A. INTRODUCTION

This section addresses the potential for the presence of hazardous materials resulting from previous or existing uses at the project site and the surrounding area, and identifies potential issues of concern that could pose a hazard to users of the new buildings, the surrounding communities, and/or the environment during or after development of the proposed project. According to City Environmental Quality Review (CEQR) criteria, a hazardous material assessment is to be conducted when elevated levels of hazardous materials exist on a site, when a project would increase pathways to their exposures, either human or environmental, or when an action would introduce new activities or processes using hazardous materials, thereby increasing the risk of human or environmental exposure. An analysis should be conducted for a site with the potential to contain hazardous materials or if any future redevelopment of the property is anticipated.

The proposed project would facilitate the development of the project site with a new detention facility; support space; community facility and/or retail space; and parking spaces. All existing buildings on the project site would be demolished to allow for the new construction that would require excavation for new foundations, utilities, etc. As such, without appropriate controls there could be a potential for exposure to any contaminated materials present (within existing buildings or in the subsurface).

A Phase I Environmental Site Assessment (ESA) addressing the project site was prepared, in May 2018, by Matrix New World Engineering, Land Surveying and Landscape Architecture, P.C. (Matrix) in accordance with ASTM E1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Practice. The Phase I ESA included a visual inspection and, for the project site lot(s) and nearby, a review of historical land-use maps, aerial photographs, local records, and state and federal regulatory databases relating to use, generation, storage, treatment, and/or disposal of hazardous materials.

A March 2019 Phase II Environmental Site Assessment (Phase II ESA) for the project site was prepared by Matrix. The scope included installation of nine soil borings (groundwater was not encountered) for collection and laboratory analysis of soil samples and installation of six probes for the collection and laboratory analysis of soil vapor samples. Testing within the existing building for asbestos-containing materials (ACM), lead-based paint (LBP) and polychlorinated biphenyls (PCBs) was also performed.

Additional information on geology/hydrogeology was obtained from an October 2018 Preliminary Geotechnical Report, prepared by Mueser Rutledge Consulting Engineers.

PRINCIPAL CONCLUSIONS

Evaluation of the project site was performed via review of the Phase I ESA and the results of the Phase II ESA. The Phase I ESA revealed evidence of recognized environmental conditions (RECs) at the project site. ASTM, in the E1527-13 Standard for conducting ESAs, identifies these as “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a

property." However, the subsurface testing, while finding signs of historical fill material, did not indicate evidence of a petroleum spill or other release.

Not unexpectedly for a building that dates from 1957, testing identified ACM (e.g., in floor tiles, insulation materials and roofing elements) and LBP, but samples of caulk would be considered PCB-free. There are a variety of federal, state, and local regulatory requirements that would be followed to address disturbing and disposing of these materials.

Construction of the new building would require extensive excavation. Impacts would be avoided by implementing the March 2019 Remedial Action Plan (RAP) and associated Construction Health and Safety Plan (CHASP) for implementation during the subsurface disturbance associated with construction. The RAP and CHASP were approved by the New York City Department of Environmental Protection (DEP). Occupancy permits would only be issued once DEP receives and approves a Remedial Closure Report, certified by a New York-licensed Professional Engineer, that documents the RAP and CHASP were properly implemented.

With the implementation of applicable regulatory requirements for ACM, LBP, etc., related to the demolition of the existing building and the measures required by the RAP/CHASP for subsurface disturbance, the potential for significant adverse hazardous materials impacts from construction at the project site would be avoided. Following construction, there would be no potential for significant adverse impacts relating to hazardous materials.

B. EXISTING CONDITIONS

HAZARDOUS MATERIALS ASSESSMENT

POTENTIAL CONTAMINANTS OF CONCERN

Soil and groundwater can become contaminated because of past or current activities on a 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 handling/management of raw product and/or waste materials, or inadvertent spills/release.

Exposure to contaminants can potentially occur through direct contact. Exposure to contaminated groundwater through ingestion is not expected as New York City is served by municipal water systems that rely on upstate reservoirs. However, if such contaminants are not properly managed, the proposed excavation, earthmoving, dewatering, and other construction activities can introduce potential risk to construction workers and others nearby by providing a pathway of exposure from contaminants. Demolition or disturbance of existing structures that have ACM, LBP, electrical equipment containing PCBs, or fluorescent lights or older thermostats containing mercury have 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, 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:

1. **Volatile organic compounds (VOCs)**: These include aromatic compounds—such as benzene, toluene, ethylbenzene, xylene (BTEX), which are found in petroleum products (especially gasoline, which can also contain methyl tertiary butyl ether [MTBE])—and chlorinated compounds, such as tetrachloroethene (also known as perchloroethylene or

"perc") and trichloroethene, 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.

