This section describes the potential effects of the Project on the general ecology and wildlife resources (i.e., ecological communities, wildlife, and threatened or endangered species) within the Project Area. Appendix J provides additional information to support this section.

As described in Section 6-1, Introduction, the Project Area consists of the following subareas: Central Study Area; I-481 South Study Area; I-481 East Study Area; and I-481 North Study Area (see Figure 6-1-1). The assessment for ecological communities and wildlife was conducted using a study area of a 100-foot radius around these four study areas. As per NYSDOT’s The Environmental Manual (TEM), the study areas used for the assessment of effects to threatened or endangered species encompass larger areas around each of the four project study areas. These study areas vary by species as per the TEM and are presented in the threatened and endangered species section below.

This section describes the Federal legislation pertaining to the general ecology and wildlife resources. Regulations include the U.S. Fish and Wildlife Service (USFWS) Endangered Species Act (ESA) (16 U.S.C. §1531), the USFWS Migratory Bird Treaty Act (16 U.S.C. §703-712), and “Safeguarding the Nation from the Impacts of Invasive Species” (Executive Order 13112). These regulations are detailed in Appendix J-1.

With respect to New York State regulations, the general ecology and wildlife resources of the study areas are covered under the New York State Department of Environmental Conservation (NYSDEC) Endangered Species Regulation (6 NYCRR Part 182), NYSDEC’s Protected Native Plant Program (6 NYCRR Part 193.3), and NYSDEC’s Invasive Species Regulations (6 NYCRR Part 575). These regulations are outlined in Appendix J-1.

Prior to conducting the general ecology and wildlife resources assessment, methodologies were reviewed and an approach was developed as per the TEM (see Appendix J-1). As part of these methodologies several mapping and database resources were reviewed (as discussed in Appendix J-1) and information from these resources has been incorporated into this assessment, as applicable. To document existing ecological communities, site reconnaissance investigations by a plant ecologist were conducted on June 29 and 30, 2016; July 8, 2016; August 1, 2016; September 16, 2016; and August 28, 2017. Threatened and endangered plant species surveys were conducted on April 18, 19, and 20, 2017; June 27 and 28, 2017; July 13, 2017; August 28, 29, 30, and 31, 2017; and September 1, 2017, as detailed in Appendix J-4. Wildlife was documented during a site reconnaissance investigation conducted by a team of two wildlife ecologists on July 29, 2016 and by one wildlife ecologist on July 13, 2017.

Permanent effects to terrestrial ecological communities caused by the Project are discussed in the Permanent/Operational Effects sections. Temporary effects resulting from the construction of the Project are detailed in the Construction Effects sections.

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6-4-8.1 AFFECTED ENVIRONMENT

6-4-8.1.1 TERRESTRIAL RESOURCES

Seven ecological communities comprising an estimated 1,471.16 acres have been identified within the Project Area\(^2\) and are shown by study area in Table 6-4-8-1. The largest ecological community, estimated at 1,095.09 acres, is classified as a “terrestrial cultural” ecological community. Terrestrial cultural ecological communities are those that are: “either created and maintained by human activities; are modified by human influence to such a degree that the physical conformation of the substrate; or the biological composition of the resident community is substantially different from the character of the substrate or community as it existed prior to human influence (Edinger et al. 2014).” Examples of terrestrial cultural ecological communities within the Project Area include paved road/path, ditch, railroad, junkyard, urban vacant lot, mowed lawn, mowed lawn with trees, and garden (see Appendix J-2). Other communities present within the Project Area are smaller. These communities, although characterized by moderate levels of disturbance, are generally less disturbed than terrestrial cultural ecological communities. These communities include successional southern hardwoods (estimated 111.48 acres), floodplain forests (estimated 67.47 acres), successional old fields (estimated 73.58 acres), successional shrublands (estimated 37.82 acres), freshwater wetlands (75.66 acres), and open surface waters (10.06 acres). Definitions of these ecological communities (as per Edinger et al. 2014) and descriptions of these communities are provided in Appendix J-2.

In general, the ecological communities are dominated by species that are non-native and invasive or native pioneer species of low ecological value. Furthermore, a large portion of these communities are maintained (e.g., by mowing) or altered to such a degree that the physical conformation and biological composition are of little ecological value. While floodplain and southern successional hardwood forests, successional old field and shrubland communities, and freshwater wetlands and surface waters are present, these consist primarily of edge communities bordering the maintained right-of-way and are characterized by moderate levels of disturbance and/or non-native invasive species. For these reasons, most of the ecological communities that are present are characterized by disturbance and are considered to be of low ecological value. (See Section 6-4-7, Water Resources for discussion of wetlands and aquatic communities.)

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\(^2\) A 100-foot study area around the four study areas: Central Study Area, I-481 South Study Area, I-481 East Study Area, and I-481 North Study Area.
Summary of Terrestrial Ecological Communities within the Project Area

<table>
<thead>
<tr>
<th>Ecological Community</th>
<th>Definition Summary</th>
<th>Study Area</th>
<th>Approximate Acreage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terrestrial Cultural</td>
<td>A community created, maintained, or modified by human activity.</td>
<td>All Study Areas</td>
<td>1,095.09</td>
</tr>
<tr>
<td>Successional Southern Hardwoods</td>
<td>A hardwood or mixed forest that occurs on sites that have been cleared or otherwise disturbed.</td>
<td>Central I-481 South</td>
<td>111.48</td>
</tr>
<tr>
<td>Successional Old Field</td>
<td>A meadow dominated by forbs and grasses that occurs on sites that have been cleared and plowed, and then abandoned.</td>
<td>I-481 South I-481 North</td>
<td>73.58</td>
</tr>
<tr>
<td>Successional Shrubland</td>
<td>A shrubland that occurs on sites that have been cleared (for farming, logging, development, etc.) or that are otherwise disturbed.</td>
<td>I-481 South I-481 North</td>
<td>37.82</td>
</tr>
<tr>
<td>Floodplain Forest</td>
<td>A hardwood forest that occurs on the mineral soils of low terraces of river floodplains and of river deltas.</td>
<td>I-481 East I-481 North</td>
<td>67.47</td>
</tr>
<tr>
<td>Freshwater Wetland*</td>
<td>A community that contains hydrology, hydrophytic vegetation, and hydric soils as defined by the USACE.</td>
<td>Central I-481 East I-481 North</td>
<td>75.66</td>
</tr>
<tr>
<td>Open Surface Water</td>
<td>Open water such as creeks, ponds, and lakes.</td>
<td>Central I-481 East I-481 North</td>
<td>10.06</td>
</tr>
<tr>
<td><strong>Total Estimated Acreage</strong></td>
<td></td>
<td></td>
<td><strong>1,471.16</strong></td>
</tr>
</tbody>
</table>

**Notes:** The acreages are for the 100-ft study area for where roadway and potential noise barriers overlap. Ecological community observations were made during field investigations in 2016 and 2017 (see Appendix J-2). (*) Wetlands were delineated using the United States Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual in 2017. **Source:** Ecological community names and descriptions are derived from “Ecological Communities of New York State” (Edinger et al. 2014).

### 6-4-8.1.2 WILDLIFE

The Project is located in a heavily urbanized setting and dominated by transportation infrastructure, buildings, and other impervious surfaces. Habitat available to wildlife is primarily limited to roadside margins and forest and wetland fragments that are adjacent to portions of I-81 and I-481, located outside the City of Syracuse and surrounded by other development. Traffic noise on I-81 and I-481 further degrades habitat quality in these remnant patches and contributes to diminished wildlife communities. Most wildlife in the study areas is limited to urban-adapted, disturbance-tolerant generalist species, although some areas, such as the large wetland (i.e., Wetland E-5 as described in Section 6-4-7, Water Resources) near the southern end of the I-481 East Study Area, support a more diverse assemblage of species.

The New York State Breeding Bird Atlas is a periodic census of the distribution of the State’s breeding birds. The most recent census was conducted from 2000 to 2005 and documented 97 species within the atlas block that comprises the Central Study Area, 80 species in the atlas block that comprises the I-481 South Study Area, 89 species in the atlas block that comprises the I-481 East Study Area, and 106 species in the atlas block that comprises the I-481 North Study Area.
The NYSDEC Herp Atlas Project is a survey that was conducted from 1990 to 1999 that documented the geographic distribution of New York’s reptile and amphibian species. The Herp Atlas documented 21 species within the census block in which the Central Study Area and I-481 South Study Area are located, 19 species in the census block in which the I-481 East Study Area is located, and 22 species within the census block in which the I-481 North Study Area is located. However, these census blocks span larger and less disturbed habitats, as well as different habitat types from those that are present in the vicinity of the Project Area. Therefore, many of the species documented within the census blocks are unlikely to occur within the study areas because of a lack of suitable habitat. Appendix J-3 provides the species found in the Breeding Bird Atlas and Herp Atlas, the subset of those expected to occur within the study areas, and results from the wildlife surveys conducted in July of 2016 and 2017.

No NYSDEC “Critical Environmental Areas” or Federal “Wildlife and Waterfowl Refuges” are present within the study areas. The Cicero Swamp Wildlife Management Area (WMA) occurs less than one mile outside of the I-481 North Study Area. As discussed below and in Section 6-4-7, Water Resources, the Cicero Swamp WMA is under consideration for potential wetland mitigation under the Community Grid Alternative. The Cicero Swamp WMA is used for wildlife management, wildlife habitat management, and wildlife-dependent recreation. It is a wetland complex containing upland islands scattered throughout its 4,949 acres. As such, the habitats of this WMA support a variety of wildlife (NYSDEC 2016) including Federal- and State-listed threatened and endangered species.3

6-4-8.1.3 THREATENED OR ENDANGERED SPECIES AND SIGNIFICANT ECOLOGICAL COMMUNITIES

NYSDOT reviewed the USFWS Information for Planning and Consultation System (IPaC) database on September 13, 2018 and the New York Natural Heritage Program (NYNHP) databases for Federal and New York State (NYS) listed species for all four Study Areas most recently on September 14, 2018. The species that were found in the vicinity of the study areas are summarized in Table 6-4-8-2. The study areas were reviewed for State- and Federally-listed threatened or endangered species and significant ecological communities following the guidance outlined in the TEM. Unless otherwise specified in the list below, the NYNHP review areas for State- and Federally-listed species and significant ecological communities are within a 1.5-mile radius around the Central, I-481 South, I-481 East, and I-481 North Study Areas. The New York Natural Heritage Program’s “Notes for Data Users” also provides species-specific screening distances for the following species/habitats:

- Indiana bat (Myotis sodalis) (2.5-mile radius [hibernacula or roost tree]);
- Northern long-eared bat (Myotis septentrionalis) (5-mile radius [hibernacula] and 1.5-mile radius [roost tree, non-winter locations]);
- Bog turtle (Glyptemys muhlenbergii) (1-mile radius);
- Blanding’s turtle (Emydoidea blandingii) (0.8-mile radius);
- Timber rattlesnake (Crotalus horridus) (1.5-mile radius);

3 http://www.dec.ny.gov/outdoor/68681.html
- Upland sandpiper (*Bartramia longicuada*) (1.5-mile radius);
- Bald eagle (*Haliaeetus leucocephalus*) (1.5-mile radius);
- Northern harrier (*Circus cyaneus*) (1.5-mile radius); and
- Aquatic species (up to 2 miles downstream).

There are no documented IPaC or NYNHP records of bog turtle, Blanding’s turtle, or the timber rattlesnake within the review areas. Discussions of the species listed by IPaC and NYNHP as having the potential to occur within the Project Area are below.

**Federal**

As described above and shown in **Table 6-4-8-2**, the USFWS IPaC System lists the State and Federally endangered Indiana bat, State and Federally threatened northern long-eared bat, State-endangered and Federally threatened eastern massasauga, and the State and Federally threatened American hart’s-tongue fern (*Asplenium scolopendrium var. americanum*) as having the potential to occur within the vicinity of the study areas. The bald eagle, which is Federally protected under the Bald and Golden Eagle Protection Act, also has the potential to occur. The IPaC “Official Species Lists” (dated September 13, 2018) for the study areas are provided in **Appendix J-6**. NYSDOT reviewed the most up to date information on the NYNHP database on September 14, 2018 for Federally- and State-listed species in the vicinity of the study areas. The NYNHP database review indicated that Indiana bat and Northern long-eared bat maternity colonies and hibernaculum have been documented near the I-481 South and the I-481 East Study Areas. Eastern massasauga has been documented adjacent to the I-481 North Study Area and American hart’s tongue fern has been documented adjacent to the I-481 South Study Area. Discussions of habitat for each Federally-listed species identified in **Table 6-4-8-2** are included below.

Federally-listed species are automatically State-listed regardless of whether the species has been identified as threatened or endangered by NYSDEC or mapped by NYNHP.
<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>State Status</th>
<th>Federal Status</th>
<th>NYNHP Record Near Study Area</th>
<th>IPaC Potential Near Study Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana bat</td>
<td><em>Myotis sodalis</em></td>
<td>Endangered</td>
<td>Endangered</td>
<td>I-481 South</td>
<td>Central I-481 South</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I-481 East</td>
<td>I-481 East</td>
</tr>
<tr>
<td>Northern long-eared bat</td>
<td><em>Myotis septentrionalis</em></td>
<td>Threatened</td>
<td>Threatened</td>
<td>I-481 South</td>
<td>Central I-481 South</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I-481 East</td>
<td>I-481 East</td>
</tr>
<tr>
<td>Eastern massasauga</td>
<td><em>Sistrurus catenatus</em></td>
<td>Endangered</td>
<td>Threatened</td>
<td>I-481 North</td>
<td>Central I-481 South</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I-481 South</td>
</tr>
<tr>
<td>American hart's-tongue fern</td>
<td><em>Asplenium scolopendrium var.</em></td>
<td>Threatened</td>
<td>Threatened</td>
<td>I-481 South</td>
<td>Central I-481 South</td>
</tr>
<tr>
<td></td>
<td><em>americanum</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peregrine falcon</td>
<td><em>Falco peregrinus</em></td>
<td>Endangered</td>
<td>N/A</td>
<td>Central*</td>
<td>No</td>
</tr>
<tr>
<td>Bald Eagle</td>
<td><em>Haliaeetus leucocephalus</em></td>
<td>Threatened</td>
<td>Protected</td>
<td>Central</td>
<td>No</td>
</tr>
<tr>
<td>Least bittern</td>
<td><em>Ixobrychus exilis</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>I-481 North</td>
<td>No</td>
</tr>
<tr>
<td>Northern Harrier</td>
<td><em>Circus cyaneus</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>I-481 North</td>
<td>No</td>
</tr>
<tr>
<td>Lake sturgeon</td>
<td><em>Acipenser fulvescens</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>Central*</td>
<td>No</td>
</tr>
<tr>
<td>Seaside bulrush</td>
<td><em>Bolboschoemus maritimus</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>Central</td>
<td>No</td>
</tr>
<tr>
<td>Midland sedge</td>
<td><em>Carex mesochorea</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>Central</td>
<td>No</td>
</tr>
<tr>
<td>Saltmarsh aster</td>
<td><em>Symphyotrichum subulatum var.</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>Central</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td><em>subulatum</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reflexed sedge</td>
<td><em>Carex retroflexa</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>Central</td>
<td>No</td>
</tr>
<tr>
<td>Straight-leaf pondweed</td>
<td><em>Potamogeton strictifolius</em></td>
<td>Endangered</td>
<td>N/A</td>
<td>Central*</td>
<td>No</td>
</tr>
<tr>
<td>Glomerate Sedge</td>
<td><em>Carex aggregate</em></td>
<td>Endangered</td>
<td>N/A</td>
<td>Central*</td>
<td>No</td>
</tr>
<tr>
<td>Marsh Arrow Grass</td>
<td><em>Triglochin palustris</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>I-481 South</td>
<td>No</td>
</tr>
<tr>
<td>Cork Elm</td>
<td><em>Ulmus thomasii</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>I-481 South</td>
<td>No</td>
</tr>
<tr>
<td>Ohio goldenrod</td>
<td><em>Oligoneuron ohioense</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>I-481 East</td>
<td>No</td>
</tr>
<tr>
<td>Troublesome sedge</td>
<td><em>Carex molesta</em></td>
<td>Threatened</td>
<td>N/A</td>
<td>I-481 North</td>
<td>No</td>
</tr>
<tr>
<td>Inland Salt Pond*</td>
<td>N/A</td>
<td>Significant natural community</td>
<td>N/A</td>
<td>Central</td>
<td>No</td>
</tr>
<tr>
<td>Maple-basswood rich mesic forest*</td>
<td>N/A</td>
<td>Significant natural community</td>
<td>N/A</td>
<td>I-481 South</td>
<td>No</td>
</tr>
<tr>
<td>Calcareous cliff community*</td>
<td>N/A</td>
<td>Significant natural community</td>
<td>N/A</td>
<td>I-481 South</td>
<td>No</td>
</tr>
<tr>
<td>Calcareous talus slope woodland*</td>
<td>N/A</td>
<td>Significant natural community</td>
<td>N/A</td>
<td>I-481 South</td>
<td>No</td>
</tr>
<tr>
<td>Limestone woodland*</td>
<td>N/A</td>
<td>Significant natural community</td>
<td>N/A</td>
<td>I-481 South</td>
<td>No</td>
</tr>
<tr>
<td>Black spruce-tamarack bog*</td>
<td>N/A</td>
<td>Significant natural community</td>
<td>N/A</td>
<td>I-481 North</td>
<td>No</td>
</tr>
</tbody>
</table>

**Notes:**

(†) Documented within the vicinity of the Central Study Area.
(#) Documented within the Central Study Area.
(*) This is a significant natural community and therefore does not have a scientific name.

