

## **A. INTRODUCTION**

This chapter assesses whether the reasonable worst-case development scenario (RWCDS) for the proposed project would result in any significant adverse impacts on natural resources that were not addressed in the 2008 FGEIS and subsequent technical memoranda.

## **PRINCIPAL CONCLUSIONS**

This analysis finds that the RWCDS would not result in significant adverse impacts on floodplains, wetlands, sediments, groundwater, terrestrial resources, aquatic resources, endangered, threatened species, or species of special concern and rare ecological communities, and Essential Fish Habitat (EFH) that were not addressed in the 2008 FGEIS and subsequent memoranda.

## **B. SUMMARY OF FINDINGS—2008 FGEIS AND SUBSEQUENT TECHNICAL MEMORANDA**

The 2008 FGEIS and subsequent technical memoranda analyzed the potential for impacts on natural resources resulting from the Willets Point Development Plan. The 2008 FGEIS and subsequent technical memoranda concluded that the proposed Plan would not result in significant adverse impacts on natural resources within the study area.

## **C. METHODOLOGY**

The natural resources assessment has been prepared in accordance with the 2012 *City Environmental Quality Review (CEQR) Technical Manual*. The project site comprises five areas: the Special Willets Point District (the “District”), Willets West, the South Lot, and Lots B and D. Because the Willets West, South Lot, and Lots B and D are all paved surface parking lots, and the District is also developed, the study area for the assessment of potential impacts to floodplains, wetlands, groundwater, and terrestrial natural resources comprises the project site and the areas immediately adjacent to it. An exception was made for the identification of threatened or endangered species, which were evaluated for a distance of at least 0.5 miles from the project site.

The study area for water quality and aquatic resources includes the aquatic resources within Flushing Bay and Flushing Creek.

Existing conditions within the study area were summarized from the following:

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs) and Best Available Flood Hazard Data (BAFHD);
- New York State Department of Environmental Conservation (NYSDEC) Tidal Wetlands Maps and Nature Explorer data;

## Willets Point Development

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- New York City Department of Environmental Protection (DEP) 2010 New York Harbor Water Quality Report;
- Draft Ecological Communities of New York State (Edinger et al. 2002);
- United States Fish & Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps and Information, Planning and Conservation (IPaC) system list of Endangered, Threatened, Candidate, and Proposed species for Queens County, NY; and
- National Oceanic Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) EFH maps and data.

Due to the developed condition of the project site and study area, there would be minimal difference in the potential for effects to natural resources for the three project phases (i.e., 2018, 2028, and 2032). Therefore, the evaluation of potential impacts from the construction and operation of these phases considers the potential impacts from the RWCDS for the year 2032, the full build out of the proposed project.

### THE FUTURE WITHOUT THE PROPOSED PROJECT

In the future condition without the proposed project (the “No Action” condition), the District would continue to have the existing industrial and auto-related uses, and Willets West, the South Lot, and Lots B and D would continue to serve the parking needs of CitiField. It is assumed that the project site, which comprises the study area for the floodplains, wetlands, groundwater and terrestrial resources assessment, is assumed to would remain in its current condition for the three analysis years (i.e., 2018, 2028, and 2032), with the exception that climate change is projected to result in sea-level rise and associated changes in floodplain elevations, and that in the long term the City would undertake citywide efforts to improve resiliency, which would likely include measures to protect the area of Queens that includes Willets Point.

The assessment of water quality and aquatic resources for the No Action condition considered ongoing and proposed projects in the vicinity of the project site, including:

- Water quality and sediment quality improvements expected to occur as a result of regional and local programs; and
- Habitat enhancement or restoration activities associated with the New York/New Jersey Harbor Estuary Program (HEP) or Hudson-Raritan Estuary Ecosystem Restoration Project (HRE).

### POTENTIAL IMPACTS FROM THE PROPOSED PROJECT

In the future with the proposed project, potential impacts on the floodplain, wetlands, groundwater, aquatic, and terrestrial resources from the RWCDS for the proposed project were assessed by considering the following:

- The existing water quality and aquatic resources of Flushing Bay and Flushing River in the vicinity of the project site;
- The existing natural resources within the project site; and
- The permanent and direct effects to these resources due to construction and operation of the proposed project (e.g., land disturbance and tree removal, and discharge of stormwater), and temporary indirect effects such as noise disturbances to wildlife during project construction and operation.

