

Preferred Northern Route is superior to the Noticed-Alternative Southern Route with respect to minimizing potential visual impacts.

5.3.4.2.4 Mitigation Measures

It is unlikely that designated visually-sensitive areas will be affected long-term by the Project.⁹ Proposed activities will be located within previously established transmission corridors, near land areas occupied by commercial and industrial land uses, intermixed with residential development. While the change from 115-kV transmission lines to 345-kV transmission lines will result in the construction of taller transmission structures, the visual character of the area will be only modestly affected.

5.3.5 Wetlands and Vernal Pools

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

5.3.5.1 Existing Environment

The existing wetland and vernal pools for the Preferred Northern Route and the Noticed-Alternative Southern Route are summarized below.

5.3.5.1.1 Preferred Northern Route

During 2007 and 2008, WMECO environmental consultants conducted field studies to map the type and extent of jurisdictional wetlands, watercourses, and waterways along the Preferred Northern Route for the GSRP facilities. Prior to the field work, desktop research was conducted to facilitate the delineation of freshwater wetlands, waterways, and vernal pools along the Project routes. The following resources were used to determine areas where wetlands and vernal pools would be particularly likely to be found along the GSRP area:

- U.S. Fish & Wildlife Service National Wetlands Inventory (NWI) Mapping
- MassDEP Wetlands Mapping
- USDA/NRCS Soil Surveys
- MassGIS and Natural Heritage and Endangered Species Program (NHESP) Certified and Potential Vernal Pools data layer

⁹ Although there are several hundred feet of woodland buffer between the historic Ludlow Center and the ROW, it is possible that the new taller structures may be visible from Ludlow Center.

Following this office-based research, field studies were conducted during 2007 and 2008 to identify the type and extent of local, state, and federal jurisdictional wetlands, vernal pools, watercourses, and waterways along the proposed GSRP routes. Field surveys were performed according to the procedures contained in the following documents:

- U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987);
- Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act (MassDEP, 1995);
- A Field Guide to the Animals of Vernal Pools (Massachusetts Division of Fisheries & Wildlife, 2000); and
- Applicable municipal wetlands protection by-laws and ordinances.

Each wetland and watercourse boundary was demarcated by numbered flagging, and was subsequently located in the field using a Trimble Global Positioning System (GPS) survey unit. Wetlands were classified as palustrine forested (PFO), palustrine scrub-shrub (PSS), and palustrine emergent (PEM) in accordance with Cowardin et al. (1979). In instances where a wetland could be characterized by more than one wetland classification type, the most dominant cover type was listed first with the lesser cover type (by area) listed second.

The existing overhead transmission line ROWs that both possible GSRP routes follow encompass a variety of wetlands. Most of these wetlands have in part been historically affected (and in some cases, created) by the routine vegetation management and soil compaction associated with vehicles used to maintain the ROWs for the safe operation of the transmission facilities. The wetlands found in the existing, maintained portions of the transmission line ROWs typically consist of scrub-shrub, emergent marsh, wet meadow vegetation, or some combination of these cover types and include both Bordering Vegetated Wetlands (BVWs) as well as Isolated Wetlands.

Isolated wetlands are not jurisdictional resource areas under the Massachusetts Wetlands Protection Act unless they hold enough water to meet the definition of Isolated Land Subject to Flooding (310 CMR 10.57). BVWs, Land Under Waterbodies and Waterways (land under streams, rivers, ponds and lakes) (LUWW), and isolated wetlands are generally all considered “Waters of the United States”, subject to Section 404 and Section 401 of the Federal Clean Water Act, and equal weight is generally afforded to these resource areas in terms of protection under these programs. There are no tidelands within the GSRP area.

A number of Massachusetts-designated wetland resource areas and jurisdictional federal wetlands were identified and surveyed along or in the immediate vicinity of the Preferred Northern Route. The following Table 5-14 contains a list of the subject wetlands. All of the wetlands within the vicinity of the ROW are shown on the aerials for the Preferred Northern Route set forth in Exhibit 5.2.

