A. INTRODUCTION

This chapter assesses the potential effects of the Proposed Action on the City's water supply, wastewater treatment, and stormwater management infrastructure. As described in **Chapter 1, "Project Description,"** the Applicant seeks discretionary and non-discretionary approvals that would facilitate the development of a 23-story, 352-foot tall (roof height) commercial building with approximately 684,242 gross square feet (gsf), including 598,442 gsf of office space, 21,233 gsf of retail space, and 64,567 gsf of parking space. The development would also include 49,453 sf of waterfront publicly accessible open space (the "Proposed Project"). The Proposed Project would be constructed at 500 Kent Avenue (Block 2023, Lot 10), a 115,244-sf, irregular-shaped corner lot located on at the southwest corner of the Kent Avenue and Division Avenue intersection in the South Williamsburg neighborhood of Brooklyn Community District 2 (CD 2) (the "Project Site").

To facilitate the Proposed Project, the Applicant is seeking the following discretionary approvals (the "Proposed Action"): (1) a zoning map amendment that would rezone the 2.65-acre Project Site from M3-1 to M1-5; (2) a special permit pursuant to ZR 62-837 to modify various bulk requirements in sub-sections of ZR 62-341, including: (i) ZR 62-341(a)(2) - initial setback distance, (ii) ZR 62-341(c)(1) – maximum base height, (iii) ZR 62-341(c)(2) – maximum building height, and (iv) 62-341(c)(5) – maximum width of walls facing shoreline; and (3) a special permit pursuant to ZR 74-512 to allow a 234-space public parking garage. The project also requires one non-discretionary ministerial action by the City Planning Commission: a waterfront zoning certification pursuant to ZR 62-81 to demonstrate compliance with applicable waterfront zoning regulations.

Existing On-Site Stormwater Management Requirements and Unified Stormwater Rule

In 2012, the New York City Department of Environmental Protection (DEP) promulgated a stormwater rule for new and redevelopment projects in combined sewer areas (2012 Stormwater Rule).[1] The 2012 Stormwater Rule, reduced peak discharges to the city's sewer system during rain events by requiring greater on-site storage of stormwater runoff and slower release to the sewer system.

After ten years of implementation of the NYC Green Infrastructure Program, DEP updated on-site stormwater management requirements to apply lessons learned in designing, siting and constructing over 10,000 green infrastructure practices. DEP proposed amendments to Chapters 31 and 19.1 of Title 15 of the Rules of the City of New York (RCNY) as part of a Unified Stormwater Rule. The Unified Stormwater Rule, issued February 15, 2022 and administered citywide, updates and aligns Chapter 31 stormwater quantity and flow rate requirements with Chapter 19.1 Construction/Post-Construction permitting program water quality requirements.

[1] Chapter 31 of Title 15 of the Rules of the City of New York, Rule Governing House/Site Connections to the Sewer System Standards for Release Rates.

Under Chapter 31 amendments, the Unified Stormwater Rule increases the amount of stormwater required to be managed on-site and further restricts the release rates for all new and redevelopment projects that require a DEP House or Site Connection Proposal. The maximum allowable stormwater release rate from the site to the DEP combined sewer system decreased to 0.1 cubic feet per second (cfs) per acre or 0.046 cfs, whichever is greater. Additionally, under Chapter 19.1 amendments, sites that disturb 20,000 square feet (sf) or more of soil or increase impervious surfaces by 5,000 sf or more will also be required to manage the Water Quality Volume (WQv), currently defined as 1.5", using stormwater management practices (SMPs) dictated by DEP SMP hierarchies. DEP has developed hierarchies for both combined and separate sewer areas. The SMP hierarchies prioritize vegetated retention SMPs for both drainage areas with stormwater volume control and stormwater treatment communicated as the underlying goals for combined and separate sewer areas, respectively. The priority level of each SMP group is indicated by tiers with different colors, where the darker shades of green indicate higher tier SMPs. In August 2020, New York City Council passed Intro No. 1851-2020, enabling DEP to move forward with the Chapters 19.1 and 31 amendments necessary to package the Unified Stormwater Rule amendments. A new New York City Stormwater Management Guidance Manual also will be issued to accompany the Unified Stormwater Rule to provide clear guidance on requirements and design options. These new requirements are expected to be in effect under 2026 No-Action conditions.

The Unified Stormwater Rule is expected to lead to a substantial improvement in the way that individual new and redeveloped properties manage stormwater compared to the 2012 Stormwater Rule. In some cases, stormwater will be entirely prevented from entering the city sewer system through retention and, in most cases, stormwater that does enter the system will be reduced and/or treated and released at a much lower rate, allowing the system to operate more efficiently during peak wet weather events. In combined sewersheds, such as the Gowanus Canal, the Unified Stormwater Rule is expected to lead to a reduction in combined sewer overflow (CSO) volume as more lots redevelop over time. The Unified Stormwater Rule is presented as part of this analysis due to the cumulative benefits in CSO volume reduction resulting from lots that are expected to be redeveloped, and therefore would be subject to the updated on-site stormwater management requirements, as part of the Proposed Action. Given that the Unified Stormwater Rule is independent from the Proposed Action, the Rule is additionally described in the No-Action and With-Action sections below. More details on the Unified Stormwater Rule and forthcoming outreach can be found on DEP's website: https://www1.nyc.gov/site/dep/water/unified-stormwater-rule.page

B. PRINCIPAL CONCLUSIONS

Based on the methodology set forth in the 2021 *City Environmental Quality Review* (CEQR) *Technical Manual*, the analysis finds that the Proposed Action would not result in a significant adverse impact on the City's water supply, wastewater and stormwater conveyance and treatment infrastructure.

Water Supply

The Proposed Action would generate an incremental water demand of approximately 105,647 gallons per day (gpd) over No-Action conditions. The increased demand associated with the Proposed Action would represent approximately 0.01 percent of the over one billion gallons of

water supplied daily to New York City by the New York City Department of Environmental Protection (DEP). As changes of this magnitude would not be large enough to have a significant adverse impact on the City's water system pursuant to *CEQR Technical Manual* guidelines, the incremental demand as a result of the Proposed Action would not adversely affect the City's water supply or system water pressure. Therefore, no significant adverse impacts on area water supply would result in the future with the Proposed Action.

