

# Zoning for Coastal Flood Resiliency

## Executive Summary

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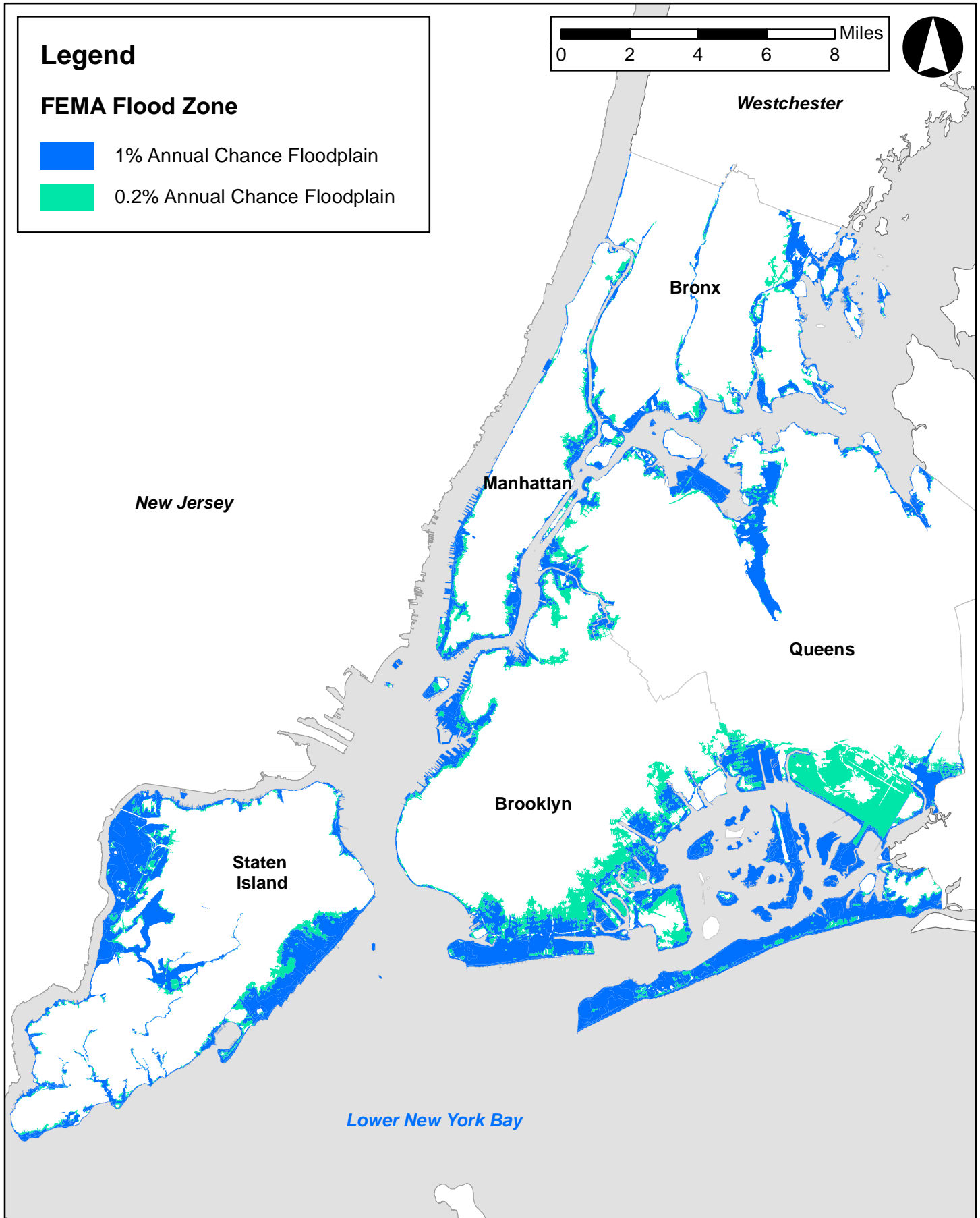
### A. INTRODUCTION

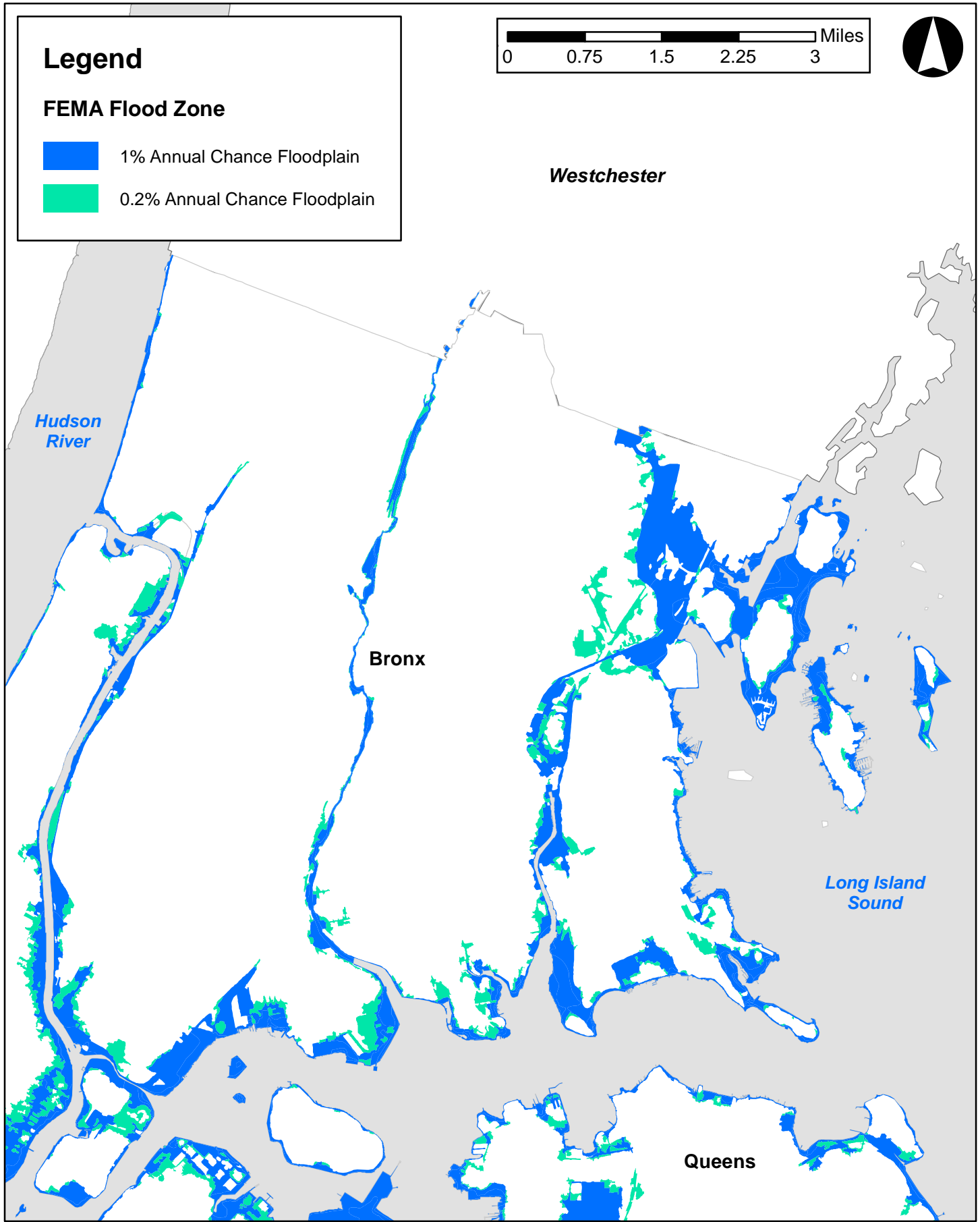
The New York City Department of City Planning (DCP) is proposing a zoning text amendment to update the Special Regulations Applying in Flood Hazard Areas (Article VI, Chapter 4) of the New York City Zoning Resolution (ZR), which includes the [“Flood Resilience Zoning Text”](#) (ULURP No. N130331(A)ZRY, CEQR No. 13DCP135Y) (the “2013 Flood Text”) and [“Special Regulations for Neighborhood Recovery”](#) (ULURP No. N150302ZRY, CEQR No. 15DCP133Y) (the “2015 Recovery Text”). These temporary zoning rules were adopted on an emergency basis to remove zoning barriers that were hindering the reconstruction and retrofitting of buildings affected by Hurricane Sandy and to help ensure that new construction there would be more resilient. The 2013 Flood Text provisions are set to expire with the adoption of new and final Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), which is anticipated to occur within the next few years. Applicability of the 2015 Recovery Text expired in July 2020. Therefore, DCP is proposing a citywide zoning text amendment, [“Zoning for Coastal Flood Resiliency”](#) (the “Proposed Action”), to improve upon and make permanent the relevant provisions of the existing temporary zoning rules of the 2013 Flood Text and 2015 Recovery Text. In addition, the Proposed Action includes special provisions to help facilitate the city’s long-term recovery from the COVID-19 pandemic and its associated economic effects by providing more time for existing non-conforming uses to reopen and for builders to undertake certain construction projects. The Proposed Action also includes updates to other sections of the ZR, including the Special Regulations Applying in the Waterfront Area (Article VI, Chapter 2) and provisions within various Special Purpose Districts. To help the City prepare for or respond to other disasters, select provisions in the Proposed Action regarding power systems and other mechanical equipment, ramps and lifts, vulnerable populations, and disaster recovery rules, would be applicable citywide.

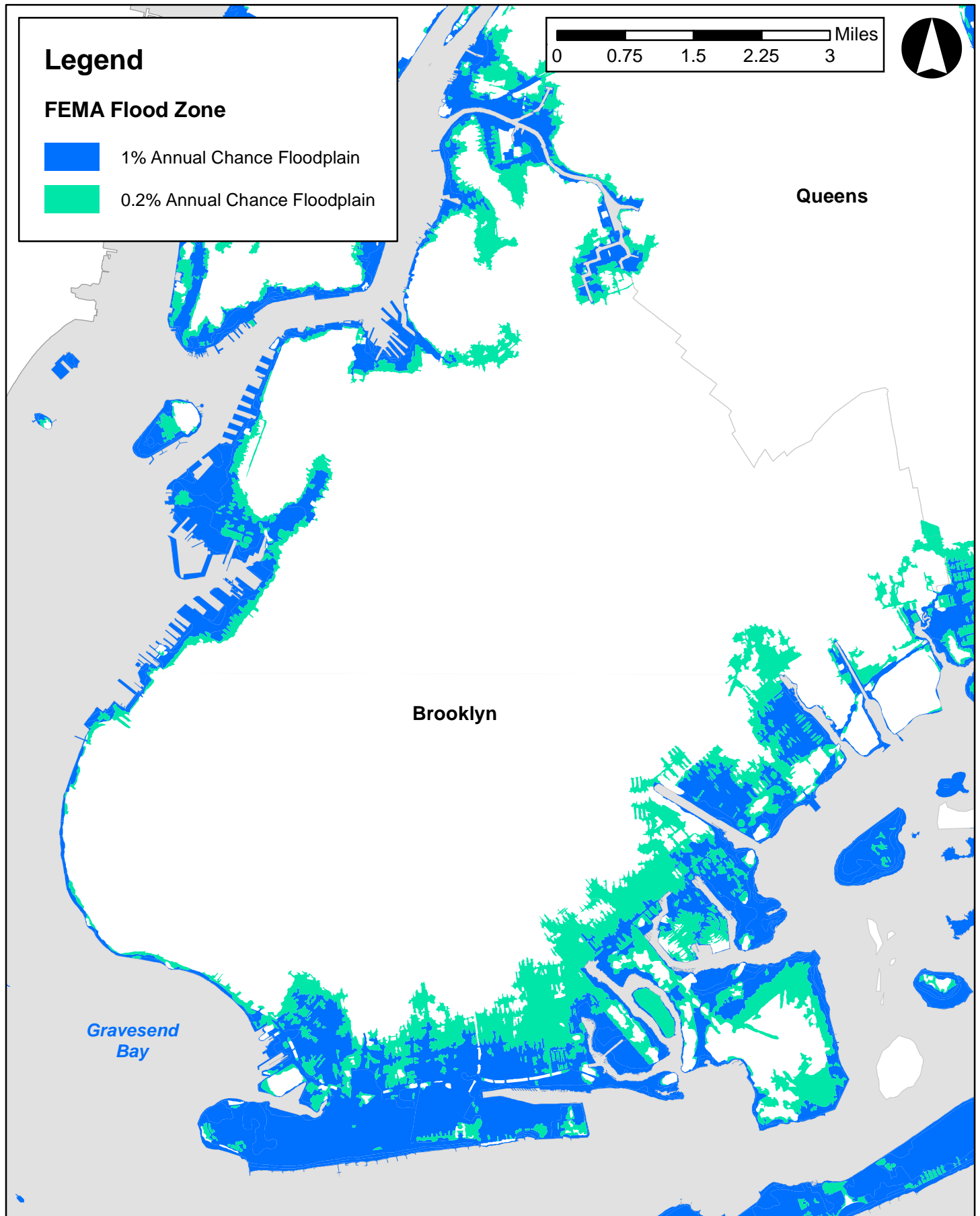
The Proposed Action would provide those homeowners, business owners, and practitioners who live and work in the city’s floodplain the option to design or otherwise retrofit buildings to: (a) reduce damage from future coastal flood events, (b) be resilient in the long-term by accounting for climate change, and (c) potentially save on long-term flood insurance costs. In addition, it would allow resiliency improvements to be more easily incorporated on waterfront sites at the water’s edge and in public spaces, as well as provide zoning regulations to help facilitate the city’s long-term recovery from the COVID-19 pandemic and other future disasters. Overall, implementation of the Proposed Action would improve the ability of the city to withstand and recover quickly from future storms or other disaster events.

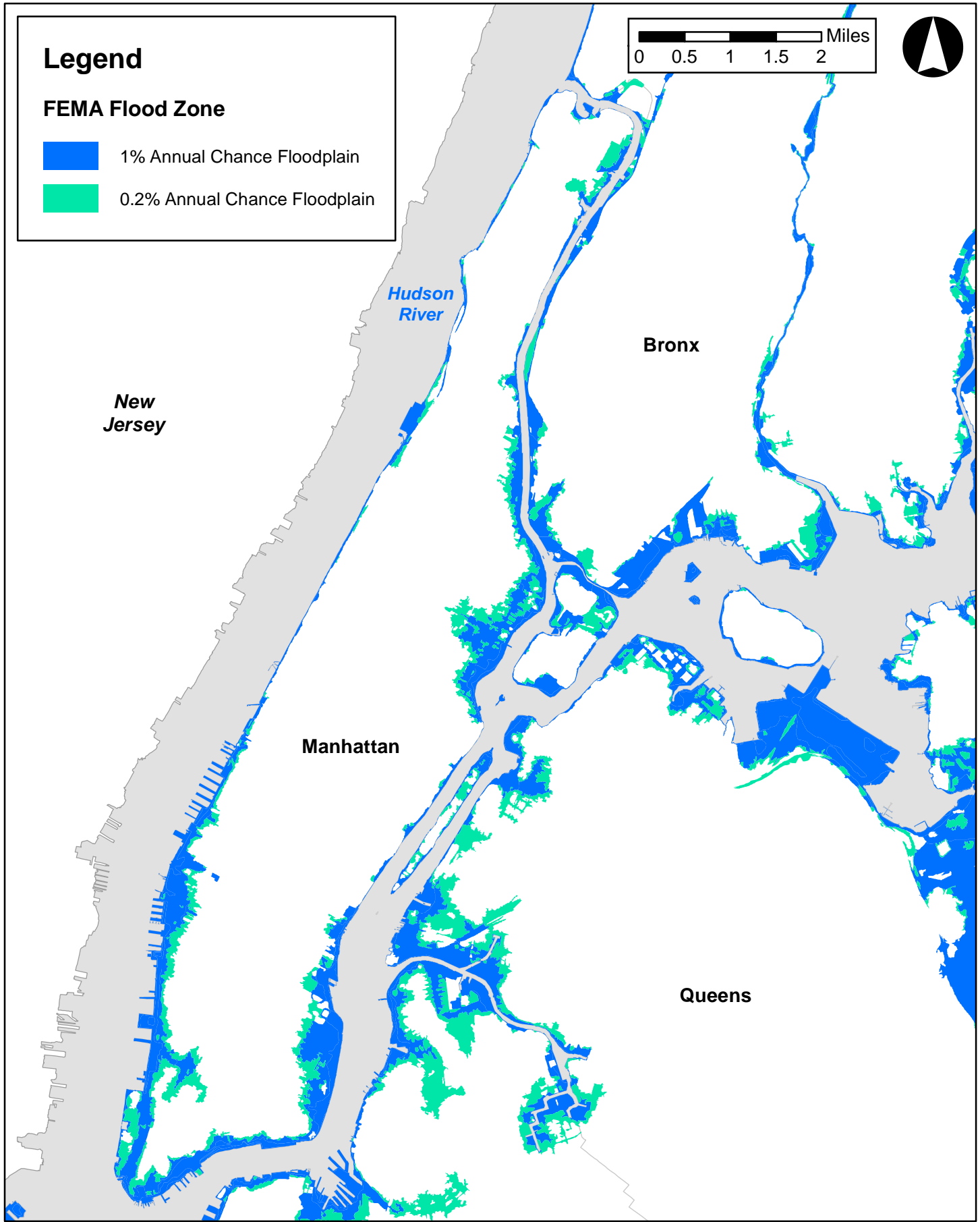
The Proposed Action would mostly affect New York City’s current 1% annual and 0.2% annual chance floodplains (illustrated in **Figure ES-1**). However, select provisions of the Proposed Action would be applicable citywide (discussed in detail below), affecting all five boroughs and the city’s 59 Community Districts.

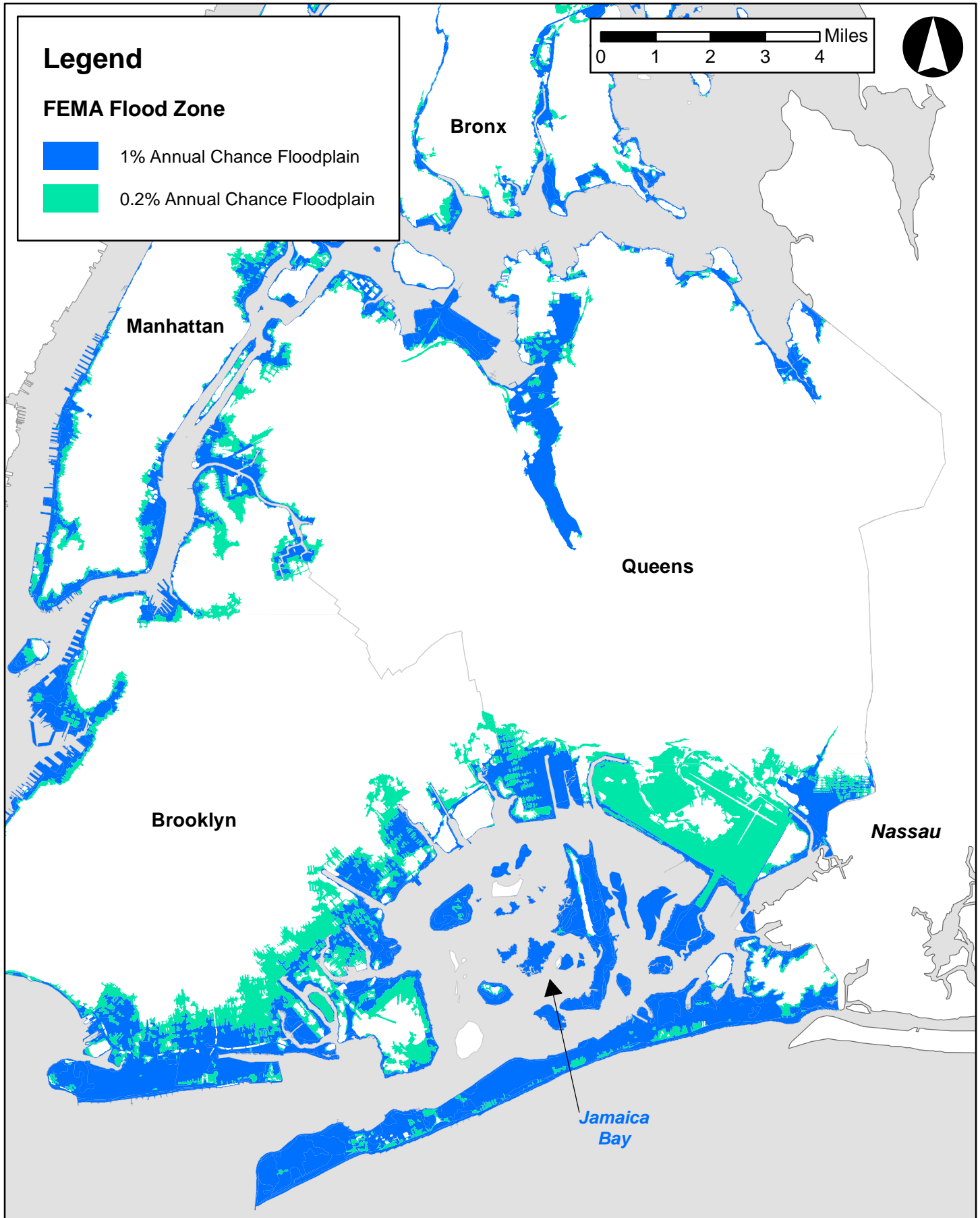
The Proposed Action was drawn from lessons learned and initiatives implemented through New York City’s recovery efforts after Hurricane Sandy and was developed based on analysis of resilient construction in the floodplain, through widespread coordination with partner City agencies, and community feedback received during an extensive public engagement process as laid out in [Zoning For Resiliency: Community Outreach Summary](#), released in 2018.