**Sources:** NYNHP database review September 14, 2018; USFWS IPaC Official Species List dated September 13, 2018 (see Appendix J-6).
• **Indiana Bat:** The Indiana bat is a temperate, insectivorous bat that is Federally- and State-listed as endangered. In the spring, Indiana bats emerge from the caves or mines in which they hibernate and travel to breeding habitat where they roost under loose bark or in the crevices of trees. Roosting trees are usually in riparian, bottomland/floodplain, and upland forests (Humphrey et al. 1977, Britzke et al. 2006, Watrous et al. 2006) often within agricultural landscapes (Murray and Kurta 2004, Watrous et al. 2006, USFWS 2007a). Indiana bats have also been found roosting under bridges (Keeley and Tuttle 1999). Indiana bats forage in the forest canopy, over open fields, over impounded waterbodies, along riparian corridors, and along forest edges (USFWS 2007a). 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 2007a).

The woodland fragments bordering the east and west sides of the I-481 South Study Area represent suitable roosting habitat for Indiana bats. Therefore, they have the potential to occur in the I-481 South Study Area. The closest summer habitat to the I-481 East Study Area that is most suitable for Indiana bats is the woodland area 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 to the east of the southern end of the I-481 East Study Area also has the potential to support Indiana bats. Indiana bats are not likely to occur in the areas near the Central and I-481 North Study Areas due to the high density of urban development.

Bridges are located in the Central, I-481 South, I-481 East, and I-481 North Study Areas, and Indiana bats have been documented roosting under bridges in other parts of their range (Keeley and Tuttle 1999). As such, all bridges in the Project Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form for FHWA and other federal transportation agencies during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

• **Northern Long-eared Bat:** The northern long-eared bat that is Federally- and State-listed as threatened is a temperate, insectivorous bat that hibernates in caves and mines during winter, and then emerges in early spring to disperse to summer habitat. 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 (Caceres 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). Northern long-
I-81 VIADUCT PROJECT

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). 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 in 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).

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 represent suitable roosting habitat for the northern long-eared bat. Therefore, the species has the potential to occur in 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 bat is the woodland area 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 northern long-eared bat. The wooded area around Butternut Creek to the east of the southern end of the I-481 East Study Area represents suitable roosting habitat for the northern long-eared bat.

Bridges are located in the Central, I-481 South, I-481 East, and I-481 North Study Areas, and northern long-eared bats have been documented roosting under bridges in other parts of their range (Feldhamer et al. 2003). As such, all bridges in the Project Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form for FHWA and other federal transportation agencies during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

- **Eastern Massasauga:** The eastern massasauga is a rare rattlesnake that is Federally-listed threatened and State-listed endangered. The eastern massasauga inhabits fens, marshes, and wet prairies (Gibbs et al. 2007).

Wetlands within the I-481 North Study Area are limited to drainage ditches and disturbed common reed and forested wetlands along I-481 and within the quadrants at the I-81 interchange. Therefore, no habitat that is suitable for eastern massasaguas is present in the I-481 North Study Area and eastern massasaguas are not expected to occur in the area. The Central, I-481 South, and I-481 East Study Areas also lack suitable habitat to support eastern massasaguas.
- **Bald Eagle:** The bald eagle is not Federally-listed as threatened or endangered, but is Federally protected under the Bald and Golden Eagle Protection Act. They are also State-listed in New York as threatened and are addressed in the state-listed species sections throughout the chapter.

- **American Hart’s-tongue fern:** American hart’s-tongue fern is a Federal and State-listed threatened perennial and evergreen fern. This species requires deep shade and grows in cool, moist, rocky, calcareous substrates, usually within small cracks in large rocks. American hart’s-tongue fern is found in close association with outcrops of dolomitic limestone and other calcareous rocks. American hart’s-tongue fern has been found in cave entrances, coulees, gorges, and sinkholes in mature hardwood forests. 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 glacial plunge basins near Syracuse.

The upland ecological communities of the study areas are associated with maintained right-of-ways, successional old fields and shrublands, and successional and floodplain forests located along the edges of the right-of-way. All of these ecological communities are associated with disturbance. Although roadside cliff/slope communities are present within the I-481 South Study Area, they are located directly along the highway and are associated with disturbance and are not characterized by cool, moist conditions. American’s hart’s-tongue was not found during targeted surveys for this species conducted on April 18, 19, and 20, 2017. Based on the lack of preferred habitat and the results of targeted surveys, the American hart’s-tongue fern has the low potential to occur within the I-481 South Study Area. The American hart’s-tongue fern is not expected to occur within the Central, the I-481 East, or the I-481 North Study Areas.

**New York State**

NYSDOT reviewed the NYNHP database for State- and Federally-listed species, most recently on September 14, 2018. In addition to the Federally-listed species discussed above, the NYNHP database indicated the potential for the following State-listed animal and plant species and natural communities (as listed in Table 6-4-8-2 and outlined in Appendix J-4):

- **Peregrine Falcon:** The peregrine falcon is a State-listed endangered bird. It is globally widespread and common in many areas (White et al. 2002). Populations in New York State have grown dramatically since the 1980s. Peregrine falcons have become increasingly common in urban areas, demonstrating a tolerance of human disturbance and an ability to exploit resources in human-modified environments (Cade et al. 1996, White et al. 2002). It has been stated that peregrine falcons will tolerate almost any level of human activity taking place below their nest provided that the nest is inaccessible (Ratliffe 1972) to humans and 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 in bridges and high-rise buildings among high levels of noise and human

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4 A habitat investigation was conducted in the vicinity of Noise Barrier 9 in the I-481 South Study Area on July 13, 2017. Habitat is not present for American hart’s-tongue-fern at this location.

The NYNHP database indicated that there is a peregrine falcon’s nest adjacent to 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.

- **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). The recovery of bald eagles throughout their range is largely attributable to their consistently growing, generational habituation to human activity and development (Johnson 2010, Guinn 2013). According to the NYNHP database, non-breeding bald eagles have been observed perching and foraging along the shoreline of Onondaga Lake. This area is on the periphery of the Central 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, I-481 East, and I-481 North Study Areas.

- **Least Bittern**: The least bittern is a State-listed threatened waterbird 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). 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 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 the I-481 East Study Areas.

- **Northern Harrier**: The northern harrier is a State-listed threatened bird of prey. 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). The NYNHP has a record of northern harriers breeding within 1.5 miles of the I-481 Study Area. There is potentially suitable breeding and non-breeding habitat for northern harriers in the 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. 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. Thus, lake sturgeon has the potential to occur in the Central Study Area. Lake sturgeon do not have the potential to occur within the I-481 South, I-481 East, and I-481 North Study Areas.

- **Seaside Bulrush:** Seaside 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 2016 National Wetland Plant List (Lichvar 2016). Its habitat includes a variety of open, saltwater, or brackish wetlands. Seaside bulrush may also be found in disturbed areas like roadsides and ditches. In New York, confirmed ecological communities associated with seaside 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. Furthermore, seaside bulrush was not found during targeted searches (conducted on August 30, 2017) for this species in the Central Study Area. For these reasons, seaside bulrush has a low potential to occur in the Central Study Area. Seaside bulrush is not expected to occur within the I-481 South, I-481 East, and I-481 North 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 2016 National Wetland Plant List (Lichvar 2016). 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 (conducted on June 27 and 28, 2017) for this species in the Central Study Area. For these reasons, Midland sedge has a low potential to occur in the Central Study Area. Midland sedge is not expected to occur within the I-481 East or the I-481 North Study Areas.

\[5\] Surveys for this species will be conducted during its fruiting period (middle of June through the middle of August [NYNHP]) in 2019 to confirm its presence or absence within the I-481 South Study Area.
• **Saltmarsh Aster:** 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 2016 National Wetland Plant List (Lichvar 2016). In New York, 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 saltmarsh aster near Syracuse (NYNHP). In New York, confirmed ecological communities associated with 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. Additionally, saltmarsh aster was not found during targeted searches (conducted on August 30, 2017) for this species in the Central Study Area. Due to habitat requirements, saltmarsh aster has a low potential to occur within the Central Study Area. Saltmarsh aster is not expected to occur in the I-481 South, I-481 East, or I-481 North Study Areas.

• **Reflexed Sedge:** Reflexed sedge is a State-listed threatened plant that prefers successional areas with open tree canopies. Its habitat includes dry-mesic to mesic deciduous forests, forest openings and edges, and rocky summits and ledges. Reflexed sedge is known to grow along and in paths, forest roads, and abandoned railroad lines. It can grow in poor soil conditions or waste places as well. It is listed as a FACU (i.e., usually occurs in non-wetlands) plant by the 2016 National Wetland Plant List (Lichvar 2016). In New York, it has been documented throughout the Hudson Valley and in scattered locations within central New York. Confirmed ecological communities associated with reflexed sedge include acidic talus slope woodlands, Appalachian-oak-hickory forests, Appalachian oak-pine forests, red cedar rocky summits, rocky summit grasslands, and successional southern hardwoods (NYNHP). As described above, successional southern hardwoods communities occur within the Project Area. Furthermore, a known population of reflexed sedge exists in the vicinity of the Central and I-481 South Study Area. Reflexed sedge was not found during targeted searches (conducted on June 27 and 28, 2017). There are no records of reflexed sedge within the I-481 South, I-481 East, or I-481 North Study Areas. Therefore, this species has a low potential to occur within the I-481 East and I-481 North Study Areas.

• **Straight-leaf Pondweed:** Straight-leaf 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 (i.e., almost always occurs in wetlands) plant by the 2016 National Wetland Plant List (Lichvar 2016). New York is the eastern edge of this species’ range; it is found in central and eastern New York (NYNHP). In New York, straight-leaf pondweed does not have confirmed associated ecological communities (NYNHP). Straight-leaf 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,

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6 Surveys for this species will be conducted during its fruiting period (middle of May through the middle of July [NYNHP]) in 2019 to confirm its presence or absence within the I-481 South Study Area.
straight-leaf pondweed has the low potential to occur within wetlands and surface waters of the Central Study Area. Straight-leaf pondweed is not expected to occur in the I-481 South, I-481 East, or I-481 North Study Areas.

- **Glomerate Sedge**: Glomerate sedge is a State-listed endangered species that occurs in calcareous soils in meadows, thickets, open forests, moist woods, cemeteries, and ditches. It is not listed as a wetland plant by the 2016 National Wetland Plant List (Lichvar 2016). In New York, glomerate sedge does not have confirmed associated ecological communities associated with glomerate sedge are not documented by NYNHP. Within the Central Study Area, thicket, cemetery, and ditch habitats are present. Therefore, this plant has the potential to occur within the Central Study Area. Glomerate sedge is not documented or expected to occur in the I-481 South, I-481 East, or I-481 North Study Areas.

- **Marsh Arrow Grass**: Marsh arrow-grass is a State-listed threatened plant that occurs in 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 2016 National Wetland Plant List (Lichvar 2016). New York is located at the southern range-limit of for this species. Given its habitat requirements, the potential for marsh arrow grass to occur within the I-481 South Study Area would be limited to the narrow channel located in the vicinity of the proposed noise barrier (Noise Barrier 9). Marsh arrow grass is not documented or expected to occur in the Central, I-481 East, 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 2016 National Wetland Plant List (Lichvar 2016). None of the confirmed ecological communities listed above is present within the Project Area. 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.

- **Troublesome sedge**: Troublesome sedge is a State-listed threatened plant that prefers open habitats associated with dry fields, wet fields, and native grasslands. This species can often have a somewhat weedy habit where it occurs in fields, roadsides, bottomlands, open woods, on dry to wet, often heavy, calcareous soils. Less frequently it occurs on open edges of rivers, woodlands, talus slopes, and in waste areas. It is listed as a FAC (i.e., occurs in wetlands and non-wetlands) plant by the 2016 National Wetland Plant List (Lichvar 2016). In New York, confirmed ecological communities include alvar grassland, alvar pavement grassland, inland
calcareous lake shore, oak openings, and successional old field (NYNHP). Given its habitat
requirements, troublesome sedge has the potential to occur within the I-481 North Study Area.
However, it was not found during targeted surveys (conducted on August 30, 31, and
September 1, 2017). Troublesome sedge has not been documented or expected to occur in the
vicinity of the Central, I-481 East, or I-481 South Study Areas.

- **Inland Salt Pond:** Inland salt pond is a globally rare community identified by NYNHP as
  having the potential to occur as an artificial salt pond in a roadside park. Edinger et al. define
  this community as an “aquatic community of a small spring-fed pond in which the water is
  salty from flowing through salt beds in the aquifer. These salt springs occur in central New
  York and were once common around Onondaga Lake in Syracuse” (2014). Most of these
  springs were used for salt production, and thus can be severely degraded. Inland salt ponds
  are permanently flooded, but water levels in the pond seasonally fluctuate. No inland salt
  ponds were observed in the Central, I-481 South, I-481 East, or I-481 North Study Areas
during field inspections. Therefore, this habitat does not occur within the Project Area.

- **Maple-basswood Rich Mesic Forest:** Maple-basswood rich mesic forest is an uncommon
  community type documented by NYNHP near the I-481 South Study Area. NYNHP identified
  the potential for a high-quality occurrence of maple-basswood rich mesic forest to occur in a
  protected natural area outside of the study area. Edinger et al. (2014) defines the maple-basswood
  rich mesic forest community as a “species-rich northern hardwood forest that typically occurs
  on well-drained, moist soils of circumneutral pH.” Herbs common on calcareous bedrock are
  associated with this community. When bedrock is not exposed, surficial features such as seeps
  are often present (Edinger et al. 2014, NYNHP). No maple-basswood rich mesic forests
  were observed in the I-481 South Study Area. Furthermore, this community was not observed
  in the Central, I-481 East, or I-481 North Study Areas during field investigations. Therefore, this
  habitat does not occur within the Project Area.

- **Calcareous Cliff Community:** Calcareous cliff community is an uncommon community type
  documented by NYNHP near the I-481 South Study Area. NYNHP identified the potential
  for a high-quality occurrence of a calcareous cliff community to occur in a protected natural
  area outside of the study area. Edinger et al. (2014) define this community as a “community
  that occurs on vertical exposures of resistant, calcareous bedrock (such as limestone or
dolomite) or consolidated material; these cliffs often include ledges and small areas of talus.”
  There is minimal soil development in calcareous cliff communities, and they are often
  sparsely vegetated. Plant species vary depending on exposure and moisture conditions, which can
  range from shady and moist to sun-exposed and dry. Vegetation is generally found in cracks or
  crevices within the cliff wall or in shallow pockets of soil accumulated on ledges (Edinger et
  al. 2014, NYNHP).

