Appendix J-7
NYSDEC Threatened and Endangered Species Consultation

Appendix J-7
Assessment of State-Listed Threatened or Endangered Species

A. PROJECT DESCRIPTION

The New York State Department of Transportation (NYSDOT), in cooperation with the Federal Highway Administration (FHWA), has prepared a Draft Design Report/Draft Environmental Impact Statement (DDR/DEIS) for the Interstate 81 (I-81) Viaduct Project (the "Project") in accordance with the requirements of the Council on Environmental Quality's regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) (40 CFR §1500-1508), the FHWA's *Environmental Impact and Related Procedures: Final Rule* (23 CFR §771), the NYSDOT *Procedures for Implementation of the State Environmental Quality Review Act* (17 NYCRR Part 15), and the NYSDOT Project Development Manual.

The purpose of the Project is to address structural deficiencies and non-standard highway features while creating an improved transportation corridor through the City of Syracuse that meets the transportation needs and provides the infrastructure to support long-range transportation planning efforts.

As part of the environmental review, potential effects of the Project's reasonable alternatives to Federally- and State-listed Threatened and Endangered wildlife and plant species were assessed. This Assessment of State-listed Threatened and Endangered Species has been prepared to document the likelihood and severity of potential effects on listed wildlife species for each build alternative included in the DDR/DEIS in accordance with 6 NYCRR Part 182. This assessment also evaluates the Project's effects on State-listed plants regulated by 6 NYCRR Part 193.3 with the potential to occur in the Project Area.

PROJECT ALTERNATIVES

NO BUILD ALTERNATIVE

The No Build Alternative would maintain the highway in its existing configuration, with ongoing maintenance and repairs to ensure the safety of the traveling public. The No Build Alternative would not meet the purpose and need for the Project, but it is examined to establish a baseline condition to evaluate the potential effects of build alternatives.

VIADUCT ALTERNATIVE

The Viaduct Alternative would reconstruct I-81 from between approximately Colvin Street and Hiawatha Boulevard and would reconstruct I-690 between Leavenworth Avenue and Lodi Street. The new viaduct would provide four, 12-foot (ft) wide travel lanes (a minimum of two in each direction), as well as inside and outside shoulders. The new viaduct would be approximately 10 to 15 feet higher than the existing one at some locations. The Viaduct Alternative would address nonstandard and nonconforming design features; reconstruct the existing I-81/I-690 interchange, providing all movements between I-81 and I-690 including those that do not exist today (between eastbound I-690 and northbound I-81 and between southbound I-81 and westbound I-690); improve connections to local streets; and implement local traffic, bicycle, and pedestrian enhancements (see **Appendix J-5**, **Figures J-5-1** through **J-5-4**). Noise barriers are also proposed as part of the Viaduct Alternative within the four study areas described below.

COMMUNITY GRID ALTERNATIVE

The Community Grid Alternative would demolish the existing viaduct between the New York, Susquehanna and Western Railway bridge and the I-81 and I-690 interchange and would reconstruct I-690

between Leavenworth Avenue and Beech Street. It would construct new or reconfigured interchanges on I-690 (i.e., West Street, Crouse Avenue, and Irving Avenue) and on the remaining section of I-81 north of the I-690 interchange. The portion of the existing I-81 between its north and south interchanges with the existing I-481 would be reclassified as a business loop of I-81 (BL 81), and I-481 would be re-designated as I-81. The Community Grid Alternative would disperse traffic throughout the city grid by promoting broader use of the existing street network. Vehicular traffic would be channeled through Almond Street and along parallel corridors such as Crouse Avenue, Irving Avenue, James Street, Oswego Boulevard, State Street, and Townsend Street, as well as other local streets that would have the capacity to accommodate this traffic. The Community Grid Alternative would also improve connections to local streets and implement traffic, bicycle, and pedestrian enhancements (see **Appendix J-5**, **Figure J-5-1** and **Figures J-5-5** through **J-5-9**). Noise barriers are also proposed as part of the Community Grid Alternative within the four study areas described below.

STUDY AREAS

There are four distinct portions of the overall Project Area (referred to as "study areas") (see **Appendix J-5**, **Figure J-5-1**): (1) the Central Study Area, (2) the I-481 South Study Area, (3) the I-481 East Study Area, and (4) the I-481 North Study Area. Under the Viaduct Alternative, the Project would be limited to the Central Study Area with the exception of noise barriers that would be constructed along the interstate in portions of the I-481 South Study Area, the I-481 East Study Area, and the I-481 North Study Area. Under the Viaduct Alterative, the Project would involve roadway work in the Central Study Area and potential noise barriers in the I-481 North, I-481 South, I-481 East Study Areas. Under the Community Grid Alternative, the Project would involve roadway work in all four study areas.

METHODOLOGY

The study area for the assessment of Federally- and State- listed Threatened, Endangered, special concern species and significant ecological communities follows the guidance outlined in Section 4.4.9.3 "Endangered and Threatened Species" (August 2011) of NYSDOT's The Environmental Manual (TEM). Further guidance, as outlined in FHWA's New York Division: Environmental Procedures "Endangered Species Act, Section 7, Essential Fish Habitat, and Marine Mammal Protection Act: Process for Compliance and Consultation" (June 2020) of NYSDOT's TEM (Issued by NYSDOT as TEM Section 4.4.9.3.11 Appendix G), is followed to assess the effects of the Project on Federally listed species.

The NYSDOT previously reviewed the New York Natural Heritage Program (NYNHP) database and United States Fish and Wildlife Service Information for Planning and Consultation (IPaC) database for records of Threatened and Endangered species in 2017, 2018, 2019, 2020, and 2021 for all study areas. The NYSDOT most recently reviewed the NYNHP database on February 3, 2022 and IPaC database on February 25, 2022. In May 2021, Noise Barrier 16A&B was incorporated into the Project in the I-481 North Study Area. NYSDOT reviewed the NYNHP and IPaC databases on February 3, 2022 and February 2, 2022, respectively, for the area in the vicinity of the noise barrier. The IPaC "Official Species Lists" for the Project are provided in **I-81 DDR/DEIS Appendix J-4.**

Species-specific plant surveys were conducted where potential habitat is present within the Project limits. A team of two ecologists conducted these species-specific surveys by walking meandering transects and searching the ground within each of the preferred habitats of each species within the limits of disturbance in the study areas for which there is a NYNHP and IPaC record. These surveys occurred

on April 18, 19, and 20, 2017; June 27 and 28, 2017; August 28, 29, 30, and 31, 2017; September 1, 2017; and July 10, 11, 12, and 16, 2019. Species-specific survey dates are outlined in **Section B**, below.[1]

B. STATE-LISTED SPECIES WITHIN AND/OR ADJACENT TO THE STUDY AREAS

Table J-7-1
State Listed Threatened or Endangered Species

Common Name	Scientific Name	Status	NYNHP Record Study Area
Indiana bat	*Myotis sodalist*	Endangered	I-481 South / I-481 East
Northern long-eared bat	*Myotis septentrionalis*	Threatened	I-481 South / I-481 East / I-481 North
Eastern massasauga	*Sistrurus catenatus*	Endangered	I-481 North
American hart's-tongue fern	*Asplenium scolopendrium* var. *americanum*	Threatened	I-481 South
Peregrine falcon[1]	*Falco peregrinus*	Endangered	Central[2]
Bald eagle[1]	*Halieaeetus leucocephalus*	Threatened	Central / I-481 North
Least bittern	*Ixobrychus exilis*	Threatened	I-481 North
Northern harrier[1]	*Circus cyaneus*	Threatened	I-481 North
Lake sturgeon	*Acipenser fulvescens*	Threatened	Central[3]
Upland Sandpiper	*Bartramia longicuada*	Threatened	I-481 North
Black Tern	*Chlidonias niger*	Endangered	I-481 North
American Saltmarsh bulrush	*Bolboschoemus maritimus* ssp. *paludosus*	Threatened	Central
Midland sedge	*Carex mesochorea*	Threatened	Central / I-481 South
Annual Saltmarsh aster	*Symphyotrichum subulatum* var. *subulatum*	Threatened	Central
Yellow Giant Hyssop	*Agastache nepetoides*	Threatened	Central I-481 South I-481 East
Straight-leaf pondweed	*Potamogeton strictifolius*	Endangered	Central
Glomerate sedge	*Carex aggregata*	Threatened	Central[2]
Marsh arrowgrass	*Triglochin palustris*	Threatened	I-481 South / I-481 East
Thread-leaved pondweed	*Stuckenia filiformis*	Endangered	I-481 East
Blunt-lobed grape fern	*Botrychium oneidense*	Threatened	I-481 East
Ohio goldenrod	*Oligoneuron ohioense*	Threatened	I-481 East
Rock Elm	*Ulmus thomasii*	Threatened	I-481 South
Ram's Head Lady's Slipper	*Cypripedium arietinum*	Threatened	I-481 North
Common Moonwort	*Botrychium neolunaria*	Endangered	I-481 South I-481 East
Red Pigweed	*Oxybasis rubra var. rubra*	Threatened	I-481 North
Few-flowered Spike Rush	*Eleocharis quinqueflora*	Endangered	Central / I-481 North
Hooker's Orchid	*Platanthera hookeri*	Endangered	I-481 South
Forest Blue Grass	*Poa sylvestris*	Endangered	I-481 South
Puttyroot	*Aplectrum hyemale*	Endangered	I-481 South
Purple Wild Bergamot	*Monarda media*	Endangered	I-481 South
Prairie Dunewort	*Botrychium campestre*	Endangered	I-481 East

Notes:

(1) State status has been proposed to be changed to "special concern" as per the NYSDEC Draft List Under Part 182.5 Pre-proposal—October 2019.

(2) Documented in the vicinity of the Central Study Area.

(3) Documented within the Central Study Area.

(4) Typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.

Sources: NYNHP database review February 3, 2022; USFWS IPaC Official Species List dated February 2, 2022.

[1] The sedges (i.e., *Carex* genus) listed in **Table J-7-1** share similar habitat preferences. In addition, these species are similar in appearance to other state-listed and state-unlisted sedges. For this reason, as a conservative measure, the sedges listed in **Table J-7-1** were included in the species-specific searches in both the Central and I-481 South Study areas during the 2019 surveys. All sedges identified during the species-specific searches were identified to species when possible.

As indicated in **Table J-7-1** above, 31 State-listed species are documented by the NYNHP as occurring within and/or adjacent to the four study areas.

INDIANA BAT

The Indiana bat is a Federally- and State-listed Endangered temperate, insectivorous bat. Indiana bats emerge from the caves or mines in which they hibernate in early spring; males then disperse and remain solitary until mating season at the end of the summer, and pregnant females form maternity colonies in which to rear their young. Maternity roosts, roosting sites of post-lactating females, and roosting sites of solitary males are usually under loose bark or in the crevices of trees. Indiana bat roosting sites have been documented in numerous species of deciduous trees; however, tree availability, diameter, height, bark characteristics, and sun exposure appear to be more important factors in roost site selection than tree species (Kurta 2004, USFWS 2007). Roost trees in New York (Britzke et al. 2006) and elsewhere (USFWS 2007) are typically in trees with a diameter greater than 16 inches and a height taller than 52 feet, but roosts in smaller trees are not uncommon (USFWS 2007). Trees are usually dead or nearly dead and decayed (Menzel et al. 2001, Kitchell 2008).

Indiana bats often roost near forest gaps or edges where trees receive direct sunlight for much of the day (Callahan et al. 1997, Menzel et al. 2001). Habitats used by Indiana bats during summer are varied and include riparian, bottomland/floodplain, and upland forests (Humphrey et al. 1977, Britzke et al. 2006, Watrous et al. 2006) often within highly fragmented agricultural landscapes (Murray and Kurta 2004, Watrous et al. 2006, USFWS 2007). They will forage in the forest canopy, over open fields, over impounded waterbodies, along riparian corridors, and along forest edges (USFWS 2007). Maternity colonies are commonly located in areas with abundant natural or artificial freshwater sources (Carter et al. 2002, Kurta et al. 2002, Watrous et al. 2006, and USFWS 2007). Spring and autumn habitats of Indiana bats have not been well described but appear to be largely similar to their summer habitat (Britzke et al. 2006, USFWS 2007). During autumn, Indiana bats mate and deposit fat stores in preparation for winter hibernation. Hibernacula are typically in caves or abandoned mines where ambient temperatures remain above freezing (USFWS 2007).

SITE SPECIFIC INFORMATION

The Indiana bat is listed by the USFWS IPaC System as having the potential to occur within three study areas (I-481 South, I-481 East, and I-481 North). The NYNHP has records of Indiana bat hibernaculum and roost trees adjacent to the I-481 South and I-481 East Study Areas. The NYNHP has no records of Indiana bat hibernating or roosting within 2.5 miles of the Central or I-481 North Study Areas.

The woodland fragments bordering the east and west sides of the I-481 South Study Area may represent suitable roosting and foraging habitat for Indiana bats. Therefore, Indiana bats are considered to have the potential to occur within the I-481 South Study Area. The closest summer roosting habitat to the I-481 East Study Area that is suitable for Indiana bats is a woodland area (i.e., floodplain forest) east of I-481 and south of I-90 (New York State Thruway). Suitable roost trees are likely abundant in this area and two utility rights-of-way intersecting the woodland may provide foraging corridors and commuting routes for Indiana bats. The wooded area around Butternut Creek northeast of the CSX rail line in the I-481 East Study Area may also support Indiana bats. Indiana bats are less likely to occupy habitats within the Central or I-481 North Study Areas due to the high density of urban development. However, Indiana bats may still have the potential to occur in these areas on rare occasions.

NORTHERN LONG-EARED BAT

The northern long-eared bat is a Federally- and State-listed Threatened temperate, insectivorous bat that hibernates in caves and mines during winter, and then emerges in early spring to disperse to summer

habitat. Like Indiana bats, the males remain solitary until mating season at the end of the summer and the pregnant females form maternity colonies in which they rear their pups. Summer habitat typically includes mature, closed-canopy, upland and riparian forest within heavily forested landscapes (Ford et al. 2005, Henderson et al. 2008), usually within about 60 miles of the hibernaculum (Caceras and Barclay 2000, USFWS 2014).

The northern long-eared bat is considered to be an interior forest-dependent species that is sensitive to urbanization and fragmentation and requires large tracts of unbroken forest for both foraging and breeding (Foster and Kurta 1999, Broders et al. 2006, Henderson et al. 2008, Segers and Broders 2014). Unlike many other bats of the Northeast, northern long-eared bats will commonly glean prey from leaves and other surfaces rather than strictly hawking flying insects in the air, and are thereby well-adapted to foraging in cluttered, structurally complex, forest interior habitat (Owen et al. 2003, Lacki et al. 2007). Most foraging occurs in the forest mid-story (Brack and Whitaker 2001, Harvey et al. 2011, USFWS 2014) in interior areas with a tall and closed canopy (Owen et al. 2003, Patriquin and Barclay 2003, Adams 2013). Northern long-eared bats do not concentrate along riparian corridors or other linear landscape features as much as strictly aerial-foraging species do (Owen et al. 2003, Ford et al. 2005, Harvey et al. 2011, USFWS 2014), and most radio-telemetry and acoustic studies have found that they typically avoid roads and other sharp forest edges (Owen et al. 2003, Patriquin and Barclay 2003, Carter and Feldhammer 2005, Morris et al. 2010, Segers and Broders 2014), where prey availability is expected to be lower than in the forest interior (Owen et al. 2003). Mature forest is considered to be the most important foraging habitat for the northern long-eared bat (USFWS 2013, 2014).

Roost trees are also usually within large tracts of intact forest, close to the core and away from large clearings, roads, or other sharp edges (Menzel et al. 2002, Owen et al. 2003, Carter and Feldhammer 2005). Roosts are usually in cavities or, less often, under exfoliating bark of large-diameter trees that form a high and dense canopy (Foster and Kurta 1999, Menzel et al. 2002, Carter and Feldhammer 2005; reviewed by Barclay and Kurta 2007). However, the USFWS (2014) considers trees as small as three inches diameter at breast height (DBH) to be potential roost sites. Northern long-eared bats, including lactating females, will use many different summer roost trees, often switching roosts every one to five days and moving hundreds of feet between successive locations (Menzel et al. 2002, Owen et al. 2002, Johnson et al. 2009).

SITE SPECIFIC INFORMATION

The northern long-eared bat is listed by the USFWS IPaC System as having the potential to occur within two study areas (I-481 South and I-481 East). The NYNHP has records of northern long-eared bat roosting within 1.5 miles of the Central Study Area but has no records of this species roosting within 1.5 miles of any of the other three study areas. A northern long-eared bat hibernaculum is located adjacent to the I-481 South and I-481 East Study Areas.

As discussed above, northern long-eared bats are sensitive to urbanization and fragmentation and prefer large tracts of interior forest for roosting and foraging. The woodland fragments bordering the east and west sides of the I-481 South Study Area may be too small and have too high of an edge to area ratio to be preferred habitat of northern long-eared bats, but there remains a marginal possibility that this species could occur within these sections of the I-481 South Study Area.

The closest summer habitat to the I-481 East Study Area that is most suitable for northern long-eared bats is the woodland area east of I-481 and south of I-90 (New York State Thruway). This approximately one-mile wide and 0.7-mile long woodland is bisected by two utility rights-of-way, but may be large enough to support northern long-eared bats. Suitable roost trees are likely abundant in this area. The wooded area around Butternut Creek northeast of the CSX rail line in the I-481 East Study

Area may also represent suitable habitat for the northern long-eared bat. Because of the well-documented avoidance of urban areas and sharp edges by northern long-eared bats (Owen et al. 2003, Patriquin and Barclay 2003, Carter and Feldhammer 2005, Morris et al. 2010, Segers and Broders 2014), habitats within I-481 North Study Area are also not considered suitable, and northern long-eared bats are less likely to occur in this area.

EASTERN MASSASAUGA

The eastern massasauga is a Federally-listed Threatened and State-listed Endangered rare and declining, range-restricted rattlesnake. It occurs in small, highly isolated populations from central New York State and southern Ontario to south-central Illinois and eastern Iowa. Population declines are primarily attributable to wetland drainage, habitat fragmentation, over-collecting, and now, the advancement of early successional vegetation into later successional stages in the few areas in which remnant populations persist (Gibbs et al. 2007). Only two populations of eastern massasauga are known to remain within all of New York State (Gibbs et al. 2007).

Unlike other rattlesnakes, eastern massasaugas hibernate for the winter individually rather than communally. Hibernation sites used by eastern massasaugas in New York State populations are usually under shrubs and sphagnum hummocks. They emerge from hibernation in April and then return in late September. Reproduction occurs only every two years, with birthing of live young usually occurring between mid-August and mid-September. Female eastern massasaugas are believed to mate during one summer, and then give birth the next summer (Gibbs et al. 2007).

SITE SPECIFIC INFORMATION

The USFWS IPaC System lists the eastern massasauga as having the potential to occur in three study areas (I-481 South, I-481 East, and I-481 North). The NYNHP has a record of the eastern massasauga occurring adjacent to the I-481 North Study Area. There are no NYNHP records of the eastern massasauga occurring within or adjacent to the I-481 South, I-481 East, or Central Study Areas.

Mud Creek, on the eastern edge of the I-481 North Study Area, has a hydrological connection to this known population via small, potentially ephemeral, unnamed New York State Department of Environmental Conservation (NYSDEC) Class C streams that wind through and under roads and other heavily developed areas. The eastern massasauga exhibit extremely small activity ranges and restricted movements within overlapping territories and have not been found to disperse or migrate outside of their known area (Johnson 2000). Other habitat types used by eastern massasaugas in other portions of the species' range in the U.S. include fens, marshes, and wet prairies (Gibbs et al. 2007).

Wetlands within the I-481 North Study Area are limited to drainage ditches and highly disturbed roadside segments of Mud Creek and disturbed common reed-dominated and forested wetlands along I-481, within the quadrants at the northern I-81/I-481 interchange, and along I-81 north of the I-81/I-481 interchange. As such, no habitat that is appropriate for the eastern massasauga is present in the I-481 North Study Area, and eastern massasaugas are therefore not expected to occur in the area. Roads, residential neighborhoods, and other human-altered landscapes are barriers to eastern massasauga movements (Moore and Gilingham 2006), and movement of eastern massasaugas out of their current location to the east along Mud Creek and its tributaries within the I-481 North Study Area is considered extremely unlikely. These streams extend through heavily developed areas and are culverted under major roads in several locations, and therefore would not be expected to be used by eastern massasaugas to disperse outside of their current location. Additionally, as previously noted, telemetry studies of eastern massasaugas have not observed any movements of individuals outside of their current location via these streams or otherwise (Johnson and Breisch 1993; Johnson 1995, 2000). For each of these

reasons, eastern massasaugas would not be expected to occur within the I-481 North Study Area. Eastern massasaugas are also not expected to occur within the other three study areas of the Project because they lack appropriate habitat and are fully disconnected and distant from their current known location.