Sanitary (Dry Weather) Flows

The Project Site is located within the boundaries of the Red Hook Wastewater Resource Recovery Facility (WRRF). Designed to treat a dry weather flow of 60 million gallons per day (mgd), it handled an average of 28 mgd of sewage flow for a 12-month period ending in October 2023. Although the Project Site is located within the boundaries of the Red Hook WRRF, it is anticipated that project-generated sewage would flow to the Newtown Creek WRRF for treatment. The Newtown Creek WRRF, which is designed to treat a dry weather flow of 310 million gallons per day (mgd), handled an average of 119 mgd of sewage flow for a 12-month period ending in October 2023. Based on rates in the *CEQR Technical Manual*, the Proposed Action has the potential to result in an increase of up to approximately 0.04 mgd of sanitary sewage flow. This amount represents approximately 0.02 percent of the average daily flow of 119 mgd at the Newtown Creek WRRF and would not result in an exceedance of the plant's permitted capacity of 310 mgd. Because the City's sewers are sized and designed based on the designated zoning of an area and related population density and surface coverage characteristics, the Proposed Action may result in development that is inconsistent with the design of the existing built sewer system. To be issued a permit to connect to the City sewer, a site-specific hydraulic analysis may be required to determine whether the existing sewer system is capable of supporting higher density development and related increases in sanitary flows prior to development of the Proposed Project; sewer improvements and/or a new drainage plan may also be required of the Applicant at the time of the Site Connection Proposal. Pursuant to CEQR methodology, as the projected increase in sanitary sewage would not cause the receiving WRRF to exceed its operational capacity or State Pollution Discharge Elimination System (SPDES)-permitted capacity, the Proposed Action would not result in significant adverse impacts to sanitary sewage conveyance and treatment. In addition, per the New York City Plumbing Code (Local Law 33 of 2007), while not accounted for in the quantitative analysis, low-flow fixtures would be required to be implemented and would help to reduce sanitary flows as a result of the Proposed Action.

Stormwater (Wet Weather) Flows

Compared to existing conditions, in the future with the Proposed Action, the combined wet weather flows from the Project Site would increase slightly (by up to 0.01 mg to up to 0.16 mg, depending on rainfall duration and intensity). The Project Site is located in an area that is well served by combined sewer infrastructure. In addition, as a New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001) is required for any development that would involve soil disturbance of one or more acres, a Stormwater Pollution Prevention Plan (SWPPP), consisting of both temporary erosion and sediment controls and post-construction stormwater best management practices (BMPs), may be required of the Applicant. Specific BMP methods would be determined with further refinement of the building design and in consultation with DEP as a part of the Site Connection Proposed approval process, but may include a combination of detention or infiltration

techniques identified in the *NYC Green Infrastructure Plan* (e.g., green roofs, subsurface detention and infiltration, permeable pavement, etc.).

As the wastewater treatment capacity at the Newtown Creek WRRF and the sewer conveyance infrastructure near the Project Site would be sufficient to handle wastewater flows that would result from the Proposed Action, there would not be any significant adverse impacts on wastewater treatment or stormwater conveyance infrastructure.

C. METHODOLOGY

According to the *CEQR Technical Manual*, a preliminary water supply infrastructure analysis is needed if a project would result in an exceptionally large demand for water (e.g., more than one millions of gallons per day (mgd) or is located in an area that experiences low water pressure (e.g., areas at the end of the water supply distribution system). While the Proposed Action would not generate more than one million gpd of incremental water demand, and an analysis is not warranted, water demand estimates are provided in this chapter to inform the wastewater and stormwater conveyance and treatment analysis.

For wastewater and stormwater conveyance and treatment, the *CEQR Technical Manual* indicates that a preliminary assessment would be needed if a project is located in a combined sewer area and would exceed the following incremental development of residential units or commercial space above the predicted No-Action scenario: (a) 1,000 residential units or 250,000 sf of commercial space or more in Manhattan; or (b) 400 residential units or 150,000 sf of commercial space or more in The Bronx, Brooklyn, Staten Island, or Queens. As the Proposed Project would result in a net increase of more than 150,000 sf of commercial space, a preliminary assessment of wastewater and stormwater infrastructure is provided.

To assess the Proposed Action's potential impacts on water and sewer infrastructure, this chapter:

- Describes the existing water and sewer infrastructure serving the Project Site and estimates water demand and sewage and stormwater generation under existing conditions and in the No-Action condition (for the 2026 Analysis Year). Existing and future water demands for the existing and future Project Site uses are based on information provided in the *CEQR Technical Manual*. Stormwater runoff and sanitary flows are calculated using the New York City Department of Environmental Protection (DEP) Flow Calculation Matrix.
- Describes relevant planned infrastructure improvements including the affected area, project components, and current schedules.
- Forecasts water demand and sewage and stormwater generated by the Proposed Action and RWCDS based on *CEQR Technical Manual* guidelines.
- Assesses the effects of the Proposed Action's and RWCDS's water demand and sewage and stormwater generation on the City's water and sewer infrastructure, pursuant to *CEQR Technical Manual* guidelines.

D. EXISTING CONDITIONS

Water Supply

Projected development under the Proposed Actions is expected to generate an incremental water demand of less than 1 mgd, which is below the level of significance per *CEQR Technical Manual* guidelines. As such, a detailed water supply analysis is not warranted for the Proposed Action. However, a description of water infrastructure serving the Project Site and calculations of site-generated water demand under existing, No-Action, and With-Action conditions are provided for informational purposes and to provide context for the other analyses in this chapter.

The New York City water supply system comprises a network of reservoirs, lakes, and aqueducts extending into the Catskill region and a pipe network that distributes water within the City. New York City obtains nearly all of its water from the Delaware, Catskill, and Croton watersheds, which are located within 125 miles of the City. Water from the watersheds is stored at 19 reservoirs and three control lakes, having a combined capacity of approximately 580 billion gallons. The water is then carried into the City by aqueducts. The water enters the City via City Tunnel No. 1, which runs through the Bronx, Manhattan, and Queens, and City Tunnel No. 2, which runs through the Bronx, Queens, and Brooklyn. The partially complete City Tunnel No. 3 serves The Bronx, Manhattan, and Queens, and, when fully complete, will terminate in Brooklyn. Staten Island obtains its water via the Richmond Tunnel, which is an extension of City Tunnel No. 2.