Within the I-481 South Study Area, there are small cliffs within the right-of-way. However, the
I-81 northbound and southbound lanes have been cut through portions of these cliffs, thereby
disturbing their form. For this reason, within the I-481 South Study Area, these cliffs are
best characterized as a disturbed roadcut cliff/slope community (as defined by Edinger et
al. 2014) with southern successional forest as the predominant vegetation. Thus, calcareous
cliff communities are not present within the I-481 South Study Area. No calcareous cliff communities were observed in the Central, I-481 East, or I-481 North Study Areas during the inspections. Therefore, this habitat does not occur within the Project Area.

- **Calcareous Talus Slope Woodland:** Calcereous talus slope woodlands are an uncommon community documented by NYNHP near the I-481 South Study Area. NYNHP identified the potential for a high-quality occurrence of a calcareous talus slope woodland to occur in a protected natural area outside of the Study Area. This community is described as an open or closed canopy community that occurs on talus slopes composed of calcareous bedrock, including limestone, dolomite, and amphibolite. Rocky outcrops are common. The soil in calcareous talus slope woodlands is generally moist and loamy, and the soil usually has a pH greater than 5.5 (Edinger et al. 2014, NYNHP).

As described above, within the I-481 South Study Area, there are a number of small talus slopes within the right-of-way. However, the I-81 northbound and southbound lanes have been cut through portions of these slopes, thereby disturbing their form. For this reason, within the I-481 South Study Area, these cliffs are best described as a disturbed roadcut cliff/slope community (as defined by Edinger et al. 2014) with southern successional forest as the predominant vegetation. Thus, high quality calcareous talus slope woodland communities are not present within the I-481 South Study Area. No calcareous talus slope woodlands were observed in the Central, I-481 East, or I-481 North Study Areas during field inspections. Therefore, this habitat does not occur within the Project Area.

- **Limestone Woodland:** Limestone woodlands are an uncommon community documented by NYNHP as occurring near the I-481 South Study Area. NYNHP identified the potential for a high-quality occurrence of a limestone woodland in a protected natural area outside of the study area. Edinger et al. (2014) defines a limestone woodland community as a “conifer or hardwood community that occurs on shallow soils over limestone bedrock, and usually includes numerous small rock outcrops.” Examples of typical bedrock include limestone, dolomite, calcite, marble, amphibolite, and Potsdam sandstone. The tree canopy can either be open or closed, and the canopy is often composed of either one dominant tree species or a few codominant tree species (Edinger et al. 2014, NYNHP). Limestone woodlands were not observed within the I-481 South Study Area. Furthermore, no limestone woodlands were observed in the Central, I-481 East, or I-481 North Study Areas during field inspections. Therefore, this habitat does not occur within the Project Area.

- **Black Spruce-Tamarack Bog:** Black spruce-tamarack bog is a globally rare community identified by NYNHP as having the potential to occur within the I-481 North Study Area. This ecological community is a conifer forest that occurs on acidic peatlands in cool, poorly drained depressions. The characteristic trees are black spruce (*Picea mariana*) and tamarack (*Larix laricina*); in any one stand, either tree may be dominant or codominant. Canopy cover is quite variable, ranging from open canopy woodlands with as little as 20 percent cover of evenly spaced canopy trees to closed canopy forests with 80 to 90 percent cover. No black spruce-tamarack bogs were observed in the Project Area during field inspections.
6-4-8.2 NO BUILD ALTERNATIVE
The No Build Alternative would maintain the highway in its existing configuration with routine maintenance and ongoing repairs to ensure the safety of the traveling public. Land cover type and human activity would not differ from existing conditions. As such, there would be no effects related to general ecology and wildlife resources associated with the No Build Alternative.

6-4-8.3 ENVIRONMENTAL CONSEQUENCES OF THE VIADUCT ALTERNATIVE
The Viaduct Alternative would primarily involve effects within the Central Study Area; however, potential noise barriers would be constructed in the I-481 South, I-481 East, and I-481 North Study Areas as part of this alternative.

6-4-8.3.1 PERMANENT/OPERATIONAL EFFECTS
The Viaduct Alternative would alter approximately 340.37 acres of land to build a new transportation right-of-way, potential noise barriers, and to provide sufficient area around the viaduct for construction. The majority of permanent land use change would occur adjacent to the I-81 and I-690 interchange.

Terrestrial Resources
Ecological Communities
Under the Viaduct Alternative approximately 340.37 acres of total land would be impacted in the Central, I-481 East, and I-481 North Study Areas. As shown in Table 6-4-8-3, 302.49 acres of terrestrial cultural ecological communities, 25.46 acres of successional southern hardwoods, 4.45 acres of successional old field, 5.20 acres of successional shrubland, 2.76 acres of floodplain forest, and 0.01 acres of freshwater wetland would be permanently affected. No permanent effects would occur to open surface waters (see Section 6-4-7, Water Resources, for details on wetlands and surface waters) under the Viaduct Alternative (see Table 6-4-8-3). Within the Project Area, these communities represent fragmented habitat as they are limited to interchange areas and maintained transportation right-of-way and are generally characterized by disturbance and non-native or invasive species. Furthermore, these ecological communities are common throughout the region and are of low ecological value due to low species diversity, high level of anthropogenic activities, and dominance of non-native and invasive vegetation. In addition, as discussed in 6-4-8.3.2, Construction Effects below, disturbance in terrestrial cultural communities would result in conversion of one terrestrial cultural community type (e.g., urban vacant lot) to another terrestrial cultural community type (e.g., paved roads, maintained right-of-way). For this reason, disturbances within the terrestrial cultural community of the Project Area are considered a temporary effect. Therefore, the disturbance of the approximately 302.49 acres of currently disturbed ecological communities of the Project Area would not result in adverse permanent/operational effects to these ecological communities throughout the region.

As discussed in Appendix J-4 and J-5, a total of 9.84 acres of tree removal would occur for the Viaduct Alternative. This removal would occur in terrestrial ecological communities, successional southern hardwoods, and successional old fields for a total of 9.06 acres in the Central Study Area.
With respect to the I-481 East Study Area, a total of 0.03 acres of tree removal would occur for the Viaduct Alternative. This removal would occur in the mowed lawn with trees communities in the I-481 East Study Area as discussed in Appendix J-4 and J-5.

Table 6-4-8-3
Viaduct Alternative: Approximate Ecological Communities
Operational Effects within the Project Area

<table>
<thead>
<tr>
<th>Ecological Community</th>
<th>Approximate Existing Coverage (acres)</th>
<th>Approximate Roadway Footprint—Central Study Area (acres)</th>
<th>Approximate Noise Barrier Footprint—All Study Areas (acres)</th>
<th>Approximate Total Impacts (acres)</th>
<th>Approximate Total Unaffected Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terrestrial Cultural*</td>
<td>683.28</td>
<td>178.62</td>
<td>123.87</td>
<td>302.49</td>
<td>380.79</td>
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<td>Successional Southern Hardwoods</td>
<td>41.24</td>
<td>6.47</td>
<td>18.99</td>
<td>25.46</td>
<td>15.78</td>
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<td>Successional Old Field</td>
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<td>3.86</td>
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<td>Successional Shrubland</td>
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<td>0.28</td>
<td>4.92</td>
<td>5.20</td>
<td>1.54</td>
</tr>
<tr>
<td>Floodplain Forest</td>
<td>3.96</td>
<td>0.22</td>
<td>2.54</td>
<td>2.76</td>
<td>1.20</td>
</tr>
<tr>
<td>Freshwater Wetland**</td>
<td>5.28</td>
<td>0.0</td>
<td>0.01</td>
<td>0.01</td>
<td>5.27</td>
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<tr>
<td>Open Surface Waters**</td>
<td>1.93</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>1.93</td>
</tr>
<tr>
<td>** Estimated Total</td>
<td>756.66</td>
<td>186.18</td>
<td>154.19</td>
<td>340.37</td>
<td>416.29</td>
</tr>
</tbody>
</table>

Notes:
* Includes paved road/path, railroad, junkyard, urban vacant lot, mowed lawn, mowed lawn with trees, and garden communities. Ecological community observations were made during field investigations in 2016 and 2017.
** Wetlands and open surface waters calculations are based wetland delineation and land survey work conducted in 2017. The effects to wetlands and surface waters are detailed in Section 6-4-7, Water Resources.
Source: Ecological community names and descriptions are derived from “Ecological Communities of New York State” (Edinger et al. 2014). Note that the freshwater wetland adjacent area acreages are also included in the terrestrial ecological communities’ acreage calculations.

As discussed in Appendix J-4 and J-5, a total of 0.70 acres of tree removal would occur in the I-481 North Study Area for the Viaduct Alternative. This would include tree removal in 0.1 acres in floodplain forest, 0.19 acres in mowed lawn with trees, 0.02 acres in successional old field, and 0.39 acres in successional southern hardwood forest in the I-48 North Study Area.

The disturbed areas not occupied by transportation infrastructure would be revegetated with species indigenous to this region of New York to the greatest extent practicable in accordance with a landscape plan that would be developed for the Project. In addition to the use of native species as part of the planting palate (where reasonable), non-native and invasive species would not be included in the landscape plan. Therefore, the operation of the Viaduct Alternative would be in compliance with EO 13112, “Safeguarding the Nation from the Impacts of Invasive Species” and NYCRR Part 575 “Invasive Species Regulations.”

Wildlife

Because the Central Study Area is heavily urbanized and dominated by buildings, transportation infrastructure, and other impervious surfaces, little habitat to support wildlife other than extremely generalist, urban-adapted species is present. Levels of human activity and disturbance in the area are extremely high, which further degrades habitat conditions for wildlife and limits the wildlife
community to the most disturbance-tolerant species. The Viaduct Alternative would not result in higher levels of human activity and disturbance as compared to the No Build Alternative to the extent that there would be any adverse effects to wildlife in the area, or in the composition of the wildlife community. The small and degraded fragments of habitat within the Central Study Area would continue to support the same assemblage of species. The parkland and woodland fragment habitat of Oakwood Cemetery, which represents the most substantial habitat for native wildlife species in the Central Study Area, would not be directly or indirectly impacted by the Viaduct Alternative. Overall, no adverse permanent/operational effects to birds, mammals, reptiles, or amphibians would result from the Viaduct Alternative. Potential for permanent/operational effects to lake sturgeon are discussed below.

**Threatened or Endangered Species**

The effect determinations for Federally-listed species, having the potential to occur within the vicinity of the Viaduct Alternative Study Areas, were recorded in the Biological Evaluation (BE) and are summarized in Table 6-4-8-4 below. A discussion about the permanent/operational affects that the Viaduct Alternative will have on Federally-listed species is included below.

The effect determinations for New York State-listed species, having the potential to occur within the vicinity of the Viaduct Alternative Study Areas, is summarized in Table 6-4-8-4 below. A discussion about the permanent/operational affects that the Viaduct Alternative will have on State-listed species is included below.

Coordination among FHWA, USFWS and NYSDEC regarding State- and Federally-listed species will be ongoing.

**Central Study Area**

- **Indiana Bat**: As described above, Indiana bat is a State- and Federally-listed endangered species. According to the NYNHP database, the Central Study Area is located more than 0.5 miles from a known Indiana bat hibernaculum and more than 0.25 miles from a known Indiana bat roost tree (USFWS required buffers) and more than 2.5 miles from a known hibernaculum or roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, there is a total of approximately 9.11 acres of trees, some of which are over four inches in diameter at breast height (dbh) (minimum roosting size for Indiana bat), in the Central Study Area that are subject to removal for the Viaduct Alternative.

As discussed above and in Appendix J-5, any bridges in the Central Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.
### Table 6-4-8-4

Viaduct Alternative:

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>State Effect Determination</th>
<th>Federal Effect Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana bat</td>
<td><em>Myotis sodalis</em></td>
<td>Take Not Likely</td>
<td>May Affect, Not Likely to Adversely Affect</td>
</tr>
<tr>
<td>Northern long-eared bat</td>
<td><em>Myotis septentrionalis</em></td>
<td>Take Not Likely</td>
<td>May Affect, Not Likely to Adversely Affect</td>
</tr>
<tr>
<td>Eastern massasauga</td>
<td><em>Sistrurus catenatus</em></td>
<td>Take Not Likely</td>
<td>No Effect – No Habitat</td>
</tr>
<tr>
<td>American hart's-tongue fern</td>
<td><em>Asplenium scolopendrium var. americanum</em></td>
<td>Take Not Likely</td>
<td>No Effect</td>
</tr>
<tr>
<td>Peregrine falcon</td>
<td><em>Falco peregrinus</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Bald Eagle</td>
<td><em>Haliaeetus leucocephalus</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Least bittern</td>
<td><em>Ictonyx exilis</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Northern Harrier</td>
<td><em>Circus cyaneus</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Lake sturgeon</td>
<td><em>Acipenser fulvescens</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Seaside bulrush</td>
<td><em>Bolboschoenus maritimus ssp. paludosus</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Midland sedge</td>
<td><em>Carex mesochorea</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Saltmarsh aster</td>
<td><em>Symphyotrichum subulatum var. subulatum</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Reflexed sedge</td>
<td><em>Carex retroflexa</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Straight-leaf pondweed</td>
<td><em>Potamogeton strictifolius</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Glomerate Sedge</td>
<td><em>Carex aggregate</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Marsh Arrow Grass</td>
<td><em>Triglochin palustris</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Ohio goldenrod</td>
<td><em>Oligoneuron ohiense</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
<tr>
<td>Troublesome sedge</td>
<td><em>Carex molesta</em></td>
<td>Take Not Likely</td>
<td>N/A</td>
</tr>
</tbody>
</table>

A detailed assessment of the potential for permanent/operational effects to Indiana bats (e.g., removal or alteration of suitable habitat) is provided in the BE ([Appendix J-5](#)) and the NYSDEC Consultation Package ([Appendix J-4](#)).

- **Northern Long-eared Bat**: As described above, northern long-eared bat is a State- and Federally-listed threatened species. According to NYNHP database, the Central Study Area is located more than 0.5 miles from a known hibernaculum and more than 150 feet from a known northern long-eared bat roost tree (USFWS required buffers) and less than 5.0 miles from a known hibernaculum but more than 1.5 miles from a known northern long-eared bat roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in [Appendix J-4](#) and [J-5](#), there is a total of approximately 9.11 acres of trees, some of which are over three inches dbh (minimum roost size for northern long-eared bat), in the Central Study Area that are subject to removal for the Viaduct Alternative.

As discussed above and in [Appendix J-5](#), any bridges in the Central Study Area will be inspected in accordance with the FHWA New York Division 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible.
FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to northern long-eared bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga**: As described above, the eastern massasauga is a State-listed endangered and Federally-listed threatened species. The USFWS IPaC System results indicate that the eastern massasauga has the potential to occur within the Central Study Area. However, the Central Study Area is heavily urbanized and dominated by buildings, transportation infrastructure, and other impervious surfaces, and it does not contain the eastern massasauga’s preferred habitat of open wetlands with adjacent upland forest openings, old fields, and prairies. In addition, the NYNHP has no records of this species in the vicinity of the Central Study Area.

A detailed assessment of the potential for permanent/operational effects to eastern massasauga is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Peregrine Falcon**: The State-listed endangered peregrine falcon currently nests in an artificial nest box on a building adjacent to the Central Study Area, and thus, it has 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) by humans or predators. As such, the peregrine falcon would not be significantly adversely affected by the operation of the Viaduct Alternative.

