Chapter 7: Natural Resources

A. INTRODUCTION

Under the 2012 *City Environmental Quality Review (CEQR) Technical Manual* guidelines, natural resources are defined as "(1) the City's biodiversity (plants, wildlife and other organisms); (2) any aquatic or terrestrial areas capable of providing suitable habitat to sustain the life processes of plants, wildlife, and other organisms; and (3) any areas capable of functioning in support of the ecological systems that maintain the City's environmental stability." A natural resources assessment considers species in the context of the surrounding environment, habitat or ecosystem and examines a project's potential to impact those resources.

The USTA Billie Jean King National Tennis Center (NTC) Strategic Vision (the proposed project) would result in a series of improvements on the project site, as described in Chapter 1, "Project Description." This chapter considers the proposed project's potential impacts on natural resources present within and adjacent to the project site. The analysis describes and evaluates the potential for direct and indirect impacts to these resources from the construction and operation of the proposed project.

PRINCIPAL CONCLUSIONS

The analysis finds that the proposed project would not result in any significant adverse natural resources impacts.

Most project components would entail redevelopment of existing facilities, relocation of facilities, or construction of new facilities in previously developed areas within the NTC. The relocation of Grandstand Stadium (Stadium 3), a connector road, and the relocation of the southern NTC fence line 25 to 38 feet to the south are the only project elements that would involve developing previously undeveloped land (mostly consisting of lawn and mature shade trees), but this activity would occur in the southern section of the NTC, which is outside of any floodplain and would not increase local flood risk. Construction would require the disturbance of ecological communities present on-site and removal of approximately trees from both outside the existing fence line and various locations inside the NTC site. Tree replanting and replacement within the NTC and elsewhere within the park would comply with the New York City Department of Parks and Recreation (DPR)'s applicable rules and regulations. Approximately 422 trees would be removed, which would be transplanted to the extent practicable. Trees that could not be transplanted would be replaced pursuant to City regulations. The proposed project would not significantly alter the ecological communities of the region, as similar ecological communities would be created as a result of the landscaping plans, after the proposed development has taken place. Because the wildlife community in the study area is composed of disturbance-tolerant, synanthropic species and levels of human disturbance are already high, noise generated during construction and operation of the proposed project would not be expected to displace or otherwise negatively affect wildlife. No federally or state-listed endangered wildlife species are known to or considered to have the potential to occur within the

project site or adjacent area. Six state-listed endangered willow oak trees located in the walkway between Louis Armstrong Stadium and the Indoor Tennis Center would be displaced as a result of the proposed project. However, if deemed feasible, these trees may be relocated to another area of the NTC or onto adjacent DPR property. Willow oak is commonly planted as a street tree in New York City and is listed on the DPR-approved tree planting list for sidewalk and rights-of-way (ROW). Therefore, the removal and/or transplanting of willow oaks within and/or adjacent the NTC as part of the proposed project would not result in a significant adverse impact to naturally occurring and naturalized willow oak populations within the region.

B. METHODOLOGY

ASSESSMENT OF EXISTING CONDITIONS

The methodology outlined in the *CEQR Technical Manual* was used to determine the study area. Due to the highly developed nature of the surrounding land uses, the study area for the natural resources assessment is limited to a 400-ft radius surrounding the project site. An exception is made for the establishment of the study area for the rare, threatened, and endangered species or special habitats assessment, which is a ½-mile radius surrounding the project site.

A reconnaissance-level field investigation was conducted on May 1, 2012 to characterize existing conditions of natural resources in the study area. In accordance with the Section 322 "Field Reconnaissance" assessment methods of the *CEQR Technical Manual*, the field investigation involved walking the study area to document the ecological communities, vegetation, and wildlife present. In addition to the field investigation, existing conditions within the study area were summarized from existing sources of information, including:

- Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps;
- New York State Department of Environmental Conservation (NYSDEC) 2000-2005 Breeding Bird Atlas, Herp Atlas Project;
- United States Fish & Wildlife Service (USFWS) list of Endangered, Threatened, Candidate, and Proposed species for Queens County, NY;
- Response to a request for information the New York Natural Heritage Program (NYNHP) on rare, threatened and endangered species or special habitats within the study area; and
- Results from a September 2011 Tree Survey conducted for the project.

FUTURE WITHOUT THE PROPOSED PROJECT

Conditions within the study area in the future without the proposed project (the No-Action condition) were assessed by considering potential impacts to natural resources from other projects in the area. These include USTA's on-going management of capital projects at the NTC, which would result in a range of improvements that are typically made to the NTC between US Open periods. These projects are not part of the NTC Strategic Vision and would proceed regardless of the status of the NTC Strategic Vision.

POTENTIAL IMPACTS FROM THE PROPOSED PROJECT

Potential impacts to natural resources from the proposed project were evaluated for ground water, floodplains, terrestrial ecological communities, vegetation, wildlife, and threatened, endangered, and special concern species. Wetlands were not evaluated because NYSDEC and

USFWS National Wetlands Inventory (NWI)-mapped wetlands are not present in the study area and no wetlands were observed during the field reconnaissance investigation. In addition, no aquatic habitats are present within the study area. Potential impacts were assessed by considering the existing conditions and then the permanent and direct effects such as land disturbance and tree removal, and temporary indirect effects such as noise disturbances to wildlife during project construction and operation.