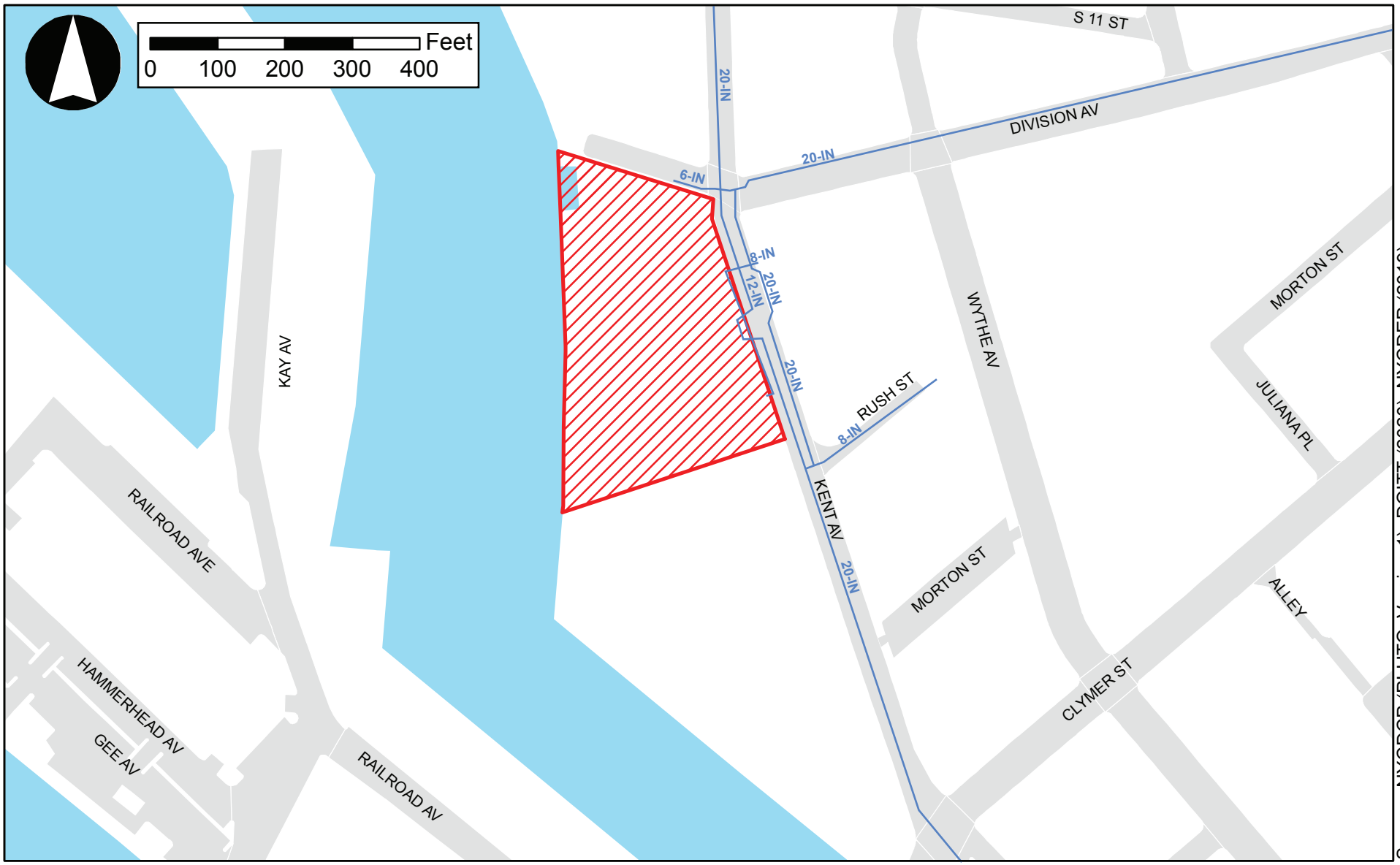
Once in the City, the three aqueducts distribute water into a network of water mains. Water mains up to 96 inches in diameter feed the smaller mains, which deliver water to their final destination. These are the same mains that provide water to fire hydrants. Nearly all of the water reaches its consumers by gravity alone, although some four percent (generally located at the outer limits of the system where in-line pressure is lowest, at high elevations, or at a pressure extremity, such as Far Rockaway) is pumped to its final destination. Pressure regulators throughout the City monitor and control the water pressure.

Water conservation measures taken by DEP in the 1990s have resulted in a steady reduction in the City's overall water demand over the last 20 years. As of 2021, the in-City water consumption totaled approximately 1,000 mgd.

The Project Site is served by two 8-inch, one 12-inch, and one 20-inch water mains located beneath Kent Avenue, as well as a 6-inch water main located at the intersection beneath Kent and Division Avenue (see **Figure 10-1**). As indicated in **Chapter 1, "Project Description,"** the Project Site has been vacant since 2009 and there are no existing uses on the site. Therefore, there is no existing water demand.

Sewer System

According to the *CEQR Technical Manual*, wastewater is considered to include sanitary sewage, wastewater generated by industries, and stormwater. Water used for air conditioning generates a negligible amount of wastewater as it recirculates or evaporates in the cooling and heating process. New York City's sewer system consists of a grid of sewers beneath the streets that send wastewater flows to fourteen different WRRFs. The City's WRRFs are regulated by the NYSDEC, which issues permits regulating the discharge of treated effluent. Combined, all fourteen WRRFs in New