AMERICAN HART'S-TONGUE FERN

American hart's-tongue fern is a Federally- and State-listed Threatened perennial and evergreen fern. It requires deep shade and grows in cool, moist, rocky, calcareous substrates, usually within small cracks in large rocks (NYNHP 2015). American hart's-tongue fern is found in close association with outcrops of dolomitic limestone and other calcareous rocks. It has been found in cave entrances, gorges, and sinkholes in mature hardwood forests (NYNHP 2015, USFWS 2015). Populations of American hart's-tongue fern tend to be scattered due to its habitat requirements. In New York, native populations of this fern are restricted to two counties in the vicinity of Syracuse: Onondaga and Madison Counties (USFWS 2012). It is known to occur in glacial plunge basins in these two counties (NYNHP 2015). In Onondaga County, American hart's-tongue fern is known to occur in four locations (USFWS 2012).

SITE SPECIFIC INFORMATION

The USFWS IPaC System search indicated that there is the potential for American hart's-tongue fern to occur within the I-481 South Study Area and I-481 East Study Area. The NYNHP has records of the American hart's-tongue fern occurring adjacent to the I-481 South Study Area. There are no NYNHP records of the American hart's-tongue fern occurring within or adjacent to the I-481 North, I-481 East, or Central Study Areas.

Overall, habitat for this species (i.e., deep shade in cool, moist, rocky, calcareous substrates), is not present within the disturbed habitats of the Central, I-481 East, I-481 North or I-481 South Study Areas. However, the I-481 South Study Area contains a disturbed roadcut cliff/slope community.[2] A targeted search for American hart's tongue fern was conducted in this ecological community on April 18, 19, and 20, 2017 within the project limits of the I-481 South Study Area. American hart's-tongue fern was not found within the I-481 South Study Area.

PEREGRINE FALCON

The peregrine falcon is a State-listed Endangered bird of prey. Populations have grown dramatically since the 1980s, however, as peregrine falcons have become increasingly common in urban areas and demonstrated a tolerance of human disturbance and an ability to exploit resources in human-modified environments (Cade et al. 1996, White et al. 2002). As a result, the State status of the peregrine falcon has been proposed to be changed to "special concern" as per the *NYSDEC Draft List Under Part 182.5 Pre-proposal—October 2019* (NYSDEC 2019). It has been suggested that peregrine falcons will tolerate almost any level of human activity taking place below their nest provided that the nest is inaccessible (Ratcliffe 1972) to humans or predators. Urban peregrine falcons appear to have particularly high tolerance thresholds compared with those in more remote areas (White et al. 2002). In several cities within New York State, peregrine falcons nest on bridges and high-rise buildings among high levels of noise and human activity associated with the urban environment (Frank 1994, Cade et al. 1996, Loucks and Nadaraski 2005).

[2] Roadcut cliff/slope is a sparsely vegetated cliff or steep slope, along a road, that was created by blasting or digging during road construction (Edinger et al. 2014).

SITE SPECIFIC INFORMATION

The NYNHP database indicated that there is a peregrine falcon nest adjacent to the Central Study Area. Therefore, peregrine falcons have the potential to occur within the Central Study Area. There were no known occurrences of the peregrine falcon within the I-481 South, I-481 East, and I-481 North Study Areas, and peregrine falcons are not expected to occur in these areas due to a lack of nearby tall structures for nesting.

BALD EAGLE

The bald eagle is a State-Threatened bird of prey that was removed from the Federal Endangered Species List in 2007 because of a strong recovery from population declines that had occurred throughout the mid- and late-1900s. Bald eagle populations in New York State in particular have grown dramatically over the past few decades (Nye 2008). There were a state record-breaking 323 breeding pairs estimated to be in New York as of the most recently released census information from 2016 (NYSDEC 2017). As a result, the State status of the bald eagle has been proposed to be changed to "special concern" as per the *NYSDEC Draft List Under Part 182.5 Pre-proposal—October 2019* (NYSDEC 2019). The recovery of bald eagles throughout their range is largely attributable to their consistently increasing, generational habituation to human activity and development (Johnson 2010, Guinn 2013). According to the NYNHP database, non-breeding[3] bald eagles have been observed perching and foraging along the southeastern shoreline of Onondaga Lake. This area is on the periphery of the Central Study Area and I-481 North Study Area and therefore non-breeding bald eagles have the potential to occur there. There are no other lakes or rivers that would provide suitable habitat for breeding or non-breeding bald eagles in the I-481 South and I-481 East Study Areas and the NYNHP has no records of bald eagles occurring in their vicinity.

SITE SPECIFIC INFORMATION

As stated above, the NYNHP has records of bald eagles perching and foraging along the shoreline of Onondaga Lake. They have also been observed foraging in nearby rivers (Seneca and Oswego) during winter in areas where water usually remains open most years. The area of Onondaga Lake mapped as bald eagle foraging area is within and adjacent to the Central Study Area and I-481 North Study Area. The bald eagle is not expected to occur within I-481 South and I-481 East Study Areas.

LEAST BITTERN

The least bittern is a State-listed Threatened wading bird that inhabits freshwater and brackish marshes with tall, dense vegetation including cattails, sedges, reeds, bulrushes, sawgrass, smartweed, arrowhead, buttonbush, and other emergent wetland vegetation. It can also be found at the edges of lakes and rivers with emergent and tall vegetation but prefers marshes with scattered bushes or other woody growth. The least bittern is tolerant of moderate levels of human disturbance and can sometimes be found in urban settings (Poole et al. 2009).

SITE SPECIFIC INFORMATION

The NYNHP has a record of least bitterns nesting within 600 feet of the I-481 North Study Area. Wetland habitat within and around the I-481 North Study Area is limited to drainage ditches along I-481 and within the quadrants of the I-81 and I-481 highway interchange and is not suitable for least

[3] Non-breeding refers to birds that may exist at any time of year, including birds that do not breed during the nesting season (e.g., juveniles). USFWS considers the breeding season in NY to be between January 1 and October 1.

bitterns. The closest potentially suitable habitat is to the west, west of South Bay Road and south of Frontage Road. Least bitterns are not considered to have the potential to occur within the I-481 North Study Area. There are no records of least bitterns anywhere else in the Project Area. As such, the least bittern is not expected to occur within the Central, I-481 South, or I-481 East Study Areas.

NORTHERN HARRIER

The northern harrier is a State-Threatened bird of prey. The State status of the northern harrier has been proposed to be changed to "special concern" as per the *NYSDEC Draft List Under Part 182.5 Pre-proposal—October 2019* (NYSDEC 2019). Local populations have gradually declined in recent decades likely in response to habitat development and reversion of much of the state's former farmland into forest. Northern harriers primarily occupy open areas such as grasslands, old fields, pastures, croplands, and salt marshes during both the breeding and non-breeding periods (Smith et al. 2011). They are present in New York year-round (Post 2008).

SITE SPECIFIC INFORMATION

NYNHP has a record of northern harriers breeding within 1.5 miles of the I-481 North Study Area. There is potentially suitable breeding and non-breeding habitat for northern harriers in this vicinity of the I-481 North Study Area, in the marshes of the Cicero Swamp Wildlife Management Area and agricultural fields approximately 1.2 to 1.5 miles to the east, and the marshes of a large wetland complex approximately 1.2 miles to the west, along State Route 481. Non-breeding northern harriers might also be expected to occur in the open fields of the Syracuse Hancock International Airport. There is no suitable breeding or non-breeding habitat for northern harriers within the I-481 North Study Area, which is primarily limited to roadside grass, small and degraded common reed-dominated wetlands bordering drainage ditches and within clover leaves of the I-481 and I-81 interchange, and small fragments of woodland. None of these habitat types would support breeding or non-breeding northern harriers, and therefore, northern harriers are not considered to have the potential to occur within the I-481 North Study Area. The NYNHP has no records of northern harriers within or near any of the other study areas and northern harriers are not expected to occur in those other study areas.

LAKE STURGEON

The lake sturgeon is a State-listed Threatened freshwater fish that occurs in several lakes, rivers, and canals in northern New York State.

SITE SPECIFIC INFORMATION

The lake sturgeon is a State-listed Threatened freshwater fish that occurs in several lakes, rivers, and canals in northern New York State. The NYNHP has records of lake sturgeon occurring in Onondaga Lake. Onondaga Creek and Ley Creek, which are both tributaries to Onondaga Lake, are within the Central Study Area. Onondaga Lake is also associated with the I-481 North Study Area.[4] Thus, lake sturgeon has the potential to occur in the Central and I-481 North Study Areas. Lake sturgeon do not have the potential to occur within the I-481 South and I-481 East Study Areas due to a lack of potential habitat, and the NYNHP has no records of lake sturgeon occurring in these areas.

UPLAND SANDPIPER

Upland sandpiper is a State-listed Threatened obligate grassland bird species. Preferred habitat includes large areas of short grass for feeding and courtship with interspersed or adjacent taller grasses for

[4] This species is only associated with the Noise Barrier 16 portion of the I-481 North Study Area.

nesting and brood cover. Confirmed ecological communities associated with upland sandpiper include, cropland/field crops, Hempstead Plains grassland, pastureland, and successional old field (NYNHP). The NYNHP has a record of upland sandpiper within 1.5 miles of the I-481 North Study Area. Given its habitat requirements, upland sandpiper has low potential to occur within the I-481 North Study Area. Upland sandpiper is not documented (within 1.5 miles) or expected to occur in the Central, I-481 South, or I-481 East Study Areas.

BLACK TERN

Black tern is a State-listed Endangered bird species that has been declining since the mid-1960's (NYNHP). Black terns breed in productive freshwater marshes, typically in sites with mixtures of emergent vegetation and open water. In western New York Hickey and Malecki (1997) found that black terns nest primarily in sparse to moderately dense bur-reed about 3 to 7 inches (in) in tall in areas with a 50:50 open water/vegetation ratio, and water depths of about 20 in. These findings were consistent with other general habitat descriptions throughout the range including in northern New York. Exposed perches such as floating logs, fallen trees, and standing dead trees and shrubs are used as stations for resting, copulation and feeding recently fledged young (Novak 1992).

Black terns are an area dependent species and in addition to marsh size, proximity to other wetlands is a critical factor in habitat selection. Black terns favor marshes greater than 49 acres, but they will nest in marshes between 12 to 27 acres only if they are part of a larger wetland complex (Brown and Dinsmore 1984; Novak 1992). Characteristics of entire landscapes must be considered in habitat assessments because wetlands that do not correspond to landscape-scale habitat requirements may not be suitable despite favorable local conditions. Suitable nest sites occur within regenerating or degenerating wetlands where vegetation structure, rather than species of vegetation, dictates suitability (Naugle et al. 2000). Confirmed ecological communities associated with black tern include deep emergent marsh, impounded marsh, and shallow emergent marsh (NYNHP). The NYNHP indicates that there is a historic record of a black tern colony within 1.5 miles of the I-481 North Study Area (1956); however, the black tern colony was not observed during thorough surveys or by NYNHP local birders between 1989 and 2007 (NYNHP). Based on this information and its habitat requirements, black tern has low potential to occur within the I-481 North Study Area. However, survey work[5] for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 North Study Area during final design of the Project.

AMERICAN SALTMARSH BULRUSH

American saltmarsh bulrush is a State-listed Threatened perennial plant. In New York, it is found in Long Island salt marshes and inland salt ponds and marshes (NYNHP). It is listed as an OBL (i.e., almost always occurs in wetlands) plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). Its habitat includes a variety of open, saltwater, or brackish wetlands. American saltmarsh bulrush may also be found in disturbed areas like roadsides and ditches. In New York, confirmed ecological communities associated with American saltmarsh bulrush include artificial pools, brackish interdunal swales, brackish intertidal mudflats, coastal salt ponds, and high salt marshes (NYNHP). These communities are not present within the Project Area. A known population exists in the vicinity of the Central and I-481 North Study Areas(NYNHP). However, American saltmarsh

[5] A site visit to record incidental observations would be conducted at a time of year (May through mid-September [NYNHP]) when black tern would be expected to be present. Any incidental observations would be coordinated with NYSDEC.

bulrush was not found during targeted searches (conducted on August 30, 2017) for this species in the Central Study Area. For these reasons, American Saltmarsh bulrush has a low potential to occur in the Central Study Area. Given its habitat requirements, the potential for American saltmarsh bulrush to occur would be limited to ditches and narrow channels in the I-481 North Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 North Study Area during final design. American Saltmarsh bulrush is not expected to occur within the I-481 South and I-481 East Study Areas.

MIDLAND SEDGE

Midland sedge is a State-listed Threatened plant found in dry, sandy soils in maritime grasslands, oak woods, mowed cemeteries, railroads, paths, and fields. It is listed as an UPL (i.e., almost always occurs in non-wetlands) plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). Its range in New York is from Long Island to the Hudson Highlands and central New York. In New York, confirmed ecological communities associated with midland sedge include Hempstead Plains grasslands, maritime grasslands, mowed lawn, rocky summit grasslands, and successional old fields (NYNHP). A known population exists in the vicinity of the Central and I-481 South Study Areas (NYNHP). However, Midland sedge was not found during targeted searches for this species in the Central Study Area (conducted on June 27 and 28, 2017 and July 10, 11, 12, and 16, 2019) and I-481 South Study Area (on July 10, 11, 12, and 16, 2019). Midland sedge is not expected to occur within the I-481 East or I-481 North Study Areas.

ANNUAL SALTMARSH ASTER

Annual saltmarsh aster is a State-listed Threatened species that is found in coastal areas in salt or brackish marshes, along tidal channels and creeks, in the swales of coastal dunes, and occasionally in disturbed habitats that are salt influenced. It is listed as a FACW (i.e., usually occurs in wetlands) plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). In New York, annual saltmarsh aster primarily occurs along the shores of Long Island, Brooklyn, and Staten Island and along the shore of the Hudson River north to Putnam and Rockland Counties. However, there is a documented population of annual saltmarsh aster near Syracuse (NYNHP). In New York, confirmed ecological communities associated with annual saltmarsh aster include brackish interdunal swales, brackish meadows, brackish tidal marshes, coastal salt ponds, estuarine riprap/artificial shores, high salt marshes, inland salt marshes, salt shrubs, and sea level fens (NYNHP). These communities are not present within the Project Area. A known population exists in the vicinity of the Central Study and I-481 North[6] Study Areas (NYNHP). However, annual saltmarsh aster was not found during targeted searches (conducted on August 30, 2017) for this species in the Central Study Area. Therefore, annual saltmarsh aster has a low potential to occur within the Central Study Area. Given its habitat requirements, the potential for American saltmarsh aster to occur would be limited to ditches and narrow channels in the I-481 North Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 North Study Area during final design. Annual saltmarsh aster is not expected to occur in the I-481 South orI-481 East, Study Areas.

STRAIGHT-LEAF PONDWEED

Straight-leaved pondweed is a State-listed Endangered species which occurs in shallow water habitats of natural and artificial lakes and slow-moving streams. It prefers alkaline water. It is listed as an OBL

[6] This species is only associated with the Noise Barrier 16 portion of the I-481 North Study Area.

(i.e., almost always occurs in wetlands) plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). New York is the eastern edge of this species' range; it is found in central and eastern New York (NYNHP). In New York, straight-leaved pondweed does not have confirmed associated ecological communities (NYNHP). A known population exists in the vicinity of the Central and I-481 North Study Areas (NYNHP). However, straight-leaved pondweed was not found during targeted searches (conducted on August 30, 2017) for this species in the Central Study Area. Therefore, given its habitat requirements, straight-leaved pondweed has low potential to occur within wetlands and surface waters of the Central Study Area. Given its habitat requirements, the potential for straight-leaf pondweed to occur would be limited to ditches and narrow channels in the I-481 North Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 North Study Area during final design. Straight-leaved pondweed is not documented or expected to occur in the I-481 South or I-481 East Study Areas.

GLOMERATE SEDGE

Glomerate sedge is a State-listed Threatened plant identified by the NYNHP as occurring in the vicinity of the Central Study Area. In New York, only a few populations have ever been reported, all of which are in portions the southern tier of western New York, central New York and in southeastern New York (NYNHP). Its habitat includes calcareous soils in meadows, thickets, open forests, moist woods, cemeteries, and ditches. It is not listed as a wetland plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). In New York, confirmed associated ecological communities associated with glomerate sedge are not documented by the NYNHP. A known population exists in the vicinity of the Central Study Area (NYNHP). Within the Central Study Area, upland habitats associated with thickets, open forest, cemetery, and ditch habitats are present. Targeted searches (conducted on June 27 and 28, 2017 and July 10, 11, 12, and 16, 2019) for the presence or absence of this species within the Central Study Area were inconclusive and, for this reason, further survey work for this species would be conducted during final design. Glomerate sedge has not been documented as occurring in the vicinity of the I-481 South, I-481 East, or I-481 North Study Areas.

MARSH ARROWGRASS

Marsh arrowgrass is a State-listed Threatened plant identified by the NYNHP as occurring in the vicinity of the I-481 South Study Area. Its habitat includes open calcareous mires, soligenous mires, limestone areas, peat bogs, open meadows, narrow coastal strips, and salt marshes (Metcalf et al. 1917, Norton 1933, Thomas et al. 1980, Van Straaten et al. 1982, Wheeler 1980) brackish and salt marshes and flats, river or stream floodplains, marshes, intertidal, subtidal, shores of rivers or lakes (GoBotany 2018). It is listed as an OBL (i.e., almost always occurs in wetlands) plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). New York is located at the southern range-limit for this species. A known population exists in the vicinity of the I-481 South and I-481 East Study Areas (NYNHP). Given its habitat requirements, the potential for marsh arrowgrass to occur would be limited to ditches and narrow channels located in the vicinity of proposed noise barriers within the I-481 South and I-481 East Study Areas and to wetlands and channels within the I-481 East Study Area. Marsh arrowgrass was not found during the targeted surveys for this species (conducted on July 10, 11, 12, and 16, 2019). Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East Study Area during final design. Marsh arrowgrass is not expected to occur in the Central or I-481 North Study Areas.

THREAD-LEAVED PONDWEED

Thread-leaved pondweed is a State-listed Endangered species which occurs in shallow, still or slow-moving water of lakes and rivers. It prefers neutral to alkaline water (NYNHP). It is listed as an OBL

(i.e., almost always occurs in wetlands) plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). In New York, thread-leaved pondweed has been found in only two alkaline settings, including a small stream and a lake. Confirmed ecological communities associated with thread-leaved pondweed include a deepwater river, marsh headwater stream, sand beach, and summer-stratified monomictic lake. While these communities are not present within the Project Area there is a known population in the vicinity of the I-481 East Study Area (NYNHP). Given its habitat requirements, thread-leaved pondweed has low potential to occur within wetlands and surface waters of the I-481 East Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East Study Area during final design. Thread-leaved pondweed is not expected to occur in the Central, I-481 South, or I-481 North Study Areas.

BLUNT-LOBED GRAPE FERN

Blunt-lobed grape fern is a State-listed Threatened species which occurs in highly organic moist soils and sandy soils of mixed deciduous hardwood forests (NYNHP). It is listed as a FAC (i.e., occurs in wetlands and non-wetlands) plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). In New York, blunt-lobed grape fern is scattered across the state south of the Adirondacks. Confirmed ecological communities associated with blunt-lobed grape fern include beech-maple mesic forest, floodplain forest, maple-basswood rich mesic forest, red maple-blackgum swamp, red maple-hardwood swamp, rich mesophytic forest, and successional northern hardwoods (NYNHP). Floodplain forest occurs within all four study areas. Furthermore, a known population exists in the vicinity of the I-481 East Study Area. Given its habitat requirements, blunt-lobed grape fern has the potential to occur within the I-481 East Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East Study Area during final design. Blunt-lobed grape fern is not documented or expected to occur in the Central, I-481 South, or I-481 North Study Areas.

OHIO GOLDENROD

Ohio goldenrod is a State-listed Threatened plant that grows in rich fens including sloping and marl fens. It occasionally occurs in rich peat swamps, calcareous dripping cliffs, and banks of large rivers in the State. In New York, confirmed ecological communities associated with Ohio goldenrod include marl fen, red maple-tamarack peat swamp, rich graminoid fen, and rich sloping fen (NYNHP). Other habitats non-specific to New York include marshes, wet sand dunes, along rivers, swamps, beaches, and other moist places, calcareous bogs, wet prairies, and sandy shores (NYNHP). It is listed as an OBL (i.e., almost always occur in wetlands) plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). None of the confirmed ecological communities listed above is present within the Project Area. A known population exists in the vicinity of the I-481 East Study Area (NYNHP). Given its habitat requirements, Ohio goldenrod has a low potential to occur within the wetlands and surface waters of the I-481 East Study Area, and it was not found during targeted surveys (conducted on August 28, 29, and 30, 2017). Ohio goldenrod is not documented or expected to occur in the Central, I-481 South, or I-481 North Study Areas.

RED PIGWEED

Red pigweed is a State-listed Threatened plant that prefers coastal habitats, shores, wet interdunal swales, stony beaches, saltmarshes, waste places, brackish soils, riverbanks, and ship ballasts. In New York, red pigweed is primarily limited to the saline areas of Long Island and lowest part of the Hudson Valley, although there are historic records of it occurring in salt ponds of Onondaga County. It is listed as an OBL (i.e., almost always occur in wetlands) plant by the 2018 National Wetland Plant List: Northcentral and Northeast Region (USACE 2018). Confirmed ecological communities include

brackish interdunal swales, coastal plain pond shore and salt ponds, dredge spoil wetlands, marine dredge spoil shore and intertidal gravel/sand beaches, and maritime freshwater interdunal swales. These communities are not present within the Project Area. Furthermore, the last record of this species was from 1940 in the vicinity of the Central and I-481 North Study Areas. Given its habitat requirements red pigweed has a low potential to occur in the Central and I-481 North Study Areas. However, survey work for this species would be conducted in the Central and I-481 North Study Areas during final design to confirm its presence or absence. Red pigweed is not expected to occur in the I-481 South and I-481 East Study Areas.