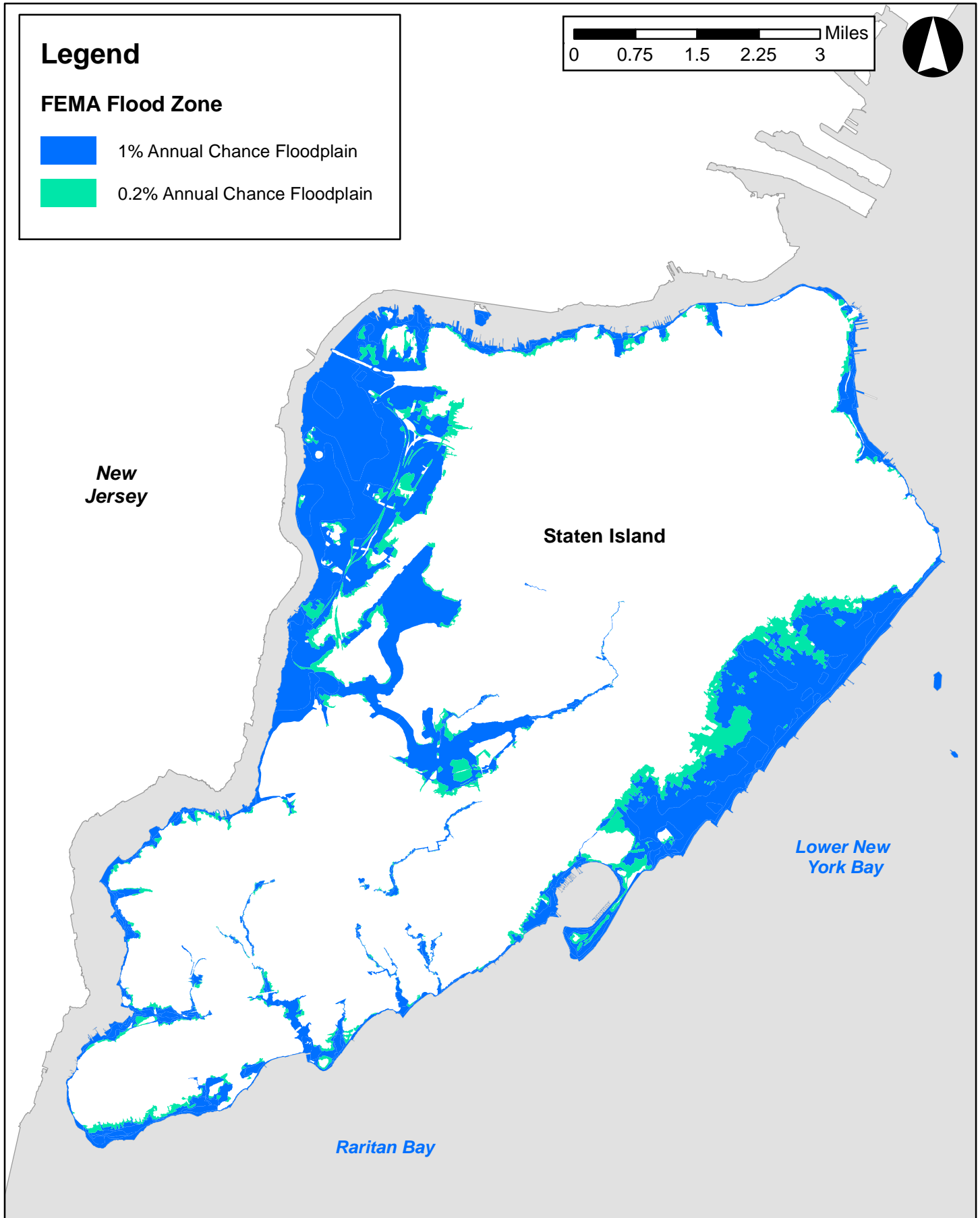












Features of the Proposed Action include:

- 1. An expanded geography:** Buildings and lots in both the city's 1% and 0.2% annual chance floodplains would be able to pursue resiliency improvements to partially meet, fully meet, or exceed flood-resistant construction standards, even when these standards are not required by FEMA or Appendix G of the New York City Building Code.
- 2. An enhanced building envelope:** Zoning allowances coupled with revised design requirements would allow building owners to more effectively factor projected sea level rise when designing new buildings or retrofitting existing ones, without creating incongruous and uninviting streetscapes. This would increase the building's and its content's safety and allow flood insurance costs to be reduced, while ensuring an accessible design that maintains an inviting streetscape.
- 3. Alternatives for the relocation of equipment:** Building owners would have additional zoning flexibility to relocate mechanical, electrical, and plumbing (MEP) equipment or install backup systems, such as generators, above projected flooding heights on roofs or in new, separate structures that would elevate a site's MEP equipment.
- 4. A zoning framework that facilitates recovery from future disasters:** A regulatory structure would be established to facilitate the recovery from potential future disasters. Given the present COVID-19 pandemic, selective provisions would be included to facilitate the present recovery. The Proposed Action would also limit the growth of nursing homes and other similar facilities in flood prone areas. This would increase the safety of particularly vulnerable populations and allow the City to more effectively assist impacted areas.

In the long term, the Proposed Action, in conjunction with coastal protection strategies and infrastructure improvements that are being pursued by the City and other state and federal agencies,<sup>1</sup> would help to fully realize the vision of a more resilient New York City.

Finally, the Proposed Action also includes related local actions intended to address neighborhood-specific resiliency challenges (described in further detail below). These actions will be subject to separate land use applications and environmental reviews but are moving in parallel with this citywide zoning text amendment.

As described in detail below, the Proposed Action is not expected to cause a significant change in the overall amount, type, or location of development. The Proposed Action is not expected to induce development where it would not have otherwise occurred absent the Proposed Action.

It should be noted that in December 2020, after completion and publication of the Zoning for Coastal Flood Resiliency DEIS and Notice of Completion, the New York City Mayor's Office of Environmental Coordination (MOEC) issued a revised City Environmental Quality Review (CEQR) Technical Manual. As such, this FEIS has been revised as necessary to reflect the updated methodology of the 2020 CEQR Technical Manual.

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<sup>1</sup> Coastal protection strategies and infrastructure improvements includes climate adaptation measures such as those identified in the City's [Lower Manhattan Climate Resiliency Study](#) issued in March 2019, the [East Side Coastal Resiliency Project](#) that is projected to be completed by 2023, and [South Shore of Staten Island Hurricane and Storm Damage Reduction Project](#) being initiated by the US Army Corps of Engineers in 2017. Examples of such measures include floodwalls and deployable flip-up barriers to protect upland areas from storm surges. For more information, refer to the [Lower Manhattan Climate Resiliency Study](#). Additionally, the DEP-administered Green Infrastructure Grant Program incentivizes private property owners to retrofit their roofs with green roofs to manage stormwater runoff.



## B. BACKGROUND

### The City's Coastal Flood Risk

With 520 miles of shoreline, there is no denying that New York City is a coastal city. Its large natural harbor, where the Hudson River meets the Atlantic Ocean, is one of the reasons that the city has become a center of commerce and culture. However, due to its extensive and varied shoreline, New York City is vulnerable to coastal flooding.

While there are many sources of flooding that pose issues in New York City, including flooding from severe rain storms or due to impaired infrastructure, coastal storms present the most significant flood risk in terms of compromising human safety, property damage, and business disruption. Therefore, in 1983, the City joined the National Flood Insurance Program (NFIP) allowing homeowners to purchase flood insurance and receive assistance following flood events. This program, administered by FEMA, is a voluntary program based on an agreement between the federal government and local communities. FEMA identifies areas at risk of flooding through the development of flood-risk maps. Local authorities adopt these maps to implement and enforce floodplain management regulations. In exchange, local communities get access to federally backed flood insurance, which is made available to property owners and renters throughout the floodplain. The rates for this flood insurance vary depending on the property's location, height above sea level and general building characteristics. These rates can be substantially reduced when subgrade spaces, such as basements and cellars are filled in residential buildings, and when living spaces are elevated above the base flood elevation (BFE).<sup>2</sup>

**Table ES-1: Number of Lots and Buildings in New York City's Floodplain**

	1% Annual Chance (FIRM + PFIRM <sup>3</sup> )	0.2% Annual Chance (FIRM + PFIRM <sup>4</sup> )	TOTAL
Total Number of Lots (without Parks)	65,582	36,718	102,300
<i>Built</i>	58,927	35,435	94,362
<i>Vacant</i>	6,655	1,283	7,938
<i>% Built</i>	90	97	92
<i>% Vacant</i>	10	3	8
Total Number of Buildings	80,907	44,632	125,539

**Source:** NYC DCP; Utilizing 2007 FIRM and 2015 PFIRM numbers, the most recently available data from FEMA.

Areas at risk of a 1% or 0.2% annual chance of flood are commonly known as the floodplain and are currently designated on FEMA's FIRMs and Preliminary FIRMs (PFIRMs). New York City's 1% annual chance floodplain, illustrated in **Figure ES-1**, covers approximately 15 percent of the city's land area, touching 50 of the city's 59 Community Boards and 45 of its 51 Council Districts. This vast geography contains over 80,900 buildings housing 434,500 residents that are currently at high risk of flooding by coastal storms. In commercial areas, the floodplain contains roughly 14,500 private businesses that employ

<sup>2</sup> The elevation to which floodwater is anticipated to rise during a 1% annual chance storm as shown on FEMA's FIRMs and PFIRMs, as measured from sea level.

<sup>3</sup> The 1% annual chance floodplain, also referred to as the "100-year floodplain," is the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year, and is designated on the FEMA FIRMs and PFIRMs.

<sup>4</sup> The 0.2% annual chance floodplain, also referred to as the "500-year floodplain," is the area that will be inundated by the flood event having a 0.2-percent chance of being equaled or exceeded in any given year, and is designated on FEMA's FIRMs and PFIRMs. The area of the City's 0.2% annual chance floodplain officially includes the area of the 1% annual chance floodplain. However, for the purposes of clarity in this document, the term 0.2% annual chance floodplain will only refer to that portion of the overall floodplain exclusive of the 1% annual chance floodplain.

approximately 270,000 people.<sup>5</sup> In industrial areas, roughly 3,600 private businesses that employ approximately 87,000 people are located in the floodplain.<sup>6</sup> The city's 0.2% annual chance floodplain, shown in **Figure ES-1**, encompasses an additional four percent of the city's land area, which includes approximately 44,600 buildings that are at moderate risk of being flooded today and houses an additional 348,000 residents. Combined, there are a total of 125,500 buildings and 782,800 residents in the city's floodplain (see **Table ES-1**).

No single flood event has made New York City's vulnerability clearer than Hurricane Sandy in 2012. This event created a historic storm surge that flooded neighborhoods well beyond the 1% annual chance floodplain, inundating approximately half of the lots in the 0.2% annual chance floodplain (see **Figures ES-2** and **ES-3**), and illustrating how these areas are at risk today and will continue to be at risk in the future.

## The City's Regulatory Framework in the Floodplain

The need to quickly recover from Hurricane Sandy revealed several regulatory conflicts between the construction standards in Appendix G of the NYC Building Code, which are overseen by the New York City Department of Buildings (DOB) as a requirement of the NFIP, and zoning regulations located within the ZR, which is administered by DCP and enforced by DOB. Within the 1% annual chance floodplain, Appendix G currently requires all habitable spaces of new construction, and existing buildings that were substantially damaged or are undertaking substantial improvements<sup>7</sup>, to be raised above the Design Flood Elevation (DFE).<sup>8</sup> All spaces below the DFE must be either wet-floodproofed, if the building is used solely for residential use, or dry-floodproofed, if the building contains non-residential uses.<sup>9</sup> Spaces that are wet-floodproofed only can be used as crawl space, or for parking, storage and building access, and spaces that are dry-floodproofed can be used for non-residential uses. Additionally, residential buildings are not allowed to provide spaces, such as basements and cellars, below grade and mechanical equipment must be located above the DFE.

These requirements have, at times, posed conflicts with certain zoning regulations, as they change the way that most buildings in New York City are structurally designed and internally configured. In New York City, aside from land use, zoning also establishes limits on the size and shape of buildings, with a range of zoning districts mapped to reflect their varying density and character of waterfront areas. These limits include height and floor area restrictions, which may hinder buildings from elevating their spaces to comply with Appendix G.

Historically, the ZR generally did not take into account the issues caused by coastal flooding. The floodplain was first introduced to the ZR as part of the Lower Density Contextual Zoning (ULURP No. N890552ZRY) text amendments adopted in 1989 when architects and residents of waterfront communities raised concerns about achieving permitted height and floor area in the floodplain. As a result, underlying zoning regulations now allow for buildings in the floodplain to measure building perimeter wall, roof and cellar heights from the BFE rather than from the adjoining grade.

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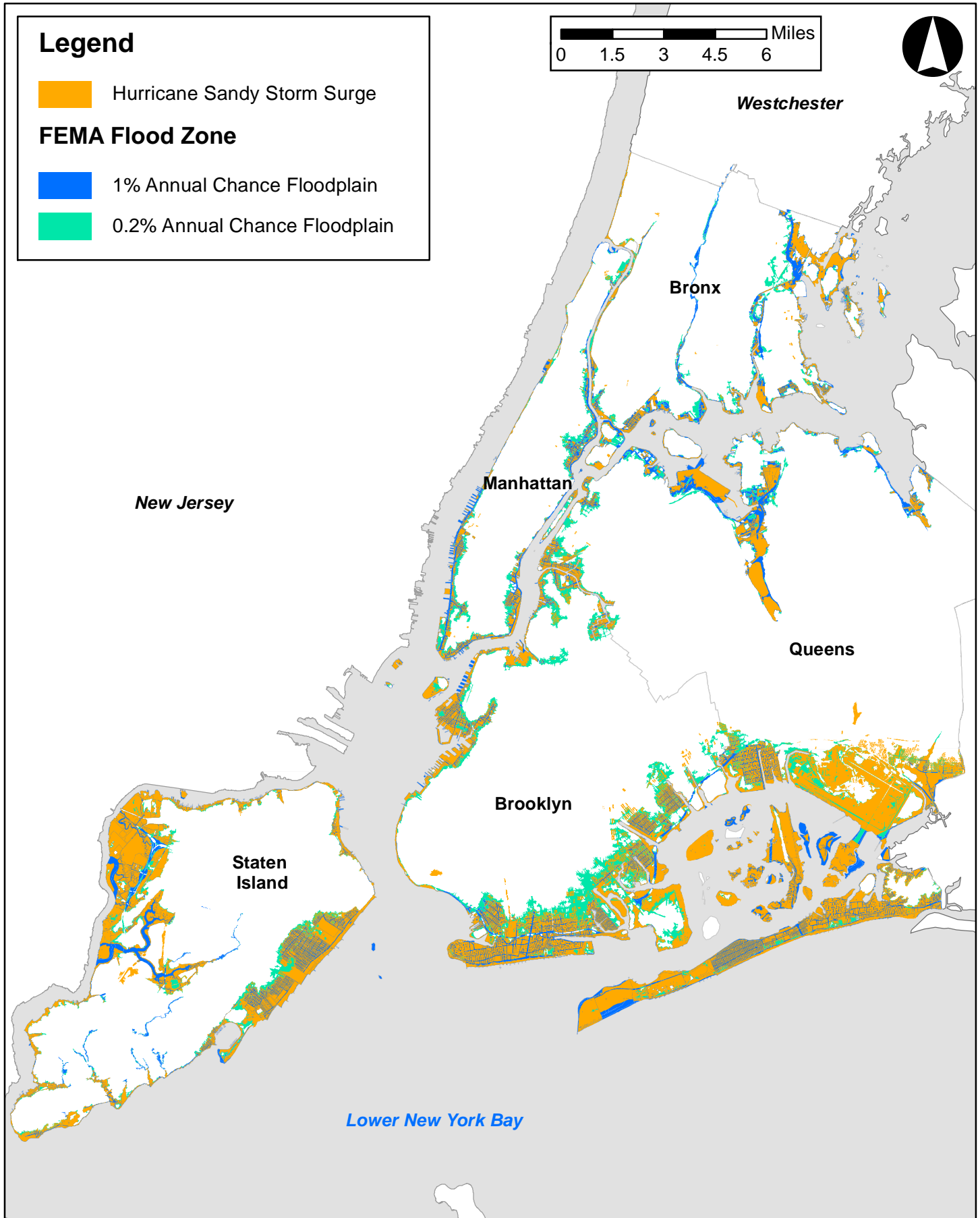
<sup>5</sup> NYC Planning, *Resilient Retail* (2016). New York City, NY. Source: [www.nyc.gov/resilientretail](http://www.nyc.gov/resilientretail)

<sup>6</sup> NYC Planning, *Resilient Industry* (2018). New York City, NY. Source: [www.nyc.gov/resilientindustry](http://www.nyc.gov/resilientindustry)

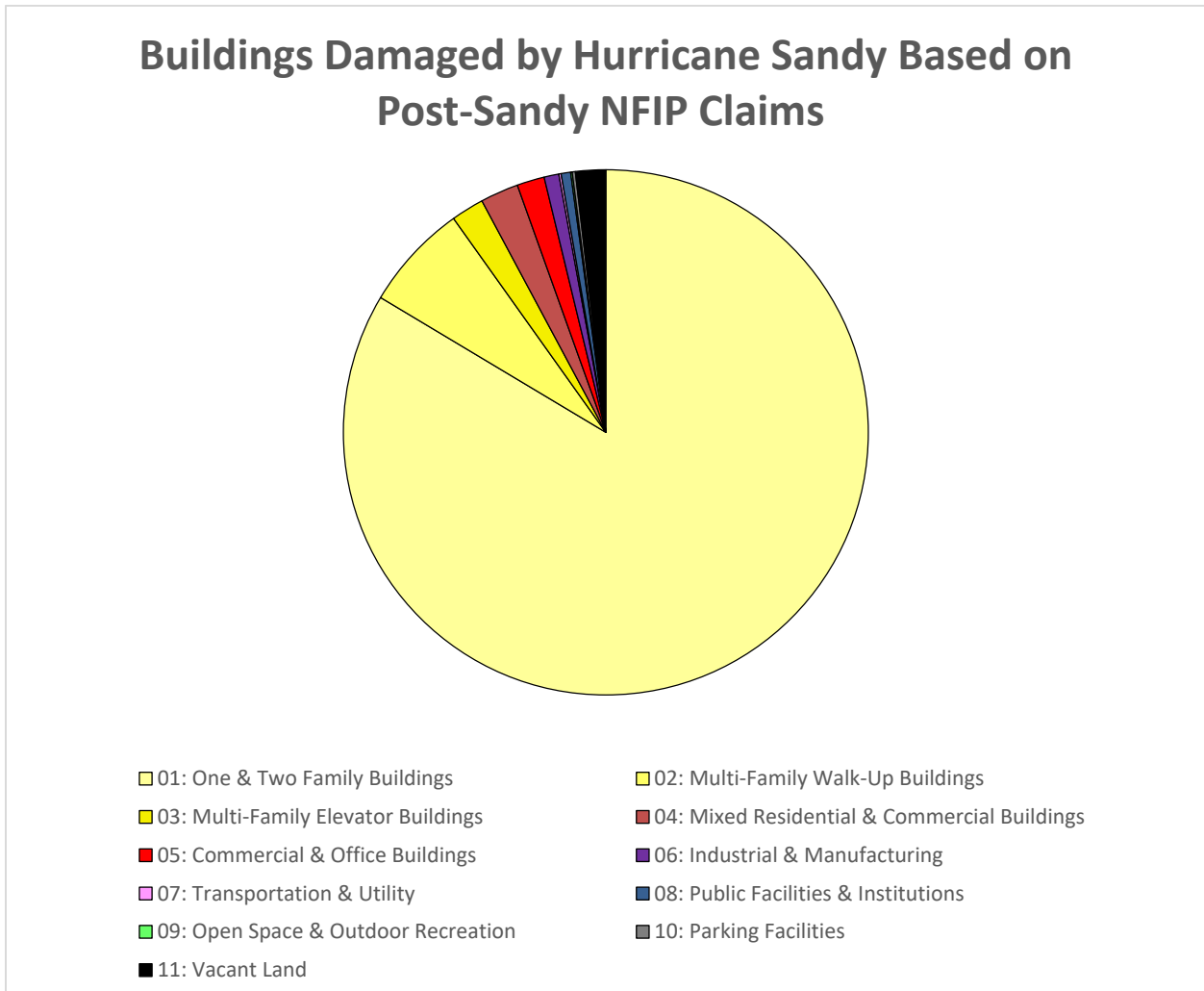
<sup>7</sup> Substantial damage is damage to a building for which the total cost of repair is 50 percent or more of the building's current market value before the disaster occurred, regardless of the cause of damage. Substantial improvement is any repair, reconstruction, rehabilitation, addition, or improvement with a cost equaling or exceeding 50 percent of the current market value of the building.

<sup>8</sup> The DFE is the minimum elevation to which a building in the 1% annual chance floodplain must be elevated or floodproofed, determined by adding freeboard (additional height for safety, either one or two feet depending on the use occupancy type) to the base flood elevation (BFE) as determined by Appendix G.