Table 5-14: Wetlands Crossed by the Preferred Northern Route 115-kV and 345-kV Facilities: CT/MA State Border to Ludlow

Wetland Series Number ¹	Municipality	Wetland Class ²	Type ³	Comments
W1-1	Agawam, MA / Suffield, CT	PFO/PEM	BVW	
W1-2	Agawam	PEM/PSS	BVW	Associated with S01HA101
W1-3	Agawam	PEM	BVW	
W1-4	Agawam	PFO/PSS	BVW/Riverfront	Associated with Still Brook S01HA103
W1-5	Agawam	PEM/OW	BVW	Man-made pond within golf course
W1-6	Agawam	PEM/OW	BVW	Potential VP habitat
W1-7	Agawam	PEM	BVW	
W1-8	Agawam	PEM	BVW	
W1-9	Agawam	PSS	BVW	Associated with Philo Brook/S01HA104
W1-10	Agawam	PSS/PEM	BVW	Associated with S01HA105
W1-11	Agawam	PSS/PEM	BVW	Associated with S01HA106
W1-12	Agawam	PEM	BVW	
W1-13	Agawam	PEM	BVW	
W1-14	Agawam	PEM	BVW	Drainage ditch receives water from detention basin and drive
W1-15	Agawam	PFO	BVW	
W1-16A	Agawam	PEM/PSS/PFO	BVW	
W2-17	Agawam	PEM/PSS/PFO	BVW	
W2-21	Agawam	PEM/PFO	BVW	Associated with S05HA005
W2-20	Agawam	PEM/PFO	BVW	Associated with S05HA003 and S05HA004
W2-19	Agawam	PEM/PFO	BVW	
W2-23	Agawam	PEM/PSS	IVW	PVP
W2-22	Agawam	PEM/PFO	BVW	Associated with S05HA002 / Three Mile Brook
W2-33	Agawam	PEM/PFO	BVW	
W2-32	Agawam	PEM/PFO	BVW	
W2-31	Agawam	PSS	IVW	
W2-30	Agawam	PSS/PFO	BVW	Associated with S05HA001
W2-29	Agawam	PSS/PFO	BVW	
W2-28	Agawam	PEM	BVW	
W2-27	Agawam	PEM/PSS	IVW	
W2-25	Agawam	PEM	BVW	
W3-34	Agawam	PSS	BVW/Riverfront	Associated with Westfield

Wetland Series Number ¹	Municipality	Wetland Class ²	Type ³	Comments
				River/S01HA002a
W3-36	West Springfield	PSS	BVW	Associated with intermittent waterbody/S01HA002c
W3-37	West Springfield	PSS	BVW	Associated with intermittent waterbody/S01HA003
W3-38	West Springfield	Riprap swale	BVW	
W3-39	West Springfield	PEM / PFO	BVW	
W3-40	West Springfield	PFO	BVW	Associated with S01HA004 and S01HA005/Piper Brook
W3-41	West Springfield	PSS	BVW/Riverfront	Associated with Bogg Brook/S01HA006
W3-42	West Springfield	PSS / PEM	BVW	Associated with S01HA007
W3-43	West Springfield	PSS	BVW	
W3-44	West Springfield	PSS	BVW/Riverfront	Associated with Golden Brook /S01HA007a
W3-45	West Springfield	PEM	BVW	Swale along I-91
W3-46	West Springfield	PEM / PFO	BVW	Associated with S01HA008
W3-47	West Springfield	PSS	BVW	
W3-48	West Springfield	PSS	BVW	
W3-49	West Springfield	PSS	BVW	
W3-50	West Springfield	PSS/PFO	BVW	Associated with S-01-HA-009/Schoolhouse Brook
W3-51	West Springfield	PSS	BVW	
W3-52	West Springfield	PSS	BVW	
W3-53	West Springfield	PSS	BVW	
W3-55	Chicopee	PEM	BVW	Drainage from Mass Pike
W3-57	Chicopee	PEM/OW	BVW	Detention pond
W3-58	Chicopee	PSS	BVW	Drainage from Mass Pike
W3-56	Chicopee	PEM	BVW	Drainage from Mass Pike
W3-59/60A	Chicopee	PEM	BVW	Drainage from Mass Pike
W3-60	Chicopee	PEM	BVW	
W3-62	Chicopee	PEM	BVW	
W3-61	Chicopee	PEM	Detention Basin	
W3-68	Chicopee	PEM	BVW	
W3-67	Chicopee	PEM	BVW	Drainage from Mass Pike
W3-70	Chicopee	PEM/PSS	BVW	
W3-71	Chicopee	PEM/PSS	BVW	Associated with S02HA003 / Fuller Brook
W3-72	Chicopee	PEM/PSS	BVW	
W3-73	Chicopee	PEM	Isolated	
W3-74	Chicopee	PEM	N/A	Unregulated detention basin
W3-75	Chicopee	PFO	Isolated	Confirmed vernal pool
W3-78	Ludlow	PSS	BVW	
W3-79	Ludlow	PEM/PSS	BVW	
W3-80	Ludlow	PEM	BVW	Not located due to location behind electric fence with livestock / Associated with S02HA007
W3-81	Ludlow	PEM/PSS/PFO	BVW	Associated with Fuller Brook S-02-HA-008
W3-82	Ludlow	PEM/PSS/O	BVW	Confirmed vernal pool