YELLOW GIANT HYSSOP

Yellow giant hyssop is a State-listed Threatened perennial plant species found in a diversity of habitats, including weedy or early-successional areas such as roadsides, railroads, and thickets. Many of the known sites for yellow giant hyssop are on limestone-derived soils, and support plant species associated with rich sites (NYNHP). Confirmed ecological communities associated with yellow giant hyssop include beech-maple mesic forest, calcareous red cedar barrens, calcareous talus slope woodland, limestone woodland, and maple-basswood rich mesic forest (NYNHP). The NYNHP indicates that there is a historic record of yellow giant hyssop occurring within the I-481 South Study Area and within 1.5 miles of the Central and I-481 East Study Areas. Given its habitat requirements, yellow giant hyssop has low potential to occur within the Central, I-481 South, and I-481 East Study Areas. However, survey work for this species would be conducted in suitable habitats within the limits of disturbance in the Central, I-481 South, and I-481 East Study Areas during final design of the Project. Yellow giant hyssop is not documented (within 1.5 miles) or expected to occur in the I-481 North Study Area.

ROCK ELM

Rock elm is a State-listed Threatened tree species most often found at dry sites with shallow soils over limestone bedrock, often on ridges or exposed ledges. It may grow with northern hardwood species in oak woodlands and forest edges, or in pastures and savannahs. Confirmed ecological communities associated with rock elm include alvar pavement grassland, alvar woodland, Appalachian oak-hickory forest, calcareous red cedar barrens, calcareous talus slope woodland, limestone woodland, maple-basswood rich mesic forest, northern white cedar rocky summit, pastureland, red cedar rocky summit, and successional red cedar woodland (NYNHP). The NYNHP has a record of rock elm within 1.5 miles of the I-481 South Study Area. However, none of the confirmed ecological communities listed above are present within the I-481 South Study Area. Given its habitat requirements, rock elm has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 South Study Area during final design of the Project. Rock elm is not documented (within 1.5 miles) or expected to occur in the Central, I-481 East, or I-481 North Study Areas.

RAM'S HEAD LADY'S SLIPPER

Ram's head lady's slipper is a State-listed Threatened plant species that has occupied a wide range of habitats with conditions ranging from inundated to dry-mesic and acidic to calcareous. Cold soils and moderately open conditions are characteristic. In the Great Lakes Region many of the largest populations have occupied successional dune forests and dune-coniferous woods edges, often associated with northern white cedar (*Thuja occidentalis*), jack pine (*Pinus banksiana*), and/or balsam fir (*Abies balsamea*), though it is certainly not limited to such habitats (NYNHP). In the northeastern states, including New York, it occupies second-growth mixed hardwood-conifer forests, limestone barrens and rocky outcrops, and forested peatlands (NYNHP). In New York most current sites are in white cedar swamps, though colonies are larger in upland habitats (Mitchell and Sheviak 1981,

NYNHP). Confirmed ecological communities associated with ram's head lady's slipper include alvar shrubland, alvar woodland, calcareous cliff community, calcareous red cedar barrens, calcareous shoreline outcrop, calcareous talus slope woodland, Great Lakes dunes, hemlock-hardwood swamp, hemlock-northern hardwood forest, limestone woodland, northern white cedar rocky summit, northern white cedar swamp, spruce-northern hardwood forest, and successional northern hardwoods (NYNHP). The NYNHP indicates that there is a historic record of ram's head lady's slipper occurring within 1.5 miles of the I-481 North Study Area. Given the date of its most recent documented observation in this area (1902) and its habitat requirements, ram's head lady's slipper has low potential to occur within the I-481 North Study Area. During final design, efforts would be made to confirm the presence or absence of ram's head lady's slipper within the I-481 North Study Area. If ram's head lady's slipper is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Ram's head lady's slipper is not documented (within 1.5 miles) or expected to occur in the Central, I-481 South, or I-481 East Study Areas.

COMMON MOONWORT

Common moonwort is a State-listed Endangered fern species whose habitat includes northern white cedar forests and open pastures that are casually grazed where the underlying bedrock is calcareous. Common moonwort habitat also includes open fields and meadows, sandy or gravelly streambanks, and hillsides and rocky ledges. Confirmed ecological communities associated with common moonwort include alvar pavement grassland, calcareous talus slope woodland, limestone woodland, pastureland (NYNHP). The NYNHP indicates that there is a historical record of common moonwort occurring within the I-481 East Study Area and within 1.5 miles of the I-481 South Study Area. Given the date of its most recent documented observation in this area (1872) and its habitat requirements, common moonwort has low potential to occur within the I-481 South and I-481 East Study Areas. However, survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East and I-481 South Study Areas during final design of the Project. Common moonwort is not documented (within 1.5 miles) or expected to occur in the Central or I-481 North Study Areas.

FEW-FLOWERED SPIKE RUSH

Few-flowered spike rush is a State-listed Endangered plant species found on cold coniferous poor fen mats, but also in a variety of moist meadows in calcareous areas (NYNHP, Wisconsin Department of Natural Resources). The NYNHP indicates that there is a historic record of few-flowered spike rush occurring within the Central and I-481 North Study Areas (observation date not provided). Given its habitat requirements, few-flowered spike rush has low potential to occur within the Central or I-481 North Study Areas. However, survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 North and Central Study Areas during final design of the Project. Few-flowered spike rush is not documented (within 1.5 miles) or expected to occur in the I-481 South or I-481 East Study Areas.

HOOKER'S ORCHID

Hooker's orchid is a State-listed Endangered plant species found in dry to moist woodlands and forest. According to the NYNHP, Hooker's orchid prefers more forested areas with open understories or successional forest, particularly those dominated by poplar and pine. Confirmed ecological communities associated with Hooker's orchid include Appalachian oak-hickory forest, Appalachian oak-pine forest, beech-maple mesic forest, calcareous talus slope woodland, chestnut oak forest,

hemlock-northern hardwood forest, limestone woodland, pine-northern hardwood forest, red maple-hardwood swamp, and successional northern hardwoods (NYNHP). The NYNHP indicates that there is a historic record of Hooker's orchid occurring within 1.5 miles of the I-481 South Study Area (1918); however, all current known populations of this species occur near Ithaca and the eastern Adirondack foothills. Based on this information and its habitat requirements, Hooker's orchid has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 South Study Area during final design of the Project. Hooker's orchid is not documented (within 1.5 miles) or expected to occur in the Central, I-481 East, or I-481 North Study Areas.

FOREST BLUE GRASS

Forest blue grass is a State-listed Endangered plant species found in deciduous forests, usually associated with calcareous or other rich soil types. Confirmed ecological communities associated with forest blue grass include beech-maple mesic forest, limestone woodland, maple-basswood rich mesic forest, and rich mesophytic forest (NYNHP). The NYNHP indicates that there is a historic record of forest blue grass occurring within 1.5 miles of the I-481 South Study Area. Given the date of its most recent documented observation in this area (1916) and its habitat requirements, forest blue grass has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 South Study Area during final design of the Project. Forest blue grass is not documented (within 1.5 miles) or expected to occur in the Central, I-481 East, or I-481 North Study Areas.

PUTTYROOT

Puttyroot is a State-listed Endangered plant species found in rich deciduous or mixed-deciduous woods, often found near limestone outcrops or in calcareous talus. The moisture of the soil varies from mesic upland sites to damp low ground areas. Confirmed ecological communities associated with puttyroot include Appalachian oak-hickory forest, beech-maple mesic forest, calcareous talus slope woodland, limestone woodland, maple-basswood rich mesic forest, and rich mesophytic forest (NYNHP). The NYNHP indicates that there is a historic record of puttyroot occurring within the I-481 South Study Area. Given the date of its most recent documented observation in this area (1890) and its habitat requirements, puttyroot has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 South Study Area during final design of the Project. Puttyroot is not documented (within 1.5 miles) or expected to occur in the Central, I-481 East, or I-481 North Study Areas.

PURPLE WILD BERGAMOT

Purple wild bergamot is a State-listed Endangered plant species found in swampy thickets, stream beds, and ditches with damp, acidic soil (U.S. Department of Agriculture [USDA] Natural Resources Conservation Service [NRCS]). The NYNHP indicates that there is a historic record of purple wild bergamot occurring within 1.5 miles of the I-481 South Study Area (date not provided). Given its habitat requirements, purple wild bergamot has the low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in the I-481 South Study Area during final design to confirm its presence or absence. Purple wild bergamot is not documented (within 1.5 miles) or expected to occur in the Central, I-481 East, or I-481 North Study Areas.

PRAIRIE DUNEWORT

Prairie dunewort is a State-listed Endangered plant species found in prairies, dunes, grassy railroad sidings, and fields over limestone. Confirmed ecological communities associated with prairie dunewort

include cropland/field crops, mowed roadside/pathway, pastureland, and successional old field (NYNHP). The NYNHP indicates that there is a historic record of prairie dunewort occurring within 1.5 miles of the I-481 East Study Area. Given its habitat requirements, prairie dunewort has the low potential to occur within the I-481 East Study Area. However, survey work for this species would be conducted in the I-481 East Area during final design to confirm its presence or absence. Prairie dunewort is not documented (within 1.5 miles) or expected to occur in the Central, I-481 South, or I-481 North Study Areas.

C. EFFECTS OF VIADUCT ALTERNATIVE

INDIANA BAT

The Viaduct Alternative would primarily involve work within the Central Study Area, where Indiana bats are not likely to occur. However, as part of this alternative, noise barriers would be constructed in portions of the other three study areas. **Appendix J-5**, **Figures J-5-2** through **J-5-4** show the approximate location of the proposed work in the Central Study Area and the noise barrier walls in the I-481 South, I-481 East and I-481 North Study Areas.

Under the Viaduct Alternative 12.2 acres of total land would be affected as a result of the noise barrier footprint[7] in the I-481 South, I-481, East and I-481 North Study Areas. Ecological communities permanently affected by the noise barriers under the Viaduct Alternative include 9.0 acres terrestrial cultural ecological communities, 1.6 acres of successional southern hardwoods, 0.3 acres of successional old field, 0.8 acres of successional shrubland, 0.4 acres of floodplain forest, 0.06 acre of freshwater wetland, and 0.003 acre of surface waters (noise barrier footprint). All tree removal would be limited to within 100 feet of existing road surfaces. Although some trees that would be cleared are large enough to be potential roost trees, their location within small and isolated forest fragments immediately adjacent to interstate highway greatly limits their quality and the likelihood of them being used as roost sites by Indiana bats.

As indicated in **Table J-7-2**, the NYNHP has no records of Indiana bat roost trees within 2.5 miles of the Central Study Area, where the majority of construction would occur. In addition, the USFWS IPaC System results do not identify the Indiana bat as having the potential to occur within the Central Study Area. As indicated in **Table J-7-2**, the NYNHP has records of Indiana bat roost trees within 0.2 miles from the I-481 South Study Area and 2.5 miles from the I-481 East Study Area. Additionally, the NYNHP has records of an Indiana bat hibernaculum within 2.5 miles from the I-481 South Study Area and greater than 2.5 miles from the I-481 East Study Area. There are no known Indiana bat roost trees or hibernaculum within 2.5 miles of the I-481 North Study Area. **Appendix J-6**, **Figures J-6-1** through **J-6-3** show the approximate area of tree removal for the Viaduct Alternative.

Tree removal associated with the installation of noise barriers in the I-481 East and I-481 North Study Areas would be limited to approximately 0.77 acres would not be expected to represent a substantial loss of potential roosting habitat for Indiana bats. Tree removal would not be required in the I-481 South Study Area as a result of Noise Barrier 9. Roost tree availability in general is unlikely to currently be a limiting factor in the regulation of Indiana bat population sizes now that there are so few tree-

[7] The acreages for the "noise barrier footprints" include a 10-foot buffer area around the potential noise barriers. Unless otherwise stated, up to approximately 30 percent of the noise barrier effects overlap with the roadway effects (portions of the noise barriers would be built on pavement). This 30 percent is included in this effects calculations as a conservative measure. The areas of roadway/noise barrier overlap are in disturbed communities of the Project Area.

roosting bats on the landscape due to WNS. As WNS has greatly reduced the size of bat populations, unoccupied roosting habitat has become increasingly available for remaining bats (USFWS 2016a). Colonies and social networks of Indiana bats have been shown to be robust to the loss of previously used roost trees, which is likely due to the ephemeral nature of the dead and dying trees that they usually use as roost sites (Silvis et al. 2014a). Urban street trees and trees within small and isolated fragments within 100 feet of existing roadways, like those that would be removed for the Viaduct Alternative, would remain common throughout the Syracuse metropolitan area and available for any Indiana bats potentially displaced from the affected portion of the Central Study Area. For these reasons, the Viaduct Alternative would not likely adversely affect roosting habitat availability for Indiana bats in the Syracuse area. As a precaution to avoid any potential for direct effects, all tree clearing would be restricted to the winter hibernation period (November 1 – March 31)[8] when Indiana bats would be in the hibernaculum. This and all other aspects of tree clearing for the Viaduct Alternative would be consistent with the tree removal Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat (USFWS/FHWA RWPC).

Indiana bats are known to sometimes also roost under bridges in lieu of natural roosting habitat (Keeley and Tuttle 1999). Noise barriers would not be constructed on bridges in the I-481 South and I-481 East Study Areas as part of the Viaduct Alternative. Noise barriers would be constructed over bridges present in the I-481 North Study Area as part of the construction of the Viaduct Alternative. As such, all existing bridges involving work as part of the Project in the I-481 North Study Area would be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to October 31) to determine if there is any evidence of bats actively using them. Bridges in the Central Study Area would not require Bridge Bat Surveys as the IPaC System does not identify the Indiana Bat as occurring this study area. In the event that bats are observed on any of the bridges, all bridge Avoidance and Minimization Measures in the USFWS/FHWA RWPC would be adopted to the greatest extent possible. FHWA would be consulted in the event that any of the measures could not be implemented to determine the proper course of action.

The areas where tree clearing would occur for the proposed noise barriers along I-81 and I-481 for the Viaduct Alternative are unlikely to represent quality foraging habitat for Indiana bats. The trees are in heavily urbanized areas, all within 100 feet of the existing roadway and closely bound by urban development. Foraging Indiana bats have been found to avoid roads, often reversing course when a road is encountered. This appears to be due more so to the presence of motor vehicles than the physical presence of the road itself (Zurcher et al. 2010, Bennett and Zurcher 2013). The areas where tree clearing would occur for the Viaduct Alternative are subjected to high levels of motor vehicle traffic noise, which is expected to limit the likelihood that they are used for foraging by Indiana bats. Loss of these trees would not be expected to substantially affect foraging habitat availability for the region's population of Indiana bats.

Dust generated during construction of the Viaduct Alternative would be minimized in accordance with NYSDOT air quality standards and is unlikely to affect any Indiana bats potentially present in the Central Study Area. A dust control plan would be implemented. Measures that could be included in the dust control plan include:

[8] Tree clearing would be limited until after November 1 in compliance with NYSDEC regulations. This is in compliance with the USFWS regulations which limits tree clearing until after October 1.

- Requiring trucks that are hauling loose material to be equipped with tight-fitting tailgates and have their loads securely covered, and
- The use of water sprays for demolition, excavation, and transfer of soils to ensure that materials would be dampened as necessary to avoid the suspension of dust into the air.

Such measures would effectively reduce emissions from dust-generating construction activities and the potential for effects to Indiana bats.

Noises generated during construction of the noise barriers would not be expected to affect any Indiana bats potentially occurring in the I-481 North and I-481 East Study Areas, given that noise levels in the area are already extremely high under existing conditions. Current occurrence of Indiana bats under these conditions would inherently indicate a high tolerance of the anthropogenic disturbances that are associated with urban and roadside environments. Indiana bats in general have been known to roost near construction sites, major airports, and other extremely noisy locations (Sparks et al. 1998, Keeley and Tuttle 1999, Niver 2009), suggesting that while they are roosting, they are tolerant of loud noises and vibrations caused by human activity. Continued roosting of Indiana bats following the start of new construction activity has been observed and indicates a tolerance of and ability to acclimate to construction noises (ESI 2008, USFWS 2011). Foraging behavior of Indiana bats has also been found to be unaffected by extremely loud noises and reverberations, such as artillery fire on military bases (Shapiro and Hohmann 2005). Sounds generated by heavy construction equipment and similar sources typically fall well below the hearing and echolocation frequency ranges of bats, which may largely explain this tolerance of loud noises (Delaney and Grubb 2004, Niver 2009). In contrast, higher frequency noises like those of cars and light trucks can displace foraging Indiana bats and other *Myotis* species from an area (Schaub et al. 2008, Zurcher et al. 2010, Bennett and Zurcher 2013). Given that the portions of the I-481 East and I-481 North Study Areas where construction would occur are already chronically subjected to high frequency noises from motor vehicles, the heavy construction equipment noise that would be generated by the Project would be unlikely to affect roosting or foraging of Indiana bats, therefore construction of the Viaduct Alternative would not be expected to affect any Indiana bats potentially occurring in those study areas. Similarly, operation of the Viaduct Alternative would be comparable to current traffic conditions and therefore would not elevate noise disturbance or vibration levels to an extent that would potentially affect Indiana bats. The sound barriers that would be constructed along portions of I-81 and I-481 would further avoid the potential for increased noise or visual disturbance in neighboring areas during operation of the Viaduct Alternative.

Temporary lighting used during construction and permanent lighting used during operation would follow the relevant Avoidance and Minimization Measures in the USFWS/FHWA RWPC. These include directing temporary construction lighting away from suitable habitat during the active season, using downward-facing, full cut-off lens lights during project operation, and directing lighting away from suitable habitat when installing new or replacing existing permanent lights.

Given that the Project under the Viaduct Alternative would limit tree clearing in the I-481 East and I-481 North Study Areas to the winter hibernation period (November 1–March 31), within 100 feet of existing roadways, is less than 2.5 miles from a hibernaculum and is less than 2.5 miles from a known roost tree, and would follow the applicable Avoidance and Minimization Measures of the USFWS/FHWA RWPC; NYSDOT has made a preliminary effect determination of "*take not likely*" for the Indiana bat for the Viaduct Alternative.

Table J-7-2
Viaduct Alternative: Tree Cutting Distances for Indiana Bat

	Roost Trees	Hibernaculum
Central Study Area	>2.5 miles	>2.5 miles
I-481 South Study	<2.5 miles	<2.5 miles
I-481 East Study Area	<2.5 miles	>2.5 miles
I-481 North Study Area	>2.5 miles	>2.5 miles

NORTHERN LONG-EARED BAT

The Viaduct Alternative would primarily involve work within the Central Study Area where northern long-eared bats are not likely to occur. However, as part of this alternative, noise barriers would be constructed in portions of the other three study areas. **Appendix J-5**, **Figures J-5-2** through **J-5-4** show the approximate location of the proposed work in the Central Study Area and the noise barrier walls in the I-481 South, I-481 East, and I-481 North Study Areas.

Under the Viaduct Alternative 8.2 acres of total land would be affected as a result of the noise barrier footprint[9] in the I-481 South, I-481 East, and Central Study Areas. Ecological communities permanently affected by the Viaduct Alternative include 6.2 acres of terrestrial cultural ecological communities, 1.5 acres of successional southern hardwoods, 0.3 acres of successional old field, and 0.2 acres of successional shrubland. The remaining area of disturbance consists of impervious surface, ditches, mowed lawn with trees, successional old field, wetland, and surface waters. All tree removal would be limited to within 100 feet of the existing road surface. As previously discussed in **Section B**, northern long-eared bats are sensitive to urbanization and avoid small forest fragments and sharp edges in favor of large tracts of interior forest for roosting and foraging, and are therefore not expected to occur immediately adjacent to I-81 and I-481 in the other study areas where the Project would be constructed As indicated in **Table J-7-3**, the NYNHP has no records of northern long-eared bat roost trees within 1.5 miles of the I-481 North Study Area and the closest hibernaculum is greater than five miles away.

The noise barriers that would be constructed in the I-481 East and Central Study Areas would be along segments of interstate highway that border densely developed residential neighborhoods and other areas where suitable forested habitat for northern long-eared bats is lacking. Tree removal associated with the installation of noise barriers in the I-481 East and Central Study Areas would total 9.9 acres. Tree removal would not occur within the I-481 South Study Area as a result of the installation of Noise Barrier 9.

Per **Table J-7-3** below, the NYNHP has no records of northern long-eared bat roost trees within 1.5 miles from the I-481 North, I-481 South, or I-481 East Study Areas. However, NYNHP has records of northern long-eared bat roost trees within 1.5 miles of the Central Study Area. The NYNHP has records of a northern long-eared bat hibernaculum less than five miles from the I-481 South Study Area and less than five miles from the I-481 East Study Area. There are no known northern long-eared bat hibernaculum within 5 miles of the Central or I-481 North Study Areas. **Appendix J-6**, **Figures J-6-1** through **J-6-3** show the approximate area of tree removal for the Viaduct Alternative.

