

Chapter 10: HAZARDOUS MATERIALS

10.1 Introduction

The proposed action would allow residential uses in an area that is currently developed as part of the Brooklyn Developmental Center (“BDC”) but which historically has been both landfilled marshland and part of a municipal refuse disposal area. As explained in the *CEQR Technical Manual*, consideration of hazardous materials in the EIS process examines whether the proposed action may increase the exposure of people or the environment to hazardous materials, and whether the proposed action may result in potential significant adverse impacts to public health or the environment. As stated in the *CEQR Technical Manual*, the potential for significant adverse impacts from hazardous materials depends on the type of materials present and their location on the project site, their levels, and whether exposure to the hazardous materials would be associated with the proposed action, either during construction or during subsequent occupancy of the project site.

Therefore, Environmental Site Assessments (“ESAs”) have been conducted to determine the potential presence of hazardous materials on the project site, and are reviewed to evaluate whether human exposure to hazardous materials would be expected to occur with the proposed action, and whether potential hazardous materials exposure could affect on-site or surrounding natural resources or the proposed action could exacerbate existing environmental contamination.

10.2 Principal Conclusions

The two ESAs (Phase I ESA and Phase II ESA, included in Appendix F) have revealed the potential for low-level, on-site subsurface contamination, primarily associated with the historic landfill of the project site. Analyses conducted as part of these ESAs indicate the low-level presence of petroleum hydrocarbons in the soils and semi-volatile organic compounds and metals in the groundwater. In addition, low concentrations of methane gas were identified originating from the decomposition of buried organic matter in the fill material over the underlying peat bog soil. Based on the results of the Phase II ESA, there are no recommendations for additional testing, and no significant adverse impacts related to hazardous materials would be expected to occur with the proposed action. The Restrictive Declaration prepared as part of the proposed action, would require that any new building structures have an engineered vapor barrier installed under the foundation slabs in order to prevent any accumulation of methane gas under

building structures and to eliminate potential vapor migration into the building structure; specifically, the Restrictive Declaration would require the preparation of a Remedial Action Plan (“RAP”), detailing the installation of building vapor barriers, and a Construction Health and Safety Plan (“CHASP”) to prevent human exposure (worker and public) to any unidentified or potential on-site contamination. Elements of the CHASP could include the following:

- A project contact list, describing responsibilities;
- A description of on-site hazardous environmental conditions that may be encountered or may be exposed during construction, such as buried material, historic fill, and methane gas, as well as methods to address these hazardous environmental conditions during construction; and,
- General guidelines to be enforced by the construction manager regarding worksite safety.

Further, a likely stipulation to be included within the CHASP would be that any exported urban fill soils and landfill materials would be handled and disposed in accordance with New York State Department of Environmental Conservation (“NYSDEC”) guidelines and recommendations. Once the proposed project plans are finalized, an *in situ* characterization would be performed for on-site soil to facilitate procurement of excavation bids and identification of soil disposal facilities.

10.3 Methodology

A Phase I ESA was prepared (July 2014) in which Recognized Environmental Conditions (“RECs”) were identified, including the potential for buried material/historic fill material of unknown origin and the potential for methane gas due to the presence of historic marshland beneath the fill material on the site. A Phase II ESA was recommended and subsequently conducted (August 2014) to confirm the identification of buried material/historic fill and to characterize subsurface soils and groundwater with respect to hazardous contaminants. (Please refer to Appendix F for the Phase I ESA and the Phase II ESA.)

The Phase 1 ESA was performed in accordance with the American Society for Testing and Materials (“ASTM”) Standard Practice E-1527-13 “Standard Practice for Environmental Site Assessments.” In tandem with a regulatory review, pursuant to ASTM standards, the site history and surrounding land uses were researched using various sources (please refer to the Phase I ESA in Appendix F for greater detail), in order to identify potential areas of environmental concern at the subject site, which may be related to: asbestos-containing materials (“ACM”) and lead-based paint (“LBP”); storage tank systems (including underground storage tanks (“USTs”)); hazardous materials, hazardous wastes; solid wastes, wastewater, and grease traps; polychlorinated biphenyls (“PCBs”); radon; and heating, ventilation and cooling (“HVAC”) systems.