<sup>9</sup> Wet-floodproofing is a method designed to allow the passage of water within parts of the structure that are located below the flood elevation, while ensuring that the structure resists water loads. Dry-floodproofing is a method designed to seal a building's exterior walls to flood waters while ensuring that the building can resist water loads below the expected level of flooding.



Buildings Damaged by Hurricane Sandy in New York City



Source: NYC DCP

After Hurricane Sandy in October 2012, the Mayor signed Executive Order No. 230, suspending height and other restrictions to the extent necessary to allow buildings to be rebuilt to the Appendix G requirements. The Executive Order was by its nature an interim measure that needed to be codified by a zoning text amendment. As a result, the City had to adopt two zoning text amendments—the 2013 Flood Text (ZR Article VI, Chapter 4) and the 2015 Recovery Text (ZR Article VI, Chapter 4, Appendix A)—on an emergency basis, and for a finite period. These were intended to remove regulatory barriers that would hinder or prevent the reconstruction of storm-damaged properties and to enable new and existing buildings to comply with new, higher flood elevations issued by FEMA, and to new requirements in the New York City Building Code.

In removing regulatory obstacles from the ZR, the 2013 Flood Text allowed buildings within the 1% annual chance floodplain to meet the requirements of Appendix G by, for example, allowing height to be measured from the DFE (rather than from grade). The subsequent 2015 Recovery Text simplified the process to document non-compliances,<sup>10</sup> and established new rules to allow the reconstruction of damaged homes located on narrow and small lots.

Both 2013 and 2015 zoning changes also supported the City’s land use strategy for the floodplain. With such a vast and populous area subject to varied risks of flooding, it is evident that the city cannot simply retreat from the entire shoreline. Therefore, the City’s local land use policies across the 1% and 0.2% annual chance floodplains vary based on the degree of flood risk that exists in different parts of the city. As an example, in 2017, the City established Special Coastal Risk Districts in Broad Channel and Hamilton Beach, Queens to limit future density in these areas due to their exceptional vulnerability to coastal storms and projected daily tidal flooding due to sea level rise. On a citywide level, the City’s land use strategy has aimed to maintain prevailing land uses and the planned density across neighborhoods in the floodplain while encouraging buildings and neighborhoods of all types to become resilient in the long-term.

In addition, the two text amendments were adopted on a temporary, emergency basis and were not subject to environmental review, as determined to be Type II per New York Codes, Rules, and Regulations (NYCRR) Part 617.5 (33): “*adoption of regulations, policies, procedures and local legislative decisions in connection with any action on this list.*” The zoning changes are set to expire in the next few years: the 2013 Flood Text expires within one year of the adoption of new FIRMs, which are expected to be revised by FEMA in the next few years, while applicability of the 2015 Recovery Text expired in July 2020. As described in the Analytic Framework in Section F below, the environmental analysis assumes a future scenario in which both the 2013 Flood Text and the 2015 Recovery Text have expired. However, illustrations of scenarios with the 2013 Flood Text regulations are provided in **Appendix A** to compare what exists today with what the Proposed Action is modifying and improving.

## **COVID-19 Pandemic Recovery**

New York City encountered its first case of COVID-19 on March 1, 2020 and, on March 7, Governor Andrew Cuomo declared a State disaster emergency for the entire state to address the threat the virus posed to the health and welfare of New York residents and visitors. With cases quickly increasing over the next few weeks, the Governor announced a full stay-at-home order for all non-essential workers on March 20 and halted all non-essential construction on March 27. The City’s Uniform Land Use Review Procedure (ULURP) was suspended on March 16.

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<sup>10</sup> A non-complying building is any structure that does not adhere to bulk regulations of the applicable zoning district. A non-conforming use is any land use that is not permitted under applicable zoning regulations.

As of mid-July, over 220,000 cases and 22,000 deaths were reported in the city making it one of the global centers of the pandemic. In addition, the city's economy was greatly impacted by the shutdown, losing nearly one million jobs in the span of only a few weeks.

To help address these issues, Mayor Bill de Blasio issued Emergency Executive Order No. 98 on March 12 which included a declaration of a state of emergency in the city due to the virus. This order was updated repeatedly and soon also addressed legally imposed deadlines for the filing of certain documents or for the completion of other required actions since the measures taken to combat the spread of the virus could prevent individuals, business and other entities from meeting them. These measures were generally intended to provide more time for businesses to reopen and builders to complete construction projects. However, these allowances cannot be extended beyond the timeframe of the Emergency Order.

## **C. DESCRIPTION OF THE PROPOSED PROJECT AREA**

The Proposed Action would be applicable to all lots located wholly or partially within both the current 1% and 0.2% annual chance floodplains (the latter serving as a proxy for the projected 2050<sub>s</sub> 1% annual chance floodplain).<sup>11</sup> This contrasts with the 2013 Flood Text and 2015 Recovery Text, which have a more limited geography as they only apply to buildings located wholly or partly within the 1% annual chance floodplain. However, to help the city prepare for or respond to other disasters, select provisions in the Proposed Action would be applicable throughout the city.

### **1% Annual Chance Floodplain**

As illustrated in **Figure ES-1**, the 1% annual chance floodplain encompasses a significant portion of land coverage in New York City, including approximately 65,600 lots and 80,900 buildings across the city's five boroughs.

### **0.2% Annual Chance Floodplain**

As also shown in **Figure ES-1**, the 0.2% annual chance floodplain encompasses a large portion of land in New York City, including approximately 36,700 lots and 44,600 buildings across the city's five boroughs.

## **D. PURPOSE AND NEED FOR THE PROPOSED ACTION**

The Proposed Action would provide those homeowners, business owners, and practitioners who live and work in the city's floodplain the option to design or otherwise retrofit buildings to: (a) reduce damage from future coastal flood events, (b) be resilient in the long-term by accounting for climate change, and (c) potentially save on long-term flood insurance costs. In addition, it would allow resiliency improvements to be more easily incorporated on waterfront sites at the water's edge and in public spaces, as well as provide zoning regulations to help facilitate the city's long-term recovery from the COVID-19 pandemic and other future disasters. Overall, implementation of the Proposed Action would improve the ability of the city to withstand and recover quickly from future storms or other disaster events.

The Proposed Action builds upon the 2013 Flood Text and the 2015 Recovery Text which were approved in the aftermath of Hurricane Sandy. These temporary zoning rules, adopted on an emergency basis,

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<sup>11</sup> The applicable area would be automatically updated when maps or map data reflecting new flood risks are adopted in the New York City Building Code.

removed many of the zoning barriers hindering the reconstruction and retrofitting of buildings affected by the storm and helped ensure that new construction in these locations would be more resilient. The 2013 Flood Text provisions are set to expire with the adoption of new and final FEMA Flood Insurance Rate Maps, anticipated to occur in the next few years. Applicability of the 2015 Recovery Text expired in July 2020. If these rules are not made permanent, it would limit the ability of owners to protect existing vulnerable buildings from flooding and would disincentivize more resilient construction in the floodplain.

Therefore, the Proposed Action would make permanent the temporary zoning rules of these previous actions, but also improve upon them based on lessons learned since their original implementation through DCP's analysis of resilient construction in the floodplain, coordination with partner City agencies, and community feedback received during public engagement since Hurricane Sandy.

Most critically, the 2013 Flood Text and the 2015 Recovery Text focused on modifying zoning regulations so that buildings could be constructed or modified to meet minimum requirements set forth in Appendix G of the Building Code. However, the city's flood risk will continue to increase with climate change, since sea level rise will increase the potential height of storm surges. For that reason, current building code standards that are tied to today's storm surge projections may not be sufficient to protect buildings from being damaged by future storms. In addition to increasing the potential height of storm surges, sea level rise will also cause the floodplain to expand over time.

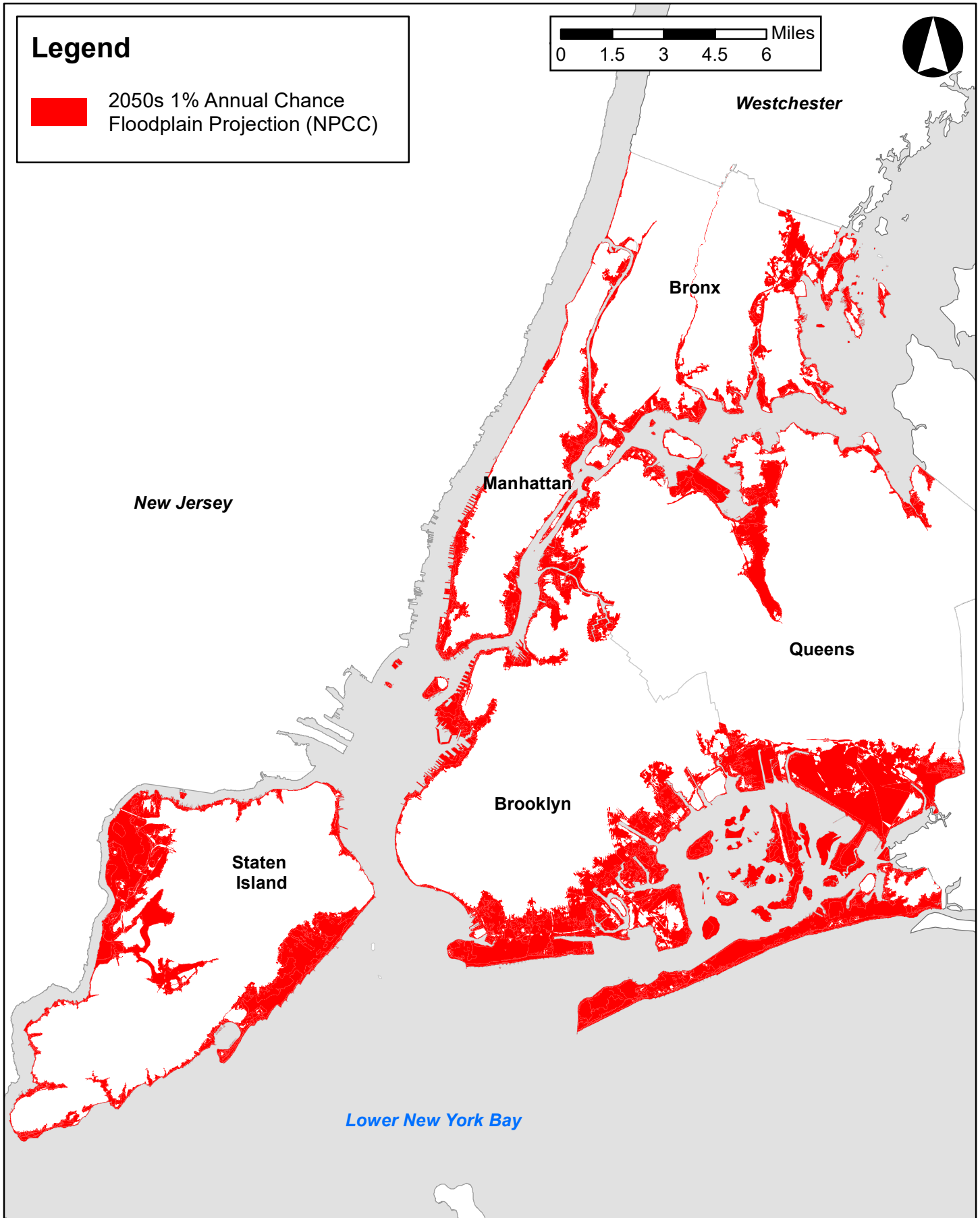
To supplement and inform future flood risk, the City relies on the findings of the New York City Panel on Climate Change (NPCC). The NPCC is a group of scientists and private sector experts that provides climate change projections for the city. NPCC's most recent report, released in early 2019, provides the latest estimates for sea level rise (SLR) in the city. The projections take into account different climate change scenarios and inputs to arrive at high- and low-range SLR projections for the 2020s, 2050s, 2080s, and 2100. The NPCC projects that the city could experience 28 inches of sea level rise at the 90th percentile of its estimation in the 2050s. The City conservatively uses the NPCC's high-range sea level rise projections for the 2050s as its actionable data to inform land use and capital planning considerations, including the Proposed Action. The high-end projections for the 2050s are roughly equivalent to the mid-range projections (the likely rate of sea level rise) in the 2080s and 2100s. Employing this standard helps to ensure a high degree of safety and resiliency for buildings throughout their full life cycles. Moreover, it should be noted that these projections are not a fixed number, but rather a large range, particularly as one looks beyond the 2050s. The City continues to monitor the NPCC's projections as they evolve over time because the science and underlying data are not static and will continue to advance.

Based on data provided by the NPCC, the 1% annual chance floodplain is projected to cover one-quarter of the city's total landmass by the 2050s (see **Figure ES-4**).<sup>12</sup> This area, which closely overlaps today's 0.2% annual chance floodplain (whose full geographic extent includes the area of the 1% annual chance floodplain), currently contains twice the number of residents as today's 1% annual chance floodplain: approximately 780,000 residents and 122,100 buildings. As a result, current zoning rules need to be modified to take into consideration future flood risk, so that long-term adaptation can be achieved across the city's entire floodplain.

Beyond this, there are other issues that need to be addressed to ensure that the zoning regulations applicable in the floodplain allow for all types of buildings in neighborhoods across the city to be resilient in the long term. Each neighborhood in the floodplain faces different challenges to adapt to climate change. For instance, most of the floodplain is characterized by low-density communities that contain a prevalence of single- and two-family homes that are highly vulnerable to flooding but are also easier to retrofit since they often can be physically elevated. There are also medium- and high-density neighborhoods in the floodplain, which contain larger multi-family structures that make it more difficult and more expensive to fully comply

<sup>12</sup> The 1% annual chance floodplain for the 2050s is based on FEMA's PFIRMs and the NPCC's 90th Percentile Projection for Sea Level Rise (30 inches).

NPCC's 2050s 1% Annual Chance Floodplain Projections





with resiliency standards but can be protected over time through incremental resiliency improvements. The floodplain also hosts different types of commercial corridors and industrial areas that need to be protected. These areas play an important role in providing services to residents in the floodplain, and in serving critical functions that support the city's overall population and economy. However, businesses face challenges to incorporate resiliency improvements while keeping a functional operation that largely depends on being at grade. These uses will therefore have to explore incremental resiliency improvements and creative solutions to increase the building's safety over time.

Through its public outreach efforts and analyses, DCP has identified that the current zoning regulations are predominantly focused on low-density residential areas – which were heavily impacted by Hurricane Sandy – and they less effectively address the wider variety of conditions found in the city's floodplain. This makes it less likely that other areas, such as retail corridors, can become resilient over time. In addition, some of the regulations themselves have been found to be not always well calibrated, sometimes hampering the ability to conduct resiliency improvements while at other times leading to buildings out of scale with their surroundings or with unwelcoming blank walls at street level. These inconsistencies sometimes even occur along the same streets. This is an outcome of the necessarily fast-paced nature of the response to the 2012 hurricane, with DCP and other agencies making their best attempt to create zoning regulations to address situations never before seen in the city. With more than seven years of experience under the current floodplain regulations, some of these inconsistencies have become clear and must be addressed so that buildings and, by extension, neighborhoods in the city's floodplain can become resilient.

It will take time for New York City's building stock to adapt to climate change because only a small portion of these buildings currently meet the requirements of Appendix G of the Building Code. Nevertheless, the City believes that resilient construction should become the new normal in the floodplain. By making the current regulations permanent and addressing the various identified issues with them, the Proposed Action would facilitate this goal and make for more resilient neighborhoods, since places with a resilient building stock would be able to bounce back more quickly from a coastal flood event. In conjunction with coastal protection strategies and infrastructure improvements that are being pursued by the City collectively with other state and federal agencies, this will help the City to fully realize the vision of a more resilient New York City.

Finally, the city's experience recovering from Hurricane Sandy and the current COVID-19 pandemic makes clear that zoning should include rules that can help facilitate long-term disaster recovery. While the storm pointed out the need for provisions that make it easier to reconstruct damaged buildings after a disaster like a hurricane, there is also a need for zoning regulations to address the associated economic effects from disasters like the pandemic, even if they do not cause physical damage. All rules should be able to be made applicable quickly after a disaster strikes the city, as with the COVID-19 pandemic, but should last no longer than necessary to facilitate the recovery. These regulations under the "Disaster Recovery Rules" were drawn from the 2015 Recovery Text and the Emergency Executive Orders that have been issued to address the pandemic. Beyond this, the city can be made less susceptible to future disasters by undertaking zoning changes that keep vulnerable populations in nursing homes out of harm's way and by allowing for a more resilient energy grid.

## **Goals of the Proposed Action**

Given the issues currently facing New York City's coastal neighborhoods under the existing zoning framework and the possibility for future disasters beyond the floodplain, DCP has developed the following core goals to assist the city and its residents to be resilient over the long-term.

**Goal 1. Encourage resiliency throughout the current and future floodplains.**

All building owners in areas subject to flood risk should have the option to proactively incorporate resiliency standards into their buildings, even when these standards are not required by FEMA and Appendix G of the New York City Building Code.

**Goal 2. Support long-term resilient design of all building types.**

Zoning rules in the floodplain should facilitate protection from coastal flooding for all buildings, independent of their age, typology or specific location.

**Goal 3. Allow for adaptation over time through incremental retrofits.**

Building owners should be able to incrementally incorporate resiliency improvements into all buildings and waterfront sites, including existing structures that are not able to fully meet Appendix G.

**Goal 4. Facilitate future recovery by reducing regulatory obstacles.**

Zoning rules should assist vulnerable populations and the recovery process after a future storm or other type of disaster, including the ongoing COVID-19 pandemic.

While the Proposed Action includes a range of zoning changes to meet these four goals, it would continue the overarching goal of the 2013 Flood Text to maintain prevailing land uses and the planned density in neighborhoods across the floodplain, while helping buildings and neighborhoods of all types to be resilient in the long-term. The following section gives an overview of the proposed text amendment, categorized by the four goals outlined above.

## **E. DESCRIPTION OF THE PROPOSED ACTION**

Like the 2013 Flood Text and the 2015 Recovery Text, the Proposed Action would generally provide optional zoning rules in the floodplain for buildings to fully incorporate “flood-resistant construction standards,”<sup>13</sup> but also for those who may want to incorporate incremental resiliency improvements to protect their buildings against flooding over time, as described in more detail below. Given the scale and variety of the city’s floodplain, the Proposed Action necessarily includes modifications to many existing zoning regulations. These changes generally allow habitable spaces and other building support features to be better protected and raised out of harm’s way and address the effect these elevated spaces can have on the city’s streetscape. The Proposed Action also includes provisions with applicability beyond the floodplain to help address a wider variety of situations.

**Goal 1. Encourage resiliency throughout the current and future floodplains.**

The Proposed Action would modify zoning regulations to allow building owners throughout the floodplain to proactively incorporate resiliency improvements in their buildings by expanding the applicability of the optional rules.

*Expanding Beyond the Current 1% Annual Chance Floodplain*

The Proposed Action would greatly expand the current availability of optional regulations to allow more building owners to design or retrofit their buildings to meet “flood-resistant construction standards”

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<sup>13</sup> “Flood-resistant construction standards” are the construction standards set forth in Appendix G of the NYC Building Code for “Post-FIRM Construction” (as defined therein) applied up to the flood-resistant construction elevation or higher to aid in protecting buildings in the floodplain from flood damage, governing both buildings that are required to comply with such standards and those that voluntarily comply.

proactively. The existing 2013 Flood Text only applies in the 1% annual chance floodplain. As a result, for buildings in the 0.2% annual chance floodplain, there are no zoning regulations to facilitate or encourage resiliency improvements. While most uses in this area are not required to comply with Appendix G, the current 0.2% annual chance floodplain will become more vulnerable to flooding in the future as sea-level rise projections show flood risk increasing over time. To address this, the Proposed Action would apply to both the 1% annual chance floodplain and the 0.2% annual chance floodplain.<sup>14</sup> The City believes that the 0.2% annual chance floodplain geography is a valid proxy for the projected 1% annual chance floodplain in the 2050s (**Figure ES-4**) and that this geographic expansion is a sensible precautionary approach that would allow the city to proactively adapt to future flood risk. Eligibility within these two geographies would be determined at the time of a building permit application.

### *Expanding to Lots*

The Proposed Action would simplify the design process and encourage more building owners to proactively meet “flood-resistant construction standards” by determining applicability based on their zoning lot. The 2013 Flood Text provisions are currently applicable only to buildings located wholly or partially within the 1% annual chance floodplain. For example, in a residential campus with multiple buildings where only some of which are in the 1% annual chance floodplain, the 2013 Flood Text zoning allowances and flood protection standards cannot be applied to all buildings, making the design process more complex—and ultimately costly—since each building would have to follow different zoning rules. Along streets, this standard produces inconsistent results where only some specific buildings touch the floodplain edge. By determining eligibility based on whether the zoning lot is both wholly or partially within the floodplain, the Proposed Action would produce a more consistent outcome and be more in line with applicability requirements in the rest of the ZR.

## **Goal 2. Support long-term resilient design for all building types.**

The Proposed Action would include optional zoning regulations that better enable building owners to make their buildings more resilient by physically elevating habitable spaces and other building support features above expected flood elevations. These would generally modify existing regulations for building envelopes and ground floors, as well as address more unique situations. When these allowances are used, buildings would have to comply with “flood-resistant construction standards” and a new set of streetscape requirements meant to improve the relationship between the raised building and its surroundings.

### Accommodating Current and Future Flood Risk in the Building Envelope

The Proposed Action includes optional modifications of various building envelope regulations to better allow habitable spaces to be raised above flood levels.

#### *Flood-Resistant Construction Elevation*

The Proposed Action would continue to provide additional building height where building owners are required or are opting to meet Appendix G floodproofing standards.