## D. EXISTING CONDITIONS

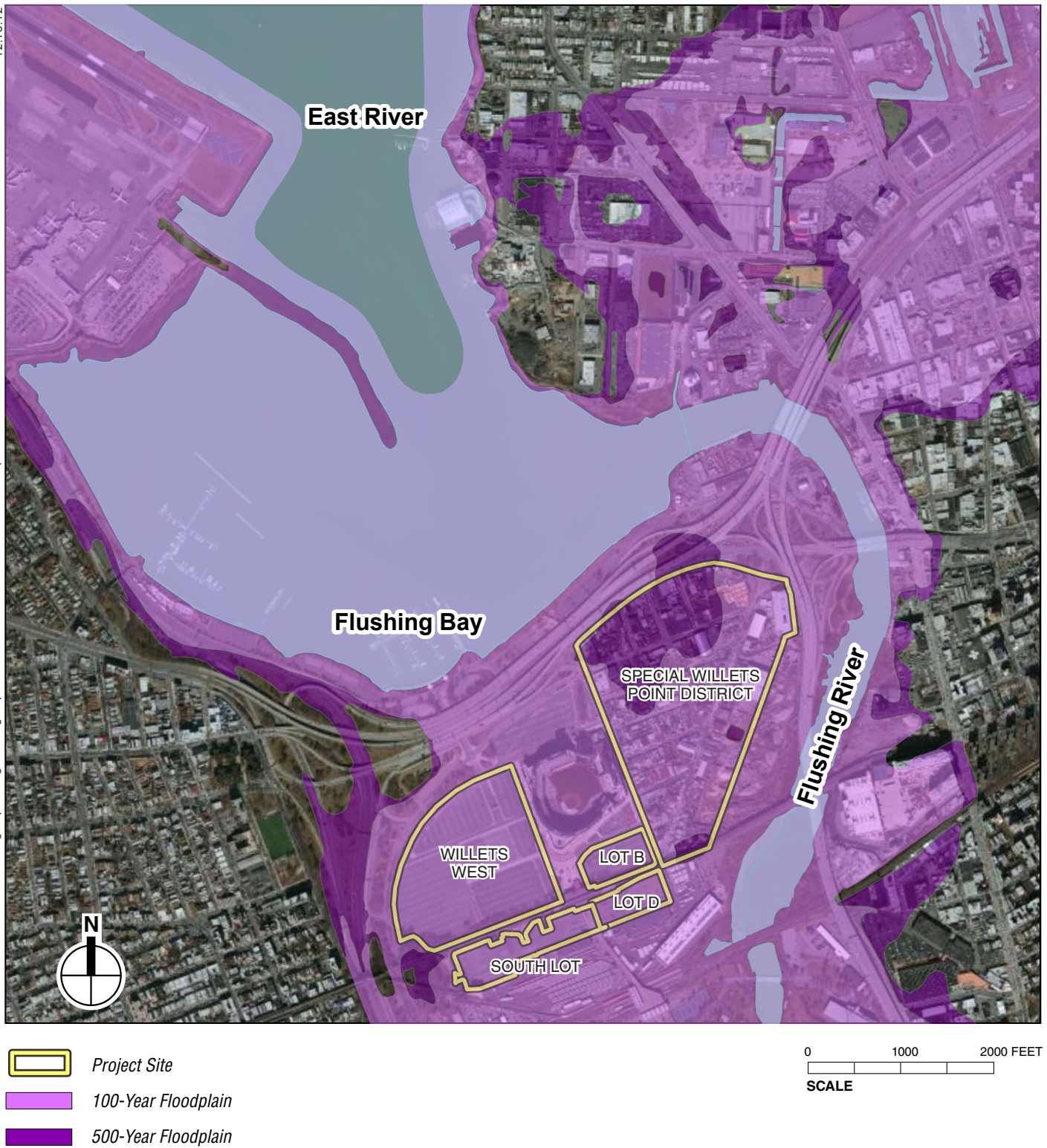
### FLOODPLAINS

New York City is affected by local flooding (e.g., flooding of inland portions of the city from short-term, high-intensity rain events in areas with poor drainage), fluvial flooding (e.g., rivers and streams overflowing their banks), and coastal flooding (e.g., long and short wave surges that affect the shores of the Atlantic Ocean, bays such as Upper New York Bay, and tidally influenced rivers such as the Hudson River and East River, streams, and inlets [FEMA 2007]). Because the East River is tidal, its water level and that of Flushing Bay is controlled by the tidal conditions within the New York Bay, Long Island Sound, and the Atlantic Ocean. Within New York City, tidal flooding is the primary cause of flood damage. Coastal floodplains such as those present within the study area are influenced by astronomic tide and meteorological forces (e.g., northeasters and hurricanes), and not by fluvial flooding (FEMA 2007).

**Figure 9-1** presents the 100-year floodplain boundary (Zone AE; the area with a 1 percent probability of flooding each year) and the 500-year floodplain boundary (Zone X; the area with a 0.2 percent probability of flooding each year) for the project site based on FEMA Flood Insurance Rate Maps (FIRMs) currently in effect. The 100-year flood elevation is at 14 feet National Geodetic Vertical Datum of 1929 (NGVD29), or approximately 13 feet when referenced to the North American Vertical Datum of 1988 (NAVD88). Willets West, the South Lot, and Lots B and D are within the 100-year floodplain. Most of the District is also within the 100 year floodplain, with the exception of three areas located in the northwest, along the eastern border and along Roosevelt Avenue that are within the 500-year floodplain. The portion of the District within the 500 year floodplain along Roosevelt Avenue was indicated as being within the 100-year floodplain in the 2008 FGEIS but is now within the 500-year floodplain on the basis of the updated FEMA FIRM for this portion of the project site.

Floodplain boundaries based on existing FIRMs are currently the only regulatory standard relating to elevations of new developments. On July 2, 2013, FEMA released the latest version of Best Available Flood Hazard Data (BAFHD)—a draft product preceding the publication of new FIRMs. FEMA encourages communities to use the BAFHD when making decisions about floodplain management and post-Hurricane Sandy recovery efforts, and these levels have been adopted by New York City for zoning purposes, allowing projects to account for higher base flood elevations for height and other zoning requirements. The 100-year floodplain elevations are the same as those in the currently effective FIRM in the northern portion of the District, north of 37th Avenue, and are one foot lower in all other areas of the proposed project.

On February 25, 2013, FEMA released Advisory Base Flood Elevation maps for areas in New York City, including the project site. The 100 year flood ABFE for Willets West and portions of the project site to the south of 37th Avenue is 12 feet NAVD88 or 13 feet NGVD 1929 (approximately 1 foot lower than the currently effective FIRM elevation). Within the District, for most of the area to the North of 37th Avenue, the 100 year ABFE is 13 feet NAVD88 or 14 feet NGVD29 (the same as the currently effective FIRM elevation), with the exception of an area mostly to the north of 34th Avenue, which is outside of the advisory 100 year floodplain. Although the ABFE is subject to further review, if it is adopted into the FIRM, the proposed project elements in Willets West and portions of the project site to the south of 37th Avenue where the ABFE differs from the existing FIRM elevation would comply with the updated flood elevation as required by the New York City Building Code.



U.S. Federal Emergency Management Agency  
Flood Hazard Areas  
**Figure 9-1**

### WETLANDS

The boundaries and classifications of the NWI- and NYSDEC-mapped wetlands that are known to occur in the vicinity of the District and Lot B and Lot D, are as described in the 2008 FGEIS. NYSDEC and NWI-mapped wetlands are not present on or adjacent to Willets West or the South Lot (see **Figures 9-2** and **9-3**). Willets West and the South Lot are paved surface parking lots and do not contain wetlands. The areas immediately adjacent to the project site are also developed and do not contain wetlands.

### TERRESTRIAL RESOURCES

Since the publication of the 2008 FGEIS, development has occurred within the immediate vicinity of the District, Willets West, the South Lot, and Lots B and D, including the construction of CitiField, an associated parking lot, and the Department of Sanitation New York (DSNY) North Shore Marine Transfer Station. In addition, in December 2011, the City began construction on new sanitary and storm water mains to support the redevelopment of the District and adjacent areas. These projects did not include any new open space, and did not change the existing amount of vegetation, or natural habitat available to terrestrial wildlife within the immediate area of the project sites.

