THE CONNECTICUT PORTION

OF THE INTERSTATE RELIABILITY PROJECT

BY

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EX. 1: Inventory of Potential Breeding Bird Species and Habitats along the Connecticut Portions of Interstate Reliability Project

INVENTORY OF POTENTIAL BREEDING BIRD SPECIES AND HABITATS

ALONG THE CONNECTICUT PORTION OF THE

INTERSTATE RELIABILITY PROJECT

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1.0 Introduction

The Connecticut Light and Power Company (CL&P) and National Grid USA (National Grid) propose to construct and operate approximately 75 miles of new 345-kilovolt (kV) transmission lines and make related modifications and improvements to existing 345-kV lines and 115-kV lines in northeastern Connecticut, northwestern Rhode Island, and south central Massachusetts (Figure 1). These proposed improvements are referred to as the Interstate Reliability Project.

CL&P would construct and operate the Connecticut portion of the Interstate Reliability Project, which would consist of approximately 36.8 miles of new 345-kV transmission lines, extending between CL&P's existing Card Street Substation, Lake Road Switching Station, and the Connecticut/Rhode Island border, as well as related modifications to two existing substations and the Lake Road Switching Station (Figure 2). For the purposes of this report, the Connecticut portion of the Interstate Reliability Project is referred to as "the Project".

1.1 Study Objectives

Pursuant to the Connecticut Siting Council's (Council's) *Application Guide for Electric and Fuel Transmission Line Facility* (April 2010), applicants proposing transmission line projects must perform an inventory of breeding birds and their habitats[1]. Accordingly, the purpose of this report is to:

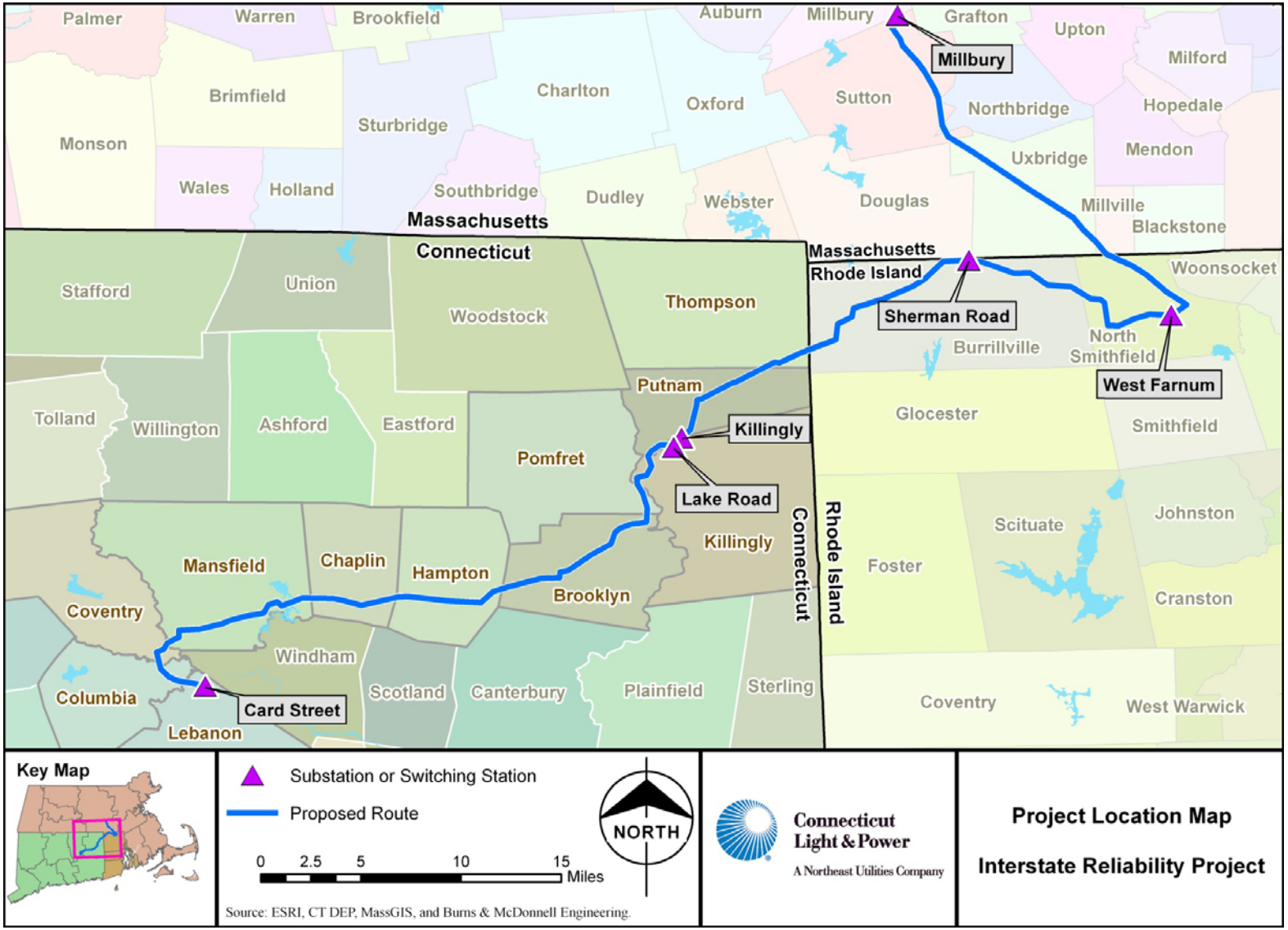
- Present an inventory of the bird species that are known or expected to breed in the Project region and that may occur along the proposed Project right-of-ways (ROWs), based on the results of available breeding bird research and an analysis of the habitat types present on and in the vicinity of the ROWs;
- Review the results of research concerning state and regional (Northeast U.S.) trends in bird populations associated with the habitats found on ROWs;
- Review the results of research concerning bird use of ROWs;

[1] *Application Guide*, Section VI.H.1(a)(iv)

- Present the results of field surveys conducted along segments of the ROWs for certain state-listed bird species, as requested by the Connecticut Department of Environmental Protection (CTDEP[2]); and
- Describe in general terms the potential effects of ROWs on bird species.

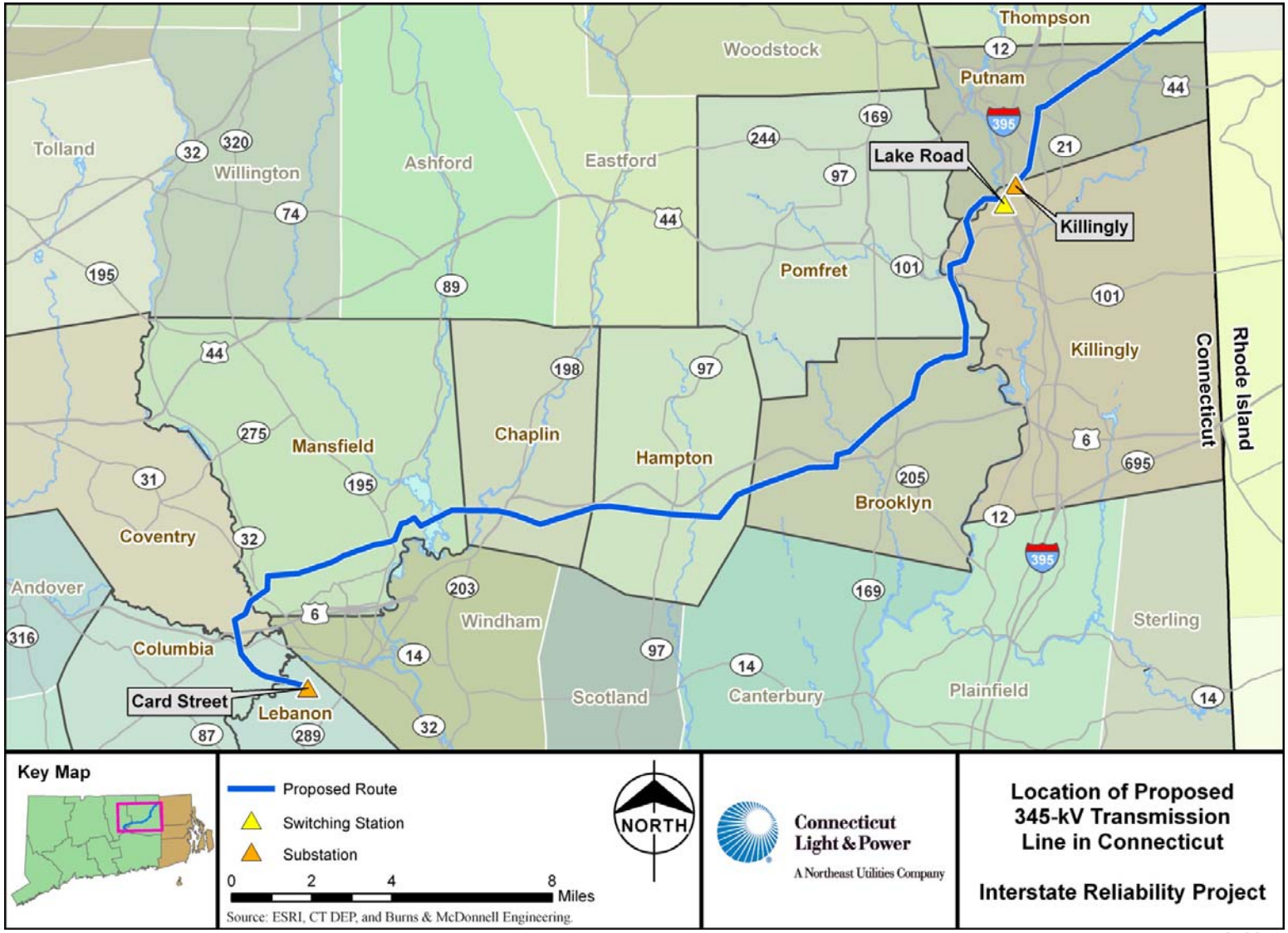
[2] As of July 1, 2011, the CTDEP was merged with other state agencies to become the Connecticut Department of Energy and Environmental Protection (CT DEEP). References herein to CTDEP related to consultations that occurred prior to July 1, 2011.

Figure 1: Interstate Reliability Project Location



August 18,2011

Figure 2: Location of Proposed 345-kV Transmission Lines in Connecticut



August 18, 2011

To perform the inventory of breeding birds and their habitats in the Project area, CL&P retained AECOM Environment (AECOM). AECOM's literature review concerning breeding birds in the Project area was performed over a four-year period (2007 – 2011).[3] In addition, in 2008 and again in 2011, field surveys were performed along segments of the ROWs to assess the presence of, or potential habitat for, certain rare bird species, as identified based on CL&P's initial consultations with the CTDEP.

1.2 Project Location and Background

The Project would be located in portions of New London, Tolland, and Windham counties. All of the Project would be aligned through inland areas in northeastern Connecticut, along ROWs that are located more than 30 miles from New London County's coastal zone along Long Island Sound.

CL&P proposes to develop the new 345-kV transmission lines, in overhead configurations, along existing ROWs, adjacent to existing overhead 345-kV lines.[4] Commencing at the Card Street Substation in the Town of Lebanon (in northern New London County), the proposed 345-kV transmission lines would extend north-northeast along these ROWs, traversing portions of 11 towns (Lebanon, Columbia, Coventry, Mansfield, Chaplin, Hampton, Brooklyn, Pomfret, Killingly, Putnam, and Thompson), before terminating at the Connecticut/Rhode Island border in the Town of Thompson (Windham County). The CL&P transmission lines would connect to the proposed National Grid facilities at the state border.

With the exception of a 1.4-mile segment across federally owned properties in the towns of Mansfield and Chaplin, the proposed 345-kV transmission lines would be located within presently unused portions of CL&P's ROWs, which typically average 300 feet in width. Across the federally-owned properties, the CL&P ROW is only 150 feet wide. As a result, for this 1.4-mile area, CL&P has identified various alternative ROW expansion

[3] As part of initial Project planning efforts, a preliminary inventory of potential breeding bird species and habitat was conducted by ESS Group, Inc. This August 2004 inventory was included in the Project's September 2008 Municipal Consultation Filing (Exhibit 5), which CL&P published in accordance with the Council's requirements.

[4] The new 345-kV lines would be aligned parallel to existing CL&P 345-kV lines along the length of the proposed route. Along segments of the proposed route, the ROWs also include other transmission lines (115 kV and 69 kV) and distribution lines.

and transmission line configuration options. Table 1-1 summarizes the counties and towns along the proposed transmission line route, identifies the existing width of the CL&P ROWs along which the new 345-kV lines are proposed, and provides the estimated width of each ROW segment that CL&P routinely manages in scrub-shrub vegetation in the vicinity of the existing transmission and distribution lines that presently occupy these ROWs.

Table 1-1
Proposed 345-kV Transmission Lines: Location (County / Town) and Widths of Existing CL&P ROWs

Town	ROW		
	Miles	**Width Range (feet, typical)**	**Width of Current Vegetation Management along ROW (feet, typical)**
New London County			
Lebanon	0.6	350	275
Tolland County			
Columbia	1.7	300-350	275
Coventry	1.2	300	275
Mansfield	6.4	150*-300	100-140
Windham County			
Chaplin	3.3	150*-300	140
Hampton	4.3	300	140
Brooklyn	7.2	300-360	260
Pomfret	1.7	360	260
Killingly	3.0	250-400	260-345
Putnam	5.6	340-400	140-345
Thompson	1.8	300	140
Total	**36.8**		

* Along federally owned property in Mansfield and Chaplin, the CL&P ROW is 150 feet wide.

Although CL&P prefers to locate the new 345-kV transmission lines in overhead configurations along the 36.8-mile Proposed Route, as part of the Project planning process, CL&P also identified six variations to segments of this route. Breeding bird inventories for these variations are discussed in Appendix B.

1.3 Report Organization

This report both summarizes the research conducted regarding breeding birds in Connecticut and avian uses of ROWs, and presents the results of field surveys conducted for birds along segments of the Proposed Route. Section 2 describes the methods used to perform the breeding bird inventory, whereas Section 3 summarizes current research concerning avian use of ROWs and trends in bird populations relating to the use of habitats commonly found on ROWs.

Section 4 describes the major habitat types present along the Project ROWs, as well as the results of research concerning the bird species that may breed or otherwise occur in such habitats. Section 5 summarizes the results of field surveys conducted along the Project ROWs in the towns of Mansfield and Putnam to assess the presence of state-listed bird species. Section 6 reviews the general effects of ROWs on bird populations. References are included in Section 7.

Appendix A includes agency correspondence concerning state-listed rare, threatened, or endangered bird species in the Project vicinity. Appendix B reviews the potential breeding bird species that could occur along six route variations to portions of the proposed Project route. Appendix C includes the 2011 Whip-poor-will survey report, which presents the results of the additional field investigations that were conducted for this state-listed species of special concern along segments of the ROW in the Town of Putnam.

2.0 Methods

The inventory of potential breeding bird species in the Project area was compiled based on the following:

- Consultations with the CTDEP Natural Diversity Database (NDDB), and the United States Fish and Wildlife Service (USFWS) to determine if any rare bird species are reported to occur within or in close proximity to the Project area.
- Review of published data concerning breeding birds in Connecticut, and particularly in the northeastern Connecticut Project region.
- Examination of published research concerning avian use of ROW habitats.
- Evaluation of aerial photography and video footage (based on helicopter overflights) of the proposed ROWs to identify habitats along and adjacent to the ROWs.
- Field reconnaissance of the proposed 345-kV transmission line ROWs and site-specific surveys for certain state-listed bird species, as requested by CTDEP.

2.1 Review of Agency Consultations

On behalf of CL&P, AECOM initiated consultations with CTDEP and the USFWS regarding the Project in 2007. Copies of correspondence with these agencies are provided in Appendix A.

In correspondence dated November 2007 and April 2009, the USFWS indicated that there are no federally-listed rare, threatened, or endangered bird species within the Project area. In the same 2007 and 2009 correspondence, the USFWS further indicated that CL&P should consult the USFWS website for future updates regarding federally-listed bird species. Accordingly, on December 9, 2010, AECOM consulted the USFWS website to review updates concerning the occurrence of federally-listed species. Based on this review, no federally-listed bird species were identified as occurring within the towns in the Project area.

Consultations with the CTDEP NDDB (correspondence dated February 25, 2008 and March 8, 2010[5]; refer to Appendix A) indicated historic records of six state-listed species

[5] Consultation with the CTDEP NDDB in December 2010 verified that this information was the most current data regarding state-listed bird species in the Project area.

of birds in the Project area. These species, all of which were reported to either potentially nest or forage on or near portions of the Project ROWs in the towns of Mansfield or Putnam, are:

- Horned Lark (*Eremophila alpestris,* state-listed as endangered).
- Grasshopper Sparrow (*Ammodramus savannarum,* state-listed as endangered).
- American Kestrel (*Falco sparverius,* state-listed as threatened).
- Whip-poor-will (*Caprimulgus vociferous,* state-listed as species of special concern).
- Savannah Sparrow (*Passerculus sandwichensis,* state-listed as species of special concern).
- Eastern Meadowlark (*Sturnella magna,* state-listed as species of special concern)

Table 2-1 summarizes the primary habitat characteristics of these six species, along with the general locations (all in the towns of Mansfield and Putnam) where the species were reported to occur near the Project ROWs (based on NDDB records). To determine whether the six state-listed bird species occur along CL&P's existing ROWs in the towns of Mansfield and Putnam, AECOM biologists performed a series of field surveys and evaluated the ROW for potentially suitable habitat by performing a habitat assessment. The results of these surveys are detailed in Section 5.

