

temporary. These constructibility details will be refined prior to submittal of wetland permit applications and the Single Environmental Impact Report.

- Avoiding the placement of new structures and facilities in wetland areas where possible.
- Restoring wetlands to their pre-construction configurations and contours to the extent practicable.
- Providing appropriate compensatory mitigation (in collaborative consultation with local, state, and federal resource agencies) in order to offset any permanent wetland impacts. To date, WMECO and its wetlands consultants have participated in pre-application meetings with MassDEP Western Regional Office Wetlands and Waterways Program staff, as well as the U.S. Army Corps of Engineers to initiate discussions regarding compensatory mitigation, and intend to meet with the conservation commissions of Agawam, West Springfield, Springfield, Chicopee, and Ludlow to discuss the topic as well. The intent will be to develop a compensatory wetlands mitigation package acceptable to all the reviewing agencies, and which suitably demonstrates no net loss of existing wetland functions and values, and statutory interests within the watershed. Compensatory mitigation for the GSRP may include:
 - On-site wetlands restoration and/or enhancement (e.g., replacement of existing compromised culverts conveying streams flows; improvement of existing ford crossings that could benefit from more stabilization; placement of natural obstacles, such as boulders, at the perimeter of especially high quality wetlands, such as vernal pools, in order to impede illicit and destructive all-terrain vehicle (ATV) usage in these areas;
 - Mitigation banking;
 - Payments to the municipalities in-lieu of fees, if applicable;
 - On-or-off-site wetlands creation;
 - Off-site wetlands restoration; and/or
 - Wetlands preservation.

The particular mix of these mitigation measures will be developed during additional pre-application meetings with federal, state and local wetlands regulatory agencies, and will be further described in wetland permit applications.

5.3.6 Protected Species and Habitats

The existing environment and impacts and mitigation measures for the Preferred Northern Route and the Noticed-Alternative Southern Route are in the following subsections.

5.3.6.1 Existing Environment

The existing state- or federally-listed rare, threatened, endangered or species of special concern (“Protected Species”) and habitats for the Preferred Northern Route and the Noticed-Alternative Southern Route are summarized below.

5.3.6.1.1 Preferred Northern Route

To assess the potential for Protected Species in the Project area, WMECO solicited written information from the MA NHESP and the USFWS; reviewed the mapping of Estimated Habitats, Priority Habitats and Certified Vernal Pools available through MassGIS; and conducted field inspections of the Project routes and substation sites to identify habitat types.

The USFWS responded on November 8, 2007, and indicated no federally listed or proposed threatened or endangered species or critical habitat under USFWS jurisdiction have been identified within the GSRP area. As a result, the USFWS determined that a Biological Assessment (pursuant to Section 7 of the federal Endangered Species Act) and/or further consultation with the USFWS would not be required.

According to the Massachusetts Division of Fisheries & Wildlife (DFW), Natural Heritage & Endangered (NHESP), the Preferred Northern Route crosses the Estimated and/or Priority habitats of 13 state-listed protect animal species, as summarized in Table 5-21. Based on the NHESP database, no protected plant species are reported to occur along the Preferred Northern Route in Massachusetts.

As shown in Table 5-21, of the 13 state-listed species identified as potentially occurring along the route, eight are aquatic species or those otherwise generally restricted to and dependent upon the riverine habitats present (e.g., the Connecticut River and the Westfield River). These species include the shortnose sturgeon, several species of freshwater mussels and dragonflies and the Bald Eagle. Along the Preferred Northern Route, the proposed transmission facilities will span these rivers and thus will not affect these species or the habitat they utilize.

Table 5-21: Summary of State-Listed “Protected” Species Habitat Mapped within and/or Along the Preferred Northern Route

Scientific Name	Common Name	NHESP Polygon Code(s)	General Location
<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	PH 1236, 1234 EH 875, 873	CT River Westfield River
<i>Alasmidonta undulata</i>	Triangle Floater	PH 167, 1234 EH 844, 873	Westfield River
<i>Lampsilis cariosa</i>	Yellow Lampmussel	PH 1236; EH 875	CT River
<i>Leptodea ochracea</i>	Tidewater Mucket	PH 1236 EH 875	CT River
<i>Ambystoma laterale</i>	Blue-Spotted Salamander	PH 39, 966, 167, 1142 EH 582, 303, 756, 844, 493	Ludlow
<i>Haliaeetus leucocephalus</i>	Bald Eagle	PH 1236, 1234; EH 875, 873	CT River, Westfield River
<i>Hemidactylium scutatum*</i>	Four-Toed Salamander*	PH 167, 1142, 1191, 1149 EH 564, 490, 756, 844, 493	Ludlow
<i>Neurocordulia yamaskanensis</i>	Stygian Shadowdragon	PH 1236 EH 875	CT River Westfield River
<i>Stylurus amnicola</i>	Riverine Clubtail	PH 1236; EH 875	CT River Westfield River
<i>Stylurus spiniceps</i>	Arrow Clubtail	PH 1236, 1234; EH 875, 873	CT River Westfield River
<i>Terrapene carolina</i>	Eastern Box Turtle	PH 167, 1101, 1102, 1200, 1234 EH 756, 449, 450, 577, 873	Agawam
<i>Carphophis amoenus</i>	Eastern Worm Snake	PH 1102 EH 450	Agawam

* Recently de-listed by the MA NHESP.