The ecological communities within the District and Lots B and D are unchanged from those described in the 2008 FGEIS, comprising industrial and auto-related uses and paved surface parking. These areas of the project site, as well as the paved surface parking of the South Lot and Willets West, including the new development described above, could be described as “Terrestrial Cultural” communities by Edinger et al. (2002). These are communities that are “either created and maintained by human activities, or are modified by human influence to such a degree that the physical conformation of the substrate, or the biological composition of the resident community is substantially different from the character of the substrate or community as it existed prior to human influence (Edinger et al. 2002).” For Willets West and the South Lot, dominant vegetation is limited to street trees that are located within parking lot medians of Willets West and around Willets West in the vicinity of Roosevelt Avenue and the northern part of the site along Shea Road.

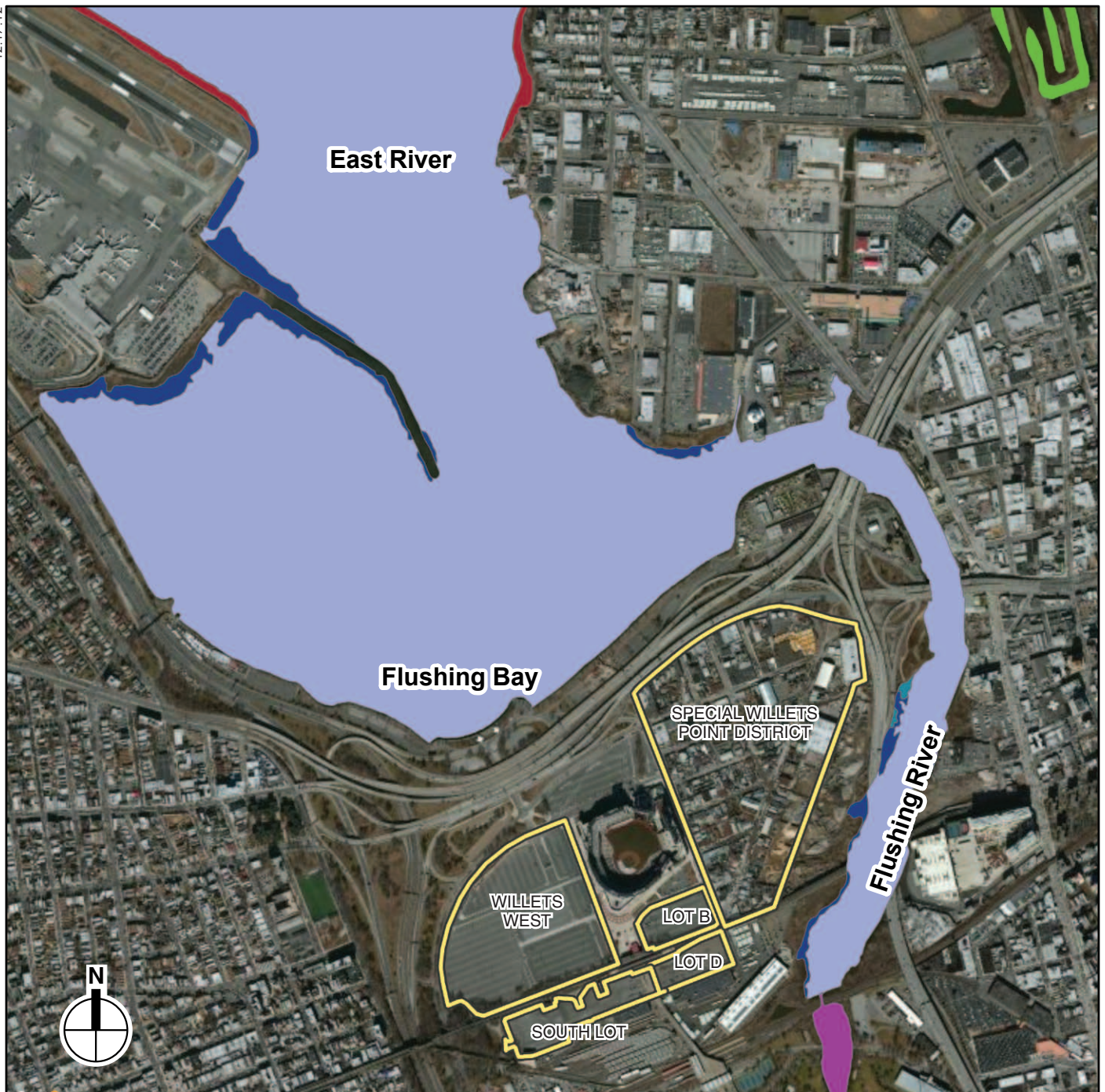
### WILDLIFE

The wildlife expected to occur within the District and Lots B and D would remain unchanged from the existing conditions presented in the 2008 FGEIS. These same urban-adapted species (e.g., Norway rat [*Rattus norvegicus*], rock pigeon [*Columba livia*], European starling [*Sturnus vulgaris*]) would be expected to occur in the vicinity of Willets West and the South Lot.

### GEOLOGY AND SOILS

As described in the 2008 FGEIS, the Willets Point peninsula, where the District, Willets West, the South Lot, and Lot B and Lot D are located, is situated near the westernmost end of Long Island. Soils on the site consist primarily of fill material. The regional stratigraphy of Long Island, including the aquifers and confining layers, was formed from glacial tills and outwash sands of the Pleistocene Epoch. These layers lie unconformably over older deposits of the Cretaceous Period. The Cretaceous deposits lie over an impermeable bedrock surface dipping to the southeast. The bedrock consists of crystalline metamorphic rock of the lower Paleozoic Era.

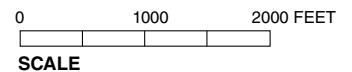




- Project Site**
- Formerly Connected Marsh**
- High Marsh**
- Intertidal Marsh**
- Littoral Zone**
- Coastal Shoals**
- State-Regulated Freshwater Wetlands**

Wetlands Data Source:  
 New York State Department of Environmental Conservation (NYSDEC).  
 Publication date 1999 Albany, NY  
<http://cugir.mannlib.cornell.edu/datatheme.jsp?id=111>

Notes:  
 This map is for informational purposes only. It uses the most current data available and is deemed accurate, but is not guaranteed.







- Project Site*
- Estuarine and Marine Deepwater*
- Estuarine and Marine*
- Freshwater Pond*

Wetlands Data Source:  
 U. S. Fish and Wildlife Service. Publication date April 1, 2012.  
 National Wetlands Inventory website. U.S. Department of the  
 Interior, Fish and Wildlife Service, Washington, D.C.  
<http://www.fws.gov/wetlands/>

Notes:  
 This map is for general reference only. It uses the most current data  
 available and is deemed accurate, but is not guaranteed.