Specifically, these potential areas of environmental concern were evaluated in accordance with the ASTM E-1527-13 protocol to determine whether such areas exist at the subject site that may affect the site and to determine if any issue would be identified as an REC, Controlled Recognized Environmental Condition (“CREC”), Historical Recognized Environmental Condition (“HREC”) or a *de minimis* Condition.

RECs are defined in the ASTM E-1527-13 Standard as, “...the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.”

CRECs are defined in the ASTM E-1527-13 Standard as, “...a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (e.g., as evidenced by the issuance of an NFA letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (e.g., property use restrictions, AULs, institutional controls, or engineering controls).”

HRECs are defined in the ASTM E-1527-13 Standard as, “...a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted residential use criteria established by a regulatory authority, without subjecting the property to any required controls.”

A *de minimis* condition is defined in the ASTM E-1527-13 Standard as “...a condition that does not represent a threat to human health or the environment; and a condition that would not be subject to enforcement action if brought to the attention of a regulatory agency.”¹

In order to thoroughly assess each area, the following scope of work was conducted:

- Review available historical information regarding site use and progressive development, including available historical site plans, historical city directories and environmental reports.
- Review federal, state, and local regulatory information regarding the subject site and adjacent properties.
- Review natural resource maps, as available.
- Interview local agencies regarding historical and current site operations, permits, and potential environmental issues and/or areas of environmental concern.

¹ *De minimis* conditions are not RECs, as defined by ASTM, and therefore do not typically merit further assessment when identified. A *de minimis* condition does not represent a threat to human health or the environment, or require enforcement action if brought to the attention of a regulatory agency.

- Interview knowledgeable individuals regarding site and facility history, and facility work practices.
- Interview current occupants where suspected environmental hazards may exist regarding facility operations and history.

As explained in the Phase I ESA (provided in Appendix F of this EIS), both federal and state regulatory agency databases were researched and reviewed for information regarding documented and/or suspected releases of regulated hazardous substances and/or petroleum products on or near the project site. Historical Sanborn fire insurance maps for the BDC site and adjoining properties were reviewed for the years between 1977 and 2007. Historical city directories for the BDC site and surrounding areas for the years between 1976 and 2013 were also reviewed.

In addition, on-site inspection of the project site included observations of parcels A and B and their surrounding area to identify odorous or visible indications of potential hazardous substances, such as the presence of ASTs, USTs, tank vents and fill ports; transformers (and other items that could contain PCBs); waste storage areas; hazardous materials usage, storage, and disposal areas and equipment; stained surfaces and soils, and stressed vegetation. In addition, readily-observable portions of the properties immediately adjacent to parcels A and B were viewed from public rights-of-way to identify or determine the likelihood of any of the aforementioned potential sources of contamination being present. There were no limiting conditions with respect to the accuracy of the site reconnaissance.

Subsequently, a Phase II ESA was conducted in accordance with the ASTM Standard Practice E-1903-97 "Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process."

The Phase II ESA included:

- A Geophysical Investigation to utilize ground-penetrating radar (GPR) and/or electromagnetic ("EM") survey on parcels A and B in order to identify subsurface structures or anomalies prior to soil boring.
- Ten (10) soil borings advanced using a track-mounted GeoProbe to a depth of 30 feet below ground surface ("bgs").
- Continuous core sampling using a four-foot length, 2-inch ID, macro-core sampler fitted with a sample sleeve. Upon retrieval, the sleeve was split open and screened for volatile organic compounds ("VOC") using a photo-ionization detector ("PID") to assist in identifying the presence of any photo-ionizable volatile organic vapor concentrations and likely sample locations.
- The collection of soil samples based on PID readings, visual, and olfactory observations. Samples collected were analyzed by a New York-accredited laboratory for Volatile Organic Compounds (VO+10), Semi-volatile Organic Compounds (SVOC+15), Total Petroleum Hydrocarbons (including DRO and GRO), PCBs and Resource Recovery and Conservation Act ("RCRA") Metals.

- The collection of soil vapor samples (methane gas), due to the fact that the area is historic fill over marshland.
- Groundwater sampling, if groundwater was encountered in any of the borings. Samples collected were analyzed by a New York-accredited laboratory for Volatile Organic Compounds (VO+10), Semi-volatile Organic Compounds (SVOC+15), Total Petroleum Hydrocarbons (including DRO and GRO), PCBs and RCRA Metals.