As previously noted for Indiana bats, roost tree availability is unlikely to be a limiting factor in the regulation of northern long-eared bat population sizes now that there are so few tree-roosting bats on

[9] The acreages for the "noise barrier footprints" include a 10-foot buffer area around the potential noise barriers. Unless otherwise stated, up to approximately 30 percent of the noise barrier effects overlap with the roadway effects (portions of the noise barriers would be built on pavement). This 30 percent is included in these effects calculations as a conservative measure. The areas of roadway/noise barrier overlap are in disturbed communities of the Project Area.

the landscape due to WNS. Urban street trees and trees within small and isolated fragments within 100 feet of existing roadways, like those that would be removed for the Viaduct Alternative, would nevertheless remain common throughout the Syracuse metropolitan area and available for any northern long-eared bats potentially displaced from the affected area. Like Indiana bats, northern long-eared bats are also considered to be robust to the loss of previously used roost trees, which is likely due to the ephemeral nature of the dead and dying trees that they usually use as roost sites (Silvis et al. 2014b). For these reasons, the Viaduct Alternative would not likely adversely affect roosting habitat availability for northern long-eared bats in the Syracuse area. As a precaution to avoid any potential for direct effects, however, all tree clearing would be restricted to the winter hibernation period (November–March 31) when northern long-eared bats would be in the hibernaculum. This and all other aspects of tree clearing for the Viaduct Alternative would be consistent with the tree removal Avoidance and Minimization Measures in the USFWS/FHWA RWPC.

Like Indiana bats, northern long-eared bats have been found to sometimes roost under bridges in lieu of natural roosting habitat (Feldhamer et al. 2003). Noise barriers would be constructed in the I-481 East Study Area, but they would not be constructed on bridges as part of the construction of the Viaduct Alternative. The IPaC System does not list the northern long-eared bat as occurring in the vicinity of the Central or I-481 North Study Areas and noise barriers would not be constructed on bridges in the I-481 South Study Area. However, NYNHP lists the northern long-eared bat as having the potential to occur in the Central, I-481 South, and I-481 East Study Areas and noise barriers would be constructed in the vicinity of bridges in these study areas as part of the Viaduct Alternative. Therefore, Bridge Bat Surveys would be required for the northern long-eared bat in the Central Study Area as part of the Viaduct Alternative. These bridges would be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) to determine if there is any evidence of bats actively using them. In the event that any bats are observed on any of the bridges, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA RWPC would be adopted to the greatest extent possible. FHWA would be consulted in the event that any of the measures could not be implemented to determine the proper course of action.

The areas where tree clearing would occur along I-81 and I-481 for the Viaduct Alternative do not represent suitable foraging habitat for northern long-eared bats. The trees are in a heavily urbanized area, all within 100 feet of the existing roadway. Northern long-eared bats require large tracts of unbroken forest for foraging, and they strongly avoid roads and other sharp edges (Owen et al. 2003, Patriquin and Barclay 2003, Carter and Feldhammer 2005, Morris et al. 2010, Segers and Broders 2014). Tree clearing for the Viaduct Alternative would not eliminate foraging habitat availability for the region's population of northern long-eared bats.

Dust generated during construction of the Viaduct Alternative would be minimized in accordance with NYSDOT air quality standards and unlikely to affect any northern long-eared bats potentially present in the area. A dust control plan would be implemented. Measures that could be incorporated into the dust control plan may include, but are not limited to:

- Trucks that haul loose material be equipped with tight-fitting tailgates and their loads be securely covered.
- The use of water sprays for demolition, excavation, and transfer of soils to ensure that materials would be dampened as necessary to avoid the suspension of dust into the air.

Such measures would effectively reduce emissions from dust-generating construction activities and the potential for effects to northern long-eared bats.

Noises and vibrations generated during construction of the Viaduct Alternative would not be expected to affect northern long-eared bats given that they are not expected to occur in the area and noise and vibration levels in the area are already extremely high under existing conditions. Presence of northern long-eared bats under these conditions would inherently indicate a high tolerance of, and habituation to, the anthropogenic disturbances that are associated with urban and roadside environments. While there have not been any studies of the sensitivity of northern long-eared bats to construction noises or other forms of noise disturbance, northern long-eared bats have been observed roosting in areas with substantial noise and vibration levels, such as near the Indianapolis International Airport (Sparks et al. 1998) and under bridges (Feldhamer et al. 2003), which suggests that they can be tolerant of chronic anthropogenic noise disturbances and reverberations while roosting if the habitat is otherwise suitable. Like Indiana bats, loud noises like those generated by heavy construction equipment are well below the expected hearing and echolocation frequency ranges of northern long-eared bats (Delaney and Grubb 2004, Niver 2009). Higher frequency noises, however, like those of cars and light trucks, can displace foraging *Myotis* bats (Schaub et al. 2008, Zurcher et al. 2010, Bennett and Zurcher 2013) like northern long-eared bats from an area. Given that the Central Study Area is already chronically subjected to high frequency noises from motor vehicles, the heavy construction equipment noise that would be generated by the Project would be unlikely to affect roosting or foraging northern long-eared bats, therefore construction of the Viaduct Alternative would not be expected to affect any northern long-eared bats potentially occurring in the area. Similarly, operation of the Viaduct Alternative would be comparable to current traffic conditions and therefore would not elevate noise and vibration levels to an extent that would potentially affect northern long-eared bats. Sound barriers that would be constructed along portions of I-81 and I-481 would further avoid the potential for increased noise or visual disturbance in neighboring areas during operation of the Viaduct Alternative.

Temporary lighting used during construction and permanent lighting used during operation would follow the relevant Avoidance and Minimization Measures in the USFWS/FHWA RWPC. These include directing temporary construction lighting away from suitable habitat during the active season, using downward-facing, full cut-off lens lights during project operation, and directing lighting away from suitable habitat when installing new or replacing existing permanent lights.

Given that the Project under the Viaduct Alternative would limit tree clearing in the I-481 East and I-481 North Study Areas to the winter hibernation period (November 1–March 31), is more than 0.5 miles from a hibernaculum and more than 150 feet from a known roost tree, is within 100 feet of existing roadways, and would follow the applicable Avoidance and Minimization Measures of the USFWS/FHWA RWPC; NYSDOT has made a preliminary effect determination of "*take not likely*" for the northern long-eared bat for the Viaduct Alternative.

Table J-7-3
Viaduct Alternative: Tree Cutting Distances for Northern Long-Eared Bat

Study Area	Roost Trees	Hibernaculum
Central Study Area	<1.5 miles	>5.0 miles
I-481 South Study	>1.5 miles	<5.0 miles
I-481 East Study Area	>1.5 miles	<5.0 miles
I-481 North Study Area	>1.5 miles	>5.0 miles

EASTERN MASSASAUGA

The Viaduct Alternative would primarily involve work within the Central Study Area, which encompasses a heavily urbanized portion of downtown Syracuse that does not contain any habitat capable of supporting eastern massasaugas. Construction in the three other study areas for the Viaduct

Alternative would be limited to the construction of sound barrier walls alongside portions of I-481. **Appendix J-5**, **Figures J-5-2** through **J-5-4** show the approximate location of the proposed work in the Central Study Area and the noise barrier walls in the I-481 South, I-481 East and I-481 North Study Areas. As discussed in greater detail below, under "Community Grid Alternative" no habitat within the I-481 South, I-481 East, or I-481 North Study Areas is considered suitable for eastern massasaugas and there are no NYNHP records of this species occurring anywhere locally aside from an isolated population adjacent to the I-481 North Study Area. For these reasons, eastern massasaugas are not expected to occur in any portion of the Project Area. Therefore, NYSDOT has made a preliminary effect determination of "*Take Not Likely*" for the eastern massasaugas for the Viaduct Alternative.

AMERICAN HART'S-TONGUE FERN

As described above, the NYNHP database indicates that the American hart's-tongue fern has been documented adjacent to the I-481 South Study Area and the USFWS IPaC database indicated the species had the potential to occur within the I-481 South Study Area. The NYNHP has no known occurrences of the American hart's-tongue fern within or adjacent to the I-481 North, I-481 East, or Central Study Areas and there is no suitable habitat for this species within or adjacent to these study areas. Additionally, the American hart's-tongue fern did not come up on the USFWS's IPaC database search for these three study areas. **Appendix J-5**, **Figure J-5-4** shows the approximate location of the proposed work in the I-481 South Study Area.

On July 13, 2017, a site investigation was conducted in the vicinity of proposed Noise Barrier 9 in the I-481 South Study Area to determine if habitat for American hart's-tongue fern is present. Habitat in the vicinity of Noise Barrier 9 consists of a disturbed ROW. It was determined that no suitable habitat for American hart's-tongue fern is present in the vicinity of the proposed Noise Barrier 9.

As discussed above, American hart's-tongue fern's preferred habitat is not present within the I-481 East, the Central or the I-481 North Study Areas and no species were found during a field survey in the I-481 South Study Area. Therefore, NYSDOT has made a preliminary effect determination of "*Take Not Likely*"[10] for the American Hart's tongue fern for the Viaduct Alternative.

PEREGRINE FALCON

Peregrine falcons currently nest in an artificial nest box on a building adjacent to the Central Study Area, and thus, have the potential to occur throughout the Central Study Area. The peregrine falcons in this area are already accustomed to an urban environment and would not be further affected by additional noise or activity from the operation of the Project. Peregrine falcons will tolerate almost any level of human activity taking place below their nest provided that the nest itself is inaccessible (Ratcliffe 1972). As such, the peregrine falcon would not be significantly adversely affected by the operation of the Viaduct Alternative.

The known peregrine falcon nest box is located outside of the area that may be disturbed by construction. Should construction or construction staging take place near the nest box, then measures would be implemented by the Contractor to avoid disruptions to the nest box, including the establishment of any required buffers or monitoring based on coordination with NYSDEC.

[10] "Take Not Likely" is not the standard terminology used under the plant regulations to describe when a project will not likely impact a protected plant species; however, this terminology is used in this document for uniformity with the discussion of protected wildlife species.

There have been no known occurrences of peregrine falcons in the I-481 South, I-481 East, or I-481 North Study Areas. As such, the peregrine falcon nest box as well as the falcons themselves would not be adversely affected by the operation of the project. For these reasons, NYSDOT has made a preliminary effect determination of *"take not likely"* for the peregrine falcon for the Viaduct Alternative.

BALD EAGLE

As discussed above, the NYNHP has a record of non-breeding bald eagles perching and foraging along the shoreline of Onondaga Lake. This area is on the periphery of the Central Study Area and I-481 North Study Area and therefore non-breeding bald eagles have the potential to occur there. The sensitivity of bald eagles to human disturbance is greatest during courtship and nest-building, which take place in New York between December and March, and then declines as the nesting period progresses and eventually ends (USFWS 2007). Decades ago, bald eagles were considered to be sensitive to human disturbance even outside of the breeding season (e.g., Stalmaster and Newman 1978, Nye 1994, Stalmaster and Kaiser 1997), with concern that repeated displacement from important roosting and foraging areas could waste energy reserves at a time of year when energy demands are high (Stalmaster and Gessaman 1984). Since then, however, bald eagles have shown a rapid and substantial generational habituation to human disturbance during both the breeding and non-breeding periods, and an increasing tolerance of development, including urbanization (Johnson 2010, Guinn 2013). In many parts of their range, bald eagles are increasingly nesting and occurring during the non-breeding periods in areas with heavy levels of human activity where they would almost never be found only a few decades ago (Millsap et al. 2004, Guinn 2013). This includes nesting by bald eagles in recent years within major metropolitan areas, including New York City, Washington D.C., Philadelphia, and Pittsburgh (Sullivan 2016). The use of Onondaga Lake in the City of Syracuse by bald eagles is another such example of bald eagles having acclimated to an urban area with extremely high levels of disturbance. Any non-breeding bald eagles utilizing the lake and its shorelines inherently display a high tolerance of human activity as well as degraded habitat.

The Viaduct Alternative would include the construction and operation of a reconstructed system of ramps connecting I-81 to Park Street, State Route 370, Old Liverpool Road (Central Study Area), and noise barrier construction in the vicinity of Exits 25a and 26 (I-481 North Study Area). The closest construction activity to Onondaga Lake would consist of road repaving approximately 200 feet away from the southeastern shoreline. At slightly greater distances, the road reconstruction would likely include louder activities such as jack-hammering and pile-driving. The USFWS Bald Eagle Management Guidelines (USFWS 2007) do not provide guidance on buffer distances for construction disturbance near habitats used by non-breeding eagles but recommend a minimum buffer of 330 feet from nests. Given the reduced sensitivity of bald eagles to disturbance during the non-breeding period compared to the nesting period (USFWS 2007) and the high existing levels of disturbance and urban setting of the area of Onondaga Lake where non-breeding bald eagles have been observed, a minimum distance of 200 feet from the closest area of construction to the closest point of lakeshore where non-breeding eagles could occur is expected to be more than sufficient for reducing the likelihood of any potential disturbance from construction noise. In the event that any bald eagles would be displaced by construction noise from the small area of the lake and shoreline near the site of construction, the effect would be highly temporary, and the eagles would be able to easily distance themselves from the activity and utilize nearby areas of the lake and its shoreline without negative consequence. Operation of the Viaduct Alternative would not bring motor vehicle traffic any closer to the Onondaga Lake shoreline than at present or increase existing levels of disturbance. Given that paved roads with heavy traffic are already present near the shoreline in this area, operation of the Viaduct Alternative would not eliminate

quality habitat or otherwise permanently alter the current conditions on Onondaga Lake for non-breeding bald eagles. The Viaduct Alternative would not create disruptive activities or development in the direct flight paths of eagles between roost sites and important foraging areas, and in all other aspects would be in accordance with the USFWS Bald Eagle Management Guidelines' "recommendations for avoiding disturbance at foraging areas and communal roost sites" (USFWS 2007). Overall, construction and operation of the Viaduct Alternative would not have significant adverse effects on bald eagles and NYSDOT has made a preliminary effect determination of "*take not likely.*"

LEAST BITTERN

The least bittern has been documented by the NYNHP within 600 feet of the I-481 North Study Area. Least bitterns inhabit freshwater and brackish marshes with tall, dense vegetation including cattails, sedges, reeds, bulrushes, sawgrass, smartweed, arrowhead, buttonbush, and other emergent wetland vegetation. They can also be found at the edges of lakes and rivers with emergent and tall vegetation but prefer marshes with scattered bushes or other woody growth. Wetland habitat within and around the I-481 North Study Area is limited to drainage ditches, creeks, and common-reed dominated and disturbed forested wetlands along I-481 and within the quadrants of the I-81 and I-481 highway interchange, which are of poor quality and unlikely to support least bitterns. The wetlands where least bitterns were documented on the NYNHP would not be affected by the Project. Additionally, because of the reclusive nature of the least bittern there is a very low probability that any individual bittern would leave the safety of their wetland area to forage in any of the unsuitable/disturbed wetlands within the Project Area during construction. Therefore, due to the lack of suitable habitat in the study areas and the fact that their known habitat would not be impacted by the Project, NYSDOT has made a preliminary effect determination of *"take not likely"* for the least bittern for the Viaduct Alternative.

NORTHERN HARRIER

The NYNHP has a record of northern harriers breeding within 1.5 miles of the I-481 North Study Area. Northern harriers inhabit areas such as grasslands, old fields, pastures, croplands, and salt marshes during both the breeding and non-breeding periods (Smith et al. 2011). The closest such habitat to the I-481 North Study Area that is potentially suitable for northern harriers includes the Cicero Swamp Wildlife Management Area and some agricultural fields that are approximately 1.5 and 1.2 miles to the east, respectively, and the marshes of a large wetland complex that is approximately 1.2 miles to the west, along State Route 481. Non-breeding northern harriers, which are much less sensitive to human disturbance than when breeding, might also be expected to occur in the open fields of the Syracuse Hancock International Airport. There is no suitable breeding or non-breeding habitat for northern harriers within the I-481 North Study Area, which is primarily limited to roadside grass, small and degraded common reed-dominated wetlands bordering drainage ditches and within clover leaves of the I-481 and I-81 interchange, and small fragments of woodland. None of these habitat types would support breeding or non-breeding northern harriers, and therefore, northern harriers are not considered to have the potential to occur within the I-481 North Study Area. There are no records of northern harriers and there is no suitable habitat for northern harriers in any of the other study areas. For these reasons, construction and operation of the Viaduct Alternative would not affect northern harriers or their habitat, and NYSDOT has made a preliminary effect determination of *"take not likely*."

LAKE STURGEON

Lake sturgeon are present in Onondaga Lake, which is in the vicinity of the Central and I-481 North Study Areas. Under the Viaduct Alternative, a 96-inch-diameter stormwater trunk line and a 42-inch-diameter stormwater trunk line would be installed in Onondaga Creek, a tributary to Onondaga Lake, in order to separate the stormwater from the sanitary sewer and reduce combined sewer overflows,

leading to water quality improvements in Onondaga Creek and Onondaga Lake. Under the Viaduct Alternative, the amount of impervious area in the Central Study Area (144.2 acres) would decrease by 2.0 acres, or 1.4 percent, with corresponding reductions in stormwater runoff volumes and pollutant loadings. The new stormwater system would also include best management practices (BMPs) such as hydrodynamic stormwater treatment units and infiltration/detention basins, which would improve stormwater quality prior to it entering the stormwater trunk lines. Despite the overall decrease in impervious area in the Central Study Area, the total highway lane miles in the Central Study Area would increase by 17.9 percent, leading to corresponding increases in chloride loadings to Lower Onondaga Creek, when compared with the No Build Alternative. However, the concentration of chloride in Onondaga Creek, and thus the lake, would not substantially increase under this alternative. The percent increase between the Viaduct Alternative and No Build Alternative is 0.04 percent. The concentration of chloride in Onondaga Lake in 2013, as measured by Onondaga County Department of Water Environment Protection's Ambient Monitoring Program, ranged from 355 to 643 mg/L. The USEPA chronic toxicity water quality criteria concentration of chloride, for the majority of aquatic species, is 230 mg/L, while the acute toxicity concentration is 860 mg/L. The increase in chloride loading would be even less noticeable in Onondaga Lake, as the much larger water body would dilute the chloride concentrations entering from Onondaga Creek. Additionally, the Project would have a reduction in the total amount of impervious area in the Central Study Area, which could lead to a reduction in chloride applications, and a benefit to water quality not indicated by the analyses.

Noise barrier (Noise Barrier 16) would be constructed in the I-481 North Study Area. No new highway lanes would be constructed in the I-481 North Study Area. Therefore, the operation of the Viaduct Alternative would have no better or worse effect on Onondaga Creek when compared to the No Build Alternative.

Lake sturgeon are known to occur in the surface waters of Onondaga Lake, and have the potential to occur in Onondaga Creek, and Ley Creek. The implementation of erosion and sediment controls (e.g., silt fences and inlet protection) in accordance with the 2016 New York State Standards and Specifications for Erosion and Sediment Control (“Blue Book”), the SWPPP prepared to meet the requirements of SPDES General Permit GP-0-20-001, and NYSDOT Highway Design Manual, Chapter 8 Highway Drainage, would minimize the potential for construction activities to result in adverse effects to surface water quality within the study areas.

BMPs that incorporate green infrastructure components (e.g., source control stormwater management, such as permeable pavements, and bioretention areas, such as rain gardens) would be considered for integration into the public ROW. Where little space is available, underground detention basins and hydrodynamic devices would be considered. These BMPs would ensure there would be no net increase in stormwater flow to receiving surface waters (i.e., Onondaga Creek) within the Central and I-481 North Study Areas and that all roadway runoff from the Viaduct Alternative would be treated for water quality prior to discharge to surface waters. With these measures in place, the State-listed lake sturgeon would not be directly or indirectly affected by the operation of the Viaduct Alternative. As such, NYSDOT has made a preliminary effect determination of *“take not likely”* for the lake sturgeon for the Viaduct Alternative.

UPLAND SANDPIPER

The State-listed Threatened upland sandpiper has been recorded by NYNHP in the vicinity of the I-481 North Study Area. The upland sandpiper is not expected to directly utilize habitats within the Project Area since it is an obligate grassland species. Habitat loss is not expected as a result of construction of the Project and no permanent adverse effects to upland sandpiper would occur as a result the Viaduct

Alternative. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the upland sandpiper for the Viaduct Alternative.

BLACK TERN

The State-listed Endangered Black tern has been recorded by NYNHP near the I-481 North Study Area. As described above, black tern was not found during thorough surveys or by NYNHP local birders between 1989 and 2007. Based on this information and its habitat requirements, black tern has low potential to occur within the I-481 North Study Area. Survey work[11] for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 North Study Area during final design of the Project. Habitat loss is not expected as a result of construction of the Project and no adverse effects to black tern are anticipated to result from construction of the Viaduct Alternative in the I-481 North Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the black tern for the Viaduct Alternative.

AMERICAN SALTMARSH BULRUSH

The State-listed Threatened American Saltmarsh bulrush has been recorded by the NYNHP in the vicinity of the Central Study Area. The Central Study Area is heavily urbanized and dominated by buildings, transportation infrastructure, and other impervious surfaces, and it does not contain the American Saltmarsh bulrush preferred habitat of open, saltwater or brackish wetlands. The study area also does not contain the confirmed ecological communities where this plant has been documented within the State. However, occasionally American Saltmarsh bulrush may be found in disturbed areas such as roadsides and ditches. Due to the lack of preferred habitat and confirmed ecological communities, this species has a low potential to occur within the Central Study Area. Also, as described above, American Saltmarsh bulrush was not found during targeted surveys for this species in the Central Study Area.