A detailed assessment of the potential for permanent/operational effects to the peregrine falcon is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Bald Eagle**: As described above, the bald eagle is a State-listed threatened bird. Non-breeding bald eagles have been observed perching and foraging along the shoreline of Onondaga Lake. This area is on the periphery of the Central Study Area and therefore non-breeding bald eagles have the potential to occur there. There is no suitable habitat for breeding or non-breeding bald eagles in the I-481 South, I-481 East, and I-481 North Study Areas.

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 2007b). 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.

Within the Central Study Area, the Viaduct Alternative would include the construction and operation of a reconstructed system of ramps connecting I-81 to Park Street, State Route 370, and Old Liverpool Road. The closest portion of the project area to the lakeshore, where non-breeding bald eagles have the potential to occur, would be approximately 200 feet. Operation of the Viaduct Alternative would not bring motor vehicle traffic any closer to the Onondaga Lake shoreline than at present or increase the already high 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 2007b). Overall, 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.”

- **Lake Sturgeon:** As described above, the State-listed threatened lake sturgeon is present in Onondaga Lake located in the vicinity of the Central Study Area. 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 (136.8 acres) would decrease by 9.4 acres, or 6.4 percent, with corresponding reductions in stormwater runoff volumes and pollutant loadings. The new stormwater system would also include 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 Study Area, the total highway lane miles in the Study Area would increase by 18 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. According to United States Geological Survey (USGS) monitoring data, the concentration of chloride in Onondaga Creek, in 2012, ranged from 259 to 833 mg/L, which was above the USEPA chronic toxicity level for streams (230 mg/L), but below the acute toxicity value (860 mg/L). Based on the ambient chloride concentrations in
the Creek, a 0.4 to 1.3 percent increase in chloride loading would not be expected to raise the chloride level above the acute toxicity threshold. 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 Study Area, which could lead to a reduction in chloride applications, and a benefit to water quality not indicated by the analyses. Therefore, the operation of the Viaduct Alternative would have an overall beneficial effect on Onondaga Creek when compared to the No Build Alternative.

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 right-of-way. 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 Study Area 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.

A detailed assessment of the potential for permanent/operational effects to the lake sturgeon is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Seaside Bulrush:** The State-listed threatened seaside 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 seaside 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 seaside 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, seaside bulrush was not found during targeted surveys for this species in the Central Study Area. Therefore, no adverse effects to seaside bulrush would result from the operation of the Viaduct Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to the seaside bulrush is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Midland Sedge:** The State-listed threatened Midland sedge has been recorded by NYNHP in terrestrial cultural ecological communities in the vicinity of the Central Study Area. However, as described above, Midland sedge was not found during targeted surveys for this species in the Central Study Area. Therefore, no adverse effects to midland sedge would result from the operation of the Viaduct Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to the Midland sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Saltmarsh Aster:** Saltmarsh aster is a State-listed threatened species that 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 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, saltmarsh aster was not found during targeted surveys for this species in the Central Study Area. Therefore, no adverse effects to saltmarsh aster would result from the operation of the Viaduct Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to the saltmarsh aster is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Reflexed Sedge:** The State-listed threatened reflexed sedge has been recorded by NYNHP in terrestrial cultural ecological communities in the vicinity of the Central Study Area. However, as described above, reflexed sedge was not found during targeted surveys for this species in the Central Study Area. Therefore, no adverse effects to reflexed sedge would result from the operation of the Viaduct Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to the reflexed sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Straight-leaved 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, no adverse effects to straight-leaved pondweed would result from the operation of the Viaduct Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to the straight-leaved pondweed is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Glomerate Sedge:** The State-listed endangered glomerate sedge has been recorded by NYNHP in the vicinity of the Central Study Area. Surveys for glomerate sedge would be conducted in Summer 2019. Should glomerate sedge be found during the survey, then a transplanting and/or propagation program would be developed in consultation with NYSDEC at that time. With these measures in place, no significant adverse effects would occur to glomerate sedge as a result of the operation of the Viaduct Alternative. A detailed assessment of the potential for permanent/operational effects to glomerate sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Inland Salt Pond:** The inland salt pond ecological community has been documented by NYNHP as occurring in the vicinity of the Central Study Area. However, based on field surveys this community is not present within Central Study Area. Therefore, no adverse effects to this ecological community would result from operation of the Viaduct Alternative.

*I-481 South Study Area*

- **Indiana Bat:** As described above, Indiana bat is a State- and Federally-listed endangered species. According to the NYNHP database, the I-481 South Study Area is located more than 0.5 miles from a known Indiana bat hibernaculum but less than 0.25 miles from a known Indiana bat roost tree (USFWS required buffers). The I-481 South Study Area is located within
2.5 miles from a known hibernaculum, and less than 2.5 miles of a known Indiana bat roost tree (NYSDEC required buffers). As discussed in Appendix J-5, trees would not be removed in the I-481 South Study Area for the Viaduct Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 South Study Area will 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. If any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted if any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to Indiana Bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-eared Bat**: As described above, northern long-eared bat is a State- and Federally-listed threatened species. According to NYNHP database, the I-481 South Study Area is located more than 0.5 miles from a known northern long-eared bat hibernaculum and more than 150 feet from a known northern long-eared bat roost tree (USFWS required buffer). The I-481 South Study Area is more than 1.5 miles from a known northern long-eared bat roost tree, but it is less than 5.0 miles from a known northern long-eared bat hibernaculum (NYSDEC required buffers). As discussed in Appendix J-5, trees would not be removed in the I-481 South Study Area for the Viaduct Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 South Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern long-eared bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to northern long-eared bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga**: As described above, the eastern massasauga is State-listed endangered and Federally-listed threatened species. The IPaC system results indicated that the eastern massasauga has the potential to occur within the I-481 South Study Area. However, the I-481 South Study Area is heavily urbanized and dominated by buildings, transportation infrastructure, and other impervious surfaces, and it does not contain suitable habitat of open
wetlands with adjacent upland forest openings, old fields, and prairies. In addition, the NYNHP has no records of eastern massasaugas in the vicinity of the I-481 South Study Area. A detailed assessment of the potential for permanent/operational effects to eastern massasauga is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **American Hart’s-Tongue Fern**: The American hart’s-tongue fern is a Federal and State-listed threatened perennial and evergreen fern. The IPaC System results indicate that the American hart’s-tongue fern has the potential to occur within the I-481 South Study Area. However, the upland ecological communities of the study area are associated with maintained right-of-ways, successional old fields and shrublands, and successional forests located along the edges of the right-of-way. All of these ecological communities are associated with disturbance and do not contain the deep shade and cool, moist, rocky, calcareous substrates of its preferred habitat. As described in Appendix J-4 and J-5, remnants of low quality rocky (i.e., roadcut cliff/slope) habitat are present within the I-481 South Study Area. As a conservative measure, targeted surveys for American hart’s-tongue fern were conducted within portions of the I-481 South Study Area that contain habitat with the potential to support this species. No American hart’s-tongue fern individuals were found. Therefore, no adverse effects to American hart’s-tongue fern would result from the operation of the Viaduct Alternative in the I-481 South Study Area.

A detailed assessment of the potential for permanent/operational effects to the American hart’s-tongue fern is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Midland Sedge**: The State-listed threatened Midland sedge has been recorded by NYNHP in terrestrial cultural ecological communities in the vicinity of the I-481 South Study Area. Surveys for midland sedge would be conducted in Summer 2019. Should midland sedge be found during the survey, then a protection, transplanting, and/or propagation program would be developed in consultation with NYSDEC at that time. Therefore, no adverse effects to midland sedge would result from the operation of the Viaduct Alternative in the I-481 South Study Area. A detailed assessment of the potential for permanent/operational effects to the Midland sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Reflexed Sedge**: The State-listed threatened reflexed sedge has been recorded by NYNHP in terrestrial cultural ecological communities in the vicinity of the I-481 South Study Area. Surveys for reflexed sedge would be conducted in Summer 2019. Should reflexed sedge be found during the survey, then a protection, transplanting, and/or propagation program would be developed in consultation with NYSDEC at that time. Therefore, no adverse effects to reflexed sedge would result from the operation of the Viaduct Alternative in the I-481 South Study Area. A detailed assessment of the potential for permanent/operational effects to the reflexed sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Marsh Arrow Grass**: The State-listed threatened marsh arrow grass has been recorded by NYNHP in the vicinity of the I-481 South Study Area. Given its habitat requirements, the potential for marsh arrow grass to occur within the I-481 South Study Area would be limited.
to a narrow channel located in the vicinity of the proposed noise barrier (Noise Barrier 9). Surveys for marsh arrow grass would be conducted in Summer 2019. Should marsh arrow grass be found during the survey, then a transplanting and/or propagation program would be developed in consultation with NYSDEC at that time. Therefore, no adverse effects to marsh arrow grass would result from the operation of the Viaduct Alternative in the I-481 South Study Area.

- **Maple-Basswood Rich Mesic Forest:** As previously described, the maple-basswood rich mesic forest ecological community has been documented by NYNHP as occurring near the I-481 South Study Area. However, as also described, this community is not present within the I-481 South Study Area. Therefore, no adverse effects to this ecological community would result from the operation of the Viaduct Alternative in the I-481 South Study Area.

- **Calcareaous Cliff Community:** As previously described, the calcareaous cliff community has been documented by NYNHP as occurring near the I-481 South Study Area. However, as also previously described, remnant cliff communities of the I-481 South Study Area are better characterized as roadcut cliff/slope communities that are disturbed and characterized by a southern successional forest cover type. Therefore, no adverse effects to this ecological community would result from the operation of the Viaduct Alternative in the I-481 South Study Area.

- **Calcareaous Talus Slope Woodland:** As previously described, the calcareaous talus slope woodland community has been documented by NYNHP as occurring near the I-481 South Study Area. However, as also previously described, remnant talus slopes of the I-481 South Study Area are better characterized as roadcut cliff/slope communities in the I-481 South Study Area that are disturbed and characterized by a southern successional forest cover type. Therefore, no adverse effects to this ecological community would result from the operation of the Viaduct Alternative in the I-481 South Study Area.

- **Limestone Woodland:** As previously described, the limestone woodland ecological community has been documented by NYNHP as occurring near the I-481 South Study Area. However, this community is not present within the I-481 South Study Area. Therefore, no adverse effects to this ecological community would result from the operation of the Viaduct Alternative in the I-481 South Study Area.

**I-481 East Study Area**

**Indiana Bat:** As previously described, Indiana bat is a State- and Federally-listed endangered species. According to the NYNHP database, the I-481 East Study Area is located more than 0.5 miles from a known Indiana bat hibernaculum and more than 0.25 miles from a known Indiana bat roost tree (USFWS required buffers). The I-481 East Study Area is also located less than 2.5 miles from a known hibernaculum and less than 2.5 miles of a known Indiana bat roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in **Appendix J-4 and J-5**, a total of 0.03 acres of trees (i.e., mowed lawn with trees), including trees measuring 4 inches in dbh and greater, are subject to removal in the I-481 East Study Area as part of the Viaduct Alternative.
As discussed above and in Appendix J-5, any bridges in the I-481 East Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to Indiana bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-eared Bat:** As described above, northern long-eared bat is a State- and Federally-listed threatened species. According to NYNHP, the I-481 East Study Area is located more than 0.5 miles from a known northern long-eared bat hibernaculum and more than 150 feet from a known northern long-eared bat roost tree (USFWS required buffer). The I-481 East Study Area is also more than 1.5 miles from a known northern long-eared bat roost tree, but less than 5.0 miles from a known northern long-eared bat hibernaculum (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, there is a total of 0.03 acres of trees (i.e., mowed lawn with trees), including trees measuring 4 inches in dbh and greater, that are subject to removal in the I-481 East Study Area for the Viaduct Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 East Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to northern long-eared bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

**Eastern Massasauga:** The eastern massasauga is a State-listed endangered and Federally-listed threatened species. The IPaC system results indicated that the eastern massasauga has the potential to occur within the I-481 East Study Area. The NYNHP has no records of eastern massasaugas in the vicinity of the I-481 East Study Area. In addition, the I-481 East Study Area lacks fens, marshes, and wet prairies that are needed to support the eastern massasauga.
A detailed assessment of the potential for permanent/operational effects to eastern massasauga is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Ohio goldenrod**: As described above, the State-listed threatened Ohio goldenrod has been recorded by NYNHP in the vicinity of the I-481 East Study Area. However, Ohio goldenrod was not found during targeted surveys for this species in the I-481 East Study Area. Therefore, no adverse effects to Ohio goldenrod would result from the operation of the Viaduct Alternative in the I-481 East Study Area. A detailed assessment of the potential for permanent/operational effects to Ohio goldenrod is provided in the NYSDEC Consultation Package (Appendix J-4).

**I-481 North Study Area**

- **Indiana Bat**: As described above, Indiana bat is a State- and Federally-listed endangered species. According to the NYNHP, the I-481 North Study Area is located more than 0.5 miles from a known Indiana bat hibernaculum and more than 0.25 miles from a known Indiana bat roost tree (USFWS required buffers) and more than 2.5 miles from a known hibernaculum or roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, a total of approximately 0.70 acres of trees (i.e., floodplain forest [0.10 acres], mowed lawn with trees [0.19 acres], successional old field [0.02 acres], and successional southern hardwoods [0.39 acres]), including trees measuring 4 inches in dbh and greater, are subject to removal in the I-481 North Study Area for the Viaduct Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 North Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to Indiana bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-eared Bat**: As described above, northern long-eared bat is a State- and Federally-listed threatened species. According to NYNHP, the I-481 North Study Area is located more than 0.5 miles from a known hibernaculum and more than 150 feet from a known northern long-eared bat roost tree (USFWS required buffers) and more than 5.0 miles from a known hibernaculum and 1.5 miles from a known northern long-eared bat roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, a total of 0.70 acres of trees (i.e., floodplain forest [0.10 acres], mowed lawn with trees [0.19 acres], successional old field [0.02
acres], and successional southern hardwoods [0.39 acres]), including trees measuring 4 inches in dbh and greater, are subject to removal in the I-481 North Study Area as part of the construction of potential noise barriers under the Viaduct Alternative. No new roadway would be built in this study area as part of the Viaduct Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 North Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to northern long-eared bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga:** As described above, the eastern massasauga is State-listed endangered and Federally-listed threatened species. The IPaC system results indicated that the eastern massasauga has the potential to occur within the I-481 North Study Area. The NYNHP has a record of eastern massasauga occurring adjacent to the I-481 North Study Area. Mud Creek, on the eastern edge of the I-481 North Study Area, has a hydrological connection to known eastern massasauga habitat. There is no habitat within the I-481 North Study Area that is suitable for supporting eastern massasaugas. Nevertheless, as a protective measure to avoid any potential for direct impacts to any 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.

A detailed assessment of the potential for permanent/operational effects to eastern massasauga is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Least Bittern:** As described above, the State-listed threatened least bittern has been documented by NYNHP as nesting within 600 feet of the I-481 North Study Area. Least bittern 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. Wetland habitat within and around the I-481 North Study Area is limited to drainage ditches, creeks, and common-reed dominated and forested wetlands along I-481 and within the quadrants of the I-81 and I-481 highway interchange and is not considered ideal habitat for least bitterns. However, given the proximity of the known least bittern nesting location to the I-481 North Study Area, coordination with the NYSDEC regarding protection measures would be conducted to avoid potential adverse effects to this species.
A detailed assessment of the potential for permanent/operational effects to the least bittern is provided in the NYSDEC Consultation Package (Appendix J-4.)

- **Northern Harrier**: NYNHP has a record of northern harriers breeding within 1.5 miles of the I-481 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. For this reason, operation of the Viaduct Alternative would not have significant adverse impacts to northern harriers.

- **Troublesome Sedge**: As described above, the State-listed threatened troublesome sedge has been recorded by NYNHP in vicinity of the I-481 North Study Area. However, troublesome sedge was not found during targeted surveys for this species in the I-481 North Study Area. Therefore, no adverse effects to troublesome sedge would result from the operation of the Viaduct Alternative in the I-481 North Study Area. A detailed assessment of the potential for permanent/operational effects to troublesome sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Black Spruce-Tamarack Bog**: As described above, the black spruce-tamarack bog community has been documented by NYNHP as occurring in the vicinity of the I-481 North Study Area. However, as described above, this community is not present within the I-481 North Study Area. Therefore, no adverse effects to this ecological community would result from the operation of the Viaduct Alternative for the I-481 North Study Area.