0 1000 2000 FEET  
  
 SCALE

## **GROUNDWATER**

As described in the 2008 FGEIS, testing shows that contamination of the groundwater of the District and adjacent properties is typical to industrial areas and is likely limited to areas with shallow groundwater. As described in Chapter 10, “Hazardous Materials, conditions in the District, Lot B, and Lot D are not expected to have changed significantly from those summarized in the 2008 FGEIS. With respect to a new assessment of Willets West and the South Lot and a reassessment of Lots B and D, as described in Chapter 10, “Hazardous Materials,” evidence of a potential underground storage tank was observed on Lot D, though the Phase I ESA found no registered historical or current petroleum storage tanks. Similarly, the groundwater sampling of Lot B identified some substances (generally metals) at levels above the most stringent (drinking water) standards, but these were consistent with fill. The Willets West and the South Lot were found to be part of an “ash dump.” However, a Phase I ESA conducted on these sites found no evidence of historical or current petroleum storage tanks or other historical uses of concern.

## **AQUATIC RESOURCES**

### *WATER QUALITY*

As described in the 2008 FGEIS, the District is located along the western shore of Flushing Bay and the Flushing River. Willets West, the South Lot, and Lot B, and Lot D do not contain any surface waterbodies and do not border Flushing Bay or Flushing River.

The Flushing River and Flushing Bay are classified by NYSDEC as Use Classification I. Recommended uses for Class I waters are for secondary contact recreation and fishing, and water quality should be suitable for fish propagation and survival.

The DEP monitors water quality in New York Harbor, including Flushing Bay and the Flushing River, through its annual Harbor Survey. The results of recent surveys show that water quality in New York Harbor has improved significantly as a result of measures undertaken by the City. These measures include infrastructure improvements, the elimination of 99 percent of raw dry-weather sewage discharges, the reduction of illegal discharges, the increased capture of wet-weather-related floatables, and the reduction of toxic metals loadings from industrial sources by 95 percent (DEP 2002).

In the Upper East River–Western Long Island Sound survey region of the DEP Harbor Survey (which includes Flushing Bay and Flushing Creek) fecal coliform concentrations (an indicator of untreated sewage discharge) have demonstrated a downward trend over the last 20 years. Data collected in this region in 2009 and 2010, are consistent with this trend, with all but one station (located in Flushing Creek) meeting the Class I standards (DEP 2010). Average dissolved oxygen (DO)<sup>1</sup> concentrations also met the Use Classification I standards in 2009 and 2010 in both surface and bottom waters. Average chlorophyll-*a* concentrations<sup>2</sup> were not indicative of high nutrient concentrations in most

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<sup>1</sup> DO in the water column is necessary for respiration by aquatic biota. The bacterial breakdown of high organic loads can deplete DO and result in low DO levels. Persistently low DO can degrade habitat and affect aquatic biota. Consequently, DO is one of the most universal indicators of overall water quality in aquatic systems.

<sup>2</sup> High levels of nutrients can lead to excessive plant growth (a sign of eutrophication) and depletion of DO. Concentrations of the plant pigment chlorophyll-*a* in water can be used to estimate productivity and the abundance of phytoplankton. Chlorophyll-*a* concentrations greater than 20 micrograms per liter (µg/L) are considered suggestive of eutrophic conditions (DEP 2010).



locations although confined areas such as the heads of Flushing Bay and Flushing River showed eutrophic conditions, particularly in mid-summer (DEP 2010). Secchi transparency<sup>1</sup> during 2010 was indicative of decreased water clarity, particularly in constricted waterways, likely due to high suspended solid concentrations of surface waters (DEP 2010).

### AQUATIC BIOTA

The aquatic biota existing conditions remain unchanged from those described in the 2008 FGEIS. The composition of aquatic biota within Flushing Bay is expected to remain unchanged from the 2008 FGEIS conditions, even though water quality within the Upper East River-Western Long Island Sound continues to improve. As long as the substrate within Flushing Bay is dominated by fine grain material, many invertebrate species will continue to be excluded, limiting the diversity of the benthic macroinvertebrate community (even though the macroinvertebrate organisms can be abundant). Because of this lack of diversity in the benthic macroinvertebrate community, many fishes will make limited use of the habitat due to lack of preferred prey (NYCDEP 2011).

As discussed in the 2008 FGEIS, a 2003 field program found that the most abundant species were Atlantic silverside (*Menidia menidia*) and Atlantic sea herring (*Clupea harengus*), the latter as identified as a species with EFH in the study area. In addition, finfish sampling was conducted during August through October 2001 and July, September and October 2002 at the mouth of Flushing Bay and the inner Bay region. A total of 13 finfish species and 3 crab species were collected during the surveys. The primary fish collected were weakfish (41 percent), winter flounder (36 percent), Atlantic menhaden (9 percent) and striped bass (*Morone saxatilis*) (8 percent) (DEP 2012). The most abundant finfish eggs collected in the 2003 field program were cunner (*Tautoglabrus adspersus*) and Atlantic menhaden (*Brevoortia tyrannus*). The most abundant finfish larvae collected in the 2003 field program were herring (*Clupea* spp.), Atlantic menhaden, anchovy (*Anchoa* spp.), winter flounder, and goby (*Gobiosoma* spp.) (DSNY 2005). The most abundant macroinvertebrate species collected in 2003 were sevenspine bay shrimp (*Crangon septemspinosa*) and grass shrimp (*Palaemonetes vulgaris*). During the 2001 and 2002 field programs, three species of crabs were also collected including blue crab (*Callinectes sapidus*), Atlantic rock crab (*Cancer irroratus*) and green crab (*Carcinus maenas*) (DEP 2012). With respect to benthic habitats, data collected (1995 and 2012) in the bay show high abundances of pollution-tolerant species (e.g., *Oligochaeta*, *Leitoscoloplos robustus*) suggesting that the habitat quality is poor in this bay (Iocco et al. 2000; DEP 2012).

