SITE INFORMATION REPORT

for

55-01 2nd Street
Long Island City, New York
(Block 11, Lot 1)

Prepared For:

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EXECUTIVE SUMMARY

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C. has prepared this site information report at the request of owner Hans Holterbosch Inc. to summarize our due-diligence research and investigations pertaining to future development of 55-01 2nd Street, Long Island City, New York (Block 11, Lot 1). This report is intended for use by prospective developers as a basis of information for informing design decisions.

Our findings are based primarily on a desk study that assessed zoning analysis, environmental reports, boundary survey and related site information provided by Eight Points Asset Management LLC as well as record maps, documents, and pertinent government regulations. We also performed a site walkthrough.

This report is broken into the following sections representing our various site-development disciplines:

- Environmental Planning
- Waterfront Design and Permitting
- Geotechnical Engineering
- Environmental Engineering
- Site/Civil Engineering

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I. INTRODUCTION

Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C. has prepared this site information report at the request of owner Hans Holterbosch Inc. to summarize our due-diligence research and investigations pertaining to future development of 55-01 2nd Street, Long Island City, New York (Block 11, Lot 1). This report is intended for use by prospective developers as a basis of information for informing design decisions.

This site information report summarizes the findings of our various site-development assessments for the project site including environmental planning, waterfront permitting, geotechnical engineering, environmental engineering, and site/civil engineering.

Our assessments are based on information and reports provided by the owner and from documents and findings from our due-diligence efforts. Each section of the report presents our methodologies, assumptions, findings, and recommendations for the future development.

The figures and appendices contain record maps, charts, sketches, and reference material on which our investigations are based.

II. SITE DESCRIPTION AND EXISTING/HISTORICAL USE

The project site is in the Hunters Point South region of southwestern Queens near the confluence of the East River and Newtown Creek. The site is an irregular four-sided polygon of approximately 329,800 square feet. See the image below.

The site is bound on the west by 2nd Street. Parcels D and E of the Hunters Point South redevelopment project are under construction on the other side of 2nd Street. The site's northern boundary is 54th Avenue and its eastern boundary is the former 5th Street, now adjacent Lot 36, Block 90. Newtown Creek forms the extent of the site's southern border.

The site usage is primarily industrial warehouse and storage (approximately 183,800 gross square feet) with some light commercial usage, surface parking, and loading docks. The site surface is almost entirely impervious, with paving where there are no buildings. A small planted band separates the riprap embankment along Newtown Creek from the remainder of the site.

The project site has been developed since at least the 1890s for industrial uses including a sugar refinery, construction company, machine shop, multiple garages, automobile repair shop, dry dock company, and several beer-distribution companies that serviced and staged their fleets of trucks.

Site Location Map

III. PROJECT UNDERSTANDING

This site information report is based on a variety of documents provided by the owner and on research materials obtained during our due diligence investigations including FOIL and FOIA requests.

For the purposes of this report, we assume that proposed development will follow the conceptual layouts that accompanied the prior Marcie Kesner zoning analysis and included site layout and building massing diagrams and zoning requirements. The conceptual designs show the future development broken into two distinct building clusters separated by a private drive bisecting the site and connecting 2nd Street to 54th Avenue. This private drive will allow for maximum floor area ratio (FAR) as described in more detail in the environmental planning section of this report. A waterfront public access area and esplanade will comprise the entire frontage of the site along Newtown Creek and a significant part of the southernmost tip of the property.

IV. ENVIRONMENAL PLANNING

This section presents our due diligence findings pertaining to zoning and environmental planning analysis of the project site. Zoning analysis performed as part of our due diligence research is a refreshing of the memorandum provided by the owner and prepared by Marcie Kesner, AICP (Kramer, Levin, Naftalis, & Frankel LLP) to ensure that zoning considerations for the site are current. This referenced memorandum is included as Appendix 1.

A. Site Characteristics (Planning)

1. Land Use

The area immediately surrounding the project site is predominantly industrial, composed of warehousing and manufacturing uses that reflect the M1-4 zoning district mapped north of the project site (refer to Figure 4: "Land Use Map" and Figure 5: "Existing Zoning Map"). The Long Island Rail Road (LIRR) Long Island City train station and rail terminal is north of the project site between 54th and Borden avenues. Open space resources include Hunters Point South Park and Gantry Plaza State Park northwest of the project site along the East River waterfront – areas that were formerly part of Long Island City's industrial waterfront. The area further north has become increasingly mixed use in character with new residential, retail, and community facility development and waterfront open space—trends that have redefined an area whose built environment was once predominantly industrial.

2. Zoning

In 2008, the site was rezoned from a manufacturing district (M1-4) to a residential and commercial district (R7-3 with a C2-5 commercial overlay) (refer to Figure 5: "Existing Zoning Map"). This rezoning was part of the Hunters Point South Rezoning[1], an area-wide action intended to facilitate implementation of a large-scale, mixed-use development plan (Hunters Point South) that would allow for the mixed-use redevelopment of both the project site and an approximately 30-acre stretch of land to the west along the East River. The 2008 rezoning also established the Special Southern Hunters Point District (SHP) and Newtown Creek Subdistrict to modify the underlying provisions of the R7-3 for floor area, height and setback provisions, and special streetscape provisions (New York City Zoning Resolution (ZR), Section 125-00) (Figure 6: "Special Southern Hunters Point District and Newtown Creek Subdistrict"). The goals of the SHP District and Newtown Creek Subdistrict are, among others, to encourage well-designed buildings that complement the surrounding area; maintain and reestablish physical and visual access to and along the waterfront; and facilitate the creation of a neighborhood characterized by higher-density mixed-use developments with residential and retail uses,

[1] Hunters Point South FEIS - CEQR No. 08DME006Q; ULURP Nos. 080276MMQ, 080362ZMQ, N080363ZRQ, 080364PQQ, 080365HAQ

community facilities, and waterfront open space.[2] Affordable housing options are promoted through the Inclusionary Housing Program that permits an increase in maximum floor area for residential developments in exchange for the provision of below-market-rate housing. Waterfront access is governed by the Newtown Creek Waterfront Access Plan (ZR 125-46)[3], refer to Figure 11.

The 2008 rezoning placed an (E) designation (E-213) on the project site to address potential issues related to hazardous materials, air quality, and noise. An (E) designation is applied to specific properties that could require remediation or other measures if an owner wants to demolish, excavate, or otherwise redevelop the property. The (E) designation program and its implications for the site are described in more detail in the environmental engineering section of this report.

3. New York City Coastal Zone Boundary

The site is in the New York City Coastal Zone Boundary. Local discretionary actions that affect areas within the Coastal Zone, and subject to City Environmental Quality Review (CEQR) must be reviewed for consistency with the coastal policies of the New York City Waterfront Revitalization Plan (WRP)[4], which includes review of actions requiring City Planning Commission approval pursuant to the Uniform Land Use Review Procedure (ULURP) or other provisions of the City Charter.

B. Zoning Analysis

The zoning provisions of the SHP District and the Newtown Creek Subdistrict supersede those of the underlying R7-3 district.[5] Dimensional and parking standards and streetscape provisions of the SHP District and Newtown Creek Subdistrict are found in Article XII, Chapter 5 of the Zoning Resolution.

1. Permitted Uses

Uses permitted as-of-right in an R7-3 district include all residential and community facility uses (Use Groups 1-4). Residential Use Group 1 includes single-family detached residential developments. Residential Use Group 2 includes all other types of residential developments designated for permanent occupancy. Community Facility Use Group 3 includes schools, libraries, museums, college dormitories, nursing homes, and residential facilities for special needs populations. Community Facility Use Group 4 includes houses of worship, community

[2] New York City Department of City Planning. (2016) Special Southern Hunters Point District. http://www1.nyc.gov/site/planning/zoning/districts-tools/special-purpose-districts-queens.page#hunters_point

[3] Waterfront Access Plans (WAPs) allow for the modification of waterfront public access area requirements to address unique conditions in specific areas.

[4] The New York City Waterfront Revitalization Program (WRP) (revised February 2016) is the City's principal coastal zone management tool. It establishes the City's policies for development and use of the waterfront.

[5] However, in flood zones, in the event of a conflict between the provisions of Article XII, Chapter 5, and the provisions of Article VI, Chapter 4 (Special Regulations Applying in Flood Hazard Areas), the provisions of Article VI, Chapter 4 shall govern.

centers, hospitals, ambulatory healthcare facilities and nonprofit facilities without sleeping accommodations (ZR 22-00).

Within the C2-5 commercial overlay district, local retail and service uses (Use Groups 1-9 and 14) are permitted as-of-right (ZR 32-00).

2. Floor Area Regulations

In the Newtown Creek Subdistrict, the maximum floor area ratio (FAR) is 2.75. An FAR bonus of 1.0 is available for developments that provide: (1) a publicly accessible private street as the easterly prolongation of 55th Avenue across the site with a through-connection north to 54th Avenue, and (2) a publicly accessible open area on the site, east of 2nd Street, as shown on Map 8 in Appendix A of ZR Section 123-00.[6] (refer to Figure 7: "Publicly Accessible Private Street and Open Area in Newtown Creek Subdistrict" of this report). The maximum FAR may be further increased from 3.75 to an FAR of 5.0 with the provision of permanent affordable housing,[7] in accordance with the Inclusionary Housing Program (ZR 125-22 and ZR 23-90).

Within the C2-5 overlay district, a maximum commercial FAR of 2.0 is permitted below the level of the first story ceiling when located below residential uses. However, there are two parts of the site fronting 2nd Street where nonresidential ground-floor use is required, as shown on Map 2, Appendix A (refer to Figure 8: "Special Ground Floor Use Regulations" of this report).

3. Height and Setback Requirements

Required Street Walls: All street walls on the site, except frontages on 54th Street and the pier-head line, have a minimum base height of 50 feet and a maximum of 70 feet, as shown on Map 3, Appendix A (refer to Figure 9: "Street Wall Locations" of this report). Frontages on 54th Street and along the pier-head line have a minimum base height of 40 feet.

Required Setbacks: Above the maximum base height, a setback with a depth of at least 15 feet from the street wall is required.

Maximum Building Height: Above the maximum base height, the maximum building height is 125 feet, except where towers are permitted.

Tower Heights and Locations: Structures that exceed the maximum 125-foot building height on the site may be sited at the four locations shown on Map 6, Appendix A (refer to Figure 10: "Tower Areas" of this report). Permitted tower heights range between 270 and 400 feet. Detailed requirements governing the shape and orientation of towers are found in ZR 125-34.

[6] The publicly-accessible private street and open area must comply with the design standards of ZR 125-44 (Private Street Requirements in Newtown Creek Subdistrict) and ZR 125-45 (Publicly Accessible Open Area in Newtown Creek Subdistrict). See Appendix A, Map 8 (ZR 123-00).

[7] Affordable housing units may be provided on- or off-site. If the latter, the affordable units must be located within a half-mile of the Project Site in Community District 1, Queens.

4. Newtown Creek Waterfront Access Plan (WAP)

Map 9, Appendix A (refer to Figure 11: "Newtown Creek Waterfront Access Plan (Q-3)" of this report) delineates the boundaries of the Newtown Creek WAP and the location of certain features mandated or permitted by the WAP, as follows:

- A 40-foot-wide shore public walkway is required along the shoreline;
- A 30-foot-wide upland connection is required south of 54th Street to the public walkway on the shoreline; and
- A supplemental public access area is required inland parallel to the shore public walkway.