The I-481 North Study Area is heavily urbanized and dominated by linear sections of highway and residential development, although a complex of forested and emergent wetlands associated with Mud Creek and Beartrap Creek exist within the Wetlands/Surface Waters Study Area. Given its habitat requirements, there is low potential for American saltmarsh bulrush to occur within the I-481 North Study Area. During final design, efforts would be made to confirm the presence or absence of American saltmarsh bulrush within the I-481 North Study Area. If American saltmarsh bulrush is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the American Saltmarsh bulrush for the Viaduct Alternative.

MIDLAND SEDGE

The State-listed Threatened Midland sedge has been recorded by the NYNHP in terrestrial cultural ecological communities in the vicinity of the Central and I-481 South Study Areas. However, as described above, Midland sedge was not found during targeted surveys for this species in the Central

[11] A site visit to record incidental observations would be conducted at a time of year (May through mid-September [NYNHP]) when black tern would be expected to be present. Any incidental observations would be coordinated with NYSDEC.

Study Area or in the I-481 South Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the midland sedge for the Viaduct Alternative.

ANNUAL SALTMARSH ASTER

The State-listed Threatened- annual saltmarsh aster has been recorded by the NYNHP in the vicinity of the Central Study and I-481 North Study Areas. The Central Study Area is heavily urbanized and dominated by buildings, transportation infrastructure, and other impervious surfaces, and it does not contain the annual saltmarsh aster preferred habitat of salt or brackish marshes, the edges of tidal channels and creeks, and swales of coastal dunes. It also does not contain the confirmed ecological communities from which it has been documented. However, it is also occasionally found in disturbed habitats that are salt influenced. As previously described, annual saltmarsh aster was not found during targeted surveys for this species in the Central Study Area.

The I-481 North Study Area is heavily urbanized and dominated by linear sections of highway and residential development, although a complex of forested and emergent wetlands associated with Mud Creek and Beartrap Creek are present. . Given its habitat requirements, there is low potential for annual saltmarsh aster to occur within the I-481 North Study Area. During final design, efforts would be made to confirm the presence or absence of annual saltmarsh aster within the I-481 North Study Area. If annual saltmarsh aster is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the annual saltmarsh aster for the Viaduct Alternative.

STRAIGHT-LEAVED PONDWEED

The State-listed Endangered straight-leaved pondweed has been recorded by the NYNHP in the vicinity of the Central Study Area. As described above, straight-leaved pondweed was not found during targeted surveys for this species in the Central Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the straight-leaf pondweed for the Viaduct Alternative.

GLOMERATE SEDGE

The State-listed Threatened glomerate sedge has been recorded by the NYNHP in the vicinity of the Central Study Area. Within the project limits this species has the potential to occur in upland habitats including thickets, open woods, cemetery, and ditches. During surveys for glomerate sedge in the Central Study Area and I-481 South Study Area two sedge species that closely resemble glomerate sedge were identified. Therefore, glomerate sedge has the potential to occur in both the Central and I-481 South Study Areas.

Disturbances to areas where glomerate sedge has the potential to occur within the NYSDOT ROW is likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or absence of glomerate sedge. If glomerate sedge is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of "*take not likely*" for the glomerate sedge for the Viaduct Alternative.

MARSH ARROWGRASS

The State-listed Threatened marsh arrowgrass has been recorded by NYNHP in the vicinity of the I-481 South and East Study Areas. Given its habitat requirements, the potential for marsh arrowgrass to occur would be limited to ditches and narrow channels located in the vicinity of proposed Noise Barrier 9 within the I-481 South Study Area and wetlands and channels associated with the proposed noise barriers in the vicinity of I-481 East Study Area. As previously described, marsh arrowgrass was not found during targeted surveys for this species in the I-481 South Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East Study Area during final design. Marsh arrowgrass is not expected to occur in the Central or I-481 North Study Areas.

Disturbances to areas where marsh arrowgrass has the potential to occur within the NYSDOT ROW is likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or absence of marsh arrowgrass. If marsh arrowgrass is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of "*take not likely*" for the marsh arrowgrass for the Viaduct Alternative.

THREAD-LEAVED PONDWEED

The State-listed Endangered thread-leaved pondweed has been recorded by the NYNHP in the vicinity of the I-481 East Study Area. Given its habitat requirements (i.e., alkaline settings, small stream, deepwater river, marsh headwater stream, sand beach, and summer-stratified monomictic lake), thread-leaved pondweed has low potential to occur within wetlands and surface waters of the I-481 East Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East Study Area during final design. Thread-leaved pondweed is not expected to occur in the Central, I-481 South, or I-481 North Study Areas.

Disturbances to areas where thread-leaved pondweed has the potential to occur within the ROW is likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or absence of thread-leaved pondweed. If thread-leaved pondweed is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed considering the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the thread-leaved pondweed for the Viaduct Alternative.

BLUNT-LOBED GRAPE FERN

The State-listed Threatened blunt-lobed grape fern has been recorded by the NYNHP in the vicinity of the I-481 East Study Area. Given its habitat requirements (i.e., highly organic moist soils and sandy soils of mixed deciduous hardwood forests [floodplain forests of the I-481 East Study Area), blunt-lobed grape fern has the potential to occur within the I-481 East Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East Study Area during final design. Blunt-lobed grape fern is not documented or expected to occur in the Central, I-481 South, or I-481 North Study Areas.

Disturbances to areas where blunt-lobed grape fern has the potential to occur within the ROW is likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or

absence of blunt-lobed grape fern. If blunt-lobed grape fern is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the blunt-lobed grape fern for the Viaduct Alternative.

OHIO GOLDENROD

The State-listed Threatened Ohio goldenrod has been recorded by the NYNHP in the vicinity of the I-481 East Study Area. Given its habitat requirements, Ohio goldenrod has low potential to occur within the I-481 East Study Area. The I-481 East Study Area is dominated by transportation infrastructure and other impervious surfaces, and it does not contain the Ohio goldenrod's preferred habitat of fens, peat swamps, calcareous dripping cliffs, and banks of large rivers. Furthermore, Ohio goldenrod was not found during targeted surveys for this species in the I-481 East Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the Ohio goldenrod for the Viaduct Alternative.

RED PIGWEED

The State-listed Threatened red pigweed has been recorded by the NYNHP in the vicinity of the I-481 North Study Area. Given its habitat requirements, red pigweed has low potential to occur within the I-481 North Study Area. Given its preferred habitat is limited within the study area, this species has a low potential to occur within the I-481 North Study Area. However, survey work for this species would be conducted in the I-481 North Study Area during final design.

Disturbances to areas where red pigweed has a low potential to occur within the ROW is not likely under the Viaduct Alternative. It is a violation of ECL S9-1503 to collect or destroy listed plants without the permission of the landowner. Disturbances to areas where yellow giant hyssop has the potential to occur within the right-of-way is likely under the Viaduct Alternative. However, during final design, efforts would be made to confirm the presence or absence of red pigweed. If red pigweed is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the red pigweed for the Viaduct Alternative.

YELLOW GIANT HYSSOP

The State-listed Threatened yellow giant hyssop has been recorded by NYNHP as occurring in the vicinity of the Central, I-481 South, and I-481 North Study Areas. Given its habitat requirements, there is low potential for yellow giant hyssop to occur in the vicinity of the Central, I-481 South, and I-481 North Study Areas. However, survey work for this species would be conducted in the Central, I-481 South, and I-481 North Study Areas during final design.

Disturbances to areas where yellow giant hyssop has a low potential to occur within the ROW is not likely under the Viaduct Alternative. However, during final design, efforts would be made to confirm the presence or absence of yellow giant hyssop within the Central, I-481 South, and I-481 North Study Areas. If yellow giant hyssop is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's

jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the yellow giant hyssop for the Viaduct Alternative.

ROCK ELM

The State-listed Threatened rock elm has been recorded by NYNHP in the vicinity of the I-481 South Study Area. Given its habitat requirements, rock elm has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in the I-481 South Area during final design.

Disturbances to areas rock elm has a low potential to occur within the ROW is not likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or absence of rock elm. If rock elm is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for rock elm for the Viaduct Alternative.

RAM'S HEAD LADY'S SLIPPER

The State-listed Threatened ram's head lady's slipper has been recorded by NYNHP in the vicinity of the I-481 North Study Area. Ram's head lady's slipper has low potential to occur within the I-481 North Study Area. It is a violation of ECL S9-1503 to collect or destroy listed plants without the permission of the landowner. During final design, efforts would be made to confirm the presence or absence of ram's head lady's slipper. If ram's head lady's slipper is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. With these measures in place, no adverse effects would occur to ram's head lady slipper as a result of the construction and operation of the Viaduct Alternative in the I-481 North Study Area. Given the date of its most recent documented observation in this area (1902) and its habitat requirements, ram's head lady's slipper has low potential to occur within the I-481 North Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for ram's head lady's slipper for the Viaduct Alternative.

COMMON MOONWORT

The State-listed Endangered common moonwort has been recorded by NYNHP in the vicinity of the I-481 East and I-481 South Study Areas. Disturbances to areas where common moonwort has the potential to occur within the right-of-way is likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or absence of common moonwort. If common moonwort is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. With these measures in place, no adverse effects would occur to common moonwort as a result of the construction and operation of the Viaduct Alternative in the I-481 East and I-481 South Study Areas. Given the date of its most recent documented observation in this area (1872) and its habitat requirements, common moonwort has low potential to occur within the I-481 East and I-481 South Study Areas. Therefore,

NYSDOT has made a preliminary effect determination of *"take not likely"* for common moonwort for the Viaduct Alternative.

FEW-FLOWERED SPIKE RUSH

The State-listed Endangered few-flowered spike rush has been recorded by NYNHP within the Central and I-481 North Study Areas (observation date not provided). Few-flowered spike rush has low potential to occur within the Central and I-481 North Study Area. It is a violation of ECL S9-1503 to collect or destroy listed plants without the permission of the landowner. During final design, efforts would be made to confirm the presence or absence of few-flowered spike rush. If few-flowered spike rush is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. With these measures in place, no adverse effects would occur to few-flowered spike rush as a result of the construction and operation of the Viaduct Alternative in the Central or I-481 North Study Area).

HOOKER'S ORCHID

The State-listed Endangered Hooker's orchid has been recorded by NYNHP in the vicinity of the I-481 South Study Area. Given that all current known populations of this species occur near Ithaca and the eastern Adirondack foothills and its habitat requirements, Hooker's orchid has low potential to occur within the I-481 South Study Area.

Disturbances to areas where Hooker's orchid has a low potential to occur within the ROW is not likely under the Viaduct Alternative. However, during final design, efforts would be made to confirm the presence or absence of Hooker's orchid. If Hooker's orchid is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for Hooker's orchid for the Viaduct Alternative.

FOREST BLUE GRASS

The State-listed Endangered forest blue grass has been recorded by NYNHP in the vicinity of the I-481 South Study Area. Given the date of its most recent documented observation in this area (1916) and its habitat requirements, forest blue grass has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in the I-481 South Area during final design.

Disturbances to areas where forest blue grass has the potential to occur within the right-of-way is likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or absence of forest blue grass. If forest blue grass is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for forest blue grass for the Viaduct Alternative.

PUTTYROOT

The State-listed Endangered puttyroot has been recorded by NYNHP within the I-481 South Study Area. Given the date of its most recent documented observation in this area (1890) and its habitat requirements, puttyroot has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in the I-481 South Area during final design.

Disturbances to areas where puttyroot has the potential to occur within the right-of-way is likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or absence of puttyroot. If puttyroot is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for puttyroot for the Viaduct Alternative.

PURPLE WILD BERGAMOT

The State-listed Endangered purple wild bergamot has been recorded by NYNHP in the vicinity of the I-481 South Study Area (date not provided). Given its habitat requirements, purple wild bergamot has the potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in the I-481 South Area during final design.

Disturbances to areas where puttyroot has the potential to occur within the right-of-way is likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or absence of puttyroot. If purple wild bergamot is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for purple wild bergamot for the Viaduct Alternative.

PRAIRIE DUNEWORT

The State-listed Endangered prairie dunewort has been recorded by NYNHP in the vicinity of the I-481 East Study Area. Given its habitat requirements, prairie dunewort has potential to occur within the I-481 East Study Area. However, survey work for this species would be conducted in the I-481 East Study Area during final design.

Disturbances to areas where prairie dunewort has the potential to occur within the right-of-way is likely under the Viaduct Alternative. During final design, efforts would be made to confirm the presence or absence of prairie dunewort. If prairie dunewort is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for prairie dunewort for the Viaduct Alternative.

D. EFFECTS OF COMMUNITY GRID ALTERNATIVE

INDIANA BAT

Construction of the Community Grid Alternative would include all of the actions described above for the Viaduct Alternative in the Central Study Area, as well as additional road construction in the I-481 North, I-481 South, and the I-481 East Study Areas. **Appendix J-5**, **Figures J-5-5** through **J-5-9** show

the approximate location of the proposed work in the Central, I-481 South, I-481 East and I-481 North Study Areas.

As discussed under **Section B**, Indiana bats are considered unlikely to occur in the I-481 North and Central Study Areas due to the high density of urban development and lack of quality habitat, whereas they are expected to have the potential to occur in woodlands near the I-481 East and I-481 South Study Areas. Furthermore, as discussed above, Indiana bats are not documented by USFWS in the vicinity of the Central Study Area. Tree clearing within the developed I-481 North Study Area (2.8 acres) would be limited to within 100 feet of the existing I-81 roadway and as such, would not be expected to substantially affect roost tree availability for Indiana bats under the Community Grid Alternative. **Appendix J-6**, **Figures J-6-4** through **J-6-9** show the approximate area of tree removal for the Community Grid Alternative.

Construction in the I-481 East Study area would require the clearing of 0.3 acres of land with trees for permanent roadway. In the northern portion of the study area, tree clearing would occur immediately adjacent to and within 100 feet of the existing boundaries of I-481 and the Exit 5W on- and off-ramps. The trees that would be removed along the eastern and western sides of I-481 and the exit ramps are not part of a tract of contiguous forest and instead are part of narrow roadside fragments that are closely bound between I-481 and other roads or forms of development in each direction. The trees that would be removed on the east side of I-481 are part of an approximately 200-ft wide linear fragment that is bound by I-481 to the west and Pheasant Road to the east (see **Appendix J-6**, **Figure J-6-8**), such that the larger tract of forest to the east of Pheasant Road that may support Indiana bats would not be directly affected. Indiana bats would not be expected to utilize this narrow band of trees along the highway margin over the larger tract of more suitable mature forest and utility corridor habitat immediately to the east of Pheasant Road. The tree removal that would occur in the southern portion of the I-481 East Study Area would also be limited to within 100 feet of the existing roadway, where habitat suitability for Indiana bats is considered low. Occurrences of Indiana bats in this area are less likely than in the floodplain forest further to the east and more removed from the disturbances associated with I-481. The characteristics and integrity of this floodplain forest around Butternut Creek would not be affected by the removal of trees adjacent to the highway, and this area of habitat would have the same potential to be used for foraging and/or roosting by Indiana bats under the Community Grid Alternative as at present.

Trees would not be removed for noise walls barriers in the I-481 South Study Area. Construction in the I-481 South Study Area would require the removal of a total of 7.6 acres of land with trees (for the roadway) bordering the eastern and western sides of I-81. These trees make up the current roadside edge of narrow, linear forest fragments that parallel the highway on both sides. They are bounded by I-81 in one direction, and roads, housing subdivisions, and other forms of development in the other direction. Tree clearing in this area would be limited to within 100 feet of the existing I-81 roadway and as such, would not substantively alter habitat conditions in the portions of these fragments that would remain. These areas of woodland bordering the highway are already narrow and isolated, such that the removal of trees along their edges would not cause any additional fragmentation of forest or otherwise compromise forest integrity.

Overall, the clearing of 7.6 total acres of woodland along I-81 in the I-481 South Study Area, 0.3 total acres of woodland along I-481 in the I-481 East Study Area, and 2.8 acres of woodland (a total of 10.7 acres) in the I-481 North Study Area would not be expected to represent a substantial loss of quality potential roosting or foraging habitat for Indiana bats. As discussed above, roost tree availability in general is unlikely to be a limiting factor in the regulation of Indiana bat population sizes, and colonies and social networks of Indiana bats have been shown to be robust to the loss of previously used roost

trees. Indiana bats are known to naturally change roost trees on a regular basis on a scale of hundreds of feet to more than a mile (Kurta et al. 2002, Menzel et al. 2002, Owen et al. 2002, Johnson et al. 2009), and when primary roosts are lost, the bats relocate to new roosting areas (Silvis et al. 2014a,b). Small and narrow fragments of woodland along major roadways, like those that would be affected in the I-481 East and I-481 South Study Areas for the Community Grid Alternative, would remain common throughout the Syracuse metropolitan area and available for any Indiana bats potentially displaced from the affected areas. For these reasons, the Community Grid Alternative would not be expected to substantially affect roost tree availability for Indiana bats in the Syracuse area. As a precaution to avoid any potential for direct impacts, all tree clearing would be restricted to the winter hibernation period (November– March 31) when Indiana bats would be in the hibernaculum. This and all other aspects of tree clearing for the Community Grid Alternative would be consistent with the tree removal Avoidance and Minimization Measures in the USFWS/FHWA RWPC.

Per **Table J-4-4**, the NYNHP indicates known Indiana bat roost trees 0.2 – 2.5 miles from the I-481 South Study Area and less than 2.5 miles from the I-481 East Study Area. The closest Indiana bat hibernaculum is within 2.5 miles of the I-481 South Study Area and greater than 2.5 miles from the I-481 East Study Area. There are no Indiana bat hibernaculum or roost trees within 2.5 miles from the Central or I-481 North Study Areas.

There are bridges in the I-481 North, I-481 South, and the I-481 East Study Areas that would be modified, removed, or replaced as part of the Community Grid Alternative. These bridges would be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) to determine if there is any evidence of bats actively using them. In the event that any bats are observed utilizing a bridge, all bridge Avoidance and Minimization Measures in the USFWS/FHWA RWPC would be adopted to the greatest extent possible. FHWA would be consulted in the event that any of the measures could not be implemented to determine the proper course of action.

Similar to roosting habitat, the areas in which tree clearing would occur in the I-481 South, I-481 East, and I-481 North Study Areas for the Community Grid Alternative are unlikely to represent quality foraging habitat for Indiana bats because they are located immediately adjacent to major roadways. As discussed above for the Viaduct Alternative, foraging Indiana bats have been found to avoid roads, often reversing course when a road is encountered. This appears to be due more so to the presence of motor vehicles than the physical presence of the road itself (Zurcher et al. 2010, Bennett and Zurcher 2013). The areas where tree clearing would occur for the Community Grid Alternative are subjected to high levels of motor vehicle traffic noise and visual disturbance, which is expected to limit the likelihood that they are used for foraging by Indiana bats. Loss of these trees would not be expected to substantially affect foraging habitat availability for the region's population of Indiana bats. Comparable roadside edge habitat would remain abundant along I-481 and other major roadways in the region.

As with the Viaduct Alternative, noises and vibrations generated during construction of the Community Grid Alternative would not be expected to affect any Indiana bats potentially occurring in any of the study areas, given that noise levels are already extremely high under existing conditions. Current occurrence of Indiana bats under these conditions would inherently indicate a high tolerance of, and habituation to, the anthropogenic disturbances that are associated with the roadside environment along I-81 and I-481. Indiana bats in general have been known to roost near construction sites, major airports, and other extremely noisy locations (Sparks et al. 1998, Keeley and Tuttle 1999, Niver 2009), suggesting that while they are roosting, they are tolerant of loud noises and vibrations caused by human activity. Foraging behavior of Indiana bats has also been found to be unaffected by extremely loud noises and reverberations, such as artillery fire on military bases (Shapiro and Hohmann 2005). Sounds

generated by heavy construction equipment and similar sources typically fall well below the hearing and echolocation frequency ranges of bats, which may largely explain this tolerance of loud noises (Delaney and Grubb 2004, Niver 2009). In contrast, higher frequency noises like those of cars and light trucks, can displace foraging Indiana bats and other *Myotis* species from an area (Schaub et al. 2008, Zurcher et al. 2010, Bennett and Zurcher 2013). Given that the I-481 South and I-481 East Study Areas are already chronically subjected to high frequency noises from motor vehicles, and the heavy construction equipment noise that would be generated by the Project would be unlikely to be heard by roosting or foraging of Indiana bats, construction of the Community Grid Alternative would not be expected to impact any Indiana bats potentially occurring in these areas. Similarly, operation of the Community Grid Alternative would be comparable to current traffic conditions and therefore would not elevate disturbance levels to an extent that would potentially affect Indiana bats. Sound barriers that would be constructed along portions of I-81 and I-481 would further avoid the potential for increased noise or visual disturbance in neighboring areas during operation of the Community Grid Alternative.

Temporary lighting used during construction and permanent lighting used during operation would follow the relevant Avoidance and Minimization Measures in the USFWS/FHWA RWPC. These include directing temporary construction lighting away from suitable habitat during the active season, using downward-facing, full cut-off lens lights during project operation, and directing lighting away from suitable habitat when installing new or replacing existing permanent lights.