All zoning districts have height and setback regulations that govern the size and shape of buildings. Their heights are measured from different starting points depending on the type of building and the zoning district. For example, the maximum height of a single-family residence in a lower-density contextual Residence

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<sup>14</sup> In the proposed text amendment, the 1% annual chance floodplain is defined as the “high-risk flood zone” and the 0.2% annual chance floodplain is defined as the “moderate-risk flood zone.”

District (typically 35 feet) is measured from the “base plane,” which is generally located between the elevation of the curb and the average natural grade along the building facade.

Since 1989, in the 1% annual chance floodplain, required heights in the ZR can be measured from the BFE to allow building owners to construct habitable space above the elevations which FEMA projects would be inundated by flooding without losing buildable space. However, it has been identified that pre-1989 buildings could utilize this extra height for enlargements without providing any floodproofing, as long as the improvement did not trigger compliance with Appendix G.

In the aftermath of Hurricane Sandy, DOB changed the Building Code to require that buildings in the 1% annual chance floodplain locate all living spaces at or above the DFE which, depending on building type, requires an extra one or two feet above the BFE as an extra measure of safety. The 2013 Flood Text embedded this rule into the ZR by allowing heights in all zoning districts to be measured from the “flood-resistant construction elevation” (FRCE), which is generally synonymous with the DFE in the current rules. The underlying building envelope associated with building types and zoning districts did not change; the only change was to the height from where the envelope was measured. With this modification, building owners can meet the requirements of Appendix G without sacrificing living space.

The Proposed Action would continue to allow building envelopes across all zoning districts to be measured from the FRCE. In addition, such term would be revised to add certain clarifications. The FRCE will be required to not be lower than two feet above lowest adjacent grade to ensure a minimum level of floodproofing. In the 0.2% floodplain, where compliance with Appendix G is voluntary and no DFEs exist, this two foot minimum level of protection would also apply. Coupled with required compliance with the “flood-resistant construction standards,” this would mean that no living space would be located below the FRCE, and below grade basements and cellars would not be built in residences. In addition, essential facilities (such as hospitals) would be able to measure height from the 500-year flood elevation, which is required by Appendix G. Finally, the allowance to measure height from the BFE would be removed to ensure a consistent framework and any additional height would be tied to flood-resistant improvements.

### *Reference Plane*

The Proposed Action would include a consistent framework for additional building height to encourage building owners to address long-term climate change, lower insurance costs and provide usable spaces at grade.

Acknowledging that there may be situations where the FRCE height could result in spaces with awkward heights that could deleteriously impact the streetscape, the 2013 Flood Text allows the reference point at which heights are measured to be adjusted upwards to create more practical and viable ground floor spaces. This alternate reference plane is available in areas where the BFE equals or exceeds four feet, and the plane’s maximum height (ranging from 9 to 12 feet) is dependent on the zoning district and building use.

While the notion of an alternative reference plane has proven sensible, there are issues with the specific ways it is applied. First, varying the reference point based on the building type and zoning district creates a highly complex framework that benefits some buildings more than others. This leads to inconsistent outcomes, sometimes even along the same street due to minor changes in the topography. Additionally, the BFE height necessary to use the reference plane limits its applicability since most of the buildings in the 1% annual chance floodplain are subject to a lower BFE. This means that most building owners in the floodplain can only measure building height from the FRCE, whose lower height only encourages compliance with the minimum construction standards set forth in Appendix G, making it difficult for building owners to over-elevate their buildings without sacrificing living space. This means that building owners cannot easily incorporate sea level projections into their building design (the NPCC projects that

New York City would be subject to approximately 30 inches of sea level rise by the 2050s)<sup>15</sup> or maximize their flood insurance reduction (which is generally achieved when the first occupiable floor is placed four feet above the BFE).

To create a consistent framework for height measurement that addresses these issues, the Proposed Action would allow building heights to be measured from a new “reference plane” that is up to 10 feet above the base plane or curb level (as applicable within the underlying zoning district) in the 1% annual chance floodplain and up to five feet in the 0.2% annual chance floodplain. To ensure that the additional height is tied to actual improvement in the building’s resiliency, the building would have to comply with “flood-resistant construction standards” and its “first story above the flood elevation” (FSAFE) would have to be located at or above the chosen “reference plane” height. The FSAFE would be defined as the level of the finished floor of the first story located at or above the level to which the building complies with “flood-resistant construction standards.” In areas where the FRCE is higher than 10 feet, the higher FRCE could continue to be used.

#### *Other Envelope Modifications*

To help offset the effects of the proposed additional height that would allow construction at or above the FRCE, the Proposed Action would include several allowances intended to break down the building massing in the upper portions of buildings.

For lower-density residential areas, the Proposed Action would continue to encourage sloped roof design in areas where that type of roof is the prevailing context. However, there would be a minor modification to the existing “attic allowance,” which allows a 20 percent floor area bonus in exchange for a sloped roof in R2X, R3, R4, R4A and R4-1 Districts. The current regulations require that the additional floor area be located directly under the roof, which often results in taller roofs and building heights to accommodate a usable attic. If these rules were applied to the floodplain, the height of these buildings could be exacerbated, as building heights would be measured from the FRCE or the “reference plane.” To address this, the Proposed Action would instead allow the additional floor area to be located in any portion of the building which would encourage a lower roof slope and overall building height. In Lower Density Growth Management Areas (LDGMA) the rule would not change, since the ability to locate the additional floor area is already permitted (albeit with a steeper roof pitch). However, “cottage envelope” buildings, described below, would be able to use the lower pitch in LDGMAs since it is more reminiscent of bungalow homes.

In medium- and high-density contexts, the Proposed Action would make two modifications to promote lower building scale. First, while maximum base heights and overall heights in Quality Housing buildings may be measured from the FRCE or the “reference plane,” the Proposed Action would allow minimum base heights to continue to be measured from the base plane. This would allow setbacks in buildings to be made closer to the ground and keep the base heights lower. The provision was adopted as part of the 2013 Flood Text and would be maintained in the Proposed Action. Additionally, the Proposed Action would modify the underlying dormer allowances to provide an alternative that could break up the bulk in the upper portion of the building. The underlying dormer allowance permits 60 percent of the width of the building as a permitted obstruction in the building setback above the maximum base height, but this must diminish in width as the building rises. The Proposed Action would allow a dormer that extends up to 40 percent of the building width without any diminishing.

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<sup>15</sup> [“Climate Resiliency Design Guidelines – Version 3.0.”](#) New York City Mayor’s Office of Recovery and Resiliency (March 2019). Appendix 2.

## Accommodating “Flood-Resistant Construction Standards” on Ground Floors

The Proposed Action includes a series of regulations intended to incentivize the floodproofing of ground floors, encourage active uses to be kept at the street level to promote more resilient neighborhoods, and encourage internal building access. These regulations build on the standards included in the 2013 Flood Text but aim to provide more consistent outcomes throughout the floodplain. These are described below under five categories: wet-floodproofed spaces, dry-floodproofed spaces, cellars, street wall location, and ground floor use requirements.

### *Wet-Floodproofed Spaces*

The Proposed Action would provide a consistent floor area exemption for wet-floodproofed ground floor spaces for all buildings to promote long-term resiliency improvements.

“Flood-resistant construction standards” require the ground floor of residential buildings to be wet-floodproofed, thereby limiting the use of this ground floor space solely to parking, storage and/or building access. While accessory parking is generally not counted toward zoning floor area calculations, spaces used for storage or building access typically count and therefore can act as a severe disincentive to floodproofing. The 2013 Flood Text addressed this by allowing all existing structures to fully exempt a wet-floodproofed ground floor. For new buildings, the exemptions are limited to entryway areas used for enclosed ramps and stairs to encourage access to be kept within the building.

The Proposed Action would provide the full ground floor exemption for wet-floodproofed spaces to new and existing buildings. This would provide more consistent results and incentivize internal access at grade, while encouraging living spaces to be elevated above the FRCE in new and existing buildings, including those that cannot be physically elevated.

### *Dry-Floodproofed Spaces*

To promote a safe and lively pedestrian environment, the Proposed Action would encourage active dry-floodproofed ground floor spaces along the City’s retail corridors.

“Flood-resistant construction standards” allow non-residential ground floor uses to be dry-floodproofed. While this method allows active uses to be kept close to grade, which is beneficial in maintaining retail continuity along the city’s commercial streets, this method has proven to be quite costly. The 2013 Flood Text attempted to incentivize dry-floodproofing by allowing up to 10,000 square feet of non-residential uses in existing buildings to be exempted from floor area calculations if they are dry-floodproofed. However, this provision has seen limited use to date due to both the high cost of dry-floodproofing as well as existing restrictions on the use of relocated space that make the resiliency investment less viable. But if the 2013 provision was utilized, the large size of the floor area exemption could lead to out-of-scale development on small lots. For new buildings, the exemptions are limited to entryway areas used for enclosed ramps and stairs, to encourage access to be located within the building.

The Proposed Action would modify these incentives to better encourage dry-floodproofed spaces in appropriate locations. The provision would be available for both new and existing buildings facing “primary street frontages” (as defined in the ZR) in Commercial Districts and M1 Districts paired with Residence Districts. The floor area exemption would only be available for the first 30 horizontal feet of the non-residential floor space as measured from the street wall of the building, since this is the most critical space to maintaining retail continuity. It does not preclude uses from going deeper than 30 feet. The exemption would come with design requirements to ensure quality ground floors. For new developments, the level of the first story located above the flood elevation has to be placed 13 feet or more above the level of the adjoining sidewalk. For new and existing buildings, These would require the ground floor level would be

required to be within two feet of the adjacent sidewalk and follow transparency requirements. In addition, the Proposed Action would maintain the existing floor area exemption for access, to encourage ramps and stairs be located within the building.

### *Cellars*

The Proposed Action would ensure that floor area exemptions are given only when buildings are floodproofed and remove incentives to build low-quality ground-floors.

The 2013 Flood Text included some limited modifications to the definition of “cellar” to help ensure that buildings with moderate and high FRCE levels (especially those that equal or exceed four and a half feet above grade) can achieve their fully permitted floor area. However, this provision has unexpectedly resulted in low-quality spaces, since it encourages low ground floor heights to obtain the floor area exemption, and the outcome can be out of scale with the neighborhood context, since an entire floor can be discounted from floor area calculations even when the space is used for active uses. In addition, where allowed, this provision has also encouraged the construction of sunken retail ground floors. While these floors would have to be dry-floodproofed, they could become vulnerable as sea levels rise, making it harder to further retrofit these buildings in the future.

The Proposed Action would limit these exemptions by not allowing the FRCE to be used as the measurement threshold for cellars and basements. In addition, as noted in the “flood resistant construction elevation” section above, the Proposed Action would modify the “base plane” definition to remove references to the BFE. Taken together, this would restrict the owners of buildings subject to a high BFE from taking significant floor area exemptions for these low-quality below-grade spaces. With this proposed change, floor area exemptions would only be tied to the floodproofing of the building. However, existing buildings would have the option to determine floor area calculations using either the definition prior to or after the change to ensure that significant new non-compliances are not caused for these sites.

### *Street Wall Location*

The Proposed Action would include limited street wall modifications when access or flood protection measures are provided outside of the building.

Many zoning districts have street wall location provisions that ensure new development will be constructed close to the property line to reflect the character of their area. While these regulations promote best practices in streetscape design, they can conflict with the ability to provide sufficient outdoor access from the sidewalk into buildings in the floodplain since stairs and ramps can occupy considerable space and may not fit in the permitted area.

The 2013 Flood Text provided street wall modifications in the highest-density Commercial Districts to allow stairs and ramps in recesses that occupy up to 30 percent of the street wall width. However, this allowance is not applicable to buildings in lower-density districts and does not fully accommodate stairs and ramps serving narrow buildings, or buildings with high flood elevations, because of the limited recess percentage allowance. The 2013 Flood Text also did not provide any street wall location modifications for installing flood protection measures, which has been identified by practitioners as hampering flood resiliency. While the Proposed Action is particularly intended to facilitate interior entrances to improve the streetscape around flood-resilient buildings there are situations where exterior access may be necessary and existing street wall location provisions may make this impossible. Provisions governing these types of locations may also hamper the implementation of flood protection measures such as flood gates.

The Proposed Action would instead allow sufficient space to accommodate exterior stairs and ramps, as well as flood panels, in all zoning districts that require street walls be located on or near the street line. To

incorporate these measures, street walls could be located up to eight feet from the property line and, to allow ramps that run perpendicular to the street, up to 50 percent of the street wall could be located beyond eight feet. In acknowledging the access challenges for narrow lots (less than 50 feet), the Proposed Action would allow the remaining 50 percent of the street wall to be recessed at the ground floor level. The possible visual impact of the access measures would be limited by requiring planting if the access extended along 70 percent or more of the street wall.

### *Ground Floor Level Requirements*

The Proposed Action would accommodate resilient buildings and raised first floors by addressing conflicts with existing ground floor level zoning requirements.

To promote walkability and enliven retail corridors, some zoning districts have ground floor use regulations that typically require non-residential uses (i.e., commercial and community facility) on the ground floor level in close proximity to the sidewalk level (often between two and five feet), and that the building facade adjoining these uses would be transparent to promote the feel of shopping districts with large show windows. In the floodplain, that ground floors and transparency be located close to the sidewalk level would often preclude floodproofing strategies, which could become extremely onerous in areas with a high FRCE. In addition, Commercial and Manufacturing Districts include accessory signage regulations to promote businesses on the lot that include size and height limitations measured from grade which may lead to impractical outcomes in the floodplain given the need to sometimes elevate these uses.

To address issues in applying these rules at the sidewalk level in the floodplain, the 2013 Flood Text allowed these ground floor measures to be elevated to the FRCE so that buildings could comply with Appendix G. For example, if the FRCE of the building was five feet above grade, the measurement elevation for required non-residential uses could be elevated to the FRCE along with associated transparency rules. Accessory signage could also be measured from this elevation. With these changes, owners can consider a wide variety of resilient design strategies including ground-floor elevation, dry-floodproofing, or the creation of wet-floodproofed “show pits.”

The Proposed Action would continue to allow this, with small additions. In all areas, any blank walls created along retail corridors would now be subject to streetscape rules and would need to be addressed by adding elements such as planting, street furniture, or artwork. Additionally, in V zones and Coastal A zones identified by FEMA, ground floor use regulations would be made optional because dry-floodproofing is prohibited and FRCEs are often extremely high above the sidewalk.

### Improving Streetscape in the Floodplain

The Proposed Action would require buildings using any of the regulations provided to comply with “flood-resistant construction standards” to also comply with streetscape requirements meant to help ensure flood-resistant buildings contribute to their surroundings.

Leading up to the 2013 Flood Text, there were concerns that elevating buildings and restricting the use of ground floor space would have deleterious effects on the neighborhood streetscape. To address this, the 2013 Flood Text included ground level design requirements for those buildings that utilized its zoning regulations. These requirements are dependent on the height of the FRCE, the building’s use and the applicable zoning district. They require that a minimum number of elements be incorporated into the building’s design from a small menu of options. For instance, single- and two-family homeowners that elevate their first occupiable floor five feet above grade must incorporate one of four design treatments, including front yard plantings or a front porch.



While this system laudably attempts to provide design flexibility while ensuring an appropriate level of streetscape consideration, its workability has proven challenging in practice. This has mainly been due to the requirements and thresholds being overly focused on residential buildings, particularly in low-density areas. For example, buildings in Commercial Districts are rarely required to meet any streetscape requirements because their applicable flood elevation threshold is so high, while many buildings in Residence Districts are required to comply because the thresholds there are lower. In addition, the actual design options in the menu are rather limited, particularly for buildings other than single- and two-family residences. For example, while these buildings have four design options to choose from, multi-family buildings typically have only one. In addition, practitioners have identified that some of the options are inadvertently restricted by unrelated zoning regulations, further limiting the number of available design features.

The Proposed Action would continue to require design features to address concerns about building elevation and blank walls but would address the issues raised with the current rules. Specifically, this would create a more consistent framework of requirements, with more design options, to better address the wide variety of building conditions found in the floodplain.

The framework would include a points system, like the 2013 Flood Text. Points would now be available in two broad categories: Building Access and Ground Floor Level. Building Access would be focused on how users reach the building's elevated first story, while Ground Floor Level would be focused on the design of the ground floor itself. Generally, for buildings with a "first story above the flood elevation" (FSAFE) that is less than five feet above grade, one point would be required and may be fulfilled within either category. Where the building's FSAFE is five feet or higher, the building would have to meet a total of three points, with at least one point coming from each of the two categories. These requirements would be applicable in all zoning districts other than M2 and M3 districts. Additionally, in M1 Districts, they would not apply to heavy industrial uses. A much-expanded menu of design options would be available for each category to better address different building types and scales found in the floodplain. For example, the Building Access category would include nine options such as front porches, stair turns, entrances close-to-grade, and multiple entrances along a facade. The Ground Floor Level category would include 14 options, including planting and raised yards (included in the 2013 Flood Text), as well as wall treatments such as decorative latticework, street furniture, and ground floor level transparency. This expanded menu would give designers the toolkit to better reflect conditions found in the floodplain, such as locations along commercial corridors or in higher-density residential neighborhoods.

In addition, the Proposed Action would ensure that these design options can be more easily utilized. It would classify steps and covered porches as permitted obstructions in front yards and modify the maximum height of retaining walls to three feet to address those practical construction constraints caused by the previous maximum height of two and a half feet. In low-density Residence Districts, the Proposed Action would also exempt buildings on narrow lots from existing front yard planting requirements that inadvertently limit the use of the other available design options. Finally, for all buildings subject to these provisions, all group parking facilities provided on the ground floor level would be required to be either wrapped by usable building space, or screened by treatments such as latticework, vertical plantings, or artwork.

#### Accommodating Current and Future Flood Elevations in Special Conditions

The Proposed Action includes more tailored zoning regulations to address special situations found in the city's floodplain, including small or narrow lots, as well as for existing buildings that do not meet current zoning requirements. While these conditions exist throughout the floodplain, they are often concentrated in certain neighborhoods, such as the bungalow communities often found along the water's edge.

### *Substandard Lots (Cottage Envelope)*

The Proposed Action would expand the availability of the popular cottage envelope option, first created in the 2015 Recovery Text, to small lots throughout the floodplain. This would allow for the construction of resilient buildings that better match their surroundings and accommodate better layouts.

Following the 2013 Flood Text, many neighborhoods with a prevalence of small, high-lot coverage bungalow homes on substandard zoning lots had concerns about the taller heights of recently constructed flood-resistant buildings. This issue was partially a result of zoning regulations that were designed with larger lots in mind. For instance, when traditional yard regulations were applied on narrow and/or shallow lots, the resulting building footprint was extremely small and forced the permitted floor area into a taller building than would have otherwise been expected. To make matters worse, the interiors of these narrow homes were also undesirable and inefficient, so both neighbors and the homeowners themselves were often dissatisfied with the outcome.

To better reflect the scale of surrounding buildings,<sup>16</sup> the 2015 Recovery Text provided an alternative cottage envelope option for single- and two-family detached residences reconstructed in the special Neighborhood Recovery Areas. This envelope came with decreased yard requirements and increased permitted lot coverages on substandard lots, in exchange for a shorter overall building height. The resulting building form mimics the wider and deeper bungalow homes and has provided homeowners the opportunity to create a more practical design and interior layout. While this provision has been well received, it was limited to reconstructions in the specific recovery areas.

The Proposed Action would expand the 2015 Recovery Text provisions by allowing all new and existing single- and two-family detached residences in R1 through R5 Districts in the floodplain to use the cottage envelope option when the building is designed to “flood-resistant construction standards.” Specifically, the maximum permitted building height would be reduced to 25 feet, as measured from the “reference plane,” instead of the typical maximum height of 35 feet. In exchange for this reduction, the applicable yard and lot coverage requirements would be modified: the minimum front yard would be reduced to the depth of neighboring homes, while minimum side and rear yards would be reduced at a rate proportional to the narrowness and shallowness of the lot (up to a minimum of three and 10 feet respectively). In addition, any applicable lot coverage and open space requirements would not apply because the modified yard regulations effectively control the building’s footprint. Corner lots would be able to consider one of their front yards a (narrower) side yard to allow for a more contextual corner building.

### *Parking on Narrow Lots*

The Proposed Action would continue to encourage single- and two-family residences on narrow lots to have parking be located below the building.

Several low-density Residence Districts restrict the location of parking spaces and curb cuts on a property. For instance, in many contextual districts, parking is only allowed within the side lot ribbon on lots less than 35 feet wide, and curb cuts must be at least 16 feet from other curb cuts on the same or an adjoining zoning lot. While the combination of these regulations works well to preserve the streetscape in many neighborhoods, they may be particularly difficult to comply with in the floodplain due to the prevalence of narrow lots found there and the inability to use ground floors for habitable spaces.

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<sup>16</sup> For more information on the cottage envelope, see report outlining the City’s proposal, [Zoning for Coastal Flood Resiliency: Planning for Resilient Neighborhoods](#), issued by the NYC Department of City Planning. Page 20.

To address these issues, the 2013 Flood Text included modified curb cut spacing and parking location requirements, particularly for narrow lots. These have allowed narrow residences to be elevated and parking to be located below the building provided that at least two parking spaces are located there. The Proposed Action would maintain these allowances, with small modifications to better align the number of parking spaces that may locate under an elevated building to what is required by the zoning district (which may be less than two spaces) and to only allow the curb cut spacing for narrow lots. Specifically, in providing parking spaces beneath the building single and two-family residences in R1 through R5 districts (except R4B and R5B districts) would be able to disregard underlying parking location and curb cut location rules to allow parking spaces be located under the building. On existing zoning lots with widths of less than 35 feet, the curb cut spacing regulations would become optional if four feet of curb space is provided between the new and existing curb cuts. In either case, the site would have to comply with the underlying front yard planting requirements.