5. Private Street Requirement

If a publicly accessible private street is provided in exchange for additional floor area, it must be located as shown on Map 8 of Appendix A (refer to Figure 7 of this report), and built to New York City Department of Transportation (DOT) public street standards, including standards pertaining to lighting, curbs and curb cuts. The private street must consist of a paved road bed with a width of 34 feet and a 13-foot-wide sidewalk on either side along its entire length.

6. Publicly Accessible Open Area

If a publicly accessible open area is provided in exchange for additional floor area, it must be located as shown on Map 8 of Appendix A (refer to Figure 7 of this report). No excavation or building permit for a development on the site will be granted without certification from the chairperson of the City Planning Commission (CPC) that a site plan has been submitted that is either consistent with the Department of Parks and Recreation (DPR) design standards for the public park located on 55th Avenue between Center Boulevard and 2nd Street or, if design standards have not been developed for such park, acceptable to the chairperson of the CPC and the DPR. Additional requirements pertaining to design standards are found in ZR 125-44.

7. Permitted Parking

Within the Newtown Creek Subdistrict, parking regulations pursuant to ZR 13-134 apply for mixed-use developments. No parking is required. However, if parking is provided, the maximum number of spaces permitted within a development or enlargement may not exceed 40 percent of the total number of dwelling units. All off-street parking spaces must be in an enclosed facility, located entirely below-grade or, if above-grade, behind commercial, community facility, or residential floor area so that no part of the parking facility is visible from adjoining streets or publicly accessible open areas. Additional design standards and requirements for off-street parking spaces are found in ZR 122-52.

C. Variances and Special Permits

If the site is to be developed beyond what is permitted as-of-right, requiring discretionary approval, the owner must demonstrate that full compliance with applicable zoning regulations

(i.e., use, height, bulk standards) is not possible to realize a reasonable economic return on the property. The New York City Board of Standards and Appeals (BSA) is empowered to grant special permits for specified uses or for the modification of use and bulk requirements in appropriate cases. BSA special permit and variance approvals are discretionary actions subject to City Environmental Quality Review (CEQR). CEQR is New York City's process for implementing the New York State Environmental Quality Review Act (SEQRA) by which city agencies review proposed discretionary actions to identify and disclose the potential effects those actions may have on the environment.

D. City Environmental Quality Review

If a proposed project on the site involves a discretionary action (e.g., a zoning waiver), environmental review would be required. The following is a summary of the required procedures for actions requiring a City Environmental Quality Review (CEQR).

1. CEQR Environmental Assessment Statement

Preparation of an Environmental Assessment Statement (EAS) is required for all actions subject to environmental review. The EAS must be prepared in accordance with the CEQR rules (62 RCNY Chapter 5 and Executive Order 91 of 1977, as amended) and guidelines outlined in the latest version (March 2014 Edition) of New York City's CEQR Technical Manual ("*CEQR Technical Manual*") to assess the potential environmental impacts of the proposed project.

a) EAS Part I, including:

i. Information about the proposed project and site including:

- Lead agency and applicant information
- Description of the proposed project
- Project purpose and need
- List of the required governmental approvals being sought
- Physical dimensions and scale of the project
- Analysis year
- Land uses in the project vicinity
- Description of the existing and proposed conditions

b) EAS Part II: Technical Analysis, including:

i. Conducting screening analyses in accordance with the *CEQR Technical Manual* to determine if the proposed action would exceed CEQR thresholds for relevant impact categories (e.g., 50 peak-hour vehicle trips or 200 peak-hour transit trips).

ii. Determining the future "No-Action" and "With-Action" scenarios for the Reasonable Worst Case Development scenario and evaluate potential environmental effects of the proposed action in the future "No-Action" and future "With-Action" scenarios in the following categories:

- Land Use, Zoning and Public Policy
- Socioeconomic Conditions
- Community Facilities and Services
- Open Space
- Shadows
- Historic and Cultural Resources
- Urban Design/Visual Resources
- Natural Resources
- Hazardous Materials
- Infrastructure
- Solid Waste and Sanitation Services
- Energy
- Transportation
- Air Quality
- Greenhouse Gas Emissions
- Noise
- Public Health
- Neighborhood Character
- Construction

c) CEQR Supplemental Report: The CEQR supplemental report provides additional analysis of items noted above and in the EAS as having the potential for adverse impacts. The report identifies those technical areas that do not "screen out" based on the EAS and provides additional analyses to determine the potential for significant adverse impacts.

If at the end of the EAS environmental review process the lead agency determines there are no significant adverse impacts and issues a "Negative Declaration" or a "Conditional Negative Declaration" as a Determination of Significance, no further environmental review would be required other than the required 30 day public comment period for the Conditional Negative Declaration. If a positive declaration is issued, the project would require an Environmental Impact Statement (EIS) to address significant environmental impacts.

V. WATEFRONT DESIGN AND PERMITTING

This section presents our due diligence findings pertaining to waterfront design and permitting.

A. State and Federal Regulatory Jurisdiction – Existing Conditions

1. New York State Department of Environmental Conservation (NYSDEC)

NYSDEC Tidal Wetland jurisdiction applies to any Tidal Wetland, the final boundaries of which have been delineated on an inventory map. In this site's case, Index 1: Kings, New York and Queens Counties, Sheet No. 586-510 depicts the tidal wetland along this section of Newtown Creek as a Littoral Zone (LZ). The upper boundary of the LZ is the Mean High Water (MHW) elevation (see Figure 21). Tidal Wetland Jurisdiction also includes Tidal Wetland Adjacent Areas (TWAA) or "buffers." TWAAs are any land immediately adjacent to a tidal wetland extending to the closer of the following:

- 150 feet landward of the tidal wetland boundary
- To the seaward edge of the closest, lawfully and presently existing (i.e., as of August 20, 1977) functional and substantial fabricated structure (including but not limited to paved streets, bulkheads, seawalls, riprap walls), which are generally parallel to the tidal wetland and are a minimum of 100 feet long, but not including individual buildings.
- The elevation contour of 10 feet NGVD (7.28 Queens datum) above mean sea level, or to the top of slope where elevation 10 MGVD (7.28 Queens datum) crosses the seaward face of a bluff or cliff.

Our preliminary assessment is that the TWAA likely extends to the current top of rip rap revetment. However, NYSDEC may claim TWAA jurisdiction to the former top of bulkhead as it appeared on the Tidal Wetland map which was flown in 1974 (Figure 21).

Use and Protection of Waters is another set of NYSDEC regulations, which may affect site development activities. For this project, "Protection of Waters" regulations are applicable because the Newtown Creek is a navigable waterbody. Jurisdiction extends to MHW, elevation. Work below MHW, including, but not limited to, repairs or modifications to the existing rip-rap revetment, new stormwater outfalls, will require approval under the Use and Protection of Waters regulations.

A tidal wetland permit will be required for any development-related activities that occur in the Tidal Wetland or TWAA. A Protection of Waters permit is required for regulated activities below MHW. Regulated activities include but are not limited to excavation, filling, construction of structures, removal of vegetation, etc.

2. State of New York Office of General Services

New York State technically owns Lands Under Water and individuals proposing to work or fill any such areas must obtain the approval from the Office of General Services in the form of an

easement, grant or other conveyance. Lands Under Water are generally defined by the mean high water elevation and the agency's jurisdiction in many cases extends back to the mean high water elevation–line as it was mapped in the mid to late 1800s. We have submitted a FOIL request to the Office of General Services (OGS) for the property. A response has not been received as of the time of this writing.

3. U.S. Army Corps of Engineers (USACE)

The U.S. Army Corps of Engineers (USACE) regulates filling activities in waters of the U.S. up to the Spring High Water (SHW) elevation along Newtown Creek and excavation up to the MHW elevation. These activities are regulated under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. USACE Jurisdiction does not include buffers or adjacent areas.

Regulated activities include but are not limited to excavation, filling, building of structures, and removal of vegetation. Any proposal to undertake such activities will require a permit from the USACE.

4. Federal Emergency Management Agency (FEMA)

According to the FEMA map, (Appendix 7) the majority of the site is inundated by the 100-year flood, elevation 11.0 NAVD. There is narrow strip along the site's waterfront where the 100-year floodplain is elevation 12.0 NAVD. The city has standards for development within the floodplain. These standards are discussed in the site/civil engineering section of this report.

B. Site Evaluation

Langan performed a site walkthrough of the project site to assess existing conditions. However, an exhaustive survey of the shoreline (e.g. boat-based or underwater) was not performed. The following section describes the extent of NYSDEC and USACE jurisdiction for the site based on information provided to us, information we have obtained through Freedom of Information Act (FOIA) and the Freedom of Information Law (FOIL), current and historical air photographs.

The anticipated NYSDEC Tidal Wetland and Protection of Waters jurisdictional boundary is expected to occur at the Mean High Water (MHW) elevation along the riprap revetment along Newtown Creek. The USACE, Waters of the United States jurisdictional boundary will be the Spring High Water elevation (estimated about 6 inches to 1 foot higher than MHW) and this will also occur along the riprap revetment. With regard to the TWAA boundary, we estimate this "buffer" will extend from the MHW elevation up to the top of the existing riprap revetment, assuming the riprap revetment is considered a legally existing functional and substantial fabricated structure by NYSDEC.

Note that our assumption of State and Federal Wetland/Water Jurisdiction is based on our experience with the regulations and in working with the regulatory agencies and current site conditions. The boundaries are based on our best professional judgment. Only the NYSDEC and the U.S. Army Corps of Engineers can issue official written Jurisdictional Determinations (JD). As such, we recommend applying to each agency for written JDs as early in the design and planning process as possible.

As part of our investigation, we submitted a Freedom of Information Act (FOIA) request to USACE and Freedom of Information Law (FOIL) request to the NYSDEC to obtain copies of any permits these agencies may have issued. We also submitted a FOIL request to the NYS Office of General Services (OGS) to obtain copies of conveyances OGS has issued for filling or work in "Lands Under Water". To date we have received one response from the USACE and copies of several conveyance documents from OGS for the site. No response was received from NYSDEC.

For this assessment, it is important to note that structures and fill must have been present as of August 20, 1977, or legally permitted by DEC. The same is generally true for the Army Corps of Engineers.

Previous permitting: Based on a response to our FOIA request, the USACE issued a permit to "Place about 93 feet of embankment consisting of approximately 1,400 cubic yards of riprap for the purpose of stabilizing an existing bulkhead" (Appendix 10). This permit was issued on 14 December 1978 and expired on 18 May 1981 (Application No. 78-270). This was the only federal permit we obtained through FOIA. The approved drawings indicate this section of the failing bulkhead to be stabilized is actually at the end of 2nd Street, and thus off site, to the west. Attached to this permit was a NYSDEC Protection of Waters permit (No 24104-0085) for the same activity, issued 7 September 1978 and expired on 31 December 1979. It is assumed this work was completed in accordance with the permits. While it is possible additional work may have occurred along the waterfront however, no other permits have been made available from either the USACE, NYSDEC.