2. **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 all of the project site. Petroleum-related SVOCs could be present and are typically associated with buried tanks currently or formerly located in the study area. SVOCs can also be present in creosote-treated timber (e.g., piles).
3. **Polychlorinated biphenyls (PCBs)**: Commonly used as a dielectric fluid in transformers, some underground high-voltage electric lines, and hydraulically operated machinery, PCBs are of special concern near electrical transformers 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).
4. **Pesticides, herbicides, and rodenticides**: These are commonly used to control rodents and/or insects and vegetation in vacant structures or in vegetated areas or vacant lots. Pesticides/herbicides are relatively immobile and tend to be persistent in surface soils.
5. **Metals (including lead, arsenic, cadmium, chromium, mercury and cyanide)**: Metals are often used in smelters, foundries, and metal works and are found as components in paint, ink, petroleum products, fluorescent lights, older thermostats, and coal ash, and were used in the past (copper, chrome, and arsenic) as wood preservatives (e.g., on piles). These metals tend not to migrate far in soil. Metals at levels above natural background levels are frequently present in fill material throughout the New York metropolitan area.
6. **Fuel oil and gasoline from storage tanks**: Current or historical buildings at or near the project sites could have had aboveground storage tanks and/or underground storage tanks for fuels, including heating oil and gasoline.
7. **Fill materials of unknown origin**: In the past, waste materials, including coal and incinerator ash, demolition debris (including from demolished cinder blocks), 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, SVOCs, and other contaminants. Such materials are potentially present on the project sites. The geotechnical investigation found a 12 to 23 foot layer of fill material uppermost in the borings.
8. **Asbestos**: Asbestos is a common component of building materials, especially insulation, fireproofing, tile flooring, plaster, sheetrock, ceiling tiles, mastic, and roofing materials. In addition to materials within existing structures, subsurface utility lines may be coated with asbestos or encased in "transite," an ACM. Asbestos was widely used before 1980. Because of the age of many of the project site buildings, ACM is almost certainly present in the older project site buildings.
9. **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. It is regulated under the Occupational

Safety and Health Administration (OSHA) Lead Exposure in Construction standard (29 CFR 1926.62). Lead that is released as dust (or as a fume if heated) is potentially hazardous, especially to children. The older project site buildings are likely to include LBP.

PROJECT SITE—275 ATLANTIC AVENUE

The approximately 1.78-acre site includes the Brooklyn House of Detention, an 11-story 161,765-square-foot building from 1957. The Phase I ESA identified RECs including two 20,000-gallon diesel fuel underground storage tank (USTs) located beneath the State Street sidewalk (these USTs service the Kings County Criminal Court building located north of the site, across State Street, which in turn provides steam to the site); a 3,000-gallon diesel fuel aboveground storage tank (AST), in the basement with visible signs of leakage around the suction port; and potential groundwater contamination from an off-site source (suspected due to upgradient sites with known spills and the location of groundwater monitoring wells adjacent to the site).

The Phase II ESA summarized installation of nine soil borings down to a maximum of 27 feet below grade. Fill was found to extend to between 12 and 23 feet below grade. The new building excavation depth is projected to be approximately 58 feet, but subsurface conditions prevented the drilling equipment reaching that depth. As part of geotechnical investigation activities, the water table was reached at approximately 31 feet below grade in the southeast of the project site. Soils were logged, noting the presence of any staining, odors, and/or free product, and screened for organic vapors with a photoionization detector (PID). No indications of contamination were found, with the exception of a slight petroleum-like odor and a PID reading of 4.5 parts per million in one boring at a depth of 18 to 20 feet.

Two soil samples were collected for laboratory analysis from most of the nine borings (due to shallow refusal some had only one sample collected), one from the 0- to 2-foot interval and the other from the 2-foot interval immediately above the refusal depth (except for the location where the odors were noted, where the sample was collected at that depth). Soil samples were analyzed for Target Compound List (TCL) VOCs, TCL SVOCs, TCL PCBs, TCL pesticides, Target Analyte List (TAL) metals and total cyanide. Analytical results were compared to the 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs), both Unrestricted Use (UUSCO) and Restricted Residential Use (RRSCO).

- No VOCs or PCBs exceeded any SCOs.
- Pesticides exceeded UUSCOs but not RRSCOs in one shallow sample. This is typical for urban fill material.
- SVOCs exceeded UUSCOs and/or RRSCOs in one of the shallow soil samples, but all of these exceedances were for polycyclic aromatic hydrocarbons (PAHs), a class of SVOCs commonly detected in historical fill material, especially fill material containing combustion byproducts, such as coal ash.
- Metals were detected above UUSCOs in all samples and above RRSCOs in two samples. Elevated metals compounds are frequently encountered in urban fill material.