### *Non-Complying and Non-Conforming Buildings*

The Proposed Action would promote resiliency for the large number of existing buildings and land uses that do not adhere to the zoning rules that are currently applicable.

These conditions exist because the buildings or uses were constructed before zoning existed or because they were legally built under the provisions in effect at the time and the regulations have since changed. These non-complying buildings or non-conforming uses can stay in place but there are limits on their reconstruction, enlargement or alteration. Most importantly, if these buildings or uses are demolished or damaged, such that more than a specified amount of floor area is removed — (75 percent for most non-compliances, 50 percent for most non-conformances) — they cannot be put back, although single- and two-family residences located in districts that permit them can be fully demolished and replaced. This longstanding policy was intended to ensure that properties comport with the applicable zoning regulations over time.

However, these restrictions became immediately problematic in the aftermath of Hurricane Sandy. The drafters of the ZR in 1961 did not anticipate the significant destruction of non-conforming uses or non-complying buildings caused by the storm, which meant that many uses and buildings could not be rebuilt since they were damaged beyond the applicable thresholds. Nor did the drafters anticipate that these buildings would need to be elevated to become more resilient, therefore potentially creating, or increasing, non-compliance with several bulk regulations.

To ensure that building owners could rebuild and get their properties out of harm's way, the 2013 Flood Text allowed non-conforming uses and non-complying buildings damaged in Hurricane Sandy beyond the applicable thresholds to be reconstructed while still retaining their previous non-conformances or non-compliances. It also encouraged buildings to be elevated or reconstructed up to the FRCE by permitting new and increasing existing non-compliances. Subsequently, the 2015 Recovery Text created two additional allowances to address situations that building owners encountered when rebuilding their homes. First, it permitted non-conforming two-family residences in single-family Residence Districts and single- and two-family residences in Manufacturing Districts to rebuild or vertically enlarge if they were in Neighborhood Recovery Areas, neither of which had been permitted under the 2013 Flood Text. Additionally, it allowed all habitable space in existing single- and two-family residences, including space in basements, to be elevated above the FRCE and accommodated all associated non-compliances.

These special rules have facilitated reconstruction of properties damaged by Hurricane Sandy, but building owners and practitioners have identified issues that deterred some owners from making their buildings more resilient. For example, the non-compliance allowances only permitted buildings to be elevated to the FRCE, which limited the ability to over-elevate to lower insurance premiums or plan for projected sea level rise. Additionally, buildings being elevated have to keep within their existing footprint to maintain existing yard

and open space non-compliances, which has proven to be challenging for those on small or awkwardly configured lots. Finally, many of the provisions were only applicable in the Neighborhood Recovery Areas for a limited time period, even though similar issues are found throughout the floodplain.

In response, the Proposed Action would allow nearly all non-conforming uses and non-complying buildings to be elevated, retrofitted, or reconstructed to meet “flood-resistant construction standards” and measure height from the “reference plane” while retaining existing non-conformances and non-compliances. This allowance would come with the condition that less than 75 percent of the floor area be damaged or demolished (single- and two-family residences in districts that permit them would maintain their higher threshold). Relief beyond this threshold would be available for non-conforming uses and non-complying buildings damaged in any future disaster, as described in the “Disaster Recovery Rules” section of Goal 4 below.

In addition, non-compliances could be created or increased as long as the change to the building does not exceed specified parameters. For example, it would be possible to retain and relocate non-complying floor area (often located in basements) above the “reference plane,” provided that the floor area does exceed the maximum allowed in the applicable zoning district by 20 percent. Similarly, it would be possible to increase the height of a building with non-complying height (as measured from the lowest floor to the highest point of the roof), provided that the elevated building does not exceed the maximum height allowed by the applicable zoning district by 10 percent or 10 feet, whichever is less, as measured from the “reference plane.” Non-compliances could also be created or increased for open areas (yards, courts, and open spaces, including minimum distance between buildings) to accommodate resiliency measures on constrained sites. For instance, a building’s previous footprint could be shifted or altered provided that the building’s lot coverage is not increased and that any new encroachment into required yards does not get too close to surrounding lot lines (five feet from the rear lot line and three feet from the front and side lot lines).

Building on the provisions of the 2015 Recovery Text, the Proposed Action would also allow non-conforming residential buildings in heavy Commercial (C8) Districts and in all Manufacturing Districts throughout the floodplain to be elevated, retrofitted, or reconstructed to meet “flood-resistant construction standards” and measure height from the “reference plane” as long as the buildings are located within predominantly residential areas in these districts. In addition, the residential floor area in these buildings could not be increased and the maximum height for single- and two-family residences would be 35 feet (multi-family buildings, generally rare in these areas, would be able to use the applicable zoning district height).

#### Providing Discretionary Actions to Address Special Situations

The Proposed Action would modify the existing special permit that can be granted by the New York City Board of Standards and Appeals (BSA) to facilitate resiliency improvements in unique conditions and also create a new BSA special permit to allow alternative uses on ground floors in Residence Districts.

##### *BSA Resiliency Special Permit*

The Proposed Action would expand upon the existing BSA special permit to allow it to better fulfill its original mission of promoting compliance with Appendix G. The Proposed Action would also move the text to ZR Section 73-71.

There are often building or site conditions that cannot be fully addressed by modifications to zoning regulations and therefore require review on a case-by-case basis. The 2013 Flood Text recognized this by including a resiliency special permit (ZR Section 64-81, “Special Permit for Modification of Certain Zoning Resolutions”) whereby the BSA could modify zoning regulations (predominantly related to the building envelope) if it found that the existing rules created practical difficulty in complying with Appendix G.

While this special permit has proven necessary in many situations, some of the limits placed on the possible modifications available have made it difficult to undertake resiliency improvements. For example, maximum height regulations could not be increased by more than 10 percent or 10 feet (whichever is lower), which proved inconsequential in many low-density zoning districts given their low maximum height. Additionally, regulations for use, parking or floor area were not available for modification even though these were found to be necessary in many situations, particularly through the City's *Build It Back* program.

The modifications in the Proposed Action would change the maximum height limitations to 10 percent or 10 feet (whichever is higher) to help accommodate different retrofitting needs, which often require a building's ground floor to be evacuated and the floor space relocated to the top of the structure. While continuing to allow yard and permitted obstruction modifications, a wider range of zoning regulations could also be modified through the special permit. For example, floor area regulations could be modified to encourage below-grade spaces (typically exempted from floor area calculations) to be raised above the FRCE (where they would not be exempted). This allowance would be limited to a maximum increase of 20 percent above what is permitted in the zoning district or 10,000 square feet, whichever is less. In addition, some parking and use regulations could also be requested. For all these modifications, the BSA would have to find that there would be practical difficulty in meeting "flood-resistant construction standards" absent the modifications. The special permit would also be moved to ZR Section 73-71.

#### *BSA Ground Floor Use Special Permit*

The Proposed Action would create a new discretionary action to permit ground floor offices in Residence Districts, where appropriate, to encourage dry-floodproofing and benefit the streetscape in these areas.

While the Proposed Action includes strategies to encourage buildings to become more resilient, public input has noted the limited options available for residential buildings, since Appendix G requires their ground floors to be wet-floodproofed and therefore limited solely to parking, storage or access. This is a particular issue in Residence Districts, where the only permitted option for dry-floodproofed ground floors are community facility uses.

The Proposed Action would therefore create a separate BSA special permit for buildings located in Residence Districts in the floodplain. This special permit would allow office uses (Use Group 6B) on the ground floor if the space is dry-floodproofed and meets certain conditions focused on ensuring that the use fits into its residential context. Parking and signage regulations typically applicable to doctor's office would apply to the use. The new special permit would be found in ZR Section 73-72, "Special Permit for Ground-Floor Uses in Residence Districts."

### **Goal 3. Allow for adaptation over time through incremental retrofits.**

While the proposal is primarily focused on encouraging all buildings in the floodplain to fully meet "flood-resistant construction standards," there are situations where specific conditions, such as regulatory obstacles or cost constraints, may prevent a building from reaching that level of resiliency. The Proposed Action includes optional modifications that would encourage buildings to become more resilient over time without having to comply with those standards. These modifications, which would also be available to buildings that meet flood-resistant construction standards, include provisions to facilitate location of mechanical equipment and other critical spaces above the flood-resistant construction elevation (FRCE), allowances for some specific flood protection measures, and parking design modifications in low-density Residence Districts.

### Locating Mechanical Equipment Above Flood Elevation

The Proposed Action would help protect mechanical equipment from flood damage by facilitating its elevation above flood levels, which is often the first and most cost-effective resiliency strategy for existing buildings since it requires few changes to the building's structure or floor elevations.

The 2013 Flood Text allowed mechanical equipment, typically found in basements and cellars, to be relocated to other areas within buildings or in required open areas. In some instances, these have been found to be insufficient and have therefore hampered resiliency improvements. For example, owners of residential campuses who are looking to construct a new separate structure to house mechanical equipment above expected flood levels have been hindered by zoning regulations that require minimum distances between buildings. The Proposed Action would improve upon these existing 2013 Flood Text provisions for mechanical equipment by promoting an expanded set of resiliency improvements.

#### *Within and On Top of Buildings*

The Proposed Action would facilitate the relocation of mechanical equipment from basements and cellars to locations higher in or on top of buildings.

The 2013 Flood Text included allowances for larger bulkheads on the top of multi-family buildings and for existing commercial or manufacturing buildings. It also included modifications in lower-density Residence Districts to facilitate the relocation of equipment from below-grade spaces to elsewhere within the building. Bulkheads were already considered permitted obstructions and permitted to extend above any required maximum heights or sky exposure planes if they remained within certain size limitations. The 2013 Flood Text increased these dimensions in the floodplain to encourage mechanical equipment to be moved onto roofs where they are more protected from flooding. For example, for buildings in R5 through R10 districts, and in Commercial and Manufacturing Districts, these changes permitted a 10 percent increase in bulkhead coverage. Alternatively, for existing buildings, it allowed an approximately 30 percent increase of their permitted height. Bulkheads in R3 and R4 Residence Districts were permitted smaller increases given their smaller scale. Screening was required for all bulkheads. The Proposed Action would maintain these provisions, while increasing their applicability for all new and existing buildings in Residence, Commercial and Manufacturing Districts. While there are no prohibitions on locating mechanical equipment in the cellars of non-residential structures, in the long-term it is safer to locate such equipment above the flood level.

In addition, the 2013 Flood Text also exempted buildings in the floodplain from limitations on interior mechanical space found in many lower-density Residence Districts, as this tended to force mechanical equipment into basements and cellars. This exemption would continue in the Proposed Action to ensure that mechanical equipment can be placed above the FRCE.

#### *In Open Areas*

The Proposed Action would also facilitate the placement of mechanical equipment above the FRCE outside of buildings to address situations where the structures cannot physically sustain additional loads or where centralizing this equipment in a single structure would be more efficient.

The 2013 Flood Text included allowances for mechanical equipment in various open areas regulated by zoning. The equipment can be considered permitted obstructions within yards, courts and other open areas if it stays within certain coverage and height limitations. These measures offered alternative locations for necessary mechanical equipment in lieu of basements and cellars. The provisions are available for existing single- and two-family residences as well as all other new and existing buildings.

The Proposed Action would consistently apply these allowances to all buildings regardless of whether they are new or existing. It would also modify some of the dimensional limitations to provide more rational standards to address various design challenges that have been identified since 2013. Mechanical equipment would have to be placed a minimum of five feet from property lines (though this could be reduced to three feet for substandard lots). Coverage would be limited to 25 percent of the minimum required open space, but the coverage would be restricted to 25 square feet if the equipment is located between the building and the front lot line, to minimize its effect on the street. The height would be limited to certain heights above the “reference plane” depending on the zoning district (10 feet in low-density Residence Districts, 15 feet in other Residence Districts, and 23 feet in Commercial and Manufacturing Districts). All equipment would be required to be screened by vegetation when located in front yards or between the street line and the street wall and when placed in other locations, if more than one piece of equipment is provided, it would have to be screened by materials that are at least 50 percent opaque.

Finally, to allow for the construction of new utility structures on larger campus-style housing sites, the Proposed Action would permit buildings used predominantly for mechanical equipment to be considered permitted obstructions on properties larger than 1.5 acres. The structure’s coverage would similarly be limited to 25 percent of the minimum required open space, and it would be required to be located at least 30 feet from any legally required windows with the exhaust stacks located above adjacent residential buildings. The structures would be subject to underlying height and setback controls.

#### Locating Important Spaces Out of Harm’s Way

Beyond mechanical equipment, there are some situations where elevating key support spaces would improve the long-term resiliency of buildings and their uses. The Proposed Action therefore includes modifications to address three of these situations.

Many retail stores rely on basement and cellar space to support their at-grade retail, but zoning regulations often restrict these spaces from being located on the second floor, which limits the stores’ ability to become more resilient. The Proposed Action would therefore include two modifications to address this issue.<sup>17</sup> In low- and medium-density C1 and C2 local Commercial Districts, where underlying zoning regulations limit commercial uses to the first story in mixed-use buildings, the Proposed Action would allow commercial uses on the second story in buildings in the floodplain. This would give businesses an opportunity to move key spaces out of basements or cellars. The space within the second floor would still be counted towards floor area regulations.

In Commercial and Manufacturing Districts with a low maximum floor area ratio (FAR), buildings may have little available floor area to raise key spaces above the flood elevation.<sup>18</sup> To remedy this, the Proposed Action would add a floor area exemption of up to 500 square feet to provide businesses the option of elevating important spaces, such as offices or storage rooms, above the FRCE in Commercial and Manufacturing Districts where the permitted commercial or manufacturing FAR is less than or equal to 1.0.

Lastly, existing residential buildings in low-density Residence Districts are often hindered by underlying zoning regulations when attempting to fill in their basements or cellars and relocate the required parking found there to other portions of their lot. The 2013 Flood Text included provisions to address this. The Proposed Action would similarly allow below-grade parking in existing residential buildings in R1 through R5 districts (except R4B and R5B districts) to be relocated to front, side or rear yards. To be granted this allowance, below-grade spaces would have to be removed and filled, in compliance with “flood-resistant construction standards.” In addition, the Proposed Action would continue to allow parking spaces and

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<sup>17</sup> This recommendation came from the 2016 *Resilient Retail* report.

<sup>18</sup> This recommendation came from the 2018 *Resilient Industry* report.

driveways to be covered with dustless gravel for all single- and two-family residences in R1 through R5 districts.

### Flood Protection Measures

The Proposed Action would allow more flood protection measures as permitted obstructions to accommodate their installation when required for compliance with “flood-resistant construction standards” and in situations where alternate flood protection strategies may be warranted.

The 2013 Flood Text allowed several flood protection measures, such as flood barriers and associated emergency egress, as permitted obstructions in various required open areas in recognition that they are required in front of building entrances. However, practitioners and other City agencies have subsequently identified additional viable measures that are not included and have noted the difficulty in finding on-site storage within buildings for temporary measures such as flood panels, both of which have limited the use of these measures.

The Proposed Action would therefore maintain the existing flood protection measures listed as permitted obstructions but add items which were not previously listed: landscaped berms and their associated floodgates. The Proposed Action would also allow space used for the storage of temporary flood panels to be exempted from floor area calculations, up to a maximum exemption of 15 square feet for each linear foot of protection and no more than 1,000 square feet of exemption per zoning lot. These standards account for the space that panels, trolleys and deployable access take up in a typical building configuration).

### Accommodating Current and Future Flood Elevations on Waterfront Sites

The Proposed Action would modify provisions applicable in waterfront areas to better allow for coastal flood resilient design.

In 1993 DCP enacted comprehensive waterfront rules that, at their core, required developments on the waterfront to provide public access in the form of esplanades and ancillary spaces. The zoning text set forth minimum amounts and dimensions for these spaces and stipulates necessary amenities that must be provided, including circulation paths, planting, seating, lighting, and several other elements to help ensure that these are successful public spaces.

However, practitioners have noted how some of these requirements make it difficult, if not impossible, to integrate contemporary resiliency measures into the waterfront spaces and address sea level rise. The 2013 Flood Text provided some limited allowances for the grading of waterfront yards and visual corridors to increase flood resilience, but practitioners have identified other rules that could also be improved. These include limits on site grading and height for waterfront yards, open spaces and paths.

The Proposed Action would permit the construction of bi-level esplanades that facilitate waterfront public access both close to the shoreline at the water level and at a higher elevation to meet flood design elevations at the building level. To facilitate these bi-level designs, the Proposed Action would also allow for increased retaining wall heights (generally up to three feet), provide new planting design options (including terraced planting), and provide slight reductions to the minimum required planting areas, and screening buffers so that access requirements can be satisfied.

The Proposed Action would facilitate the elevation of waterfront public access areas while maintaining visual connectivity to the water by raising the required level of visual corridors on upland streets from three feet above curb level to five feet. In addition, flood protection measures such as temporary flood control devices and associated permanent fixtures, structural landscaped berms, flood gates, and associated emergency egress systems would be permitted as obstructions in both waterfront yards and visual corridors



subject to dimensional limitations (up to the FRCE or five feet above the lowest adjacent grade, whichever is higher).

Finally, to encourage waterfront sites to include soft shorelines (such as natural aquatic grasses) as a resiliency measure, the Proposed Action would allow the width of the required waterfront yard and shore public walkway to be reduced for soft shorelines by up to seven feet along up to 30 percent of the shoreline length of such yard.

#### **Goal 4. Facilitate future recovery by reducing regulatory obstacles.**

The Proposed Action would include modifications to expedite future recovery processes. Hurricane Sandy showed that areas affected by the storm went beyond the floodplain and that the regulations which would facilitate recovery would be useful for other types of disasters. Thus, these select rules would be applicable citywide. Topics addressed in this section include mechanical equipment, vulnerable populations, as well as zoning rules available after a disaster occurs.

##### Power Systems and Other Mechanical Equipment

The Proposed Action would allow appropriately scaled power systems on lots throughout the city to make it easier to provide back-up energy, especially in the event of a disaster by considering these types of equipment as permitted obstructions in required open areas. Recovery efforts from Hurricane Sandy also identified issues with existing zoning regulations for mechanical equipment both within and outside of the floodplain. As described below, both of these issues extend beyond the floodplain and therefore modifications to address them are required on a citywide basis.

The 2012 hurricane caused a wide array of power system disruptions well beyond the floodplain, and the city's power grid has seen other recent disruptions through events like blackouts. Allowing power systems to be more easily located around the city would help support back-up energy needs and the overall energy grid. The 2013 Flood Text took the first step by allowing back-up systems, such as emergency generators, to be considered permitted obstructions in the required yards and open spaces for single- and two-family residences in the floodplain.

The Proposed Action would expand this approach citywide in a more consistent fashion. Power systems (including, but not limited to, generators, solar energy systems, fuel cells, batteries, and other energy storage systems) would be added as a permitted obstruction, subject to dimensional limitations, that could encroach in any required open area in all zoning districts citywide. Similar to the limitations for the broader mechanical equipment category in the floodplain, power systems would have to be placed a minimum of five feet from property lines. Coverage would be limited to 25 percent of the minimum required open space, although the coverage would be restricted to 25 square feet if the equipment is located between the building and the front lot line to minimize its effect on the street. The height would be limited to certain heights above adjoining grade, or the "reference plane" for lots in the floodplain, depending on the zoning district (10 feet in low-density Residence Districts, 15 feet in other Residence Districts, and 23 feet in Commercial and Manufacturing Districts). Exempted equipment would be subject to requirements for enclosure or screening, depending on the equipment type and applicable zoning district.

In addition, recovery efforts after Hurricane Sandy have highlighted shortcomings with the floor area exemptions provided for mechanical equipment in the ZR that have hampered resiliency projects. Space used for mechanical equipment is exempted from floor area calculations in all zoning districts citywide. However, it has not been clear whether the space necessary for routinely accessing and servicing the equipment is also exempted, which has led to inconsistent outcomes. This has also, in some situations, made it difficult to retrofit buildings in the floodplain by moving mechanical equipment from below-grade locations, where they are fully exempted from floor area calculations, to upper areas where they may not

be. To address this situation in a comprehensive manner across the city, the Proposed Action would clarify that the floor area exemption for mechanical equipment applies to mechanical, electrical, plumbing equipment, as well as to fire protection and power systems, and necessary maintenance and access areas. This is consistent with the general practice at the Department of Buildings but would ensure that buildings across the city would be treated consistently.

### Ramps and Lifts

The Proposed Action would provide rules for accessible design that are consistent throughout the city.

The 2013 Flood Text classified ramps and lifts as permitted obstructions in various forms of required open areas to help facilitate the elevation of living spaces. But in areas beyond the floodplain, these elements are permitted in required open areas in a piecemeal fashion. For example, lifts are classified as permitted obstructions in residential courts, yet they are not considered permitted obstructions in required yards. While DCP has been gradually adding them to the ZR as permitted obstructions through different text amendments, the Proposed Action would provide full consistency across the city by classifying ~~both steps,~~ ramps and lifts as permitted obstructions in all required open areas.

This allowance is particularly important for existing buildings, many of which were constructed prior to ADA legislation. Since they are often built right up to the particular district lot coverage allowances or, in the case of many pre-1961 building, exceed them, subjecting new ramps or stairs to lot coverage limits would severely deter needed adaptation.