Legend

Project Site

20-IN Existing DEP Water Main

500 Kent Avenue EIS

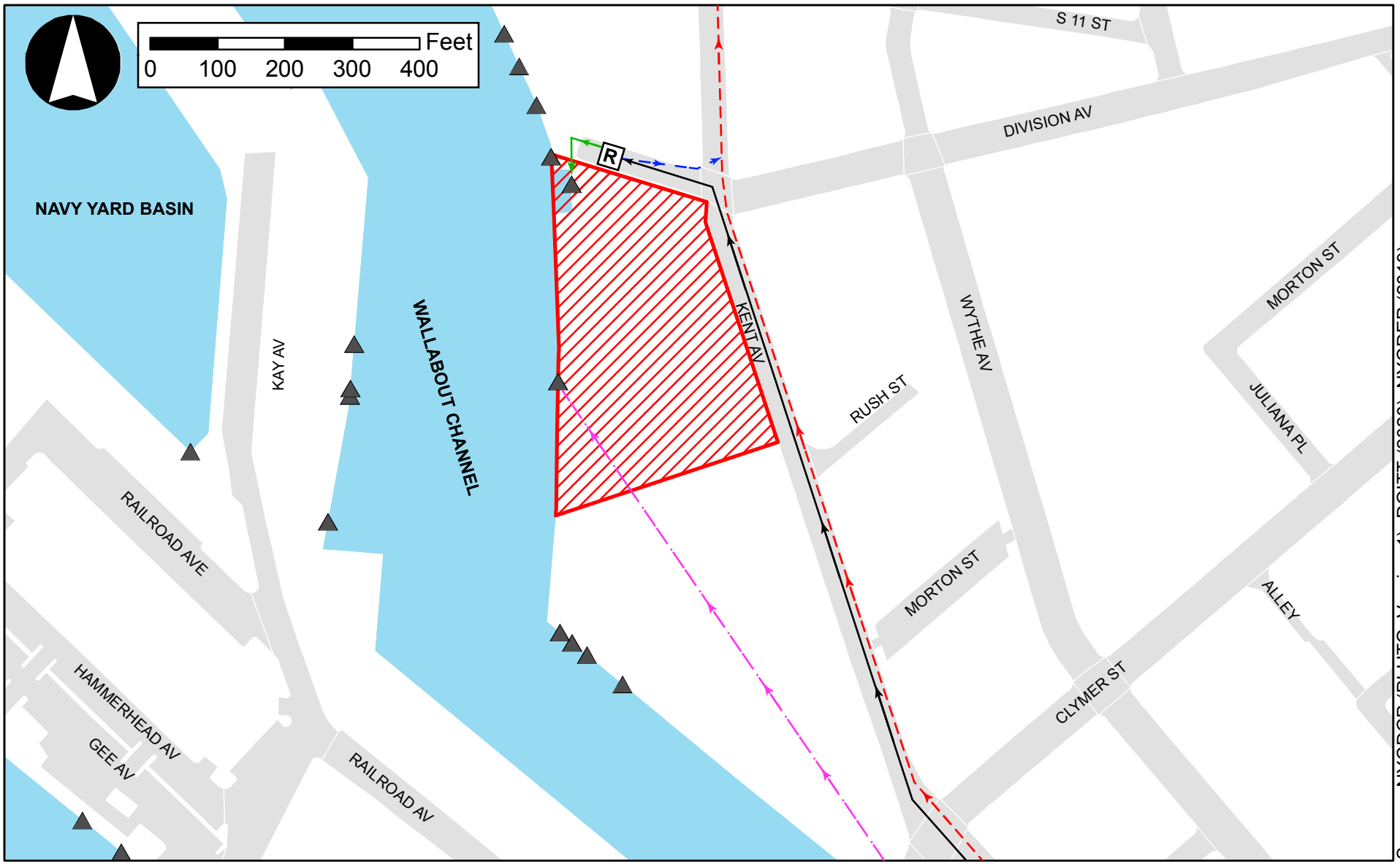
Figure 10-1
Existing DEP Water Mains

York City have a SPDES permitted total capacity of 1.8 billion gpd. The area served by each plant is called a "drainage area" or "catchment area." The majority of New York City's sewers are combined sewers, since they receive both sanitary wastewater and stormwater runoff. During wet weather, large volumes of rainfall runoff enter the combined system through storm drains and catch basins in streets and mix with sanitary sewage, then flow through regulators (relief valves), before being sent to the WRRFs through interceptor sewers. During such wet-weather events, excessive volumes of stormwater runoff (ten to 50 times the dry-weather flow) can enter the combined sewer system and, if transported to the WRRF, could exceed the treatment design capacity. Flow into the interceptor sewers are controlled by regulators along the length of the interceptor sewers. The purpose of the regulators is to divert sanitary flow from the existing combined sewers to the interceptor sewers during normal flow periods (dry weather) and limit the flow to the interceptor sewers to twice the dry weather flow during storm periods (wet weather). The existing tide gates placed on the CSOs downstream of the regulators are designed to keep tidal water from entering the existing combined sewers and the interceptor sewers. Tide gates can be part of the regulator structure or stand-alone chambers. The New York City wastewater treatment system currently treats approximately 1.3 billion gpd of municipal wastewater and a portion of combined sewer flow during wet weather events. Within the Project Site, there are three CSO outfalls that discharge to the Wallabout Channel. Two CSO outfalls are located at the western terminus of Division Avenue, and the other CSO outfall is located in the middle of the site's waterfront edge.

Sanitary sewers can be one to two feet in diameter on side streets and three or four feet in diameter under larger roadways. They connect to trunk sewers, which are generally five to seven feet in diameter. Combined sewers discharge to regulators and the interceptors carry wastewater to the WRRFs for treatment. As shown in **Figure 10-2**, the wastewater collection system in the immediate vicinity of the Project Site consists of a 72-inch interceptor sewer beneath Kent Avenue and a 120 by 96-inch combined sewer that runs beneath both Kent and Division Avenue. The existing 120 by 96-inch combined sewer was built in 1941 and flows northwest from Kent Avenue to a regulator beneath Division Avenue. The regulator connects to a southwest-flowing CSO outfall which was built in 1979, and to an existing eastward-flowing branch interceptor sewer which was built in 1962. The 60-inch branch interceptor sewer only runs along the terminus of Division Avenue before connecting to the 72-inch interceptor sewer at the intersection of Kent Avenue and Division Avenue, which ultimately heads north of Kent Avenue. Additionally, there is an existing 162-inch temporary connection and plumber's drain built in 1941 located beneath the intersection of Taylor Street and Kent Avenue, and flows northwest through the Brooklyn Navy Yard to the CSO outfall located within the Project Site.

As shown in **Figure 10-3**, according to data from NYC DEP the Project Site is located within the service area, aka sewershed, of the Red Hook WRRF, which treats wastewater from a 3,200-acre area located in the northwest part of the Brooklyn. The Red Hook WRRF has been operating since 1987 and has a SPDES permitted dry weather capacity of 60 mgd. As presented in **Table 10-1**, through a 12-month running period ending in October 2023, the Red Hook WRRF handled an average of 28 mgd of flows, which is less than the facility's permitted capacity of 60 mgd.