C. EXISTING CONDITIONS

GROUNDWATER

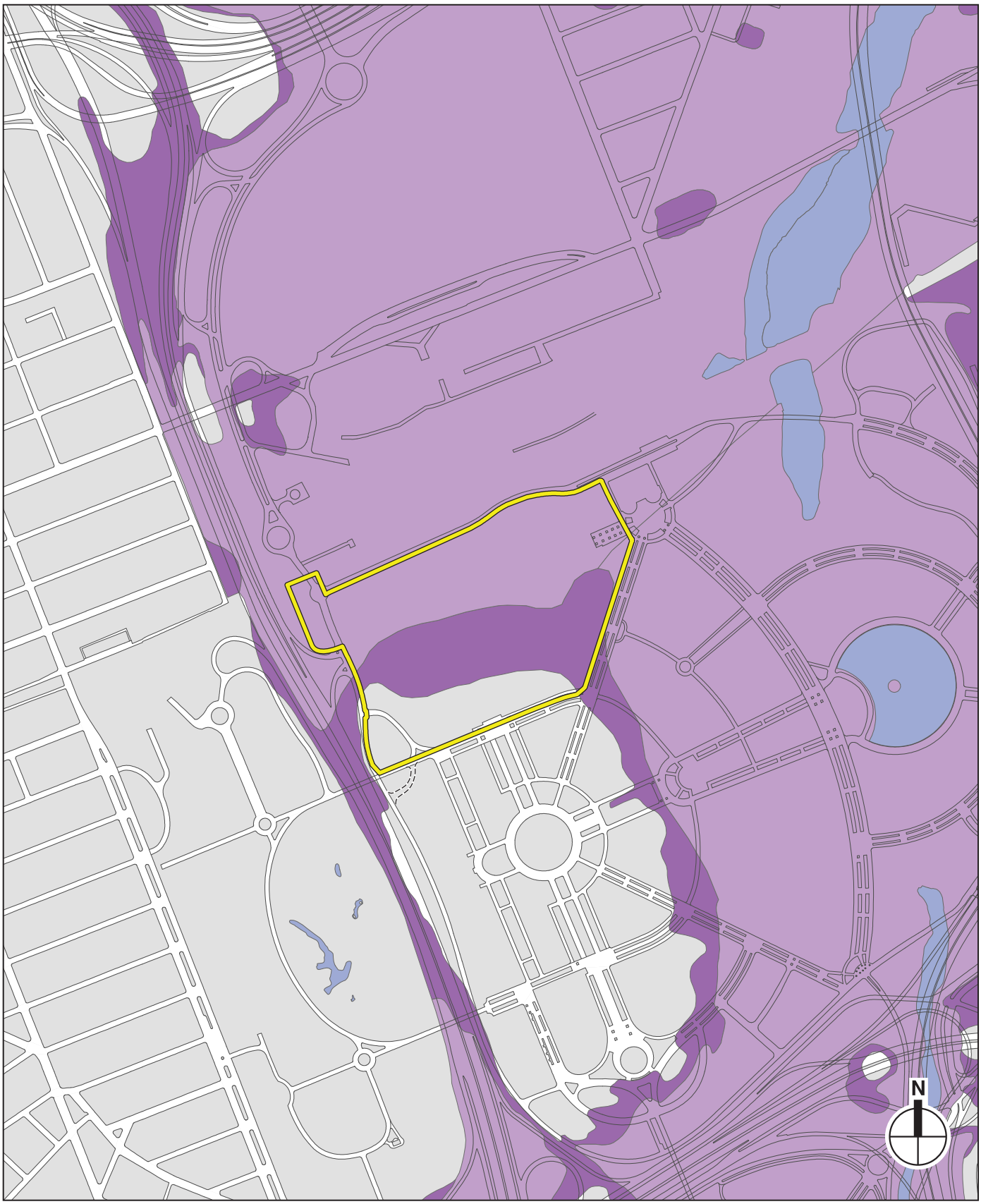
As discussed in Chapter 8, "Hazardous Materials," geotechnical studies indicate that groundwater is first encountered at approximately 5 to 15 feet below grade and appears to be flowing in a northeasterly direction (i.e., either toward the Flushing River approximately 1,100 feet to the east, or toward Flushing Bay approximately 3,200 feet to the north). Groundwater in this part of Queens is not used as a source of potable water (the municipal water supply uses upstate reservoirs). Soil and groundwater testing conducted in the vicinity of the project site in 1991-1992 identified somewhat elevated concentrations of certain semivolatile organic compounds (SVOCs), metals and total petroleum hydrocarbons (TPH) in soil samples, which are typical for fill materials containing ash, cinders etc. The detected volatile organic compound (VOC) concentrations met or were only slightly above NYSDEC Part 375 Soil Cleanup Objectives for Unrestricted Use (USCOs) for soils and met NYSDEC Class GA Standards (drinking water standards) for groundwater, and also appeared to be attributable to fill materials rather than a spill.

FLOODPLAINS

The southwestern extent of the project site, including the present site of a portion of the southerly tournament courts, the proposed location of the new Grandstand Stadium (Stadium 3), and the site of the proposed relocated connector road, is outside of any floodplain. The midsection of the project site, extending from the eastern to the western boundary is within a 500-year floodplain (an area with a 0.2 percent annual chance of flooding) and the remainder of the NTC to the north is within a 100-year floodplain (an area with a 1 percent annual chance of flooding) (see **Figure 7-1**). These floodplains are associated with Flushing Creek. Portions of Arthur Ashe Stadium (Stadium 1), the Indoor Training Center, Court 12, and portions of the southerly tournament courts are within the 500-year floodplain. A portion of Louis Armstrong Stadium (Stadium 2), a portion of Grandstand Stadium, portions of parking lots A and B, and a portion of Arthur Ashe Stadium, are within the 100-year floodplain.