### Vulnerable Populations

The Proposed Action would limit the growth of vulnerable populations in nursing homes in high-risk areas of the floodplain.

Hurricane Sandy and other storms across the nation have exposed the difficulties facing nursing home residents in high-risk areas. Nursing homes are licensed to house populations that require continual medical care, but research shows that this dependency can be strained whether nursing homes shelter in place or evacuate prior to a coastal storm event. While all nursing homes in hurricane evacuations zones in the city are subject to mandatory evacuations during a declared emergency, the City believes it would be appropriate to limit the growth of nursing homes in high-risk areas to lessen the health consequences and logistical challenges of evacuating the residents of these facilities.

The Proposed Action would therefore prohibit the development of new nursing homes and restrict the enlargement of existing facilities within the 1% annual chance floodplain and other selected geographies (shown in **Appendix C**) likely to have limited vehicular access because of the storm event. The modification would restrict the enlargement of existing nursing homes in this geography to a maximum of 15,000 square feet to allow for improvements, including those related to resiliency. These restrictions would also apply to the nursing home portions of Continuing Care Retirement Communities (CCRCs). The CPC special permit (ZR Section 74-901) that permits nursing homes in areas where they are not allowed as-of-right (i.e., R1 and R2 districts and certain community districts) would not be available in this geography.

### Disaster Recovery Rules

The Proposed Action would include rules that could be made available to facilitate the recovery process from future disasters, some of which would be implemented now to help address the COVID-19 pandemic and its associated economic effects.

The need to adopt the 2013 Flood Text and 2015 Recovery Text as temporary zoning rules on an emergency

basis after Hurricane Sandy demonstrated that a lengthy process to update zoning regulations can present obstacles to the necessarily fast-paced disaster response. In addition, while the Mayor can issue Emergency Orders to temporarily remove legislative obstacles to facilitate recovery efforts, including rules from the ZR, that process is limited in time (the duration of the disaster), which may not be enough for a longer-term recovery. That became clear post-Sandy and now during the COVID-19 pandemic disaster response.

Given this, the Proposed Action would include a series of disaster recovery provisions that could be made available through a text amendment when a disaster occurs. Adding these provisions to the ZR would offer a useful roadmap for the public, planners, and decision-makers when working to recover from a disaster. Applicable recovery provisions would be selected based on the issues caused by the disaster and would be available for a limited time period (set at the time of the text amendment). The provisions could be limited to designated recovery areas whose extent would be determined based on the disaster's impacts and the City's recovery plans.

The recovery provisions would include a range of rules that could facilitate the recovery process from disasters which cause physical impacts. The 2013 Flood Text and the 2015 Recovery Text included a set of rules that facilitated the reconstruction and retrofit of Hurricane Sandy-damaged buildings, and therefore could also be useful after any other disasters that lead to a concentration of physical damage in the city. The Proposed Action would build upon this set of provisions and include modifications to the damage and destruction thresholds set forth in the underlying zoning rules to allow the reconstruction of non-complying buildings and non-conforming uses. It would also include modifications to building envelope rules to allow non-compliances to be increased, or even created, in the event new regulations would require damaged buildings be replaced in a slightly different shape and form. (For example, after Hurricane Sandy, new Building Code regulations were adopted and required buildings to elevate beyond the minimum level required prior to the storm.) These provisions would also include an allowance for property owners to use their tax lot as their zoning lot when applying zoning rules, which was found necessary in many waterfront communities. Lastly, it would allow the documentation process for obtaining DOB permits to be simplified for disaster-damaged buildings.

The recovery provisions would also facilitate the recovery process from a wider range of disasters including those that do not involve physical impacts, such as pandemics. This set of provisions is mostly drawn from the lessons learned during the COVID-19 pandemic response. The provisions would provide a framework to allow uses in zoning districts where they are not typically permitted to better respond to the situation then at hand. This framework would also allow possible relief from zoning rules that require permits to be sought with a specific timeframe, and those that require a certain level of construction and operation be completed to vest a project. It would also include possible relief from provisions that only allow non-conforming uses to remain inactive for a limited period of time (generally two years) before they can no longer legally reopen.

The Mayor's Executive Order No. 98 (March 12, 2020), which provided short-term relief from regulations hindering the pandemic recovery effort, included relief from construction timeframe and non-conforming use provisions. However, these allowances will cease when the Executive Order expires. Consistent with the general intent of the disaster recovery rules and the Mayor's Executive Order, the Proposed Action would extend the available timeframe for non-conforming uses to reactivate by an additional two years. In addition, the Proposed Action would allow for the extension of the timeframe required for substantial construction to take place under City Planning Commission special permits and authorizations for an additional term. These changes would provide greater certainty to residents, business and building owners, and therefore support the city's recovery from the ongoing pandemic. It should be noted that pending an ongoing emergency, mayoral and state executive orders would nevertheless remain in effect under the Proposed Action.

### Uses in Waterfront Recreation Districts

Lastly, the Proposed Action would modify the zoning requirements that have made it difficult for eating or drinking establishments in some lower-density waterfront areas from making long-term resiliency improvements.

In C3 and C3A Waterfront Recreation zoning districts, which are mapped along the city's waterfront in limited locations, these businesses are required to obtain a BSA special permit to operate, renewable every five years. Local elected officials and business owners have noted how this short timeframe adds uncertainty that makes it difficult for these establishments to invest in resiliency. Therefore, the Proposed Action would extend the initial special permit term from five to 10 years for new applicants. Additionally, for existing establishments with a previously approved special permit, the permit would allow the BSA to determine the required term moving forward.

### **Overlap with Special Districts**

While special purpose districts cater to a range of locally specific conditions, the 2013 Flood Text allowed the optional provisions in the 1% annual chance floodplain to supersede their special regulations and further modified select special purpose district rules that overlap with the floodplain. The Proposed Action would allow the optional provisions to supersede regulations applicable in all areas within any special purpose district that geographically overlaps with the 1% and 0.2% annual chance floodplains. Additionally, select provisions in these special purpose districts would be modified to align with the Proposed Action's ground floor use, street wall, and building envelope regulations, as well as the proposed streetscape rules. This would allow all buildings in the floodplain to have a consistent zoning framework for resiliency.

### **Related Actions**

In addition to the proposed citywide zoning recommendations, DCP would be proposing neighborhood-specific zoning text and map changes in three neighborhoods that were recommended as part of DCP's Resilient Neighborhoods Initiative. These related actions would be in public review concurrent with the Proposed Action and their effects are analyzed as part of separate environmental reviews. These specific actions are intended to address resiliency challenges that are specific to the conditions in these areas. These three neighborhoods are:

#### ***Brooklyn: Gerritsen Beach***

Gerritsen Beach is a low-lying residential community originally developed as a neighborhood of summer bungalows. During Hurricane Sandy, the neighborhood was almost entirely inundated as the tidal surge rose up to seven feet above grade. Less severe but more frequent storms also cause flooding to Gerritsen Beach's constrained roadways (some streets are as narrow as 15 feet wide). This area is proposed to be designated as a Special Coastal Risk District (SCRD) to limit future density, by allowing two-family residences only on large lots. The SCRDR would also limit building heights to 25 feet, as opposed to the 35 feet currently allowed by the underlying zoning district. This height restriction would be measured above the "reference plane" in alignment with the cottage envelope in the Proposed Action. This lower height would best match the area's neighborhood character while enabling existing buildings to retrofit. In addition, Gerritsen Beach's residential and waterfront areas would be remapped to more contextual districts, to prevent the construction of attached buildings, as the existing non-contextual districts do not reflect the existing character of the area and attached buildings are more difficult to retrofit in the future. Additionally, the proposal would expand use options for commercial establishments along Gerritsen Avenue to

allow for a wider range of local services, which are key in providing support year-round for the community.

### ***Brooklyn: Sheepshead Bay***

Sheepshead Bay is a mixed-use neighborhood with a working and recreational waterfront, commercial corridors, and residential areas that have a wide range of building types, from small bungalows to large apartment buildings. During Hurricane Sandy, small businesses in the area experienced flood levels as high as six feet above grade, resulting in their temporary closure. Within the Special Sheepshead Bay District (SSBD), businesses located in cellar spaces below grade experienced severe flooding and, in some cases, have been unable to return following Hurricane Sandy. In consultation with the community, DCP proposes to update the existing SSBD so that regulations align with the Proposed Action to ensure that buildings are encouraged to floodproof in the long term. Additionally, public space regulations in the SSBD would be updated to include requirements for resiliency – such as a prohibition on below-grade plazas – and to promote the creation of well-designed, inviting spaces that support the commercial vibrancy of Emmons Avenue.

### ***Queens: Old Howard Beach***

Old Howard Beach is a waterfront neighborhood with predominantly detached houses, an active commercial corridor, and a community that enjoys easy access to the waterfront. During Hurricane Sandy, flooding inundated basements in residential buildings and ground floor commercial uses. Old Howard Beach is characterized by its location within a low-lying area, with BFEs ranging from four to six feet above grade, with analysis suggesting that projected sea level rise will affect the neighborhood primarily through tidal inundation on low-lying streets. As sea levels rise, Old Howard Beach is projected to see a gradual increase in vulnerability to flooding from daily and monthly spring high tides. Portions of Old Howard Beach are proposed to be rezoned to limit permitted residential uses to single- and two-family detached residences, enabling building owners to retrofit existing buildings and, as may be necessary, elevate to the “reference plane.” Building to these higher standards will reduce vulnerability to future floods.

The Draft Scope of Work described an additional local action for New Dorp Beach. Based on further analysis of existing conditions in the New Dorp Beach neighborhood, recent capital commitments by the New York City Department of Environmental Protection (DEP) and New York City Department of Transportation (DOT) to upgrade sewer and street infrastructure in the surrounding area, and progress being made by the U.S. Army Corps of Engineers on the Line of Protection, DCP is no longer pursuing a local rezoning for this area at this time. The proposed Zoning for Coastal Flood Resiliency initiative would provide zoning regulations to allow property owners the ability to make proactive investments in resiliency.

## **F. ANALYSIS FRAMEWORK**

Consistent with ~~2020~~<sup>2014</sup> *CEQR Technical Manual* guidance, the Proposed Action is analyzed as a “generic action” because there are no known developments that are projected at this time. According to the *CEQR Technical Manual*, generic actions are programs and plans that have wide application or affect a range of future alternative policies and, for such actions, a site-specific description or analysis is not appropriate. As described in the *CEQR Technical Manual*, generic analyses are conducted using the following methodology:

- **Identify Typical Cases:** Provide several descriptions similar to those in a localized action for cases that can reasonably typify the conditions and impacts of the entire proposal.

- **Identify a Range of Conditions:** A discussion of the range of conditions or situations under which the action may take place, so that the full range of impacts can be identified. As detailed below, this includes existing conditions, a future scenario without the Proposed Action, and a future scenario with the Proposed Action.

Due to the broad applicability of the Proposed Action, it is difficult to predict the sites where development would be facilitated. In addition, the Proposed Action is not in-and-of-itself expected to induce development where it would not otherwise have occurred absent the Proposed Action. Although the Proposed Action may allow developments and existing buildings to retrofit to resilient standards, the overall amount, type, and location of construction within the affected area is not anticipated to change. Owing to the generic nature of this Proposed Action, there are no known or projected as-of-right development sites identified as part of the action's Reasonable Worst-Case Development Scenario (RWCDS). To produce a reasonable analysis of the likely effects of the Proposed Action, 14 representative prototypical sites containing either new developments, infill, reconstructions, or retrofits of existing buildings in the city's 1% and 0.2% annual chance floodplains have been identified to demonstrate the wide range of proposed regulations for sites that would be able to develop as-of-right in the future with the Proposed Action.

Additionally, Conceptual Analysis sites were identified for those conditions where development would require discretionary action in the future With-Action condition. This Conceptual Analysis will serve as a means of disclosing the potential impacts of the proposed discretionary actions.

Development affected by the Proposed Action is projected based on trends between 2012 and 2019. Although projections are typically modeled after trends of the previous decade, this analysis focuses on development data since Hurricane Sandy in 2012, during which there is more data available for resilient construction. Accordingly, unless otherwise noted, development assumptions in the future without and with the Proposed Action would mirror recent development patterns. The Proposed Action is not expected to change the rate of construction in the floodplain, which is controlled primarily by local real estate conditions.

## Prototypical Analysis

To assess the possible effects of the Proposed Action, a RWCDS was developed for the future without the Proposed Action (No-Action condition) and the future with the Proposed Action (With-Action condition) for a 10-year period in both the 1% annual chance and 0.2% annual chance floodplains. Although the Proposed Action's provisions are similar for these two geographies, there is a difference in the permitted height of the "reference plane." As discussed below, RWCDS developments in the 0.2% annual chance floodplain generally follow the development rationale for the 1% annual chance floodplain, unless the lower "reference plane" height in the 0.2% annual chance floodplain does not allow for it. In addition, as the city's Building Code are applied differently in these two areas, the No-Action conditions will vary. To capture the varying conditions, the incremental difference between the No-Action and With-Action conditions for both the 1% annual chance and 0.2% annual chance floodplains will serve as the basis for assessing the potential environmental impacts of the Proposed Action. Furthermore, the No-Action condition reflects a scenario where the 2013 Flood Text and 2015 Recovery Text have both expired. The incremental difference does not consider the effects of these two prior texts because they were adopted on a temporary basis with sunset (expiration) dates, and given the urgent nature of these provisions, there was no environmental review conducted. As illustrated in **Table ES-2**, 14 sites were selected as prototypes for environmental analysis for the No-Action and With-Action scenarios. Illustrative renderings and descriptions of all 14 Prototypical Analysis Sites are provided in **Appendix A**.

**Table ES-2: Prototypical Site Selection**

ID	Zoning District	Building Typology	Construction Type	Lot Area (sf)	Width (feet)	Depth (feet)
1	R3-1	Single-family detached residence	Retrofit	4,000	40	100
2	R3-1	Single-family semi-detached residence	New Construction	2,500	25	100
3	R4 (Infill)	Two-family attached residence	Reconstruction	2,000	20	100
4	R5 (Infill)	Low-rise multi-family building	Retrofit	2,500	25	100
5	R7A	High-rise multi-family building	New Construction	10,000	100	100
6	R6	Campus-style housing	Retrofit	50,000	500	100
7	C1-2/R5	Low-rise mixed-use building	New Construction	12,000	120	100
8	C1-2/ R7A	High-rise mixed-use building	Retrofit	2,500	25	100
9	C1-2/ R3-1	Commercial building	Retrofit	10,000	100	100
10	M1-1	Industrial building	Retrofit	10,000	100	100
11	R4	Single-family detached residence	New Construction	2,500	25	100
12	R3A	Single-family detached residence (non-compliant)	Retrofit	2,500	25	100
13	R3X	Two-family detached (non-conforming/non-compliant)	Retrofit	2,000	20	100
14	C2-4/R8	Waterfront site	Site Modification	50,000	250	200

**Note:** Refer to **Appendix A** for illustrative renderings and descriptions of the Prototypical Analysis Sites.

In addition, as discussed above, the Proposed Action would also have provisions that would be applicable citywide, such as the allowance for power systems to be considered permitted obstructions in required open areas. Other citywide provisions would be a series of disaster recovery rules that could be made available in the event of a future disaster through a zoning text amendment (and requisite environmental review). However, two of those provisions would be made available upon adoption of the Proposed Action to facilitate the city's long-term recovery from the COVID-19 pandemic and its associated economic effects. These two provisions would provide more time for existing non-conforming uses to reopen and for builders to undertake certain construction projects.

To determine the No-Action and With-Action conditions, standard methodologies have been used pursuant to the *CEQR Technical Manual*. These methodologies have been used to identify the amount and location of future development, as discussed below.

Most provisions for the Proposed Action would affect the 1% and 0.2% annual chance floodplains, which include 14 building types in a total of 97 zoning districts, including 34 Residence Districts, 48 Commercial Districts, and 15 Manufacturing Districts. It would also allow for resiliency improvements in the open areas on sites subject to waterfront regulations. In this overall area, approximately 102,300 lots in New York City would be potentially affected by the Proposed Action. The characteristics listed below were analyzed to create the hypothetical sites where the effects of the Proposed Action could be assessed (i.e., Prototypical Analysis Sites). These sites are not necessarily representative of a specific lot, but rather reflect prevalent conditions as a basis for analysis. These Prototypical Analysis Sites were then analyzed for their respective recent development trends to determine the development scenario to be assessed. To assess the effect of the Proposed Action, the characteristics considered in identifying the Prototypical Analysis Sites are described below.

### *Range of Building Typologies*

- The sites are representative of the building types located in the 1% annual chance and 0.2% annual chance floodplains. Although all building types are in the floodplain, the prototype list mirrors the data showing a prevalence of single- and two-family buildings.
- The sites are based on building types and site conditions that can demonstrate specific provisions and
- The sites reflect varied vulnerability and ability to retrofit buildings, without repeating similar outcomes. Distinction was made between low-rise and high-rise buildings based on the number of floors, as they have different likelihoods of being fully retrofitted to meet “flood-resistant construction standards.” Low-rise buildings are four floors and below; high-rise buildings are five floors and above.

### *Range of Zoning Districts*

- To determine the zoning districts for the prototypical sites, the overall most prevalent zoning districts were considered in both the 1% and 0.2% annual chance floodplains. The top two most prevalent zoning districts by building typology were considered in both the 1% and 0.2% annual chance floodplains and zoning districts which permit a reasonable range of building typologies and development scenarios were selected to evenly distribute the actions across different densities and district types.

### *Lot Characteristics*

- These were based on the median lot area, width, and depth of all lots within a selected prototype zoning district. Although there is a prevalence of small lots across all building types, some lot sizes for future developments reflect current trends of aggregate development.

### *Base Flood Elevation*

- To determine the flood elevation, the average and median flood levels by building typology were considered in the 1% annual chance floodplain. The average flood level is moderate across the City with three to four feet of base flood elevation. However, depending on the building typology, some averages were low, with two feet of base flood elevation, and some averages were high, with five feet of base flood elevation. One of these two thresholds has been applied to each scenario based on the building type and data analysis.

### *Development Assumptions*

Consideration of the development and retrofit typology, including size and location of buildings and the layout of required parking, was determined through analysis indicating the median lot coverage, floor area, and building height throughout various neighborhoods within the existing 1% and 0.2% annual chance floodplains and analysis of recent construction in the floodplain through applications filed to DOB. It was also determined through the use of aerial and street view photography.

### *Type of Construction*

The percentage of unbuilt lots within a given zoning district was used to approximate the areas where future development is most likely to occur. Generally, the percentage of unbuilt lots is low in the 1% and 0.2% annual chance floodplains with low-density (R1 through R5 districts having the highest percentage, illustrating more new construction for single- and two-family residences.

The percentage of built lots within a given zoning district was used to approximate the areas where retrofit of existing buildings is most likely to occur.



Because the Proposed Action has implications for both new developments and existing buildings, assumptions are made for the existing, no-action, and with-action conditions.

#### Existing Condition

Based on 2019 conditions, existing conditions for the Prototypical Analysis Sites do not meet Appendix G, as only a small fraction of the city's floodplain currently meets these standards, largely as a result of the post-Hurricane Sandy recovery efforts. Also, these existing buildings typically do not meet Appendix G because of the smaller floodplain geography that was designated by FEMA's FIRMs, which was in effect from when the city joined the NFIP program in 1983 until PFIRMs were issued in 2013.

For this analysis, it is assumed that the existing buildings would maximize their development potential under the permitted building envelope. This provides a baseline for analysis of the effect of the Proposed Action.

#### No-Action Condition

There will be two No-Action scenarios for each Prototypical Analysis Site to illustrate conditions in both the 1% annual chance floodplain and the 0.2% annual chance floodplain. The No-Action condition assumes that the 2013 Flood Text and 2015 Recovery Text have both expired at some point during the 10-year analysis period, and that new development has continued in the city's floodplain without the benefit of special zoning regulations in the floodplain.

- New developments would be required to meet the requirements of Appendix G for buildings in the 1% annual chance floodplain, but not in the 0.2% annual chance floodplain. Existing buildings, in general, only need to meet Appendix G if they are substantially damaged or substantially improved, or if the building is conducting a horizontal enlargement. However, in certain instances these buildings could potentially pursue resilient improvements, to demonstrate a more conservative analysis, the No-Action scenario will assume that an existing building does not get retrofitted or reconstructed. Recent development trends also indicate that it is unlikely that the existing buildings will invest in resiliency, especially in the absence of special zoning regulations to assist buildings to comply with "flood-resistant construction standards" without needing to lose existing floor space.

For this analysis, it is assumed that each Prototypical Analysis Site would maximize their development under the permitted building envelope. This provides a baseline for analysis of the effect of the Proposed Action.

#### With-Action Condition

There will be two With-Action scenarios for Prototypical Analysis Sites 1 to 13 to illustrate the impact of the Proposed Action in both the 1% and 0.2% annual chance floodplain. Site 14 will have one With-Action scenario to illustrate the impact of the Action on waterfront sites. The With-Action conditions assume that the 2013 Flood Text and 2015 Recovery Text have been superseded by the Proposed Action and that most building owners can then incorporate future flood risks when making resiliency investments.

New developments would meet "flood-resistant construction standards," exceeding the minimum flood elevation requirements of Appendix G, for buildings in both the 1% and 0.2% annual chance floodplains by elevating habitable spaces to the permitted "reference plane."

Existing buildings would be retrofitted to either meet "flood-resistant construction standards" or the minimum flood elevation requirements of Appendix G, depending on the cost and structural feasibility of construction for both the 1% and 0.2% annual chance floodplains.