C. Proposed Development Activities and Permitting Timeframes

The following permit assessment is based on our experience in working with the regulations and the regulators. Only NYSDEC and the USACE can provide the official determinations on both the extent of their jurisdiction and the site-specific permitting requirements, we strongly recommend meeting with each agency early in the planning process. Redevelopment activities that would potentially require permits from these agencies are discussed below.

1. Waterfront Walkway

Depending on the final use, the redevelopment of this site may need to include a public waterfront easement and walkway parallel to the sites waterfront as described in the planning section above.

NYSDEC

Any work for the walkway construction will require a Tidal Wetlands Permit from NYSDEC if work is to occur below the tidal wetland boundary or within the TWAA. This would include any proposal to construct an overhanging or cantilevered walkway or bank stabilization activities. The approval process with NYSDEC could take 12 to 18 months. Based on our initial assessment of the waterfront, this permitting effort may be avoided if the walkway is constructed landward of the riprap revetment.

Army Corps

An Army Corps Section 10/404 permit would only be required if work occurred below the SHW elevation. The activities may qualify for a Nationwide Permit (NWP), in which case written concurrence in response to a Preconstruction Notification (PCN) from the Corps could take two to three months. If the activity does not qualify for a NWP, an individual permit (IP) would be required and the permitting timeframe would take more than 12 months following submission of the application.

2. Pier/Platform for Water Taxi or Ferry

A water taxi, ferry launch or other waterfront access improvements (e.g kayak launch, get downs, etc…) proposed by the developer will require approvals from both NYSDEC and the USACE.. We anticipate the agencies will be concerned with navigation impacts, traffic impacts and shading of the water area. We anticipate that the permit approval process will take 12 to 18 months assuming dredging is not required. If dredging is required, permitting timeframes will be extended considerably. To proceed with design and the application preparation a bathymetric survey of the river bottom will be required, in addition to sediment sampling for hazardous materials.

3. General Site Development Activities

Assuming all existing waterfront structures (specifically the riprap revetment) are legally existing, once outside (landward) of the 40-foot walkway easement, there is essentially no area within either NYSDEC or USACE jurisdiction.

Additional general site development activities that could trigger the need for permits from NYSDEC and the USACE would include the construction of new stormwater outfalls, the relocation of or enlarging any existing outfalls or repairs to the existing revetment. The permitting timeframe for stormwater outfalls can become lengthy, because of the need to meet specific water-quality standards. The approval process for stormwater outfalls is expected

to take 6 to 8 months. Typically repairs to riprap revetments should receive approvals from each agency within six months.

Waterfront work along Newtown Creek is also potentially subject to EPA review as further discussed in the environmental engineering section of this report.

VI. GEOTECHNICAL ENGINEERING

This section presents our due diligence findings pertaining to geotechnical engineering review of the project site.

A. Review of Geotechnical Information

We reviewed historical Sanborn maps, regional geologic information, Amtrak drawings, New York City Department of Buildings (NYCDOB) records, Phase II Environmental Site Assessment reports for the project, and previous geotechnical reports prepared for projects located within the vicinity of the site. Pertinent information obtained from the above items is summarized in the following paragraphs. A site location plan was provided previously in this report as Figure 2.

1. Historical Sanborn Maps

We reviewed available historical Sanborn Maps dated 1898, 1915, 1922, 1928, 1936, 1947, 1950, 1970, 1977, 1979, 1980, 1985, 1986, 1988 through 1996, and 1999 through 2006; see Appendix 5. Our review was to determine whether pre-existing structures/foundations may impact future design considerations.

- 1898 Sanborn Map - The 1898 Sanborn Map shows the project site as being mostly developed and bordered by Flushing Street to the north, West Avenue to the east, and Front Street to the west. Pidgeon Street, a 60-foot-wide road, is shown running through the center of the site in an east–west orientation. H.F. Burrough's – Lumber Yard and an area labeled The White Granite Co. are depicted in Block 11 south of Pidgeon Street. Block 12, located north of Pidgeon Street, is divided into approximately 37 lots. An area labeled New York Sugar Refining Co. is located in the southwest corner of Block 12 and an area labeled C. Hommel Stone Yard is in the northeast corner. The remainder of Block 12 appears to be unoccupied.
- 1915 Sanborn Map - The 1915 Sanborn Map shows the following changes relative to the 1898 map. The area located south of Pidgeon Street, previously labeled H.F. Burrough's – Lumber Yard, has been replaced by McWilliams Bro's Dock Yard and The O'Rourke Engineering Construction Co. The Dock Yard contains several structures and floating docks within Newtown Creek. The block located north of Pidgeon Street is now divided into larger-sized lots. The area in the southwest corner of the block is now labeled New York Sugar Refining Co. of the National Sugar Refining Co. of N.J. The area in the northeast corner of the block is now labeled M.F. Moran Stone Yard. Railroad tracks are shown in the center of Pidgeon Street, extending approximately halfway across the project site.
- 1928 Sanborn Map - The 1928 Sanborn Map shows the following changes relative to the 1915 and 1922 maps. The area previously labeled McWilliams Bro's Dock Yard is now labeled Russell Dry Docks Inc. The area previously labeled O'Rourke Engineering

Construction Co. is now vacant. Flushing Street, north of the project site, is now labeled 54th Avenue (Flushing Street) and West Street, east of the project site, is now labeled 5th Street (West Street).

- 1936 Sanborn Map - The 1936 Sanborn Map shows the following changes relative to the 1928 map. The area in the northeast corner of Block 11 is now labeled Newtown Creek Towing Co. Several structures are now depicted within Block 11. Railroad tracks are now depicted entering Pidgeon Street from the east side of the project site. Front Street, west of the project site, is now labeled 2nd Street.
- 1947 Sanborn Map - The 1947 Sanborn Map shows the following changes relative to the 1936 map. The areas previously labeled Russell Dry Docks Inc. and Newtown Creek Towing Co. have been replaced by a new structure labeled Refined Sugar W. Ho.
- 1970 Sanborn Map - The 1970 Sanborn Map shows the following changes relative to the 1947 and 1950 map. Several structures north of Pidgeon Street are no longer depicted. A structure labeled Auto Repair and Machine Shop is now shown.
- 1977 Sanborn Map - The 1977 Sanborn Map shows the following changes relative to the 1970 map: Three tanks containing 10,000 gallons of solvent each, one tank containing 4,000 gallons of solvent, and a pump are depicted in the southwest corner of the project site. Railroad tracks are now depicted running the entire length of Pidgeon Street within the project site.
- 1986 Sanborn Map - The 1986 Sanborn Map shows the following change relative to the 1977, 1979, 1980, and 1985 maps. Pidgeon Street is no longer depicted.
- 1988 Sanborn Map - The 1988 Sanborn Map shows the following changes relative to the 1986 map. A collection of structures at the northwest corner of the project site are now labeled Trident Recycling Corp. The solvent tanks previously located at the southwest corner of the project site are no longer depicted; the area is now shown as parking space.
- 1989 through 1996 and 1999 through 2006 Sanborn Maps - These Sanborn Maps show no significant changes to the project site relative to the 1988 map.

2. Regional Geology

We reviewed the 1991 "Surficial Geologic Map of New York, Lower Hudson Sheet" published by the New York State Geological Survey. The surficial geologic map indicates the soils beneath the site consist of till with variable texture, consisting of a clay, silt and boulders, see Figure 12.

We reviewed the 1994 "Bedrock and Engineering Geological Map of New York, Kings and Queens Counties, New York and Parts of Bergen and Hudson Counties, New Jersey" published by the United States Geological Survey, see Figure 13. The bedrock map indicates the bedrock beneath the site is Ravenswood Granodiorite, which consists of both granite and

diorite ranging in texture from granitic to gneissic; medium to dark-gray sillimanite-garnet-pink microcline-plagioclase-biotite-muscovite-quartz; and (or) biotite-hornblende-orthoclase layered gneiss are also present.

We also reviewed the 1944, revised October 1973, "Rock Data Map of Manhattan" prepared by the Topographical Bureau of the Borough of Manhattan Office of the President; see Figure 14. The elevation of the surface of rock as shown by core borings indicates the top of rock surface in the vicinity of the site to range between el -43 and -63 (MBPD) corresponding to el -41 and -61 (NAVD 88), or approximately 45 to 70 feet below existing site grades.

3. Amtrak Records

Two Amtrak tunnels are located north of the project site. At its closest point to the site, the southernmost tunnel is about 200 feet from the northwest corner of the project site. Langan previously obtained record drawings for the tunnel structures. The "Plan and Profiles of Tube Tunnels, Eastward from Long Island Shafts, Lines A and B, Record Drawing No. 197" (31 December 1909) prepared by the East River Division of the Pennsylvania Tunnel & Terminal Railroad Company, show the base of rail elevation of the tunnels beneath 2nd Street is at approximate el 235 PENN Station Datum, or at approximate el -65 (NAVD 88).

4. New York City Department of Buildings Search

We reviewed available information obtained from the NYCDOB for the neighboring and existing on-site buildings to assess possible impacts to geotechnical considerations.

- 2-39 54th Avenue (Block 13, Lot 160): The 20 April 2005 Certificate of Occupancy indicates that the structure is a one-story warehouse with a mezzanine level containing accessory storage and office space. Foundation related information was not available.
- 5-35 54th Avenue (Block 13, Lot 105): The 14 April 2005 Certificate of Occupancy indicates that the structure is a two-story building with warehouse space on the first-floor level and office space on the second-floor level. Three off-street loading berths are also located on this property. Foundation related information was not available.
- 52-37 2nd Street (Block 13, Lot 175): The 26 February 1969 and 2 March 1979 Certificates of Occupancy indicate that the structure is a one-story warehouse with offices used for the manufacturing of metal products. The building height is 23 feet and the floor slab bears on fill.
- 5-02 54th Avenue (Block 36, Lot 75): The 9 April 1945 Certificate of Occupancy indicates that the structure is a one-story building used for storage of noncombustibles. The building height is 14 feet. Foundation related information was not available.

5. Phase II Subsurface Investigation prepared by AES dated 10 February 2006

We reviewed the 10 February 2006 Phase II Subsurface Investigation report prepared for the project site by Associated Environmental Services, Ltd. (AES) and included in this report as Appendix 3. The report states the subsurface conditions consist of urban fill to a depth of approximately 5 feet or to approximately el zero (NAVD 88), underlain by brown fine to medium sand. The depth to groundwater at the site was found to be approximately 7 feet below existing grades, or at approximately el -2 (NAVD 88). Refer to the environmental engineering section of this report for more analysis of previous Phase II investigations.

6. Phase II Environmental Site Assessment prepared by AKRF dated November 2013

We reviewed the November 2013 Phase II Environmental Site Assessment prepared for the project site by AKRF, Inc. and included in this report as Appendix 3. Part of the subsurface investigation performed for this report including drilling eight test borings (SB-1 through SB-8) to approximately 10 feet below existing grades or to approximate el -5 (NAVD 88). Fill consisting of gray to brown sand with varying amounts of gravel, silt, and brick was encountered to the termination depth of each boring. Groundwater was encountered approximately 5 to 8 feet below existing grades or from approximate el zero to -3 (NAVD 88). Refer to the environmental engineering section of this report for more analysis of previous Phase II investigations.