### SEDIMENT QUALITY

The sediment existing conditions remain unchanged from those described in the 2008 FGEIS. Even with continued improvements in water quality, the substrates of Flushing Bay consist of fine silts and, as a result, the benthic community remains limited to pollution tolerant species (NYCDEP 2011). As discussed in the 2008 FGEIS, New York Harbor Estuary sediments,

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<sup>1</sup> Secchi transparency is a measure of the clarity of surface waters. Transparency greater than 5 feet (1.5 meters) indicates relatively clear water. Decreased clarity can be caused by high suspended solid concentrations or blooms of plankton. Secchi transparencies less than 3 feet (0.9 meters) may be considered indicative of poor water quality conditions. Average Secchi readings in the Inner Harbor area have remained relatively consistent since measurement of this parameter began in 1986, ranging between approximately 3.3 and 6.1 feet (1.0 to 1.9 meters) (DEP 2010).

including the upper East River/Flushing Bay, are contaminated due to a history of industrial uses in the area. Backwaters such as Flushing Bay tend to be sediment traps; fine silts tend to accumulate in areas where tidal current velocities are reduced. The benthic habitat of Flushing Bay has been classified as soft silt or as silt with infauna. Some areas are presence of “stressed silt,” or silt with methane gas voids. Deeper collections near the confluence with the East River were characterized as azoic (silty bottoms without epifauna, infauna, or bacterial mats). The sediments in Flushing Bay are indicative of recently accumulated material that has limited potential to support a diverse benthic faunal community (Iocco et al. 2000; NYCDEP 2011).

### **THREATENED, ENDANGERED, RARE, AND SPECIAL CONCERN SPECIES AND SIGNIFICANT ECOLOGICAL COMMUNITIES**

Requests for federally and state-listed species and ecological communities information were made to the USFWS, New York Natural Heritage Program (NYNHP), New York Department of State (NYSDOS), and National Marine Fisheries Service (NMFS) in preparation of the 2008 FGEIS. Responses from these agencies indicate that federally or state-listed species are not known to occur within the study area. Furthermore, the 2008 FGEIS concluded that habitat is not present for federally and state-listed species.

The USFWS’s IPaC system (accessed July 17, 2013) ~~“Queens County Federally Listed Endangered and Threatened Species and Candidate Species” list~~ (accessed November 5, 2012) ~~indicate lists~~ three federally listed species as occurring in Queens County: the piping plover (*Charadrius melodus*), roseate tern (*Sterna dougallii dougallii*), and seabeach amaranth (*Amaranthus pumilus*) (USFWS 2013<sup>2</sup>).<sup>1</sup> The study area comprises developed land that does not provide habitat for these species and they are not expected to occur within the project site. NYSDEC’s Nature Explorer database (accessed November 5, 2012) does not indicate any known occurrences of state-listed plant species or wildlife within an approximate 0.5-mile radius of the study area (NYSDEC 2012). Therefore, state-listed species are not expected to occur within the study area.

### **ESSENTIAL FISH HABITAT (EFH)**

**Table 9-1** lists the species and designated life stages identified as having EFH within the study area. This list is unchanged from the 2008 FGEIS with the exception of the addition of the dusky shark larval stage. Two EFH-designated species were identified during the 2003 sampling: the Atlantic sea herring was found to be abundant during the 2003 sampling event, as described above. In addition, the winter flounder (*Pleuronectes americanus*) was also collected during the 2003 survey.

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<sup>1</sup> These species were not identified in the 2008 FGEIS.

Table 9-1

Essential Fish Habitat Designated Species for the Upper East River

Species	Eggs	Larvae	Juveniles	Adults
Pollock ( <i>Pollachius virens</i> )			X	X
Red hake ( <i>Urophycis chuss</i> )		X	X	X
Winter flounder ( <i>Pseudopleuronectes americanus</i> )	X	X	X	X
Windowpane flounder ( <i>Scophthalmus aquosus</i> )	X	X	X	X
Atlantic sea herring ( <i>Clupea harengus</i> )		X	X	X
Bluefish ( <i>Pomatomus saltatrix</i> )			X	X
Atlantic butterfish ( <i>Peprilus triacanthus</i> )		X	X	X
Atlantic mackerel ( <i>Scomber scombrus</i> )			X	X
Summer flounder ( <i>Paralichthys dentatus</i> )		X	X	X
Scup ( <i>Stenotomus chrysops</i> )	X	X	X	X
Black sea bass ( <i>Centropristis striata</i> )			X	X
King mackerel ( <i>Scomberomorus cavalla</i> )	X	X	X	X
Spanish mackerel ( <i>Scomberomorus maculatus</i> )	X	X	X	X
Cobia ( <i>Rachycentron canadum</i> )	X	X	X	X
Sand tiger shark ( <i>Carcharias taurus</i> )		X <sup>(1)</sup>		
Dusky shark ( <i>Carcharhinus obscurus</i> )		X <sup>(1)</sup>		
Sandbar shark ( <i>Carcharhinus plumbeus</i> )		X <sup>(1)</sup>		X

**Notes:** <sup>(1)</sup> This species does not have a free-swimming larval stage; rather it is a live bearer that gives birth to fully formed juveniles. For the purposes of this table, "larvae" for the sand tiger shark refers to neonates and early juveniles.

**Sources:** [http://www.nero.noaa.gov/hcd/STATES4/conn\\_li\\_ny/40407350.html](http://www.nero.noaa.gov/hcd/STATES4/conn_li_ny/40407350.html)

## E. THE FUTURE WITHOUT THE PROPOSED PROJECT

### FLOODPLAINS

Floodplain elevations in the project site will change as a result of climate change and associated rises in sea level. As discussed in Chapter 16, "Greenhouse Gas Emissions and Climate Change," the New York City Panel on Climate Change (NPCC) projects that the 100-year floodplain elevation will increase 11 to 24 inches by the middle of the century (2050s middle range, 25th to 75th percentile), with a possible increase as high as 31 inches (high estimate, 90th percentile)<sup>1</sup>. The NPCC predicts that intense hurricanes are "more likely than not" to increase in intensity and/or frequency, while possible changes in other large storms (e.g., Nor'easters) are uncertain. Regardless of storm frequency, the frequency of flooding events would increase because the sea level rise would result in flooding due to lesser storms, such that the current flood with a 1 percent chance of occurring in any given year would have a 5 percent chance of occurring in any given year by mid-century, and higher by the end of the century.

### TERRESTRIAL RESOURCES

In the future without the proposed project, there would be no change to the terrestrial resources habitats, vegetation, or wildlife (i.e., ~~habitats and wildlife~~) of the District, Willets West, the South Lot, Lot B, and Lot D or adjacent properties (e.g., CitiField). These sites would remain as terrestrial cultural ecological communities with limited wildlife habitat.

<sup>1</sup> New York City Panel on Climate Change, *Climate Risk Information 2013*, June 2013.