Table 2-1
State-Listed Bird Species Reported to Occur in the Vicinity of the Proposed Route
(Based on CTDEP NDDB Records)

Species (Common Name)	Species (Scientific Name)	State Status*	NDDB Record of Observation (Town along ROW)	General Habitat Preference and Nest Characteristics
Horned Lark	*Eremophila alpestris*	SE	Mansfield	Open areas with little cover (large fields, open areas, grasslands, agricultural areas). Common migrant and winter visitor, but rarely nests in Connecticut. Nests in hollows in ground lined with fine grass. Breeding usually begins mid-June.
Grasshopper Sparrow	*Ammodramus savannarum*	SE	Mansfield	Grasslands, pastures and old fields. Breeds in late May – early June. Nests on ground. Minimum grassland size for breeding habitat is reported as 30 acres (Jones and Vickery, Grassland Conservation Program, MAS, Lincoln, MA).
American Kestrel	*Falco sparverius*	ST	Mansfield	Grassland or shrubland at the edge of forest; requires cavities for nesting and perches for hunting. Nests in a natural tree cavity or man-made next box. Eggs typically laid by end of April.
Savannah Sparrow	*Passerculus sandwichensis*	SSC	Mansfield	Upland meadows, pastures, old fields, cultivated fields, and hayfields with damp soils. Nest is formed in shallow depressions on ground in tall grass clumps or base of low woody shrubs. Minimum grassland size is 20-40 acres.
Eastern Meadowlark	*Sturnella magna*	SSC	Mansfield	Upland meadows, pastures, old fields, crop lands, and capped landfills. Nests in depression within meadows, hayfields on ground with dense vegetative cover 10-20 inches tall. Minimum grassland size is 15 to 20 acres.
Whip-poor-will	*Caprimulgus vociferus*	SSC	Putnam	Scrubby immature woods, wooded areas following a disturbance. Nests on ground among dried leaves.

*Key: SSC=State Species of Special Concern, ST=State Threatened, SE=State Endangered

2.2 Review of Breeding Bird Atlas Data

The Atlas of Breeding Birds of Connecticut (*Atlas;* Bevier, [ed] 1994) was the primary source consulted to determine which bird species are likely to breed in the Project area.

The *Atlas* compiles the results of a comprehensive and systematic survey of Connecticut's breeding birds and their habitats.

The *Atlas* was initiated to determine the bird species that nest in Connecticut and the locations within the state used by each species. The information presented in the *Atlas* is the result of field surveys conducted over a five-year period from 1982 to 1986 and involving more than 500 volunteers. The *Atlas* utilizes a grid system based on the United States Geological Survey (USGS) topographic quadrangle mapping system. The system divides Connecticut into 596 "blocks", with each "block" consisting of one-sixth of a USGS topographic quadrangle, representing approximately 10 square miles of geographic coverage. For each block, volunteers recorded observations of bird species and their behavior, identifying which species were observed and whether breeding in that block was considered possible, probable, or confirmed. For each bird species recorded in Connecticut, the *Atlas* includes a discussion of the species' habitat preferences and provides a distribution map that indicates in which blocks the species was observed and whether breeding was confirmed, probable, or possible.

The Project extends through portions of New London, Tolland, and Windham Counties. Given the geographic distribution of the Project, and in an effort to be as thorough as possible, a bird species listed in the *Atlas* was considered potentially occurring in the Project area if:

1) It was listed as a confirmed breeder in the vicinity of the proposed Project in New London, Tolland, or Windham counties in the *Atlas*[6]; or

2) It was identified by the CTDEP NDDB as reportedly occurring in the Project area (i.e., as part of the NDDB's records concerning the previously identified locations of state-listed special concern, threatened, or endangered species).

[6] For the purposes of this inventory, species recorded within approximately 10-15 miles of the Proposed Route were considered to have the potential to occur in the Project area. Further, some species (primarily coastal birds) were eliminated from consideration in this inventory due to lack of suitable breeding habitat in the Project area.

3) The bird species is known to use habitats that occur on the Project ROWs (e.g., upland or wetland shrubland habitat along the managed portion of the ROWs and typically forested habitat along the un-utilized portion of the ROWs).

2.3 Review of Published Literature Regarding Breeding Birds and ROWs

In addition to the *Atlas*, a literature search was conducted of published data concerning both the status of bird species in Connecticut and the effects of vegetatively managed ROWs on avian habitat utilization. This data ranged from information compiled by CTDEP to studies conducted by university researchers and conservation organizations.

For example, since 2006, the Connecticut Audubon Society has annually published a *Connecticut State of the Birds* report, which each year has focused on a different issue regarding birds in the state. Each of these Audubon *State of the Birds* reports (2006 – 2011) was reviewed for relevancy to the proposed Project.

2.4 Field Reconnaissance of Breeding Bird Habitat along the Project ROWs

To assess the terrestrial and palustrine habitat types present along and in the vicinity of the Project, AECOM biologists reviewed aerial photographs and videos (taken during helicopter over-flights) to identify general habitat cover types along the proposed Project ROWs.

In 2008, AECOM conducted field reconnaissance (meander surveys) of the Project ROWs to verify the habitat cover types and to document dominant plant species assemblages within the cover types. During the meander surveys, representative segments of the Project ROWs were investigated to identify existing cover types and specifically to evaluate the nature and extent of avian utilization. All bird species observed during the ROW meander surveys were documented.

In 2011, AECOM conducted a Whip-poor-will survey along the CL&P transmission line ROW segment in Putnam. The objective of the 2011 survey effort was to augment the 2008 survey and to provide more data relative to the presence or absence of the species.

3.0 Avian Regional / State Population Trends and Use of ROWs

To evaluate avian population trends in Connecticut, with an emphasis on avian utilization of ROWs, several sources of information were utilized. Sources of data include the Connecticut Ornithological Association, the Connecticut Audubon Society, the *Atlas of Breeding Birds of Connecticut*, and Connecticut's *Comprehensive Wildlife Conservation Strategy* ([CWCS]; CTDEP, October 2005). A summary of the findings of this data review is provided below.

3.1 Summary of Avian Population Trends and Issues in Connecticut

Although a small state, Connecticut is characterized by a variety of habitats, ranging from Long Island Sound beaches and tidally influenced rivers to inland wetlands and upland forests. These habitats in turn support a diverse assemblage of bird species. According to the Avian Records Committee of the Connecticut Ornithological Association, 424 species of birds have been recorded in the state and, of these, 335 species occur regularly or annually. An estimated 170 species regularly breed in Connecticut.

Review of Connecticut Audubon Society Reports

Since 2006, the Connecticut Audubon Society has issued an annual *Connecticut State of the Birds* report. Each report focuses on a different key issue related to the state's birds. For instance, the first (2006) report spotlighted habitat loss as the greatest threat to the state's native bird populations. The report identified six major bird habitats in Connecticut: shoreline (beaches, dunes, bluffs, and headlands), tidal marshes, inland wetlands, grasslands, shrublands, and forests.

The proposed Project region encompasses four of these habitat types (i.e., inland wetlands, grasslands, shrublands, and forests). The 170 avian species known to breed in the state use these four inland habitats as follows:

- 70-80 species nest in forests
- 20-30 species nest in shrublands

- 15-20 species nest in freshwater wetlands
- 10 species nest in grasslands

The 2006 report noted that as a result of habitat loss, 50% of the state's native birds are declining, with 17% listed by the CTDEP as threatened, endangered, or special concern. Birds that inhabit shrublands and grasslands have shown particular declines in Connecticut, due to the conversion of farmlands to development or as a result of natural reforestation/succession. As identified in the 2006 report, transmission line ROWs provide "the most important source of habitat for shrubland specialists" and "support a rich diversity of shrubland birds, including species that have suffered substantial population declines in the region, such as Brown Thrasher, Yellow-breasted Chat, Blue-winged Warbler, and Eastern Towhee". Furthermore, the report states that transmission line ROWs provide enough suitable nesting habitat to sustain shrubland bird populations and also that some shrubland bird species were found in greater densities on wider ROWs, "suggesting that consolidation of utility ROWs may produce better shrubland habitat (while minimizing fragmentation of forests)". (*Connecticut State of the Birds* 2006, pp. 30-31).

Lastly, the *2006 Connecticut State of the Birds* report identified five specific recommendations for mitigating threats to the state's bird populations and habitats:

(1) Inventory and map key habitats

(2) Better use of current land resources

(3) Prioritize species of greatest conservation need

(4) Review Connecticut's 21% open space goal (by 2023) to verify the inclusion of prioritized bird habitats

(5) Improve information regarding birds (e.g., bird counts and surveys)

Under recommendation No. 2 (better use of current land resources), the report emphasized the importance of transmission line ROWs as a major source of shrubland habitat and recommended that utility companies be encouraged to maintain power line corridors as shrubland.

After the 2006 focus on habitat loss as the most critical threat to birds in the state, the *Connecticut State of the Birds 2007* report described various secondary, but serious, risks to native birds, including glass strikes, cats, and interference of tall structures, specifically referencing cell towers and transmission lines with blinking lights for aircraft warning purposes. Subsequently, the 2008 report focused on conservation strategies for six bird species in serious decline (none of which are reported to occur in the Project area).

The 2009 report described the federal and state endangered species acts, identified Connecticut-listed birds, and selected 20 species to serve as indicators of where important habitat exists or can be created in the state. Of these 20 species, nine species[7] were either observed during surveys of the Project ROWs or are otherwise reported to occur in the Project vicinity. The *Connecticut State of the Birds 2010* report describes the role of "citizen scientists" in bird survey and conservation efforts and also reviews recommendations for the protection of critical bird habitat.

The *Connecticut State of the Birds 2011* report reviews the status of the state's forest land, one of the six major bird habitats identified in the 2006 report. As described in the 2011 report, approximately 60% (1.87 million acres) of Connecticut is forested, and birds are the predominant wildlife group within forest communities. However, the quality of forest habitat is threatened by urban / suburban development (causing fragmentation, parcelization, and canopy perforation, as well as the loss of habitat to buildings and parking lots); noxious pests and invasive plants; over-browsing by White-tailed Deer; and climate change. As an example, of the state's 1.87 million acres of forest, only 46% (about 860,000 acres) represents "core forest" that consists of forest that is at least 300 feet from a non-forest habitat type. In addition, over the past 35 years, Connecticut's forest cover has declined by more than 13%, primarily as a result of the conversion of forests to urban / suburban development. The 2011 report refers to the importance of

[7] These species are: American Black Duck (*Anas rubripes*), American Woodcock (*Scolopax minor*), Blue-winged Warbler (*Vermivora cyanoptera*), Bobolink (*Dolichonyx oryzivorus*), Brown Thrasher (*Toxostoma rufum*), Eastern Meadowlark (*Sturnella magna*), Golden-winged Warbler (*Vermivora chrysoptera*), Grasshopper Sparrow (*Ammodramus savannarum*), and Least Bittern (*Ixobrychus exilis*). Of these nine species, four have been observed during on ROW surveys: American Woodcock, Blue-winged Warbler, Brown Thrasher, and Eastern Meadowlark.

preserving both forest land and farmland habitats in New England[8], and emphasizes the need to focus the CTDEP's land acquisition strategy on identifying and acquiring for preservation forest land that provides valuable forest habitat (rather than just acquiring land that is available), and also for effectively managing the forest land that is under public stewardship.

Connecticut Comprehensive Wildlife Conservation Strategy

Connecticut's *Comprehensive Wildlife Conservation Strategy* ([CWCS]; CTDEP, October 2005), which presents a strategy for the conservation of wildlife through 2015, includes extensive information regarding birds, threats to bird species, and conservation actions for priority species, categorized by habitat type. The CWCS identifies the *Atlas of Breeding Birds of Connecticut* (1994) as the best source of information on the distribution and abundance of breeding birds in the state. The CWCS also defines 12 key habitats that are essential for species of greatest conservation need in the state. Among these are "intensively managed habitats", which are defined as including early successional shrublands and forests found on utility ROWs, as well as cool season grasslands and wet meadows.

CTDEP also has recently verified the importance of shrubland habitat, re-emphasizing the CWCS strategy for conserving and increasing breeding populations of early successional shrubland birds (Kearney-McGee, 2011). At the 5th Connecticut Conference on Natural Resources (2011), CTDEP noted that shrub-dominated habitats and the birds that occupy such habitats continue to decline rapidly in the Northeast U.S. as a result of forest succession, changes in timber harvest practices, disruption in natural disturbance regimes, and development.

The CWCS also describes the various bird monitoring and conservation programs that CTDEP conducts, typically in partnership with the USFWS and various non-governmental conservation groups. These programs include annual monitoring of grassland birds, as well as upland gamebird management and waterbird conservation.

[8] The 2011 report references the Harvard Forest May 2010 "Wildlands and Woodlands, A Vision for the New England Landscape", which advocates permanently preserving about 30 million acres of New England forest, as well as farmland. The Wildlands and Woodlands report also advocates the management of 90% of protected forests for timber, recreation, and other values.

3.2 Avian Utilization of Rights-of-Way Habitats

The old field/shrubland habitat typically maintained on ROWs is becoming scarce in Connecticut and in the Northeast in general, as farmlands have been abandoned and have reverted back to forest and as existing woodlands mature (Saucier, 2003). At its peak around the middle of the 19th century, agricultural practices resulted in the clearing of nearly three-fourths of the forestland in Connecticut, while at present approximately 60% of the state is forested (USDA, 2001).

According to the United States Department of Agriculture (USDA), the amount of acreage in forestland in Connecticut has remained relatively stable since 1972, with losses due to commercial and residential development being approximately offset by new young forest habitats that have become established on abandoned pastures, meadows, and old farm fields; this trend was expected to continue for the foreseeable future (USDA, 2001). However, given present day land use, this trend will not continue, as there are no longer large amounts of farmland to revert to forest, and development pressures are increasing on both habitat types (Wharton et al., 2004).

ROWs therefore represent an important component of regional habitat diversity, providing a stable, long-term source of shrubland habitat in a region where it is becoming scarce. The proportion of scrub-shrub habitat present on utility corridors, compared to the amount of scrub-shrub habitat available regionally, varies by state. Of the Neotropical migrant bird species from all habitats that show a decline in abundance from 1980 to 2000 in the Northeast U.S., 90% use disturbance-generated habitats such as open fields, shrublands, mid-successional forests, open parkland, and forest edge, and 72% prefer disturbance and non-climax habitats (Confer and Pascoe, 2003).

Consequently, perpetuating disturbance-generated habitats such as those typical of managed utility ROWs is becoming an increasing concern for avian conservation, as species dependent upon those habitat types are becoming less common. The exchange of forested habitats for shrublands is often interpreted as a net gain for regional biodiversity (Confer and Pascoe, 2003).

Scrub-shrub habitats along utility ROWs are dominated by low-growing, woody vegetation with trees nearly or entirely absent. Historically, these habitats were created by natural and anthropogenic disturbances, which have declined over time. Due to these reductions in disturbances, this habitat type currently represents a small and declining portion of the overall landscape in the northeast (Trani et al., 2001). The overall lack of this type of habitat places additional biological importance on existing and newly created scrub-shrub habitat often associated with utility corridors and the "edge effect" these utility corridors create.

The "edge effect" is a classic ecological principal, which states that the edge between differing habitat types, such as between a utility corridor managed in shrub-scrub vegetation and adjacent forested areas, typically produces larger numbers and a greater diversity of wildlife than the adjacent habitats considered alone. This is because the border between habitats is inhabited by species that specialize in utilizing edge habitats, as well as by species that primarily use either of the adjacent habitat types. This situation is the norm for ROWs in New England, where the dominant old field/shrubland habitat of a typical ROW often borders different habitat cover types.

As a result, the vegetative community commonly found in managed ROWs can support a large and diverse population of bird species (Confer and Pascoe, 2003; King and Byers, 2002; Yahner et. al., 2002; Yahner et. al., 2003). Long-term studies of bird populations on ROWs have demonstrated that the shrubland/meadow complex is generally able to support a greater number and diversity of birds than adjacent forested habitats, as they not only provide food and nesting opportunities for early successional species, but also are important sources of food and cover for woodland species (Confer and Pascoe, 2003; Pagen et. al., 2000; Yahner et. al., 2002; Yahner et. al., 2003). It is recognized however that certain forest-interior bird species demonstrate a preference for un-fragmented forest habitats.

Although utility corridors frequently support a greater diversity of wildlife than adjacent habitats, the size and width of the corridor and associated scrub-shrub habitat can influence the presence of scrub-shrub specific bird species. Some species appear to have a specific set of criteria for habitat selection and will not inhabit areas that appear

suitable (Askins et al., 2007; Chandler et al., 2009). Studies have suggested that wider utility corridors result in a greater abundance of scrub-shrub specific birds (Confer and Pascoe, 2003; King et al., 2009), including species that are often listed as rare or endangered. Corridor width may also affect nesting success, as scrub-shrub birds tend to avoid edges (Schlossberg and King, 2008; King et al., 2009) and nest predation of scrub-shrub bird nests is higher along the edges (Weldon and Haddad, 2005; King et al., 2009). Wider utility corridors ensure that a larger portion of important scrub-shrub habitat is available away from the habitat edges.

Research studies have also shown that vegetation management on ROWs does not have a significant detrimental effect on bird populations that utilize the habitat either for nesting or simply for foraging for food resources and/or protective cover habitat (King and Byers, 2002; Yahner et. al., 2003). Similarly, the presence of a ROW does not significantly affect either nesting success of woodland species in the adjacent forested habitat or brood parasitism by brown-headed cowbirds (Confer and Pascoe, 2003; King and Byers, 2002; Yahner et. al., 2003).