Although the Project Site is located within the Red Hook WRRF service area boundaries, it appears that the sewage system adjacent to the Project Site is connected to Newtown Creek WRRF based on sewer system information provided in **Figure 10-2**. In addition, the three CSO outfalls located within or adjoining the Project Site are connected to the Newtown Creek WRRF. The Newtown


Feet
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NAVY YARD BASIN
WALLABOUT CHANNEL
KAY AV
KENT AV
WYTHE AV
RUSH ST
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DIVISION AV
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RAILROAD AVE
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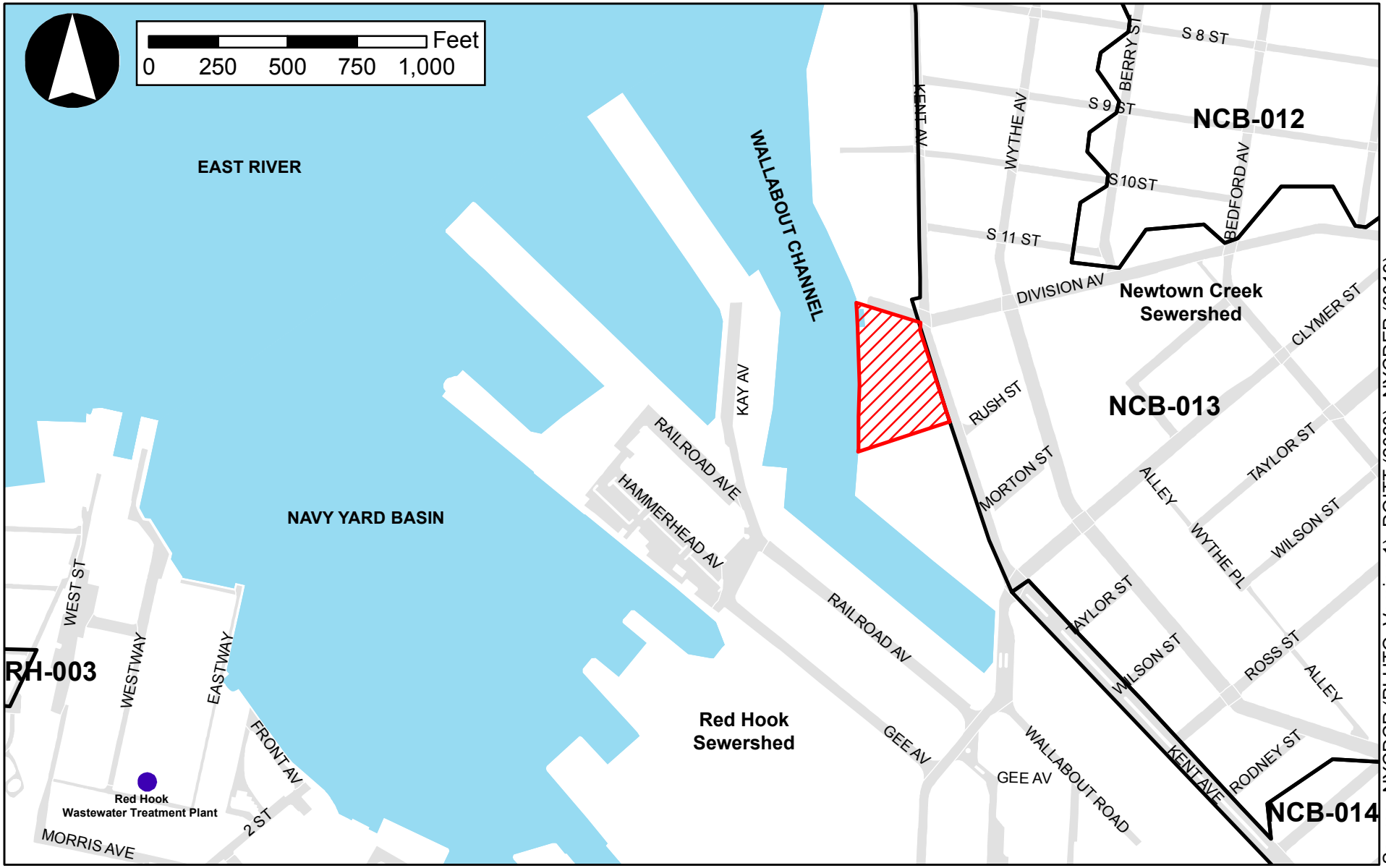
Source: NYCDCP (PLUTO, Version 1); DOITT (2020); NYCDEP (2019)
For Illustrative Purposes Only - Not to Scale
Legend
Project Site
Regulator
CSO Outfalls
CSO Outfall Sewer
Branch Interceptor
Interceptor Sewer
Temporary Connection & Plumber's Drain
Combined Sewer (Arrow Indicates Flow Direction)



Source: NYCDCP (PLUTO, Version 1); DOITT (2020); NYCDEP (2019)

Legend

Project Site | Wastewater Treatment Plants | WPCP Subcatchment Areas

Creek WRRF treats wastewater from a 15,656-acre area located in the south and eastern midtown sections of Manhattan, the northeast section of Brooklyn, and the western section of Queens. The Newtown Creek WRRF has been operating since 1967 and has a SPDES permitted dry weather capacity of 310 mgd. As presented in **Table 10-2**, through a 12-month running period ending in October 2023, the Newtown Creek WRRF handled an average of 119mgd of flows, which is less than the facility's permitted capacity of 310 mgd.

TABLE 10-1: Existing Red Hook WRRF Average Daily Sewer Flows

Year	Month	Average Daily Flows (mgd)
2022	November	26
	December	31
2023	January	28
	February	25
	March	28
	April	30
	May	25
	June	25
	July	29
	August	28
	September	35
	October	32
	12-Month Average	28

Source: DEP "Monthly Operating Efficiency (2022) and (2023)" tables.

TABLE 10-2: Existing Newtown Creek WRRF Average Daily Sewer Flows

Year	Month	Average Daily Flows (mgd)
2022	November	104
	December	111
2023	January	111
	February	100
	March	108
	April	115
	May	102
	June	103
	July	112
	August	112
	September	131
	October	111
	12-Month Average	119*

Source: DEP "Monthly Operating Efficiency (2022) and (2023)" tables.
* Calculated using the "actual" values of the last 12 months, not by using the 12 Month rolling average provided in DEP dataset

Sanitary Flows (Dry Weather)

As described above, the Project Site has been vacant since 2009 and there are no existing uses on the site. Since there is no water demand, the Project Site does not generate wastewater.