## **AQUATIC RESOURCES**

As described in the 2008 FGEIS, there are several proposed and ongoing projects aimed at improving water quality and aquatic resources in New York that have the potential to result in water quality and aquatic habitat improvements in the Flushing Bay and Flushing River. These projects are independent of the proposed project. The project descriptions provided below include updates since the 2008 FGEIS.

### *NEW YORK/NEW JERSEY HARBOR ESTUARY PROGRAM (HEP)*

The New York/New Jersey Harbor Estuary Program (HEP) improvement projects as described in the 2008 FGEIS would occur without the proposed project and would continue through the proposed construction in 2018 to full operation of the project in 2032.

### *NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION*

As described in the 2008 FGEIS, DEP has taken several steps in recent years to mitigate discharges from combined sewer overflows (CSOs). In combination with improvements that have been made to Wastewater Pollution Control Plants (WPCPs), and the on-going Comprehensive City-Wide Floatables Abatement Plan,<sup>1</sup> the CSO improvements are expected to result in future improvements in coliform, dissolved oxygen, and floatables levels in the New York Harbor area. The improvements are expected to continue through the proposed construction in 2018 to the full operation of the project in 2032.

As required by EPA's CSO Control Policy, DEP initiated the development of the Long Term Control Plan (LTCP) Project in 2004. The LTCP Project is integrating CSO Facility Planning Projects and the Comprehensive City-Wide Floatables Abatement Plan, incorporating ongoing Use and Standards Attainment Program (USA) Project work, and developing Waterbody/Watershed Facility Plan Reports and the LTCP for each waterbody area, including Flushing Bay. As of 2011, DEP continues its development of the LTCP. The LTCP incorporates several cost-effective engineering solutions to address water quality issues of Flushing Bay, including increases in DO concentrations, decreases in coliform concentrations, and reductions in nuisance odors and floatables that are a consequence of CSO discharges. The Flushing Bay Waterbody/Watershed Facility Plan includes measures to maximize the wet weather capacity of Bower Bay WPCP, incorporates passive floatables controls, and plans for dredging five feet below mean lower low water (MLLW) to remove existing sediments of Flushing Bay to reduce odors. Following dredging it is anticipated that the bottom two feet would be capped to cover any exposed sediments, although the final design would be developed during the design and permitting phases.

NYCDEP has developed a "Green Infrastructure Plan" that provides a framework for CSO reduction strategies and investments over the next 20 years. The primary goal of the green infrastructure component is to manage runoff from 10 percent of the impervious surfaces in combined sewer watersheds through various detention and infiltration source controls such as rain barrels, swales, and green roofs. This plan includes green infrastructure for the drainage areas of Flushing River and Flushing Bay.

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<sup>1</sup> New York City Department of Environmental Protection. 1999. Comprehensive Planning for Control of CSO Floatables and Settleable Solids in New York City. Available: <http://www.hydroqual.com/Papers/wmcmillin/02/Small/index.htm>.

### *UNITED STATES ARMY CORPS OF ENGINEERS*

In addition to the dredging proposed by DEP, the United States Army Corps of Engineers (USACE) is developing engineering and design plans for the maintenance dredging of the Flushing Bay and Flushing River navigational channel.

### *OTHER PROJECTS*

As part of ongoing infrastructure work to better manage stormwater within the Willets Point District, the New York City Economic Development Corporation (EDC) received authorization from the USACE in December 2010 and from NYSDEC in February 2011. The new 126th Street outfall combined with re-use of the existing 127th Street outfall would contribute to improved water quality conditions within Flushing Bay and would be operational by 2018.

## **F. PROBABLE IMPACTS OF THE PROPOSED PROJECT**

Due to the developed condition of the project site and study area, there would be minimal difference in the potential for effects to natural resources for the three project phases (i.e., 2018, 2028 and 2032). Therefore, the evaluation of potential impacts from the construction and operation of these phases considers the potential impacts from the RWCDS for the year 2032, the full build out of the proposed project.

### **FLOODPLAINS**

On the basis of the currently effective FEMA FIRM, Willets West, the South Lot, and Lots B and D are within the 100-year floodplain. Most of the District is also within the 100-year floodplain, with the exception of three areas located in the northwest, along the eastern border and along Roosevelt Avenue that are within the 500-year floodplain. Thus, in some locations, particularly within the District, new fill would be required to grade and raise the project site structures above the 100-year flood elevation, consistent with the New York City Building Code<sup>1</sup> and any future revisions to these requirements that may be made on the basis of FEMA ABFEs, BAFHD and eventually updated FIRMs. According to the BAFHD, the 100-year floodplain elevations are the same as the current FIRM in the northern portion of the District, north of 37th Avenue, and are one foot lower in all other areas of the proposed project. Factoring in recently updated (June 2013) New York City Panel on Climate Change projections of sea-level rise, it is expected that the 100-year floodplain elevation will increase 11 to 24 inches by the middle of the century (2050s middle range, 25th to 75th percentile), with a possible increase up to 31 inches (high estimate, 90th percentile) (see Chapter 16, “Greenhouse Gas Emissions and Climate Change”).

Under the current plan, the District portion of the project site and Willets West would be graded and elevated one foot above the current FIRM floodplain (which is two feet above the BAFHD for all project areas except a portion of the District north of 37th Avenue) such that the occupiable floors would be at an elevation of 14 feet (NAVD88) and would meet the requirements of the New York City Building Code. Therefore, the proposed design would

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<sup>1</sup> As specified in Appendix G: “Flood Resistant Construction” of the *New York City Building Code* <sup>1</sup> for the applicable building category (see Table 1604.5 of the *New York City Building Code* or Table 1-1 of Appendix G to the *New York City Building Code*), and revisions to these requirements prior to construction.

reduce the vulnerability to flood damage as compared with existing conditions, as well as offer resilience to the 1 to 2 feet of sea-level rise expected to occur by mid-century (2050s). To account for climate change, the occupiable floors of the proposed buildings are designed to be at an elevation of 1 to 2 feet above the ABFE to provide resilience to the 1 to 2 foot rise in future sea level that is projected by the New York City Panel on Climate Change. Changes to the grade elevation are expected would likely to occur in phases. During Phase 1A, the majority of the project site would remain at the existing grade and only the hotel and commercial spaces would be built at a higher grade above the floodplain elevation. No internal, private streets would be built during Phase 1A. The remainder of the extent of Phase 1A and 1B would be raised above the 100 year flood elevation prior to completion of the development of Phase 1B in 2028. Those grade changes would either occur through new fill and retaining walls or by building atop basements that raise the finished floor height above the floodplain elevation. Grade transitions would be created between the new streets in Phase 1B and the existing street grades that would remain in the Phase 2 area until that area is raised prior to completion of Phase 2 development in 2032.