4.0 Correlation of Habitat Types to Potential Breeding Birds: Results

4.1 Habitat Types along the Project ROWs

The proposed 345-kV transmission lines would be aligned along existing CL&P ROWs that average approximately 300 feet wide and are presently occupied, in part, by overhead 345-kV and other transmission lines. In the vicinity of these existing overhead transmission lines, CL&P routinely performs vegetation management to maintain shrubland or other low-growth habitats that are compatible with overhead transmission line operation. Consequently, the habitats along the managed and adjacent un-managed portions of the ROWs are often diverse.

Based on the review of the video and aerial photography of the Project area and the 2008 field investigations of the ROWs, eight habitat cover types were identified as occurring along or near the Project ROWs. These eight habitats are identified on the Project maps[9] and are described below. Land use and vegetative cover types adjacent to the overall ROW vary considerably and include areas of each category discussed below. However, the dominant habitat type adjacent to the ROW and in the surrounding region is forested land, both upland and wetland.

Old Field/Shrub and Sapling Thickets (OFS)

This upland habitat, which is the dominant cover type in the managed portions of the ROWs, is composed of areas dominated by grasses, forbs, shrubs and saplings. Plant species commonly observed in these habitats include deer tongue (*Panicum clandestinum* = *Dichanthelium clandestinum*), big bluestem (*Andropogon gerardii*), timothy (*Phleum pratense*), orchard grass (*Dactylis glomerata*), goldenrod (*Solidago* spp.), aster (Symphyotrichum sp. = *Aster* spp.), common mullein (*Verbascum thapsus*), whorled loosestrife (*Lysimachia quadrifolia*), brambles (*Rubus* spp.), multiflora rose (R*osa multiflora*), Japanese barberry (*Berberis thunbergii*), eastern red cedar (*Juniperus virginiana*), witch-hazel (*Hamamelis virginiana*), grape (*Vitis* spp.), bittersweet (*Celastrus* spp.) and poison ivy (*Toxicodendron radicans*).

[9] The Volume 9 maps identify each of the habitats by acronym (e.g., OFS, UF, etc.); the scale of the Volume 11 maps allows a closer view of the vegetative cover types, which are not specifically identified.

Mixed Deciduous Forest/Conifers (UF)

This upland habitat is the dominant cover type in the portions of the ROWs that are not vegetatively managed. Included in this category are deciduous hardwoods such as oak (*Quercus* spp.), maple (*Acer* spp.), hickory (*Carya* spp.), birch (*Betula* spp.) and cherry (*Prunus* spp.). Interspersed with these hardwoods are coniferous trees such as eastern hemlock (*Tsuga canadensis*), white pine (*Pinus strobus*) and spruce (*Picea* spp.). These habitats typically have an underlying shrub and sapling stratum composed of the overstory species mentioned above, as well as witch-hazel, Japanese barberry, hazelnut (*Corylus* spp.), lowbush blueberry (*Vaccinium angustifolium*) and buckthorn (*Rhamnus* spp.).

Forested Wetland (PFO)

Forested wetlands are found on certain portions of the ROWs that are not vegetatively managed. Typically, these areas have canopies that are dominated by some combination of red maple (*Acer rubrum*), yellow birch (*Betula allegheniensis*), pin oak (*Quercus palustris*), swamp white oak (*Quercus bicolor*), elm (*Ulmus* spp.) and tupelo (*Nyssa sylvatica*). The canopies of forested wetlands are frequently subtended by a shrub layer composed of species such as northern arrowwood (*Viburnum dentatum*), winterberry (*Ilex verticillata*), wild raisin (*Viburnum cassinoides*), spicebush (*Lindera benzoin*) and swamp azalea (*Rhododendron viscosum*), among others. The herbaceous plant strata can be diverse in many of these wetlands. However, skunk cabbage (*Symplocarpus foetidus*), jewelweed (*Impatiens capensis)*, cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), sphagnum moss (*Sphagnum* spp.) and royal fern (*Osmunda regalis*) are frequently dominant.

Shrub Swamp (PSS)

Along the ROWs, habitats identified as shrub swamps frequently occur in areas with substantial accumulations of organic materials and are commonly associated with deep organic soils (Histosols). Within the managed portions of the ROWs, shrub swamps are typically the predominant type of wetland. These types of habitats are frequently inundated and many remain saturated throughout the entire year. Woody plant species prevalent in these areas include buttonbush (*Cephalanthus occidentalis*), swamp rose (*Rosa palustris*), willow (*Salix* spp.), speckled alder (*Alnus rugosa*), highbush blueberry (*Vaccnium corymbosum*), steeplebush (*Spiraea tomentosa*), and meadowsweet (*Spiraea alba* var.*latifolia*). Common herbaceous plants interspersed with these woody species include emergent herbaceous species such as common cattail (*Typha latifolia*), narrow-leaved cattail (*Typha angustifolia*), purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), soft-stem bulrush (*Scirpus validus*), tussock sedge (*Carex stricta*), wool grass (*Scirpus cyperinus*), as well as other sedges (*Carex* spp.*)* and rushes (*Juncus* spp.). While these areas do exhibit some degree of interspersion among herbaceous and woody vegetation, these habitat types are dominated by the latter.

Emergent Marsh (PEM)

Like the shrub swamp habitats described above, emergent marsh habitats frequently occur in areas exhibiting substantial accumulations of organic materials and are commonly associated with deep organic soils (Histosols). These types of habitats

are frequently inundated and many remain saturated throughout the entire year. This habitat type is typically dominated by emergent herbaceous species such as common cattail (*Typha latifolia*), narrow-leaved cattail (*Typha angustifolia*), purple loosestrife (*Lythrum salicaria*), common reed (*Phragmites australis*), soft-stem bulrush (*Juncus effuses*), as well as other wetland dependent sedges (*Carex* spp.) and rushes (*Juncus* spp.).

Open Water (POW)
This habitat type is characterized by significant areas of open water associated with both lentic (lakes and ponds) and lotic (streams and rivers) waterbodies.

Agricultural Land (AG)
Agricultural land includes all lands currently in active agriculture such as hay fields, pastures, orchards and cultivated fields.

Urban Areas (CI and/or HY)
Urban areas encompass suburban and urban residential (HY), commercial, or industrial developments (CI); recreational areas such as park playgrounds, ballfields, and golf courses; and other locations (including roadsides) where vegetation is intensively managed.

4.2 Potential Breeding Bird Species in the Project Area

As discussed in Section 2, the *Atlas of Breeding Birds of Connecticut* (Bevier, 1994) was the primary source consulted to determine the bird species likely to breed in the vicinity of the proposed Project. In addition, during the 2008 and 2011 field surveys of the ROWs, and the species-specific surveys for the state-listed species, any birds observed were noted.

To develop the list of potential breeding birds in the Project area (refer to Table 4-1, located at the end of this section), the distribution maps of each breeding bird, as provided in the *Atlas,* were compared to the location of the Project ROWs. For the purposes of this analysis, any species that the *Atlas* identified as possible, probable, or confirmed for breeding within approximately 10-15 miles of the ROWs was included in Table 4-1. As described in Section 1.2, the Project would be aligned through inland areas in northeastern Connecticut, along ROWs that are located more than 30 miles from New London County's coastal zone along Long Island Sound. Therefore, limited coastal bird species are included in Table 4-1, with only those species which are known to breed both along the coast and in inland habitats represented.

The table also includes the state-listed threatened, endangered, or special concern bird species identified by the CTDEP NDDB as occurring in the Project area, as well as bird species observed during the field surveys performed along the ROWs (refer to Section 5 for a discussion of the species observed during the 2008 and 2011 field surveys of two segments of the ROWs). In addition, Table 4-1 identifies which of the eight habitats found along the ROWs each bird species is likely to use, and whether the species would typically use such habitat for nesting (N), foraging (F), or cover, resting, or roosting (C).

Based on the review of the available literature and the results of the field surveys, of the 170 bird species identified in as breeding in Connecticut, 146 species were determined as potentially occurring in the vicinity of the proposed Project. Of these 146 species, 61 species were observed during meander surveys performed on May 27 and 29, 2008, and June 3 and 5, 2008. Only three bird species (none of them whip-poor-wills) were heard or observed during the surveys performed on June 15, 16 and 20, 2011.

Table 4-1
Breeding Birds Observed or Potentially Occurring in the Project Area, by Habitat Type

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Bitterns, Herons									
Double-crested Cormorant	*Phalacrocorax auritus*			N,C		F,C	F,C		
Least Bittern **(T)**	*Ixobrychus exilis*				F,C	N,F,C	F		
Great Blue Heron*	*Ardea herodias*			N, C	F,C	F,C	F		F
Green Heron*	*Butorides virescens*			N,C	N,C	F,C	F		
Swans, Geese, Ducks									
Mute Swan	*Cygnus olor*				N,C	N,F,C	F,C		
Canada Goose	*Branta canadensis*				N,F,C	N,F,C	F, C	F,C	N,F
Wood Duck	*Aix sponsa*		N,F	N,F,C	F,C	F,C	F,C		
American Black Duck	*Anas rubripes*	N	N	N,C	N,F,C	N,F,C	F,C		
Mallard	*Anas platyrhynchos*	N	N	N,C	N,F,C	N,F,C	F,C		N,F
Gadwall	*Anas strepera*				N,C	N,F,C	F,C		F
Hooded Merganser	*Lophodytes cucullatus*			N	F,C	F,C	F,C		
American Vultures									
Turkey Vulture*	*Cathartes aura*		N,F,C					F	F

Table 4-1
Breeding Birds Observed or Potentially Occurring in the Project Area, by Habitat Type

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Eagles, Hawks									
Osprey	*Pandion haliaetus*				F,C	N,F,C	F		
Sharp-shinned Hawk **(E)**	*Accipiter striatus*	F	N,F,C	F,C	F	F			F
Cooper's Hawk	*Accipiter cooperii*	F	N,F,C	F,C	F	F			F
Northern Goshawk	*Accipiter gentilis*	F	N,F,C	F,C	F	F			
Red-shouldered Hawk	*Buteo lineatus*		N	N,F,C			F	F	
Broad-winged Hawk **(SC)**	*Buteo platypterus*	F	N,F,C						F
Red-tailed Hawk*	*Buteo jamaicensis*	F	N,F,C					F	F
Falcons									
American Kestrel (T)*	***Falco sparverius***	**F,C**	**N,C**	**N,C**	**F**	**F**			**N,F**
Pheasants, Grouse, Turkeys, and Quail									
Ring-necked Pheasant	*Phasianus colchicus*	N,F,C		**F,C**	**F,C**				N,F,C
Ruffed Grouse	*Bonasa umbellus*	F	N,F,C		**F,C**				
Wild Turkey*	*Meleagris gallopavo*	F,C	N,F,C		**F,C**				N,F,C
Northern Bobwhite	*Colinus virginianus*	N,F,C			**F,C**				N,F,C
Rails, Gallinules									
Virginia Rail	*Rallus Limicola*				F,C	N,F,C	F		
Sora	*Porzana carolina*					N,F,C	F		
Common Moorhen **(E)**	*Gallinila chloropus*				N,F,C	N,F,C	F		
Plovers									
Kildeer*	*Charadrius vociferous*	F						N,F,C	F,C
Sandpipers, Snipes, Woodcocks									
Spotted Sandpiper	*Actitis macularia*	N					F		
American Woodcock*	*Scolopax minor*	N,F,C	N,C	N,C	F,C				F,C
Pigeons, Doves									
Rock Dove (Pigeon)	*Columba livia*							N,F,C	F,C
Mourning Dove*	*Zenaida macroura*	F,C	N,F,C					F,C	F,C

Table 4-1
Breeding Birds Observed or Potentially Occurring in the Project Area, by Habitat Type

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Cuckoos									
Black-billed Cuckoo	*Coccyzus erythropthalmus*	N,F,C	N,F,C	F,C	F,C				
Yellow-billed Cuckoo	*Coccyzus americanus*	N,F,C	N,F,C	F,C	F,C				
Owls									
Eastern Screech-Owl	*Otus asio*	F	N,F,C	F,C				N,F,C	F
Barn Owl **(E)**	*Tyto alba*	F,C				**F**		N,F,C	F
Great Horned Owl	*Bubo virginianus*	F	N,F,C	F,C		F		F,C	F
Barred Owl***	*Strix varia*	F	N,F,C	N,F,C		F			F
Nighthawks, Nightjars									
Whip-poor-will (SC)	***Caprimulgus vociferous***	**N,F,C**	**N,F,C**						**F,C**
Chimney Swift*	*Chaetura pelagica*	F				F	F	N,F,C	F
Hummingbirds									
Ruby-throated Hummingbird	*Archilochus-colubris*	N,F,C	N,F,C	F,C	F,C	F,C		F,C	
Kingfishers									
Belted Kingfisher	*Ceryle alcyon*					C	N,F,C		
Woodpeckers									
Red-bellied Woodpecker	*Melanerpes carolinus*	F,C	N,F,C	N,F,C				F	
Downy Woodpecker*	*Picoides pubescens*	F,C	N,F,C	N,F,C				F	
Hairy Woodpecker	*Picoides villosus*	F,C	N,F,C	N,F,C				F	
Northern Flicker*	*Colaptes auratus*	F,C	N,F,C	N,F,C				F	F
Yellow-bellied Sapsucker	*Sphyrapicus varius*	F,C	N,F,C	N,F,C					
Pileated Woodpecker	*Dryocopus pileatus*		N,F,C	N,F,C					
Tyrant Flycatchers									
Eastern Wood-Pewee*	*Contopus virens*	F,C	N,F,C	F,C					
Acadian Flycatcher	*Empidonax virescens*	F,C	N,F,C	N,F,C	F,C	F,C	F		
Alder Flycatcher **(SC)**	*Empidonax alnorum*	N,F,C	F,C	F,C	N,F,C				
Willow Flycatcher*	*Empidonax trailli*				N,F,C	F,C	F		
Least Flycatcher	*Empidonax minimus*	F,C	N,F,C	N,F,C					N,F,C
Eastern Phoebe*	*Sayornis phoebe*	N,F,C	N,F,C	N,F,C	F,C	F,C	F	N,F,C	F

Table 4-1
Breeding Birds Observed or Potentially Occurring in the Project Area, by Habitat Type

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Eastern Kingbird*	*Tyrannus tyrannus*	F,C	N,F,C	N,F,C	F,C	F,C	F	F	F
Great Crested Flycatcher*	*Myiarchus crinitus*	F,C	N,F,C	N,F,C	F,C	F,C	F	N,F,C	F
Larks									
Horned Lark (T)	***Eremophila alpestris***	N,F,C						N,F,C	N,F,C
Swallows									
Purple Martin **(T)**	*Progne subis*						F		N,F,C
Tree Swallow*	*Tachycineta bicolor*	F,C	N,F,C	N,F,C	F,C	F,C	F	N,F,C	N,F,C
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					F,C	N,F		F
Bank Swallow*	*Riparia riparia*				F,C	F,C	N,F		F
Cliff Swallow	*Hirundo pyrrhonota*				F,C	F,C	N,F		F
Barn Swallow*	*Hirundo rustica*	F,C			F,C	F,C	F	N,F,C	F
Jays, Crows									
Blue Jay*/***	*Cyanocitta cristata*	F,C	N,F,C	N,F,C				N,F,C	F,C
American Crow*	*Corvus brachyrhynchos*	F,C	N,F,C	F,C	F,C	F,C	F	N,F,C	F,C
Common Raven**	*Corvus corax*	F,C	N,F,C	N,F,C	F,C				F,C
Chickadees, Titmice									
Black-capped Chickadee*	*Parus atricapillus*	F,C	N,F,C	N,F,C				N,F,C	F,C
Tufted Titmouse*	*Parus bicolor*	F,C	N,F,C	N,F,C				F,C	F,C
Nuthatches									
Red-breasted Nuthatch	*Sitta canadensis*		N,F,C	N,F,C				N,F,C	
White-breasted Nuthatch	*Sitta carolinensis*		N,F,C	N,F,C				F,C	
Creepers									
Brown Creeper	*Certhia americana*		N,F,C	N,F,C					
Wrens									
Carolina Wren*	*Thryothorus ludovicianus*	N,F,C	N,F,C	N,F,C				N,F,C	N,F,C
House Wren*	*Troglodytes aedon*	N,F,C	N,F,C					N,F,C	N,F,C

Table 4-1
Breeding Birds Observed or Potentially Occurring in the Project Area, by Habitat Type