Wetland Series Number ¹	Municipality	Wetland Class ²	Type ³	Comments
		W		
W3-83	Ludlow	PSS/PFO	BVW	
W3-84	Ludlow	PEM/PSS/PFO	BVW	Associated with S02HA008a / Fuller Brook
W3-85	Ludlow	PEM/PSS/PFO	BVW	
W3-86	Ludlow	PEM/OW	Isolated	Confirmed Vernal Pool
W3-87	Ludlow	PEM	BVW	
W3-88	Ludlow	PEM	BVW	
W3-89	Ludlow	PEM/PSS	BVW	
W3-90	Ludlow	PEM/PSS/PFO	BVW	
W3-91	Ludlow	PEM	Isolated	
W3-92	Ludlow	PEM/PSS	BVW	
W3-93	Ludlow	PEM/PSS	BVW	
W3-94	Ludlow	PEM	BVW	
W3-95	Ludlow	PEM	BVW	
W3-96	Ludlow	PEM	BVW	
W3-97	Ludlow	PEM/PSS	BVW	
W3-98	Ludlow	PEM/PSS	BVW	Associated with S02HA033
W3-99	Ludlow	PEM/PSS	BVW	
W3-100	Ludlow	PEM	BVW	Associated with Harris Brook / S02HA008b
W3-101	Ludlow	PEM	BVW	
W3-102	Ludlow	PEM/PSS	BVW	Associated with un-named perennial stream / S02HA037
W3-103	Ludlow	PEM/PSS	BVW	
W3-104	Ludlow	PEM/PSS	IVW	
W3-105	Ludlow	PFO	IVW	
W3-106	Ludlow	PEM/PFO	BVW	
W3-107	Ludlow	PSS	Isolated	
W3-108	Ludlow	PFO	BVW	
W3-109	Ludlow	PSS	Isolated	
W3-110	Ludlow	PSS	BVW	Associated with Higher Brook / S02HA009
W3-111	Ludlow	PEM/PSS/PFO	BVW	Associated with S02HA047

1: Series No. refers to wetland/waterbody numbers illustrated on the aerial photographs in Exhibit 5.2

2: Wetlands classification according to Cowardin et al 1979;

3: In Massachusetts, wetlands are classified as either BVW-bordering vegetated wetlands or IVW – isolated vegetated wetlands

According to MassGIS data, only one certified vernal pool exists along the Preferred Northern Route.

The following Table 5-15 contains the subject MassGIS vernal pool information. In addition, Table 5-15 lists all wetlands confirmed by WMECO's environmental consultants during the spring of 2008 as containing vernal pool habitat. The single Certified Vernal Pool along the Preferred Northern Route (CVP 1373), which occurs in Ludlow, coincides with Wetland W3-103. This wetland was independently

identified as providing vernal pool habitat by WMECO's environmental consultants during the 2008 vernal pool surveys.