7. Anticipated Subsurface Conditions

We have reviewed two geotechnical reports prepared for nearby sites; one located northwest of the project site and the second located south across Newtown Creek. From the borings performed for these investigations, the subsurface conditions likely consist of the following:

- An approximate 5- to 30-foot-thick fill layer is anticipated at the project site. The thickness of the fill layer is anticipated to be greater towards Newtown Creek. The fill density can be expected to be highly variable because of the heterogeneous nature of the material and the presence of obstructions such as bricks, timber, and concrete.
- An approximate 10- to 40-foot-thick layer of compressible soils consisting of organic silt, silt, and clay is anticipated beneath the fill layer at the project site. Sand layers of variable thickness are anticipated to exist within and around this compressible soil layer.
- An approximate 5- to 30-foot-thick layer of glacial till, decomposed bedrock, and weathered bedrock is anticipated beneath the compressible soils layer.
- Bedrock is anticipated about 35 to 75 feet below existing site grades. Bedrock is anticipated to be typically good quality but may contain zones of softer, highly weathered rock.

- Groundwater is anticipated approximately 5 to 8 feet below existing grades, corresponding to approximately el zero (NAVD 88). Because of the project site's proximity to the East River and Newtown Creek, groundwater levels are tidally influenced and close to Newtown Creek can be expected to vary approximately 3 to 4 feet during the rise and fall associated of each tidal cycle.

B. Preliminary Foundation Considerations

The following paragraphs provide our preliminary thoughts regarding foundations and other geotechnical aspects of design and construction for future development at the site. These preliminary thoughts are based solely on our review of available information. A project specific geotechnical subsurface investigation and analysis that meets NYC Building Code requirements must be performed.

- The site is underlain by fill and compressible soils interbedded with sands that are inadequate to support a significant building on a shallow foundation system. We anticipate the proposed building would need to be supported on deep foundations deriving their support either in the glacial till or on or in rock.
- The Amtrak tunnel approximately 200 feet north of the site should be considered. A submission will have to be made to Amtrak requesting a "Letter of No Objections." At a minimum, this submission must include aerial maps and location plans of the proposed construction, property survey plans, copy of plans submitted to DOB, and 100% design drawings. We do not expect the tunnel to impact design and construction given this distance.
- Groundwater was encountered at approximately 5 to 8 feet below existing grades, or at el zero (NAVD 88). For preliminary design purposes, we recommend that a design groundwater level at el 4 (NAVD 88) be used. A new building having below-grade basement levels will require a construction dewatering system such as perimeter well points with additional localized dewatering of deep pits.
- Temporary support of excavation (SOE) systems will be required for constructing new basements and deep pits. If construction is to extend below approximately el 2, a groundwater cutoff system should be considered.
- A geotechnical subsurface investigation satisfying the requirements of the NYC Building Code should be performed and an associated geotechnical engineering study report should be prepared for the specific development concept that is considered for this site. Assuming that the proposed development footprint will occupy the full site, a maximum of 85 borings will be required to meet NYC Building Code requirements. In addition to borings, we recommend that test pits be included in this investigation to investigate the extent of remnants of the former building foundation, CPTs be performed for seismic

analysis, and groundwater observation wells be installed and permeability testing be performed for dewatering analysis.

- Based on the results of the subsurface investigation, it could be warranted to perform a site specific seismic analysis to refine anticipated seismic loads or one could be needed by the NYC Building Code.
- Special inspections should be performed by a certified special-inspection agency during foundation construction in accordance with the requirements of the NYC Building Code.

1. Foundations and Floor Slabs

Because of the presence of fill and compressible soils, a deep foundation system consisting of driven piles or drilled caissons deriving their support in the glacial till or on or in rock is required.

Driven piles consisting of closed-end steel-pipe piles filled with concrete or steel H-piles driven into the glacial till or to rock can be considered for deep foundation support. Individual pile-design compression capacities on the order of 100 to 200 tons for piles in the 10-inch to 16-inch size range can likely be achieved, depending on the pile type, size, and wall thickness. Given the anticipated number of driven piles that would be required, we recommend that a Design Phase pile test program be performed in order to determine the most efficient pile based on type and loading.

If driven piles are used, index piles and full-scale pile axial compression and uplift load tests will be necessary to satisfy the Building Code before starting construction. In addition, lateral load tests should be performed in accordance with the provisions of the latest NYC Building Code, if individual pile lateral capacities greater than one ton are required.

If higher bearing capacities are required, an 11-5/8 diameter drilled caisson can achieve an individual design compression capacity of 300 tons. Larger diameter caissons can provide capacities of 1,000 tons or more. Drilled caissons should be designed to have a permanent cased section through the soil, so as to achieve their load-carrying capacity from the underlying rock. Drilled caissons would consist of a cased upper part and an uncased lower "socketed" portion with reinforcement.

Obstructions are expected to be encountered within the fill. Pre-drilling, pre-excavating, and removing obstructions are expected to be the most efficient method of installing driven piles.

We anticipate that tie-down anchors will be required to resist uplift loads if driven piles are used. Double corrosion protected steel tie-down anchors installed within casing drilled into rock, can provide an uplift capacity of 615 kips.

Because of the fill and compressible soils, we recommend that the building's lowest level floor slab be constructed as a structural slab supported on piles or caissons.

2. Seismic Design

The conditions at adjacent sites indicate that liquefaction could be a concern at the site. In addition, we anticipate that the Seismic Site Class could be from Site Class D to F. The factor of safety against liquefaction and the Seismic Site Class will have to be determined as part of the geotechnical subsurface investigation performed for the specific development. For preliminary seismic loading, a Seismic Site Class "E" can be assumed.

3. Excavation Support

Temporary excavation support will be required for the perimeter of the proposed development if below-grade levels are to be constructed. Temporary excavation support for mass excavation below the groundwater table will require a cut-off such as a sheet-pile or drilled-in secant-pile wall system with tie-backs or interior rakers–bracing to act as a temporary water barrier.

All excavation support must be designed by a Professional Engineer licensed in the state of New York. The designs should take into account all anticipated soil, groundwater, and temporary and permanent surcharge loads from streets, sidewalks, and adjacent structures and buried utilities. The NYC Building Code requires that site-specific plans and details be prepared for temporary excavation support and submitted to the NYCDOB.

Excavation and excavation support construction work should be performed with care so as not to cause damage or loss of support to neighboring buildings, structures, and roadways.

As indicated previously, former building foundation remnants are anticipated within the fill, so we expect that pre-excavation along the excavation-support alignment may be required in some areas to facilitate installing an excavation support system.

4. Groundwater Control during Construction

Groundwater was encountered approximately 5 to 8 feet below existing grades, or at approximately el zero. Assuming that the new building would not include a basement level and would allow for the new foundation or pile caps to be constructed above the groundwater level, provisions to pump out collected storm water runoff, groundwater seepage, and any perched water will need to be made for foundation excavation and construction. If the project intent is for a basement space below the groundwater level, we anticipate a dewatering system including well points will be required. Dewatering should be performed in a manner to avoid potential damage to adjacent structures.

The pumping, handling, and discharge of all dewatering effluent should be performed in accordance with all applicable regulations and any environmental requirements established for the site. Dewatering related permitting will also need to be procured and may include (but is not limited to) New York State Pollution Discharge Elimination System (SPDES) discharge permitting, NYSDEC Long Island well permitting, and/or NYCDEP dewatering discharge permitting.

5. Protection of Adjacent Structures

Neighboring buildings, MTA structures, and all utilities, sidewalks, and streets surrounding the site should be protected against loss of support or any other damage during excavation and subsequent construction. Special care will be required during SOE installation, excavation, and pile installation to ensure excessive vibrations or movements are not induced in these structures, and site activities do not result in the loss of support or instability of the neighboring structures.

6. Pre-Construction Conditions Documentation and Monitoring During Construction

Documentation of pre-construction conditions should be performed for the 5-02 54th Avenue building. This documentation should include, at a minimum, photographs of accessible and observable parts of the exterior façades and select interior façades of the building and adjacent sidewalks and streets. Ambient vibrations at the site and in the basement should be measured as part of this documentation. Crack reference lines and elevation control points should also be established on the building. Surveying and documentation of the Amtrak tracks and tunnel could be required if the Amtrak does not issue a "Letter of No Objections."

The 5-02 54th Avenue building should be continuously monitored during construction, using crack-monitoring gauges and survey monitoring points established over select building façades to determine whether the building is being adversely impacted by the on-site work. Adjacent sidewalks should be similarly monitored periodically during excavation and foundation construction. Vibration levels in the neighboring building should be monitored using seismograph vibration monitors placed strategically in the building basement.

VII. EVIRONMENTAL ENGINEERING

This section presents our due-diligence findings pertaining to environmental engineering review of the project site.

A. Introduction

Available documents related to environmental conditions were reviewed and summarized to identify issues that could affect future site use or development. The environmental site conditions summary presented below is based on a review of publicly available records, environmental reports and documents provided by Eight Points Asset Management LLC, and a site reconnaissance completed on May 23, 2016. Publicly available records that were reviewed include:

- The New York State Department of Environmental Conservation (NYSDEC) Petroleum Bulk Storage (PBS) database;
- The NYSDEC Spill Incidents database;
- The City Planning Commission's E-Designation and Restrictive Declaration lists;
- The Automated City Register Information System (ACRIS); and
- The New York City Department of Buildings (NYCDOB) Buildings Information System (BIS).

The following environmental reports and documents were reviewed:

- Phase I Environmental Assessment, prepared by Singer Environmental Group, Ltd (Singer) (February 7, 2006);
- Phase II Subsurface Investigation, prepared by Associated Environmental Services, LTD. (AES) (February 10, 2006);
- Asbestos Assessment Report, prepared by EMSL Analytical, Inc. (EMSL) (November 27, 2010);
- Site Assessment Report for the Underground Tank Removal, prepared by Empire Environmental Services (Empire) (August 1, 2011); and
- Subsurface (Phase II) Investigation, prepared by AKRF, Inc. (AKRF) (November 2013).

Freedom of Information Act (FOIA) requests were submitted to the New York City Office of Environmental Remediation (OER), the New York City Fire Department (FDNY), the New York City Department of Environmental Protection (NYCDEP), the New York City Department of Health (NYCDOH), the NYSDEC, the New York State Department of Health (NYSDOH), the United States Army Corps of Engineers (USACE), and the United States Environmental Protection Agency (USEPA). As of the date of this document, additional information regarding the site has not been received from FDNY, NYCDEP, NYCDOH, and NYSDEC. . The USACE

sent additional information, which is described in more detail in the waterfront design and permitting section of this report (and included as Appendix 10). The EPA, NYSDOH, and OER responded to their respective FOIA requests (included in Appendices 11, 12, and 13, respectively), but did not submit additional information.

B. Site Location

The site is in an urban setting generally characterized by vacant land, industrial buildings, and a Long Island Railroad (LIRR) yard. Several of the industrial buildings within one-half mile of the site house tenants listed with the USEPA as hazardous waste generators. Newtown Creek, which borders the site to the south, is listed on the USEPA National Priority List (NPL) because of contamination from historical operations lining its banks, including oil refineries, fertilizer factories, and chemical plants.

C. Historic and Current Site Use

The site has been developed since at least the 1890s for various industrial uses including a sugar refinery, construction company, machine shop, multiple garages, automobile repair shop, dry-dock company, and several beer distribution companies where truck maintenance was performed.

Several petroleum product aboveground and underground storage tanks (AST, UST) shown below were associated with the site from the 1930s to 2011.