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Marsh Wren	*Cistothorus palustris*				F	N,F,C			
Winter Wren	*Troglodytes troglodytes*	F,C	F,C	N,F,C	F,C				
Kinglets, Gnatcatchers, Thrushes									
Golden-crowned Kinglet	*Regulus satrapa*	F, C	N,F,C	N,F,C	F,C				
Blue-gray Gnatcatcher	*Polioptila caerulea*	F,C	N,F,C	N,F,C				F,C	
Eastern Bluebird*	*Sialia sialis*	N,F,C	N,C	C				N,F,C	N,FC
Veery*	*Catharus fuscescens*		N,F,C	N,F,C	N,F,C				
Hermit Thrush	*Catharus guttatus*		N,F,C	F,C					
Wood Thrush*	*Hylocichla mustelina*		N,F,C	N,F,C	F,C				
American Robin*/***	*Turdus migratorius*	N,F,C	N,F,C	F,C	F,C			N,F,C	N,F,C
Mockingbirds, Thrashers									
Gray Catbird*	*Dumetella carolinensis*	N,F,C	N,F,C	N,F,C	N,F,C	F,C		N,F,C	N,F,C
Northern Mockingbird*	*Mimus polyglottos*	N,F,C	F,C	F,C				N,F,C	N,F,C
Brown Thrasher* (SC)	***Toxostoma rufum***	**N,F,C**	**F,C**	**F,C**				**N,F,C**	**F**
Waxwings									
Cedar Waxwing*	*Bombycilla cedrorum*	N,F,C	F,C					F,C	N,F,C
Starlings									
European Starling*	*Stumus vulgaris*	N,F,C				F,C		N,F,C	N,F,C
Vireos									
White-eyed Vireo	*Vireo griseus*	N,F,C	F,C	F,C					
Blue-headed (Solitary) Vireo	*Vireo solitarius*	F,C	N,F,C	F,C					
Yellow-throated Vireo*	*Vireo flavifrons*	F,C	N,F,C	F,C					
Warbling Vireo*	*Vireo gilvus*	F,C	N,F,C	N,F,C	F,C				F
Red-eyed Vireo*	*Vireo olivaceus*	F,C	N,F,C	N,F,C				N,F,C	
Wood-Warblers									
Blue-winged Warbler*	*Vermivora pinus*	N,F,C	N,F,C	N,F,C	N,F,C	N,F,C			F
Golden-winged Warbler **(E)**	*Vermivora chrysoptera*	N,F,C							F

Table 4-1
Breeding Birds Observed or Potentially Occurring in the Project Area, by Habitat Type

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Blue-winged Warbler and Golden-winged Warbler Hybrid	*Vermivora pinus X Vermivora chrysoptera*	N,F,C	N,F,C	F,C	F,C				
Nashville Warbler	*Vermivora ruficapilla*	N,F,C	F,C	F,C	F,C	F,C			
Yellow Warbler*	*Dendroica petechia*	N,F,C	N,F,C	N,F,C	N,F,C	F,C		N,F,C	F
Northern Parula **(SC)**	*Parula americana*	F,C	N,F,C	N,F,C	N,F,C	F,C			
Magnolia Warbler	*Dendroica magnolia*	F,C	N,F,C	N,F,C	F,C				
Chestnut-sided Warbler	*Dendroica pensylvanica*	N,F,C	N,F,C	F,C	F,C				F
Black-throated Blue Warbler	*Dendroica caerulescens*	F,C	N,F,C	F,C	F,C			F,C	
Yellow-rumped Warbler	*Dendroica coronata*	F,C	N,F,C	F,C	F,C				F
Black-throated Green Warbler	*Dendroica virens*		N,F,C	F,C					
Blackburnian Warbler	*Dendroica fusca*		N,F,C	F,C					F
Pine Warbler*	*Dendroica pinus*	F,C	N,F,C	F,C					F
Prairie Warbler*	*Dendroica discolor*	N,F,C	F,C	F,C					N,F,C
Cerulean Warbler	*Dendroica cerulea*		N,F,C	N,F,C	F,C				
Black-and-white warbler*	*Mniotilta varia*		N,F,C	F,C					
American Redstart*	*Setophaga ruticilla*	N,F,C	N,F,C	N,F,C				F,C	F
Worm-eating Warbler	*Helmitheros vermivorus*		N,F,C	F,C					
Ovenbird*	*Seiurus aurocapillus*		N,F,C	F,C					
Northern Waterthrush	*Seiurus noveboracensis*			N,F,C	F,C		F		
Louisiana Waterthrush	*Seiurus motacilla*			N,F,C	F,C		F		
Kentucky Warbler	*Oporornis formosus*			N,F,C	N,F,C				
Common Yellowthroat*	*Geothlypis trichas*	N,F,C	N,F,C	N,F,C	N,F,C				F
Hooded Warbler	*Wilsonia citrina*		N,F,C	N,F,C	F,C				
Canada Warbler	*Wilsonia canadensis*		F,C	N,F,C	F,C				
Yellow-breasted Chat **(E)**	*Icteria virens*	N,F,C	F,C	F,C	N,F,C				

Table 4-1
Breeding Birds Observed or Potentially Occurring in the Project Area, by Habitat Type

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Tanagers									
Scarlet Tanager*	*Piranga olivacea*	F	N,F,C	F,C					F
Cardinals, Grosbeaks, and Buntings									
Northern Cardinal*	*Cardinalis cardinalis*	N,F,C	N,F,C	F,C				N,F,C	F
Rose-breasted Grosbeak*	*Pheucticus ludovicianus*	F	N,F,C	F,C					F
Indigo Bunting*	*Passerina cyanea*	N,F,C	F,C						F
Eastern (Rufous-sided) Towhee*	*Pipilo erythrophthalmus*	F,C	N,F,C	F,C					F
Chipping Sparrow*	*Spizella passerina*	N,F,C	F,C					N,F,C	F
Field Sparrow*	*Spizella pusilla*	N,F,C							N,F,C
Vesper Sparrow **(E)**	*Pooecetes gramineus*	N,F,C	F,C						N,F,C
Savannah Sparrow (SC)	***Passerculus sandwichensis***	**N,F,C**							**N,F,C**
Grasshopper Sparrow (E)	***Ammodramus savannarum***	**N,F,C**							**N,F,C**
Song Sparrow*	*Melospiza melodia*	N,F,C	N,F,C	N,F,C				N,F,C	F,C
Swamp Sparrow*	*Melospiza Georgiana*	F		N,F,C	N,F,C	N,F,C			
White-throated Sparrow	*Zonotrichia albicollis*	F,C	F,C	N,F,C	F,C			F,C	F,C
Dark-eyed Junco	*Junco hyemalis*	F,C	N,F,C					F,C	F,C
Blackbirds, Orioles									
Bobolink **(SC)**	*Dolichonyx oryzivorus*								N,F,C
Red-winged Blackbird*	*Agelaius phoniceus*			F,C	F,C	N,F,C		N,F,C	F,C
Eastern Meadowlark* (SC)	***Sturnella magna***								**N,F,C**
Common Grackle*	*Quiscalus quiscala*	F		N,F,C	F,C	F,C	F	N,F,C	F,C
Brown-headed Cowbird*	*Molothrus ater*	F,C	N,F,C	N,F,C				N,F,C	F,C
Orchard Oriole	*Icterus spurius*	F	N,F,C					N,F,C	F
Baltimore Oriole*	*Icterus galbula*	FF	N,F,C					N,F,C	F

Table 4-1
Breeding Birds Observed or Potentially Occurring in the Project Area, by Habitat Type

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Finches									
Purple Finch	*Carpodacus purpureus*	F,C	N,F,C	F,C				F	F
House Finch	*Carpodacus mexicanus*	F,C	F,C					N,F,C	F
Pine Siskin	*Carduelis pinus*		N,F,C					N,F,C	F,C
American Goldfinch*	*Carduells tristis*	N,F,C						N,F,C	N,F,C
Evening Grosbeak	*Coccothraustes vespertinus*	F,C	N,F,C	F,C				F,C	F,C
House Sparrow	*Passer domesticus*	F,C						N,F,C	N,F,C

1. State of Connecticut listings: **E** = Endangered; **T** = Threatened; **SC** = Special Concern. Note that only the species identified in **BOLD** are reported by CTDEP NDDB to occur in the Project area. Other state-listed species were identified as potentially occurring in the general Project vicinity, based on *Atlas* data only.

2. OFS = Old Field/Shrub/Sapling Thickets
   UF = Mixed Deciduous Forest
   PFO = Forested Wetland
   PSS = Shrub Swamp
   PEM = Emergent Marsh
   POW = Open Water
   CI/HY = Urban Areas
   AG = Agricultural Land

3. For each species listed, habitat types marked with an "N" indicate that species may use that habitat type for nesting, an "F" indicates that the species may forage in that habitat, and a "C" indicates that the species may use as cover, rest, or roost in that habitat. Blank boxes indicate the species is not typically found in that habitat type, except as occasional transients.

   (*) indicates confirmation of species during field surveys of Mansfield and Putnam ROW segments conducted on 27 and 29 May, 2008, and 3 and 5 June, 2008.

   (**) indicates species is not listed as nesting in Project vicinity but observations during 2011 vernal pool surveys warrant inclusion as a potential breeder.

   (***) indicates confirmation of species during field surveys of Putnam ROW segment conducted on June 15, 16 and 20, 2011.

5.0 Rare Breeding Bird Species Field Surveys: Towns of Mansfield and Putnam

5.1 Survey Objectives, Location, and Methods

As described in Section 2.1, based on rare status and distributional information received from the CTDEP NDDB (correspondence to CL&P dated February 25, 2008; refer to Appendix A), six state-listed bird species have been historically observed in the vicinity of portions of the Project ROWs in the towns of Mansfield and Putnam. The CTDEP NDDB requested that CL&P commission a bird survey, during the breeding season, to determine the presence or absence of these species along specific segments of the ROWs in these towns.

As listed in Table 2-1, the five species reported to occur in the Town of Mansfield are the Horned Lark (*Eremophila alpestris*), Grasshopper Sparrow (*Ammodramus savannarum*), American Kestrel (*Falco sparverius*), Savannah Sparrow (*Passerculus sandwichensis*), and Eastern Meadowlark (*Sturnella magna*). The Whip-poor-will (*Caprimulgus vociferus*) was reported to occur in the vicinity of the ROW in Putnam. Horned Lark and Grasshopper Sparrow are state-listed endangered species, whereas the American Kestrel is listed as threatened and the Savannah Sparrow, Eastern Meadowlark, and Whip-poor-will are listed as Species of Special Concern.

In response to the CTDEP's request for a breeding season survey, AECOM avian experts conducted four ground surveys in 2008 and three ground surveys in 2011. The field activities were designed to confirm the presence or absence of the identified rare species, as well as potential nesting habitat for the subject target species along the CL&P ROW segments. The ROW segments surveyed included:

- **Town of Mansfield.** Approximately 0.5-mile ROW segment extending through Mansfield Hollow State Park, from Bassetts Bridge Road to Mansfield Hollow Lake. Field investigations in this area were conducted on May 27 and 29, 2008.

- **Town of Putnam**. Approximately 0.7-mile ROW segment from near Ridge Road to Killingly Avenue (State Route 12). Field surveys were performed on June 3 and 5, 2008 and again on June 15, 16, and 20, 2011.

To conduct the surveys, avian experts walked both segments of the ROW, visually inspecting the ROWs for the identified rare bird species and potential nesting habitat, including large diameter trees with cavities, open grassy or agricultural fields, old fields, open woodlands adjacent to clearings, or scrub-shrub habitat. Birds located in areas off-ROW, but observable from the ROWs, also were noted. Avian experts used Leupold 10X50 binoculars to identify birds during the surveys. In addition to the investigations for the five species identified by the NDDB, AECOM tabulated all avian species observed during the field surveys.

5.2 Survey Results

As a result of the field surveys, two of the state-listed species (American Kestrel and Eastern Meadowlark) were identified in the vicinity of, but not within, the ROW segment in the Town of Mansfield. Furthermore, another state-listed species, the Brown Thrasher (*Toxostoma rufum*, a Species of Concern) not originally identified by the NDDB as occurring in the Project vicinity, was observed near the Mansfield ROW segment.

All of the bird species observed during the surveys (including the three state-listed species) are recorded in Table 5-1 (species observed along and near the ROW segment in Mansfield) and Table 5-2 (species observed along and near the ROW segment in Putnam). Both tables are located at the end of this section.

Summary of Surveys along Mansfield ROW Segment

Along the 0.5-mile segment of ROW surveyed in Mansfield, CL&P's existing ROW is only 150 feet wide. Approximately 100 feet of this ROW is presently managed in low-growth vegetation, consistent with overhead transmission line operation. The habitats along this ROW segment include a grassy field in active agricultural use (mowed hayfield), approximately 3 acres in size, in the vicinity of Bassetts Bridge Road and the Mansfield Hollow Dam levee (near existing CL&P Structure Nos. 9081 to 9082), as well as forest habitat along the un-managed edges of and in the vicinity of the ROW

extending through the state park to Mansfield Hollow Lake. One forested wetland area abuts the southern edge of the ROW, near the lake as well. While forest habitat predominates in the state park as a whole, CL&P's existing ROW includes scrub-shrub habitat, dominated primarily by shrub and sapling thickets, interspersed with areas of grasses and forbs. Some farm fields and other grassy areas also are located outside of the state park, to the west of the ROW segment.

Dominant plants observed in the scrub/shrub and sapling habitats include species such as red maple (*Acer rubrum*), white pine (*Pinus strobus*), witch-hazel (*Hamamelis virginiana*), tartarian honeysuckle (*Lonicera tatarica*), dewberry (*Rubus* spp.), blackberry (*Rubus allegheniensis*), winterberry (*Ilex verticillata*), and meadowsweet (*Spiraea alba* var.*latifolia*). Herbaceous species recorded in the surveys include orchard grass (*Dactylis glomerata*), goldenrods (*Solidago spp*.), bedstraws (*Galium* spp.), clovers (*Trifolium* spp.), English plantain (*Plantago lanceolata*), and other various grasses.

Forested habitats observed within the Mansfield ROW segment were dominated by tree species such as white pine, red pine (*Pinus resinosa*), red maple, sugar maple (*Acer saccharum*), and red oak (*Quercus rubra*). Trees occur outside the limits of the managed portions of the ROW, while saplings of these species occur in various percentages within the ROW. Dominant shrubs included arrowwood (*Viburnum dentatum*), winterberry, and spicebush (*Lindera benzoin*). Herbaceous species included hay-scented fern (*Dennstaedtia punctilobula*), Christmas fern (*Polystichum acrostichoides*), sensitive fern (*Onoclea sensibilis*), Canada mayflower (*Maianthemum canadense*), and false Solomon's seal (*Maianthemum racemosum* = *Smilacena racemosa*).

Along or in the vicinity of the Mansfield ROW segment, a total of 44 bird species were observed during the two-day survey. Eighteen of these species are considered species that largely utilize of forest edge habitat, 12 are species which typically use forest edge and interior habitats, six species utilize open habitat types, five species are considered habitat generalists and three are usually associated with interior forested habitat.

Included in the overall Mansfield observations were three state-listed species. These were the American Kestrel, Eastern Meadowlark and Brown Thrasher. Two of the listed species, the American Kestrel and Eastern Meadowlark, were observed in the vicinity of, but not within, the portion of the ROW in Mansfield. Both species were detected in an active farm field approximately 600 feet west of the transmission line ROW. As this was not on CL&P property or on publicly accessible property associated with Mansfield Hollow State Park or Wildlife Management Area, nest searches were not initiated. No active nest sites of any state-listed species were encountered within the ROW during the surveys.

The Brown Thrasher also was encountered in the vicinity of (not within) the ROW segment. Specifically, this species was recorded approximately 700 feet south of the ROW. This state-listed Species of Concern was identified in the *Atlas* as breeding in the Project area. The characteristics of the Brown Thrasher, based on the data in the *Atlas*, are:

- Nest preference: Rural or suburban areas, nesting in thickets, brushy hillsides, and woodland edges. Nests are made of twigs, dead leaves, and bark; lined with rootlets; and placed on the ground or in a low thicket or bush, usually within 4 feet of the ground.
- Feeding areas: Prefer open areas and old fields with patches of bare ground.

Although once common in Connecticut, the Brown Thrasher has declined in the state along with the loss of old fields and brushy pastures to reforestation or to urban development.

On May 27, 2008, a female American Kestrel was observed perching on the top of a derrick of an unused water-well drilling rig in an active farm field approximately 600 feet west of the CL&P ROW in the vicinity of Structure No. 9082, south of Bassetts Bridge Road. The bird appeared to show interest in a box-like structure at the top of the derrick, but because the machinery was on private property, AECOM was unable to positively determine if it was being used as a nest site. There is a man-made nest box on a post at the eastern edge of the farm field, but the top is missing, so it is unlikely kestrels use this structure to nest in. The kestrel was not observed utilizing the nearby hay field

located in the CL&P ROW at any time during the survey, though it is possible it may forage for insects (grasshoppers, crickets) and small mammals there.

On May 27 and 29, 2008, a single Eastern Meadowlark was heard singing and observed flying from the same farm field in which the kestrel was observed. The field was on private property, so a nest search was not initiated in the offsite field. The field is enclosed by a cedar post and wire fence, and it is likely the posts serve as elevated song perches for this bird.

On May 29, 2008 the meadowlark appeared to alternate between the farm field and a larger, more open grassy area abutting Mansfield Hollow Lake to the south. The minimum grassland area required for breeding habitat for the Eastern Meadowlark is 15 to 20 acres according to information in "*Conserving Grassland Birds*" by Jones and Vickery. No meadowlarks were observed utilizing the nearby hayfield located within the CL&P ROW at any time during the survey, although the field may serve as a foraging area for this species. The hayfield appears to be part of a "complex" which collectively contains suitable nesting habitat for meadowlarks. The "complex" itself is composed of areas which are on and off the ROW. Also, since there are no elevated song perches within the field (aside from the power stanchion itself and a single survey stake), the attractiveness of the area as a breeding site is reduced. Elevated song perches are required by males within a breeding territory. As noted, the field itself is kept in low grass either as part of a mowing program or to harvest hay. In addition, this area is part of Mansfield Hollow State Park and is subject to continual disturbance from people utilizing an existing trail system (i.e., the Red Trail within the park) which crosses the ROW several times. During the field surveys, many people were observed walking the ROW and adjacent areas with unleashed dogs. This activity may also act as a further hindrance to nesting activity for the Eastern meadowlark.