Soil vapor samples were collected from six locations over two hours and analyzed for VOCs. In the absence of soil vapor standards or guidelines, analytical results were compared with the indoor Air Guideline Values (AGVs) contained in New York State Department of Health (NYSDOH) *Guidance for Evaluating Vapor Intrusion in the State of New York* (October 2006 and subsequent updates). It should be noted that this direct comparison is highly conservative as it essentially

assumes that all soil vapor would migrate into a future building, a situation that would not occur in reality. The comparison showed that there were exceedances of the 2 micrograms per cubic meter (µg/m^3) AGV for trichloroethene (TCE) in two of the samples (7.52 and 2.04 µg/m^3) and of the 30 micrograms per cubic meter (µg/m^3) AGV for tetrachloroethene (PCE) in three of the samples (36.62 to 85.44 µg/m^3).

C. THE FUTURE WITHOUT THE PROPOSED PROJECT

In the future without the proposed project (i.e., the No Action condition), it is assumed that the project site would remain in its current condition. Regulatory requirements relating to petroleum storage tanks, ACM, LBP, PCBs would continue to apply, but without the subsurface disturbance associated with the proposed project, the potential for exposure (to construction workers and the community) to any subsurface hazardous materials would not occur.

D. THE FUTURE WITH THE PROPOSED PROJECT

As currently contemplated, all existing structures/facilities on the Brooklyn Site would be demolished/removed and a new building would be constructed. Given that (typical of older buildings) the existing structure contains, for example, ACM and LBP (and potentially PCBs, although none were found in the testing conducted to date), a variety of federal, state, and local regulatory requirements addressing activities that could disturb and dispose of these materials would be applicable.

These include:

- Prior to demolition or renovation, existing buildings (or portions planned for disturbance) would be surveyed for asbestos by a NYC-certified asbestos investigator and all ACM would be removed and disposed of prior to demolition (or renovation) in accordance with local, state and federal requirements.
- Demolition or renovation activities with the potential to disturb LBP would be performed in accordance with applicable requirements (including federal OSHA regulation 29 CFR 1926.62–Lead Exposure in Construction).
- Unless there is labeling or test data indicating that any suspect PCB-containing electrical equipment and fluorescent lighting fixtures do not contain PCBs, and that any fluorescent lighting bulbs do not contain mercury, disposal of these items would be conducted in accordance with applicable federal, state, and local requirements.

Construction of the new buildings would require extensive excavation. Although the Phase II ESA identified hazardous materials in the project site's soil and soil vapor, the levels were not as high as at many other sites in New York City. Even at those much higher levels, excavation can be accomplished in a manner that effectively protects human health and the environment, by performing the work in accordance with the type of measures set out below to avoid impacts:

- Based on the results documented in the Phase II ESA, a March 2019 RAP and associated CHASP have been prepared for implementation during the subsurface disturbance associated with construction at the project site (these plans were reviewed and approved by DEP in correspondence dated March 19, 2019; see **Appendix E**). The RAP and CHASP set out procedures to be followed to avoid the potential for adverse impacts related to hazardous materials identified by the investigation as well as other hazardous materials that could be (unexpectedly) encountered. The RAP addresses requirements for items such as: field oversight of soil disturbance by an environmental professional, soil management (including

stockpiling, handling, transportation and disposal), dust control and air monitoring, and contingency measures should USTs or soil contamination be encountered. Given the results of the soil vapor testing, the RAP includes requirements for vapor controls (a vapor barrier around the foundation elements, and, if the foundations do not extend below the groundwater table, a sub-slab depressurization system) to avoid the potential for soil vapor intrusion into new structures. The RAP sets out criteria for imported soil in any new landscaped areas. The CHASP presents a hazard assessment for the construction workers and sets out the requirements for real-time air monitoring (for respirable dust and VOCs) during subsurface disturbance, to protect both the construction workers and the community. Following construction, occupancy permits would only be issued once DEP receives and approves a Remedial Closure Report, certified by a New York-licensed Professional Engineer, that documents the RAP and CHASP were properly implemented.

- Removal of all known USTs, ASTs and any unforeseen petroleum tanks would be performed in accordance with applicable regulatory requirements including New York State Department of Environmental Conservation (NYSDEC) requirements relating to spill reporting and tank registration.
- If dewatering would be necessary for the proposed construction (the preliminary geotechnical study encountered groundwater at 31 feet below grade, but the basement levels may well extend deeper), water would be discharged to sewers in accordance with DEP requirements.

With the implementation of the regulatory requirements relating both to the demolition of the existing facilities and the measures required by the RAP/CHASP and other applicable regulatory requirements, the potential for significant adverse hazardous materials impacts from construction at the project sites would be avoided. Following construction, there would be no potential for significant adverse impacts relating to hazardous materials. ✷