane, hydrogen sulfide, VOCs) would be managed in accordance with the HASP and Soil Management Plan to prevent exposure to construction workers and the general public. Management options would include engineering controls and upgrading personal protective equipment used by the construction workers, which would be used separately or in combination, depending on the conditions encountered. Engineering controls would consist of ventilating the work area with exhaust fans. The use of vapor barriers and soil gas venting could also be used to treat contaminated soil gas in areas that would not be excavated. The ventilation exhaust would be treated on-site using contaminant-appropriate equipment (e.g., granulated activated carbon for VOCs) prior to discharging to the atmosphere. The

HASP would include contaminant-specific action levels that would identify conditions that require construction workers to upgrade their respiratory protection equipment. Real time contaminants-specific air monitoring would be performed in conjunction with respiratory protection upgrades to prevent exposure to the general public. As required, permits would be secured for any air treatment facilities.

12.6.4 Groundwater Management Plan

The groundwater management plan would provide a description of the methods used to collect, store, and dispose of contaminated water generated during dewatering activities. Additionally, the groundwater management plan would identify the permits required from the NYCDEP and/or the NYSDEC to discharge the water into either the City's sewers or surface waters, respectively. Prior to obtaining NYCDEP or NYSDEC discharge permits, groundwater would be sampled and analyzed to characterize its physical and chemical properties. Depending on the results of the analyses, the type of treatment prior to discharge, if required, would be determined. The type of treatment selected would be determined by the contaminants present in the groundwater. Both NYSDEC and NYCDEP permits require that contaminated sediments (e.g., metals, PAHs PCBs) suspended in groundwater are removed prior to discharge. This would be achieved through the use of settling tanks and the injection of flocculants, causing suspended sediments to settle out of the water. The sediments would be analyzed to determine whether contaminants are present and, depending on the type and concentrations of contaminants, the disposal option that would be selected, as described in the soil management section.

If the groundwater contains VOCs, additional treatment would be performed on-site after the settling process and prior to discharge. The treatment could include agitation or the use of carbon filtration. Agitation extracts VOCs from the water by inducing them to partition into air, and is generally accomplished by forcing air through the water column in the other direction. Once the air passes through the water column, it is collected and filtered with carbon. The VOCs then adsorb to the carbon; and when the filters are spent, they are disposed of in a permitted facility. If this method is utilized, an air discharge permit would be obtained and discharges performed in accordance with the permit requirements (see Chapter 19, "Air Quality"). Alternatively, VOC- or PCB-contaminated groundwater could be filtered through carbon for treatment. This treatment utilizes a sealed container containing carbon, and VOCs and PCBs are removed as the water passes through the carbon.

Prior to implementing any treatment system or discharge of groundwater, samples would be collected and analyzed, a treatment system would be designed, and the information would be included in the NYSDEC or NYCDEP permit applications. Approval from the responsible regulatory agency, in the form of a permit, would be obtained prior to construction activities. Depending on the quantity of water to be discharged, the permits require sampling on a regular basis to confirm that the treatment is effective. Discharging activities would be performed in accordance with the terms and conditions specified by the permit, including the discharge rate, the sampling frequency, and duration.

12.6.5 Petroleum Storage Tank Management Plan

Removal of petroleum storage tanks is regulated by NYSDEC under 6 NYCRR Part 613.9, which requires that tanks no longer in use be closed in place or removed. Contaminated soils surrounding the tanks and petroleum floating on the water table must also be removed prior to construction. If suspected petroleum-contaminated soil is encountered, a program of soil sample collection would be employed to determine the extent and level of the contamination. The affected material would then be disposed of or stored on-site as appropriate (according to the applicable management plan and NYSDEC regulations). Depending upon the concentration of contaminants present within the material, as determined by laboratory analytical sample results, the soil would be stockpiled in categories (i.e., potentially contaminated and non-hazardous materials). The management plans would provide explicit details as to the appropriate stockpiling and handling procedures for each type of soil class determined on-site.

12.6.6 Asbestos-Containing Building Materials Management Plan

Building demolition/renovation has the potential to disturb asbestos-containing material. Proper removal, disposal, and handling of asbestos material are required under State of New York Article 30-Labor Law, Asbestos or Products Containing Asbestos Licensing, 12 NYCRR-Part 56 Asbestos Regulations (i.e., ICR #56), and the requirements of NYCDEP Title 15. A number of engineering controls (e.g., dust control) can minimize asbestos exposure and would be implemented prior to demolition/renovation.

12.6.7 Lead-Based Paint Management Plan

Surfaces coated with LBP require proper abatement of the lead paint prior to the disturbance that would generate lead-containing dust or vapors (lead vapors could be generated through the heating of materials that are coated with LBP, such as structural steel). During demolition, if lead-coated surfaces are present, an exposure assessment would be performed to determine whether lead exposure would occur during the demolition. Wet methods to control dust and air monitoring would be implemented during demolition activities.

12.6.8 PCB-Containing Equipment Management Plan

Suspected PCB-containing equipment 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, State, and local regulations.

12.7 Conclusion

Based on the results of the analysis, no significant adverse impacts are anticipated due to the Proposed Action. Potential hazardous materials present within the study area include VOCs, SVOCs, metals, PCBs, pesticides, herbicides, cyanide, ACM, LBP, and PCB-containing equipment. During construction they would be managed or isolated to protect public health and the environment. Construction measures, including the implementation of site-specific Health and Safety Plans, dust control measures, contaminated soil and groundwater management plans, and abatement of hazardous building materials prior to

construction, would aid in the avoidance of adverse health impacts to workers and the general public. Because hazardous materials would be abated, managed, or remediated during construction, no significant adverse impacts are expected during either the construction or operational phases of the Proposed Action.

The proposed rezoning also would not result in significant adverse impacts on development sites identified with the potential to contain hazardous materials. No significant adverse hazardous materials impacts are anticipated as a result of the zoning map amendments because (E) Designations would be placed on the Zoning Map for all tax lots containing the potential to result in hazardous materials contamination. Refer to Table 12-5 for a complete list of tax lots which would be mapped with an (E) Designation for hazardous materials. The (E) Designation would require that the fee owner of an (E) designated site conduct a testing and sampling protocol, and management where appropriate, to the satisfaction of the NYCDEP before the issuance of a building permit by the Department of Buildings (pursuant to Section 11-15 of the Zoning Resolution-Environmental Requirements). The (E) Designation also includes mandatory construction-related health and safety plans which must also be approved by the NYCDEP.