Type of Tank	Tank Size (gallons)	Tank Contents	Tank Status	NYSDEC PBS Facility ID
UST	4,000	Diesel	Removed (12/01/1999)	2-034568
UST	4,000	Diesel	Removed (07/21/2011)	
UST	4,000	Gasoline	Removed (12/01/1999)	2-034568
UST	4,000	Diesel	Removed (07/21/2011)	
AST	275	Waste Oil	Removed (07/21/2011)	
AST	275	Waste Oil	Removed (07/21/2011)	
AST	275	Waste Oil	Removed (07/21/2011)	
AST	280	Motor Oil/Lube Oil	Removed (07/21/2011)	
AST	275	Lube Oil	Removed (unknown)	Not Listed – Identified in Singer's 2006 Phase I Environmental Assessment
AST	20,000	Fuel Oil	Removed (unknown)	Not Listed – The tanks

Type of Tank	Tank Size (gallons)	Tank Contents	Tank Status	NYSDEC PBS Facility ID
AST	20,000	Fuel Oil	Removed (unknown)	were recorded on a set of Site Plans dated 1970 that were reviewed by Singer when compiling the 2006 Phase I Environmental Assessment
AST	20,000	Fuel Oil	Removed (unknown)	
AST	20,000	Fuel Oil	Removed (unknown)	
AST	10,000	Solvents	Removed (unknown)	
AST	10,000	Solvents	Removed (unknown)	
AST	10,000	Solvents	Removed (unknown)	
AST	4,000	Solvents	Removed (unknown)	

The May 23, 2016, inspection identified the following site uses and potential contaminant sources or pathways for contamination to enter the subsurface:

- NBC Studios uses part of the garage to complete minor automotive repairs (e.g., oil changes, electrical repairs) on their fleet of vans. Small quantities of fluids associated with common automotive maintenance were observed to be stored in appropriate containers. No staining or cracking was observed on the floor in the vicinity of the fluid storage.
- Ten hydraulic lifts were observed in the loading dock area of the warehouse. According to the site superintendent, each lift contains a hydraulic oil reservoir installed above-grade beneath the lift. Minor staining was observed in the loading dock but did not appear to be associated with the hydraulic lifts and is likely the result of heavy automotive traffic in these areas.
- Two monitoring wells were identified. The approximate monitoring well locations (assumed to be B-5 and B-10) are shown on Figure 15: "Boring Location Plan".

D. Environmental Reports

1. NYSDEC Spills

Two closed spills associated with the site are recorded on the NYSDEC Spill Incidents database. Spill No. 0700400—closed by the NYSDEC on June 18, 2008—resulted from the release of about 10 gallons of waste oil, and Spill No. 1208872—closed by the NYSDEC on April 21, 2014—was due to the release of about 30 gallons of an unknown petroleum product. An additional spill event is referenced in Singer's 2006 Phase I Environmental Assessment. This spill was described as the release of about 20 gallons of hydraulic oil, and the NYSDEC was said to have closed the spill on June 7, 1999. The spill number was not recorded in the Phase I, and a record of this spill was not identified in the NYSDEC Spill Incidents database. Additional information regarding these spills was not available for review from the NYSDEC.

2. Investigation Results

At least three environmental subsurface investigations (May 1989, February 2006, and October 2013) and two UST removal events (May 2000 and August 2011) have been conducted at the site. The environmental findings and results of each event are described in the environmental reports and documents listed above and summarized in the following paragraphs.

May 1989, Groundwater Technology Inc. (GTI)

GTI's environmental investigation included the collection of eight soil and three groundwater samples. Details of this sampling event and results were not provided; however, Singer's 2006 Phase I Environmental Assessment summarized GTI's conclusions, which indicated that while contaminants were detected in the subsurface, a point source could not be determined. A layer of historic fill was noted across the site footprint.

May 2000 UST Closure Report, Piazza Construction Corp. (Piazza)

Two 4,000-gallon USTs were removed by Piazza. Signs of corrosion and holes were not reported and evidence of environmental impacts was not observed in the tank excavation. Six soil and two groundwater samples were collected from the tank excavation. Laboratory analytical results did not identify petroleum-related compounds in the soil or groundwater samples, with the exception of one volatile organic compound (VOC), methyl tert-butyl ether (MTBE), which was detected in one of the groundwater samples at a concentration exceeding its applicable NYSDEC groundwater criteria, the Technical Operation and Guidance Series Ambient Water Quality Standards (TOGS AWQS). The extent and quantity of soil removed from the tank excavation was not noted.

February 2006 Phase II, AES

This investigation included the advancement of 14 soil borings and the installation of five groundwater monitoring wells. One soil sample and one groundwater sample were collected from each location and submitted for laboratory analysis of VOCs, semivolatile organic compounds (SVOC), polychlorinated biphenyls (PCB), and metals. Soil sampling results were compared to Title 6 of the New York Codes, Rules and Regulations (6 NYCRR) Part 375 Unrestricted Use Soil Cleanup Objectives (SCO). SVOCs and metals commonly associated with historic fill were detected at concentrations above the regulatory standards in soil samples collected from multiple locations across the site footprint. MTBE was detected in the groundwater sample collected near the former UST excavation at a concentration exceeding its TOGS AWQS.

April 29, 2010, asbestos, EMSL

Multiple samples from the office space and warehouse were collected for asbestos analysis. About 350 feet of pipe insulation near the ceiling of the main warehouse was found to contain

asbestos. The analytical results did not identify asbestos in the remainder of sampled materials.

August 2011 Site Assessment Report for Underground Tank Removal, Empire Environmental Services

The report documents the removal of two 4,000-gallon USTs. The USTs were installed in early 2000 to replace the two 4,000-gallon USTs previously removed by Piazza in 1999. The USTs were apparently in good condition (i.e., holes and signs of corrosion were not evident). Four soil and one groundwater sample were collected from the tank excavation and submitted for laboratory analysis of VOCs and SVOCs. SVOCs, specifically polycyclic aromatic hydrocarbons (PAH), were detected at concentrations above the NYSDEC Spills Technology and Remediation Series (STARS) criteria (i.e., the applicable criteria at the time of the tank removal) in three of the four soil samples. Three petroleum-related compounds (i.e., o-xylene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene) were detected above the TOGS AWQS in the groundwater sample. Upon receipt of the analytical results, the tank excavation was backfilled with 3/4-inch stone. Information regarding whether the soil and groundwater impacts were remediated was not available.

October 2013 Phase II, AKRF

This investigation included the advancement of eight soil borings to about 10 feet below grade surface (bgs) and the installation of eight temporary groundwater monitoring wells. During fieldwork, historic fill was encountered from surface grade to boring termination. Historic fill generally consisted of silty sand with gravel and brick, and the groundwater table was observed at about 5 to 8 feet bgs. A petroleum-like odor and slight sheen were noted from 4 to 8 feet bgs in boring SB-3 (northwest corner of the site) and elevated photoionization detector (PID) readings (up to 153 parts per million) were recorded. Evidence of environmental impacts was not apparent anywhere else at the site. One soil sample and one groundwater sample were collected from each boring and submitted for laboratory analysis of VOCs and SVOCs. SVOCS were detected above the NYSDEC Part 375 Unrestricted Use SCOs in seven of the eight soil samples. SVOCs were also detected above the TOGS AWQS in several groundwater samples. Petroleum-related compounds (i.e., benzene and naphthalene) were detected above the TOGS AWQS in the temporary groundwater monitoring well installed in boring SB-2.

The soil boring and groundwater sampling locations from each of the above-referenced investigations are shown on Figure 15: "Boring Location Plan".

E. Regulatory Status

Federal

The National Priority List (NPL) is a listing of the most serious uncontrolled or abandoned sites known to be impacted by hazardous substances, pollutants, or other contaminants. Sites listed on the NPL are remediated under the USEPA's Superfund Program. Newtown Creek, which

borders the site to the south, is listed on the NPL to because of contamination from historical operations lining its banks, including oil refineries, fertilizer factories, and chemical plants. The section of Newtown Creek that abuts the southern border of the site is currently stabilized by riprap. Any changes to current conditions at the waterfront are likely to require review by the EPA's Superfund case manager.

State

There are no current requirements as all known spill cases have been closed.

Local

This site has been assigned an E-Designation (E-213) for hazardous materials, air quality, and noise as part of the Special Southern Hunters Point District rezoning (City Environmental Quality Review [CEQR] No. 08DME006Q). The City Planning Commission prepared a CEQR document (September 24, 2008) that outlines the environmental requirements for site redevelopment. The CEQR document is included in Appendix 6.

The E-Designation program was established to ensure that "the provisions set forth during rezoning actions are implemented to avoid significant adverse impacts to human health or the environment through exposure to potential hazardous materials, unwanted sound on sensitive noise receptors, and mobile or stationary pollutants in ambient air quality." Sites that are included in the E-Designation program require involvement throughout the design and construction phases of site redevelopment by the NYC Mayor's Office of Environmental Remediation (OER). The OER will review and approve documents related to environmental investigation and remedial design, and the OER will oversee implementation of the agreed-upon remedy.

Satisfaction of OER's E-Designation requirements are necessary to obtain New York City Department of Building (NYCDOB) permits and, upon completion of construction, Certificates of Occupancy. NYCDOB permits (excluding those required for building demolition) cannot be obtained without a Notice of No Objection or a Notice to Proceed, both of which are issued by the OER as part of the E-Designation process. A Notice of No Objection (NNO) can be obtained for excavation and foundation work once the hazardous materials requirements are met (see below); however, the NYCDOB will only release a Notice to Proceed (NTP) for a full building permit once the hazardous materials, noise, and air quality requirements are met. Additionally, the NYCDOB will not issue a Certificate of Occupancy for the site until the OER recognizes that the E-Designation process has been successfully completed.

The requirements for the hazardous materials E-Designation include:

- Pre-investigation meeting with the OER to discuss the proposed remedial investigation and the proposed site development.
- Preparation of a Remedial Investigation Work Plan for review and approval by the OER.

- Investigation of the site subsurface for environmental impacts to the extent negotiated with the OER. The Remedial Investigation typically includes the collection of soil, groundwater, and soil-vapor samples.
- Preparation of a comprehensive Remedial Investigation Report that describes site investigation data and provides a summary of environmental impacts.
- Preparation and submission of a Remedial Action Plan and Construction Health and Safety Plan for review and approval by the OER. The Remedial Action Plan describes the remedial activities to be implemented at the site during construction.
- The Remedial Action Plan is typically completed concurrently with the Remedial Investigation Report. OER approval of the Remedial Investigation Report and Remedial Action Plan takes about 30 to 60 days.
- Following OER approval of the Remedial Action Plan, a Notice of No Objection or Notice to Proceed is issued. As discussed above, the NYCDOB permits cannot be obtained without an NNO or NTP.
- Pre-construction meeting with the OER at the site to go over implementation of the remedy.
- Engineering oversight of Remedial Action Plan implementation during construction, and preparation of a Remedial Action Report following completion of the remedial action. The Remedial Action Report must be certified by a Professional Engineer registered in New York. The NYCDOB will not issue a Certificate of Occupancy without OER approval of the Remedial Action Report.
- Preparation of a Site Management Plan, if necessary, that details the management of engineering and institutional controls implemented as part of the remedial action. The Site Management Plan typically includes a periodic inspection schedule, which is meant to ensure the long-term viability of the controls.