Table 5-15: MA Natural Heritage and Endangered Species Program Certified Vernal Pools and Confirmed Vernal Pool Habitats in the Vicinity of the Preferred Northern Route 115-kV and 345-kV Facilities: CT/MA State Border to Ludlow

CVP Number or Wetland Number	Municipality	Wetland Class
W1-10	Agawam	PFO/PSS
W1-16A	Agawam	PSS
W2-17	Agawam	PFO/PEM
W3-65	Chicopee	PEM
W3-75	Chicopee	PFO/PSS
W3-82	Ludlow	PFO/PSS
W3-86	Ludlow	PEM
W3-100	Ludlow	PFO/PSS
W3-102	Ludlow	PEM
W3-104	Ludlow	PFO/PSS
W3-106	Ludlow	PFO/PEM
CVP 1373/W3-103	Ludlow	PFO/PSS

5.3.5.1.2 Noticed-Alternative Southern Route

In order to delineate wetlands along the Noticed-Alternative Southern Route, the same approach, involving baseline research and field studies, was used as described in Section 5.3.5.1.1 for the Preferred Northern Route. As a result of these studies, various federal, state and/or local wetlands were delineated along the Noticed-Alternative Southern Route. The following Table 5-16 contains a listing of the subject wetlands.

Table 5-16: Wetlands Traversed By the Noticed-Alternative Southern Route in Massachusetts

Wetland Series Number ¹	Municipality	Wetland Class ²	Type ³	Comments
W1-18D	Agawam	PEM	BVW	None
W8-139	Agawam	PSS/PFO	BVW	None
W8-140	Agawam	PSS/PFO	BVW	None
W8-141	Agawam	PEM	BVW	None
W8-142	Agawam	PSS/PFO	BVW	None
W8-148A/ W8-148B	Longmeadow	PSS/PFO	BVW	CT River floodplain
W8-149	Longmeadow	PSS/PFO	BVW	CT River floodplain
W8-153	Longmeadow	PSS/PFO	BVW	Near Wolf Swamp Park
W8-154	East Longmeadow	OW/PSS	BVW	Jawbuck Brook Reservoir
W8-155	East Longmeadow	PSS	BVW	Associated with Freshwater Brook
W8-156	East Longmeadow	PSS	BVW	None
W8-157	East Longmeadow	PFO	BVW	None
W8-158	East Longmeadow	PSS	BVW	None
W8-159/ W8-160	East Longmeadow	PSS	BVW	None
W8-172	Hampden	PSS	BVW	None
W8-173	Hampden	PEM	BVW	Heron rookery
W8-174	Hampden	PFO	BVW	None
W8-175	Hampden	PSS	BVW	None
W8-176	Hampden	PFO	BVW	None
W8-177	Hampden	PSS	BVW	None
W8-178	Hampden	PFO	BVW	None
W8-179	Wilbraham	PFO/PSS	BVW	None
W1-18	Agawam	PEM/PFO	BVW	None
W1-18A	Agawam	PEM	IVW	None
W1-18C	Agawam	PEM	BVW	None
W1-18B	Agawam	PEM	BVW	None
W8-135	Agawam	PEM	BVW	None
W8-136	Agawam	PEM/PFO	BVW	None
W8-137	Agawam	PEM/PFO	BVW	None
W8-138	Agawam	PEM/PSS	BVW	None
W8-161	East Longmeadow	PSS	BVW	None
W8-162	East Longmeadow	PSS	BVW	None
W8-163	East Longmeadow	PSS	BVW	Associated with Watchaug Brook
W8-164	East Longmeadow	PSS	BVW	None
W8-165	East Longmeadow	PFO	IVW	None
W8-166	East Longmeadow	PSS	BVW	None
W8-167	East Longmeadow	PFO	BVW	None
W8-168	East Longmeadow	PSS/PFO	BVW	None
W8-169	Hampden	PSS	BVW	None