Given that the Project under the Community Grid Alternative would limit tree clearing to the winter hibernation period (November1–March 31), within 100 feet of existing roadways, is more than 0.5 miles from a hibernaculum but less than 2.5 miles from a known roost tree, and would follow the applicable Avoidance and Minimization Measures of the USFWS/FHWA RWPC; NYSDOT has made a preliminary effect determination of "*take not likely*" for the Indiana bat for the Community Grid Alternative.

Table J-7-4
Community Grid Alternative: Tree Cutting Distances for Indiana Bat

Study Area	Roost Trees	Hibernaculum
Central Study Area	>2.5 miles	>2.5 miles
I-481 South Study	<2.5 miles	<2.5 miles
I-481 East Study Area	<2.5 miles	>2.5 miles
I-481 North Study Area	>2.5 miles	>2.5 miles

NORTHERN LONG-EARED BAT

Construction of the Community Grid Alternative would include all of the actions described above for the Viaduct Alternative in the Central Study Area, as well as additional construction in the I-481 North, I-481 South, and the I-481 East Study Areas. **Appendix J-5**, **Figures J-5-5** through **J-5-9** show the approximate location of the proposed work in the Central, I-481 South, I-481 East and I-481 North Study Areas.

As discussed above, the USFWS IpaC System has records of northern long-eared bat in the vicinity of the I-481 South and I-481 East Study Areas. There are no USFWS IpaC System records of northern long-eared bats occurring in the vicinity of the Central and I-481 North Study Areas. As described below, the NYNHP has records indicating that northern long-eared bats have the potential to occur in the Central Study Area.

Because northern long-eared bats are sensitive to urbanization and fragmentation and prefer large tracts of interior forest for roosting and foraging (Foster and Kurta 1999, Broders et al. 2006, Henderson et

al. 2008, Segers and Broders 2014), there is little habitat in the Project Area that is considered potentially suitable for northern long-eared bats. One area where northern long-eared bats could potentially occur is in the woodland fragments bordering the east and west sides of the I-481 South Study Area, but these fragments may be too small and have too high of an edge to area ratio to be suitable. The closest summer habitat to the I-481 East Study Area that is most suitable for northern long-eared bats is the woodland east of I-481 and south of I-90 (New York State Thruway). This approximately one mile wide and 0.7 mile long woodland is bisected by two utility ROWs, but may be large enough to support northern long-eared bats. Suitable roost trees are likely abundant in this area. The wooded area around Butternut Creek northeast of the CSX rail line in the I-481 East Study Area may also represent suitable habitat for the northern long-eared bat. Because of their well-documented avoidance of urban areas and sharp edges (Owen et al. 2003, Patriquin and Barclay 2003, Carter and Feldhammer 2005, Morris et al. 2010, Segers and Broders 2014), northern long-eared bats are not likely to occur within the I-481 North Study Area. Furthermore, tree clearing within the developed I-481 North (2.8 acres) Study Areas would be limited to within 100 feet of the existing I-81 roadway and as such, would not be expected to substantially affect roost tree availability for northern long-eared bats under the Community Grid Alternative.

Construction in the I-481 East Study Area would require the clearing of 0.3 acres of land with trees (0.1 acres of floodplain forest, 0.1 acres of mowed lawn with trees, and 0.1 acres of successional old field). In the northern portion of the study area, the tree clearing would occur immediately adjacent to and within 100 feet of the existing boundaries of I-481 and the Exit 5W on- and off-ramps. These trees that would be removed along the eastern and western sides of I-481 and the exit ramps are not part of a tract of contiguous forest and instead are part of narrow roadside fragments that are closely bounded between I-481 and other roads or forms of development in each direction. These trees along the roadside edge are not expected to represent potential roosting habitat for northern long-eared bats, given their well-documented avoidance of sharp edges in favor of interior forest. As such, their removal would not be likely to reduce roosting habitat availability in the area for northern long-eared bats. The trees that would be removed on the east side of I-481 are part of an approximately 200-ft wide linear fragment that is bound by I-481 to the west and Pheasant Road to the east (see **Appendix J-6**, **Figure J-6-8**), such that the larger tract of forest to the east of Pheasant Road that may support northern long-eared bats would not be directly affected. Northern long-eared bats would not be expected to utilize this narrow band of trees along the highway margin over the larger tract of more suitable mature forest habitat immediately to the east of Pheasant Road. The tree removal that would occur in the southern portion of the I-481 East Study Area would also be limited to within 100 feet of the existing roadway, immediately adjacent to major transportation infrastructure, where roosting habitat suitability for northern long-eared bats is considered extremely low. Any northern long-eared bats potentially present in the vicinity of this area would be most likely to occur in the floodplain forest that is further to the east and more removed from the disturbances associated with I-481. The characteristics and integrity of this floodplain forest around Butternut Creek would not be affected by the removal of trees adjacent to the highway, and this area of habitat would have the same potential to be used for foraging and/or roosting by northern long-eared bats under the Community Grid Alternative as at present.

Construction in the I-481 South Study Area would require the clearing of a total of 7.6 acres of land with trees (for the roadway) that borders the eastern and western sides of I-81. These trees make up the current roadside edge of narrow, linear forest fragments that parallel the highway on both sides. They are closely bound by I-81 in one direction and roads, housing subdivisions, and other forms of development in the other direction, and therefore lack any interior, forest core habitat that is preferred by northern long-eared bats. Tree clearing in this area would be limited to within 100 feet of the existing I-81 roadway, where northern long-eared bats are unlikely to roost. Clearing along the edges of these

forest fragments would further reduce their width, but because they are already too narrow to contain any interior, core forest habitat, habitat suitability for northern long-eared bats and the likelihood of their occurrence in these areas would not be expected to change.

Overall, the clearing of 7.6 total acres of woodland along I-81 in the I-481 South Study Area, 0.3 total acres of woodland along I-481 in the I-481 East Study Area, and 7.7 acres of woodland (a total of 15.6 acres) in the Central Study Area would not be expected to represent a substantial loss of quality potential roosting or foraging habitat for northern long-eared bats. As discussed above, roost tree availability in general is not believed to currently be a limiting factor in the regulation of northern long-eared bat population sizes, and northern long-eared bats are known to be robust to the loss of previously used roost trees. Northern long-eared bats naturally change roost trees throughout the summer on a scale of hundreds of feet to more than a mile (Menzel et al. 2002, Owen et al. 2002, Johnson et al. 2009), and when primary roosts are lost, the bats relocate to new roosting areas (Silvis et al. 2014b). Small and narrow fragments of woodland along major roadways, like those that would be affected in the I-481 East and South Study Areas for the Community Grid Alternative, would remain common throughout the Syracuse metropolitan area and available for any northern long-eared bats potentially displaced from the affected areas. For these reasons, the Community Grid Alternative would not likely adversely affect habitat availability for northern long-eared bats in the Syracuse area. As a precaution to avoid any potential for direct impacts, all tree clearing would be restricted to the winter hibernation period (November 1–March 31) when northern long-eared bats would be in the hibernaculum. This and all other aspects of tree clearing for the Community Grid Alternative would be consistent with the tree removal Avoidance and Minimization Measures in the USFWS/FHWA RWPC.

Per **Table J-7-5** below, the NYNHP has no records of northern long-eared bat roost trees within 1.5 miles from the I-481 North, I-481 South, or I-481 East Study Areas. However, NYNHP has records of northern long-eared bats roosting within 1.5 miles of the Central Study Area. The NYNHP has records of a northern long-eared bat hibernaculum greater than five miles from the Central and I-481 North Study Areas and less than five miles from the I-481 South and I-481 East Study Areas. **Appendix J-6**, **Figures J-6-4** through **J-6-9** show the approximate area of tree removal for the Community Grid Alternative.

There are bridges in the Central, I-481 South, and I-481 East Study Areas that would be modified, removed, or replaced as part of the Community Grid Alternative. These bridges would be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to October 31) to determine if there is any evidence of bats actively using them. In the event that bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA RWPC would be adopted to the greatest extent possible. FHWA would be consulted in the event that any of the measures could not be implemented to determine the proper course of action.

Similar to roosting habitat, the areas where tree clearing would occur in the I-481 South and East Study Areas for the Community Grid Alternative are unlikely to represent quality foraging habitat for Indiana bats because they are located immediately adjacent to major roadways. As discussed above for the Viaduct Alternative, foraging Indiana bats have been found to avoid roads, often reversing course when a road is encountered. This appears to be due more so to the presence of motor vehicles than the physical presence of the road itself (Zurcher et al. 2010, Bennett and Zurcher 2013). The areas where tree clearing would occur for the Community Grid Alternative are subjected to high levels of motor vehicle traffic noise and visual disturbance, which is expected to limit the likelihood that they are used for foraging by Indiana bats. Loss of these trees would not be expected to substantially affect foraging habitat availability for the region's population of Indiana bats. Comparable roadside edge habitat would remain abundant along I-481 and other major roadways in the region.

As with the Viaduct Alternative discussed above, construction noises generated during construction of the Community Grid Alternative would not be expected to affect any northern long-eared bats potentially occurring in the study areas, given that noise levels are already extremely high under existing conditions. Presence of northern long-eared bats under these conditions would inherently indicate a high tolerance of, and habituation to, the anthropogenic disturbances that are associated with the roadside environment along I-81 and I-481. While there have not been any studies of the sensitivity of northern long-eared bats to construction noises or other forms of noise disturbance, northern long-eared bats have been observed roosting in areas with substantial noise and vibration levels, such as near the Indianapolis International Airport (Sparks et al. 1998) and under bridges (Feldhamer et al. 2003), which suggests that they can be tolerant of chronic anthropogenic noise disturbance and vibration while roosting if the habitat is otherwise suitable. Like Indiana bats, loud noises like those generated by heavy construction equipment are well below the expected hearing and echolocation frequency ranges of northern long-eared bats (Delaney and Grubb 2004, Niver 2009). Higher frequency noises, however, like those of cars and light trucks, can displace foraging *Myotis* bats (Schaub et al. 2008, Zurcher et al. 2010, Bennett and Zurcher 2013), like northern long-eared bats, from an area. Given that the I-481 South and East Study Areas are already chronically subjected to high frequency noises from motor vehicles, and the heavy construction equipment noise that would be generated by the Project would be unlikely to affect roosting or foraging of northern long-eared bats, construction of the Community Grid Alternative would not be expected to impact any northern long- bats potentially occurring in these areas. Similarly, operation of the Community Grid Alternative would be comparable to current traffic conditions and therefore would not elevate disturbance levels to an extent that would potentially affect northern long-eared bats. Sound barriers that would be constructed along portions of I-81 and I-481 would further avoid the potential for increased noise or visual disturbance in neighboring areas during operation of the Community Grid Alternative.

Temporary lighting used during construction and permanent lighting used during operation would follow the relevant Avoidance and Minimization Measures in the USFWS/FHWA RWPC. These include directing temporary construction lighting away from suitable habitat during the active season, using downward-facing, full cut-off lens lights during project operation, and directing lighting away from suitable habitat when installing new or replacing existing permanent lights.

Given that the Project under the Community Grid Alternative would limit tree clearing in the I-481 South, I-481 East, and I-481 North Study Areas to the winter hibernation period (November–March 31), is more than 0.5 miles from a hibernaculum and more than 150 feet from a known roost tree, is within 100 feet of existing roadways, and would follow the applicable Avoidance and Minimization Measures of the USFWS/FHWA RWPC; NYSDOT has made a preliminary effect determination of "*take not likely*" for the northern long-eared bat for the Community Grid Alternative.

Table J-7-5

Community Grid Alternative: Tree Cutting Distances for Northern Long-Eared Bat

Study Area	Roost Trees	Hibernaculum
Central Study Area	>1.5 miles	>5.0 miles
I-481 South Study	>1.5 miles	<5.0 miles
I-481 East Study Area	>1.5 miles	<5.0 miles
I-481 North Study Area	<1.5 miles	>5.0 miles

EASTERN MASSASAUGA

Construction of the Community Grid Alternative would include all of the actions described above for the Viaduct Alternative in the Central Study Area, as well as additional construction in the I-481 North,

I-481 South, and the I-481 East Study Areas. **Appendix J-5**, **Figures J-5-5** through **J-5-9** show the approximate location of the proposed work in the Central, I-481 South, I-481 East and I-481 North Study Areas. As discussed under **Section B**, eastern massasaugas are considered unlikely to occur in any of the four study areas due to the high density of urban development and lack of the species' preferred habitat of fens, marshes, and wet prairies. As discussed above the NYNHP has only one record of this species occurring within the Project Area and that is adjacent to the I-481 North Study Area.

The Community Grid Alternative would affect a total of 2.6 acres of ditches, 64.0 acres of impervious surfaces, 61.6 acres of mowed lawns/mowed lawns with trees, 7.6 acres of successional southern hardwood forests,[12] 18.9 acres of successional old fields, 15.2 acres of successional shrublands, 23.2 acres of floodplain forests, 0.6 acres of freshwater wetlands, and 0.04 acres of surface waters[13] in the I-481 North Study Area. Although Mud Creek, on the eastern edge of the I-481 North Study Area, has a hydrological connection to a known location of the eastern massasaugas via unnamed NYSDEC Class C streams, the habitat types within the I-481 North Study Area are not suitable for the eastern massasauga. As discussed under **Section B**, roads, residential neighborhoods, and other human-altered landscapes are barriers to eastern massasauga movements (Moore and Gilingham 2006), and movement of eastern massasaugas out of their current location to the east along these unnamed NYSDEC Class C streams that eventually connect to Mud Creek within the I-481 North Study Area is considered extremely unlikely. These streams extend through heavily developed areas and are culverted under major roads in several locations, and therefore would not be expected to be used by eastern massasaugas to disperse outside of their current location. Additionally, as noted above, telemetry studies of eastern massasaugas in their current location have not observed any movements of individuals outside of their current location via these streams or otherwise (Johnson and Breisch 1993; Johnson 1995, 2000). For each of these reasons, eastern massasaugas would not be expected to occur within the I-481 North Study Area. The acreage of roadside lawn, successional old field, shrubland, woodland, wetland, ditch, surface water, and impervious surface that would be impacted within the limits of disturbance in the I-481 North Study Area would not eliminate any habitat that would be capable of supporting the species. Nevertheless, as a protective measure to avoid any potential for direct impacts to any eastern massasaugas, rattlesnake fencing would be erected around the limits of disturbance prior to construction to prevent eastern massasaugas from being able to enter the construction area.

For these reasons, eastern massasaugas are not expected to occur in any portion of the Project Area. Therefore, NYSDOT has made a preliminary effect determination of "*take not likely*" for the eastern massasaugas for the Community Grid Alternative.

AMERICAN HART'S-TONGUE FERN

As described above, the NYNHP database indicates that the American hart's-tongue fern has been documented adjacent to the I-481 South Study Area and the USFWS IpaC database indicates the species had the potential to occur within the I-481 South Study Area. The NYNHP has no known occurrences of the American hart's-tongue fern within or adjacent to the I-481 North, I-481 East, or Central Study Areas and there is no suitable habitat for this species within or adjacent to these study areas.

[12] Successional southern hardwoods vegetation is present in the roadcut cliff/slope community and for this reason acreages associated with this community are included in the successional southern hardwoods acreages. 5.7 acres of roadcut cliff/community within the 69.4 acres of successional southern hardwoods effects would be affected by the Community Grid Alternative.

[13] Acreage presented to the hundredth place to keep consistent with **Chapter 6-4-7, Water Resources**.

Additionally, the American hart's-tongue fern did not come up on the USFWS's IpaC database search for these three study areas. **Appendix J-5**, **Figures J-5-8** and **J-5-9** show the approximate location of the proposed work in the I-481 South Study Area.

Because the NYNHP database shows American hart's-tongue fern as occurring adjacent to the I-481 South Study Area and limited forested/roadcut cliff/slope cut communities (i.e., rocky habitats) are present within the limits of disturbance, a targeted search for the American hart's-tongue fern was conducted in the vicinity of the roadcut cliff/slope (6.0 acres) communities located in the limits of disturbance of the I-481 South Study Area. A team of two plant ecologists conducted a survey for the American hart's-tongue fern on April 18, 19, and 20, 2017 within forested (i.e., southern successional hardwoods) habitats containing roadcut cliff/slope habitat of the I-481 South Study Area.[14] The field biologists walked meandering transect lines, generally oriented south to north, spaced approximately 20 feet wide, as the areas and the terrain would allow. The team walked at a slow walking pace, stopping approximately every 50 feet for closer examination of species and habitat suitability. Potential habitat areas were traversed at a slower pace and up to five minutes were taken at stopping points, for closer examination of plants and habitat. No American hart's-tongue fern individuals were found within the I-481 South Study Area during the targeted searches for this species.

In addition, as described above, on July 13, 2017, a site investigation was conducted in the vicinity of proposed Noise Barrier 9 in the I-481 South Study Area to determine if habitat for American hart's-tongue fern is present. Habitat in the vicinity of the expanded portion of the I-481 South Study Area consists of a disturbed ROW. It was determined that, no suitable habitat for American hart's-tongue fern is present in the vicinity of proposed Noise Barrier 9.

As discussed above, American hart's-tongue fern's preferred habitat is not present within the I-481 East, the Central or the I-481 North Study Areas and no species were found during a field survey in the I-481 South Study Area. Therefore, NYSDOT has made a preliminary effect determination of "*take not likely*" for the American hart's-tongue fern for the Community Grid Alternative.

PEREGRINE FALCON

As discussed above, peregrine falcons currently nest in an artificial nest box on a building adjacent to the Central Study Area, and thus, have the potential to occur throughout the Central Study Area. The peregrine falcons in this area are already accustomed to an urban environment and would not be further impacted by additional noise or activity from the operation of the Project. Peregrine falcons will tolerate almost any level of human activity taking place below their nest provided that the nest itself is inaccessible (Ratcliffe 1972) to humans or predators. As such, the peregrine falcon would not be significantly adversely affected by the operation of the Community Grid Alternative.

The nest box is located outside of the area that may be disturbed by construction. Should construction or construction staging take place near the nest box, then measures would be implemented by the Contractor to avoid disruptions to the peregrine falcon nest box, including the establishment of any required buffers or monitoring based on coordination with NYSDEC. As such, NYSDOT has made a preliminary effect determination of *"take not likely"* for the peregrine falcon for the Community Grid Alternative.

[14] The vegetation of the roadcut cliff/slope ecological community within the I-481 South Study Area consists of successional southern hardwoods. Therefore, roadcut cliff/slope ecological community acreages (6.0 acres) are counted with the successional southern hardwoods acreages.

BALD EAGLE

As discussed above, the NYNHP has a record of non-breeding bald eagles perching and foraging along the shoreline of Onondaga Lake. This area is on the periphery of the Central Study Area and the I-481 North Study Area and therefore non-breeding bald eagles have the potential to occur there. The sensitivity of bald eagles to human disturbance is greatest during courtship and nest-building, which take place in New York between December and March, and then declines as the nesting period progresses and eventually ends (USFWS 2007). Decades ago, bald eagles were considered to be sensitive to human disturbance even outside of the breeding season (e.g., Stalmaster and Newman 1978, Nye 1994, Stalmaster and Kaiser 1997), with concern that repeated displacement from important roosting and foraging areas could waste energy reserves at a time of year when energy demands are high (Stalmaster and Gessaman 1984). Since then, however, bald eagles have shown a rapid and substantial generational habituation to human disturbance during both the breeding and non-breeding periods, and an increasing tolerance of development, including urbanization (Johnson 2010, Guinn 2013). In many parts of their range, bald eagles are increasingly nesting and occurring during the non-breeding periods in areas with heavy levels of human activity where they would almost never be found only a few decades ago (Millsap et al. 2004, Guinn 2013). This includes nesting by bald eagles in recent years within major metropolitan areas, including New York City, Washington D.C., Philadelphia, and Pittsburgh (Sullivan 2016). The use of Onondaga Lake in the City of Syracuse by bald eagles is another such example of bald eagles having acclimated to an urban area with extremely high levels of disturbance. Any non-breeding bald eagles utilizing the lake and its shorelines inherently display a high tolerance of human activity as well as degraded habitat.