The E-Designation for air quality and noise requires preparation and submission of an Air Quality/Noise Remedial Action Plan (RAP) to OER, which is typically prepared concurrently with the hazardous materials Remedial Action Plan. The air quality part of the plan states that the required fuel type (in this instance natural gas) will be used to power the development's heating, ventilation, and air conditioning (HVAC) systems and that the exhaust stack will meet the height and location requirements outlined in the CEQR document. The noise part of the plan states the specifications for windows and walls of the proposed building construction, demonstrates that the façade (glass or masonry composition) meets the required noise-attenuation ratings (specified in the CEQR document), and provides for alternate means of ventilation considering a "closed window" condition. The NYCDOB will not issue an NTP without OER approval of the Air-Quality/Noise RAP. After implementing the measures outlined in the Air-Quality/Noise RAP, an Installation Report must be submitted to the OER. The

NYCDOB will not issue a Certificate of Occupancy without OER approval of the Installation Report.

F. Environmental Conclusions

Based on the historical and current site conditions and the results of the previous environmental investigations, our conclusions regarding known and potential environmental impacts at the site are as follows:

- Historical records indicate that since the 1890s, the site has been used for various industrial purposes including a sugar refinery, a machine shop, and a beer distribution company that used the garage for truck repairs, parking, and refueling. Several USTs and ASTs were in operation from the 1930s to 2011. Historical releases of petroleum products and other hazardous materials from these uses have adversely impacted soil and groundwater.
- Because not all USTs and ASTs are accounted for, abandoned USTs may remain at the site. If encountered, abandoned USTs should be decommissioned, removed, and disposed of in accordance with applicable local, state, and federal regulations.
- Previous environmental investigations targeted the former UST area, the garage, and the perimeter of the site. Subsurface investigation has not been conducted in the warehouse, where historical Sanborn maps indicating manufacturing suggest an area requiring further environmental study as part of future development.
- Residual petroleum-related compounds were identified in soil and groundwater, suggesting that petroleum-related VOCs are present in soil vapor. Vapor mitigation measures will likely be required by the OER as part of future development.
- Historic fill was identified from surface grade to about 5 to 8 feet bgs. Based on the concentrations of SVOCs and metals detected in the historic fill, excavated material generated as part of future development will be considered a regulated solid waste and must be handled and disposed of in accordance with applicable regulations.
- About 350 linear feet of asbestos-containing material (ACM) was identified during an investigation of the office building and warehouse. The asbestos assessment did not include the garage. Before future demolition of structures, the garage should be inspected for ACM and other hazardous materials, and known areas of ACM should be abated in accordance with applicable local, state, and federal regulations.

G. Beneficial Site Clean-up Programs

Based on historical site use and the previous environmental investigation findings, the site is eligible for entry into OER's Voluntary Cleanup Program (VCP) and may be eligible for the NYSDEC's Brownfield Cleanup Program (BCP). Entry into both programs is voluntary and an application must be completed to enroll. If accepted into the VCP or BCP, the redevelopment

would be eligible for grants (VCP) or tax credits based on the cost of remediation (BCP). The benefits to entrance and the general progression of the city-run VCP and the state-run BCP are summarized below.

1. NYC Voluntary Cleanup Program

Economic benefits to entering the VCP include financial incentive grants, waivers for hazardous-waste disposal fees and taxes, liability-protection agreements from the city of New York and the NYSDEC, and priority options for receiving clean soil through the NYC Clean Soil Bank. Upon completion of the VCP, the OER issues the property a NYC Green Property Certification. The VCP is a voluntary program and a project can be withdrawn from the program by the owner at any time.

Before submitting an application requesting enrollment into the VCP, prospective volunteers typically attend a pre-application meeting with the OER. This meeting is conducted to determine whether the proposed development will be a good fit for the VCP. The progression of the VCP is the same as the E-Designation program discussed above, with the following additions:

- Submission of a VCP Application and VCP Agreement to the OER before the Notice to Proceed is issued. Boilerplate language for both documents is available on OER's website.
- Inclusion of a Remediation Alternatives Analysis in the Remedial Action Plan. The alternatives analysis should outline and compare at least two viable remediation strategies.
- Preparation of a Citizen Participation Plan that identifies the requirements for citizen participation activities. The Citizen Participation Plan will include a detailed site contact list that will be used to inform the public of important project information and the name of the public repository where all project documents related to remediation will be posted. As part of the Citizen Participation Plan the Remedial Investigation Report and Remedial Action Plan are subjected to a 30-day public-comment period as part of the OER's review–approval process.
- Preparation of project fact sheets following the completion of each remedial milestone. The fact sheets will be distributed to the site contact list included in the CPP. Issuance of a Notice of Completion after OER approval of the RAR. At this point, the site receives an NYC Green Property Certification and becomes eligible for liability protection.

2. NYS Brownfield Cleanup Program

The New York State BCP is a site remediation program administered and overseen by the NYSDEC in conjunction with the NYSDOH. As stated by the NYSDEC, "The goal of the BCP is

to encourage private-sector cleanups of brownfields and to promote their redevelopment as a means to revitalize economically blighted communities. The BCP is an alternative to greenfield development and is intended to remove some of the barriers to, and provides tax incentives for, the redevelopment of urban brownfields." The tax credits available for a site accepted into the BCP are related to the site's cleanup track and include Site Preparation credits and potentially Tangible Property credits. Successful completion of the BCP would potentially provide the most significant financial benefit to future development.

There are four BCP cleanup tracks to choose from based on site use: unrestricted, residential, commercial, and industrial. In general, a Track 1 cleanup would render the site suitable for unrestricted use, Tracks 2 and 3 would render the site suitable for restricted residential use, and Track 4 includes remedial objectives negotiated with the NYSDEC. A detailed summary of each cleanup track is provided in 6 NYCRR Part 375: Environmental Remediation Programs.

The Site Preparation tax credit provides partial reimbursement for "site preparation" costs associated with the environmental investigation and remediation of the site incurred after executing a Brownfield Cleanup Agreement. The Site Preparation credit varies from 22 to 50% of the site preparation costs for the contemplated development, depending on the degree of cleanup (i.e., the "Track"). Cleanup to Track 1 levels renders the site suitable for unrestricted use and affords a 50% reimbursement. Cleanup to Track 4 levels (the least conservative cleanup) is based on a negotiated level of cleanup, renders the site suitable for restricted residential, commercial, or industrial use and affords a 22% reimbursement.

The Tangible Property credit is typically the larger of the two credits and provides partial reimbursement for the capital cost of development. The Tangible Property credit is based on the tax status of the site owner, site location (i.e., Environmental Zone, Brownfield Opportunity Area), site use (i.e., affordable housing, manufacturing), and BCP cleanup track. Considering the location of this site (not in and Environmental Zone or Brownfield Opportunity Area), and considering that the site does not meet the definition of "underutilized" or "underwater," this site would only be eligible for tangible property credits if an affordable housing component was implemented into future development.

The Tangible Property credit is capped at $35 million and equals the lesser of three times the Site Preparation cost or 10 to 24% of the capital construction cost. The general progression of the BCP, detailed below, is similar to that of the E-Designation program. Entrance into the BCP does not negate the need to work with the OER. Instead, the developer, OER, NYSDEC, and NYSDOH work together to ensure the successful progression of the site through both regulatory programs. An estimated timeline of completion of the BCP is shown in parentheses.

1. BCP pre-application meeting with the NYSDEC to discuss the proposed site development and the potential environmental factors. (month 1)
2. Preparation and submission of a BCP Application to the NYSDEC. (month 1)

3. 30-day public comment period for the BCP Application. (month 2)
4. Acceptance of the site into the BCP and execution of the Brownfield Cleanup Agreement between the site owner and the State of New York. A site owner has 60 days to execute the Brownfield Cleanup Agreement after the site is accepted into the program. (month 4)
5. Preparation and submission of a Citizen Participation Plan to the NYSDEC 20 days after execution of the Brownfield Cleanup Agreement. The Citizen Participation Plan identifies the requirements for citizen participation activities. (month 5)
6. Preparation and submission of a Remedial Investigation Work Plan to the NYSDEC 30 days after execution of the Brownfield Cleanup Agreement. The Remedial Investigation Work Plan details the proposed environmental field investigation. (month 5)
7. 60-day NYSDEC/NYSDOH/OER review period followed by a 30-day public comment period for the Remedial Investigation Work Plan. (month 8)
8. Completion of a Remedial Investigation that includes the sampling and analyses of soil, groundwater, and soil vapor samples. (month 9)
9. Preparation and submission of a Remedial Investigation Report to the NYSDEC that describes the Remedial Investigation field work, field observations, and laboratory analytical results. (month 10)
10. Preparation and submission of a Remedial Action Work Plan to the NYSDEC that includes a Remedial Alternatives Analysis, which outlines and compares at least two remediation strategies. The Remedial Action Work Plan describes the remedial actions that will be implemented as part of site redevelopment. (month 10)
11. 60-day NYSDEC/NYSDOH/OER review period followed by a 45-day public comment period for the Remedial Action Work Plan. (month 14)
12. Implementation of the Remedial Action Work Plan during construction with oversight by the remedial engineer. (assuming a 6-month timeline for implementation of the remedial action – month 20)
13. Preparation of an Environmental Easement if institutional or engineering controls are part of the remedy. The Environmental Easement is completed and filed by an attorney. (month 21)
14. Submission of a Final Engineering Report and Site Management Plan, if required depending on the chosen BCP cleanup track. The Final Engineering Report describes implementation of the remedial action, and the Site Management Plan describes long-term environmental monitoring associated institutional and engineering controls implemented at the site. (month 22)

15. 60-day NYSDEC/NYSDOH/OER review period for the Final Engineering Report and Site Management Plan. (month 24)
16. The project site has successfully completed the Brownfield Cleanup Program, and NYSDEC issues a Certificate of Completion. At this point, the site is eligible for receipt of Site Preparation and Tangible Property tax credits. (month 25)

VIII. SITE/CIVIL ENGINEERING

The site/civil part of this report will identify high-level site-design considerations–issues and summarize anticipated permits–approvals from local, state, and federal agencies pertaining to site/civil scope of work based on the conceptual, as-of-right development. This section is broken into considerations of site layout, site utilities, and utility master planning.

A. Site Layout Considerations

Future development of the project site must follow the requirements of the Newtown Creek Waterfront Access Plan (Q-3), which are discussed in detail in the environmental planning section of this report. The project site's location in a partially-developed (particularly with regards to utilities), portion of Hunter's Point South, its proximity to Newtown Creek, and its inclusion in FEMA's flood-zone mapping are other primary drivers for site design. Also as discussed in the environmental planning section of this report, a private drive will need to be constructed in order to achieve the largest floor-area ration (FAR) for the site.

1. Site Grading and Flood Zone

Finished-floor elevations for new construction are determined by the FEMA flood-zone elevation for the site. Per NYCDOB requirements, new residential construction must be elevated above the flood zone per the requirements of Appendix G of the Building Code and in compliance with ASCE-24 "Flood Resistance Design and Construction." Development of large sites with interior spaces and building entrances will typically have interior parts of the site elevated to meet the finished-floor elevations at building entrances. However, a developer could elect to keep the majority of site elevations lower (reducing the amount of fill needed) and provide ramping, terracing, etc., in order to meet finished-floor elevations at entrances interior to the site.