ECOLOGICAL COMMUNITIES

As stated above, the NTC consists of buildings with pockets of maintained landscapes (i.e., planted medians and lawns). These landscapes would be characterized by Edinger et al. (2002) as "terrestrial cultural" communities. Terrestrial cultural communities are defined as "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)."



FEMA Floodplain

Figure 7-1

Vegetated terrestrial cultural communities that are present within the project site include flower/herb garden,[1] mowed lawn,[2] and mowed lawn with trees.[3] As shown in **Figure 7-2**, the majority of these terrestrial ecological communities are situated in strips or blocks that are surrounded by walkways, tennis courts, stadiums, and buildings (see **Figure 7-3**). Within these areas, there are several variations of the three terrestrial ecological community descriptions given that the landscaping of each vegetated strip or block is slightly different. However, the understory of all of these communities consists of lawn, lawn with small to large trees, or areas with ornamental herbaceous, shrub, and groundcover species (see **Figures 7-4, 7-5, and 7-6**). Species observed in lawn areas include common grasses and broadleaf plants such as fescues (F*estuca* sp.), orchard grass (*Dactylis glomerata*), mugwort (*Artemisia vulgaris)*, common plantain (*Plantago major*), and clovers (*Trifolium* sp.). More manicured areas on the site include ornamental shrubs, such as meadowsweet (*Spirea* sp.), rhododendron (*Rhododendron* sp.), and Japanese barberry (*Berberis thunbergii*).

A tree survey was conducted within the project site as part of the proposed project. Most of the species in and adjacent to the project site are commonly planted along roadways within the City. In the vicinity of the NTC, trees are present along United Nations Avenue North, Meridian Road (including the connector road that would be relocated as part of the proposed project), and along the walkways between the NTC facilities. The most common tree species include the following: honey locust (*Gleditsia triacanthos*), which is prominent in the paved areas at the main entrance of NTC and between Arthur Ashe Stadium and Louis Armstrong Stadium; London planetree (*Platanus* x *acerifolia*), which occurs along Meridian Road North/South, in the median along United Nations Avenue North, and most of the road in the surrounding area of Corona Park; and little leaf linden (*Tilia cordata*) found along Meridian Road East/West and in the parking lot northwest of Arthur Ashe Stadium. Less common tree species include Eastern white pine (*Pinus strobus*), pin oak (*Quercus palustris*), Japanese zelkova (*Zelkova serrata*), and Kwanzan cherry (*Prunus kwanzan*).

These maintained terrestrial ecological communities are expected to provide limited habitat to wildlife, as described below.