Wetland Series Number ¹	Municipality	Wetland Class ²	Type ³	Comments
W8-170	Hampden	PFO	BVW	None
W8-171	Hampden	PSS	BVW	None
W8-212	Ludlow	PFO	BVW	None
W8-211	Ludlow	PSS/PFO	BVW	None
W8-210	Ludlow	PSS/PEM	BVW	None
W8-209	Ludlow	PFO	BVW	None
W8-208	Ludlow	PFO	BVW	None
W8-207	Ludlow	PFO/PSS	BVW	None
W8-206	Ludlow	PEM	BVW	None
W8-205	Ludlow	PEM/PSS	BVW	None
W8-204	Ludlow	PSS	IVW	None
W8-203	Ludlow	PEM/PFO	BVW	None
W8-202	Ludlow	PEM	BVW	None
W8-201	Ludlow	PEM/PFO	BVW	None
W8-200	Ludlow, Wilbraham	PEM	BVW	Associated with Chicopee River
W8-199	Wilbraham	PFO	IVW	None
W8-198	Wilbraham	PFO	BVW	None
W8-197	Wilbraham	PFO/PEM	BVW	None
W8-196	Wilbraham	PSS	BVW	None
W8-195	Wilbraham	PEM	BVW	None
W8-194	Wilbraham	PSS	BVW	None
W8-193	Wilbraham	PSS	IVW	None
W8-192	Wilbraham	PSS	IVW	None
W8-191	Wilbraham	PEM	BVW	Associated with White Cedar Swamp
W8-183	Wilbraham	PEM	BVW	None
W8-184	Wilbraham	PFO/PSS	BVW	None
W8-185	Wilbraham	PSS	BVW	None
W8-186	Wilbraham	PSS	BVW	None
W8-187	Wilbraham	PFO	BVW	None
W8-189	Wilbraham	PSS/PFO	BVW	None
W8-190	Wilbraham	PSS	IVW	None
W8-182	Wilbraham	PSS	BVW	None
W8-181	Wilbraham	PSS	IVW	None
W8-180	Wilbraham	PSS	IVW	None

1: Series No. refers to wetland/waterbody numbers illustrated on the aerial photographs in Exhibit 5.2

2: Wetlands classification according to Cowardin et al 1979

3: In Massachusetts, wetlands are classified as either BVW-bordering vegetated wetlands or IVW – isolated vegetated wetlands

According to MassGIS data, no certified vernal pools exist along the Noticed-Alternative Southern Route. However, as a result of vernal pool surveys performed by WMECO's environmental consultants in the spring of 2008, a portion of 27 wetlands in the ROW of the Noticed-Alternative Southern Route were identified as providing vernal pool habitat. A particularly noteworthy wetland feature along the Noticed-

Alternative Southern Route is a Great Blue Heron rookery located in Hampden. These wetlands are listed in Table 5-17.

Table 5-17: Wetlands Providing Vernal Pool Habitat in the ROW of the Noticed-Alternative Southern Route in Massachusetts

Wetland Number	Municipality	Wetland Class
W1-16A	Agawam	PSS
W1-18C	Agawam	PFO/PEM
W2-17	Agawam	PFO/PEM
W8-135	Agawam	PSS
W8-142	Agawam	PFO/PSS
W8-151	Longmeadow	PFO
W8-156	East Longmeadow	PFO/PSS
W8-157	East Longmeadow	PFO
W8-160	East Longmeadow	PFO/PSS
W8-173	Hampden	PEM
W8-174	Hampden	PFO
W8-175	Hampden	PFO/PSS
W8-176A	Hampden	PFO/PSS/PEM
W8-177	Hampden	PFO/PSS
W8-180	Wilbraham	PFO/PSS
W8-181	Wilbraham	PSS
W8-182	Wilbraham	PSS
W8-183	Wilbraham	PFO/PSS
W8-184	Wilbraham	PFO/PSS/PEM
W8-186	Wilbraham	PFO/PSS
W8-187	Wilbraham	PFO/PSS
W8-189	Wilbraham	PFO/PSS
W8-190	Wilbraham	PFO/PSS
W8-191	Wilbraham	PFO/PEM
W8-192	Wilbraham	PFO/PSS
W8-196	Wilbraham	PSS
W8-205	Ludlow	PFO/PEM

5.3.5.2 Impacts and Mitigation

The impacts and mitigation for wetlands and vernal pools of the Preferred Northern Route and the Noticed-Alternative Southern Route are summarized below.