On May 27 and 29, 2008, two Brown Thrashers were observed repeatedly flying in and out of a large multiflora rose bush on state-managed property (maintained lawn) just to the south of the active farm field where the American Kestrel was observed. This location is likewise part of Mansfield Hollow State Park. It is likely that the Brown Thrashers were nesting there. No thrashers were observed at any time utilizing the

CL&P transmission corridor in Mansfield during the survey. However, suitable breeding habitat (dry thickets, second-growth areas, brushy fields, etc.) does exist for this species along the ROW, particularly within the section between pole number 9082 and pole number 9084. This section of ROW is located within Mansfield Hollow State Park, south of and parallel to a section of Bassetts Bridge Road.

Summary of Surveys along Putnam ROW Segment

Along the 0.7-mile segment of ROW surveyed in the Town of Putnam, CL&P's ROW is approximately 340 feet wide, and is occupied by an overhead 345-kV transmission line, as well as a double-circuit 23-kV distribution line. CL&P conducts routine vegetation management on approximately 210 feet of the ROW to maintain scrub-shrub habitat consistent with overhead transmission and distribution line operation. The proposed 345-kV transmission line would be located within the ROW, between the existing 345-kV and 23-kV lines.

The vegetatively managed portions of the transmission ROW segment in Putnam are dominated primarily by shrubs and saplings, interspersed with areas of grasses and forbs (old field habitat). Un-managed sections of the ROW segment are characterized primarily by forested uplands, with some scattered forested wetlands. Smaller areas of scrub-shrub and emergent wetlands are also found within this segment of ROW.

Dominant plants observed in the old field habitat along the ROW segment in Putnam during the 2008 survey included species such as Eastern red cedar (*Juniperus virginiana*), white pine, witch-hazel, dwarf sumac (*Rhus copallina*), blackberry, autumn olive (*Elaeagnus umbellata*), and sweet fern (*Comptonia peregrina*). Herbaceous species included big bluestem (*Andropogon gerardii*), goldenrods (*Solidago* spp.), yarrow (*Achillea millefolium*), and various grasses. Dominant plants found within the scrub-shrub wetlands included willow (*Salix* spp.), mulitflora rose (*Rosa multiflora*) and speckled alder (*Alnus incana*). Dominant herbs within the emergent wetland included sweet flag (*Acorus calamus*), skunk cabbage (*Symplocarpus foetidus*), blue flag (*Iris versicolor*), hairy sedge (*Carex crinita*), tussock sedge (*Carex stricta*), Joe-pye weed (*Eupatorium dubium*), and rough-stemmed goldenrod (*Solidago rugosa*).

Forested habitats observed within the Putnam segment were dominated by tree species such as white pine, white oak (*Quercus alba*), red oak, and red maple. Trees occur outside the limits of the managed portions of the ROW, while saplings of these species occur in various percentages within the ROW. Dominant shrubs included highbush blueberry (*Vaccinium corymbosum*) and lowbush blueberry (*Vaccinium* spp.). Herbaceous species included princess-pine (*Lycopodium obscurum*), starflower (*Trientalis borealis*), partridgeberry (*Mitchella repens*), Canada mayflower, and spotted wintergreen (*Chimaphila maculata*).

On June 3 and 5, 2008, AECOM conducted evening (17:00 to 21:00 PM) surveys and on June 15, 16 and 20, 2011, AECOM conducted night (21:00 PM to 3:00 AM) surveys along the CL&P transmission line ROW segment in Putnam in an effort to determine if Whip-poor-wills, a target species indicated by the NDDB, were present. Although the ROW does provide suitable breeding habitat, open woodland adjacent to clearings or scrub-shrub habitat (this habitat types is particularly prevalent along the eastern side of the ROW, near the existing 345-kV line), no Whip-poor-wills were observed or heard during the field surveys.

Overall, along or in the vicinity of the Putnam ROW segment, a total of 47 bird species were observed during the two-day survey in 2008. Seventeen of these species are considered species that largely utilize of forest edge habitat, 18 are species that typically use forest edge and interior habitats, three species utilize open habitat types, three species are considered habitat generalists and six species are usually associated with interior forested habitat.

Only three bird species were heard or observed during the Whip-poor-will survey conducted in 2011. These include the American Robin, Blue Jay and Barred Owl. The American Robin typically uses forest edge habitat, the Blue Jay typically uses forest edge and interior habitats, and the Barred Owl typically uses interior forested habitats. (Refer to Appendix C for additional details regarding the 2011 survey.)

Table 5-1
Avian Species Encountered along the Proposed Route ROW and Vicinity
Town of Mansfield, Connecticut

Species	Date Observed	
	5/27/08	5/29/08
American Crow (*Corvus brachyrhynchos*) (Generalist)	X	X
American Goldfinch (*Carduelis tristis*) (Edge)	X	X
American Kestrel (*Falco sparverius*) (T) (Open)	**X**	
American Robin (*Turdus migratorius*) (Edge)	X	X
Baltimore Oriole (*Icterus galbula*) (Edge)	X	X
Bank Swallow (*Riparia riparia*) (Open)		X
Barn Swallow (*Hirundo rustica*) (Open)	X	X
Black-capped Chickadee (*Parus atricapillus*) (Interior-Edge)	X	X
Blue Jay (*Cyanocitta cristata*) (Interior-Edge)	X	X
Blue-winged Warbler (*Vermivora pinus*) (Interior-Edge)	X	
Brown Thrasher (*Toxostoma rufum*) (SC) (Edge)	**X**	**X**
Brown-headed Cowbird (*Molothrus ater*) (Edge)	X	X
Carolina Wren (*Thryothorus ludovicanius*) (Edge)		X
Cedar Waxwing (*Bombycilla cedrorum*) (Edge)	X	X
Chipping Sparrow (*Spizella passerina*) (Edge)	X	X
Common Yellowthroat (*Geothlypis trichas*) (Interior-Edge)	X	X
Eastern Bluebird (*Sialia sialis*) (Edge)	X	X
Eastern Kingbird (*Tyrannus tyrannus*) (Edge)	X	X
Eastern Meadowlark (*Sturnella magna*) (SC) (Open)	**X**	**X**
Eastern Phoebe (*Sayornis phoebe*) (Interior-Edge)	X	X
Eastern Towhee (*Pipilo erythrophthalmus*) (Interior-Edge)	X	X
Eastern Wood Pee-wee (*Contopus virens*) (Interior-Edge)		X
European Starling (*Sturnus vulgaris*) (Edge)	X	X
Gray Catbird (*Dumatella carolinensis*) (Interior-Edge)	X	X
Great Blue Heron (*Ardea herodias*) (Generalist)		X
House Wren (*Troglodytes aedon*) (Edge)	X	X
Killdeer (*Charadrius vociferous*) (Open)	X	X
Mourning Dove (*Zenaida macroura*) (Edge)	X	X
Northern Cardinal (*Cardinalis cardinalis*) (Interior-Edge)	X	X
Northern Flicker (*Colaptes auratus*) (Interior-Edge)	X	X
Northern Mockingbird (*Mimus polyglottos*) (Generalist)	X	X
Ovenbird (*Seiurus aurocapillus*) (Interior)	X	
Pine Warbler (*Dendroica pinus*) (Interior)	X	X
Prairie Warbler (*Dendroica discolor*) (Edge)	X	X
Red-winged Blackbird (*Agelaius phoeniceus*) (Edge)	X	X
Scarlet Tanager (*Piranga rubra*) (Interior)	X	
Song Sparrow (*Melospiza melodia*)(Edge)	X	X
Swamp Sparrow (*Melospiza georgiana*) (Wetland Generalist)		X
Tree Swallow (*Tachycineta bicolor*) (Open)	X	X
Turkey Vulture (*Cathartes aura*) (Generalist)	X	
Tufted Titmouse (*Parus bicolor*) (Interior-Edge)	X	
Warbling Vireo (*Vireo gilvus*) (Interior-Edge)	X	X
Willow Flycatcher (*Empidonax traillii*) (Edge)		X
Yellow Warbler (*Dendroica petechia*) (Edge)	X	X

Table 5-2
Avian Species Encountered along the Proposed Route ROW and Vicinity
Town of Putnam, Connecticut

Species	Date Observed				
	6/3/08	6/5/08	6/15/11	6/16/11	6/20/11
American Crow (*Corvus brachyrhynchos*) (Generalist)	X	X			
American Goldfinch (*Carduelis tristis*) (Edge)	X	X			
American Redstart (*Setophaga ruticilla*) (Interior)	X				
American Robin (*Turdus migratorius*) (Edge)	X	X	X		
American Woodcock (*Scolopax minor*) (Edge)	X	X			
Baltimore Oriole (*Icterus galbula*) (Edge)	X	X			
Barred Owl (*Strix varia*) (Interior)				X	X
Barn Swallow (*Hirundo rustica*) (Open)		X			
Black-capped Chickadee (*Parus atricapillus*) (Interior-Edge)	X	X			
Black-and-white Warbler (*Mniotilta varia*) (Interior)	X	X			
Blue-winged Warbler (*Vermivora pinus*) (Interior-Edge)	X	X			
Blue Jay (*Cyanocitta cristata*) (Interior-Edge)	X	X	X	X	X
Cedar Waxwing (*Bombycilla cedrorum*) (Edge)	X	X			
Chimney Swift (*Chaetura pelagica*) (Open)	X	X			
Chipping Sparrow (*Spizella passerina*) (Edge)		X			
Common Grackle (*Quiscalus quiscula*) (Edge)		X			
Common Yellowthroat (*Geothlypis trichas*) (Interior-Edge)	X	X			
Downy Woodpecker (*Picoides pubescens*) (Interior-Edge)		X			
Eastern Kingbird (*Tyrannus tyrannus*) (Edge)	X	X			
Eastern Towhee (*Pipilo erythrophthalmus*) (Interior-Edge)	X	X			
Eastern Wood Pee-wee (*Contopus virens*) (Interior-Edge)	X	X			
European Starling (*Sturnus vulgaris*) (Edge)		X			
Field Sparrow (*Spizella pusilla*) (Edge)	X	X			
Gray Catbird (*Dumatella carolinensis*) (Interior-Edge)	X	X			
Great-crested Flycatcher (*Myiarchus crinitus*) (Interior-Edge)		X			
Green Heron (*Butorides virescens*) (Generalist)		X			
Indigo Bunting (*Passerina cyanea*) (Edge)		X			
Mourning Dove (*Zenaida macroura*) (Edge)	X	X			
Northern Cardinal (*Cardinalis cardinalis*) (Interior-Edge)	X	X			
Northern Flicker (*Colaptes auratus*) (Interior-Edge)	X	X			
Ovenbird (*Seiurus aurocapillus*) (Interior)	X	X			
Pine Warbler (*Dendroica pinus*) (Interior)	X	X			
Prairie Warbler (*Dendroica discolor*) (Edge)	X	X			
Red-eyed Vireo (*Vireo olivaceus*) (Interior-Edge)		X			
Red-winged Blackbird (*Agelaius phoeniceus*) (Edge)	X	X			
Red-tailed Hawk (*Buteo jamaicensis*) (Interior-Edge)	X	X			
Rose-breasted Grosbeak (*Pheucticus ludovicianus*) (Interior-Edge)	X	X			
Scarlet Tanager (*Piranga rubra*) (Interior)	X	X			
Song Sparrow (*Melospiza melodia*) (Edge)	X	X			
Tree Swallow (*Tachycineta bicolor*) (Open)	X	X			
Tufted Titmouse (*Parus bicolor*) (Interior-Edge)		X			
Veery (*Catharus fuscescens*) (Interior)	X	X			
Warbling Vireo (*Vireo gilvus*) (Interior-Edge)	X	X			
Wild Turkey (*Meleagris gallapavo*) (Generalist)	X	X			
Willow Flycatcher (*Empidonax trailii*) (Edge)		X			
Wood Thrush (*Hylocichla mustelina*) (Interior-Edge)	X	X			
Yellow-throated Vireo (*Vireo flavifons*) (Interior-Edge)	X	X			
Yellow Warbler (*Dendroica petechia*) (Edge)	X	X			

6.0 General Summary of Effects of ROWs on Birds

Linear ROWs such as the proposed overhead transmission lines primarily affect avian utilization through habitat modifications due to vegetation removal during construction, and subsequent routine vegetation management activities required for the normal operation and maintenance of the transmission line facilities.

During construction, existing mature woody vegetation along the ROWs in the vicinity of the new 345-kV lines would be removed. After the completion of construction, the areas along the ROWs near the new 345-kV lines would be managed in low-growing scrub-shrub and emergent habitats typical of CL&P's existing managed ROWs and consistent with federal and regional safety standards for the management of vegetative communities under overhead transmission lines. Therefore, the Project would result in a net long-term loss of woodland habitat along the new 345-kV route. However, this effect is minimized by the proposed use of existing ROWs (as opposed to siting new ROWs that would result in far greater loss of woodland habitat) and by limiting vegetation removal to areas required for the construction and safe operation of the Project facilities. Further, the conversion of woodland habitat to early successional habitats would benefit shrubland birds, especially when this type of habitat conversion takes place adjacent to exiting shrubland.

In general, the types of habitats found along the Project ROWs are common to the region. Therefore, the principal effect of the Project would be to expand the amount of acreage managed along the ROWs in scrub-shrub habitat type. The type of habitat preferred by a particular bird species will determine the nature and extent of the effects to that species. Species typically found in one of the more open habitat types (old field/shrub/sapling thicket, shrub swamp, emergent marsh, open water, agricultural lands) would not be significantly affected regardless of their abundance as only areas required for construction (access roads, work pads, etc.) would be temporarily disturbed in most of these open habitats. Species that utilize forested habitats (mixed deciduous forest and forested wetlands) could be affected to a greater extent, as mature woody vegetation would be removed as necessary and replaced permanently with early successional and more open habitats. These impacts would be minor, however, as the

overall amount of forest cleared would be limited to that required for installation of the new lines, and there is extensive forest habitat available generally throughout the Project region.

Following vegetation removal, birds dependent on the open, early successional communities in the existing ROW edge, such as Prairie Warbler, Indigo Bunting, and Field Sparrow can be expected to continue to utilize the vegetative resources. Edge species such as Great Crested Flycatchers, Cedar Waxwing, American Goldfinch, Blue Jay, Mourning Dove, American Robin, and Eastern Wood Pewee will also continue to utilize the early succession habitat and forest edges. Minor direct impacts would be expected for those few individuals that actually nest in trees that are being removed. These individuals would be temporarily displaced during the construction phase of the Project. However, due to the presence of additional nesting sites in adjacent forested areas, these effects are expected to be minor.

Overall, the proposed Project is expected to have a long-term effect on the structure of the on-ROW vegetative community, but these associated effects on bird species that require forested areas for breeding habitat are minor and highly localized. The Project is also expected to result in temporary effects to bird species utilizing upland meadows/ pastures, old fields, and shrub and sapling thicket habitats. This would result from human disturbance during construction activities and temporary loss of habitat in areas where vegetation is removed for construction. However, construction in any one area would be of relatively short duration and most areas disturbed during construction would be allowed to revert to old field/shrub and sapling thickets following completion of construction activities. A permanent, but minor adverse effect to birds would result from the loss of habitat associated with the maintenance of new permanent access roads to allow for operation and maintenance of the new 345-kV transmission lines. Overall, the Project would provide long-term benefits to bird species that depend on old fields/shrub and sapling thickets, scrub-shrub swamps, emergent marshes and to a lesser degree open water habitats. The amount of these habitat types would permanently increase as a result of the management of the Project ROWs. Recent declines in populations of shrubland birds in the Northeast are a growing concern among avian conservationists. Increasing the width of the managed portions of the ROWs to accommodate the

proposed new 345-kV transmission line may ultimately benefit shrubland species that currently nest on the ROW where the on-going vegetation management operations maintain suitable habitat for the shrubland-dependent species. Studies of a 100-foot ROW in Massachusetts indicated that nest predation was highest along the ROW/forest edge, and a wider ROW may actually benefit shrubland-nesting species by providing more potential nesting sites away from the edge habitat (King and Byers, 2002).

Once construction is complete and the Project is operational, routine vegetation management as currently practiced along existing CL&P transmission line ROWs would not significantly affect birds. Several studies have shown that routine vegetation management practices along ROWs, whether using mechanical methods, herbicides, or a combination thereof, do not have a significant adverse effect on bird populations so long as standard precautions are taken during herbicide application (Bramble et. al., 1992; Bramble et. al., 1994; Confer and Pascoe, 2003; King and Byers, 2002; Yahner et. al., 2002; Yahner et. al., 2003; Yahner, 2004; Yahner et. al., 2004). A recent study on bird use of utility corridors suggests habitat management protocols should be adopted by utility companies to realize the full potential of scrub-shrub habitats on the ROWs (King et al., 2009).

Recently, shrubland (early successional) birds have undergone some of the most dramatic declines of any groups of birds in Connecticut. Avian shrubland specialists (e.g., prairie warbler, indigo bunting, and field sparrow) require low, woody vegetation such as shrub thickets commonly occurring along ROWs. The vast majority of shrubland dependent bird species are declining (P.M. Comins, 2006). The strips of shrubland along power lines support a rich diversity of shrubland birds, including species that have suffered substantial population declines in the region such as brown thrasher, song sparrow, field sparrow, prairie warbler, blue-winged warbler, and Eastern towhee (R.A. Askins, 2006, P.M. Comins, 2006, King et al., 2009). In Connecticut, the most important source of habitat for bird species that are dependent on early succession shrubland habitats is found on the open ROWs maintained along power lines (R.A. Askins, 2006).