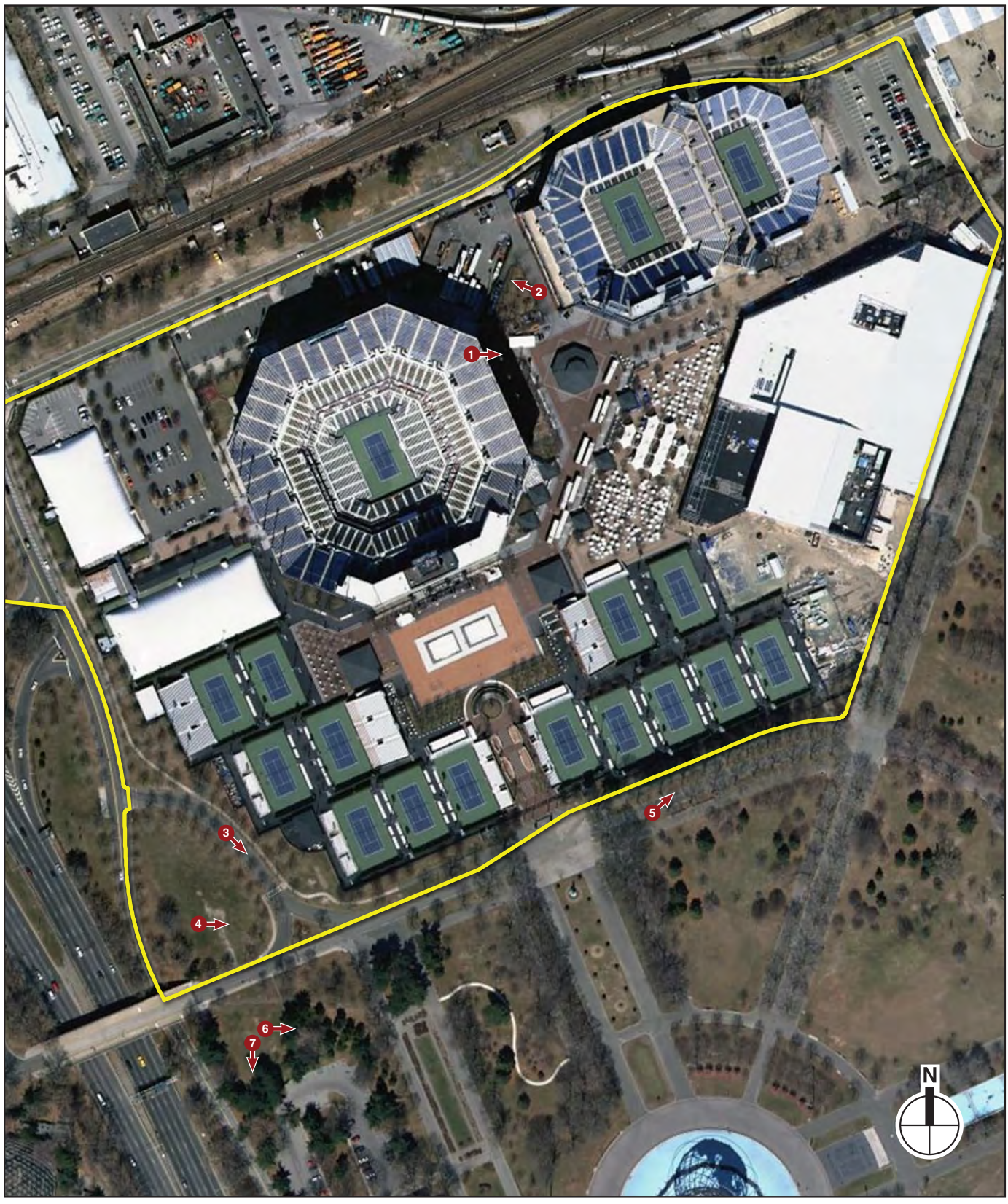
WILDLIFE

The habitat available to terrestrial wildlife in the study area primarily consists of manicured lawn with small clusters and rows of mature shade trees. There is no woody understory beneath the tree canopies, and herbaceous ground cover consists of landscaped and mowed areas. The majority of the study area is unvegetated and covered by impervious surfaces. As such, wildlife

[1] Edinger et al. (2002) defines this community as "[r]esidential, commercial, or horticultural land cultivated for the production of ornamental herbs and shrubs. This community includes gardens cultivated for the production of culinary herbs."

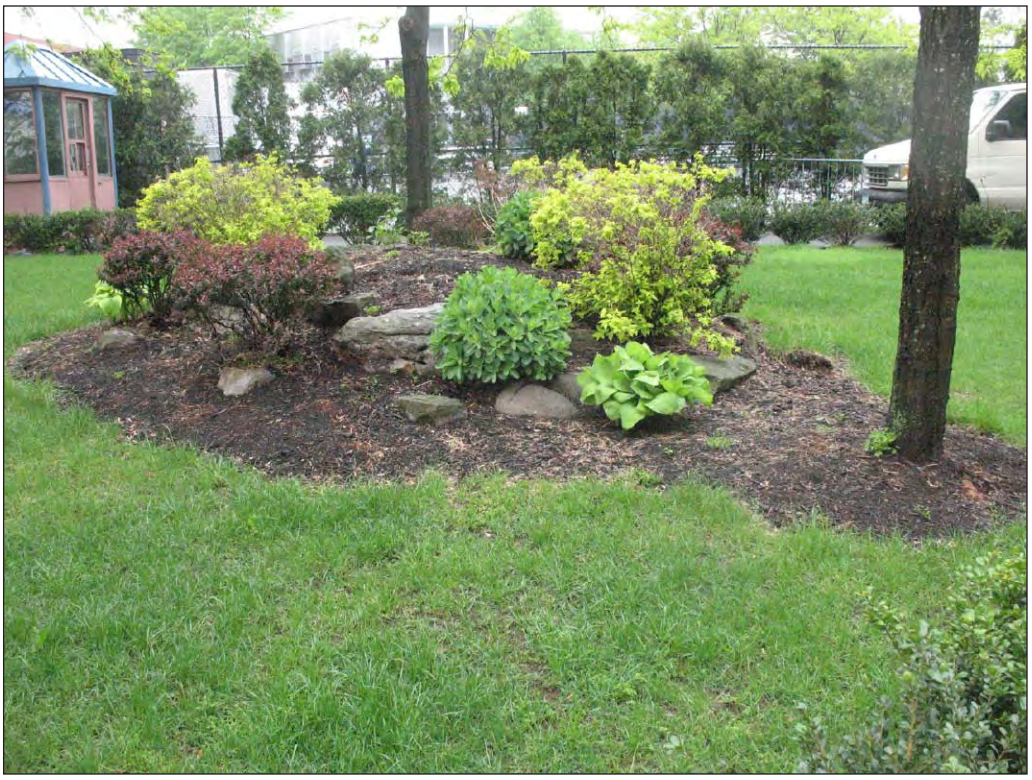
[2] Edinger et al. (2002) defines this community as "[r]esidential, recreational, or commercial land, or unpaved airport runways in which the groundcover is dominated by clipped grasses and there is less than 30% cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50% cover. The groundcover is maintained by mowing."

[3] Edinger et al. (2002) defines this community as "[r]esidential, recreational, or commercial land in which the groundcover is dominated by clipped grasses and forbs, and it is shaded by at least 30% cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50% cover. The groundcover is maintained by mowing."