5.3.5.2.1 Preferred Northern Route and Related Facilities

Effects on wetlands would occur from vegetation removal, the temporary placement of construction mats that will be needed in order to allow heavy machinery to cross certain wetlands, the placement of equipment staging pads, grading and filling necessary to improve access roads, and the unavoidable installation of some new transmission line structures and/or foundations within wetlands (in locations where there are no viable upland structure sites). Potential wetland impacts were evaluated based on the

results of both a detailed constructibility review and a more generic evaluation of the potential alignment of access roads through wetlands along the Preferred Northern Route. The detailed constructibility review, which was conducted only for the Preferred Northern Route, estimated that approximately 9 acres of wetlands could be affected as a result of the development of the Project along the Preferred Northern Route. The more generic evaluation, which was predicated upon the assumption that access roads would traverse directly along the entire ROW, revealed that approximately 6.2 miles of wetlands, and watercourses would be affected.

5.3.5.2.2 Noticed-Alternative Southern Route

Effects on wetlands on the Noticed-Alternative Southern Route would be incurred in a similar fashion. While detailed constructibility analyses were not performed, it was determined, based on the same straight-line access road presumption used for the generic evaluation of impacts along the Preferred Northern Route, that approximately 12.8 miles of the proposed ROW crosses through wetlands, watercourses, and non-wetland floodplains along the Noticed-Alternative Southern Route.

5.3.5.2.3 Comparison of Wetlands and Vernal Pools Impacts

Based on the vegetated wetland impact analyses described above, approximately 3.6 miles of these resources would be affected along the Preferred Northern Route, versus 5.9 miles on the Noticed-Alternative Southern Route. Overall, the functional quality (e.g., the ability of these wetlands to potentially polish surface water of contaminants, attenuate floodwaters, provide significant aquatic species habitat, entrap sediments, and remove and transform nutrients) of wetlands along the Noticed-Alternative Southern Route is higher than those of the Preferred Northern Route, due mainly to the fact the Noticed-Alternative Southern Route is less developed. That is to say, wetlands along the Noticed-Alternative Southern Route generally function better, provide higher value, and are, relatively speaking, more important than those which occur along the Preferred Northern Route. A particularly noteworthy wetland feature along the Noticed-Alternative Southern Route is a Great Blue Heron rookery located in Hampden. This is a relatively uncommon type of wildlife habitat in Massachusetts and no such habitat currently exists along the Preferred Northern Route.

In addition, selection of the Noticed-Alternative Southern Route would mean that the majority of the impacts to wetlands along the Preferred Northern Route would still occur due to the need to accommodate the 115-kV re-builds along the Preferred Northern Route regardless of which route is selected for the new 345-kV infrastructure. As previously stated, a number of Massachusetts-designated wetland resource areas and jurisdictional federal wetlands were identified and surveyed along or in the immediate vicinity

of the Preferred Northern Route. Some of these wetlands will have unavoidable construction related impacts, some will not. Table 5-18 identifies what types of impacts are currently proposed to which wetlands along the Preferred Northern Route. Since the 115-kV upgrades will occur along the Preferred Northern Route, most of these impacts are common to the use of either the Preferred Northern Route or the Noticed-Alternative Southern Route.