### 6-4-8.3.2 CONSTRUCTION EFFECTS

Construction effects are temporary and short term in nature, such as temporary fill in freshwater wetlands for construction access, associated temporary work related to roadway and bridge improvements, and lighting and noise disturbances to wildlife from construction equipment. This subsection provides a conservative assessment of potential temporary construction effects to natural resources within the Project Area; the effects presented herein could be reduced as the design advances.
Terrestrial Resources

Ecological Communities

As discussed in Chapter 4, Construction Means and Methods, the contractor would be responsible for identifying construction staging sites. It is expected that the contractor would seek out underutilized sites, such as vacant parcels or land currently used for surface parking, for staging. As described above, the Central Study Area contains disturbed habitats including terrestrial cultural and successional southern hardwoods ecological communities. With respect to terrestrial cultural communities (302.49 acres), disturbance in these habitats in the Central Study Area for roadway and potential noise barrier construction would result in conversion of one terrestrial cultural community type (e.g., urban vacant lot) to another terrestrial cultural community type (e.g., paved roads, maintained right-of-way) and, for this reason, is considered a temporary effect. Temporary staging sites would be located in similar habitats close to the construction zone in the Central Study Area. For potential noise barrier construction in the I-481 East and I-481 North study areas, the areas contain disturbed habitats including terrestrial cultural, successional old field, successional shrubland, successional southern hardwood, and floodplain forest ecological communities. Thus, temporary staging sites would likely be located in such habitats close to the construction zone, when practicable.

During construction, measures (i.e., cleaning of construction equipment and proper transportation/disposal of soils containing invasive species) as per Section 4.8.3 “Invasive Species Control Methods for Maintenance and Construction” (September 10, 2004) of the TEM would be implemented to avoid the spread of invasive plant species that may occur in the disturbed ecological communities of these sites. Following construction, these sites would be restored to existing or improved conditions. Restoration would involve revegetation of these temporarily disturbed sites as part a Landscape Restoration Plan. Thus, it is not anticipated that the temporary loss of terrestrial cultural and successional southern hardwoods ecological communities due to construction staging would result in adverse effects under the Viaduct Alternative. Furthermore, the construction measures described above would meet the intent of EO 13112 “Safeguarding the Nation from the Impacts of Invasive Species” and NYCRR Part 575 “Invasive Species Regulations” under the Viaduct Alternative.

Wildlife

Clearing of terrestrial cultural ecological communities would occur as part of the construction of the Viaduct Alternative (see Table 6-4-8-3). As described above, these habitats are widespread and common in the region, and the use of these areas for construction staging would represent a negligible reduction in the amount of habitat available to wildlife in the area. Any reductions in the number of individuals inhabiting these communities would not impact the size or viability of their local populations and would not change the assemblage of wildlife species present. Overall, land disturbance required to construct the Viaduct Alternative would not have significant adverse effects to wildlife at the individual, population, or community level. Tree clearing would be conducted during the winter to avoid impacts to Indiana and northern long-eared bats (see below), and therefore, there would also be minimal potential for direct effects to tree-nesting birds or their nests. Because construction and operation of the Viaduct Alternative would not result in the direct take of birds, it would be in compliance with the Migratory Bird Treaty Act.

Noises generated during the construction (e.g., heavy machinery or generators) of the Viaduct Alternative would not be likely to have long-lasting or significant effects to wildlife in the Central
Study Area due to high existing levels of noise and other human disturbance from automobile traffic and other sources. As discussed in Section 6-4-6, Noise, construction may result in noticeable increases in noise levels in most of the Central Study Area, but these effects would be temporary, shortened by the proposed accelerated construction schedule, and abated by several measures. Wildlife communities in the study area have been established under noisy existing conditions, and as such, are inherently disturbance-tolerant (cf. Bonier et al. 2007, Francis et al. 2009). Visual and auditory disturbances during construction would potentially displace some individuals of some species from the immediate vicinity of the site of activity; however, overall, construction activities would not be expected to increase levels of disturbance to the extent that there would be alterations in species assemblages or otherwise negative changes to wildlife communities in the surrounding area relative to the present state. Individuals that would potentially briefly relocate in response to the construction noise could easily acquire suitable alternative habitat given that comparable areas of terrestrial cultural and successional southern hardwoods ecological communities are abundant in the area. Any such relocation away from the area of disturbance would not be expected to adversely affect these individuals in the long term (Gill et al. 2001). Overall, noises generated during construction would not have adverse effects to wildlife within the Central Study Area.

**Threatened or Endangered Species**

The effect determinations for Federally-listed species, having the potential to occur within the vicinity of the Viaduct Alternative Study Areas, were recorded in the BE (see Appendix J-5) and are summarized in Table 6-4-8-4 above. A discussion about the temporary affects that construction of the Viaduct Alternative would have on Federally-listed species is included below.

The effect determinations for New York State-listed species, having the potential to occur within the vicinity of the Viaduct Alternative Study Areas, is summarized in the NYSDEC Consultation Package (see Appendix J-4) and summarized in Table 6-4-8-4 above. A discussion about the temporary effects that construction of the Viaduct Alternative would have on State-listed species is included below.

*Central Study Area*

- **Indiana Bat:** As described above, Indiana bats have a low potential to occur within the Central Study Area and are not expected to be affected by construction of the Viaduct Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when Indiana bats would not be present.

As previously discussed, any bridges in the Central Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted during construction to the greatest extent possible.
A detailed assessment of the potential for construction effects to Indiana bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-Eared Bat:** As described above, northern long-eared bats have a low potential to occur within the Central Study Area and are not expected to be affected by construction of the Viaduct Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when northern long-eared bats would not be present.

As previously discussed, any bridges in the Central Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted during construction to the greatest extent possible. For example, bridge demolition may be limited to the winter hibernation period (November 1 to March 31) when northern long-eared bats would not be present. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to northern long-eared bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga:** As described above, the eastern massasauga does not have the potential to occur within the Central Study Area and is therefore not expected to be affected by construction of the Viaduct Alternative.

- **Peregrine Falcon:** As described above, the 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. 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.

A detailed assessment of the potential for construction effects to the peregrine falcon is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Bald Eagle:** As previously discussed, non-breeding 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 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 2007b). 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 of the Viaduct Alternative would include the reconstruction of a system of ramps connecting I-81 to Park Street, State Route 370, and Old Liverpool Road. 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 2007b) 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 much lower sensitivity of bald eagles to disturbance during the non-breeding period compared to the nesting period (USFWS 2007b) 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. Given that paved roads with heavy traffic are already present near the shoreline in this area, construction of the Viaduct Alternative would not eliminate high quality habitat, introduce human disturbance to a previously disturbance-free area, 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 2007b). Overall, construction 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.”

- **Lake Sturgeon:** Lake sturgeon is known to occur in Onondaga Lake and has the potential to occur in the surface waters of Onondaga Creek and Ley Creek. As described in Section 6-4-7, Water Resources, 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 effects to surface water quality within the study areas.

A detailed assessment of the potential for construction effects to the lake sturgeon is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Seaside Bulrush:** As described above, the State-listed threatened seaside bulrush has been recorded by NYNHP within the vicinity of the Central Study Area. However, seaside bulrush was not found during targeted surveys for this species within the Central Study Area. Therefore, seaside bulrush would not be adversely affected during the construction of the Viaduct Alternative in the Central Study Area.

- **Midland Sedge:** As described above, the State-listed threatened Midland sedge has been recorded by NYNHP in the Central Study Area. However, Midland sedge was not found during targeted surveys for this species within the Central Study Area. Therefore, midland sedge would not be adversely affected during the construction of the Viaduct Alternative in the Central Study Area.

- **Saltmarsh Aster:** As described above, the State-listed threatened saltmarsh aster has been recorded by NYNHP within the vicinity of the Central Study Area. However, saltmarsh aster was not found during targeted surveys for this species within the Central Study Area. Therefore, saltmarsh aster would not be adversely affected during the construction of the Viaduct Alternative in the Central Study Area.

- **Reflexed Sedge:** The State-listed threatened reflexed sedge has been recorded by NYNHP in the Central Study Area. However, reflexed sedge was not found during targeted surveys for this species within the Central Study Area. Therefore, reflexed sedge would not be adversely affected during the construction of the Viaduct Alternative in the Central Study Area.

- **Straight-Leaf Pondweed:** The State-listed endangered straight-leaf pondweed has been recorded by NYNHP in the Central Study Area. However, straight-leaf pondweed was not found during targeted surveys for this species within the Central Study Area. Therefore, straight-leaf pondweed would not be adversely affected during the construction of the Viaduct Alternative in the Central Study Area.

- **Glomerate Sedge:** The State-listed endangered glomerate sedge has been recorded by NYNHP in the vicinity of the Central Study Area. Surveys for this species would be conducted in Summer 2019. Should glomerate sedge be found in the Central Study Area, a protection, transplanting, and/or propagation program would be implemented in consultation with
NYSDEC. Therefore, glomerate sedge would not be adversely affected during the construction of the Viaduct Alternative.

- **Inland Salt Pond**: The inland salt pond ecological community is not present within the Central Study Area. Therefore, this ecological community would not be adversely affected during the construction of the Viaduct Alternative.

**I-481 South Study Area**

- **Indiana Bat**: As described above, Indiana bats have a low potential to occur within the I-481 South Study Area and are not expected to be affected by construction of the Viaduct Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when Indiana bats would not be present.

Any bridges in the I-481 South Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to Indiana bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-Eared Bat**: As described above, northern long-eared bats have a low potential to occur within the I-481 South Study Area and are not expected to be affected by construction of the Viaduct Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when northern long-eared bats would not be present.

Any bridges in the I-481 South Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. If any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted if any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to northern long-eared bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).
• **Eastern Massasauga:** As described above, the eastern massasauga does not have the potential to occur within the I-481 South Study Area and is not expected to be affected by construction of the Viaduct Alternative.

• **American Hart’s-Tongue Fern:** As described above, targeted surveys for American hart’s-tongue fern were conducted within portions of the I-481 South Study Area that contains habitat with the potential to support this species. No American hart’s-tongue fern individuals were found. Therefore, American hart’s-tongue fern would not be adversely affected during the construction of the Viaduct Alternative in the I-481 South Study Area.

A detailed assessment of the potential for permanent/operational effects to the American hart’s-tongue fern (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE ([Appendix J-5](#)) and the NYSDEC Consultation Package ([Appendix J-4](#)).

• **Midland Sedge:** As described above, the State-listed threatened Midland sedge has been recorded by NYNHP in the I-481 South Study Area. Surveys for this species would be conducted in Summer 2019 in the I-481 South Study Area. Should midland sedge be found in the I-481 South Study Area, a protection, transplanting, and/or propagation program would be implemented in consultation with NYSDEC. Therefore, midland sedge would not be adversely affected during the construction of the Viaduct Alternative in the I-481 South Study Area.

• **Reflexed Sedge:** The State-listed threatened reflexed sedge has been recorded by NYNHP in the I-481 South Study Area. Surveys for this species would be conducted in Summer 2019 in the I-481 South Study Area. Should reflexed sedge be found in the I-481 South Study Area, a protection, transplanting, and/or propagation program would be implemented in consultation with NYSDEC. Therefore, reflexed sedge would not be adversely affected during the construction of the Viaduct Alternative in the I-481 South Study Area.

• **Marsh Arrow Grass:** The State-listed threatened marsh arrow grass has been recorded by NYNHP in the vicinity of the I-481 South Study Area. Surveys for this species would be conducted in Summer 2019 in the I-481 South Study Area. Should marsh arrow grass be found in the I-481 South Study Area, a transplanting and/or propagation program would be implemented in consultation with NYSDEC. Therefore, marsh arrow grass would not be adversely affected during the construction of the Viaduct Alternative in the I-481 South Study Area.

• **Maple-basswood Rich Mesic Forest:** The maple-basswood rich mesic forest ecological community is not present within the I-481 South Study Area. Therefore, this community would not be adversely affected by construction of the Viaduct Alternative.

• **Calcareous Cliff Community:** Low quality roadside rockcut cliff/slope ecological communities are present within the I-481 South Study Area. As described above, these communities are disturbed and vegetation associated with southern successional forest predominates. Therefore, high quality calcareous cliff community would not be adversely affected by construction of the Viaduct Alternative.

• **Calcareous Talus Slope Woodland:** Low quality roadside rockcut cliff/slope ecological communities are present within the I-481 South Study Area. As described above, these
communities are disturbed and vegetation associated with southern successional forest predominates. Therefore, high quality calcareous talus slope woodland ecological communities would not be adversely affected by construction of the Viaduct Alternative.

- **Limestone Woodland:** The limestone woodland ecological community is not present within the I-481 South Study Area. Therefore, this community would not be adversely affected by construction of the Viaduct Alternative.

**I-481 East Study Area**

- **Indiana Bat:** Indiana bats have a low potential to occur within the I-481 East Study Area and are not expected to be affected by construction of the Viaduct Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when Indiana bats would not be present.

Any bridges in the I-481 East Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to Indiana bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-Eared Bat:** As described above, northern long-eared bats have a low potential to occur within the I-481 East Study Area and are not expected to be affected by construction of the Viaduct Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when northern long-eared bats would not be present.

Any bridges in the I-481 East Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to northern long-eared bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).
Eastern Massasauga: As described above, the eastern massasauga does not have the potential to occur within the I-481 East Study Area and is not expected to be affected by construction of the Viaduct Alternative.

Ohio goldenrod: The State-listed threatened Ohio goldenrod has been recorded by NYNHP near 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. As described above, Ohio goldenrod was not found during targeted surveys for this species in the I-481 East Study Area. Therefore, Ohio goldenrod would not be adversely affected during the construction of the Viaduct Alternative in the I-481 East Study Area.

I-481 North Study Area

Indiana Bat: As described above, Indiana bats have a low potential to occur within the I-481 North Study Area and are not expected to be affected by construction of the Viaduct Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when Indiana bats would not be present.

Any bridges in the I-481 North Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to Indiana bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

Northern Long-Eared Bat: As described above, northern long-eared bats have a low potential to occur within the I-481 North Study Area and are not expected to be affected by construction of the Viaduct Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when northern long-eared bats would not be present.

Any bridges in the I-481 North Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible.
FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to northern long-eared bat (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga:** Eastern massasauga is not expected to occur in the I-481 North Study Area because its preferred habitats do not occur within the I-481 North Study Area. 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.

A detailed assessment of the potential for construction effects eastern massasauga (e.g., removal or alteration of suitable habitat, noise disturbance) is provided in the BE (Appendix J-5) and the NYSDEC Consultation Package (Appendix J-4).

- **Least Bittern:** As described above, the State-listed threatened least bittern has been documented by NYNHP as nesting within 600 feet of the I-481 North Study Area. Least bittern 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, however prefers 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 forested wetlands along I-481 and within the quadrants of the I-81 and I-481 highway interchange and is not considered ideal habitat for least bitterns. However, given the proximity of the known least bittern nesting location to the I-481 North Study Area, coordination with the NYSDEC regarding protection measures would be conducted to avoid potential adverse effects to this species.

A detailed assessment of the potential for permanent/operational effects to the least bittern is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Northern Harrier:** The NYNHP has a record of northern harriers breeding within 1.5 miles of the I-481 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). As previously discussed, 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. For this reason, construction of the Viaduct Alternative would not have significant adverse impacts to northern harriers or their habitat.

- **Troublesome Sedge**: As described above, the State-listed threatened troublesome sedge has been recorded by NYNHP in vicinity of the I-481 North Study Area. However, troublesome sedge was not found during targeted surveys for this species in the I-481 North Study Area. Therefore, troublesome sedge would not be adversely affected during the construction of the Viaduct Alternative in the I-481 North Study Area. A detailed assessment of the potential for permanent/operational effects to troublesome sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Black Spruce-Tamarack Bog**: The black spruce-tamarack ecological community is not present within the I-481 North Study Area. Therefore, this community would not be adversely affected by construction of the Viaduct Alternative.