Natural Resources
Photograph Key
Figure 7-2

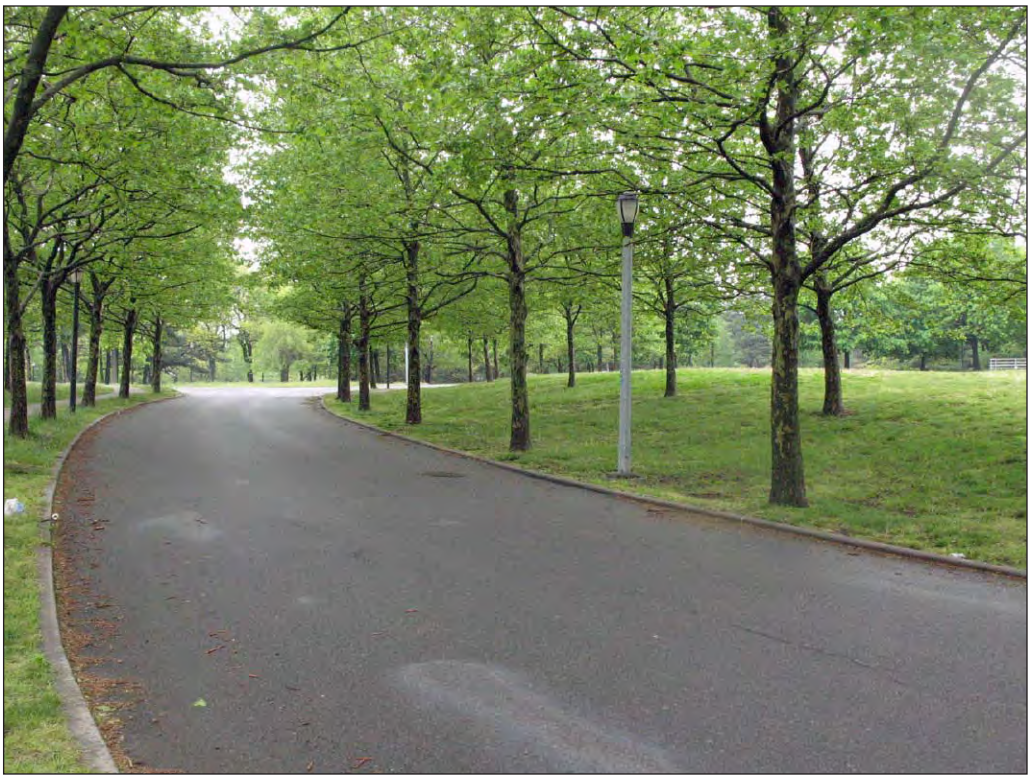
View from Arthur Ashe Stadium, facing east **1**



View of typical mowed lawn with trees and shrubs, facing west **2**

Natural Resources
Photographs

Figure 7-3



View along Meridian Road North/South of street trees and mowed lawn with trees, facing south east **3**

View of mowed lawn with trees at the location of the proposed Grandstand Stadium, facing east **4**

Natural Resources
Photographs

Figure 7-4

View along United Nations Avenue North, facing north east **5**

View of mowed lawn with trees in the vicinity of the proposed road, facing east **6**

Natural Resources Photographs

Figure 7-5

View of mowed lawn with trees in the vicinity of the proposed road, facing south **7**

Natural Resources
Photographs

Figure 7-6

occurring in the study area is largely limited to urban-adapted species that are tolerant of degraded environments and high levels of human activity.

BIRDS

The Breeding Bird Atlas is a periodic census of the distribution of breeding birds across New York State. The most recent census was conducted from 2000-2005 and documented 48 species as confirmed or probable/possible breeders in the survey block in which the study area is located (Block 5951C; in **Appendix C**). The three square mile survey block encompasses larger and different types of habitat (e.g., Flushing Bay, forested areas of Flushing Meadows Park, and Meadow Lake) than what is present within and around the project site. As such, many bird species that appear in the atlas block are unlikely to breed in the study area. Only 10 of the 48 species listed in the atlas block are considered to have the potential to breed in study area on the basis of their habitat requirements (see **Appendix C**). They are disturbance-tolerant, generalist species that have small area requirements and thrive in human-modified environments, including American robin (*Turdus migratorius*), blue jay (*Cyanocitta cristata*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), rock dove (*Columbia liva*), and mourning dove (*Zenaida macroura*). Bird species with the potential to occur in the study area during the breeding season are mainly year-round residents that remain throughout the winter. Birds that are expected to occur in the study area during winter include urban-adapted species such as blue jay, downy woodpecker (*Picoides pubescens*), European starling, house sparrow, rock dove, and mourning dove.

Additional bird species have the potential to occur in the study area during spring and fall, when migratory birds are traveling between southern wintering grounds and northern breeding grounds. Most bird species are more generalistic in their habitat preferences during migration than during the non-migratory periods, and far more species occur in the New York City area during spring and fall than at other times of year. However, the limited vegetative cover within the study area provides minimal stopover habitat for migrating birds, and migrants are likely to occur in the area only on rare occasions. Any migrants seeking stopover habitat in the area are likely to select the more suitable habitat available in forested sections of Flushing Meadows Corona Park to the south. Examples of some migratory birds with the potential to occur in the study area during spring and fall include arboreal species that forage in mature trees and can be found in small city parks, such as American redstart (*Setophaga ruticilla*), northern parula (*Parula americana*), red-eyed vireo (*Vireo olivaceous*), and yellow-rumped warbler (*Dendroica coronata*). No habitat is available for ground- or understory-foraging migrants such as *Catharus* thrushes.

The May 1, 2012 field survey coincided with the peak passage period of spring migrants through New York, yet no such migrants were observed.

Birds observed within the study area during the May 1, 2012 field survey included: American robin, American goldfinch (*Carduelis tristis*), American crow (*Corvus brachyrhynchos*), blue jay, chipping sparrow (*Spizella passerine*), European starling, gray catbird (*Dumetella carolinensis*), house sparrow, mallard (*Anas platyrhynchos*), and northern flicker (*Colaptes auratus)*. Each of these species is expected to nest within the study area.

MAMMALS

Similar to the bird community, minimal terrestrial resources available in the study area limit the mammal community to species that can thrive in extremely altered and disturbed habitats within

urban landscapes and those that benefit from an association with humans (i.e., synanthropic species). The only mammals expected to occur in the study area include raccoon (*Procyon lotor*), gray squirrel (*Sciurus carolinensis*), Norway rat (*Rattus norvegicus*), and domestic cat (*Felis catus*). Gray squirrel was the only mammal observed during the May 1, 2012 field survey.