Preliminary flood insurance rate maps (PFIRM) issued by FEMA in December 2013 show that a majority of the site is in an AE flood zone with a base flood elevation (BFE) of 11 feet NAVD88 with part of the site along Newtown Creek in an AE flood zone with base flood elevation of 12 feet NAVD88 (see Appendix 7 for flood maps). At the time of this writing, FEMA had not finalized the PFIRMs; however, the NYCDOB integrated them into the 2014 revision of the Building Code to serve as the city's flood maps.

An AE zone is defined by FEMA as an area of high flood risk subject to inundation by the 1% annual flood-chance event, which is colloquially referred to as a "100-year storm." Per NYCDOB and ASCE-24 requirements, new construction must provide additional freeboard above the base flood elevation, varying based on the structural usage category of the construction. We anticipate that future development of the project site will require an additional freeboard of one foot, which would result in a design flood elevation (DFE) of 12 to 13 feet NAVD88.

When a site is located in two or more flood zones, code requirements stipulate that the more stringent design flood elevation must be used. Based on the conceptual zoning and massing exhibits received from the owner (included in this report as Appendix 1), we anticipate that the southernmost building complex will be designed to a DFE of 13 feet NAVD88 while the northernmost building complex will be designed to a DFE of 12 feet NAVD88. Interior site elevations range from 5 to 8 feet NAVD88, resulting in a difference of four to eight feet compared to the FEMA DFEs. We again note that the FEMA flood mapping referenced in this report is preliminary and subject to change.

The existing public right-of-way (ROW) street elevations will also need to be accommodated by the future development. This requirement is most pertinent to the private drive that will connect 54th Avenue and 2nd Street and buildings with entrances on the public ROW. Building finished-floor elevations must meet FEMA DFEs, so ramps or stairs will be needed in order to transition from finished-floor elevations in residential spaces to existing street elevations in the public ROW. Accessible access must also be provided for buildings that have a large difference in elevation between occupied spaces and entrances at public street level.

Similarly, the private drive must meet existing street elevations where it connects to the public street grid. The private drive may then ramp to meet internal site elevations including those at entranceways to buildings and public waterfront spaces.

The title survey provided by the owner (see Appendix 4) does not contain topographic or utility information. However, we reviewed legal grades for the surrounding area to gauge the general indication of what street grades should be. For 2nd Street, legal grades range from 8.5 feet NAVD8 at the southern extent of the street to 4.5 feet NAVD88 at the intersection of 54th Avenue. These values show an approximate 3.5- to 8.5-foot elevation difference between legal grades along 2nd Street and the DFEs.

Legal street grades along 54th Avenue vary from 6.5 feet NAVD88 at the intersection of former 5th Street to 8 feet NAVD88 at the midpoint of the project site. These values (including the legal grade at the intersection of 2nd Street) show a similar 4- to 8.5-foot elevation difference between legal grades along 54th Avenue and the DFEs.

2. Private Drive Layout

Based on the zoning analysis and owner direction, we understand that future development will include a new private drive to secure a larger floor-to-area ratio (FAR) for the development. This private drive (approximately 700 feet long) will extend south from 54th Avenue and turn west to bisect the site and connect with 2nd Street. Per zoning requirements (as discussed in the environmental planning section of this report), the private drive must be 34 feet wide with 14-foot-wide shoulders (60 feet wide in total).

As discussed in the zoning analysis, the private drive must be constructed to NYCDOT standards (with regards to pavement types, curb requirements, etc.) though we note it will not

be permitted as such. Instead, the private drive will be subject to NYCDOB approvals-permits as well as FDNY requirements for site access.

As part of its review of site access, the FDNY will require that the private drive be designed to adequately accommodate their trucks and equipment. FDNY requires 34-foot-wide roadways with a minimum vertical clearance of 14 feet (which affects any canopies or building projections into the roadway). We note that this roadway width matches that required by zoning. Zoning-permissible street parking is allowed, though a 30-foot by 30-foot clear area must be provided in front of each building's main entrance. If any building's main entrance fronts onto a public ROW (i.e., 54th Avenue and 2nd Street), FDNY site access requirements will not apply for that particular building.

The FDNY has further requirements for dead-end turnarounds (though the zoning and conceptual designs do not plan for such), as well as for water main sizing and hydrant locations, which are further discussed in the site utilities section below.

In addition, the title survey provided by the owner (see Appendix 4) shows a permanent sewer easement in the bed of former 5th Street, partially extending onto the property. The 33-foot-wide easement runs north-south from 54th Avenue to the bulkhead line at Newtown Creek and is slightly off-centered along former 5th Street, with 20 feet of the easement area on the project site. Private-drive construction within this easement would need to be reviewed and approved by the NYCDEP and would likely require modification to the easement documents. NYCDEP is generally accepting of roadway construction within its easement areas, but does restrict most structures, and limits the type, location, and configuration of privately owned utilities.

We note that the above considerations pertain to that specific sewer easement only. We have not performed a title search or title survey for the project site and cannot speak to other legal encumbrances that may or may not be present.

3. Public Right-of-way Improvements

Development of the project will likely require public ROW improvements for both 2nd Street and 54th Avenue. Improvements will include new sidewalks, curbing, street trees, and roadway per zoning requirements. Design approval of these improvements typically falls under the NYCDOB's Builder's Pavement Plan (BPP) process in conjunction with New York City Department of Parks (NYCDPR) requirements for street trees and NYCDOT requirements for street design. Due to the condition of the streets as witnessed during our walkthrough, we anticipate that NYCDOT will require stripping and repaving of the street bed in 2nd Street and 54th Avenue up to the centerline of the street plus five feet, which is the maximum limit that NYCDOT can impose.

Adjacent development (in particular Hunter's Point South along 2nd Street) may result in additional public street improvements which may need to be accommodated by future development. Per discussions with Eight Points Management LLC, we understand that a

shared bike lane with a median is planned for 2nd Street as part of the Hunter's Point South redevelopment. Depending on the timing of construction and configuration (is the lane-median on the east or west side of the street), the private drive entrance onto 2nd Street may require a slight redesign to the bike lane and median so as to not restrict traffic into and out of the project site.

4. Site Walkthrough

Langan walked through the property on 23 Mary 2016 to observe site conditions. Refer to the environmental engineering section of this report for a description of site usage and potential environmental impacts.

The majority of 2nd Street south of the intersection with 54th Avenue is partially-improved, with asphalt roadway as the majority of the streetscape. Few sidewalks are present and are not built to NYCDOT standards. The street ends abruptly at the waterfront with a barrier and chain-link fence. The entrance to the parking area in the southern part of the site is on 2nd Street, approximately aligned with 56th Avenue. Curb returns for this entrance can be seen, though no concrete sidewalk is provided in this area. No street trees are present in 2nd Street south of 54th Avenue on either side of the street.

54th Avenue is mostly improved, with concrete sidewalks along the majority of the project site's frontage. The sidewalk curb is depressed along most of this frontage to accommodate the various loading docks that serve the project site. There is only a partial concrete sidewalk along the part of 54th Avenue in front of the warehouse currently being used by NYC Studios. No street trees are present in 54th Avenue along the project site frontage on either side of the street.

The interior portion of the site is mostly occupied by building area, with a large, paved parking lot and loading dock area occupying the southern part of the site. The majority of the site is paved, with only a small strip of landscaped area between the warehouses and the rip-rap embankment along Newtown Creek. The rip-rap embankment appeared to be in sound condition, composed of uniformly sized boulders with no apparent deficiencies that could be seen from our perspective inland and above-water.

B. Site Utility Considerations

The project site's location in a relatively unimproved (with regards to utilities) part of Hunter's Point South will require additional site utility design considerations for future development. It should be noted that adjacent development in the Hunter's Point South area will likely result in new utilities being constructed in the city streets; however, this report will proceed assuming such improvements have not yet been installed because the timing for these improvements is not known. For instance, we know from correspondence with Eight Points Management LLC that ConEd is not planning to install primary electric service in 2nd Street until the city-owned parcels of the Hunters Point South development are constructed.

Utility planning and phasing considerations are discussed further later in this section of the report. Please refer to Figures 17 and 18 for conceptual utility layouts for the project site illustrating the discussions below.

1. Sanitary Sewer

NYCDEP reference maps (refer to Appendix 8) show a 12-inch combined sewer in 54th Avenue. This is the only existing city sewer available to the project site for connection. We note that additional sewer manholes and catch basins in 2nd Street were seen during our site walkthrough and are shown in historical data from adjacent sites; however, configuration of this infrastructure is largely unknown, does not show on NYCDEP record maps, and cannot be considered as available for connection by future development.

We also note that there is a 54-inch, interceptor sewer in 54th Avenue, as well as a 15-inch combined sewer overflow (CSO) in former 5th Street (the sewer easement for which partially extends onto the project site as described above in the site layout part of this section). NYCDEP would not typically allow connection to either of these sewers (the interceptor sewer being a branch of the Bowery Bay wastewater treatment plan, and the CSO being an overflow for the combined sewer network).

Future buildings along 54th Avenue can make direct connection to the NYCDEP combined sewer in 54th Avenue, though it should be noted that there is no sewer for approximately 100 feet of 54th Avenue nearest the intersection of 2nd Street. The NYCDEP reference maps also show that though the sewer invert elevation is relatively low (approximately 1.3 feet NAVD88 at the top of its run), the street grade is also relatively low with a rim elevation of 4.78 feet NAVD88 at the top of the sewer run, resulting in a shallow sewer.

Buildings in the southern development area will not be able to directly connect to the city sewer network because there are no available sewers in 2nd Street. Based on the available sewer data and the proposed development layout, we believe that there are two options for conveying sanitary flow from the site.

The first option is to construct an internal sanitary drain in the private drive, with sanitary pumping likely needed for buildings a number of buildings, particularly those with basements. This internal sanitary sewer would connect to the 12-inch combined sewer in 54th Avenue. This first option appears to be the most simple and economical from a permitting and construction standpoint.

As mentioned above, the 12-inch combined sewer in 54th Avenue is–shallow, with an invert elevation roughly 3.5 feet below grade at the start of the run. However, the invert elevation of the sewer (approximately 1.3 feet NAVD88) is far enough below the anticipated finished-floor elevations of the buildings (12 to 13 feet NAVD88) that the majority of buildings connecting to the internal sanitary drain should be able to do so via gravity. However, pumping may be

required for buildings closer to 2nd Street (i.e. further away from the connection to the city sewer).

The existing sewer easement in former 5th Street may impede the location of an internal sanitary drain (and other utilities) in the private drive. From the title survey provided by the owner, and according to the private drive layout proposed, we anticipate that the eastern 20 feet of the 60-foot-wide private drive will be within the NYCDEP easement area. The NYCDEP is generally wary of private utilities that parallel their sewer in their easement areas and may require the internal sanitary drain be outside of the easement area.

The second sanitary drainage option is construct approximately 300-500 linear feet of NYCDEP sanitary sewer (i.e., a private sewer) in 2nd Street to which buildings in the southern development can connect directly. Private sewers are those built by a private developer using private money, but with the city eventually taking ownership of the construction. We note that the NYCDEP sanitary sewer in 2nd Street may be constructed as part of an adjacent project prior to development of the project site.