### 6-4-8.3.3 INDIRECT EFFECTS

The Viaduct Alternative would result in the replacement of an existing use in-kind, and therefore, would not result in any substantial induced development in ecological communities of the Project Area. As such, the Viaduct Alternative would not indirectly result in indirect effects to the general ecology and wildlife of the Project Area. Therefore, no indirect effects would result from the Viaduct Alternative.

### 6-4-8.3.4 CUMULATIVE EFFECTS

The Viaduct Alternative has the potential to be constructed simultaneously with private and public development projects on vacant or underused land near the Project Area. However, the projects would not be constructed in areas of significant ecological communities nor would they be expected to result in significant adverse impacts on wildlife including Federally- and State-listed species. Therefore, the Viaduct Alternative would not result in any adverse cumulative effects to general ecology and wildlife resources.

### 6-4-8.3.5 MITIGATION

With respect to ecological communities, areas disturbed during construction that are not part of the permanent project footprint would be revegetated to the greatest extent practicable with plant species indigenous to this region of New York in accordance with a Landscape Restoration Plan.

Mitigation may be required for tree cutting in Indiana and northern long-eared bat habitat. As design advances and scheduling for tree cutting is planned, any required mitigation would be coordinated with FHWA, USFWS, and NYSDEC.
6-4-8.4 ENVIRONMENTAL CONSEQUENCES OF THE COMMUNITY GRID ALTERNATIVE

6-4-8.4.1 PERMANENT/OPERATIONAL EFFECTS

The Community Grid Alternative would alter approximately 827.63 acres of land in the Project Area.

Terrestrial Resources

Ecological Communities

The Community Grid Alternative would affect the following communities (acreages approximated): terrestrial cultural communities (640.43 acres), successional southern hardwoods (63.78 acres), successional old fields (58.07 acres), successional shrublands (34.88 acres), floodplain forests (29.78 acres), freshwater wetlands (0.62 acres), and open surface waters (0.07 acres) in the Project Area (see Table 6-4-8-5). Generally, these communities represent fragmented habitat as they are limited to interchange areas, maintained right-of-way, and edges of the right-of-way and are characterized by disturbance and non-native or invasive species. One exception is the floodplain forest, which is a community that consists of several native plant species. However, the portion of this community to be affected is characterized as edge habitat and is predominantly dominated by invasive species, particularly common buckthorn in the understory. Furthermore, all of the ecological communities, including floodplain forest, are common to the area. Within the Project Area, they are of low ecological value due to low species diversity, high level of anthropogenic activities, and dominance of non-native and invasive vegetation.

As discussed in Appendix J-4 and J-5, a total of approximately 17.53 acres of tree removal would occur as part of the Community Grid. This removal would occur in terrestrial ecological communities, successional southern hardwoods, and successional old fields.

With respect to terrestrial cultural communities (1,095.09 acres), disturbance in these habitats would result in conversion of one terrestrial cultural community type (e.g., urban vacant lot) to another terrestrial cultural community type (e.g., paved roads, maintained right-of-way) and, for this reason, is considered a temporary effect, as described below in Section 6-4-8.3.2, Construction Effects. The permanent removal of ecological communities as part of the Community Grid Alternative would not result in significant adverse impacts to such communities throughout the region. Furthermore, any areas disturbed during construction that are not part of the permanent project footprint would be revegetated to the greatest extent practicable with plant species indigenous to this region of New York in accordance with a Landscape Restoration Plan that would be developed for the Project. Furthermore, as discussed above and in detail in Section 6-4-7, Water Resources, approximately 0.62 acres of freshwater wetlands and approximately 0.07 acres of open surface waters (a total of approximately 0.69 acres) would be permanently affected by the Community Grid Alternative. As described in Section 6-4-7, Water Resources, NYSDOT has been coordinating with the USACE and NYSDEC on possible wetland and stream mitigation options. As a result of this coordination, a conceptual mitigation plan has been accepted by USACE and NYSDEC. The conceptual mitigation for NYSDEC wetlands and stream mitigation for the Project would occur in the I-481 North Study Area right-of-way where enhancements will be made to Mud Creek and its floodplain. Effects to federal wetlands will be mitigated through an in lieu fee program.
### Table 6-4-8-5

<table>
<thead>
<tr>
<th>Ecological Community</th>
<th>Approximate Existing Coverage (acres)</th>
<th>Approximate Roadway Footprint—All Study Areas (acres)</th>
<th>Approximate Noise Barrier Footprint—All Study Areas (acres)</th>
<th>Approximate Total Impacts (acres)</th>
<th>Approximate Total Unaffected Area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terrestrial Cultural*</td>
<td>1,095.09</td>
<td>533.95</td>
<td>106.48</td>
<td>640.43</td>
<td>454.66</td>
</tr>
<tr>
<td>Successional Southern hardwoods</td>
<td>111.48</td>
<td>46.54</td>
<td>17.24</td>
<td>63.78</td>
<td>47.70</td>
</tr>
<tr>
<td>Successional Old Field</td>
<td>73.58</td>
<td>55.09</td>
<td>2.98</td>
<td>58.07</td>
<td>15.51</td>
</tr>
<tr>
<td>Successional Shrubland</td>
<td>37.82</td>
<td>29.96</td>
<td>4.92</td>
<td>34.88</td>
<td>2.94</td>
</tr>
<tr>
<td>Floodplain Forest</td>
<td>67.47</td>
<td>28.91</td>
<td>0.87</td>
<td>29.78</td>
<td>37.69</td>
</tr>
<tr>
<td>Freshwater Wetland**</td>
<td>75.66</td>
<td>0.617</td>
<td>0.003</td>
<td>0.62</td>
<td>75.05</td>
</tr>
<tr>
<td>Open Surface Waters**</td>
<td>10.06</td>
<td>0.07</td>
<td>0.00</td>
<td>0.07</td>
<td>9.99</td>
</tr>
<tr>
<td>Estimated Total</td>
<td>1,471.16</td>
<td>695.14</td>
<td>132.49</td>
<td>827.63</td>
<td>643.54</td>
</tr>
</tbody>
</table>

**Notes:**
- *Includes paved road/path, railroad, junkyard, urban vacant lot, mowed lawn, mowed lawn with trees, and garden communities.
- Ecological community observations were made during field investigations in 2016 and 2017.
- **Wetlands and open surface waters calculations are based on wetland delineation and land survey work conducted in 2017. The effects to wetlands and surface waters are detailed in Section 6-4-7, Water Resources.
- Source: Ecological community names and descriptions are derived from “Ecological Communities of New York State” (Edinger et al. 2014). Note that the freshwater wetland adjacent area acreages are also included in the terrestrial ecological communities’ acreage calculations.

Non-native and invasive species would not be included in the landscape plan. Therefore, the Community Grid Alternative would be in compliance with EO 13112, “Safeguarding the Nation from the Impacts of Invasive Species” and NYCRR Part 575 “Invasive Species Regulations.”

**Wildlife**

The majority of the study areas are heavily developed with terrestrial ecological communities associated with transportation infrastructure and urban land uses. Following construction, wildlife in the Project Area would not be expected to be displaced or otherwise affected by the operation of the Community Grid Alternative. The Community Grid Alternative would not increase the levels of noise and human activity to the extent that there would be a change in the abundance or community composition of wildlife in the study areas. The common, urban-adapted species present within the study areas would not experience significant adverse impacts from the minor losses of low quality habitat that would result from the Community Grid Alternative. The same species would be expected to continue with the same likelihood and in the same abundance. Overall, no significant adverse effects to birds, mammals, reptiles, or amphibians would be expected to result from the operation of the Community Grid Alternative. Because construction and operation of the Viaduct Alternative would not result in the direct take of birds, it would be in compliance with the Migratory Bird Treaty Act.

**Central Study Area**

Within the Central Study Area, the effects to wildlife would be nearly the same as described above for the Viaduct Alternative. Because it would not disturb habitat or substantially change noise or activities as compared to the No Build Alternative, the operation of the Community Grid Alternative would
not adversely affect wildlife in the Central Study Area, which are already adapted for living in urban environments.

**I-481 South Study Area**

Other than impervious surface and mowed lawn, most of the habitat available to wildlife in the I-481 South Study Area is limited to small fragments of successional southern hardwoods, successional old field, and successional shrublands along I-81 and I-481, and within the interchanges of both highways. These small and fragmented habitats are further degraded by the traffic noise on the interstates and adjacent roads. Wildlife occurring in the area consists primarily of disturbance-tolerant species that are common to degraded habitats. Construction of the Community Grid Alternative within the I-481 South Study Area would disturb a total of approximately 28.92 acres of successional southern hardwood forest (including 4.68 acres of roadcut cliff/slope), 52.25 acres of impervious surface, 39.69 acres of mowed lawn with trees, 26.43 acres of old field, and 19.83 acres of successional shrubland, all immediately adjacent to or between the existing roadways and interchanges. Thus, reductions of the acreages of these roadside habitats in the I-481 South Study Area would not adversely affect populations of the abundant generalist species inhabiting them, and these same species would occur in the I-481 South Study Area during project operation.

**I-481 East Study Area**

Similar to the preceding study areas, the removal of terrestrial ecological communities within the I-481 East Study Area would not adversely affect populations of the abundant generalist species that use these habitats. The floodplain forest and wetlands associated with the southern end of the I-481 East Study Area and the floodplain forests associated with the northern portion of the I-481 East Study Area represent the most substantial habitat for native wildlife in the Project Area. Waterbirds, amphibians, and other wildlife inhabiting that area are already exposed to, and demonstrate a tolerance of, noise levels that emanate from I-481 overhead and the nearby CSX rail line. The limits of disturbance for the Community Grid Alternative in this portion of the I-481 East Study Area would remain immediately adjacent to the existing footings of the I-481 bridge crossing over the rail tracks. Construction of the Community Grid Alternative within the I-481 East Study Area would permanently disturb approximately 0.52 acres of ditches, 10.36 acres of floodplain forests, 57.88 acres of impervious surface, 73.95 acres of mowed lawn with trees, 9.09 acres of old fields, 0.09 acres of freshwater wetlands, and 0.03 acres of surface waters. This would represent a negligible reduction in the availability of these habitat types in the Project Area. Furthermore, the areas that would be affected are roadside, and therefore subjected to high levels of disturbance, and of low ecological value relative to more interior areas. At the northern end of the I-481 East Study Area, the limits of disturbance would be immediately alongside the existing edge of pavement of I-481 and the ramp for Exit 6; thus, only roadside margins containing ruderal vegetation of little value to wildlife would be affected. These communities provide low value habitat, and the loss of some of these communities in the I-481 East Study Area during the operation of the Community Grid Alternative would not adversely affect wildlife throughout the region.

**I-481 North Study Area**

Modifications to the I-81 and I-481 interchange in the I-481 North Study Area would affect only roadside habitat fragments that are currently subjected to traffic noise and other forms of degradation.
The Community Grid Alternative would affect a total of approximately 2.69 acres of ditches, 19.20 acres of floodplain forests, 9.33 acres of successional southern hardwood forests, 60.47 acres of impervious surfaces, 57.68 acres of mowed lawns/mowed lawns with trees, 19.17 acres of old fields, 13.27 acres of successional shrublands, 0.52 acres of freshwater wetlands, and 0.04 acres of surface waters. The areas that would be affected are poor quality habitats and of little value to native wildlife due to their isolation and immediate proximity to interstate highways. The noise levels, to which these roadside habitats are exposed, and their isolation, fragmentation, and small size, limit the wildlife community to disturbance-tolerant generalists. Overall, these communities provide low value habitat, and the loss of some of these communities in the I-481 North Study Area during the operation of the Community Grid Alternative would not adversely affect wildlife throughout the region.

**Threatened or Endangered Species**

The effect determinations for Federally-listed species having the potential to occur within the vicinity of the Community Grid Alternative Study Areas were recorded in the BE and are summarized in Table 6-4-8-4 below. A discussion about the permanent/operational affects that the Community Grid Alternative will have on Federally-listed species is included below.

The effect determinations for state-listed species having the potential to occur within the vicinity of the Community Grid Alternative Study Areas is summarized in Table 6-4-8-4 below. A discussion about the permanent/operational effects of the Community Grid Alternative on State-listed species is discussed below.

Coordination among FHWA, USFWS, and NYSDEC regarding State- and Federally-listed species will be ongoing.

**Central Study Area**

- **Indiana Bat:** As described above, Indiana bat is a State- and Federally-listed endangered species. According to the NYNHP database, the Central Study Area is located more than 0.5 miles from a known Indiana bat hibernaculum and more than 0.25 miles from a known Indiana bat roost tree (USFWS required buffers) and more than 2.5 miles from a known hibernaculum or roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, there is a total of approximately 9.11 acres of trees, some of which are over four inches dbh (minimum roosting size for Indiana bat), in the Central Study Area that are subject to removal for the Viaduct Alternative.

As discussed above and in Appendix J-5, any bridges in the Central Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.
**Community Grid Alternative:**

**Threatened and Endangered Species Effect Determinations**

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>State Effect Determination</th>
<th>Federal Effect Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indiana bat</td>
<td><em>Myotis sodalis</em></td>
<td>Take Not Likely</td>
<td>May Affect,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not Likely to Adversely</td>
</tr>
<tr>
<td>Northern long-eared bat</td>
<td><em>Myotis septentrionalis</em></td>
<td>Take Not Likely</td>
<td>May Affect,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not Likely to Adversely</td>
</tr>
<tr>
<td>Eastern massasauga</td>
<td><em>Sistrurus catenatus</em></td>
<td>Take Not Likely</td>
<td>No Effect – No Habitat</td>
</tr>
<tr>
<td>American hart’s-tongue fern</td>
<td><em>Asplenium scolopendrium var. americanum</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Peregrine falcon</td>
<td><em>Falco peregrinus</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Bald Eagle</td>
<td><em>Haliaeetus leucocephalus</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Least bittern</td>
<td><em>Ictonyxius exilis</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Northern Harrier</td>
<td><em>Circus cyaneus</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Lake sturgeon</td>
<td><em>Acipenser fulvescens</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Seaside bulrush</td>
<td><em>Bolboschoenus maritimus ssp. paludosus</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Midland sedge</td>
<td><em>Carex mesochorea</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Saltmarsh aster</td>
<td><em>Symphyotrichum subulatum var. subulatum</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Reflexed sedge</td>
<td><em>Carex retroflexa</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Straight-leaf pondweed</td>
<td><em>Potamogeton stricifolius</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Glomerate Sedge</td>
<td><em>Carex aggregate</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Marsh Arrow Grass</td>
<td><em>Triglochin palustris</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Ohio goldenrod</td>
<td><em>Oligoneuron ohioense</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
<tr>
<td>Troublesome sedge</td>
<td><em>Carex molesta</em></td>
<td>Take Not Likely</td>
<td></td>
</tr>
</tbody>
</table>

A detailed assessment of the potential for permanent/operational effects to Indiana bat (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-eared Bat:** As described above, northern long-eared bat is a State- and Federally-listed threatened species. According to NYNHP database, the Central Study Area is located more than 0.5 miles from a known hibernaculum and more than 150 feet from a known northern long-eared bat roost tree (USFWS required buffers) and less than 5.0 miles from a known hibernaculum but more than 1.5 miles from a known northern long-eared bat roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, a total of approximately 7.86 acres of trees, some of which are over four inches dbh, in the Central Study Area are subject to removal for the Community Grid Alternative.

As discussed above and in Appendix J-5, any bridges in the Central Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible.
FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to northern long-eared bat (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga**: As described above, the eastern massasauga is a State-listed endangered and Federally-listed threatened species. The USFWS IPaC System results indicate that the eastern massasauga has the potential to occur within the Central Study Area. However, the Central Study Area is heavily urbanized and dominated by buildings, transportation infrastructure, and other impervious surfaces, and it does not contain the eastern massasauga’s preferred habitat of open wetlands with adjacent upland forest openings, old fields, and prairies. In addition, the NYNHP has no records of this species in the vicinity of the Central Study Area.