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APPENDIX A

AGENCY CORRESPONDENCE

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRANKLIN WILDLIFE MANAGEMENT AREA
391 ROUTE 32
NORTH FRANKLIN, CT 06254
TELEPHONE: (860) 642-7239

February 25, 2008

Mr. Donald D. Biondi
Transmission Siting and Permitting
Northeast Utilities System
107 Selden Street
Berlin, CT 06037

re: CL&P CT Interstate Reliability Project Brooklyn to Windham, CT

Dear Mr. Biondi:

Your request for information was reviewed on 1/9/08 with Dawn McKay of the Department of Environmental Protection's (DEP) Natural Diversity Data Base. Their records indicated the following map by map.

Mapsheet 02 of 15 near the Perkins Corner area of Mansfield
Special Concern: Horace's duskywing (*Erynnis horatius*) butterfly is more restricted to xeric rocky areas and barrens north of southern New Jersey.

If this habitat will be impacted by this project, the DEP Wildlife Division recommends that a lepidopterist conduct surveys for these species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the lepidopterist' qualifications. The Wildlife Division does not maintain a list of lepidopterists in the state. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Mapsheet 03 of 15 near Mansfield Hollow area
Endangered: Horned Lark (*Eremophila alpestris*) and Grasshopper sparrow (*Ammodramus savannarum*)
Threatened: The Frosted elfin (*Callophryus irus*), Sleepy duskywing (*Erynnis brizo*), and the American kestrel (*Falco sparverius*).
Special Concern: a noctuid moth species (*Zale obliqua*), the Pine Barrens Noctuid moth (*Zanclognatha martha*), Horace's duskywing (*Erynnis horatius*), Eastern hognose snake (*Heterodon platirhinos*), an aquatic snail (*Gyraulus circumstriatus*), Scribbled sallow (*Lepipolys perscripta*), four noctuid moth species (*Apamea burgessi, Chaetaglaea cerata, Eucoptocnemis fimbriaris,* and *Shinia spinosae*), and Shrub euchlaena (*Euchlaena madusaria*), Savannah sparrow (*Passerculus sandwichensis*) and Eastern Meadowlark (*Sturnella magna)*

The Savannah Sparrow is a bird that nests in open, grassy areas. Its breeding season is approximately from May through August and it is during this period that the species is most susceptible to disturbances in its habitat. Minimizing impact to open fields, meadows, marshes, and other grassy areas during this time period will likewise minimize impact to this species.

The Grasshopper Sparrow nests in open, grassy areas. Their breeding season is approximately from May through August and it is during this period that these species are most susceptible to disturbances in their habitat. Minimizing impact to open fields, meadows, marshes, and other grassy areas during this time period will likewise minimize impact to these species.

The Eastern meadowlark is a bird that nests and forages in large open, grassy areas (typically fields that are 15 acres or greater). Its breeding season is approximately May through August. It is during the breeding season that these birds are most susceptible to human disturbance. Minimizing impacts to open grassy fields and meadows will likewise minimize impacts to this species.

The noctuid moth (*Apamea burgessi*) favors xeric, sandy sites. The host plant of *Schinia spinosa* is not known, however, the caterpillars of this moth are associated with the host plant – jointweed. Protection of these host plants will benefit this species. The noctuid moth species (*Zale obliqua*) and the Pine Barrens

noctuid moth are associated with pitch pines (*Pinus rigida*), dry grassy or sandy fields with remnant pine barrens and scrub oak barrens. Protection of their host plants will benefit these species.

The aquatic snail (*Gyraulus circumstriatus*) will be affected by activities that degrade the water quality, particularly the dissolved oxygen and dissolved salts. In addition, activities that affect the water depth will affect this species which prefers shallow areas less than 3 meters deep where its food supply is abundant. They feed on the coating of living algae that covers most submerged surfaces. Fluctuations in water depth of 3 feet or more at one time will be too much for a slow moving invertebrate species to respond to.

Numbers of Frosted elfin, are declining nationally. This moth species is associated with the plant species *Lupinus perennis* but that may not be its only food plant. Sleepy duskywing (*Erynnis brizo*), another butterfly, has a listed habitat of oak or oak-pine scrub, chaparral, barrens; on well-drained sandy or shaly soils. The caterpillar hosts are oak or oak-pine scrub, chaparral, barrens; on well-drained sandy or shaly soils. Horace's Duskywing butterfly is more restricted to xeric rocky areas and barrens north of southern New Jersey.

The Scribbled sallow moth favors disturbed sandy soil habitats with the host plant *Lineria canadensis*, Blue Toadflax. The noctuid moth species *Eucoptcnemis fimbriaris* is associated with pitch pines (*Pinus rigida*), dry grassy or sandy fields with remnant pine barrens and scrub oak barrens. The noctuid moth (*Apamea burgessi*) favors xeric, sandy sites. The host plant of *Schinia spinosa* is not known, however, the caterpillars of this moth are associated with the host plant – jointweed. Protection of these host plants will benefit this species. The noctuid moth *Chaetaglaea cerata,* favors pitch pine-scrub oak barrens and heathlands on sandplains.

American kestrel (*Falco sparverius*) nest in late March - April in open areas like woodland edges, parks, and open field habitat. They are cavity nesters and seek out abandoned woodpecker or flicker holes to nest. They catch and eat mice, voles, shrews and insects. They winter over much of the nesting range. If kestrels are nesting then I recommend that work not be done near the nest during the nesting season (February - July) and that a sufficient buffer zone be left around the nest to minimize disturbance. This buffer should be determined after the nest is located.

Kestrels are cavity nesters and will nest in artificial nesting boxes that are placed in the area. Artificial nesting box plans will be provided at your request. The Wildlife Division would welcome the opportunity to work with your company to put up kestrel nesting boxes on your property in good habitat. Nesting boxes and silvicultural practices that maintain high densities of nesting and roosting cavities in trees with a minimum diameter of 30.5 cm will benefit this species.

Eastern hognose snakes favor dry sandy areas with well drained gravelly soils. This species is dormant from November 1 to April 1. It has been negatively impacted by the loss of suitable habitat. Construction should be done during the dormant season.

The nesting season for horned lark (*Eremophila alpestris*) extends from the end of March to the middle of August. Construction should be done during the non-breeding season.

All these species have been negatively impacted by the loss of their associated plant species and habitats. If favored plants are going to be impacted by this project these species may be affected. The DEP Wildlife Division recommends that a lepidopterist conduct surveys for these species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the lepidopterist' qualifications. The Wildlife Division does not maintain a list of lepidopterists in the state. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Mapsheet 04 of 15 south of Sherman Corner area
Threatened: The Frosted elfin (*Callophryus irus*), Harris' checkerspot (*Chlosyne harrisii*) and the Moustached clubtail (*Gomphus adelphus*)
Special Concern: Horace's duskywing (*Erynnis horatius*),

Numbers of Frosted elfin, are declining nationally. This moth species is associated with the plant species *Lupinus perennis* but that may not be its only food plant. The Harris' checkerspot (*Chlosyne harrisii*) butterfly is

This species has been negatively impacted by the loss of their associated plant species and habitats. If favored plants are going to be impacted by this project these species may be affected. The DEP Wildlife Division recommends that a lepidopterist conduct surveys for these species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the lepidopterist' qualifications. The Wildlife Division does not maintain a list of lepidopterists in the state. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Mapsheet 09 of 15; yellow hatched circle to left of route
Special Concern: Wood Turtle (*Glyptemys insculpta*)

Wood Turtles require riparian habitats bordered by flood plains, woodlands or meadows. Their summer habitat includes pastures, old fields, woodlands, power line cuts and railroad beds bordering or adjacent to streams ,and rivers. They hibernate submerged in tangled tree roots along the river banks or in deep pools from November 1 to April 1. Wood turtles can use areas up to 1500 feet from the streams/rivers where they are found. This species is dormant from November 1 to April 1. They have been negatively impacted by the loss of suitable habitat. If wood turtle habitat is present, the Wildlife Division recommends that work be done during the dormant period, which is November 1 to April 1, to avoid affecting wood turtles.

Mapsheet 10 of 15: yellow hatched circle to the north and right of the route
Special Concern: Whip-poor-will (*Caprimulgus vociferus*)

Whip-poor-wills favor forest habitat with an open understory, often adjacent to areas of shrubby, herbaceous habitat. These ground-nesting birds are found in Connecticut during the breeding season (late May through July) and spend the winter in South America. If timber harvesting is an activity that will be considered for this open space parcel, whip-poor-wills may ultimately benefit from the earlier forest growth stages created. Any forestry operation should be conducted outside of the breeding season, so that the potential for destruction of nests, eggs, or young is reduced.

Mapsheet 11 of 15: yellow hatched circle that intersects route
Special Concern: Eastern Ribbon snake (*Thamnophis sauritus*)

Eastern ribbon snakes inhabit areas with shallow water, grassy or shrubby areas bordering streams and wooded swamps. They also prefer sunny areas with low dense vegetation near shallow water areas. Their diet consists of insects, fish, frogs, salamanders and toads. If Ribbon snake habitat is present, the Wildlife Division recommends that work be done during the dormant period, which is November 1 to April 1, to avoid affecting Ribbon snakes.

Mapsheet 14 of 15: near Plains Road
Endangered: Banded Bog Skimmer Dragonfly (*Williamsonia lintneri*)
Special Concern: Bog Copper butterfly (*Lycaena epixanthe*)

The Bog Copper is a fairly conspicuous butterfly that is associated with sphagnum bogs in Connecticut. Activities that alter the physical or chemical nature of the aquatic habitat, cause siltation or any source of pollution will be detrimental. Any work that will detrimentally impact the associated sphagnum bog will affect this species. The Banded Bog Skimmer dragonfly is associated with fen/bog habitat. Again, activities that alter the physical or chemical nature of the aquatic habitat, cause siltation or any source of pollution will be detrimental. Any work that will detrimentally impact the associated sphagnum bog or wetland will affect these species.

Standard protocols for protection of wetlands should be followed and maintained during the course of the project. Additionally, all silt fencing should be removed after soils are stable so that reptile and amphibian movement between uplands and wetlands is not restricted.

Please be advised that the Wildlife Division has not made a field inspection of the project nor have we seen detailed timetables for work to be done. Should state permits be required or should state involvement occur in some other fashion, specific restrictions or conditions relating to the species discussed above may apply. In this situation, additional evaluation of the proposal by the DEP Wildlife Division should be requested.

found in moist areas like marshes, bog edges, pastures and meadows. The host plant is flat-topped white aster (*Aster umbellatus*). The adult females lay eggs in clusters under host plant leaves. The caterpillars feed on leaves communally in a web and partially-grown caterpillars hibernate at the base of the host plant. Horace's Duskywing butterfly is more restricted to xeric rocky areas and barrens north of southern New Jersey. Moustache Clubtail dragonfly (*Gomphus adelphus*) is found on chest high vegetation along river banks.

All these species have been negatively impacted by the loss of their associated plant species and habitats. If favored plants are going to be impacted by this project these species may be affected. The DEP Wildlife Division recommends that an invertebrate biologist/ lepidopterist conduct surveys for these species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the biologist'/lepidopterist' qualifications. The Wildlife Division does not maintain a list of biologist/lepidopterists in the state. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Same map - on the lower branch Blue Route
Threatened: Harris' checkerspot (*Chlosyne harrisii*)
Special Concern: American Rubyspot damselfly (*Hetaerina americana*)

American rubyspot damselfly is found on sunny riverbanks with plants or grasses along the banks or on emergent rocks in the river.

The Harris' checkerspot (*Chlosyne harrisii*) butterfly is found in moist areas like marshes, bog edges, pastures and meadows. The host plant is flat-topped white aster (*Aster umbellatus*). The adult females lay eggs in clusters under host plant leaves. The caterpillars feed on leaves communally in a web and partially-grown caterpillars hibernate at the base of the host plant.

If any wetland habitats are to be altered, it may affect this species and the DEP Wildlife Division would recommend that a invertebrate biologist conduct surveys for this species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the biologist' qualifications. The Wildlife Division does not maintain a list of biologists in the state. The results of these investigations should be forwarded to the Wildlife Division and, after evaluation, recommendations can be provided.

Mapsheet 05 of 15: yellow hatched circle near Merrick Brook
Special Concern: Whip-poor-will (*Caprimulgus vociferus*)

Whip-poor-wills favor forest habitat with an open understory, often adjacent to areas of shrubby, herbaceous habitat. These ground-nesting birds are found in Connecticut during the breeding season (late May through July) and spend the winter in South America. If timber harvesting is an activity that will be considered for this open space parcel, whip-poor-wills may ultimately benefit from the earlier forest growth stages created. Any forestry operation should be conducted outside of the breeding season, so that the potential for destruction of nests, eggs, or young is reduced.

Mapsheet 06 of 15: yellow hatched circle that intersects route
Special Concern: a noctuid moth (*Apamea burgessi*)

The noctuid moth (*Apamea burgessi*) favors xeric, sandy sites. If this favored habitat is going to be impacted by this project than the noctuid moth may be affected. The DEP Widlife Division recommends that a lepidopterist conduct surveys for this species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the lepidopterist' qualifications. The Wildlife Division does not maintain a list of lepidopterists in the state. A DEP Wildlife Division permit may be required by the lepidopterist to conduct survey work, you should ask if your lepidopterist has one. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Mapsheet 08 of 15: yellow hatch circle to the left of the route
Threatened: The Frosted elfin butterfly (*Callophryus irus*)

Numbers of Frosted elfin, are declining nationally. This moth species is associated with the plant species *Lupinus perennis* but that may not be its only food plant.

Consultation with the Wildlife Division should not be substituted for on-site surveys required for environmental assessments. If you have any additional questions, please feel free to contact me at Julie.Victoria@po.state.ct.us, please reference the NDDB # at the bottom of this letter when you e-mail. Jenny Dickson (860-675-8130) can further assist you in the impact on the Grasshopper Sparrows, Savannah sparrows, Horned Larks, Whip-poor-wills and Eastern meadowlarks. Thank you for the opportunity to comment.

Sincerely,

Julie Victoria, Wildlife Biologist
Franklin Swamp Wildlife Management Area
391 Route 32
N. Franklin, CT 06254

cc: NDDB – 15775
J. Dickson

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Natural Resources
Wildlife Division
79 Elm Street, Sixth Floor
Hartford, CT 06106
Natural Diversity Data Base

March 8, 2010

Mr. Donald D. Biondi
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270

re: The Connecticut Light and Power Company Connecticut Interstate Reliability Project in Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson, and Windham, Connecticut

Dear Mr. Biondi:

I have reviewed Natural Diversity Data Base maps and correspondence files regarding the area delineated on the maps you provided showing the project mapping that was updated in January 2010 for the proposed project listed above. I have determined that CL&P is in receipt of the most recent updated state-listed species and habitat information that is available for this project.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the DEP's Natural History Survey and cooperating units of Department of Environmental Protection's private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at 860-424-3592. Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Sincerely,

Dm. McKay

Dawn M. McKay
Biologist/Environmental Analyst 3

Cc: NDDB File # 15775

APPENDIX B

INVENTORY OF POTENTIAL BREEDING BIRD SPECIES AND HABITATS ALONG ROUTE VARIATIONS

B.1 Introduction and Summary

In accordance with the Council's requirements, CL&P evaluated alternatives to the proposed 345-kV transmission line route and overhead configuration. A total of six variations were identified. These include two route variations involving overhead configurations along new ROWs (Willimantic South Overhead and Brooklyn Overhead), and four variations involving underground cable configurations, following either CL&P's existing overhead transmission line ROWs or highway corridors (i.e., the Mansfield, Mount Hope, Willimantic South, and Brooklyn Underground Variations). Each variation would only replace certain portions of the Proposed Route.

Figure B-1 illustrates the general location of the six variations in relation to the Proposed Route for the Project, and Table B-1 summarizes key characteristics of each variation. (For additional environmental information regarding these six variations, refer to Volume 1A, Section 15.)

With the exception of the Willimantic South Overhead and Brooklyn Overhead Route Variations, the variations are all either within CL&P's existing ROWs (i.e., the Mansfield, Mount Hope, and Brooklyn Underground Variations) or within roadway ROWs (Willimantic South Underground Variation) . As a result, the breeding bird species found along these variations would not be expected to differ substantially from those identified as potentially occurring in the vicinity of the Proposed Route segments that the variations would replace.