Table 5-18: Proposed Impacts to Wetlands along the Preferred Northern Route

Wetland Series Number	Municipality	Wetland Class	Wetland Type	Type of Wetland Impact
Massachusetts Border to South Agawam				
W1-1	Agawam, MA, Suffield, CT	PFO/PEM	BVW	Proposed Crane Pad
W1-4	Agawam	PFO/PSS	BVW/Riverfront	Proposed Crane Pad
W1-5	Agawam	PEM/OW	BVW	Proposed Crane Pad
W1-6	Agawam	PEM/OW	BVW	Proposed Crane Pad
W1-7	Agawam	PEM	BVW	Preferred Access Road
W1-10	Agawam	PSS/PEM	BVW	Proposed Crane Pads, Preferred Access Road, Proposed Structure
W1-11	Agawam	PSS/PEM	BVW	Proposed Crane pads, Preferred Access Road, Proposed Structure
W1-15	Agawam	PFO	BVW	Proposed Crane Pad
W1-16A	Agawam	PFO, PSS, PEM	BVW	Proposed Crane pads, Preferred Access Roads, Proposed Structures
South Agawam to Agawam				
W2-17	Agawam	PFO, PSS, PEM	BVW	Proposed Crane Pad, Proposed Structure
W2-20	Agawam	PFO, PEM	BVW	Proposed Crane Pad
W2-21	Agawam	PFO, PEM	BVW	Preferred Access Road
W2-32	Agawam	PFO, PEM	BVW	Alternate Access Road
W2-33	Agawam	PFO, PEM	BVW	Alternate Access Road
W2-29	Agawam	PFO, PSS	BVW	Proposed Crane Pad, Proposed Structures
W2-26	Agawam	PFO, PSS	BVW	Proposed Crane Pad
W2-27	Agawam	PSS, PEM	IVW	Proposed Crane pad
Agawam to Ludlow				
W3-36	West Springfield	PSS	BVW	Proposed Crane Pad, Preferred Access Road
W3-37	West Springfield	PSS	BVW	Proposed Crane Pads, Alternate Access Road
W3-41	West Springfield	PSS	BVW/Riverfront	Proposed Crane Pad, Proposed Structures, Preferred Access Road, Alternate Access Road
W3-43	West Springfield	PSS	BVW	Proposed Crane pad
W3-45	West Springfield	PEM	BVW	Proposed Crane pad
W3-46	West Springfield	PFO, PEM	BVW	Proposed Crane Pad, Proposed Structure
W3-48	West Springfield	PSS	BVW	Proposed Crane Pad
W3-53	West Springfield	PSS	BVW	Preferred Access Road

Wetland Series Number	Municipality	Wetland Class	Wetland Type	Type of Wetland Impact
W3-55	Chicopee	PEM	BVW	Proposed Crane Pad
W3-65	Chicopee	PFO, PSS, PEM	BVW	Proposed Crane Pad, Proposed Structures, Preferred Access Road, Alternate Access Road
W3-70	Chicopee	PSS, PEM	BVW	Proposed Crane Pad, Proposed Structures, Preferred Access Road
W3-70A	Chicopee	PSS, PEM	BVW	Proposed Crane Pad
W3-71	Chicopee	PSS, PEM	BVW	Preferred Access Road
W3-72	Chicopee	PSS, PEM	BVW	Proposed Crane Pad, Proposed Structure, Preferred Access Road, Alternate Access Road
W3-79	Ludlow	PSS, PEM	BVW	Proposed Crane Pad, Proposed Structures
W3-84	Ludlow	PFO, PSS, PEM	BVW	Proposed Crane Pad, Proposed Structures, Preferred Access Road
W3-86	Ludlow	PEM/OW	IVW	Proposed Crane Pads, Preferred Access Road
W3-87	Ludlow	PEM	BVW	Preferred Access Road
W3-89	Ludlow	PSS, PEM	BVW	Proposed Crane Pad, Alternate Access Road
W3-90	Ludlow	PFO, PSS, PEM	BVW	Proposed Crane Pads, Proposed Structures, Preferred Access Road, Alternate Access Road
W3-93	Ludlow	PSS, PEM	BVW	Proposed Crane Pad, Preferred Access Road
W3-94	Ludlow	PEM	BVW	Proposed Crane Pad
W3-98	Ludlow	PSS, PEM	BVW	Proposed Crane Pad
W3-100	Ludlow	PEM	BVW	Proposed Crane Pad, Proposed Structure
W3-102	Ludlow	PEM	BVW	Proposed Crane Pads, Proposed Structures, Alternate Access Road
W3-106	Ludlow	PFO, PEM	BVW	Proposed Crane Pads, Proposed Structures, Alternate Access Road
W3-110	Ludlow	PSS	BVW	Alternate Access Road
W3-111	Ludlow	PFO, PSS, PEM	BVW	Proposed Crane Pads, Proposed Structures

In practical terms, based on the foregoing, selection of the Noticed-Alternative Southern Route would result in more impacts to wetlands than the Preferred Northern Route. Therefore, as it relates to wetland impacts, the Preferred Northern Route is superior.