A detailed assessment of the potential for permanent/operational effects to eastern massasauga is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Peregrine Falcon**: The State-listed endangered peregrine falcon currently nests in an artificial nest box on a building adjacent to the Central Study Area, and thus, it has 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 Viaduct Alternative.

A detailed assessment of the potential for permanent/operational effects to peregrine falcon is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Bald Eagle**: Non-breeding 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 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, I-481 East, and I-481 North Study Areas.

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 2007b). 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.

Within the Central Study Area, 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, and Old Liverpool Road. The closest portion of the project area to the lakeshore, where non-breeding bald eagles have the potential to occur, would be approximately 200 feet. Operation of the Community Grid Alternative would not bring motor vehicle traffic any closer to the Onondaga Lake shoreline than at present or increase the already high 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 2007b). Overall, 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.”

- **Lake Sturgeon:** As described above, the State-listed threatened lake sturgeon is present in Onondaga Lake in the vicinity of the Central Study Area. 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. As described in **Section 6-4-7, Water Resources,** 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 9.8 percent higher because the Community Grid Alternative would introduce 3.7 more highway miles that would require deicing. As discussed under the Viaduct Alternative, the chloride concentration in Lower Onondaga Creek in 2012, as measured by the USGS, ranged from 259 to 833 mg/L. Thus,
according to the Toler Analysis, the Central Study Area under the Community Grid Alternative would contribute a 0.4 to 1.3 percent increase in the total concentration of chloride in Lower Onondaga Creek. The USEPA chronic toxicity water quality criteria concentration of chloride, for most 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 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.). 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 would be below the acute toxicity concentration. Therefore, the increase in chloride concentration in Lower Onondaga Creek as a result of the Community Grid Alternative is not expected to result in significant adverse effects to the Creek.

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 right-of-way 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 right-of-way 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 BMPs, 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.

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 right-of-way. 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 Study Area 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.

A detailed assessment of the potential for permanent/operational effects to lake sturgeon is provided in the NYSDEC Consultation Package (Appendix J-4).
- **Seaside Bulrush**: The State-listed threatened seaside 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 seaside 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 seaside 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, seaside bulrush was not found during targeted surveys for this species in the Central Study Area. Therefore, seaside bulrush would not be adversely affected during the operation of the Community Grid Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to seaside bulrush is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Midland Sedge**: The State-listed threatened Midland sedge has been recorded by NYNHP in terrestrial cultural ecological communities near the Central Study Area. However, as described above, Midland sedge was not found during targeted surveys for this species in the Central Study Area. Therefore, midland sedge would not be adversely affected during the operation of the Community Grid Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to Midland sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Saltmarsh Aster**: Saltmarsh aster is a State-listed threatened species that 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 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, saltmarsh aster was not found during targeted surveys for this species in the Central Study Area. Therefore, saltmarsh aster would not be adversely affected during the operation of the Community Grid Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to saltmarsh aster is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Reflexed Sedge**: The State-listed threatened reflexed sedge has been recorded by NYNHP in terrestrial cultural ecological communities in the vicinity of the Central Study Area. However, as described above, reflexed sedge was not found during targeted surveys for this species in the Central Study Area. Therefore, reflexed sedge would not be adversely affected during the operation of the Community Grid Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to reflexed sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Straight-leaved 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, straight-leaved pondweed would not be adversely affected during the operation of the Community Grid Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to straight-leaved pondweed is provided in the NYSDEC Consultation Package (Appendix J-4).
Area. Therefore, straight-leaved pondweed would not be adversely affected during the operation of the Community Grid Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to straight-leaved pondweed is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Glomerate Sedge:** The State-listed endangered glomerate sedge has been recorded by NYNHP in the vicinity of the Central Study Area. Surveys for glomerate sedge would be conducted in Summer 2019. Should glomerate sedge be found during the survey, then a transplanting and/or propagation program would be developed in consultation with NYSDEC at that time. With these measures in place, no significant adverse effects would occur to glomerate sedge as a result of the operation of the Community Grid Alternative in the Central Study Area. A detailed assessment of the potential for permanent/operational effects to glomerate sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Inland Salt Pond:** The inland salt pond ecological community has been documented by NYNHP as occurring in the vicinity of the Central Study Area. However, as described above, based on field surveys this community is not present within Central Study Area. Therefore, no adverse effects to this ecological community would result from operation of the Viaduct Alternative.

**I-481 South Study Area**

- **Indiana Bat:** As described above, Indiana bat is a State- and Federally-listed endangered species. According to the NYNHP database, the I-481 South Study Area is located more than 0.5 miles from a known Indiana bat hibernaculum but less than 0.25 miles from a known Indiana bat roost tree (USFWS required buffers). The I-481 South Study Area is located within 2.5 miles from a known hibernaculum but less than 2.5 miles of a known Indiana bat roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, a total of approximately 7.59 acres of trees, some of which are over four inches in dbh, in the I-481 South Study Area are subject to removal for the Community Grid Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 South Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to Indiana bats (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).
• **Northern Long-eared Bat:** As described above, northern long-eared bat is a State- and Federally-listed threatened species. According to NYNHP database, the I-481 South Study Area is located more than 0.5 miles from a known northern long-eared bat hibernaculum and more than 150 feet from a known northern long-eared bat roost tree (USFWS required buffer). The I-481 South Study Area is more than 1.5 miles from a known northern long-eared bat roost tree, but less than 5.0 miles from a known northern long-eared bat hibernaculum (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, a total of approximately 7.59 acres of trees, some of which are over four inches in dbh, in the I-481 South Study Area are subject to removal for the Community Grid Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 South Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to northern long-eared bat (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

• **Eastern Massasauga:** As described above, the eastern massasauga is State-listed endangered and Federally-listed threatened species. The IPaC system results indicated that the eastern massasauga has the potential to occur within the I-481 South Study Area. However, the I-481 South Study Area is heavily urbanized and dominated by buildings, transportation infrastructure, and other impervious surfaces and it does not contain suitable habitat of open wetlands with adjacent upland forest openings, old fields, and prairies. In addition, the NYNHP has no records of eastern massasaugas near the I-481 South Study Area.

A detailed assessment of the potential for permanent/operational effects to eastern massasauga is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

• **American Hart's-Tongue Fern:** As described above, the American hart’s-tongue fern is a Federal and State-listed threatened perennial and evergreen fern. The IPaC System results indicate that the American hart’s-tongue fern has the potential to occur within the I-481 South Study Area. However, the upland ecological communities of the study area are associated with maintained right-of-ways, successional old fields and shrublands, and successional forests located along the edges of the right-of-way. All of these ecological communities are associated with disturbance and do not contain the deep shade and cool, moist, rocky, calcareous substrates of its preferred habitat. As described in Appendix J-4, remnants of low quality rocky (i.e., roadcut cliff/slope) habitat are present within the I-481 South Study Area. As a conservative measure, targeted surveys for American hart’s-tongue fern were conducted.
within portions of the I-481 South Study Area that contain habitat with the potential to support this species. No American hart’s-tongue fern individuals were found. Therefore, American hart’s-tongue fern would not be adversely affected during the operation of the Community Grid Alternative in the I-481 South Study Area.

A detailed assessment of the potential for permanent/operational effects to American hart’s-tongue fern is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Midland Sedge**: The State-listed threatened Midland sedge has been recorded by NYNHP in terrestrial cultural ecological communities in the vicinity of the I-481 South Study Area. Surveys for midland sedge would be conducted in Summer 2019. Should midland sedge be found during the survey, then a protection, transplanting, and/or propagation program would be developed in consultation with NYSDEC at that time. Therefore, midland sedge would not be adversely affected during the operation of the Community Grid Alternative in the I-481 South Study Area. A detailed assessment of the potential for permanent/operational effects to the Midland sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Reflexed Sedge**: The State-listed threatened reflexed sedge has been recorded by NYNHP in terrestrial cultural ecological communities in the vicinity of the I-481 South Study Area. Surveys for reflexed sedge would be conducted in Summer 2019. Should reflexed sedge be found during the survey, then a protection, transplanting, and/or propagation program would be developed in consultation with NYSDEC at that time. Therefore, no adverse effects to reflexed sedge would result from the operation of the Community Grid in the I-481 South Study Area. A detailed assessment of the potential for permanent/operational effects to the reflexed sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Marsh Arrow Grass**: The State-listed threatened marsh arrow grass has been recorded by NYNHP in the vicinity of the I-481 South Study Area. Given its habitat requirements, the potential for marsh arrow grass to occur within the I-481 South Study Area would be limited to a narrow channel located in the vicinity of the proposed noise barrier (Noise Barrier 9). Surveys for marsh arrow grass would be conducted in Summer 2019. Should marsh arrow grass be found during the survey, then a transplanting and/or propagation program would be developed in consultation with NYSDEC at that time. Therefore, no adverse effects to marsh arrow grass would result from the operation of the Community Grid Alternative in the I-481 South Study Area.

- **Maple-Basswood Rich Mesic Forest**: As previously described, the maple-basswood rich mesic forest ecological community has been documented by NYNHP as occurring in the vicinity of the I-481 South Study Area. However, as also described, this community is not present within the I-481 South Study Area. Therefore, no adverse effects to this ecological community would result from the operation of the Community Grid Alternative in the I-481 South Study Area.

- **Calcareous Cliff Community**: As previously described, the calcareous cliff community has been documented by NYNHP as occurring near the I-481 South Study Area. However, as also previously described, remnant cliff communities of the I-481 South Study Area are better
characterized as roadcut cliff/slope communities that are disturbed and characterized by a southern successional forest cover type. Therefore, no adverse effects to this ecological community would result from the operation of the Community Grid Alternative in the I-481 South Study Area.

- **Calcareous Talus Slope Woodland:** As previously described, the calcareous talus slope woodland community has been documented by NYNHP as occurring near the I-481 South Study Area. However, as also previously described, remnant talus slopes of the I-481 South Study Area are better characterized as roadcut cliff/slope communities in the I-481 South Study Area that are disturbed and characterized by a southern successional forest cover type. Therefore, no adverse effects to this ecological community would result from the operation of the Community Grid Alternative in the I-481 South Study Area.

- **Limestone Woodland:** As previously described, the limestone woodland ecological community has been documented by NYNHP as occurring near the I-481 South Study Area. However, this community is not present within the I-481 South Study Area. Therefore, no adverse effects to this ecological community would result from the operation of the Community Grid Alternative in the I-481 South Study Area.

**I-481 East Study Area**

- **Indiana Bat:** As previously described, Indiana bat is a State- and Federally-listed endangered species. According to the NYNHP database, the I-481 East Study Area is located more than 0.5 miles from a known Indiana bat hibernaculum and more than 0.25 miles from a known Indiana bat roost tree (USFWS required buffers). The I-481 East Study Area is located less than 2.5 miles from a known hibernaculum and less than 2.5 miles of a known Indiana bat roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, a total of approximately 0.27 acres of trees, some of which are over four inches in dbh, in the I-481 East Study Area are subject to removal for the Community Grid Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 East Study Area that will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to Indiana bats (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-eared Bat:** As described above, northern long-eared bat is a State- and Federally-listed threatened species. According to NYNHP, the I-481 East Study Area is located more than 0.5 miles from a known northern long-eared bat hibernaculum and more
than 150 feet from a known northern long-eared bat roost tree (USFWS required buffer). The I-481 East Study Area is more than 1.5 miles from a known northern long-eared bat roost tree but is less than 5.0 miles from a known northern long-eared bat hibernaculum (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, a total of approximately 0.27 acres of trees, some of which are over four inches in dbh, in the I-481 East Study Area are subject to removal for the Community Grid Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 East Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to northern long-eared bat (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga:** The eastern massasauga is a State-listed endangered and Federally-listed threatened species. The IPaC system results indicated that the eastern massasauga has the potential to occur within the I-481 East Study Area. The NYNHP has no records of eastern massasaugas in the vicinity of the I-481 East Study Area. In addition, the I-481 East Study Area lacks fens, marshes, and wet prairies that are needed to support the eastern massasauga.

A detailed assessment of the potential for permanent/operational effects to eastern massasauga is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Ohio goldenrod:** As described above, the State-listed threatened Ohio goldenrod has been recorded by NYNHP in the vicinity of the I-481 East Study Area. However, Ohio goldenrod was not found during targeted surveys for this species in the I-481 East Study Area. Therefore, Ohio goldenrod would not be adversely affected during the operation of the Community Grid Alternative in the I-481 East Study Area. A detailed assessment of the potential for permanent/operational effects to Ohio goldenrod is provided in the NYSDEC Consultation Package (Appendix J-4).

**I-481 North Study Area**

- **Indiana Bat:** As described above, Indiana bat is a State- and Federally-listed endangered species. According to the NYNHP, the I-481 North Study Area is located more than 0.5 miles from a known Indiana bat hibernaculum and more than 0.25 miles from a known Indiana bat roost tree (USFWS required buffers) and more than 2.5 miles from a known hibernaculum or roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located
within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, a total of approximately 1.81 acres of trees, some of which are over four inches in dbh, in the I-481 North Study Area are subject to removal for the Community Grid Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 North Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to Indiana bats (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-eared Bat**: As described above, northern long-eared bat is a State- and Federally-listed threatened species. According to NYNHP, the I-481 North Study Area is located more than 0.5 miles from a known hibernaculum and more than 150 feet from a known northern long-eared bat roost tree (USFWS required buffers) and more than 5.0 miles from a known hibernaculum and 1.5 miles from a known northern long-eared bat roost tree (NYSDEC required buffers). Additionally, the tree cutting area is located within 100 feet of the road surface. As discussed in Appendix J-4 and J-5, a total of approximately 1.81 acres of trees, some of which are over four inches in dbh, in the I-481 North Study Area are subject to removal for the Community Grid Alternative.

As discussed above and in Appendix J-5, any bridges in the I-481 North Study Area will 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 bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for permanent/operational effects to northern long-eared bat (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga**: As described above, the eastern massasauga is State-listed endangered and Federally-listed threatened species. The IPaC system results indicated that the eastern massasauga has the potential to occur within the I-481 North Study Area. The NYNHP has a record of eastern massasauga occurring adjacent to the I-481 North Study Area. Mud Creek, on the eastern edge of the I-481 North Study Area, has a hydrological connection to known
eastern massasauga habitat. There is no habitat within the I-481 North Study Area that is suitable for supporting eastern massasauga. 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.

A detailed assessment of the potential for permanent/operational effects to eastern massasauga is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Least Bittern**: As described above, the State-listed threatened least bittern has been documented by NYNHP as nesting within 600 feet of the I-481 North Study Area. Least bittern 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. Wetland habitat within and around the I-481 North Study Area is limited to drainage ditches, creeks, and common-reed dominated and forested wetlands along I-481 and within the quadrants of the I-81 and I-481 highway interchange and is not considered ideal habitat for least bitterns. However, given the proximity of the known least bittern nesting location to the I-481 North Study Area, coordination with the NYSDEC regarding measures to protect this species would be conducted to avoid adverse effects to this species. A detailed assessment of the potential for permanent/operational effects to the least bittern is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Northern Harrier**: The NYNHP has a record of northern harriers breeding within 1.5 miles of the I-481 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). As discussed above, 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 phragmites-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. For this reason, operation of the Community Grid Alternative would not have significant adverse impacts to northern harriers or their habitat.

- **Troublesome Sedge**: As described above, the State-listed threatened troublesome sedge has been recorded by NYNHP in vicinity of the I-481 North Study Area. However, troublesome sedge was not found during targeted surveys for this species in the I-481 North Study Area.
Therefore, troublesome sedge would not be adversely affected during the operation of the Community Grid Alternative in the I-481 North Study Area. A detailed assessment of the potential for permanent/operational effects to the troublesome sedge is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Black Spruce-Tamarack Bog**: As described above, the black spruce-tamarack bog community has been documented by NYNHP as occurring near the I-481 North Study Area. However, as described above, this community is not present within the I-481 North Study Area. Therefore, no adverse effects to this ecological community would result from the operation of the Community Grid Alternative for the I-481 North Study Area.