Stormwater Flows (Wet Weather)

As outlined in **Chapter 1, "Project Description,"** the Project Site lot area totals approximately 115,244 sf. **Table 10-3** describes the surfaces, surface areas, and the weighted runoff coefficient (the fraction of precipitation that becomes surface runoff) for each surface type present on the Project Site. Based on visual inspections of the Project Site, and as indicated in **Table 10-3**, the Project Site is comprised of permeable surfaces, no roof or paved areas. Based on the existing Project Site surface areas, the weighted runoff coefficient of the Project Site is 0.20.

TABLE 10-3: Existing Project Site Surface Areas and Runoff Coefficients

Surface Type	Roof	Pavement and Walks	Other	Grass and Softscape	Total
Area	0%	0%	0%	100%	100%
Surface Area (sf)	0	0	0	115,244	115,244
Runoff Coefficient[1]	1.00	0.85	0.85	0.20	0.20

Notes:
[1] Weighted runoff coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual.*

For this analysis, the runoff coefficients were used to calculate the amount of stormwater runoff during a range of storm events, with rainfall averaging from 0.00 to 2.50 inches over durations of 3.80 to 19.50 hours. **Table 10-4** shows the existing stormwater runoff for the Project Site. As indicated in the table, the Project Site currently generates between 0.00 and 0.04 mg of wet weather flows for different rainfall intensities.

TABLE 10-4: Existing Project Site Stormwater and Sanitary Sewage Flow Volumes

Rainfall Volume (in)	Rainfall Duration (hr)	Runoff Volume to CSS (MG)	Sanitary Volume to CSS (MG)	Total Volume to CSS (MG)
0.00	3.80	0.00	0.00	0.00
0.40	3.80	0.01	0.00	0.01
1.20	11.30	0.02	0.00	0.02
2.50	19.50	0.04	0.00	0.04

Notes:
CSS = combined sewer system; MG = million gallons

E. THE FUTURE WITHOUT THE PROPOSED ACTION (NO-ACTION CONDITION)

The future without the Proposed Action condition - also known as the "No-Action condition" - assumes the future without approval of the Proposed Action. Absent the Proposed Action, it is

anticipated that the Project Site would be developed as-of-right under the existing M3-1 zoning. The No-action development would have an FAR of 2.00 (1.5 FAR of warehouse use and 0.5 FAR of office space) and would be 74 feet tall (roof height) with four stories. The Project Site would be occupied by approximately 312,599 gsf, including 58,000 gsf of office space, 181,401 gsf of warehouse space, and 73,198 gsf of accessory parking. As the No-Action development would be predominantly Use Group 16d warehouse, the Project Site will be exempt from waterfront public access area and visual corridor requirements. The Project Site would provide 279 accessory parking spaces on the first and mezzanine floors, meeting the minimum requirement that the site provide 1 space per 300 zsf of office space and 1 space per 2,000 zsf of warehouse space.

Water Supply

The overall water supply system in New York City is not expected to change materially in the future without the Proposed Action. In the No-Action condition, the Project Site would continue to be served by two 8-inch, one 12-inch, and one 20-inch water mains located beneath Kent Avenue, as well as a 6-inch water main located at the intersection beneath Kent and Division Avenue, as shown in **Figure 10-1**.

As presented in **Table 10-5**, the No-Action development is estimated to have a total daily water demand of 64,638 gpd, including 23,940 gpd of domestic demand and 40,698 gpd of air conditioning (A/C) demand.

TABLE 10-5: No-Action Project Site Water Consumption and Wastewater Generation

Land Use	Rate[1]	Area (gsf)	Domestic Water/ Wastewater Generation (gpd)	A/C (gpd)
Warehouse	Domestic: 0.1 gpd/sf A/C: 0.17 gpd/sf	181,401	18,140	30,838
Office	Domestic: 0.1 gpd/sf A/C: 0.17 gpd/sf	58,000	5,800	9,860
Total Water Consumption			64,638	
Total Wastewater Generation			23,940	

Notes:
[1] Based on average daily water use rates provided in Table 13-2 of the *CEQR Technical Manual*:
- Commercial Office/Warehouse: 0.1 gpd/sf, plus 0.17 gpd/sf for A/C.

Sewer System

Sanitary Flows (Dry Weather)

While it is anticipated that the Project Site would remain within the mapped service area of the Red Hook WRRF in the future without the Proposed Action, based on the information presented above it is anticipated that the No-Action development on the Project Site would be served by the Newtown Creek WRRF. As presented in **Table 10-5** and described above, the No-Action development is expected to generate approximately 23,940 gpd of daily sanitary sewage, which would not represent a significant increase in the daily sewage treated by the WRRF.

Stormwater Flows (Wet Weather)

As presented in **Table 10-6**, below, based on the anticipated site plan in the future without the Proposed Action, compared to existing conditions, the No-Action development would result in increases on the Project Site in the amount of roof area (increasing to approximately 74 percent) and areas comprised of pavement and walks (increasing to 25 percent), while decreasing the permeable areas (decreasing to 0 percent of the Project Site). Based on these anticipated changes in the Project Site's surface areas, the weighted runoff coefficient of the Project Site would increase from 0.20 to 0.96 in the future without the Proposed Action.

TABLE 10-6: No-Action Project Site Surface Areas and Runoff Coefficients

Surface Type	Roof	Pavement and Walks	Other	Grass and Softscape	Total
Area	74%	25%	0%	0%	100%
Surface Area (sf)	85,551	29,143	0	550	115,244
Runoff Coefficient[1]	1.00	0.85	0.85	0.20	0.96

Notes:
[1] Weighted runoff coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual.*

As shown in **Table 10-7**, in the No-Action condition, approximately 0.00 to 0.17 mg of stormwater and approximately 0.00 to 0.02 mg of sanitary sewage would be conveyed to the existing combined sewers, for a total of 0.00 to 0.19 mg of combined volumes to the combined sewer system. Compared to existing conditions, the total wet weather flows from the Project Site would increase by 0.00 to 0.15 mg, depending on rainfall duration and intensity.