10.4 Existing Conditions

The Phase I ESA prepared for the project identified two (2) RECs on the project site, as follows:

- Potential buried material and/or historic fill material of unknown origin, as the entire BDC campus has been identified within a historic refuse landfill area; and
- Potential methane gas due to the presence of historic marshland beneath the fill material on the site.

While no *de minimis* conditions were identified on either Parcel A or Parcel B, off-site *de minimis* conditions were identified for in-service petroleum bulk storage tanks on the remaining portion of the BDC property (Lot 300), as follows:

- Two (2) 25,000-gallon fiberglass reinforced plastic (“FRP”) USTs for #1, #2, or #4 fuel oil, which were installed on December 1, 1998, and which are registered with NYSDEC.

The subsequent Phase II ESA determined no underground magnetic anomalies indicative of USTs or that warranted further investigation. This subsurface investigation found landfill materials and urban fill soil and construction demolition debris lying above the natural peat bog and underlying sand soils.

Typical urban fill soil concentrations of total metals were found in the landfill soils, though no VOCs or PCBs were found in the soils. Petroleum hydrocarbon contamination was found to be minimal and limited in extent to only two of the ten boring locations within the landfill materials, at a depth of 10-15 feet below grade. The materials above and below this approximately five-foot layer within the borings did not reveal evidence of contamination.

No critical ground water quality issues were identified (i.e., no VOCs or PCBs were identified); however, low concentration of SVOCs and metals were identified in the groundwater, attributed to the presence of the overlying landfill and urban fill soil quality.

Results of the soil vapor methane investigation identified generally low concentrations of methane. One location reported 400 parts per million by volume (“ppmv”), which was greater than was found at other

boring locations, all of which were below 10 ppmv. The methane concentrations identified in soil vapors likely originate from decomposition of buried organic matter in the landfill and from underlying peat bog soils.

10.5 The Future Without the Proposed Action (“No Action” Conditions)

In the absence of the proposed action, no new construction or excavation is expected on the project site that would disturb any portion of the project site, neither the landfill nor the natural soils. The project site would not be developed or utilized, and future contamination or spill incidents nearby that could affect the project site are not speculated. Further, the existing *de minimis* condition (the UST) identified on the remaining BDC campus (Lot 300), is assumed to remain in-place and managed by the BDC without adverse effect to human health or the environment. Therefore, potential existing contamination associated with the project site, such as buried material, historic fill, and potential for methane gas, and the adjacent BDC property (Lot 300) would remain present to a similar extent and degree in the future without the proposed action.²

10.6 The Future With the Proposed Action (“With Action” Conditions)

Uncontrolled construction activities on the project site could disturb unidentified hazardous materials that may be present and introduce increased potential for human exposure. Based on the results of the Phase II ESA, there are no recommendations for additional testing or remedial action, though the Phase II ESA proposed that a RAP, detailing the installation of a vapor barrier, and a CHASP should be in place to protect site workers during construction.

Therefore, consistent with these recommendations, the Restrictive Declaration prepared as part of the proposed action, will require that any new building structures have an engineered vapor barrier installed under the foundation slabs in order to prevent any accumulation of methane gas under building structures and to eliminate potential vapor migration into the building structure; specifically, the Restrictive Declaration would require the preparation of a RAP, detailing the installation of building vapor barriers,

² It is noted that were redevelopment of Lot 300 contemplated as part of a separate and unrelated action in the future, appropriate attention would be given to the existing *de minimis* condition (the UST) located on that specific property in the environmental review to be undertaken before any such redevelopment.

and a CHASP to prevent human exposure (worker and public) to any unidentified or potential on-site contamination. Elements of the CHASP could include the following:

- A project contact list, describing responsibilities;
- A description of on-site hazardous environmental conditions that may be encountered or may be exposed during construction, such as buried material, historic fill, and methane gas, as well as methods to address these hazardous environmental conditions during construction; and,
- General guidelines to be enforced by the construction manager regarding worksite safety.

Further, a likely stipulation to be included within the CHASP would be that any exported urban fill soils and landfill materials would be handled and disposed in accordance with NYSDEC guidelines and recommendations. Once the proposed project plans are finalized, an *in situ* characterization would be performed for on-site soil to facilitate procurement of excavation bids and identification of soil disposal facilities.

With appropriate protocols in place during construction to address potential on-site contamination, and for the abatement and disposal of such materials off-site, no significant adverse impacts related to hazardous materials would be expected to occur with the proposed action, and no further analysis of hazardous materials is warranted.