### 6-4-8.4.2 CONSTRUCTION EFFECTS

Construction effects are temporary or short term in nature, such as temporary fill in freshwater wetlands for construction access, disturbance associated with demolition of the viaduct, temporary disturbance associated with roadway and bridge improvements, and lighting and noise disturbances to wildlife from construction equipment. This subsection provides a conservative assessment of potential temporary construction effects to natural resources within the Community Grid Alternative; the effects presented herein could be reduced as design advances.

**Terrestrial Resources**

As discussed in Chapter 4, Construction Means and Methods, the Contractor would be responsible for identifying construction staging sites. It is expected that the Contractor would seek out underutilized sites, such as vacant parcels or land currently used for surface parking, for staging. These underutilized sites are characterized as terrestrial cultural community habitats. Disturbances in these underutilized sites would result in conversion of one terrestrial cultural community type (e.g., urban vacant lot, surface parking) to another terrestrial cultural community type (e.g., staging site) and, for this reason, are considered a temporary effect. In terms of vacant parcels, the study areas contain disturbed habitats including terrestrial cultural, successional old field, successional shrubland, successional southern hardwood, and floodplain forest ecological communities. Thus, it is expected that temporary staging sites would be located in similar habitats close to the construction zone, when practicable. During construction, measures (e.g., cleaning of construction equipment and proper transportation/disposal of soils containing invasive species) as per Section 4-8-3, “Invasive Species Control Methods for Maintenance and Construction” (September 10, 2004), of the TEM would be implemented to avoid the spread of invasive plant species that may occur in the disturbed ecological communities of these sites. Following construction, these sites would be restored to existing or improved conditions. As described in Section 6-4-7, Water Resources, the restoration of temporarily affected freshwater wetlands/open surface waters would also be done following construction in consultation with the USACE and NYSDEC. Therefore, it is not anticipated that the temporary loss of these ecological communities due to construction staging would result in adverse effects. Furthermore, the construction measures described above would meet the intent of EO 13112 “Safeguarding the Nation from the Impacts of Invasive Species” and NYCRR Part 575 “Invasive Species Regulations” under the Community Grid Alternative.
Wildlife

Clearing of the previously mentioned communities as part of the construction staging would occur during construction of the Community Grid Alternative. As described above, these habitats are widespread and common in the region, and the use of these areas for construction staging would represent a negligible reduction in the amount of habitat available to wildlife in the area. Any reductions in the number of individuals inhabiting these communities would not affect the size or viability of their local populations and would not change the assemblage of wildlife species present. Overall, construction activities would not have adverse effects to wildlife at the population or community level. Because construction and operation of the Community Grid Alternative would not result in the direct take of birds, it would be in compliance with the Migratory Bird Treaty Act.

Noises generated during the construction (e.g., heavy machinery or generators) of the Community Grid Alternative would be unlikely to affect wildlife in the Project Area due to high existing levels of noise and other human disturbance from automobile traffic and other sources. As discussed in Section 6-4-6, Noise, construction would result in perceptible increases in noise levels in each study area, but these effects would be temporary, shortened by the proposed accelerated construction schedule, and abated by several measures. Wildlife communities in the study areas have been established under noisy existing conditions, and as such, are inherently disturbance-tolerant (cf. Bonier et al. 2007, Francis et al. 2009).

Visual and auditory disturbances during construction would potentially displace some individuals of some species from the immediate vicinity of the site of activity, but overall, construction activities would not be expected to increase levels of disturbance to the extent that there would be alterations in species assemblages or otherwise negative changes to wildlife communities in the surrounding area relative to the present state. Individuals that would potentially briefly relocate in response to the construction noise would be likely to easily acquire suitable alternative habitat given that comparable areas of terrestrial cultural communities, successional old field, successional southern hardwoods, and floodplain forest communities are abundant in the surrounding landscape. Any such relocation away from the area of disturbance would not significantly affect these individuals in the long-term (Gill et al. 2001). Overall, noises generated during construction would not be likely to have adverse effects to wildlife within the vicinity of the study areas.

Threatened or Endangered Species

The effect determinations for Federally-listed species having the potential to occur within the vicinity of the Community Grid Alternative Study Areas were recorded in the BE (see Appendix J-5) and are summarized in Table 6-4-8-6 above. The temporary effects of the Community Grid Alternative on Federally-listed species are discussed below.

The effect determinations for State-listed species having the potential to occur within the vicinity of the Community Grid Alternative Study Areas is summarized in the NYSDEC Consultation Package (see Appendix J-4) and in Table 6-4-8-6 above. The temporary effects of the Community Grid Alternative on State-listed species are discussed below.

Central Study Area

- Indiana Bat: As described above, Indiana bats have a low potential to occur within the Central Study Area and are not expected to be affected by construction of the Community Grid Alternative. However, as a precaution, tree clearing during construction would be limited
to the winter hibernation period (November 1 to March 31) when Indiana bats would not be present.

Any bridges in the Central Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if they are suitable for roosting and if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted if any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to Indiana bats (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-Eared Bat**: As described above, northern long-eared bats have a low potential to occur within the Central Study Area and are not expected to be affected by construction of the Community Grid Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when northern long-eared bats would not be present.

Any bridges in the Central Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted if any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to northern long-eared bat (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga**: As described above, the eastern massasauga does not have the potential to occur within the Central Study Area and is therefore not expected to be affected by construction of the Community Grid Alternative.

- **Peregrine Falcon**: Peregrine falcon has the potential to occur in the Central Study Area. As described above, the peregrine falcons will tolerate almost any level of human activity taking place below their nest, provided that the nest is inaccessible (Ratcliffe 1972). 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 peregrine falcon nest box, including the establishment of any required buffers or monitoring based on coordination with
NYSDEC. A detailed assessment of the potential for construction effects to peregrine falcon is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Bald Eagle:** As previously discussed, non-breeding 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 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 2007b). 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 of the Community Grid Alternative in the Central Study Area would be the same as described above for the Viaduct Alternative. It would include the reconstruction of a system of ramps connecting I-81 to Park Street, State Route 370, and Old Liverpool Road. 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 2007b) 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 much lower sensitivity of bald eagles to disturbance during the non-breeding period compared to the nesting period (USFWS 2007b) 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. Given that paved roads with heavy traffic are already present.
near the shoreline in this area, construction of the Community Grid Alternative would not eliminate high quality habitat, introduce human disturbance to a previously disturbance-free area, 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 2007b). Overall, construction 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.”

- **Lake Sturgeon:** Lake sturgeon is known to occur in Onondaga Lake and has the potential to occur in the surface waters of Onondaga Creek and Ley Creek. As described in **Section 6-4-7, Water Resources**, 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. A detailed assessment of the potential for construction effects to lake sturgeon is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Seaside Bulrush:** As described above, the State-listed threatened seaside bulrush has been recorded by NYNHP within the vicinity of the Central Study Area. As described above, seaside bulrush was not found during the targeted surveys for this species in the Central Study Area. Therefore, no adverse effects to this species would occur during construction of the Community Grid Alternative in the Central Study Area.

- **Midland Sedge:** As described above, the State-listed threatened Midland sedge has been recorded by NYNHP in the Central Study Area. As described above, Midland sedge was not found during the targeted surveys for this species in the Central Study Area. Therefore, no adverse effects to this species would occur during construction of the Community Grid Alternative in the Central Study Area.

- **Saltmarsh Aster:** As described above, the State-listed threatened saltmarsh aster has been recorded by NYNHP within the vicinity of the Central Study Area. As described above, saltmarsh aster was not found during the targeted surveys for this species in the Central Study Area. Therefore, no adverse effects to this species would occur during construction of the Community Grid Alternative in the Central Study Area.

- **Reflexed Sedge:** The State-listed threatened reflexed sedge has been recorded by NYNHP in the Central Study Area. As described above, reflexed sedge was not found during the targeted surveys for this species in the Central Study Area. Therefore, no adverse effects to this species would occur during construction of the Community Grid Alternative in the Central Study Area.
• **Straight-Leaf Pondweed:** As described above, the State-listed endangered straight-leaf pondweed has been recorded by NYNHP in the Central Study Area. As described above, straight-leaf pondweed was not found during the targeted surveys for this species in the Central Study Area. Therefore, no adverse effects to this species would occur during construction of the Community Grid Alternative in the Central Study Area.

• **Glomerate Sedge:** The State-listed endangered glomerate sedge has been recorded by NYNHP in the vicinity of the Central Study Area. Surveys for this species would be conducted in Summer 2019. Should glomerate sedge be found in the Central Study Area, a transplanting and/or propagation program would be developed in consultation with NYSDEC. Therefore, glomerate sedge would not be adversely affected during the construction of the Community Grid Alternative in the Central Study Area.

• **Inland Salt Pond:** The inland salt pond ecological community is not present within the Central Study Area. Therefore, this community would not be adversely affected during the construction of the Community Grid Alternative in the Central Study Area.

**I-481 South Study Area**

• **Indiana Bat:** As described above, Indiana bats have the potential to occur within the I-481 South Study Area but are not expected to be affected by construction of the Community Grid Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when Indiana bats would not be present.

Any bridges in the I-481 South Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. If any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to Indiana bats (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

• **Northern Long-Eared Bat:** As described above, northern long-eared bats have the potential to occur within the I-481 South Study Area but are not expected to be affected by construction of the Community Grid Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when northern long-eared bats would not be present.

Any bridges in the I-481 South Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the
Whatever text was extracted from the image is not clearly legible, and it appears to be a page from a document discussing ecological assessments and species presence in a study area. However, the text is not readable enough to extract meaningful content. If you have a clearer version of the page or another document, please provide it for a more accurate transcription.
communities are disturbed and vegetation associated with southern successional forest predominates. Therefore, high quality calcareous cliff community would not be adversely affected by construction of the Community Grid Alternative in the I-481 South Study Area.

- **Calcareous Talus Slope Woodland:** Low quality roadside rockcut cliff/slope ecological communities are present within the I-481 South Study Area. As described above, these communities are disturbed and vegetation associated with southern successional forest predominates. Therefore, high quality calcareous talus slope woodland ecological communities would not be adversely affected by construction of the Community Grid Alternative in the I-481 South Study Area.

- **Limestone Woodland:** The limestone woodland ecological community is not present within the I-481 South Study Area. Therefore, this community would not be adversely affected by construction of the Community Grid Alternative in the I-481 South Study Area.

**I-481 East Study Area**

- **Indiana Bat:** Indiana bats have the potential to occur within the I-481 East Study Area but are not expected to be affected by construction of the Community Grid Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when Indiana bats would not be present.

Any bridges in the I-481 East Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted if any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to Indiana bats (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-Eared Bat:** As described above, northern long-eared bats have the potential to occur within the I-481 East Study Area but are not expected to be affected by construction of the Community Grid Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when northern long-eared bats would not be present.

Any bridges in the I-481 East Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for
Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to northern long-eared bat (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga**: As described above, the eastern massasauga does not have the potential to occur within the I-481 East Study Area and is not expected to be affected by construction of the Community Grid Alternative.

- **Ohio goldenrod**: The State-listed threatened Ohio goldenrod has been recorded by NYNHP near 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. As described above, Ohio goldenrod was not found during targeted surveys for this species in the I-481 East Study Area. Therefore, no adverse effects to this species would result from construction of the Community Grid Alternative in the I-481 East Study Area.

**I-481 North Study Area**

- **Indiana Bat**: As described above, Indiana bats have a low potential to occur within the I-481 North Study Area and are not expected to be affected by construction of the Community Grid Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when Indiana bats would not be present.

Any bridges in the I-481 North Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. In the event that any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to Indiana bat (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Northern Long-Eared Bat**: As described above, northern long-eared bats have a low potential to occur within the I-481 North Study Area and are not expected to be affected by construction of the Community Grid Alternative. However, as a precaution, tree clearing during construction would be limited to the winter hibernation period (November 1 to March 31) when northern long-eared bats would not be present.
Any bridges in the I-481 North Study Area will be inspected in accordance with the FHWA New York Division Bridge Bat Survey Form during the roosting season (April 1 to September 30) and prior to construction to determine if there is any evidence of bats actively using them. If any bridges are determined to have features that represent potential roosting sites and/or bats are observed, applicable bridge Avoidance and Minimization Measures in the USFWS/FHWA Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat will be adopted to the greatest extent possible. FHWA will be consulted in the event that any of the measures cannot be implemented to determine the proper course of action.

A detailed assessment of the potential for construction effects to northern long-eared bat (e.g., removal or alteration of suitable habitat) is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Eastern Massasauga:** Eastern massasauga is not expected to occur in the I-481 North Study Area because its preferred habitats does not occur within the I-481 North Study Area. Nevertheless, as a protective measure to avoid any potential for direct impacts to any eastern massasugas, 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.

A detailed assessment of the potential for construction effects to eastern massasugas is provided in the BE (Appendix J-5) and in the NYSDEC Consultation Package (Appendix J-4).

- **Least Bittern:** As described above, the State-listed threatened least bittern has been documented by NYNHP as nesting within 600 feet of the I-481 North Study Area. Least bittern 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. Wetland habitat within and around the I-481 North Study Area is limited to drainage ditches, creeks, and common-reed dominated and forested wetlands along I-481 and within the quadrants of the I-81 and I-481 highway interchange and is not considered ideal habitat for least bitterns. However, given the proximity of the known least bittern nesting location to the I-481 North Study Area, coordination with the NYSDEC regarding measures to protect this species would be conducted to avoid adverse effects to this species.

A detailed assessment of the potential for permanent/operational effects to the least bittern is provided in the NYSDEC Consultation Package (Appendix J-4).

- **Northern Harrier:** The NYNHP has a record of northern harriers breeding within 1.5 miles of the I-481 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). As discussed above, 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. For this reason, construction of the Community Grid Alternative would not have significant adverse impacts to northern harriers or their habitat.

- **Troublesome Sedge:** The State-listed threatened troublesome sedge has been recorded by NYNHP in the vicinity of the I-481 North Study Area. As described above, this species can have a somewhat weedy habit, where it occurs in fields, roadsides, bottomlands, open woods, and on dry to wet, often heavy, calcareous soils. Given its habitat requirements, troublesome sedge has the potential to occur within the I-481 North Study Area. However, troublesome sedge was not found during targeted surveys for this species in the I-481 North Study Area. Therefore, no adverse effects to this species would result from construction of the Community Grid Alternative.

- **Black Spruce-Tamarack Bog:** The black spruce-tamarack ecological community is not present within the I-481 North Study Area. Therefore, this community would not be adversely affected by construction of the Community Grid Alternative.

### 6-4-8.4.3 INDIRECT EFFECTS
The Community Grid Alternative would result in the replacement of an existing use in-kind, and therefore would not result in any substantial induced development in natural areas. The Community Grid Alternative would not result in any adverse indirect effects to general ecology and wildlife resources. Therefore, no indirect effects would result from the Community Grid Alternative.

### 6-4-8.4.4 CUMULATIVE EFFECTS
The Community Grid Alternative has the potential to be constructed simultaneously with private and public development projects on vacant or underused land within the study areas. However, the projects would not be constructed in areas of significant ecological communities, nor would they be expected to result in significant adverse impacts on wildlife including Federally- and State-listed species. Therefore, the Community Grid Alternative would not result in any adverse cumulative effects to general ecology and wildlife resources.

### 6-4-8.4.5 MITIGATION
Areas disturbed during construction that are not part of the permanent project footprint would be revegetated to the greatest extent practicable with plant species indigenous to this region of New York. These efforts would be carried out in accordance with a Landscape Restoration Plan.

Mitigation may be required for tree cutting in Indiana and northern long-eared bat habitat. As design advances and scheduling for tree cutting is planned, any mitigation required would be developed in coordination with FHWA, USFWS, and NYSDEC.