TABLE 10-7: No-Action Project Site Stormwater and Sanitary Sewage Flow Volumes

Rainfall Volume (in)	Rainfall Duration (hr)	Runoff Volume to CSS	Sanitary Volume to CSS (MG)	Total Volume to CSS (MG)
0.00	3.80	0.00	0.00	0.00
0.40	3.80	0.03	0.00	0.003
1.20	11.30	0.08	0.01	0.09
2.50	19.50	0.17	0.02	0.19

Notes:
CSS = combined sewer system; MG = million gallons

As noted above in the "Introduction," the newly adopted Unified Stormwater Rule is now in effect and is expected to remain in effect under 2026 conditions. As a result of these requirements, it is expected that there would be a reduction in stormwater runoff on the Project Site under No-Action conditions. The runoff calculations presented in **Table 10-6** do not reflect the required reduction in stormwater from new development due to these new on-site stormwater management regulations. However, per the new Rule and using the runoff coefficients shown in **Table 10-6** (which are based on the DEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual*), it is estimated that the water quality volume to be retained or detained for the Project Site would be approximately 13,829 cubic feet (0.10 mg) under No-Action conditions.

Calculations required under the Unified Stormwater Rule include:

* Water quality treatment (retention) volume requirement

* Peak stormwater discharge limit (peak instantaneous rate of discharge to City Sewer)

These calculations are shown in **Tables 10-8** and **10-9,** respectively, for No-Action conditions. As shown in the latter table, the peak allowable stormwater discharge rate for the 2.65-acre project site is 0.26 cfs.

TABLE 10-8, No-Action Water Quality Treatment Volume

WQV = water quality volume requirement (cubic feet)	
A = contributing lot area (square feet)	
I = impervious coverage percentage	
RV = runoff coefficient	
WQV = 1.5/12 x A x RV	
Lot area (acres)	2.65
A (ft^2)	115,244
I	99.5%
RV	0.96
WQV (ft^3)	13,829
WQV (mg)	0.10

TABLE 10-9, Peak Allowable Stormwater Discharge

Q = peak allowable flow (cubic feet per second [cfs])	
A = contributory site lot area (acres)	
Q = A x 0.1 cfs	
Area (acres)	2.65
Q (cfs)	0.26

F. THE FUTURE WITH THE PROPOSED ACTION (WITH-ACTION CONDITION)

For conservative analysis purposes, in the future with the Proposed Action (the With-Action condition), the RWCDS anticipates that the Project Site would be redeveloped with a new 23-story (352-foot-tall), 684,282-gsf commercial building containing 598,442 gsf of commercial office space, 21,233 gsf of commercial retail space, and 49,453 sf of waterfront publicly accessible open space. The Proposed Project would also include 234 public parking spaces (63,527 gsf) and two loading berths.

Water Supply

The Proposed Action would generate increased demand on the DEP water supply system, compared to No-Action conditions (see **Table 10-10**). As indicated in the table, the Proposed Action would generate an incremental water demand of approximately 105,647 gpd. The incremental demand represents approximately 0.01 percent of the approximately one billion

gallons of water supplied daily to New York City by DEP. These estimated demands include water for both domestic uses and air conditioning systems.

As discussed above, the Project Site is served by two 8-inch, one 12-inch, and one 20-inch water mains located beneath Kent Avenue, as well as a 6-inch water main located at the intersection beneath Kent Avenue and Division Avenue (see **Figure 10-3**). Existing infrastructure should be capable to handle the estimated increase in water demand generated by the Proposed Action. As such, given the relatively minor incremental increase in water consumption (as compared to city-wide demand) and the Project Site's location in an area well-served by water infrastructure, the Proposed Action is not expected to adversely affect the City's water supply or system water pressure.

Sewer System

Sanitary Flows (Dry Weather)

As indicated in **Table 10-10**, below the estimated amount of sanitary sewage generated by the Proposed Action would be 64,940 gpd. This amount would represent approximately 0.25 percent of the average daily flow of 28 mgd at the Red Hook WRRF and would not result in an exceedance of the plant's permitted capacity of 60 mgd. In addition, per the New York City Plumbing Code (Local Law 33 of 2007), low-flow fixtures would be required to be implemented, which would help to reduce sanitary flows from the Proposed Project.

As indicated in **Table 10-10**, below the estimated amount of sanitary sewage generated by the Proposed Action would be 64,940 gpd. This amount would represent approximately 0.02 percent of the average daily flow of 119 mgd at the Red Hook WRRF and would not result in an exceedance of the plant's permitted capacity of 310 mgd. In addition, per the New York City Plumbing Code (Local Law 33 of 2007), low-flow fixtures would be required to be implemented, which would help to reduce sanitary flows from the Proposed Project.

TABLE 10-10: Expected Water Demand on Project Site – No-Action vs. With-Action Conditions

	Use	Area (gsf)	Domestic Use (gpd)[1]	Air Conditioning (gpd)[1]
No-Action Condition	Warehouse	181,401	18,140	30,838
	Office	58,000	5,800	9,860
	Total No-Action Water Supply Demand			64,638
	Total No-Action Sewage Generation			23,940
With-Action Condition	Office	598,442	59,844	101,735
	Retail	21,233	5,096	3,610
	Total With-Action Water Supply Demand			170,285
	Total With-Action Sewage Generation			64,940
Increment	***Incremental Water Supply Demand***			105,647
	Incremental Sewage Generation			41,000

Notes:
[1] Based on average daily water use rates provided in Table 13-2 of the *CEQR Technical Manual* (unless otherwise indicated):
- Commercial Office: 0.1 gpd/sf, plus 0.17 gpd/sf for A/C.
- Commercial Retail: 0.24 gpd/sf, plus 0.17 gpd/sf for A/C.