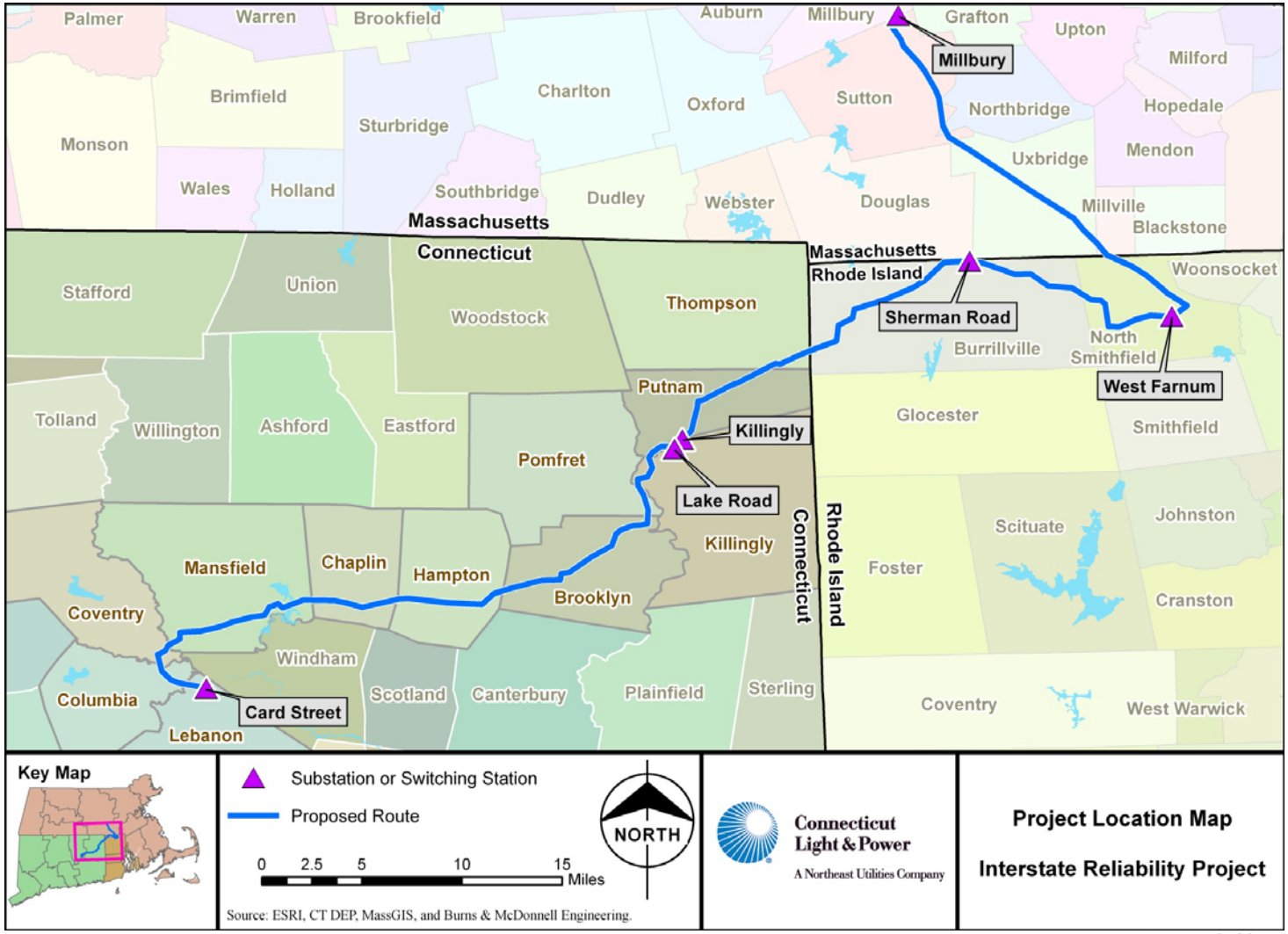
However, the Willimantic South and Brooklyn Overhead Variations would extend through areas not traversed by CL&P's existing ROWs. The Willimantic South Overhead Variation would be alignment predominantly along a new ROW that would extend through northeastern Lebanon (in New London County), as well as Windham and Chaplin (both in southwestern Windham County). The Brooklyn Overhead Route Variation would be aligned along a new ROW in the towns of Brooklyn and Pomfret (both in the north-central portion of Windham County). A review of the Breeding Bird Atlas reveals that most of the birds that could potentially breed in the vicinity of the Proposed Route could likewise breed in the vicinity of these two overhead variations.

Table B-2 lists the breeding bird species which could potentially occur near the Willimantic South Overhead and Brooklyn Overhead Variations.

Based on a review of the aerial photography and mapped resources along these two overhead route variations, the existing habitats are similar to those that characterize areas of the Proposed Route. Consequently, in general terms, the same bird species assemblages would be expected to occur in the vicinity of these variations.

However, both of the overhead route variations would require the creation of a new, cleared ROW for the 345-kV line segment. The predominant cover type found along both route variations is forest land, with substantially less acreage of old field, agricultural land, and shrub/sapling cover types than are found along the Proposed Route. Therefore, while the avian species assemblage would be similar to that found along the Proposed Route, higher numbers of forest interior bird species would be expected to utilize these overhead route variations as breeding habitat. The creation of a managed ROW through these, large tracts of presently forest land could adversely affect forest interior breeding habitat.

Figure B-1: Location of 345-kV Transmission Line Route Variations in Connecticut



August 18, 2011

Table B-1
Summary of Route Variations

Route Variation	Purpose of the Variation	Principal Route Variation Characteristics		
		Length (Miles)	Town(s) / (Counties)	Transmission Line Configuration and ROW Location
Mansfield Underground Variation	Alternative for consideration in the event that Statutory Facilities, as defined pursuant to the Connecticut General Statutes § 16-50p(i), may be determined by the Council to be located adjacent to the proposed overhead 345-kV transmission line. Would replace 0.7 mile of the proposed overhead transmission line route.	0.7 mile	Mansfield (Tolland)	Underground 345-kV cable system, within existing 300-foot-wide CL&P ROW; two transition stations within and adjacent to ROW. Center of cable system would generally be offset approximately 15 feet from the outside conductor of CL&P's existing 345-kV line Vegetation affected: Scrub-shrub, some forest land along cable ROW. Approximately 4-8 acres of forest land at line transition station sites
Mount Hope Underground Variation	Same as the Mansfield Underground Variation. Potential Statutory Facilities include Mount Hope Montessori School, Green Dragon Day Care, and Come Play with Me Day Care. Would replace 1.1 miles of the proposed overhead transmission line route.	1.1 miles	Mansfield (Tolland)	Underground 345-kV cable system, within existing CL&P ROW; two transition stations within and adjacent to ROW. Center of cable system would generally be offset approximately 15 feet from the outside conductor of CL&P's existing 345-kV line Vegetation affected: Scrub-shrub, agricultural / open field, some forest land along ROW and approximately 4-8 acres of forest land at line transition station sites.
Brooklyn Underground Variation	Same as the Mansfield Underground Variation. Would replace 1.3 miles of the proposed overhead transmission line route and avoid a day care near Church Street.	1.4 miles	Brooklyn (Windham)	Underground 345-kV cable system, within existing CL&P ROW; two transition stations within and adjacent to ROW. Cable system would generally be offset approximately 15 feet from the outside conductor of CL&P's existing 345-kV line (i.e., the 330 Line) Vegetation affected: Scrub-shrub, some forest land along ROW and approximately 4-8 acres of forest land at line transition station sites.

Table B-1
Summary of Route Variations

Route Variation	Purpose of the Variation	Principal Route Variation Characteristics		
		Length (Miles)	Town(s) / (Counties)	Transmission Line Configuration and ROW Location
Brooklyn Overhead Variation	Same as the Brooklyn Underground Variation. Would replace 3.3 miles of the proposed overhead transmission line route and would avoid a day care near Church Street.	3.3 miles	Brooklyn Pomfret (Windham)	Overhead line design on new "greenfields" 150-foot-wide ROW, easements for which would have to be acquired from private landowners Vegetation affected: New ROW across upland and wetland forest, with some open field/ scrub-shrub land
Willimantic South Underground Variation	Alternative for consideration to avoid following CL&P's existing ROW across: (1) Mansfield Hollow State Park, the Mansfield Hollow WMA, and Mansfield Hollow Lake. Would replace 11.5 miles of the proposed overhead transmission line route.	10.7 miles	Lebanon Windham Chaplin (New London, Windham)	Underground 345-kV cable system, mostly within or adjacent to public roads, except for a 0.6-mile segment along CL&P ROW. One new transition station on eastern end of cable system (western terminus would be on Card Street Substation property) Vegetation affected: Scrub-shrub, some forest land adjacent to roads and within road shoulders. Scrub-shrub and forest land within CL&P ROW and at transition station site.
Willimantic South Overhead Variation	Same as Willimantic South Underground Variation. Would replace approximately 12 miles of the proposed overhead transmission line route along CL&P's existing ROWs with new overhead line ROW.	9.4 miles	Lebanon Windham Chaplin (New London, Windham)	Overhead line design on a new "greenfields" requiring 150-foot-wide ROW, except for a 0.7-mile segment in Lebanon along an existing CL&P ROW. Vegetation affected: Predominantly forest land

B.2 Overhead Route Variations

The overhead variations would result in habitat modification due to vegetation removal along new ROWs during construction, and the subsequent management of the ROW vegetation as shrubland. For the development of the Willimantic South and Brooklyn Overhead Variations, new "greenfield" ROWs could fragment large, relatively undisturbed forest tracts, which in turn may result in a net long-term loss of woodland habitat for forest interior bird species.

The primary difference between the overhead route variations and the Proposed Route is that these overhead variations would create entirely new cleared ROW segments, reducing woodland habitat area somewhat but increasing the area of shrubland and edge habitats favored by many songbirds. However, as stated in Section 6.0, studies of a 100-foot ROW in Massachusetts indicated that nest predation was highest along the ROW/forest edge, and a wider ROW may actually benefit shrubland-nesting species by providing more potential nesting sites away from the edge habitat (King and Byers, 2002). Therefore, by aligning the Proposed Route adjacent to existing overhead transmission lines, the value of converting forest land to shrubland is maximized. Conversely, by creating a narrow, new ROW through large tracts of presently forested land this opportunity is lost. Furthermore, a research study in southern New Jersey concluded that narrow forest-dividing roadways with grassy shoulders had a negative impact on forest-nesting birds as they attracted cowbirds and nest predators (Rich et al., 1994). A new ROW through presently forested land would likely have a similar effect.

B.3 Underground Variations

Of the four underground variations, only the Willimantic Underground Variation would be aligned outside of existing CL&P ROWs. This underground variation would follow roads and roadway ROWs, as well as a segment of CL&P's existing ROW. Accordingly, only minor effects on bird species would occur along the underground cable route because

limited vegetative habitats would be affected. The three underground variations that would be aligned within CL&P's existing ROWs (i.e., the Mansfield, Mount Hope, and Brooklyn variations) would be somewhat more intrusive during construction as cable system construction methodology would be more consistent with practices typical of natural gas or petroleum pipelines as opposed to overhead transmission lines. However, once installed, the ground surface above these underground facilities would be allowed to revert to shrubland, which would typically be managed as part of CL&P's regular ROW vegetation management program.

However, all of the underground variations would result in permanent habitat impacts as a result of the required development of 345-kV line transition stations. Each of these line transition stations would require an approximately 2-to-4 acre site where facilities transition from overhead to underground. The line transition stations would displace forested land located outside of the existing managed ROWs, and would be converted to utility use for the life of the Project (each site would include above-ground electric facilities and would be surfaced in crushed stone and fenced). As a result, the overall effects on birds from the construction and operation of these underground variations would be similar to those described for the Proposed Route. However, construction of multiple transition stations would result in the clearing of larger tracts of presently undeveloped forested land, without the benefit of creating shrubland habitat in its place.

Table B-2
Breeding Birds Potentially Occurring near the Willimantic South Overhead and Brooklyn Overhead Variations, Based on Existing Habitat

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Bitterns, Herons									
Least Bittern **(T)**	*Ixobrychus exilis*				F,C	N,F,C	F		
Great Blue Heron	*Ardea herodias*			N, C	F,C	F,C	F		F
Green Heron	*Butorides virescens*			N,C	N,C	F,C	F		
Swans, Geese, Ducks									
Mute Swan	*Cygnus olor*				N,C	N,F,C	F,C		
Canada Goose	*Branta canadensis*				N,F,C	N,F,C	F, C	F,C	N,F
Wood Duck	*Aix sponsa*		N,F	N,F,C	F,C	F,C	F,C		
American Black Duck	*Anas rubripes*	N	N	N,C	N,F,C	N,F,C	F,C		
Mallard	*Anas platyrhynchos*	N	N	N,C	N,F,C	N,F,C	F,C		N,F
Gadwall	*Anas strepera*				N,C	N,F,C	F,C		F
Hooded Merganser	*Lophodytes cucullatus*			N	F,C	F,C	F,C		
American Vultures									
Turkey Vulture	*Cathartes aura*		N,F,C					F	F
Eagles, Hawks									
Osprey	*Pandion haliaetus*				F,C	N,F,C	F		
Sharp-shinned Hawk **(E)**	*Accipiter striatus*	F	N,F,C	F,C	F	F			F
Cooper's Hawk	*Accipiter cooperii*	F	N,F,C	F,C	F	F			F
Northern Goshawk	*Accipiter gentilis*	F	N,F,C	F,C	F	F			
Red-shouldered Hawk	*Buteo lineatus*		N	N,F,C			F	F	
Broad-winged Hawk **(SC)**	*Buteo platypterus*	F	N,F,C						F
Red-tailed Hawk	*Buteo jamaicensis*	F	N,F,C					F	F
Falcons									
American Kestrel **(T)**	*Falco sparverius*	F,C	N,C	N,C	F	F			N,F
Pheasants, Grouse, Turkeys, and Quail									
Ring-necked Pheasant	*Phasianus colchicus*	N,F,C		**F,C**	**F,C**				N,F,C
Ruffed Grouse	*Bonasa umbellus*	F	N,F,C		**F,C**				
Wild Turkey	*Meleagris gallopavo*	F,C	N,F,C		**F,C**				N,F,C

Table B-2
Breeding Birds Potentially Occurring near the Willimantic South Overhead and Brooklyn Overhead Variations, Based on Existing Habitat

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Northern Bobwhite	*Colinus virginianus*	N,F,C			**F,C**				N,F,C
Rails, Gallinules									
Virginia Rail	*Rallus Limicola*				F,C	N,F,C	F		
Sora	*Porzana carolina*					N,F,C	F		
Common Moorhen **(E)**	*Gallinila chloropus*				N,F,C	N,F,C	F		
Plovers									
Kildeer	*Charadrius vociferous*	F						N,F,C	F,C
Sandpipers, Snipes, Woodcocks									
Spotted Sandpiper	*Actitis macularia*	N					F		
American Woodcock	*Scolopax minor*	N,F,C	N,C	N,C	F,C				F,C
Pigeons, Doves									
Rock Dove (Pigeon)	*Columba livia*							N,F,C	F,C
Mourning Dove	*Zenaida macroura*	F,C	N,F,C					F,C	F,C
Cuckoos									
Black-billed Cuckoo	*Coccyzus erythropthalmus*	N,F,C	N,F,C	F,C	F,C				
Yellow-billed Cuckoo	*Coccyzus americanus*	N,F,C	N,F,C	F,C	F,C				
Owls									
Eastern Screech-Owl	*Otus asio*	F	N,F,C	F,C				N,F,C	F
Great Horned Owl	*Bubo virginianus*	F	N,F,C	F,C		F		F,C	F
Barred Owl	*Strix varia*	F	N,F,C	N,F,C		F			F
Nighthawks, Nightjars									
Whip-poor-will **(SC)**	*Caprimulgus vociferous*	N,F,C	N,F,C						F,C
Chimney Swift	*Chaetura pelagica*	F				F	F	N,F,C	F
Hummingbirds									
Ruby-throated Hummingbird	*Archilochus-colubris*	N,F,C	N,F,C	F,C	F,C	F,C		F,C	
Kingfishers									
Belted Kingfisher	*Ceryle alcyon*					C	N,F,C		
Woodpeckers									
Red-bellied Woodpecker	*Melanerpes carolinus*	F,C	N,F,C	N,F,C				F	

Table B-2
Breeding Birds Potentially Occurring near the Willimantic South Overhead and Brooklyn Overhead Variations, Based on Existing Habitat

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Downy Woodpecker	*Picoides pubescens*	F,C	N,F,C	N,F,C				F	
Hairy Woodpecker	*Picoides villosus*	F,C	N,F,C	N,F,C				F	
Northern Flicker	*Colaptes auratus*	F,C	N,F,C	N,F,C				F	F
Yellow-bellied Sapsucker	*Sphyrapicus varius*	F,C	N,F,C	N,F,C					
Pileated Woodpecker	*Dryocopus pileatus*		N,F,C	N,F,C					
Tyrant Flycatchers									
Eastern Wood-Pewee	*Contopus virens*	F,C	N,F,C	F,C					
Acadian Flycatcher	*Empidonax virescens*	F,C	N,F,C	N,F,C	F,C	F,C	F		
Alder Flycatcher **(SC)**	*Empidonax alnorum*	N,F,C	F,C	F,C	N,F,C				
Willow Flycatcher	*Empidonax trailli*				N,F,C	F,C	F		
Least Flycatcher	*Empidonax minimus*	F,C	N,F,C	N,F,C					N,F,C
Eastern Phoebe	*Sayornis phoebe*	N,F,C	N,F,C	N,F,C	F,C	F,C	F	N,F,C	F
Eastern Kingbird	*Tyrannus tyrannus*	F,C	N,F,C	N,F,C	F,C	F,C	F	F	F
Great Crested Flycatcher	*Myiarchus crinitus*	F,C	N,F,C	N,F,C	F,C	F,C	F	N,F,C	F
Swallows									
Purple Martin **(T)**	*Progne subis*						F		N,F,C
Tree Swallow	*Tachycineta bicolor*	F,C	N,F,C	N,F,C	F,C	F,C	F	N,F,C	N,F,C
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*					F,C	N,F		F
Bank Swallow	*Riparia riparia*				F,C	F,C	N,F		F
Cliff Swallow	*Hirundo pyrrhonota*				F,C	F,C	N,F		F
Barn Swallow	*Hirundo rustica*	F,C			F,C	F,C	F	N,F,C	F
Jays, Crows									
Blue Jay	*Cyanocitta cristata*	F,C	N,F,C	N,F,C				N,F,C	F,C
American Crow	*Corvus brachyrhynchos*	F,C	N,F,C	F,C	F,C	F,C	F	N,F,C	F,C
Common Raven	*Corvus corax*	F,C	N,F,C	N,F,C	F,C				F,C
Chickadees, Titmice									
Black-capped Chickadee	*Parus atricapillus*	F,C	N,F,C	N,F,C				N,F,C	F,C