REPTILES AND AMPHIBIANS

The NYSDEC Herp Atlas Project was a 10-year survey (1990-1999) of the geographic distribution of herpetofauna in New York State. Of the 73 species of amphibians and reptiles that occur in the state, the following 14 species were documented in the atlas block that covers the study area (*Flushing* USGS quadrangle): spotted salamander (*Ambystoma maculatum*), northern two-lined salamander (*Eurycea bislineata*), American toad (*Bufo americanus*), Fowler's toad (*Bufo fowleri*), gray treefrog (*Hyla versicolor*), spring peeper (*Pseudacris crucifer*), bullfrog (*Rana catesbeiana*), green frog (*Rana clamitans*), common snapping turtle (*Chelydra serpentina*), eastern box turtle (*Terrapene carolina*), red-eared slider (*Trachemys scripta*), painted turtle (*Chrysemys picta*), Italian wall lizard (*Podarcis sicula*), and northern brown snake (*Storeria dekayi*). However, the atlas block spans a large geographic area (most of northern Queens, Flushing Bay, and the south Bronx) that encompasses much larger and more diverse areas of habitat (e.g., Pelham Bay Park and the lower Bronx River) than what is present within and around the project site. On the basis of their habitat requirements (Mitchell et al. 2006, Gibbs et al. 2007), only the Italian wall lizard is considered to have the potential to occur in the study area. The study area's lack of wetlands, streams, or other freshwater habitats particularly prohibits it from being suitable for many of these species. The Italian wall lizard is a non-native species that was introduced to Long Island in the 1960's and has since spread to other parts of the New York metropolitan area (Burke et al. 2002).

No reptiles or amphibians were observed during the May 1, 2012 field survey.

THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES

A request for information on rare, threatened, or endangered species within a 0.5 mile radius of the NTC was submitted to NYNHP on April 30, 2012. NYNHP indicated that no species listed by NYNHP have been recorded for the study area (Pietrusiak 2012). The USFWS list of federally threatened, endangered, candidate, and proposed species for Queens County includes piping plover (*Charadrius melodus*), roseate tern (*Sterna dougalli*), and seabeach amaranth (*Amaranthus pumilus*). No federally- or state-listed bird species were documented by the 2000-2005 Breeding Bird Atlas in the census block in which the study area is located. One state-listed species, the eastern box turtle (special concern), was documented by the Herp Atlas Project in the Flushing census quadrangle, but as explained above, suitable habitat for this species and all other native reptiles is lacking within and near the study area. No federally- or state-listed wildlife species were observed within the study area during the May 1, 2012 field investigation. However, one plant, the willow oak (*Quercus phellos*), was observed in planted rows within the NTC and is described in more detail below. Because these trees were planted within the site, they would not qualify as a NYNHP species record.

PIPING PLOVER

The piping plover is a federally threatened (and NYS endangered) species listed by the USFWS as occurring in Queens County. The breeding range of piping plovers in New York State is limited to the beaches of Long Island, from Queens to Peconic Bay (Wasilco 2008). Within New York City,

piping plovers are limited to a small breeding population in Jamaica Bay National Wildlife Refuge and on Rockaway Beach, along the south shore of Rockaway Peninsula (Boretti et al. 2007). Piping plovers do not nest on the north shore of Queens which lacks wide, open expanses of unvegetated beach that Atlantic piping plovers most commonly select for nesting (Elliot-Smith and Haig 2004). Piping plovers do not have the potential to occur within the study area.

ROSEATE TERN

The roseate tern is a federally endangered (and NYS endangered) species listed by USFWS as occurring in Queens County. Northeastern colonies are located on rocky offshore islands, barrier beaches, or salt marsh islands in areas with little human disturbance (Gochfeld et al. 1998). The project site and the surrounding area of Queens lack any habitat that would be suitable for the roseate tern, and this species is not considered to have the potential to occur within the study area.

SEABEACH AMARANTH

Seabeach amaranth is a federally threatened (and NYS endangered) species listed by USFWS as occurring in Queens County. However, appropriate habitat for the species (accreting shoreline, upper beach, foredune, overwash flat, dredge spoil, and sand/shell beach replenishment areas) is lacking in the study area. Seabeach amaranth was not observed during the May 1, 2012 field visit and is not considered to have the potential to occur within the study area.

WILLOW OAK

The willow oak is ranked as "S1" by NYNHP, indicating that it is critically imperiled in the state because of extreme rarity (i.e., five or fewer sites or very few remaining individuals) (NYNHP 2010). Habitat for this species is mostly on the coastal plain in moist soils or swamps (Gleason and Cronquist 1963).

Twenty seven willow oak (most between 3 to 6 inches in diameter at breast height [dbh] and one 24 in dbh) trees have been planted in the NTC and are present in the walkway between Louis Armstrong Stadium and the Indoor Tennis Center. These trees occur in two linear arrangements, in tree pits, and are surrounded by paving stones. The one larger willow oak is located north of the east plaza walkway and south of parking lot B. Willow oak is a common tree in New York City, and these trees do not constitute one of the 'five or fewer sites or very few remaining individuals' of this species in New York State as is intended by the NYNHP "S1" rank. Otherwise, due to the urbanized nature and absence of moist soils, this species would not be likely to occur within the study area.

D. FUTURE WITHOUT THE PROPOSED PROJECT

In the future No Action condition, natural resources within the study area would be expected to remain in a similar condition as under existing conditions. The NTC's ongoing management of capital projects would result in minor alterations to the project site, as described in Chapter 2, "Land Use, Zoning, and Public Policy." However, construction activities would generally be limited to maintenance and small-scale construction projects on existing facilities in an area with few natural resources. Therefore, these projects would not result in a significant adverse impact to natural resources of the region.