As discussed in further detail in Chapter 16, “Greenhouse Gas Emissions and Climate Change,” further measures will be investigated and implemented within the proposed project site to the extent practicable. Prior to commencement of construction for each phase of the project, the project sponsor will work with the Mayor’s Office of Environmental Coordination (MOEC) to develop a plan for resilience of the proposed area to be developed in that phase from future flood levels, considering the types of uses proposed; the plan will be designed with the goal of making the project area resilient to end-of-century flood levels in residential areas, and mid-century in other areas. This may be achieved via a combination of practicable measures within the project, potentially including grade change, protection of critical infrastructure, and design elevations, and storm surge protection measures if those are practicable and relevant within the area to be developed in that phase, along with areawide or waterfront measures to be undertaken by the City outside of the project area, as appropriate. While the plan for each phase may not identify all details necessary for the long-term implementation, it will identify the practicable measures needed for that phase of the project and conceptual measures being considered or undertaken by the City beyond the project site. The plan will be consistent with the City’s citywide coastal protection policy as described in *A Stronger, More Resilient New York* through the 2050s.

For sea level rise beyond the 1 to 2 feet projected for mid-century, the most practicable solutions to increase resiliency may include areawide and/or waterfront solutions, which may need to be implemented off-site by the City. While the City has not yet undertaken the studies needed to select the most effective measure to offer flood protection to the area of Queens that includes Willets Point, some measures that may be undertaken by City agencies in the future include:

- Coastal edge elevation measures;
- The City’s tide gate repair study at Flushing Meadows, if relevant; and
- Integrated flood protection and storm surge barriers.

The City would also have the authority to require an increase in the proposed grade of the District at the time of such future development via changes to the New York City Building Code, by incorporating changes to the flood level provisions, or via other New York City Executive Orders, rules, or regulations, as may be issued at that time.

By striving to incorporate reasonable strategies that would increase resilience to the likely projected effects of climate change through the 2050s, the proposed project would go beyond the



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legal requirements to address the potential effects of climate change on a project and would be consistent with the City's Special Initiative for Rebuilding and Resiliency policy. As part of citywide efforts to improve coastal resiliency, it is anticipated that solutions for protecting the area over a longer time horizon will be developed before sea levels rise beyond 1 to 2 feet.

Because the 100-year floodplain within and adjacent to the study area is affected by coastal flooding (rather than local or fluvial flooding) as a result of astronomic tides and meteorological forces, flooding conditions in the project site and surrounding area would not be affected by construction or regrading/filling that would occur for the proposed project.

~~Therefore, the design for the structures for the RWCDS would minimize the potential for public and private losses due to flood damage under current flood conditions, and no significant adverse impacts are expected. Because the 100 year floodplain within and adjacent to the study area is affected by coastal flooding (rather than local or fluvial flooding) as a result of astronomic tides and meteorological forces, flooding conditions in the project site and surrounding area would not be affected by construction or regrading/filling that would occur as part of the RWCDS.~~

## **WETLANDS**

As described in the 2008 FGEIS, NYSDEC and NWI-mapped wetlands would not be impacted as a result of the proposed project within the District, and Lots B and D. Similarly, because there are no wetlands present within Willets West or the South Lot, the RWCDS would not adversely affect wetland resources.

## **TERRESTRIAL RESOURCES**

### *ECOLOGICAL COMMUNITIES*

The ecological communities of the study area are developed with buildings, streets, and parking lots. Vegetated areas are limited to successional urban-tolerant species of little ecological value. As described in the 2008 FGEIS, the proposed project would not have a significant adverse impact on ecological communities in the District and Lots B and D. Willets West and the South Lot are paved parking lots. Within Willets West, vegetation is limited to street trees located along the perimeter of the property and in the parking lot. Tree replacement and protection would comply with the New York City Department of Parks and Recreation's (NYCDPR) applicable rules and regulations. Trees under the jurisdiction of NYCDPR may not be removed without a permit pursuant to Title 18 of the Administrative Code of the City of New York. Chapter 5 of Title 56 of the Rules of the City of New York establishes rules for valuing trees that are approved for removal to determine the appropriate number of replacement trees. A method to calculate the number of replacement trees as per the New York City tree replacement code, such as the caliper replacement method, would most likely be used to quantify the size and number of trees that would be required to replace those removed from the project sites. Measures to protect existing trees would include protection plans to minimize impacts to the critical root zones, trunks, and canopies. The potential loss of trees and the existing "terrestrial cultural" ecological communities within the project site, which are common to the New York metropolitan area, would not result in significant adverse impacts to vegetation resources within the region.

### ***WILDLIFE***

Potential impacts to wildlife from construction activities for the project generally include noise and visual disturbances. Site preparation activities and construction of the RWCDS would generate noise and anthropogenic activity. However, impacts to wildlife would be minimal because wildlife within the study area consists of urban-adapted, highly disturbance-tolerant species. The species of wildlife in the area are ubiquitous throughout the city and commonly inhabit areas with extensive levels of human disturbance and degraded habitat conditions. Wildlife occurring in the area would not be expected to be significantly impacted by the noise and other anthropogenic disturbances generated by project construction.

The RWCDS for the proposed project would create conditions for wildlife that would be similar to those currently present within the project site, and would thus support wildlife species similar to those currently using the project site. Landscaped areas resulting from the RWCDS for the proposed project would have the potential to improve on the quality of the habitat available for urban tolerant wildlife species currently present within the study area, and would improve the suitability of the project site as migratory bird stopover habitat.

The increased human activity that would occur as a result of the RWCDS for the proposed project, when compared to the future without the proposed project in 2032 would not be expected to adversely affect disturbance-tolerant wildlife using the limited habitats within the study area. Operation of the RWCDS for the proposed project in 2032 would result in more buildings with windows in the area with which birds would have the potential to collide, and thus daytime bird collision risk would be slightly greater than under the existing conditions. Although birds are known to collide with tall artificial structures at night, the overwhelming majority of bird collisions with buildings occur during the daytime when lower story windows reflect images of nearby trees and other vegetation, and sky (Gelb and Delecretaz 2006, 2009; Klem et al. 2009).