Private sewer construction must follow the more stringent NYCDEP standard (as compared to NYCDOB standard for the internal sanitary drain) and would be subject to NYCDEP oversight during construction. Sewer construction of this type is also subject to the requirements of the city sewer network, conveyed through the amended drainage plan (ADP) for the Hunter's Point area (map #10A[7]).

Per the ADP, a 15-inch sanitary sewer is planned in 2nd Street with direct connection to the 54-inch interceptor sewer. Beginning at the intersection of 54th Avenue and 2nd Street, this 15-inch sewer could be constructed to a length that best benefits the project but would likely need to extend to at least the private drive—approximately 300 feet.

The main benefit of this sanitary design is that the new sewer in 2nd Street would have ample capacity and depth (invert elevation approximately -3.77 feet NAVD88 at the private drive) to accept all sanitary flow from the project site without the need for pumping (for direct street connections). Also, each building along 2nd Street could potentially make its own direct connection to the city sewer network, though this would require a greater length of private-sewer construction—approximately 500 feet—in order to serve the southernmost buildings.

The main drawbacks for private sewers are cost and permitting time. Private sewers are typically more costly than internal sanitary drains and the NYCDEP approval process can last over a year, with final signoff of construction adding another 1 to 2 years for a sewer of this length and location. We also note that buildings interior to the site without frontage on either 54th Avenue or 2nd Street would still require an internal sanitary drain in the private drive unless their sanitary plumbing can be joined with an adjacent building that has frontage on a city sewer. Refer to the utility master planning part of this section for more discussions on shared utilities.

2. Storm Sewer

Based on available sewer records and proposed development, we believe there are two potential scenarios for storm-sewer drainage of the project site.

The first option is discharge to the 12-inch combined sewer in 54th Avenue. Stormwater runoff from buildings drained to the NYCDEP combined sewer network must be detained on site, typically either on rooftops as a blueroof, in buildings within vaults, or on site in underground systems.

Stormwater runoff from site areas and the private drive will also need to be detained if being conveyed to the city combined sewer network. Detention systems for these areas would need to be located underground in open areas, and the shallow combined sewer in 54th Avenue will restrict the height of these underground detention systems. As with internal the sanitary drains, the NYCDEP easement area in former 5th Street will restrict the location of storm drains and catch basins located in the private drive.

For buildings along 2nd Street with no sewer frontage, a private storm sewer could be constructed per the ADP, which shows a planned 30-inch storm sewer in 2nd Street. Construction of the ADP storm sewer could begin at the private drive and extend to the new stormwater outfall in Newtown Creek, approximately 650 feet of sewer total. Construction cost and permitting times for this NYCDEP storm sewer is similar to that of the NYCDEP sanitary sewer described above. Again, we note that the city storm sewer in 2nd Street may be constructed as part of an adjacent project prior to development of the project site.

The second option is to send treated, but undetained stormwater discharge to Newtown Creek under NYSDEC jurisdiction. Stormwater runoff from buildings, site areas, and the private drive would be conveyed to an internal storm drain that would likely run in the bed of the private drive. This internal storm drain would then traverse the waterfront public areas and drain to Newtown Creek at a new outfall. One outfall can accommodate the project site, but more outfalls can be constructed if needed to accommodate the development.

Stormwater drainage to Newtown Creek would be under the purview of the NYSDEC with outfall construction included in the waterfront permitting process described in more detail in the waterfront design and permitting section of this report.

The NYSDEC does not require stormwater detention; however, it does require stormwater treatment prior to discharge to a state water body. Because the project site is a redevelopment project, the requirements for stormwater treatment are more lenient than for virgin sites and typically take the form of proprietary treatment units that can be purchased from a variety of NYSDEC-approved manufacturers (i.e., AquaShield and Imbrium). These treatment units separate floatables and suspended solids from the stormwater flow and must be maintained on a regular schedule.

3. Sewer Permitting

NYCDEP site connection proposals must be filed showing how sanitary and storm flows will be drained from the site. NYCDEP requirements for detention volumes and restricted flow rates must be addressed as part of this process if stormwater is being discharged to a city combined sewer. In addition, the NYCDEP will require a drainage master plan for any sanitary or storm sewer drainage that is shared by different buildings or tax lots. The drainage master plan serves as a planning document that describes how each lot contributes flow to the shared sewers.

Permitting of stormwater drainage to a state water body (Newtown Creek) is obtained through the NYSDEC in two parts. As mentioned above, the outfall for the internal storm drain would be included in the waterfront permitting package. The on-site treatment requirements are permitted under the State Pollution Discharge Elimination System (SPDES) program.

SPDES permitting for stormwater treatment is typically conveyed under the state's general permit for stormwater discharge from a construction activity (even for treatment that will be maintained post construction). This temporary construction permit can be obtained for project sites less than 5 acres meeting the conditions of the general permit (e.g., documented erosion and sediment controls, weekly inspections, etc.). Sites larger than 5 acres or that have special needs must apply for an individual SPDES permit, which has more stringent requirements and a longer review period—60 days compared to the 5-day notification period of the general permit.

Because the project site is approximately 7.5 acres, it is likely that an individual SPDES permit will be required for construction activities and post-construction stormwater treatment. The NYSDEC also typically requires that large, phased development be permitted under a comprehensive plan rather than piecemeal to ensure compliance with SPDES regulations.

4. Domestic Water and Fire Service

Per NYCDEP reference maps (see Appendix 9) there are existing 12-inch water mains in both 54th Avenue and 2nd Street. The water main in 54th Avenue extends the entire frontage of the project site, while the water main in 2nd Street extends south from 54th Avenue to a point approximately 100 feet past the intersection of 55th Avenue.

According to this configuration, buildings in the northern development with frontage on a city street will be able to make direct water-service connections to city water mains. Buildings in the southern development area near the intersection of 2nd Street and 55th Avenue will also be able to make direct connections to city water mains.

Buildings that do not front a city street (i.e. are internal to the site) or do not have a city water main available have two options for water service connection: (1) connect to an on-site internal water main, or (2) connect to an extension of a city water main.

Based on the proposed layout of the site (as shown in the conceptual zoning and massing diagrams), we expect that a water main loop will need to be installed in the bed of the private drive that will bisect the site. This water main loop will be classified by (and reviewed by) the NYCDEP as an "internal water main," which can serve multiple buildings and feed site hydrants. Buildings that do not have frontage on a city street can instead make water service connections to this internal water main.

In addition, buildings with frontage on both a city water main and the internal water main in the private drive can make water service connections to both sources. This configuration meets certain FDNY and NYCDOB requirements for redundancy, eliminating the need for fire-service related water storage and pumping.

Hydrant requirements along the internal water main (number, location, and spacing) will be determined as part of FDNY's review of site access. The NYCDEP will require FDNY sign-off before approving the internal water main.

According to the conceptual plans, there are buildings (specifically in the extreme southern part of the development) that will potentially not front a city street with a water main and will not front the private drive. Water service for these buildings may need to be routed through adjacent buildings. Refer to utility master planning part of this section for discussion on shared utilities.

Alternatively water-service connections and hydrant coverage for these buildings can be provided by an extension of the 12-inch NYCDEP water main in 2nd Street. Extension of a city water main is referred to the NYCDEP as a "private water main" and is treated in much the same way as private sewer construction described in previous sections, with the NYCDEP having jurisdiction over the permitting and construction of the main.

5. Third-party Utilities (Gas, Electric, Telecomm)

ConEd electric and gas record maps for the area show both electrical and high-pressure gas services in 2nd Street and 54th Avenue that serve the warehouses on the project site. Electric and gas services extend south along 2nd Street to a point just south of 55th Avenue. Empire City Subway (ECS, since bought by Verizon) maps also show a variety of communications infrastructure in 54th Avenue and 2nd Street. Utility poles and overheard utility conduits were seen during the site walkthrough along both 54th Avenue and 2nd Street, though the exact nature of these conduits is not known. We also note that ConEd and ECS utility plates were originally received in 2007 and may have changed since. Current requests for information have not been fulfilled by the time of this writing.

Gas, electric, and telecomm services for the project site will need to be coordinated with private utility companies during the design phase with load letters detailing proposed demands submitted to the utility companies for review. Depending on the existing infrastructure in the area, additional improvements may be needed to accommodate the development. Private

utility companies will also have varying requirements for construction of on-site conduits, which will likely be installed along the private drive to serve interior buildings.

Specifically with regard to ConEd electrical service, the developer may be required to install transformer vaults to serve the project site. These vaults are typically installed in sidewalks along building frontages and are permitted under the NYCDOT Vault application process if the installation is within a public ROW. Vault installation may also be required along the private drive to serve buildings interior to the site, in which case NYCDOT permitting is not required.

6. Site Walkthrough – Utilities

During the walkthrough, there were no visual indications of utilities that seemed to contrast with the utility reference maps provided by the NYCDEP. Langan also did not see evidence of any on-site drainage systems or utility distribution networks that were beyond what would normally be expected for a similarly used industrial site.

NYC One-Call and/or surveyor utility mark outs for gas and electric were seen on 54th and 2nd Avenue, roughly correlating with the information shown in the ConEd utility plates. Additional sewer manholes and catch basins in 2nd Street were identified, correlating with the information shown in historical information from adjacent sites. As noted above in the sanitary sewer discussion, this additional sewer infrastructure does not appear on the NYCDEP record maps.

One catch basin was also seen in the southern parking lot of the site, though more may be present but obscured under parked vehicles. According to the historical data and our visual inspection, it appears this onsite catch basin drains to the undocumented sewer infrastructure in 2nd Street. No readily-apparent indication of outfalls to Newtown Creek along the site's waterfront was evidenced during our site walkthrough.

C. Utility Master Planning and Phasing

Utility master planning and phasing is a key consideration for development of a large and complex site. Many of the challenges resulting from the utility considerations mentioned above (e.g., limited frontage along city infrastructure, internal utility connections) can be resolved if accounted for during the planning phase.

For instance, an overall development comprising multiple, separate sites must account for individual utility connections for each building. According to the development exhibits we have reviewed, some of these parcels, specifically at the extreme south near Newtown Creek, currently do not have frontage onto a city street with utilities.

Designing holistically by including these isolated buildings in a larger development parcel that has frontage on available utilities could eliminate the need to extend city utilities. Instead, building services could be routed internally through the site or through adjacent buildings to their points of connection to the city grid. Routing utility services onsite (or through adjacent

buildings) is typically less costly and less time consuming to permit than extending city infrastructure in public streets.

In all cases where multiple buildings share internal utilities (such as will be the case for utilities within the private drive), an agreement (usually in the form of a utility homeowners association or deed restriction) will be needed to ensure the rights of all utility end users. Proof of such an agreement will be required by the city before approval of water and sewer connections is granted. This is a standard procedure.

It should also be noted that existing infrastructure within city streets as discussed in this report is subject to change in the near future. We know from documents provided by the owner that parcels F and G of the Hunters Point South development have an anticipated construction start date of 2018. Build-out of these parcels, which lie across 2nd Street, to the southwest of the project site, will likely include improvement of 2nd Street including installation of city water mains and sewers. Phasing development of the project site in anticipation of these planned improvements could also alleviate some of the utility challenges discussed in this report.

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