With regard to potential impacts to wetlands which provide vernal pool habitat (in whole or in part) on the Preferred Northern Route, of the 12 wetlands with confirmed vernal pool habitat, 8 have associated proposed impacts. Table 5-19 lists all wetlands along this route which provide vernal pool habitat and identifies which wetlands are proposed to have Project related impacts and what those impacts are.

Table 5-19: Proposed Impacts to Wetlands along the Preferred Northern Route, which Provide Vernal Pool Habitat

Wetland Series Number	Municipality	Type of Impact
W3-106	Ludlow	Proposed Crane Pads, Proposed Structures, Alternate Access Road
W3-102	Ludlow	Proposed Crane Pad, Proposed Structures, Alternate Access Road
W3-103	Ludlow	No Proposed Impacts
W3-104	Ludlow	No Proposed Impacts
W3-100	Ludlow	Proposed Crane Pad, Proposed Structures
W3-86	Ludlow	Proposed Crane Pads, Preferred Access Road
W3-82	Ludlow	No Proposed Impacts
W3-75	Chicopee	No Proposed Impacts
W3-65	Chicopee	Proposed Crane pads, Proposed Structures, Preferred Access Road, Alternate Access Road
W2-17	Agawam	Proposed Crane pad, Proposed Structure
W1-16A	Agawam	Proposed Crane Pad, Preferred Access Road, Proposed Structure
W1-10	Agawam	Proposed Crane Pad, Proposed Structure, Preferred Access Road

With regard to potential impacts to wetlands which provide vernal pool habitat (in whole or in part) on the Noticed-Alternative Southern Route, of the 27 wetlands with confirmed vernal pool habitat, 19 would potentially be impacted by Project related construction activities. Table 5-20 lists all wetlands along this route which provide vernal pool habitat and identifies which wetlands may have Project related impacts.

Table 5-20: Potentially Impacted Wetlands along the Noticed-Alternative Southern Route, which Provide Vernal Pool Habitat

Wetland Series Number	Municipality	Wetland Class
W1-10	Agawam	PFO/PSS
W1-16A	Agawam	PSS
W1-18C	Agawam	PFO/PEM
W2-17	Agawam	PFO/PEM
W8-135	Agawam	PSS
W8-142	Agawam	PFO/PSS
W8-156	East Longmeadow	PFO/PSS
W8-173	Hampden	PEM
W8-175	Hampden	PFO/PSS
W8-177	Hampden	PFO/PSS
W8-180	Wilbraham	PFO/PSS
W8-182	Wilbraham	PSS
W8-183	Wilbraham	PFO/PSS
W8-184	Wilbraham	PFO/PSS/PEM
W8-186	Wilbraham	PFO/PSS
W8-189	Wilbraham	PFO/PSS
W8-191	Wilbraham	PFO/PEM
W8-205	Ludlow	PFO/PEM
W8-210	Ludlow	PSS/PEM

In addition, selection of the Noticed-Alternative Southern Route would mean that the majority of the impacts to vernal pools along the Preferred Northern Route would still occur due to the need to accommodate the 115-kV line re-builds along the Preferred Northern Route regardless of which route is selected for the new 345-kV lines. Consequently, regarding vernal pool habitats, the Preferred Northern Route would result in significantly less impacts to vernal pools and is therefore superior.

5.3.5.2.4 Mitigation Measures

WMECO will comply with all environmental wetland-related Project plans and specifications, including the applicable wetland regulatory permit requirements. In general, during construction, WMECO will minimize effects on wetlands by implementing the following practices:

- Limiting grading for access roads and in wetlands to the amount necessary to provide a safe workspace.
- Installing temporary construction matting, swamp mats, or geotextile and stone pads for access roads across wetlands or to establish safe and stable construction work areas/crane pads within wetlands, where necessary. It is possible that certain of the proposed access roads will be

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.