The City, through DPR, is currently in discussions with a private entity for a lease covering the construction and operation of a new stadium for professional soccer purposes in an approximately 13-

acre area within the northern portion of Flushing Meadows Corona Park south of Roosevelt Avenue and eastward of the NTC, as described in Chapter 2, "Land Use, Zoning, and Public Policy."

The Fountain of the Planets, which covers a 6.6 acre area, would be filled as part of the stadium development project. The fountain is not operational, its water is typically stagnant, and no vegetation grows within the fountain; therefore, the fountain is not considered a natural feature. However, as the fountain was constructed in the former alignment of Flushing Creek and to allow drainage from the watershed through it, DEC and the US Army Corps of Engineers are expected to maintain or assert jurisdiction over it. DEC has mapped the fountain as a Class B Protected Water and the National Wetland Inventory maps the fountain as a freshwater pond with a riverine channel bisecting it. It is anticipated that the filling of the fountain will require mitigation to offset the loss of this jurisdictional water, but the exact nature of this mitigation is yet to be determined.

Development of the new soccer stadium would include in-line structured water detention facilities below field level to accommodate Flushing Creek. Drainage systems east and west of the proposed stadium site, which are currently connected to the Fountain of the Planets, would be intercepted and discharge downstream of Porpoise Bridge. This flow would be disconnected from Flushing Meadows Corona Park site flows that discharge upstream of Porpoise Bridge. Stormwater drainage from the MLS site itself would be split and connect to the existing drainage systems east of west of the proposed stadium site.

In addition, approximately 71 trees would be removed in order to construct the soccer stadium. Tree replacement, protection, and transplanting would comply with the City's applicable rules and regulations.

E. FUTURE WITH THE PROPOSED PROJECT

As described in Chapter 1, "Project Description," the NTC Strategic Vision would result in a number of physical improvements and alterations to the facility. Overall, the proposed project would add 0.94 acres to the NTC site, including 0.68 acres of parkland that would be alienated, and 0.26-acres of previously alienated parkland that is outside the current lease. The principal elements of the proposed project are summarized below in **Table 7-1**.

Because the majority of these activities would take place in heavily developed areas and in most cases entail redevelopment of existing structures and facilities, there is minimal potential for impacts to natural resources.

GROUNDWATER

As stated in Chapter 8, "Hazardous Materials," a New York City Department of Environmental Protection (NYCDEP)-approved Remedial Action Plan (RAP) and associated Construction Health and Safety Plan (CHASP) would be prepared for implementation during subsurface disturbance associated with project construction. The RAP would address requirements for items such as soil stockpiling, soil disposal and transportation; dust control; quality assurance; and contingency measures, should petroleum storage tanks or contamination be unexpectedly encountered. The RAP would include the requirement for any future enclosed construction to include appropriate vapor control (e.g., vapor barriers) to prevent the migration of methane or VOCs into enclosed areas. The RAP would also include the requirements for a cap of clean imported soil to be placed in areas not covered by buildings or paving. If dewatering is required during construction activities, it would be performed in accordance with NYCDEP requirements. With these measures in place, no significant adverse impacts to groundwater would be expected.

Table 7-1
NTC Strategic Vision: List of Proposed Improvements

Map No.[1]	Name	Description
Stadium Improvements and New Construction		
1	Grandstand Stadium (Stadium 3)	Demolition of existing 6,000-seat stadium and replacement with 8,000-seat stadium in southwest corner of NTC site
2	Louis Armstrong Stadium (Stadium 2)	Demolition of existing 10,500-seat stadium and replacement with 15,000-seat stadium in place
3	Arthur Ashe Stadium (Stadium 1)	Renovation and expansion to include 90,000-gsf administrative/operational space; and canopy above center court
Tournament Court Modifications		
4	Northwest tournament courts	Replacement of existing courts with five practice courts, three tournament courts, and viewing platform
5	Southerly tournament courts	Relocation of existing courts 30 to 50 feet to the south
Ancillary Building Construction		
6	New administrative and retail building	Construction of new 80,000-gsf administrative and retail and sponsorship building, including four tennis courts on its roof, on former site of relocated Grandstand Stadium
Parking and Transportation Improvements		
7	New Parking Garage A	Construction of new 423-space, 2-level garage, including a 6,500-sf transportation center.
8	New Parking Garage B	Construction of new 270-space, 3-level garage
9	Relocated connector road and related improvements	Relocation of connector road and sidewalks to new location south of United Nations Avenue North near Queens Museum of Art parking lot
Pedestrian Enhancements		
10	Arthur Ashe Concourse	Expand existing concourse by 11,000-sf
11	New walkway	Construction of new walkway connecting the new Stadium 3 and Court 17

Notes: [1]See Figure 1-4 for the location of these elements under existing conditions. See Figure 1-5 for their proposed future location.
Source: USTA

FLOODPLAINS

As discussed above, nearly all project components would entail redevelopment of existing facilities, relocation of facilities, or construction of new facilities in previously developed areas within the NTC. The relocation of Grandstand Stadium (Stadium 3), a connector road, and the relocation of the southern NTC fence line 25 to 38 feet to the south are the only project elements that would involve developing previously undeveloped land (mostly consisting of lawn and mature shade trees), but this activity would occur in the southern section of the NTC, which is outside of any floodplain. Land-disturbing project elements that would take place in sections of the NTC that are within 100 and 500 year floodplains include construction of two new parking garages, construction of retail and sponsorship building, and redevelopment of Louis Armstrong Stadium (Stadium 2). The parking garages would be constructed over two existing parking lots, and the redevelopment of Louis Armstrong Stadium and the construction of the proposed adjacent retail and sponsorship building would occur within the footprints of the existing structures and surrounding areas of impervious surface (e.g., pedestrian walkways). The

elevation in the vicinity of the Louis Armstrong Stadium would be slightly increased to reduce flooding around the stadium. Redevelopment and construction in other areas of the site would not require grading that would significantly change the elevation of the area. As such, there would be no alteration of the function or distribution of the existing floodplain zone, and no changes to the current risk of flooding in the area from the proposed project.