Connecting to the City's sewer system requires certification from DEP as part of the building permit process, which is not a discretionary approval. The Applicant would be required to file a Site Connection Proposal for approval from DEP to tie into the sewer system. In this process, before a building permit can be issued, Site Connection Proposals must be certified for sewer availability by DEP. The Applicant would be required to demonstrate that the existing sanitary system could handle the sanitary flows from the Proposed Project. Because the City's sewers are sized and designed based on the designated zoning of an area and related population density and surface coverage characteristics, the Proposed Action may result in development that is inconsistent with the design of the existing built sewer system. The Proposed Action would likely result in an increase of site sanitary flow to the adjacent sewers based on the proposed buildout and estimated in accordance with the City's drainage design criteria. A hydraulic analysis of the existing sewer system would likely be required prior to the submittal of the Site Connection Proposal (SCP) application to determine whether the existing sewer system is capable of supporting higher density development and related increase in wastewater flow, or whether there will be a need to upgrade the existing sewer system. In addition, there would be a need to submit an amended drainage plan based on the hydraulic calculations. In addition, in accordance with the New York City Plumbing Code (Local Law 33 of 2007), while not accounted for in the quantitative analysis, low-flow fixtures would be required to be implemented and would help to reduce sanitary flows as a result of the Proposed Action.

As the Proposed Action is not expected to result in a significant increase in dry weather flows to the combined sewer system, no significant adverse impacts would result.

Stormwater Flows (Wet Weather)

As presented in **Table 10-11**, below, based on the proposed site plan (refer to **Figure 1-7** in **Chapter 1, "Project Description"**), compared to No-Action conditions the Proposed Action would result in a decrease in the amount of roof area present on the Project Site (decreasing from approximately 74 percent to approximately 55 percent), slightly increasing the area comprised of pavement and walks (increasing from approximately 25 percent to approximately 26 percent), and increasing softscape (increasing from approximately 0 percent to approximately 19 percent). Based on these anticipated changes in the Project Site's surface areas, the weighted runoff coefficient of the Project Site would increase from 0.96 under No-Action conditions to 0.81 under With-Action conditions.

Using these sanitary and stormwater flow calculations, the DEP Flow Volume Calculation Matrix was completed for the future With-Action condition and compared to the existing conditions presented in **Table 10-4**, above. The calculations from the Flow Volume Calculation Matrix help to determine the change in wastewater flow volumes to the combined sewer system from existing conditions to With-Action conditions, based on four rainfall volume scenarios with varying durations. The drainage analysis assumes that all stormwater runoff from the Project Site would flow via the existing combined sewer infrastructure adjacent to the Project Site. The summary tables, taken from the DEP Flow Volume Calculation Matrix, are presented in **Table 10-11**.

TABLE 10-11: Project Site Runoff Coefficient – With-Action Condition

Surface Type	Roof	Pavement and Walks	Other	Grass and Softscape	Total
Area	55%	26%	0%	19%	100%
Surface Area (sf)	62,857	30,524	0	21,863	115,244
Runoff Coefficient[1]	1.00	0.85	0.85	0.20	0.81

Notes:
[1] Weighted runoff coefficient calculations based on the DEP Flow Volume Calculation Matrix provided in the *CEQR Technical Manual.*

As shown in **Table 10-12**, in the future With-Action condition, approximately 0.00 to 0.15 mg of stormwater and approximately 0.01 to 0.05 mg of sanitary sewage would be conveyed to the existing combined sewers, for a total of 0.01 to 0.20 mg of combined volumes to the combined sewer system. Compared to existing conditions, the total wet weather flows from the Project Site would increase by 0.01 to 0.16 mg, depending on rainfall duration and intensity. The Flow Volume Matrix calculations presented in **Table 10-12** do not reflect the use of sanitary and stormwater source control BMPs to reduce sanitary flow and stormwater runoff volumes to the combined sewer system.

TABLE 10-12: Project Site Stormwater and Sanitary Sewage Flow Volumes – With-Action vs. Existing Conditions

Rainfall Volume (in)	Rainfall Duration (hr)	Runoff Volume to CSS (MG)	Sanitary Volume to CSS (MG)	Total Volume to CSS (MG)	Incremental Volume to CSS over Existing Conditions (MG)[1]
0.00	3.80	0.00	0.01	0.01	+0.01
0.40	3.80	0.02	0.01	0.03	+0.02
1.20	11.30	0.07	0.03	0.10	+0.08
2.50	19.50	0.15	0.05	0.20	+0.16

Notes:
CSS = combined sewer system; MG = million gallons
[1]Refer to **Table 10-4**.

The Project Site is located in an area that is served by combined sewer infrastructure. Given the size of the combined sewer facilities in the vicinity of the Project Site, which are described above under "Existing Conditions," it is anticipated that there is ample capacity in the adjacent sewer infrastructure to accommodate the additional combined flows generated by the Proposed Action. As part of the DEP site connection approval process, the development must be in compliance with the required stormwater release rate.

Stormwater Best Management Practices

A broad range of BMPs could be implemented on the Project Site to facilitate stormwater source controls and limit the stormwater release rate to the required 0.1 cfs/acre. The implementation of low-flow fixtures, as per the New York City Plumbing Code, Local Law 33 of 2007, and the U.S. Environmental Protection Agency's WaterSense Program, would help control sanitary flows. To further offset these increases, on-site stormwater control measures of BMPs could be implemented

to retain or slowly release stormwater runoff with controlled discharge rates to the City's combined sewer system.

In addition, as a NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001) is required for any development that would involve soil disturbance of one or more acres, the Applicant may be required to prepare a SWPPP, consisting of both temporary erosion and sediment controls and post-construction stormwater BMPs. Post-construction stormwater management measures that would be integrated into the Proposed Project as part of the SWPP could include measures such as underground detention, infiltration practices, and vegetated areas. The following typical BMP measures could be used to help manage stormwater flows: the implementation of BMPs described in the *New York City Green Infrastructure Plan* and/or green technologies, such as blue and green roofs, subsurface detention and infiltration, porous pavement, enhanced tree pits, and rain cisterns, depending on site conditions. The design of detention tanks, green roofs, and/or other chosen stormwater control BMPs, could achieve the required overall maximum release rate of 0.1 cfs/acre.

Therefore, with the incorporation of appropriate BMPs that would be required as part of the Site Connection Proposal approval process to be reviewed and approved by DEP, the overall volume of sanitary sewer discharge and stormwater runoff, as well as the peak stormwater runoff rate, would be substantially reduced. As the wastewater treatment capacity at the receiving WRRF and the sewer conveyance infrastructure near the Project Site would be sufficient to handle wastewater flows that would result from the Proposed Action, there would not be any significant adverse impacts on wastewater treatment or stormwater conveyance infrastructure.