In addition, prototype scenarios that only show incremental resiliency improvements do not need to meet the “flood-resistant construction standards” while a prototype scenario of the waterfront site does not show changes to the building and only focuses on proposed modifications specific to waterfront regulations in open areas.

For this analysis, it is assumed that the Prototypical Analysis Sites would maximize their development under the Proposed Action. Developments in the 0.2% annual chance floodplain generally follow the development rationale for the 1% annual chance floodplain, unless the lower “reference plane” height in the 0.2% annual chance floodplain does not allow for it.

Detailed descriptions and illustrative renderings of the existing, No-Action, and With-Action conditions on each of the 14 Prototypical Analysis Sites in the 1% and 0.2% annual chance floodplains are provided in **Appendix A**.

## Conceptual Analysis

Under the State Environmental Quality Review Act (SEQRA), a conceptual analysis is warranted if a proposal creates new discretionary actions that are broadly applicable, even when projects seeking those discretionary actions will trigger a future, separate environmental review. SEQRA's goal is to incorporate environmental considerations into the decision-making process at the earliest possible opportunity, and so it is the lead agency's obligation to consider all possible environmental impacts of the new discretionary actions at the time it creates them, at least on a conceptual basis.

As the Proposed Action would modify and create new discretionary actions, including BSA special permits, an assessment of the potential environmental impacts that could result from these actions within the City's 1% and 0.2% annual chance floodplains is warranted. While these discretionary approvals would trigger environmental review at the time they are sought, the environmental effects of these approvals were analyzed conceptually, as a means of disclosing future potential significant adverse impacts. However, because it is not possible to predict whether a discretionary action would be pursued on any one site in the future, the RWCDs for the Proposed Action does not include consideration of specific development that would seek these actions. Instead, a Conceptual Analysis was conducted and is provided in **Chapter 23, “Conceptual Analysis,”** to understand how the new discretionary actions could be utilized and to generically assess the potential environmental impacts that could result. Nevertheless, all potential significant adverse impacts related to these future discretionary actions would be disclosed through environmental review at the time of application.

It should be noted that, where relevant, any future discretionary actions resulting from the Proposed Action would be submitted to the New York City Landmarks Preservation Commission (LPC) for review on a case-by-case basis. These actions would be reviewed by LPC under the terms of the *CEQR Technical Manual*. Refer to **Chapter 23** and **Appendix E** for further discussion.

## Analysis Year

The *CEQR Technical Manual* notes that for some actions where the build-out depends on market conditions and other variables, the build year cannot be determined with precision. In these cases, a 10-year build year is generally considered reasonable, as it captures a typical cycle of market conditions and generally represents the outer timeframe within which predictions of future development and retrofit work may usually be made without speculation. Therefore, an analysis year of 2029 has been identified for this environmental review.

## G. PROBABLE IMPACTS OF THE PROPOSED ACTION

### Land Use, Zoning, & Public Policy

No significant adverse impacts on land use, zoning, or public policy would occur in the future with the Proposed Action. The Proposed Action would not directly displace any land uses, nor would it generate land uses that would be incompatible with existing land uses, zoning, or public policy in the city's floodplains. The Proposed Action would not result in land uses or structures that would be substantially incompatible with the underlying zoning or conflict with public policies applicable to the city's floodplains. The Proposed Action would include a zoning text amendment to update the Special Regulations Applying in Flood Hazard Areas (ZR Article VI, Chapter 4) to provide homeowners, business owners, and practitioners living and working in the city's floodplains the option to design or otherwise retrofit buildings to: (a) reduce damage from future coastal flood events, (b) be resilient in the long-term by accounting for climate change, and (c) potentially save on long-term flood insurance costs. In addition, it would allow resiliency improvements to be more easily incorporated on waterfront sites at the water's edge and in public spaces, as well as provide zoning regulations to help facilitate the city's long-term recovery from the COVID-19 pandemic and other future disasters. The Proposed Action also includes updates to other sections of the ZR, including the Special Regulations Applying in the Waterfront Area (Article VI, Chapter 2) and provisions within various Special Purpose Districts. Overall, implementation of the Proposed Action would improve the ability of the city to withstand and recover quickly from future storms and other disaster events. The Proposed Action would not result in significant adverse impacts to zoning in the city's floodplains, but rather, would provide enhanced zoning allowances and design requirements in order to help building owners to better accommodate projected sea level rise when designing new buildings or retrofitting existing ones, without creating incongruous and uninviting streetscapes.

Additionally, given the health consequences and logistical challenges of evacuating nursing home residents, the Proposed Action would limit the development of new nursing homes and restrict the enlargement of existing facilities within the 1% annual chance floodplain and selected geographies with limited vehicular access after a storm (illustrated in **Appendix C**). Nevertheless, this action is not expected to substantially alter land use trends in these areas. Existing nursing homes in the specified geographies would not be displaced as a result of the Proposed Action, and nursing homes would continue to be permitted in all other areas of the city under With-Action conditions. As such, no significant adverse impacts to land use would occur.

Moreover, the Proposed Action would not hinder any New York City Waterfront Revitalization Program (WRP) policies, but rather, is anticipated to promote a number of the city's WRP policies. As detailed in the WRP Consistency Assessment Form (CAF) provided in **Appendix D**, the Proposed Action would support and facilitate commercial and residential redevelopment in areas well-suited to such development (WRP Policy 1); incorporate consideration of climate change and sea level rise into the planning and design of waterfront industrial development and infrastructure (Policy 2.5); minimize loss of life, structures, infrastructure, and natural resources caused by flooding and erosion, and increase resilience to future conditions created by climate change (Policy 6); preserve, protect, maintain, and enhance physical, visual, and recreational access to the waterfront (Policy 8.1); and protect and improve visual quality associated with New York City's urban context and the historic and working waterfront (Policy 9.1).

### Socioeconomic Conditions

The Proposed Action would not result in significant adverse impacts related to socioeconomic conditions. As noted above, the Proposed Action would allow developments and existing buildings to retrofit to resilient standards, but the overall amount, type, and location of development within the affected area is not anticipated to change. The following summarizes the conclusions for each of the five CEQR areas of

socioeconomic concern.

### ***Direct Residential Displacement***

Analysis of the Prototypical Analysis Sites shows that no existing residential uses or residents would be displaced as a result of the Proposed Action. As such, no significant adverse impacts related to direct residential displacement would occur as a result of the Proposed Action.

### ***Direct Business/Institutional Displacement***

Assessment of the Prototypical Analysis Sites shows that no existing business or institutional uses would be displaced as a result of the Proposed Action. Therefore, no significant adverse impacts related to direct business or institutional displacement would occur as a result of the Proposed Action.

### ***Indirect Residential Displacement***

The Proposed Action would not generate new residential dwelling units (DUs) or residents as compared to No-Action conditions. As such, no significant adverse impacts related to indirect residential displacement would occur as a result of the Proposed Action.

### ***Indirect Business/Institutional Displacement***

The Proposed Action would generate a negligible number of incremental workers on several of the Prototypical Analysis Sites as compared to No-Action conditions. As the Proposed Action would introduce less than 200,000 sf of incremental commercial development, it would not result in substantial new development that is markedly different from existing uses and development, and would not create or add to a retail concentration. Therefore, it is unlikely that the Proposed Action would introduce a new trend or population that could alter existing economic patterns, and no significant adverse impacts related to indirect business or institutional displacement would occur as a result of the Proposed Action.

### ***Adverse Effects on Specific Industries***

The Proposed Action would not directly displace any businesses, or result in significant indirect business displacement due to increased rents. The Proposed Action would not result in an adverse impact on a particular industry or category of business, and would not substantially reduce employment or impair economic viability in an industry or category of business. As such, no significant adverse effects on specific industrial would occur as a result of the Proposed Action.

## **Community Facilities & Services**

### ***Direct Effects***

The Proposed Action would not displace or otherwise directly affect any public schools, child care centers, libraries, or police or fire protection service facilities. Additionally, the Proposed Action, including the restriction of nursing home development in certain geographies detailed above and illustrated in **Appendix C**, would not result in significant adverse direct effects to health care facilities. As such, the Proposed Action would not result in any significant adverse direct effects on community facilities or services.

### ***Indirect Effects***

Based on the *CEQR Technical Manual* screening methodology, detailed analyses of public elementary,

intermediate, and high schools, public libraries, publicly funded child care centers, outpatient health care facilities, and police and fire protection services are not warranted for the Proposed Action. The Proposed Action would not result in any significant adverse indirect effects on community facilities or services.

## **Open Space**

The Proposed Action would not result in any significant adverse impacts on open space resources. The Proposed Action would not physically displace any open space resources, and would not result in increased noise or air pollutant emissions, odors, or shadows on public open spaces that would significantly affect their usefulness. Additionally, as the Proposed Action would not generate new residents, and would result in the introduction of a negligible amount of workers on three of the Prototypical Analysis Sites, it would not diminish the ability of any open spaces to adequately serve users.

## **Shadows**

The Proposed Action would not result in significant adverse shadow impacts. In accordance with the methodology outlined in the *CEQR Technical Manual*, a detailed shadow analysis was conducted to assess the extent and duration of incremental shadows resulting from the Proposed Action. The Proposed Action would generate limited shadows on small, peripheral areas of sunlight-sensitive resources in the immediate vicinity of the Prototypical Analysis Sites. All affected resources would continue to receive direct sunlight throughout the day, and no natural resources are expected to be permanently shaded to a degree that would impact public use and enjoyment or plant and animal survival. The Proposed Action would not result in changes to development that would substantially reduce or completely eliminate direct sunlight exposure. Therefore, significant adverse impacts related to shadows are unlikely to occur as a result of the Proposed Action.

## **Historic & Cultural Resources**

### ***Archaeological Resources***

The Proposed Action could potentially result in significant adverse impacts on archaeological resources. The Proposed Action would alter the permitted bulks, footprints, and MEP equipment location requirements in the city's floodplains. As such, additional in-ground disturbance may occur where archaeological remains exist in the future with the Proposed Action.

The extent of effects on archaeological resources are unknown because the Proposed Action is generic, and it is therefore not possible to know exactly where and to what extent additional in-ground disturbance may occur in the future with the Proposed Action. As such, the possibility of effects on archaeological resources cannot be eliminated.

On sites owned or controlled by the City, or sites that require discretionary approvals, LPC would review any potential impacts to archaeological resources, and would require that these impacts be mitigated to the fullest extent possible pursuant to the *CEQR Technical Manual*. However, on privately owned sites that do not require discretionary actions, the anticipated in-ground disturbances would occur as-of-right without LPC oversight. It is anticipated that these effects would be limited; however, there is no mechanism for the City to enforce archaeological testing prior to construction. Therefore, these potential archaeological impacts would be unmitigated.

## ***Architectural Resources***

### **Indirect (Contextual) & Shadows Impacts**

The Proposed Action would not result in indirect contextual or shadows impacts to historic architectural resources. The Proposed Action in-and-of-itself is not expected to induce development where it would not otherwise have occurred absent the Proposed Action. Although some retrofits to the buildings on the Prototypical Analysis Sites could minimally alter the setting and visual context of potential surrounding historic resources, none of these changes would be significant or adverse as compared to No-Action conditions. Additionally, although views of surrounding historic resources could be partially obstructed as a result of the Proposed Action, more proximate and significant views of these historic resources would remain. Therefore, it is unlikely that the Proposed Action would result in development that would diminish the qualities that make surrounding historic architectural resources historically and/or architecturally important.

Furthermore, the Proposed Action would change permitted heights and bulks and MEP equipment regulations. Therefore, the Proposed Action does have the potential to generate shadows. As detailed in **Chapter 6, “Shadows,”** although the Proposed Action may increase shadows cast on some historic architectural resources, the increases are likely to be limited in duration and coverage, and would therefore not be significant or adverse.

### **Direct (Physical) Impacts**

In the With-Action condition, privately-owned properties that are New York City Landmarks (NYCLs) or in New York City Historic Districts would continue to be protected under the New York City Landmarks Law, which requires LPC review and approval before any new construction, enlargement, alteration, or demolition can occur. Therefore, any as-of-right changes to LPC-designated or calendared resources in the future with the Proposed Action would require approval before changes to the historic structure were made. The Proposed Action would not change this well-established framework. This approval process would ensure that development under the Proposed Action would not have an adverse impact on these resources. However, NYCL-eligible historic resources do not have these same protections.

Similarly, historic resources that are listed on the State and National Registers of Historic Places (S/NR) are given a measure of protection from the effects of federally-sponsored or federally-assisted projects under Section 106 of the National Historic Preservation Act, and are similarly protected against impacts resulting from state-sponsored or state-assisted projects under the New York State Historic Preservation Act. Although preservation is not mandated, federal agencies must attempt to avoid adverse impacts on such resources through a notice, review, and consultation process. However, privately-owned properties using private funds that are S/NR-listed can be altered or demolished without review.

It is possible that Prototypical Analysis Sites may contain privately owned LPC-eligible, S/NR-listed, or S/NR-eligible historic architectural resources. Therefore, direct impacts to these historic resources through as-of-right alterations or demolitions in the future with the Proposed Action cannot be ruled out. As such, the Proposed Action has the potential to result in significant adverse direct impacts to privately owned NYCL-eligible, S/NR-eligible, or S/NR-listed buildings.

### **Construction-Related Impacts**

As discussed above, the Proposed Action would not induce development as compared to the No-Action scenarios. However, retrofits/reconstructions of existing buildings are expected to occur on eight of the 14 Prototypical Analysis Sites in the future with the Proposed Action. Due to their generic nature, it is not known whether any of these sites would be located within close proximity to any NYCL-eligible and/or

S/NR-eligible historic resources. For conservative analysis purposes, it was assumed that the Prototypical Analysis Sites would be located within 90 linear feet of NYCL-eligible and/or S/NR-eligible historic resources. Therefore, the Proposed Action has the potential to result in construction-related impacts to eligible resources.

These eligible resources would continue to be afforded limited protection under New York City Department of Buildings (DOB) regulations applicable to all buildings located adjacent to construction sites. However, as the resources are not S/NR-listed or NYCL-designated, or calendared for designation, they would not be afforded the added special protections under DOB's Technical Policy and Procedure Notice (TPPN) #10/88. Additional protective measures afforded under DOB's TPPN #10/88 would only become applicable if the eligible resources are calendared or designated in the future prior to the initiation of construction work. If the eligible resources are not calendared or designated, however, they would not be subject to TPPN #10/88, and may therefore be adversely impacted by adjacent retrofitting work resulting from the Proposed Action.

On sites located within 90 linear feet of eligible historic resources that are owned or controlled by the City, or that require discretionary approvals, LPC would review any potential construction-related impacts to architectural resources and would require that construction on sites incorporates Construction Protection Plans pursuant to the *CEQR Technical Manual* in order to avoid significant adverse construction-related impacts. However, on privately owned sites that do not require discretionary actions within 90 linear feet of eligible historic resources, there is no mechanism for the City to enforce added special protections under DOB's TPPN #10/88, and potential construction-related impacts would be unmitigated.

## Urban Design & Visual Resources

The Proposed Action would not result in significant adverse impacts on urban design or visual resources, but rather, is expected to enhance the pedestrian experience in the city's 1% annual and 0.2% annual chance floodplains. The Proposed Action includes zoning allowances coupled with enhanced design requirements that would allow building owners to better accommodate projected sea level rise when designing new buildings or retrofitting existing ones, without creating incongruous and uninviting streetscapes. Although the Proposed Action would result in a notable change in the design character of the floodplains as compared to No-Action conditions, this change would not constitute a significant adverse urban design impact in that it would not alter the arrangement, appearance, or functionality of the city's floodplains such that the alteration would negatively affect a pedestrian's experience of the area. Rather, the changes in development anticipated in the With-Action conditions would improve the pedestrian experience by ensuring accessible ground-level design, particularly for buildings with lower-level commercial uses, in order to make the streetscapes in the floodplains more inviting, while ensuring preparedness to better accommodate projected sea level rise in New York City's floodplains.

The proposed floor area exemptions would continue to incentivize buildings to floodproof and encourage uses to be kept at street level. The Proposed Action would allow a small floor area incentive for active uses to be kept at grade and dry-floodproofed. The first 30 feet of floor area as measured from the street wall of a building when facing primary streets would be exempted from total floor area calculations, as these are the areas in which retail continuity is key for the success of the street. This allowance would incentivize buildings to dry-floodproof as opposed to elevating active uses, improving the pedestrian experience. Additionally, to ensure quality ground floors, this floor-area exemption would come with design controls, such as the condition that the ground floor level may not be higher than two feet above nor two feet below the level of the adjacent streets. This incentive would encourage well-designed commercial and community facility uses to be kept at grade, helping enhance the streetscape experience and retail continuity in the city's floodplains.

Additionally, as detailed above, the Proposed Action would require buildings in Residence Districts,

Commercial Districts, and M1 Districts, utilizing the optional provisions in Article VI, Chapter 4 of the ZR, to meet designated points outlined in the streetscape mitigation regulations and would extend design requirements to all residential, commercial, and mixed-use buildings as well as buildings containing community facilities and light manufacturing buildings in the floodplain. These improvements would help attenuate elevated access and potential blank walls at the street level caused by resiliency needs. The Proposed Action would also provide a wider range of options to comply with the requirements, in order to better accommodate different neighborhood contexts, lot conditions, and ground-floor uses. For example, front porches, stair turns, entrances close-to-grade, and multiple entrances along a façade would be option, as well as treatments such as decorative latticework, street furniture, and ground floor level transparency. This expanded menu would give designers the toolkit to better reflect conditions found in the floodplain, and the Proposed Action would ensure that these design options can be more easily utilized, classifying steps and covered porches as permitted obstructions and exempting buildings on narrow lots in low-density Residence Districts from existing front yard planting requirements inadvertently limiting the use of other available design options. These design requirements in the future with the Proposed Action would enhance the pedestrian experience and help activate the streetscapes of residential and commercial communities in the city's floodplains. In addition to these requirements, the Proposed Action would continue to provide flexibility for all buildings that have transparency requirements for ground floor levels.

The Proposed Action would not entail any major changes to block shapes, street patterns or hierarchies, land uses, building densities, topography, or wind conditions in the 1% annual or 0.2% annual chance floodplains. The Proposed Action would not change existing land uses or generate new land uses that would be incompatible with the existing built character of the city's floodplains. The Proposed Action would provide enhanced building envelopes for new developments and existing building retrofits and reconstructions in the floodplains in order to better accommodate projected sea level rise in building design. As detailed in **Chapter 7, "Historic & Cultural Resources,"** the Proposed Action could alter existing visual resources such as properties eligible for designation as New York City Landmarks (NYCLs) or for listing on the State/National Registers of Historic Places (S/NR). However, as detailed in **Chapter 5, "Open Space,"** and **Chapter 9, "Natural Resources,"** the Proposed Action would not result in any significant changes to open spaces or natural resources that are considered significant visual resources in the city's floodplains. Additionally, increased heights and bulks on the Prototypical Analysis Sites would not obstruct any significant viewsheds in the area, or negatively alter the pedestrian experience in the vicinity of the sites.

The Proposed Action would permit an elevated waterfront yard on Prototypical Analysis Site 14 that could alter existing view corridors. Although views of the waterfront or other visual resources could be partially obstructed as a result of the Proposed Action, none of these views would be unique, as more proximate and significant view corridors would remain throughout the city's floodplains, including vantage points in public parks, esplanades, and at street ends adjacent to the waterfront, as well as private waterfront properties that provide public waterfront access. Moreover, it should be noted that some waterfront properties, such as Prototypical Analysis Site 14, would continue to be subject to discretionary review, which requires urban design review and would further encourage the waterfront resiliency measures of the Proposed Action. Additionally, the proposed modifications to elevated visual corridors would help accommodate a broader range of site grade changes and design flood elevations utilized across the waterfront site and building, better reflecting a pedestrian's eye level and thus improving the pedestrian experience. Therefore, no significant adverse impacts to visual resources would occur as a result of the Proposed Action.

## **Natural Resources**

The Proposed Action would not result in any significant adverse impacts to natural resources. Future development as projected with the prototypical sites would not adversely affect floodplains, or increase flooding on the Prototypical Analysis Sites or the adjacent properties. All development is also required to



comply with New York City Building Codes for construction within the 1% annual and 0.2% annual chance floodplains, and the Proposed Action would not affect that requirement.

The Proposed Action and associated RWCDs would not induce development or otherwise affect the many natural areas and parkland located in the floodplain. Development projected under the RWCDs with the Proposed Action is expected to occur exclusively on the Prototypical Analysis Sites, resulting in the disturbance of sites previously developed with commercial and residential uses including structures, paved roads/paths, domestic lawns with trees, or urban yard habitats. These conditions of the Prototypical Analysis Sites within the built environment of the floodplain provide limited habitat for vegetation and wildlife apart from the species common to the city's built environments. It is therefore concluded that the Proposed Action and the related potential changes in land cover would not result in any significant adverse impacts to the natural environment or populations of plant and wildlife species in New York City or the metropolitan region.

Therefore, it is concluded that no further analysis is warranted and there would be no potential for significant adverse natural resource impacts with the Proposed Action.

## **Hazardous Materials**

The Proposed Action could potentially result in significant adverse hazardous materials impacts. In accordance with the methodology outlined in the *CEQR Technical Manual*, a hazardous materials assessment of the Prototypical Analysis Sites was conducted. The Proposed Action could result in increased in-ground disturbance in areas where hazardous materials may be present. The assessment analyzed the potential impacts of hazardous materials as they pertain to the Proposed Action and compared the differences between the No-Action and With-Action scenarios on the Prototypical Analysis Sites.