NHESP was consulted regarding the need for field studies of the potential habitats for the state-listed species along the Preferred Northern Route. No surveys were conducted for the eight species listed above that are closely tied to the major riverine habitats, because no negative impacts are anticipated to the waterways that provide potential habitat for these species. However, at the request of NHESP, and in accordance with a NHESP-approved field methods protocol, as well as a scientific collection permit issued by the DFW, WMECO’s consultants conducted field surveys in the Spring of 2008 for the terrestrial and wetland species listed in Table 5-21 that could potentially be affected by the Project and that can be practically identified in the field prior to construction. On the Preferred Northern Route, this is limited to the blue-spotted salamander, which was indicated by NHESP as potentially occurring on the ROW in Ludlow. Blue-spotted salamanders are a fossorial species, meaning that much of their time is spent underground. They can, therefore, be hard to detect. However, each spring, adults travel overland to wetland areas and vernal pools to breed. It is during this relatively active time period when surveys are performed, as this is the time of year they are most easily located. The surveys carried out for this species

by WMECO's consultants in the spring of 2008 did not confirm this species is present on the ROW as indicated by the NHESP.

Surveys for Eastern box turtle and Eastern worm snake were not performed as there are no reliable survey methods which prove presence or absence for these species. Should this route be approved by the EFSB, WMECO would address any concerns NHESP has relative to these species and incorporate the necessary mitigation measures into the Project plans.

5.3.6.1.2 Noticed-Alternative Southern Route

According to NHESP, the Noticed-Alternative Southern Route crosses through Estimated and/or Priority habitats of 19 different Protected Species, as summarized in Table 5-22. Unlike the habitats identified along the Preferred Northern Route, a large number of which are related to aquatic riverine environments that the overhead transmission lines would span, many of the habitats that were identified by the NHESP as potentially occurring along the Noticed-Alternative Southern Route are wetland and terrestrial habitats, and thus more likely to be affected if the Project were developed along this alignment.

Table 5-22: Summary of State-Listed “Protected” Species Habitat Mapped within and/or Along the Noticed-Alternative Southern Route

Scientific Name	Common Name	NHESP Polygon Code(s)	General Location
<i>Terrapene carolina</i>	Eastern Box Turtle	PH1102, EH 450, PH 1101, EH 449, PH 1200, EH 577, PH 167, EH 756, EH 844	Agawam, East Longmeadow, Hampden, Wilbraham
<i>Carphophis amoenus</i>	Eastern Worm Snake	PH 1102, EH 450, PH 167, EH 756, EH 844	Agawam, East Longmeadow, Hampden, Wilbraham
<i>Clemmys insculpta</i>	Wood Turtle	PH 167, EH 756, EH 844	East Longmeadow, Hampden, Wilbraham, Ludlow
<i>Hemidactylum scutatum*</i>	Four-toed Salamander*	PH 167, EH 756, EH 844, PH 1149, EH 490, PH 1191, EH 564	East Longmeadow, Hampden, Wilbraham, Ludlow
<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	PH 1191, EH 564	East Longmeadow
<i>Ambystoma laterale</i>	Blue-spotted Salamander	PH 167, EH 756, EH 844	East Longmeadow, Hampden, Wilbraham, Ludlow
<i>Scaphiopus holbrookii</i>	Spadefoot Toad	PH 167, EH 756, EH 844	East Longmeadow, Hampden, Wilbraham, Ludlow
<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	PH 1236, EH 875	Longmeadow
<i>Alasmidonta undulata</i>	Triangle Floater	PH 167, EH 756, EH 844	East Longmeadow, Hampden, Wilbraham, Ludlow
<i>Lampsilis cariosa</i>	Yellow Lampmussel	PH 1236, EH 875	Longmeadow
<i>Leptodea ochracea</i>	Tidewater Mucket	PH 1236, EH 875	Longmeadow
<i>Neurocordulia yamaskanensis</i>	Stygian Shadowdragon	PH 1236, EH 875	Longmeadow
<i>Stylurus spiniceps</i>	Arrow Clubtail	PH 1236, EH 875	Longmeadow
<i>Stylurus amnicola</i>	Riverine Clubtail	PH 1236, EH 875	Longmeadow
<i>Haliaeetus leucocephalus</i>	Bald Eagle	PH 1236, EH 875	Longmeadow
<i>Ranunculus pensylvanicus</i>	Bristly Buttercup	PH 167, EH 844, EH 756	East Longmeadow, Hampden, Wilbraham, Ludlow
<i>Lygodium palmatum</i>	Climbing Fern	PH 167, EH 844, EH 756	East Longmeadow, Hampden, Wilbraham, Ludlow
<i>Arisaema dracontium</i>	Green Dragon	PH 1236	Longmeadow
<i>Carex grayi</i>	Gray’s Sedge	PH 1236	Longmeadow
<i>Claytonia virginica</i>	Narrow-leaved Spring Beauty	PH 1236	Longmeadow