Construction and operation of the Community Grid Alternative in the Central Study Area and I-481 North Study Area would be the same as described above for the Viaduct Alternative. The Community Grid Alternative would include the construction and operation of a reconstructed system of ramps connecting I-81 to Park Street, State Route 370, Old Liverpool Road (Central Study Area), and I-81 northbound between Exits 25a and 26. The closest construction activity to Onondaga Lake would consist of road repaving approximately 200 feet away from the southeastern shoreline. At slightly greater distances, the road reconstruction would likely include louder activities such as jack-hammering and pile-driving. The USFWS Bald Eagle Management Guidelines (USFWS 2007) do not provide guidance on buffer distances for construction disturbance near habitats used by non-breeding eagles but recommend a minimum buffer of 330 feet from nests. Given the lower sensitivity of bald eagles to disturbance during the non-breeding period compared to the nesting period (USFWS 2007) and the high existing levels of disturbance and urban setting of the area of Onondaga Lake where non-breeding bald eagles have been observed, a minimum distance of 200 feet from the closest area of construction to the closest point of lakeshore where non-breeding eagles could occur is expected to be more than sufficient for reducing the likelihood of any potential disturbance from construction noise. In the event that any bald eagles would be displaced by construction noise from the small area of the lake and shoreline near the site of construction, the effect would be highly temporary, and the eagles would be able to easily distance themselves from the activity and utilize nearby areas of the lake and its shoreline without negative consequence. Operation of the Community Grid Alternative would not bring motor vehicle traffic any closer to the Onondaga Lake shoreline than at present or increase existing levels of disturbance. Given that paved roads with heavy traffic are already present near the shoreline in this area, operation of the Community Grid Alternative would not eliminate quality habitat or otherwise permanently alter the current conditions on Onondaga Lake for non-breeding bald eagles. The Community Grid Alternative would not create disruptive activities or development in the direct flight paths of eagles between roost sites and important foraging areas, and in all other aspects would be in accordance with the USFWS Bald Eagle Management Guidelines' "recommendations for avoiding

disturbance at foraging areas and communal roost sites" (USFWS 2007). Overall, construction and operation of the Community Grid Alternative would not have significant adverse effects on bald eagles and NYSDOT has made a preliminary effect determination of "*take not likely.*"

LEAST BITTERN

As discussed above, the least bittern has been documented by the NYNHP within 600 feet of the I-481 North Study Area. Least bitterns inhabit freshwater and brackish marshes with tall, dense vegetation including cattails, sedges, reeds, bulrushes, sawgrass, smartweed, arrowhead, buttonbush, and other emergent wetland vegetation. They can also be found at the edges of lakes and rivers with emergent and tall vegetation, but prefer marshes with scattered bushes or other woody growth. Wetland habitat within and around the I-481 North Study Area is limited to drainage ditches, creeks, and common-reed dominated and disturbed forested wetlands along I-481 and within the quadrants of the I-81 and I-481 highway interchange, which are inadequate for least bitterns. The wetlands where least bitterns were documented on the NYNHP would not be impacted by the Project. Additionally, because of the reclusive nature of the least bittern there is a very low probability that any individual bittern would leave the safety of their wetland area to forage in any of the unsuitable/disturbed wetlands within the Project Area during construction. Therefore, due to the lack of suitable habitat and the fact that their known habitat would not be affected by the project, NYSDOT has made a preliminary effect determination of *"take not likely"* for the least bittern for the Community Grid Alternative.

NORTHERN HARRIER

NYNHP has a record of northern harriers breeding within 1.5 miles of the I-481 North Study Area. Northern harriers inhabit areas such as grasslands, old fields, pastures, croplands, and salt marshes during both the breeding and non-breeding periods (Smith et al. 2011). The closest such habitat to the I-481 North Study Area that is potentially suitable for northern harriers includes the Cicero Swamp Wildlife Management Area and some agricultural fields that are approximately 1.5 and 1.2 miles to the east, respectively, and the marshes of a large wetland complex that is approximately 1.2 miles to the west, along State Route 481. Non-breeding northern harriers, which are much less sensitive to human disturbance than when breeding, might also be expected to occur in the open fields of the Syracuse Hancock International Airport. There is no suitable breeding or non-breeding habitat for northern harriers within the I-481 North Study Area, which is primarily limited to roadside grass, small and degraded common reed-dominated wetlands bordering drainage ditches and within clover leaves of the I-481 and I-81 interchange, and small fragments of woodland. None of these habitat types would support breeding or non-breeding northern harriers, and therefore, northern harriers are not considered to have the potential to occur within the I-481 North Study Area. There are no NYNHP records of northern harriers and there is no suitable habitat for northern harriers in any of the other study areas. For these reasons, construction and operation of the Community Grid Alternative would not impact northern harriers or their habitat, and NYSDOT has made a preliminary effect determination of "*take not likely*."

LAKE STURGEON

Lake sturgeon are present in Onondaga Lake located in the vicinity of the Central and I-481 North Study Areas. Within the Central Study Area, there are four active and two additional outfalls along Onondaga Creek, and one active outfall along Ley Creek. These outfalls are expected to remain active under the Community Grid Alternative and would continue to contribute their current loads of stormwater and pollutants to Onondaga and Ley Creeks. In addition, under the Community Grid Alternative, a 96-inch-diameter storm sewer trunk line would be installed in Onondaga Creek, a tributary to Onondaga Lake. However, the Project would be designed with entirely separate runoff

conveyance and treatment systems and would not contribute to the combined sewer flows. The reduction in impervious road surface within the Central Study Area under the Community Grid Alternative would result in approximately 11 percent decrease in pollutant loading when compared with the No Build Alternative. The reduction in road surface under this alternative would result in lower stormwater runoff volumes, and thus lower mass loading of pollutants. Chloride loading to Lower Onondaga Creek on an annual basis would be approximately 9.4 percent higher because the Community Grid Alternative would introduce 3.6 more highway miles that would require deicing. As discussed under the Viaduct Alternative, the chloride concentration in Onondaga Lake in 2013, as measured by Onondaga County Department of Water Environment Protection's Ambient Monitoring Program, ranged from 355 to 643 mg/L. Thus, according to the Toler Analysis, the Central Study Area under the Community Grid Alternative would contribute a 9.4 percent increase in the immediate study area, or a 0.022 percent increase when scaled to the full contributing drainage area. This would result in chloride concentrations ranging from 355.1 to 6,643.1 mg/L under the Community Grid Alternative. The USEPA chronic toxicity water quality criteria concentration of chloride, for the majority of freshwater aquatic species, is 230 mg/L, while the acute toxicity concentration is 860 mg/L. Both high and low concentrations of chloride have effects on diversity and community structure of aquatic invertebrates and may influence reproduction of aquatic organisms. Although commonly found in freshwater systems, lake sturgeon are able to effectively osmoregulate at salinities up to 15 ppt (LeBreton and Beamish 1998), which is equivalent to a chloride concentration of 8,350 mg/L. At lower chloride concentrations, including those that currently occur in Lake Onondaga and Lower Onondaga Creek and those that would occur under the Community Grid Alternative, lake sturgeon would not be expected to show any obvious behavioral response (e.g., habitat avoidance, loss of appetite, etc.) to increased chloride concentrations. This would be especially true in Lake Onondaga, where lake sturgeon occur, because chloride concentrations entering the lake from Onondaga Creek would be diluted. Therefore, lake sturgeon are not likely to be affected by increased chloride concentrations resulting from the Community Grid Alternative.

Since stormwater BMPs do not remove chloride from stormwater, the Community Grid Alternative would result in higher chloride concentration within Lower Onondaga Creek when compared with the No Build Alternative, in which chloride is already elevated above the chronic toxicity water quality criteria. Under both alternatives, chloride concentration in Lower Onondaga Creek would be below the acute toxicity concentration (860 mg/L), which, in turn is below the rate that Lake Sturgeon can effectively osmoregulate salinities (8,350 mg/L).

Although the total lane miles would increase under the Community Grid Alternative, the total impervious area in the Central Study Area would be reduced; restoration of open areas within the NYSDOT ROW would be designed so that no more than 35 percent of these areas would be constructed as impervious surfaces. The reduction in impervious area outside of the highway lanes but within the NYSDOT ROW could lead to a reduction in chloride applications, and a benefit to water quality not indicated by the Toler Analysis. Additionally, while stormwater would no longer be treated at METRO and only a portion of the stormwater runoff volume would be treated by stormwater management BMP's, the overall benefit of the separate storm drainage system would further improve water quality in a way not indicated by the FHWA analysis, by reducing CSO events.

Lake sturgeon is known to occur in the surface waters of Onondaga Creek, and have the potential to occur in Ley Creek, and Onondaga Lake. The implementation of erosion and sediment controls (e.g., silt fences, and inlet protection) in accordance with the 2016 New York State Standards and Specifications for Erosion and Sediment Control ("Blue Book"), the SWPPP prepared to meet the requirements of SPDES General Permit GP-0-15-002, and NYSDOT Highway Design Manual,

Chapter 8 Highway Drainage, would minimize the potential for construction activities to result in adverse impacts to surface water quality within the Project Area.

BMPs that incorporate green infrastructure components (e.g., source control stormwater management, such as permeable pavements and bioretention areas, such as rain gardens) would be considered for integration into the public ROW. Where little space is available, underground detention basins and hydrodynamic devices would be considered. These BMPs would ensure there would be no net increase in stormwater flow to receiving surface waters (i.e., Onondaga Creek) within the Central and I-481 North Study Areas and that all roadway runoff from the Community Grid would be treated for water quality prior to discharge to surface waters. With these measures in place, the State-listed lake sturgeon would not be directly or indirectly affected by the operation of the Community Grid Alternative. As such, NYSDOT has made a preliminary effect determination of *"take not likely"* for the lake sturgeon for the Community Grid Alternative.

UPLAND SANDPIPER

The State-listed Threatened upland sandpiper has been recorded by NYNHP in the vicinity of the I-481 North Study Area. The upland sandpiper is not expected to directly utilize habitats within the Project Area since it is an obligate grassland species. Habitat loss is not expected as a result of construction of the Project and no permanent adverse effects to upland sandpiper would occur as a result the Viaduct Alternative. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the upland sandpiper for the Community Grid Alternative.

BLACK TERN

The State-listed Endangered Black tern has been recorded by NYNHP near the I-481 North Study Area. As described above, black tern was not found during thorough surveys or by NYNHP local birders between 1989 and 2007. Based on this information and its habitat requirements, black tern has low potential to occur within the I-481 North Study Area. However, survey work[15] for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 North Study Area during final design of the Project. Habitat loss is not expected as a result of construction of the Project and no adverse effects to black tern are anticipated to result from construction of the Viaduct Alternative in the I-481 North Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the black tern for the Community Grid Alternative.

AMERICAN SALTMARSHBULRUSH

The State-listed Threatened American Saltmarsh bulrush has been recorded by NYNHP in the vicinity of the Central Study Area. The Central Study Area is heavily urbanized and dominated by buildings, transportation infrastructure, and other impervious surfaces, and it does not contain the American Saltmarsh bulrush preferred habitat of open, saltwater, or brackish wetlands. The Central Study Area also does not contain the confirmed ecological communities where this plant has been documented within the State. However, occasionally American Saltmarsh bulrush may be found in disturbed areas such as roadsides and ditches. Due to the lack of preferred habitat and confirmed ecological communities, this species has a low potential to occur within the Central Study Area. Also, as described above, American Saltmarsh bulrush was not found during targeted surveys for this species in the Central

[15] A site visit to record incidental observations would be conducted at a time of year (May through mid-September [NYNHP]) when black tern would be expected to be present. Any incidental observations would be coordinated with NYSDEC.

Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the American Saltmarsh bulrush for the Community Grid Alternative.

MIDLAND SEDGE

The State-listed Threatened Midland sedge has been recorded by NYNHP in terrestrial cultural ecological communities near the Central and I-481 South Study Areas. However, as described above, Midland sedge was not found during targeted surveys for this species in the Central Study Area and I-481 South Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the midland sedge for the Community Grid Alternative. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the midland sedge for the Community Grid Alternative.

ANNUAL SALTMARSH ASTER

Annual saltmarsh aster is a State-listed Threatened species that has been recorded by NYNHP in the vicinity of the Central I-481 North Study Areas. The Central Study Area is heavily urbanized and dominated by buildings, transportation infrastructure, and other impervious surfaces, and it does not contain the annual saltmarsh aster preferred habitat of salt or brackish marshes, the edges of tidal channels and creeks, and swales of coastal dunes. It also does not contain the confirmed ecological communities from which it has been documented. However, it is also occasionally found in disturbed habitats that are salt influenced. As previously described, annual saltmarsh aster was not found during targeted surveys for this species in the Central Study Area.

The I-481 North Study Area is heavily urbanized and dominated by linear sections of highway and residential development, although a complex of forested and emergent wetlands associated with Mud Creek and Beartrap Creek are present. Given its habitat requirements, there is low potential for annual saltmarsh aster to occur within the I-481 North Study Area. During final design, efforts would be made to confirm the presence or absence of annual saltmarsh aster within the I-481 North Study Area. If annual saltmarsh aster is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of "take not likely" for the annual saltmarsh aster for the Community Grid Alternative.

STRAIGHT-LEAF PONDWEED

The State-listed Endangered straight-leaved pondweed has been recorded by NYNHP in the vicinity of the Central Study Area. As described above, straight-leaved pondweed was not found during targeted surveys for this species in the Central Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the straight-leaf pondweed for the Community Grid Alternative.

GLOMERATE SEDGE

The State-listed Threatened glomerate sedge has been recorded by NYNHP in the vicinity of the Central Study Area. Within the project limits this species has the potential to occur in upland habitats including thickets, open woods, cemetery, and ditches. During surveys for glomerate sedge in the Central Study Area and I-481 South Study Area two sedge species that closely resembling glomerate sedge were identified. However, the identification of these sedges was inconclusive. For this reason, glomerate sedge has the potential to occur in both the Central Study Area and I-481 South Study Area.

Disturbances to areas where glomerate sedge has the potential to occur within the NYSDOT ROW is likely under the Community Grid Alternative. During final design, efforts would be made to confirm the presence or absence of glomerate sedge. If glomerate sedge is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction.

Therefore, NYSDOT has made a preliminary effect determination of "*take not likely*" for the glomerate sedge for the Community Grid Alternative.

MARSH ARROWGRASS

The State-listed Threatened marsh arrowgrass has been recorded by the NYNHP in the vicinity of the I-481 South and East Study Areas. Given its habitat requirements, the potential for marsh arrowgrass to occur would be limited to ditches and narrow channels located in the vicinity of proposed Noise Barrier 9 within the I-481 South Study Area and wetlands and channels associated with the proposed noise barriers in the vicinity of I-481 East Study Area. As previously described, marsh arrowgrass was not found during targeted surveys for this species in the I-481 South Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East Study Area during final design.

Disturbances to areas where marsh arrowgrass has the potential to occur within the NYSDOT ROW is likely under the Community Grid Alternative. During final design, efforts would be made to confirm the presence or absence of marsh arrowgrass. If marsh arrowgrass is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of "*take not likely*" for the marsh arrowgrass for the Community Grid Alternative.

THREAD-LEAVED PONDWEED

Thread-leaved pondweed has been recorded by the NYNHP in the vicinity of the I-481 East Study Area. Given its habitat requirements (i.e., alkaline settings, small stream, deepwater river, marsh headwater stream, sand beach, and summer-stratified monomictic lake), thread-leaved pondweed has low potential to occur within wetlands and surface waters of the I-481 East Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East Study Area during final design.

Disturbances to areas where thread-leaved pondweed has the potential to occur within the ROW is likely under the Community Grid Alternative. During final design, efforts would be made to confirm the presence or absence of thread-leaved pondweed. If thread-leaved pondweed is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the thread-leaved pondweed for the Community Grid Alternative.

BLUNT-LOBED GRAPE FERN

Blunt-lobed grape fern has been recorded by the NYNHP in the vicinity of the I-481 East Study Area. Given its habitat requirements (i.e., highly organic moist soils and sandy soils of mixed deciduous hardwood forests [floodplain forests of the I-481 East Study Area), blunt-lobed grape fern has the potential to occur within the I-481 East Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 East Study Area during final design.

Disturbances to areas where blunt-lobed grape fern has the potential to occur within the ROW is likely under the Community Grid Alternative. During final design, efforts would be made to confirm the presence or absence of blunt-lobed grape fern. If blunt-lobed grape fern is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the blunt-lobed grape fern for the Community Grid Alternative.

OHIO GOLDENROD

The State-listed Threatened Ohio goldenrod has been recorded by the NYNHP in the vicinity of the I-481 East Study Area. Given its habitat requirements, Ohio goldenrod has low potential to occur within the I-481 East Study Area. The I-481 East Study Area is dominated by transportation infrastructure and other impervious surfaces, and it does not contain the Ohio goldenrod's preferred habitat of fens, peat swamps, calcareous dripping cliffs, and banks of large rivers. Furthermore, Ohio goldenrod was not found during targeted surveys for this species in the I-481 East Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the Ohio goldenrod for the Community Grid Alternative.

RED PIGWEED

The State-listed Threatened red pigweed has been recorded by the NYNHP in the vicinity of the I-481 North Study Area. Given its habitat requirements, red pigweed has low potential to occur within the I-481 North Study Area. However, survey work for this species would be conducted in the I-481 North Study Area during final design.

Disturbances to areas where red pigweed has a low potential to occur within the ROW is likely under the Community Grid Alternative. However, during final design, efforts would be made to confirm the presence or absence of red pigweed. If red pigweed is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT ROW or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of "take not likely" for the red pigweed for the Community Grid Alternative.

Considering the limitation of tree removal to the winter hibernation period of Indiana bats and only within 100 feet of existing roads, the distances to nearest bat roost trees or other records of the pertinent listed species, the suitability (or lack thereof) of habitat for each species in the study areas, and the various avoidance mitigation measures detailed above, NYSDOT has made the *"not likely to take"* effect determinations for the Community Grid Alternative.

YELLOW GIANT HYSSOP

The State-listed Threatened yellow giant hyssop has been recorded by NYNHP as occurring in the vicinity of the Central, I-481 South, and I-481 North Study Areas. Given its habitat requirements, there is low potential for yellow giant hyssop to occur in the vicinity of the Central, I-481 South, and I-481 North Study Areas. However, survey work for this species would be conducted in the Central, I-481 South, and I-481 North Study Areas during final design.

Disturbances to areas where yellow giant hyssop has a low potential to occur within the ROW is not likely under the Community Grid Alternative. However, during final design, efforts would be made to confirm the presence or absence of yellow giant hyssop within the Central, I-481 South, and I-481 North Study Areas. If yellow giant hyssop is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for the yellow giant hyssop for the Community Grid Alternative.

ROCK ELM

The State-listed Threatened rock elm has been recorded by NYNHP in the vicinity of the I-481 South Study Area. Given its habitat requirements, rock elm has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in the I-481 South Area during final design.

Disturbances to areas rock elm has a low potential to occur within the ROW is not likely under the Community Grid Alternative. During final design, efforts would be made to confirm the presence or absence of rock elm. If rock elm is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for rock elm for the Community Grid Alternative.

RAM'S HEAD LADY'S SLIPPER

The State-listed Threatened ram's head lady's slipper has been recorded by NYNHP in the vicinity of the I-481 North Study Area. Given the date of its most recent documented observation in this area (1902) and its habitat requirements, ram's head lady's slipper has low potential to occur within the I-481 North Study Area. Survey work for this species would be conducted in suitable habitats within the limits of disturbance in the I-481 North Study Area during final design of the Project. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for ram's head lady's slipper for the Community Grid Alternative.

COMMON MOONWORT

The State-listed Endangered common moonwort has been recorded by NYNHP in the vicinity of the I-481 East and I-481 South Study Area. Given the date of its most recent documented observation in this area (1872) and its habitat requirements, common moonwort has low potential to occur within the I-481 South Study Area. It is a violation of ECL S9-1503 to collect or destroy listed plants without the permission of the landowner. During final design, efforts would be made to confirm the presence or absence of common moonwort. If common moonwort is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving

consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for common moonwort for the Community Grid Alternative.

FEW-FLOWERED SPIKE RUSH

The State-listed Endangered few-flowered spike rush has been recorded by NYNHP within the Central and I-481 North Study Areas (observation date not provided). Given its habitat requirements, few-flowered spike rush has low potential to occur within the Central and I-481 North Study Areas. Few-flowered spike rush has low potential to occur within the I-481 North Study Area. It is a violation of ECL S9-1503 to collect or destroy listed plants without the permission of the landowner. During final design, efforts would be made to confirm the presence or absence of few-flowered spike rush. If few-flowered spike rush is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. With these measures in place, no adverse effects would occur to few-flowered spike rush as a result of the construction or operation of the Community Grid Alternative in the I-481 North Study Area. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for few-flowered spike rush for the Community Grid Alternative.

HOOKER'S ORCHID

The State-listed Endangered Hooker's orchid has been recorded by NYNHP in the vicinity of the I-481 South Study Area. Given that all current known populations of this species occur near Ithaca and the eastern Adirondack foothills and its habitat requirements, Hooker's orchid has low potential to occur within the I-481 South Study Area.

Disturbances to areas where Hooker's orchid has a low potential to occur within the ROW is not likely under the Community Grid Alternative. However, during final design, efforts would be made to confirm the presence or absence of Hooker's orchid. If Hooker's orchid is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for Hooker's orchid for the Community Grid Alternative.

FOREST BLUE GRASS

The State-listed Endangered forest blue grass has been recorded by NYNHP in the vicinity of the I-481 South Study Area. Given the date of its most recent documented observation in this area (1916) and its habitat requirements, forest blue grass has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in the I-481 South Area during final design.

Disturbances to areas where forest blue grass has the potential to occur within the right-of-way is likely under the Community Grid Alternative. During final design, efforts would be made to confirm the presence or absence of forest blue grass. If forest blue grass is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of "*take not likely*" for forest blue grass for the Community Grid Alternative.

PUTTYROOT

The State-listed Endangered puttyroot has been recorded by NYNHP within the I-481 South Study Area. Given the date of its most recent documented observation in this area (1890) and its habitat requirements, puttyroot has low potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in the I-481 South Area during final design.

Disturbances to areas where puttyroot has the potential to occur within the right-of-way is likely under the Community Grid Alternative. During final design, efforts would be made to confirm the presence or absence of puttyroot. If puttyroot is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for puttyroot for the Community Grid Alternative.

PURPLE WILD BERGAMOT

The State-listed Endangered purple wild bergamot has been recorded by NYNHP in the vicinity of the I-481 South Study Area (date not provided). Given its habitat requirements, purple wild bergamot has the potential to occur within the I-481 South Study Area. However, survey work for this species would be conducted in the I-481 South Area during final design.