The extent of the effects of hazardous materials are unknown because of the generic nature of the Proposed Action and because it is not possible to determine exactly where and to what extent additional ground disturbance may occur in the future with the Proposed Action. Without an assessment of specific development sites, the absence of hazardous materials cannot be definitively demonstrated. As such, the possibility of impacts related to hazardous materials cannot be eliminated. The extent of potential impacts is expected to be limited. However, as development resulting from the Proposed Action on the Prototypical Analysis Sites would be as-of-right, there would be no mechanism for the City to conduct or require a program to test for hazardous materials contamination or to mandate the remediation of such materials. Therefore, any such impact would remain unmitigated.

## **Water & Sewer Infrastructure**

The Proposed Action would not result in significant adverse impacts on water and sewer infrastructure. To determine the need for water and sewer impact assessments, a screening analysis was performed for the Proposed Action that compares the development of Prototypical Analysis Sites under the No-Action and With-Action scenarios. The *CEQR Technical Manual* states that a preliminary infrastructure analysis is needed if a project (1) would result in an exceptionally large demand for water (e.g., those that are projected to use more than one million gallons per day such as power plants, very large cooling systems, or large developments); or (2) is located in an area that experiences low water pressure (e.g., areas at the end of the water supply distribution system such as the Rockaway Peninsula and Coney Island). The results of the screening analysis indicate that the Proposed Action would not result in significant adverse impacts on water and sewer infrastructure, and detailed analyses are not warranted.

## **Water Supply**

The Proposed Action would not result in significant adverse impacts on water supply. The preliminary screening concludes that the effects of the Proposed Action would not be great enough to warrant a detailed analysis of water supply.

## **Wastewater Treatment, Stormwater and Drainage Management**

The Proposed Action would not result in significant adverse impacts on wastewater or stormwater conveyance or treatment, or drainage management. The preliminary assessment shows that the incremental development that may occur at any one Prototypical Analysis Site would fall below the CEQR guidance thresholds.

## **Solid Waste & Sanitation Services**

The Proposed Action would not result in any significant adverse impacts on solid waste or sanitation services. In accordance with the methodology outlined in the 2020~~2014~~ *CEQR Technical Manual*, a preliminary assessment was conducted to assess the potential of the Proposed Action to affect demand for solid waste and sanitation services. As the Proposed Action is a generic action, there are no known potential or projected development sites. To produce a reasonable analysis of the likely effect of the Proposed Action, representative Prototypical Analysis Sites were developed. The analysis found that none of the 14 Prototypical Analysis Sites would result in a net increase of more than 50 tons of solid waste per week. As such, the Proposed Action would not result in significant adverse solid waste and sanitation services impacts, and detailed analysis is not warranted.

## **Energy**

The Proposed Action would not result in significant, adverse impacts on the generation or transmission of energy. The energy screening analysis for the Proposed Action considers the projected operational energy consumption for the Prototypical Analysis Sites in the future with the Proposed Action as compared to the No-Action conditions. Based on the incremental change in energy use at each Prototypical Analysis Site, the Proposed Action would not have a substantial impact on the City's energy systems.

## **Transportation**

The Proposed Action would not result in significant adverse impacts on the transportation network. The Prototypical Analysis Sites would be distributed throughout the city's floodplains. Incremental development for both the 1% annual and 0.2% annual chance floodplains at each of the Prototypical Analysis Sites would not exceed the minimum development densities for DUs or commercial uses detailed in Table 16-1 of the *CEQR Technical Manual*. Therefore, further transportation-related analysis is not warranted, and the Proposed Action would not result in significant adverse impacts related to traffic, pedestrians, transit, or parking.

## **Air Quality**

Based on the preliminary assessment, it is concluded that the Proposed Action would not result in any significant adverse air quality impacts. The Proposed Action would not exceed the thresholds referenced in the *CEQR Technical Manual* for mobile source analyses during any traffic peak period. Therefore, based on *CEQR Technical Manual* guidance, no additional mobile source analysis is required for the Proposed Action. As the relevant thresholds are not exceeded, the Proposed Action is therefore not expected to result in any significant adverse air quality impacts due to mobile sources. Additionally, based on the modeling

analysis of stationary sources performed for Prototypical Analysis Sites 3, 5, and 11, the Proposed Action would also not result in any impacts with respect to stationary source air emissions. Therefore, it is concluded that the Proposed Action would not result in any air quality impacts.

## **Greenhouse Gas Emissions & Climate Change**

The Proposed Action would not result in significant adverse impacts related to GHG emissions or climate change, but rather, is expected to promote climate change resiliency in the city. A screening analysis for GHG emissions and climate change was conducted for the Proposed Action by comparing the development of Prototypical Analysis Sites in the No-Action and With-Action scenarios. The Proposed Action would not involve other energy-intensive projects or result in incremental development greater than 350,000 square feet on any of the Prototypical Analysis Sites.

In fact, the Proposed Action would promote sustainability and resiliency in the city's floodplains. The Proposed Action would provide homeowners, business owners, and practitioners living and working in the city's floodplain the option to design or otherwise retrofit buildings to: (a) reduce damage from future flood events, (b) be resilient in the long-term by accounting for climate change, and (c) potentially save on long-term flood insurance costs. In addition, it would allow resiliency improvements to be more easily incorporated on waterfront sites at the water's edge and in public spaces, as well as provide zoning regulations to help facilitate the city's long-term recovery from the COVID-19 pandemic and other future disasters. Overall, implementation of the Proposed Action would improve the ability of the city to withstand and recover quickly from future storms or other disaster events.

## **Noise**

The Proposed Action would not result in any significant adverse impacts related to noise. The Proposed Action would not result in any significant changes in transportation of travel patterns that would affect ambient noise. The Prototypical Analysis Sites would be distributed throughout the city's floodplains. Incremental development for both the 1% annual and 0.2% annual chance floodplains at each of the Prototypical Analysis Sites would not exceed the minimum development densities for DUs or commercial uses requiring a detailed transportation analysis or have the resulting effects on ambient noise conditions from mobile sources. Additionally, any changes in building configuration in the future with the Proposed Action would not affect exposure to emission from surrounding noise generators. For these reasons, it is concluded that no further analysis is needed and the Proposed Action would not result in significant adverse noise impacts.

## **Public Health**

The Proposed Action would not result in significant adverse public health impacts. The Proposed Action would not result in unmitigated significant adverse impacts in the following technical areas that contribute to public health: air quality, water quality, operational noise, or construction. However, as discussed in **Chapter 10, "Hazardous Materials,"** the Proposed Action could potentially result in significant adverse impacts related to hazardous materials because of increased in-ground disturbance in the future with the Proposed Action. Therefore, a preliminary assessment of public health was conducted, which concluded that, although the Proposed Action could result in significant adverse unmitigated impacts related to hazardous materials, the potential for these impacts to occur is expected to be limited and would not significantly affect public health. Therefore, no significant adverse public health impacts are expected as a result of the Proposed Action.

## Neighborhood Character

The Proposed Action would not result in significant adverse impacts on neighborhood character. Land use, zoning, public policy, socioeconomic, open space, shadows, historic and cultural resources, urban design, visual resources, transportation, and noise conditions in the future with the Proposed Action would not negatively affect the neighborhood character of the 1% annual of 0.2% annual chance floodplains as compared to No-Action conditions. Rather, in the case of urban design, the Proposed Action would likely improve the pedestrian experience and therefore the neighborhood character of the city's floodplains. Although significant adverse impacts would occur with respect to historic and cultural resources in the future with the Proposed Action, these impacts would not result in a significant change to one of the determining elements of neighborhood character. As such, no significant adverse neighborhood character impacts would occur as a result of the Proposed Action.

## Construction

The 14 Prototypical Analysis Sites are independent sites and would not require construction that exceeds two years. Although it is possible that a site could be developed or redeveloped in close proximity to other sites, the Proposed Action in-and-of-itself would not induce development or cause a significant change in the overall amount, type, or location of development. Additionally, due to the broad geographic area across which Prototypical Analysis Sites would be located, there are unlikely to be clustering implications associated with geographic or temporal overlap of construction activities.

However, retrofits/reconstructions of existing buildings are expected to occur on eight of the 14 Prototypical Analysis Sites in the future with the Proposed Action. Due to their generic nature, it is not known whether any of these sites would be located within close proximity to any NYCL-eligible and/or S/NR-eligible historic resources. For conservative analysis purposes, it was assumed that the Prototypical Analysis Sites would be located within 90 linear feet of NYCL-eligible and/or S/NR-eligible historic resources. Therefore, the Proposed Action has the potential to result in construction-related impacts to eligible resources.

These eligible resources would continue to be afforded limited protection under DOB regulations applicable to all buildings located adjacent to construction sites. However, as the resources are not S/NR-listed or NYCL-designated, or calendared for designation, they would not be afforded the added special protections under DOB's TPPN #10/88. Additional protective measures afforded under DOB's TPPN #10/88 would only become applicable if the eligible resources are calendared or designated in the future prior to the initiation of construction work. If the eligible resources are not calendared or designated, however, they would not be subject to TPPN #10/88, and may therefore be adversely impacted by adjacent retrofitting work resulting from the Proposed Action.

On sites located within 90 linear feet of eligible historic resources that are owned or controlled by the City, or that require discretionary approvals, LPC would review any potential construction-related impacts to architectural resources and would require that construction on sites incorporates construction protection plans pursuant to the *CEQR Technical Manual* in order to avoid significant adverse construction-related impacts. However, on privately owned sites that do not require discretionary actions within 90 linear feet of eligible historic resources, there is no mechanism for the City to enforce added special protections under DOB's TPPN #10/88, and potential construction-related impacts would be unmitigated.

## H. MITIGATION

The Proposed Action would result in significant adverse impacts related to historic and cultural resources and hazardous materials. As discussed below and in **Chapter 21, "Mitigation,"** no feasible mitigation

measures have been proposed due to the generic nature of the analysis, resulting in the potential for unavoidable significant adverse impacts.

## **Historic & Cultural Resources**

### ***Archaeological Resources***

As detailed in **Chapter 7, “Historic & Cultural Resources,”** the Proposed Action could potentially result in significant adverse impacts on archaeological resources. The Proposed Action would alter the permitted bulks, footprints, and MEP equipment location requirements in the city’s floodplains. As such, additional in-ground disturbance may occur where archaeological remains exist in the future with the Proposed Action.

The extent of effects on archaeological resources are unknown because the Proposed Action is generic, and it is therefore not possible to know exactly where and to what extent additional in-ground disturbance may occur in the future with the Proposed Action. As such, the possibility of effects on archaeological resources cannot be eliminated.

On sites owned or controlled by the City, or sites that require discretionary approvals, LPC would review any potential impacts to archaeological resources, and would require that these impacts be mitigated to the fullest extent possible pursuant to the *CEQR Technical Manual*. However, on privately owned sites that do not require discretionary actions, the anticipated in-ground disturbances would occur as-of-right without LPC oversight. It is anticipated that these effects would be limited; however, there is no mechanism for the City to enforce archaeological testing prior to construction. Therefore, these potential archaeological impacts would remain unmitigated in the future with the Proposed Action.

### ***Architectural Resources***

#### **Direct (Physical) Impacts**

As detailed in **Chapter 7, “Historic & Cultural Resources,”** the Proposed Action could potentially result in significant adverse direct impacts on architectural resources. The Proposed Action in-and-of-itself is not expected to induce development where it would have not occurred absent the Proposed Action. It is possible that Prototypical Analysis Sites may contain privately owned LPC-eligible, S/NR-listed, or S/NR-eligible historic architectural resources. Therefore, direct impacts to these historic resources through as-of-right alterations or demolitions in the future with the Proposed Action cannot be ruled out. As such, the Proposed Action has the potential to result in significant adverse direct impacts to privately owned NYCL-eligible, S/NR-eligible, or S/NR-listed buildings. As there is no mechanism for the City or State to enforce LPC and/or New York State Historic Preservation Office (SHPO) review of these as-of-right alterations, enlargements, or demolitions prior to construction, these potential impacts would remain unmitigated in the future with the Proposed Action.

#### **Construction-Related Impacts**

As detailed in **Chapter 7, “Historic & Cultural Resources”** and **Chapter 20, “Construction,”** the Proposed Action has the potential to result in construction-related impacts to eligible historic resources. The Proposed Action is not expected to induce development as compared to the No-Action scenarios. However, retrofits/reconstructions of existing buildings are expected to occur on eight of the 14 Prototypical Analysis Sites in the future with the Proposed Action that could be located within 90 linear feet of NYCL-eligible and/or S/NR-eligible historic resources. These eligible resources would continue to be afforded limited protection under DOB regulations applicable to all buildings located adjacent to construction sites. However, as the resources are not S/NR-listed or NYCL-designated, or calendared for designation, they would not be afforded the added special protections under DOB’s TPPN #10/88. Additional protective

measures afforded under DOB's TPPN #10/88 would only become applicable if the eligible resources are calendared or designated in the future prior to the initiation of construction work. If the eligible resources are not calendared or designated, however, they would not be subject to TPPN #10/88, and may therefore be adversely impacted by adjacent retrofitting work resulting from the Proposed Action.

On sites located within 90 linear feet of eligible historic resources that are owned or controlled by the City, or that require discretionary approvals, LPC would review any potential construction-related impacts to architectural resources and would require that construction on sites incorporates Construction Protection Plans pursuant to the *CEQR Technical Manual* in order to avoid significant adverse construction-related impacts. However, on privately owned sites that do not require discretionary actions within 90 linear feet of eligible historic resources, there is no mechanism for the City to enforce added special protections under DOB's TPPN #10/88, and potential construction-related impacts would be unmitigated.

## **Hazardous Materials**

The Proposed Action could potentially result in significant adverse hazardous materials impacts, as the Proposed Action could result in increased in-ground disturbance in areas where hazardous materials may be present. As detailed in **Chapter 10, "Hazardous Materials,"** the extent of the effects of hazardous materials are unknown because of the generic nature of the Proposed Action and because it is not possible to determine exactly where and to what extent additional ground disturbance may occur in the future with the Proposed Action. Without an assessment of specific development sites, the absence of hazardous materials cannot be definitively demonstrated. As such, the possibility of impacts related to hazardous materials cannot be eliminated. The extent of potential impacts is expected to be limited. However, as development resulting from the Proposed Action on the Prototypical Analysis Sites would be as-of-right, there would be no mechanism for the City to conduct or require a program to test for hazardous materials contamination or to mandate the remediation of such materials. Therefore, any such impact would remain unmitigated.

## **I. ALTERNATIVES**

### **No-Action Alternative**

The No-Action Alternative assumes that the Proposed Action is not implemented. Conditions under this alternative are similar to the "Future without the Proposed Action (No-Action Condition)" described in the EIS chapters. Although the No-Action Alternative would potentially eliminate the adverse effects of the Proposed Action, the goals and objectives of the Proposed Action would not be met, nor would the associated benefits be realized. In the No-Action Alternative, the city's flood risk will continue to increase with climate change, since sea level rise will increase the potential height of storm surges. The New York City Building Code standards that are tied to today's storm surge projections may not be sufficient to protect buildings from being damaged from future storms under the No-Action Alternative. The No-Action Alternative would not provide clear and simple rules that treat all buildings in the floodplains as similarly as possible; would not guide long-term resilient design across New York City's 1% and 0.2% annual chance floodplains; and would not prepare the city's neighborhoods to withstand future storms.

### **No Unmitigated Significant Adverse Impacts Alternative**

The No Unmitigated Significant Adverse Impacts Alternative examines a scenario in which components of the Proposed Action are changed in order to specifically avoid unmitigated significant adverse impacts associated with the Proposed Action. The potential for unmitigated significant adverse impacts is attributed

to an increase in in-ground disturbance on eight of the 14 Prototypical Analysis Sites in the future with the Proposed Action, as well as as-of-right alterations to potential NYCL-eligible or privately owned S/NR-eligible or S/NR-listed historic architectural resources during retrofitting in the future with the Proposed Action.

As detailed in **Chapter 7, “Historic & Cultural Resources,”** and **Chapter 10, “Hazardous Materials,”** the Proposed Action could lead to incremental in-ground disturbances on eight of the Prototypical Analysis Sites (Nos. 1, 2, 3, 6, 9, 11, 12, and 13). This as-of-right development could occur on sites where archaeological resources or hazardous materials may be present. As such, potential significant adverse impacts with respect to archaeological resources and hazardous materials cannot be eliminated on these sites.

## **J. CONCEPTUAL ANALYSIS**

As detailed in **Chapter 23, “Conceptual Analysis,”** the Proposed Action would not result in any significant adverse impacts to any CEQR technical area. The anticipated retrofitting work on the two Conceptual Analysis Sites would require special permits subject to BSA approval. Detailed and site-specific analyses of the potential effects of the anticipated With-Action projects pursuant to the *CEQR Technical Manual* would be made at the time of the special permit applications in order to make an impact determination. In its reviews, BSA would be required to conclude that the proposed buildings meet flood-resistant construction standards and determine that the other required findings of the special permits are met. These future special permit applications, if determined to meet the findings, thereby would not result in significant adverse impacts to any CEQR technical area pursuant to *CEQR Technical Manual* guidance.

## **K. UNAVOIDABLE ADVERSE IMPACTS**

According to the *CEQR Technical Manual*, unavoidable significant adverse impacts are those that would occur if a proposed project or action is implemented regardless of the mitigation employed, or if mitigation is infeasible. The Proposed Action could result in significant adverse impacts with respect to historic architectural resources, archaeological resources, and hazardous materials, as detailed above. However, as also discussed above, no practicable mitigation measures were identified that would reduce or eliminate these impacts. Therefore, the Proposed Action would result in the potential for unavoidable adverse impacts with respect to historic architectural resources, archaeological resources, and hazardous materials.

## **L. GROWTH-INDUCING ASPECTS OF THE PROPOSED ACTION**

The term “growth-inducing aspects” generally refers to “secondary” impacts of a proposed action that trigger further development outside the directly affected area. The *CEQR Technical Manual* indicates that an analysis of the growth-inducing aspects of a proposed action is appropriate when the project: (1) adds substantial new land use, residents, or new employment that could induce additional development of a similar kind or of support uses, such as retail establishments to serve new residential uses; and/or (2) introduces or greatly expands infrastructure capacity (e.g., sewers, central water supply).

As detailed above, the Proposed Action is a generic action with no defined development sites. The Proposed Action in-and-of-itself is not expected to induce development or cause a significant change in the overall amount, type, or location of development. The development assumptions in the No-Action and With-Action scenarios mirror recent development patterns based on trends between 2012 and 2019. The Proposed Action is not expected to change the rate of growth in the city’s floodplains, which is controlled primarily by the

supply of developable land and by the local supply of skilled professionals in the construction industry. The Proposed Action is not expected to have a substantial effect on the development potential of sites, nor is it expected to modify the current housing development rate within the city's floodplains. As such, the Proposed Action would not add substantial new land uses, new residents, or new employment that could induce additional development of a similar kind or of support uses.

Additionally, the Proposed Action is not expected to negatively affect or impact the marketability of a building in any single zoning district over another and thus would not alter general market forces within any single neighborhood. Furthermore, the Proposed Action would not greatly expand infrastructure. Therefore, the Proposed Action would not result in any secondary impacts.

## M. IRREVERSIBLE & IRRETRIEVABLE COMMITMENTS OF RESOURCES

As detailed in the 2020<sup>14</sup> CEQR Technical Manual, an irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be recovered or reversed. Examples include permanent conversion of wetlands and loss of cultural resources, soils, wildlife, agricultural production, or socioeconomic conditions. Irreversible is a term that describes the loss of future options. It applies primarily to the impacts of use of non-renewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity, that are renewable only over long periods of time. Irretrievable is a term that applies to the loss of production, harvest, or use of natural resources. For example, if farmland is used for a non-agricultural event, some or all of the agricultural production from an area of farmland is lost irretrievably while the area is temporarily used for another purpose. The production lost is irretrievable, but the action is not irreversible.

Several resources, both natural and built, would be expended in the construction and operation of any retrofitting work that may result from the Proposed Action. These resources include building materials used in construction; energy in the form of natural gas, petroleum products, and electricity consumed during construction and operation of buildings; and the human effort required to develop, construct, and operate various components of any potential development. These resources are considered irretrievably committed because their reuse for some other purpose would be impossible or highly unlikely. However, these short-term losses would result in long-term gains, as the building stock of the city's floodplains would become more resilient to future sea level rise and storm surges.

As discussed above, the Proposed Action is a generic action with no defined development sites. The Proposed Action would not significantly change or increase the rate of growth in the city's floodplains, which is controlled primarily by the supply of developable land and by the local supply of skilled professionals in the construction industry. Any development pursuant to that consistent rate of growth would require consumption of resources. However, with the implementation of the Proposed Action, it is expected that future development in the floodplains would result in increased building resiliency in response to the increasing threats of sea level rise and storm surges. As such, the short-term consumption of resources associated with development would result in long-term resiliency gains in the city's floodplains.

Therefore, it is concluded that, while the Proposed Action constitutes an irreversible and irretrievable commitment of potential development sites as a land resource, thereby rendering land use for other purposes infeasible, these short-term losses would result in the long-term benefits of coastal flood resiliency in the city's current and future floodplains.<sup>19</sup>

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<sup>19</sup>This application was referred for information and review by the affected community boards and borough presidents in accordance with the procedures for referring Zoning Resolution amendments as described in the Rules of the City of New York and Section 200 of the Charter.