The new Stadium 2 and a portion of the proposed transportation center are the only structures that would be built within the 100 year flood zone as part of the proposed project. All critical infrastructure would be built above the 100 year flood zone for these structures, and the portions of these structures that would be built below this elevation will be designed to withstand damage due to flooding.

ECOLOGICAL COMMUNITIES

Due to the highly urban nature of the terrestrial ecological communities present on the site, the loss of some of these communities as a result of the proposed project would not result in a significant adverse impact on ecological communities of the region. For instance, the area where the proposed Grandstand Stadium would be constructed, near the intersection of Meridian Road and United Nations Avenue North, as shown in **Figure 7-2**, is currently occupied by pavement, "mowed lawn with trees," and "mowed lawn" communities. In addition, many of the areas within NTC, such as the area located between the main entrance and Arthur Ashe Stadium (Stadium 1), are paved with paving stones and planted with single species of tree, in this case honey locust. The proposed project would not significantly alter the ecological communities of the region, as similar ecological communities would be created as a result of the landscaping plans, after the proposed development has taken place.

Construction of the proposed project would require the removal trees both outside the existing fence line, including United Nations Avenue North and the proposed location of the connector road south of United Nations Avenue North, and various locations inside the NTC site including in the vicinity of the practice courts, parking lot A, northwest corner of Arthur Ashe Stadium, west side of parking lot B, west side of the Grandstand Stadium, proposed Grandstand Stadium relocation site, and a small number in the Food Village. Tree replanting and replacement would comply with DPR's applicable rules and regulations. Approximately 422 trees would be removed, which would be transplanted to the extent practicable. Trees that could not be transplanted would be replaced pursuant to City regulations. Where possible, some of the existing younger London planetree and willow oak trees may be transplanted within the NTC site or surrounding area where the circumstances deem feasible. Tree relocation would take place to maintain the benefits of having larger, more mature trees on site. In addition, approximately 54 percent, or 500, of the existing trees would remain in place, would be protected during construction, and would be incorporated into the landscaping design.

Tree replacement, protection, and transplanting would comply with the City's applicable rules and regulations. Trees under the jurisdiction of DPR 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 in order 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 would be used to quantify the size and number of trees that would be required to replace those removed from the NTC and adjacent area. Measures to protect existing trees and transplant trees would include protection plans to minimize impacts to the critical root zones, trunks, and

canopies. Plans would show the exact locations, species, and installation details of the replacement and transplant trees.

In addition to tree replacement, protection, and transplanting, a landscaping plan developed for the proposed project would incorporate some native shrubs (i.e., mountain laurel [*Kalmia latifolia*], Viburnum [*Viburnum*] sp.) and small trees (i.e., flowering dogwood [*Cornus florida*], eastern redbud [*Cercis Canadensis*]). Native plants used in the landscaping plans could benefit some species of wildlife, such as beneficial insects and songbirds. Therefore, the landscape design associated with the proposed project would be expected to benefit ecological communities of the NTC and the surrounding area.

WILDLIFE

The majority of the proposed project would involve construction and reconstruction in presently developed areas of the project site, which are almost entirely unvegetated and covered by impervious surfaces. Construction of these project elements would not eliminate or degrade any habitat of use to native wildlife. The relocation of Grandstand Stadium to the southwestern section of the NTC would require removal of several mature shade trees and loss of an approximately 1.21 acre area of manicured lawn. As described under "Existing Conditions," this area represents marginal quality wildlife habitat that is suitable to few native wildlife species, such as gray squirrel, blue jay, and American robin. The native and non-native wildlife species expected to occur in this area are extremely common, urban-adapted generalists that are ubiquitous throughout the metropolitan area. Relocation of the Grandstand Stadium to this area would not significantly impact these species at the individual or population level. Individuals currently inhabiting the area would, as extreme generalists, easily relocate to the extensive amounts of alternative habitat that would remain available elsewhere in Flushing Meadows Corona Park and the surrounding neighborhoods.

Because the wildlife community in the study area is composed of disturbance-tolerant, synanthropic species and levels of human disturbance are already high, noise generated during construction and operation of the proposed project would not be expected to displace or otherwise negatively affect wildlife.

THREATENED, ENDANGERED, AND SPECIAL CONCERN SPECIES

As discussed above, no federally or state-listed wildlife species are known to or considered to have the potential to occur within the project site or adjacent area. Therefore, the proposed project would not result in a significant adverse impact to federally- or state-listed wildlife of the region.

As stated above, 27 state-listed endangered willow oak trees are present in the walkway between Louis Armstrong Stadium and the Indoor Training Center. Six of these willow oak trees would be displaced as a result of the proposed project. However, if deemed feasible, these trees may be relocated to another area of the NTC or onto adjacent DPR property. Willow oak is commonly planted as a street tree in New York City and is listed on the DPR-approved tree planting list for sidewalk and rights-of-way (ROW). The planted willow oaks in the site demonstrate the common use of this species in maintained landscapes. Therefore, the removal and/or transplanting of willow oaks within and/or adjacent the NTC as part of the proposed project would not result in a significant adverse impact to naturally occurring and naturalized willow oak populations within the region.

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