* Recently de-listed by the MA NHESP.

At the request of NHESP, and in accordance with a NHESP-approved field methods protocol, WMECO’s consultants conducted surveys during the spring and summer of 2008 for all of the rare plant species

identified in Table 5-22, as well as for the Jefferson and Blue-Spotted Salamander. The Jefferson-Blue-spotted salamander complex¹⁰, Gray's sedge, narrow-leaved spring beauty, bristly buttercup, and climbing fern were all confirmed to occur on the Noticed-Alternative Southern Route.

5.3.6.2 Impacts and Mitigation

The impacts and mitigation for Protected Species and habitats of the Preferred Northern Route and the Noticed-Alternative Southern Route are summarized below.

5.3.6.2.1 Preferred Northern Route and Related Facilities

Based on NHESP-approved surveys conducted by WMECO's consultants in 2008, no protected plant or animal species have been identified as occurring along the Preferred Northern Route. WMECO is continuing its discussions with NHESP in order to determine whether other species estimated to occur along this route may potentially be impacted.

5.3.6.2.2 Noticed-Alternative Southern Route

Based on NHESP-approved surveys conducted by WMECO's consultants in 2008, the following Protected Species were confirmed to occur along the Noticed-Alternative Southern Route:

- Gray's Sedge;
- Worm snake;
- Narrow-leaved Spring Beauty;
- Climbing Fern;
- Bristly Buttercup; and
- Blue-Spotted Salamander and Jefferson Salamander complex (a hybrid of the two species)

5.3.6.2.3 Comparison of Protected Species and Habitats Impacts

Based on the intensive field surveys conducted to date, as well as general habitat information in the NHESP database, the Noticed-Alternative Southern Route provides more Protected Species habitat than the Preferred Northern Route. While WMECO will be furthering its consultation with NHESP in the coming months to determine what additional Protected Species surveys may be required for both routes, if any, and what the potential impacts could be to those species not previously surveyed for, the potential to

¹⁰ The Jefferson complex is a grouping of two species which have hybridized and cannot easily be distinguished morphologically in the field. The complex comprises the Jefferson Salamander (*Ambystoma jeffersonianum*) and the Blue-spotted Salamander (*Ambystoma laterale*), in addition to unisexual salamanders.

impact Protected Species is far greater on the Noticed-Alternative Southern Route than for the Preferred Northern Route. Therefore, regarding negative potential impacts to Protected Species and their habitats, the Preferred Northern Route is superior to the Noticed-Alternative Southern Route.

5.3.6.2.4 Mitigation Measures

WMECO and NHESP have discussed the possible construction measures and monitoring that will be required in order to avoid the taking of Protected Species. In areas mapped as potential habitat for Protected Species, these are likely to include:

- The avoidance of impacts to “Eagle Trees” within 300 feet of the Connecticut and Westfield Rivers to ensure no loss of active bald eagle habitat;
- The use of, and rigorous monitoring and maintenance of sedimentation and erosion control measures to prevent water quality impacts to the rare dragonfly, mussel, and fish habitat areas;
- Re-vegetation to the greatest extent practicable within 200 feet of the waterways known to possess the rare dragonfly, mussel, and fish habitat areas;
- Use of low ground pressure equipment (e.g., tracked vs. wheeled vehicles; wheeled vehicles with oversized tires) to the greatest extent practicable;
- Appropriate construction timing to avoid impacts to the Eastern worm snake and Eastern spadefoot toad; and
- The preparation and approval (by NHESP) of a formal “Turtle Protection Plan”, in conjunction with possible construction timing and/or daily “sweeps” of the construction area by an approved biologist, in order to avoid the taking of or injury to the Eastern box turtle and wood turtle.

WMECO anticipates further consultation with NHESP will occur during the next few months in order to formulate a detailed construction and monitoring plan intended to avoid impacts to Protected Species.

5.3.7 Surface Waters

The existing environment and impacts and mitigation measures for the Preferred Northern Route and the Noticed-Alternative Southern Route are in the following subsections.

5.3.7.1 Existing Environment

The existing surface water resources for the Preferred Northern Route and the Noticed-Alternative Southern Route are summarized below.