Disturbances to areas where puttyroot has the potential to occur within the right-of-way is likely under the Community Grid Alternative. During final design, efforts would be made to confirm the presence or absence of puttyroot. If purple wild bergamot is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of *"take not likely"* for purple wild bergamot for the Community Grid Alternative.

PRAIRIE DUNEWORT

The State-listed Endangered prairie dunewort has been recorded by NYNHP in the vicinity of the I-481 East Study Area. Given its habitat requirements, prairie dunewort has potential to occur within the I-481 East Study Area. However, survey work for this species would be conducted in the I-481 East Study Area during final design.

Disturbances to areas where prairie dunewort has the potential to occur within the right-of-way is likely under the Community Grid Alternative. During final design, efforts would be made to confirm the presence or absence of prairie dunewort. If prairie dunewort is confirmed to exist within the limits of disturbance, efforts to avoid the species would be made and disturbances would be minimized where feasible and practical. In areas where the species cannot be avoided, a plan would be developed giving consideration to the relocation of the species to other locations within the NYSDOT right-of-way or other land under NYSDOT's jurisdiction. Therefore, NYSDOT has made a preliminary effect determination of "take not likely" for prairie dunewort for the Community Grid Alternative.

E. LITERATURE CITED

Adams, A.M. 2013. Assessing and analyzing bat activity with acoustic monitoring: challenges and interpretations. Ph.D. Dissertation, University of Western Ontario, London, Canada. Available from: http://ir.lib.uwo.ca/cgi/viewcontent.cgi?article=2679&context=etd

Barclay, R.M. and A. Kurta. 2007. Ecology and behavior of bats roosting in tree cavities and under bark. Pp. 17-59 in: Bats in forests: conservation and management (M.J. Lacki, J.P. Hayes, and A. Kurta, eds.). Johns Hopkins Press, Baltimore, MD.

Bennett V.J. and A.A. Zurcher. 2013. When corridors collide: Road-related disturbance in commuting bats. Journal of Wildlife Management. 77:93-101.

Brack, V. and J.O. Whitaker. 2001. Foods of the Northern myotis, *Myotis septentrionalis*, from Missouri and Indiana, with notes on foraging. Acta Chiropterologica 3(2): 203-210.

Britzke, E.R., A.C. Hicks, S.L. Von Oettingen, S.R. Darling. 2006. Description of spring roost trees used by female Indiana bats in the Lake Champlain Valley of Vermont and New York. Am Midland Nat 155:181-187.

Broders, H.G., G.J. Forbes, S. Woodley, and I.D. Thompson. 2006. Range extent and stand selection for forest-dwelling northern long-eared and little brown bats in New Brunswick. Journal of Wildlife Management 70: 1174-1184.

Brown, M., and J. J. Dinsmore. 1986. Implications of marsh size and isolation for marsh bird management. J. Wildl. Manage. 50:392-397.

Caceres, M. and R.M.R. Barclay. 2000. *Myotis septentrionalis*. Mammal Species 634:1-4.

Cade, T.J, M. Martell, P. Redig, G. Septon, and H. Tordoff. 1996. Peregrine falcons in urban North America. In: D.M. Bird, D. Varland, and J. Negro (eds.) *Raptors in human landscapes: adaptations to built and cultivated environments*. Academic Press, San Diego, CA.

Callahan, E.V., R.D. Drobney and R.L. Clawson. 1997. Selection of summer roosting sites by Indiana bats (*Myotis sodalis*) in Missouri. Journal of Mammalogy 78:818-825.

Carter, T.C., and G.A. Feldhamer. 2005. Roost tree use by maternity colonies of Indiana bats and northern long-eared bats in southern Illinois. Forest Ecology and Management 219:259-268.

Carter, T.C, S.K. Carroll, J.E. Hofmann, J.E. Gardner, G.A. Feldhamer. 2002. Landscape analysis of roosting habitat in Illinois. Pp. 160-164 in A. Kurta and J. Kennedy (eds.), The Indiana bat: biology and management of an endangered species. Bat Conservation International, Austin, TX.

Delaney, D.K. and T.G. Grubb. 2004. Sound recordings of road maintenance equipment on the Lincoln National Forest, New Mexico. USDA Forest Service, Rocky Mountain Research Station Research Paper RMRS-RP-49, Fort Collins, CO.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2014. Ecological Communities of New York State. Second Edition. A revised and expanded edition

of Carol Reschke's Ecological Communities of New York State. New York Natural Heritage Program, New York State Department of Environmental Conservation, Albany, NY.

Environmental Solutions and Innovations (ESI). 2008. Roosts of Indiana bats (*Myotis sodalis*) near the Indianapolis International Airport (1997-2001). Proceedings of the Indiana Academy of Science 117:193-202. Available from: http://www.environmentalsi.com/DOCS/PDFs/110.pdf

Feldhamer, G.A., Carter, T.C., Morzillo, A.T. and Nicholson, E.H., 2003. Use of bridges as day roosts by bats in southern Illinois. Transactions of the Illinois State Academy of Science 96:107-112.

Ford, W.M., M.A. Menzel, J.L. Rodrigue, J.M. Menzel, and J.B. Johnson. 2005. Relating bat species presence to simple habitat measures in a central Appalachian forest. Biological Conservation 126: 528-539.

Foster, R.W. and A. Kurta, A. 1999. Roosting ecology of the northern bat (*Myotis septentrionalis*) and comparisons with the endangered Indiana bat (*Myotis sodalis*). Journal of Mammalogy 80: 659-672.

Frank, S. 1994. City peregrines: a ten year saga of New York City falcons. Hancock House, Blaine, WA

Gibbs, J.P., A.R. Breisch, P.K. Ducey, G. Johnson, J.L. Behler, and R.C. Bothner. 2007. The amphibians and reptiles of New York State. Oxford University Press, New York.

Guinn, J.E. 2013. Generational habituation and current bald eagle populations. Human–Wildlife Interactions 7:69–76.

Hammerson, G., Novak, P., Norris, S.J., 2014., NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available http://explorer.natureserve.org/servlet/NatureServe?searchName=Myotis+leibii (Accessed: January 6, 2016).

Harvey, M.J., J.S. Altenbach, and T.L. Best. 2011. Bats of the United States and Canada. Johns Hopkins University Press, Baltimore.

Henderson, L.E., L.J. Farrow, and H.G. Broders. 2008. Intraspecific effects of forest loss on the distribution of the forest-dependent northern long-eared bat (*Myotis septentrionalis*). Biological Conservation 141:1819-1828.

Hickey and Malecki 1997: Hickey, J.M., and R.A. Malecki. 1997. Nest site selection of the black tern in western New York. Colonial Waterbirds 20:582-595.

Humphrey, S.R., A.R. Richter, J.B. Cope. 1977. Summer habitat and ecology of the endangered Indiana bat, *Myotis sodalis*. J Mammal 58:334-346.

Johnson, J.B., J.W. Edwards, W.M. Ford, and J.E. Gates. 2009. Roost tree selection by northern myotis (*Myotis septentrionalis*) maternity colonies following prescribed fire in a Central Appalachian Mountains hardwood forest. Forest Ecology and Management 258:233-242.

Johnson JB, Gates JE. 2008. Spring migration and roost selection of female *Myotis leibii* in Maryland. Northeastern Naturalist 15(3):453-60.

Johnson JS, Kiser JD, Watrous KS, Peterson TS. 2011. Day-roosts of *Myotis leibii* in the Appalachian Ridge and Valley of West Virginia. Northeastern Naturalist 18(1):95-106.

Johnson, G. 2000. Spatial ecology of the eastern massasauga (Sistrurus c. catenatus) in a New York peatland. Journal of Herpetology 2000:186-192.

Johnson, G. 1995. Spatial ecology, habitat preference, and habitat management of the eastern massasauga, Sistrurus c. catenatus in a New York weakly-minerotrophic peatland. Dissertation, State University of New York, College of Environmental Science and Forestry, Syracuse, NY.

Johnson, G. and A.R. Breisch. 1993. The eastern massasauga rattlesnake in New York: occurrence and habitat management. Pp. 48-54 in: Proceedings of the International Symposium and Workshop on the Conservation of the Eastern Massasauga Rattlesnake, *Sistrurus catenatus*. Metro Toronto Zoo, West Hill, Ontario, Canada.

Johnson, N.P. 2010. Nesting bald eagles in urban areas of southeast Alaska. In: Bald Eagles in Alaska (B.A. Wright and P. Schempf, eds.). Hancock House Publishing, Blaine, WA.

Keeley, B.W. and M.D. Tuttle. 1999. Bats in American bridges. Bat Conservation International Resource Publication 4.

Kitchell, M.E. 2008. Roost selection and landscape movements of female Indiana bats at the Great Swamp National Wildlife Refuge, New Jersey. M.S. thesis, William Patterson University of New Jersey. 178pp.

Kurta, A. 2004. Roosting ecology and behavior of Indiana bats in summer. Pp. 29-42 In: Proceedings of the Bat and Coal Mining Interactive Forum, K.C. Vories and A. Harrington, Eds. U.S. Department of Interior, Office of Surface Mining, Alton, Illinois.

Kurta, A., S.W. Murray, D.H. Miller. 2002. Roost selection and movements across the summer landscape. Pp. 118-129 in A. Kurta and J. Kennedy (eds.), The Indiana bat: biology and management of an endangered species. Bat Conservation International, Austin, TX.

Lacki, M.J., S.K. Amelon, and M.D. Baker. 2007. Foraging ecology of bats in forests. Pp. 83-127 in: Bats in forests: conservation and management (M.J. Lacki, J.P. Hayes, and A. Kurta, eds.). Johns Hopkins Press, Baltimore, MD.

LeBreton, G. T. O.; Beamish, F. W. H., 1998: The influence of salinity on ionic concentrations and osmolarity of blood serum in lake sturgeon, *Acipenser fulvescens*. Environ. Biol. Fish. 52, 477–482.

U.S. Army Corps of Engineers. 2018. National Wetland Plant List, version 3.4. U.S. Army Corps of Engineers, Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory, Hanover, NH. http://wetland-plants.usace.army.mil/.

Loucks, B.A. and C. Nadareski. 2005. Back from the brink. New York State Conservationist 59: 19-23.

Naugle, D.E., K.F. Higgins, M.E. Estey, R.R. Johnson, and S.M. Nusser. 2000. Local and landscape-level factors influencing black tern habitat suitability. Journal of Wildlife Management 64:253-260.

Menzel, M.A., J.M. Menzel, T.C. Carter, W.M. Ford and J.W. Edwards. 2001. Review of the forest habitat relationships of the Indiana bat (*Myotis sodalis*). USDA Forest Service Gen. Tech. Rep. NE-284. Newtown Square, PA. 21 p.

Menzel, M.A., S.F. Owen, W.M. Ford, J.W. Edwards, P.B. Wood, B.R. Chapman, and K.V. Miller. 2002. Roost tree selection by northern long-eared bat (*Myotis septentrionalis*) maternity colonies in an industrial forest of the central Appalachian Mountains. Forest Ecology and Management 155:107-114.

Miller III, D.G., 1995. An isolated population of the bog elfin, Incisalia lanoraieensis Sheppard (Lepidoptera: Lycaenidae), in central New York. Journal of the New York Entomological Society, 103(1), pp.121-122.

Millsap B, Breen T, McConnell EL, Steffer T, Phillips L, Douglass N, Taylor S. 2004. Comparative fecundity and survival of bald eagles fledged from suburban and rural natal areas in Florida. Journal of Wildlife Management 68(4):1018-31.

Mitchell, R.S. and C.J. Sheviak. 1981. Rare plants of New York State. New York State Museum, Bull. 445. 96pp.

Moore, J.A., and J.C. Gillingham. 2006. Spatial ecology and multi-scale habitat selection by a threatened rattlesnake: the eastern massasauga (*Sistrurus catenatus catenatus*). Copeia 2006:742-51.

Morris, A.D., D.A. Miller, and M.C. Kalcounis-Reuppell. 2010. Use of forest edges by bats in a managed pine forest landscape. Journal of Wildlife Management 74: 26-34.

Murray, S.W. and A. Kurta 2004. Nocturnal activity of the endangered Indiana bat (*Myotis sodalis*). Journal of Zoology 262:197-206.

New York Natural Heritage Program (NYNHP). 2016. Correspondence from Nicholas Conrad, NYNHP to Aubrey McMahon, AKRF. Re: NYSDOT Interstate 81 Viaduct Project (dated July 1, 2016.)

New York Natural Heritage Program (NYNHP). 2015. Online Conservation Guides Available: http://www.acris.nynhp.org/plants.php (viewed July 25, 2017).

New York Natural Heritage Program (NYNHP). Database Search Results Conducted by NYSDOT on February 3, 2022.

Niver, R. 2009. Biological opinion on the proposed activities on the Fort Drum military installation (2009-2011). US Fish and Wildlife Service, Cortland, NY.

New York State Department of Environmental Conservation (NYSDEC). 2016. Cicero Swamp Wildlife Management Area. Available: http://www.dec.ny.gov/docs/wildlife_pdf/yficicerohmp.pdf (accessed on August 21, 2020).

New York State Department of Environmental Conservation (NYSDEC). 2017. New Record Established for New York's Breeding Bald Eagles. https://www.dec.ny.gov/press/110637.html.

New York State Department of Environmental Conservation (NYSDEC). 2019. Draft List Under Part 182.5 Pre-proposal—October 2019. Available from: https://www.dec.ny.gov/docs/wildlife_pdf/preproposal182.pdf.

Novak, P. G. 1992. Black tern, CHLIDONIAS NIGER. Pages 149-169 in K. J. Schneider and D. M. Pence, editors. Migratory nongame birds of management concern in the Northeast. U.S. Fish and Wildlife Service, Newton Corner, Massachusetts. 400 pp.

Nye, P.E., D. Mildner, and E. Leone. 1994. An assessment of the status of bald eagles on Iona Island, New York and reccommendations for their management.

Nye, P.E. 2008. Bald eagle. In: The second atlas of breeding birds in New York State (K. McGowan and K. Corwin, eds.). Cornell University Press, Ithaca, NY

Owen, S.F., M.A. Menzel, W.M. Ford, J.W. Edwards, B.R. Chapman, K.V. Miller, P.B. Wood. 2002. Roost tree selection by maternal colonies of northern long-eared myotis in an intensively managed forest. U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 6 p.

Owen, S.F., M.A. Menzel, W.M. Ford, B.R. Chapman, K.V. Miller, J.W. Edwards, and P.B. Wood. 2003. Home-range size and habitat used by the northern myotis (*Myotis septentrionalis*). American Midland Naturalist 150:352-359.

Patriquin, K.J. and R.M.R. Barclay. 2003. Foraging by bats in cleared, thinned and unharvested boreal forest. Journal of Applied Ecology 40:646-657.

Poole, A. F., P. E. Lowther, J. P. Gibbs, F. A. Reid, and S. M. Melvin (2009). Least Bittern (*Ixobrychus exilis*), version 2.0. The Birds of North America (A. F. Poole, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bna.17

Ratcliffe, D.A. 1972. The peregrine population in Great Britain in 1971. *Bird Study* 19:117-156.

Schaub, A., J. Ostwald and B.M. Siemers. 2008. Foraging bats avoid noise. Journal of Experimental Biology 211:3174-3180.

Schultz, J. L. 1988. Inventory of several rare plant species within the Grand Sable Dunes Area of the Pictured Rocks National Lakeshore. Unpublished report to the National Park Service, Pictured Rocks National Lakeshore. 45 pp.

Scott, V. 2014. "Myotis leibii" (On-line), Animal Diversity Web. Accessed January 06, 2016 at http://animaldiversity.org/accounts/Myotis_leibii/.

Segers, J. L. and H. G. Broders. 2014. Interspecific effects of forest fragmentation on bats. Canadian Journal of Zoology 92: 665-673.

Shapiro, A. and M.G. Hohmann. 2005. Summary of threatened and endangered batrelated restrictions on military training, testing, and land management. U.S. Army Corps of Engineers Report ERDC/CERL TR-05-13.

Shepherd, M. D. 2005. Species Profile: Callophrys lanoraieensis. In Shepherd, M. D., D. M. Vaughan, and S. H. Black (Eds). Red List of Pollinator Insects of North America. CD-ROM Version 1 (May 2005). Portland, OR: The Xerces Society for Invertebrate Conservation.

Silvis, A., A.B. Kniowski, S.D. Gehrt, and W. M. Ford. 2014a. Roosting and foraging social structure of the endangered Indiana bat (*Myotis sodalis*). PLoS One: e96937.

Silvis A, W.M. Ford, E.R. Britzke, and J.B. Johnson. 2014b. Association, roost use and simulated disruption of *Myotis septentrionalis* maternity colonies. Behavioral Processes 103: 283–290.

Sparks, D.W., J.A. Laborda, and J.O. Whitaker Jr. 1998. Bats of the Indianapolis International Airport as compared to a more rural community of bats at Prairie Creek. Proceedings of the Indiana Academy of Science 107:171-180.

Stalmaster, M.V. and J.R. Newman. 1978. Behavioral responses of wintering bald eagles to human activity. Journal of Wildlife Management 42:506-513.

Stalmaster, M.V. and J.A. Gessaman. 1984. Ecological energetics and foraging behavior of overwintering bald eagles. Ecological Monographs 54:407-428.

Stalmaster, M.V. and J.L. Kaiser. 1997. Flushing responses of wintering bald eagles to military activity. Journal of Wildlife Management 61:1307-1313.

Stegemann, E., Hicks, A. 2008. Bats of New York. New York State Conservationist, February 2008. Available from: http://www.dec.ny.gov/pubs/46905.html

Sullivan, G.L. 2016. Bald eagles are adapting to city living. Washington Post, February 29, 2016. https://www.washingtonpost.com/national/health-science/bald-eagles-are-adapting-to-city-living/2016/02/29/97df78be-d5ad-11e5-be55-2cc3c1e4b76b_story.html?noredirect=on&utm_term=.73c6b955b477

U.S. Fish and Wildlife Service (USFWS). 2016a. Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat. Federal Register 81(9):1900-1922. January 14, 2016. Available from: http://www.fws.gov/midwest/endangered/mammals/nleb/pdf/FRnlebFinal4dRule14Jan2016.pdf

U.S. Fish and Wildlife Service (USFWS). 2015. "American Hart's Tongue Fern Fact Sheet." USFWS Endangered Species. October 15, 2015. https://www.fws.gov/midwest/endangered/plants/amerihtf.html.

U.S. Fish and Wildlife Service (USFWS). 2014. Northern long-eared bat interim conference and planning guidance. Available from: http://www.fws.gov/midwest/endangered/mammals/nlba/pdf/NLEBinterimGuidance6Jan2014.pdf.

U.S. Fish and Wildlife Service (USFWS). 2013. Northern long-eared bat. Available from: http://www.fws.gov/midwest/endangered/mammals/nlba/nlbaFactSheet.html

U.S. Fish and Wildlife Service (USFWS). 2012. "American Hart's-Tongue Fern (*Asplenium Scolopendrium* var. *Americanum*) 5-Year Review: Summary and Evaluation." U.S. Fish and Wildlife Service Ecological Services Field Office. https://ecos.fws.gov/docs/five_year_review/doc4110.pdf.

U.S Fish and Wildlife Service (USFWS). 2011. Guidance on Developing and Implementing an Indiana Bat Conservation Plan. Available from: http://www.fws.gov/northeast/pafo/pdf/IBAT_conservation_plan_guidance_PAFO_072611.pdf.

U.S. Fish and Wildlife Service (USFWS). 2007. Indiana Bat (*Myotis sodalis*) Draft Recovery Plan: First Revision, April 2007. USFWS Great Lakes-Big Rivers Region - Region 3, Fort Snelling, MN.

Voss, E.G. 1972. Michigan Flora, Part I. Gymnosperms and Monocots. Cranbrook Institute of Science Bulletin 55 and the University of Michigan Herbarium. Ann Arbor. 488 pp.

Watrous, K.S., T.M. Donovan, R.M. Mickey, S.R. Darling, A.C. Hicks, S.L. Von Oettingen. 2006. Predicting minimum habitat characteristics for the Indiana bat in the Champlain Valley. Journal of Wildlife Management 70:1228-1237.

White, Clayton M., Nancy J. Clum, Tom J. Cade and W. Grainger Hunt. 2002. Peregrine Falcon (*Falco peregrinus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online:http://bna.birds.cornell.edu/bna/species/660doi:10.2173/bna.660

Zurcher AA, Sparks DW, Bennett VJ (2010) Why the bat did not cross the road? Acta Chiropterologica 12: 337–340.

F. LIST OF PREPARERS

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Dr. Seewagen is a primary resource at AKRF for diverse projects relating to wildlife and Threatened and Endangered species, as well as other natural resources. He has 18 years of experience working as a professional wildlife biologist in the Northeast and has a strong working knowledge of the region's Federally- and State-listed species, including both terrestrial and aquatic organisms. At AKRF he often conducts targeted surveys for Threatened and Endangered species, and frequently prepares Endangered Species Act Section 7 Biological Evaluations and similar impact assessments. Dr. Seewagen has prepared several Section 7 Biological Evaluations and Biological Assessments for Indiana and northern long-eared bats, each of which has received concurrence with their determinations by USFWS.

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