The additional buildings and glass coverage that would occur in the area by 2032 would not be expected to increase the likelihood of nighttime bird strikes, which is considered to be extremely low due to the limited height of the proposed buildings. Nighttime collisions of birds with artificial structures are often strongly related to structure height (Kerlinger 2000). Most birds migrate at altitudes of 656 to 2,461 feet (Able 1970, Mabee et al. 2006) and rarely fly below 295 feet (Mabee and Cooper 2004). Heights of the proposed buildings would be low, ranging from 63 to 218 feet. As such, none of the proposed buildings would extend into air space commonly used by migrating birds, and nighttime collisions of birds would be rare.

Daytime collision potential would be highly dependent on the building designs and the surrounding landscaping. The landscaped habitat that would be available within the project site by 2032 would be used most likely by common, resident bird species, such as house sparrows and European starlings, which rarely collide with windows (O'Connell 2001). Therefore, consistent with the conclusions in the 2008 FGEIS, the construction and operation of the RWCDS would not result in direct or indirect significant adverse impacts on wildlife.

### ***GEOLOGY AND SOILS***

As discussed in Chapter 10, "Hazardous Materials," management of wastes generated in the cleanup and redevelopment of the project site will be conducted in accordance with applicable federal, state, and local regulatory requirements and with oversight of NYC regulatory agencies. As a result, the proposed project would have the potential to have a direct benefit to soils of the

study area. Therefore, consistent with the conclusions in the 2008 FGEIS the RWCDs would not result in direct or indirect adverse impacts to soils of the study area.

### **GROUNDWATER**

As discussed in Chapter 10, “Hazardous Materials,” a construction health and safety plan (CHASP) and Site Management Plan (SMP) for site remediation, excavation, and redevelopment would be developed and would include detailed procedures for managing known contamination issues (e.g., tank removal, and soil and groundwater remediation of existing petroleum spills, excavation, and removal of existing septic tanks or fields, floor drains, and historic fill), as well as any unexpectedly encountered contamination issues. As a result, the proposed project would have the potential to result in a net benefit to groundwater of the study area. In addition, as discussed in Chapter 10, “Hazardous Materials,” pile driving for new construction would not be anticipated to significantly change the overall groundwater flow regime. Thus, consistent with the conclusions of the 2008 FGEIS and subsequent technical memoranda, the proposed project would not result in significant adverse impacts related to groundwater quality.

### **AQUATIC RESOURCES**

#### *WATER QUALITY AND AQUATIC BIOTA*

No in-water construction activities would result from the construction of the RWCDs. Soil disturbing activities associated with construction all phases of the RWCDs would be conducted in accordance with the NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001). Erosion and sediment control measures to be implemented during construction activities would be specified in the stormwater pollution prevention plan (SWPPP). With the implementation of these measures, stormwater discharged through the existing stormwater outfalls would not result in significant adverse impacts to water quality and aquatic biota of Flushing Bay. Additionally, with implementation of the proposed site remediation (detailed in Chapter 10, “Hazardous Materials”) construction and operation of the RWCDs would reduce the potential for contaminants to enter Flushing Bay and the Flushing River, thereby having the potential to improve the water quality of these waterbodies.

As discussed in Chapter 11, “Water and Sewer Infrastructure”, all phases of the RWCDs would be consistent with the City’s goal to reduce CSO events by requiring construction and maintenance of a separate storm and sanitary sewer system. The new sanitary sewer infrastructure would connect to the Bowery Bay Wastewater Treatment Plant (WWTP) via the City’s sewer system and would not cause the plant to exceed its capacity or SPDES permit limit of 150 million gallons per day (mgd). As such, there would be no impacts to water quality of the East River. Water quality of the East River in the vicinity of the Bowery Bay WPCP would continue to meet the Use Class I water quality standards. The 2008 FGEIS found that there would be no significant increase in the frequency of CSO events as a result of the Willets Point Development Plan because CSOs primarily relate to stormwater inputs, which greatly exceed sanitary flow rates during storm events. As a result of this conclusion, it is anticipated that the sanitary flow from the RWCDs, (lower than projected in the 2008 FGEIS) would not significantly affect the number of annual CSO events. Moreover, water conservation measures and low-flow fixtures as required by New York City Plumbing Code (Local Law 33 of 2007) would be employed to minimize sanitary sewage flow to the existing combined sewer system.



Stormwater runoff from the project site during all phases of the RWCDs would be treated in accordance with the SWPPP, and conveyed to Flushing Bay through a separate storm sewer system in accordance with an ADP that would be developed by the Queens Development Group, LLC (QDG) and approved by DEP.

Given that the District currently lacks sewer infrastructure and stormwater from the existing industrial uses flows heavily into Flushing Bay, discharges from the proposed system in the future with the RWCDs in 2018, 2028, and 2032 would be a substantial improvement over current conditions. Further, the proposed project would be consistent with the goals of DEP's NYC Green Infrastructure Plan by managing stormwater at the site. Overall, implementation of the new system is expected to improve stormwater quality and, in turn, improve water quality in Flushing Bay by addressing existing chronic flooding, improving the quality of the soil substrate of the site, providing direct drainage to storm sewers, and incorporating sustainable design features, where feasible, to reduce discharge volume and increase the quality of stormwater discharges. Therefore, consistent with the conclusions of the 2008 FGEIS, the construction and operation of the RWCDs would not result in significant adverse impacts to water quality and aquatic biota of Flushing Bay and the Flushing River.

#### *SEDIMENT QUALITY*

No in-water construction would take place in Flushing Creek and Flushing Bay as a result of the RWCDs. Therefore, the sediments of Flushing Creek and Flushing Bay would not be impacted during the construction or operation of the proposed project. Furthermore, the dredging plans for Flushing Bay, as proposed by DEP and as part of USACE's navigational channel clearance maintenance, would not be impacted by the construction or operation of the proposed project.

#### **THREATENED, ENDANGERED, RARE, AND SPECIAL CONCERN SPECIES AND SIGNIFICANT ECOLOGICAL COMMUNITIES**

As discussed in the 2008 FGEIS and above under "Existing Conditions," federally and state-listed species and ecological communities are not known to occur within the study area nor is habitat present. Therefore, consistent with the conclusions of the 2008 FGEIS, the RWCDs would not result in adverse impacts to federally and state-listed species.

#### **ESSENTIAL FISH HABITAT**

As discussed above, no significant adverse impacts to aquatic biota are expected as a result of the proposed project. Construction would not occur within Flushing Bay or Flushing Creek. Therefore, consistent with the conclusions of the 2008 FGEIS, the RWCDs would not result in significant adverse impacts to EFH.

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