Table B-2
Breeding Birds Potentially Occurring near the Willimantic South Overhead and Brooklyn Overhead Variations, Based on Existing Habitat

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Tufted Titmouse	*Parus bicolor*	F,C	N,F,C	N,F,C				F,C	F,C
Nuthatches									
Red-breasted Nuthatch	*Sitta canadensis*		N,F,C	N,F,C				N,F,C	
White-breasted Nuthatch	*Sitta carolinensis*		N,F,C	N,F,C				F,C	
Creepers									
Brown Creeper	*Certhia americana*		N,F,C	N,F,C					
Wrens									
Carolina Wren	*Thryothorus ludovicianus*	N,F,C	N,F,C	N,F,C				N,F,C	N,F,C
House Wren	*Troglodytes aedon*	N,F,C	N,F,C					N,F,C	N,F,C
Marsh Wren	*Cistothorus palustris*				F	N,F,C			
Winter Wren	*Troglodytes troglodytes*	F,C	F,C	N,F,C	F,C				
Kinglets, Gnatcatchers, Thrushes									
Golden-crowned Kinglet	*Regulus satrapa*	F,C	N,F,C	N,F,C	F,C				
Blue-gray Gnatcatcher	*Polioptila caerulea*	F,C	N,F,C	N,F,C				F,C	
Eastern Bluebird	*Sialia sialis*	N,F,C	N,C	C				N,F,C	N,FC
Veery	*Catharus fuscescens*		N,F,C	N,F,C	N,F,C				
Hermit Thrush	*Catharus guttatus*		N,F,C	F,C					
Wood Thrush	*Hylocichla mustelina*		N,F,C	N,F,C	F,C				
American Robin	*Turdus migratorius*	N,F,C	N,F,C	F,C	F,C			N,F,C	N,F,C
Mockingbirds, Thrashers									
Gray Catbird	*Dumetella carolinensis*	N,F,C	N,F,C	N,F,C	N,F,C	F,C		N,F,C	N,F,C
Northern Mockingbird	*Mimus polyglottos*	N,F,C	F,C	F,C				N,F,C	N,F,C
Brown Thrasher **(SC)**	*Toxostoma rufum*	N,F,C	F,C	F,C				N,F,C	F

Table B-2
Breeding Birds Potentially Occurring near the Willimantic South Overhead and Brooklyn Overhead Variations, Based on Existing Habitat

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
Waxwings									
Cedar Waxwing	*Bombycilla cedrorum*	N,F,C	F,C					F,C	N,F,C
Starlings									
European Starling	*Stumus vulgaris*	N,F,C				F,C		N,F,C	N,F,C
Vireos									
White-eyed Vireo	*Vireo griseus*	N,F,C	F,C	F,C					
Blue-headed (Solitary) Vireo	*Vireo solitarius*	F,C	N,F,C	F,C					
Yellow-throated Vireo	*Vireo flavifrons*	F,C	N,F,C	F,C					
Warbling Vireo	*Vireo gilvus*	F,C	N,F,C	N,F,C	F,C				F
Red-eyed Vireo	*Vireo olivaceus*	F,C	N,F,C	N,F,C				N,F,C	
Wood-Warblers									
Blue-winged Warbler	*Vermivora pinus*	N,F,C	N,F,C	N,F,C	N,F,C	N,F,C			F
Golden-winged Warbler **(E)**	*Vermivora chrysoptera*	N,F,C							F
Blue-winged Warbler and Golden-winged Warbler Hybrid	*Vermivora pinus X Vermivora chrysoptera*	N,F,C	N,F,C	F,C	F,C				
Nashville Warbler	*Vermivora ruficapilla*	N,F,C	F,C	F,C	F,C	F,C			
Yellow Warbler	*Dendroica petechia*	N,F,C	N,F,C	N,F,C	N,F,C	F,C		N,F,C	F
Northern Parula **(SC)**	*Parula americana*	F,C	N,F,C	N,F,C	N,F,C	F,C			
Magnolia Warbler	*Dendroica magnolia*	F,C	N,F,C	N,F,C	F,C				
Chestnut-sided Warbler	*Dendroica pensylvanica*	N,F,C	N,F,C	F,C	F,C				F
Black-throated Blue Warbler	*Dendroica caerulescens*	F,C	N,F,C	F,C	F,C			F,C	
Yellow-rumped Warbler	*Dendroica coronata*	F,C	N,F,C	F,C	F,C				F
Black-throated Green Warbler	*Dendroica virens*		N,F,C	F,C					
Blackburnian Warbler	*Dendroica fusca*		N,F,C	F,C					F
Pine Warbler	*Dendroica pinus*	F,C	N,F,C	F,C					F
Prairie Warbler	*Dendroica discolor*	N,F,C	F,C	F,C					N,F,C
Cerulean Warbler	*Dendroica cerulea*		N,F,C	N,F,C	F,C				
Black-and-white warbler	*Mniotilta varia*		N,F,C	F,C					

Table B-2
Breeding Birds Potentially Occurring near the Willimantic South Overhead and Brooklyn Overhead Variations, Based on Existing Habitat

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
American Redstart	*Setophaga ruticilla*	N,F,C	N,F,C	N,F,C				F,C	F
Worm-eating Warbler	*Helmitheros vermivorus*		N,F,C	F,C					
Ovenbird	*Seiurus aurocapillus*		N,F,C	F,C					
Northern Waterthrush	*Seiurus noveboracensis*			N,F,C	F,C		F		
Louisiana Waterthrush	*Seiurus motacilla*			N,F,C	F,C		F		
Kentucky Warbler	*Oporornis formosus*			N,F,C	N,F,C				
Common Yellowthroat	*Geothlypis trichas*	N,F,C	N,F,C	N,F,C	N,F,C				F
Hooded Warbler	*Wilsonia citrina*		N,F,C	N,F,C	F,C				
Canada Warbler	*Wilsonia canadensis*		F,C	N,F,C	F,C				
Yellow-breasted Chat **(E)**	*Icteria virens*	N,F,C	F,C	F,C	N,F,C				
Tanagers									
Scarlet Tanager	*Piranga olivacea*	F	N,F,C	F,C					F
Cardinals, Grosbeaks, and Buntings									
Northern Cardinal	*Cardinalis cardinalis*	N,F,C	N,F,C	F,C				N,F,C	F
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	F	N,F,C	F,C					F
Indigo Bunting	*Passerina cyanea*	N,F,C	F,C						F
Eastern (Rufous-sided) Towhee	*Pipilo erythrophthalmus*	F,C	N,F,C	F,C					F
Chipping Sparrow	*Spizella passerina*	N,F,C	F,C					N,F,C	F
Field Sparrow	*Spizella pusilla*	N,F,C							N,F,C
Vesper Sparrow **(E)**	*Pooecetes gramineus*	N,F,C	F,C						N,F,C
Savannah Sparrow **(SC)**	*Passerculus sandwichensis*	N,F,C							N,F,C
Grasshopper Sparrow **(E)**	*Ammodramus savannarum*	N,F,C							N,F,C
Song Sparrow	*Melospiza melodia*	N,F,C	N,F,C	N,F,C				N,F,C	F,C
Swamp Sparrow	*Melospiza Georgiana*	F		N,F,C	N,F,C	N,F,C			

Table B-2
Breeding Birds Potentially Occurring near the Willimantic South Overhead and Brooklyn Overhead Variations, Based on Existing Habitat

COMMON NAME (1,3)	SCIENTIFIC NAME	HABITAT TYPE (2)							
		OFS	UF	PFO	PSS	PEM	POW	CI/HY	AG
White-throated Sparrow	*Zonotrichia albicollis*	F,C	F,C	N,F,C	F,C			F,C	F,C
Dark-eyed Junco	*Junco hyemalis*	F,C	N,F,C					F,C	F,C
Blackbirds, Orioles									
Bobolink **(SC)**	*Dolichonyx oryzivorus*								N,F,C
Red-winged Blackbird	*Agelaius phoniceus*			F,C	F,C	N,F,C		N,F,C	F,C
Eastern Meadowlark **(SC)**	*Sturnella magna*								N,F,C
Common Grackle	*Quiscalus quiscala*	F		N,F,C	F,C	F,C	F	N,F,C	F,C
Brown-headed Cowbird	*Molothrus ater*	F,C	N,F,C	N,F,C				N,F,C	F,C
Orchard Oriole	*Icterus spurius*	F	N,F,C					N,F,C	F
Baltimore Oriole	*Icterus galbula*	FF	N,F,C					N,F,C	F
Finches									
Purple Finch	*Carpodacus purpureus*	F,C	N,F,C	F,C				F	F
House Finch	*Carpodacus mexicanus*	F,C	F,C					N,F,C	F
Pine Siskin	*Carduelis pinus*		N,F,C					N,F,C	F,C
American Goldfinch	*Carduells tristis*	N,F,C						N,F,C	N,F,C
Evening Grosbeak	*Coccothraustes vespertinus*	F,C	N,F,C	F,C				F,C	F,C
House Sparrow	*Passer domesticus*	F,C						N,F,C	N,F,C

1. State of Connecticut listings: **E** = Endangered; **T** = Threatened; **SC** = Special Concern. Note that these rare species are included in the table based upon their occurrence in the Project region and the presence of potentially suitable habitat only. No site specific surveys were done on route variations. In addition, CL&P has not consulted with CTDEP NDDB to determine what rare avian species may occur in the Project route variation areas. In addition, state-listed rare species were identified as potentially occurring in the general Project vicinity, based on *Atlas* data.

2. OFS = Old Field/Shrub/Sapling Thickets
   UF = Mixed Deciduous Forest
   PFO = Forested Wetland
   PSS = Shrub Swamp
   PEM = Emergent Marsh
   POW = Open Water
   CI/HY = Urban Areas
   AG = Agricultural Land

3. For each species listed, habitat types marked with an “N” indicate that species may use that habitat type for nesting, an “F” indicates that the species may forage in that habitat, and a “C” indicates that the species may use as cover, rest, or roost in that habitat. Blank boxes indicate the species is not typically found in that habitat type, except as occasional transients.

APPENDIX C

2011 WHIP-POOR-WILL SURVEY REPORT

ADDENDUM TO THE

INVENTORY OF POTENTIAL BREEDING BIRD SPECIES AND HABITATS ALONG THE CONNECTICUT PORTION OF THE INTERSTATE RELIABILITY PROJECT

INVENTORY OF POTENTIAL BREEDING BIRD SPECIES AND HABITATS ALONG THE CONNECTICUT PORTION OF THE INTERSTATE RELIABILITY PROJECT

ADDENDUM

2011 WHIP-POOR-WILL SURVEY REPORT

Town of Putnam, CT

Prepared For:

The Connecticut Light and Power Company
P.O. Box 270
Hartford, Connecticut 06141

Prepared By:

AECOM Environment
10 Orms Street, Suite 405
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August, 2011

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Attachment B: Whip-poor-will Survey Data Forms

1.0 Introduction

This Addendum to the *Inventory of Potential Breeding Bird Species and Habitats along the Connecticut Portion of the Interstate Reliability Project (July 2011)* documents the 2011 Whip-poor-will surveys, which were conducted to supplement 2008 field investigations for this bird species. Both the 2008 and 2011 surveys were completed by AECOM Environment (AECOM), on behalf of The Connecticut Light and Power Company (CL&P), along a portion of CL&P's proposed Interstate Reliability Project (Project) route in the Town of Putnam, Windham County, Connecticut.

In this area, the new 345-kilovolt (kV) overhead transmission line proposed as part of the Project would be located within CL&P's existing right-of-way (ROW) that is presently occupied by two overhead electric lines: a 23-kV distribution line and a 345-kV transmission line. The portion of the Proposed Route along which the survey was conducted is located between Killingly Avenue (Route 12) and Park Road, in the southwestern portion of Putnam. This approximately 4,650 foot survey area is depicted on Figure 1 in Attachment A.

The purpose of the 2011 survey was to further evaluate the presence/absence of Whip-poor-wills in this portion of the ROW in consideration of potential requirements for construction phase avoidance and/or mitigation measures. The 2011 survey represents an additional year of data, which augments the information collected during the 2008 Whip-poor-will surveys.

2.0 Background

As part of the initial planning for the proposed Project, CL&P contacted the Connecticut Department of Environmental Protection Natural Diversity Database (CT DEP/NDDB)[1] for information regarding reported locations of state-listed threatened, endangered, or species of special concern. In response, CL&P received correspondence from the CT DEP, dated February 25, 2008, indicating that there were reported occurrences of the Whip-poor-will (*Caprimulgus vociferus*) along CL&P's existing transmission line ROW in Putnam.

[1] The CT DEP was reorganized and renamed the Connecticut Department of Energy and Environmental Protection (CT DEEP) on July 1, 2011.

The Whip-poor-will, a member of the Nightjar family (Caprimulgidae), is listed as a Connecticut Species of Special Concern (SC). The Whip-poor-will is nocturnal, feeding exclusively on moths and other insects that are active at night; the bird is rarely seen because it sleeps by day on the forest floor, blending with the leaf litter, or perched on tree branches where its cryptic coloration enables it to hide during daylight hours. The Whip-poor-will inhabits dry open woodlands near fields, scrubby immature woodland, and areas of re-growth following disturbance in forest habitats. The species hunts its insect prey by sight and is therefore most often observable at twilight, near dawn, or on moonlit nights. In Connecticut, the Whip-poor-will breeds from late May through July (CT DEP).

When planning for the Project re-commenced in 2010, AECOM, acting on behalf of CL&P, again consulted with the CT NDDB (December 2010) to determine if additional, updated rare species information was available through the records maintained by the CT NDDB. In response to AECOM's inquiry, the CT NDDB stated that CL&P was in receipt of the most recent state-listed species and habitat information (i.e., the letter from the CT DEP dated February 25, 2008 and confirmed in a letter dated March 8, 2010).

In response to the CT DEP's 2008 request for a breeding season survey, on June 3 and 5, 2008, AECOM avian experts conducted evening (17:00 to 21:00 PM) surveys for Whip-poor-wills along the CL&P transmission line ROW segment in Putnam. Although the ROW does provide suitable breeding habitat (i.e., open woodland adjacent to clearings or scrub-shrub habitat), no Whip-poor-wills were observed or heard during the field surveys. The 2008 survey work, as well as a description of the existing habitat along the Putnam ROW segment, is fully described within the *Inventory of Potential Breeding Bird Species and Habitats*.

3.0 Objectives and Methods

The objective of the 2011 Whip-poor-will survey was to augment the 2008 survey efforts and to provide more data relative to the presence or absence of the species in the subject habitat. In recent years, specific survey protocols have been developed to determine population trends of members of the Nightjar family, which includes the Whip-poor-will (Wilson, 2008). Because the Whip-poor-will is a nocturnal species, typical surveys for this species take place at night and are

road-based, with observers driving to 10 pre-determined locations on a 9-mile route. Actual survey points are spaced 1 mile apart. Once at a survey point, observers listen for Whip-poor-will calls for six minutes. There are also specific weather and moon phase requirements with which the survey periods must comply.

The Whip-poor-will habitat location in the vicinity of the CL&P ROW in Putnam, as identified by the CT NDDB records, consists of a subset of the area between Killingly Avenue (Route 12) and Park Road. In an effort to incorporate more spatial coverage into the 2011 survey, AECOM expanded the survey effort (as compared to the 2008 AECOM survey[2] and the 2008 CT NDDB polygon data) to include the entire segment of ROW between these two roads.

Given the relatively small survey area (approximately 4,650 feet) and lack of roads that intersect the ROW in this location, the typical road-based survey protocol, as described above, was not suitable. Therefore, AECOM modified the typical road survey protocol to make it more practical for the ROW survey area and more likely to detect the Whip-poor-will, if present. The weather parameters within which the ROW surveys were conducted remained consistent with the road-based survey protocol. However, survey stations were positioned much closer together (see Figure 1) because the survey was intended to assess the presence/absence of the Whip-poor-will along the 4,650 foot segment of ROW and not to ascertain species population trends through time as typical road-based surveys are. In addition, unlike the typical 6-minute survey period per survey station used for the road-based survey, the ROW survey periods were extended to 30 minutes to maximize the possibility of documenting the species. The survey period at each station was increased because analysis of Whip-poor-will data has revealed two broad categories of bird based on calling behavior: frequent and infrequent callers (Hunt, 2008).

Thus, the modified protocol, including the weather and moon phase requirements, used for the 2011 Whip-poor-will surveys along the ROW in Putnam included the following parameters:

- Moon illumination of 50% or more,
- Commenced at least one half hour after moonrise,
- Commenced at least one half hour after sunset,
- Mostly clear conditions,

[2] 1 The 2008 surveys were performed between existing structures 9273 to 9277.

- No precipitation, and
- Light wind.

Applying these survey protocols, AECOM surveyed the subject ROW habitats on June 15, 16 and 20, 2011. Figure 1 depicts the overall survey area as well as the individual survey stations. To provide adequate survey coverage, five survey points were selected in the subject habitat. A team of two AECOM avian experts remained at each survey point for 30 minutes and recorded all avian species that were heard during that time.

All data, including survey station number, survey time periods, detected bird species, and weather conditions, were recorded on survey station-specific data forms. Data forms for the survey are included in Attachment B.

4.0 Results

The 2011 AECOM survey did not detect any evidence that Whip-poor-will presently use the subject portion of the CL&P ROW in Putnam. This finding is consistent with the results of the 2008 surveys, during which no Whip-poor-will were observed or heard.

All 2011 surveys took place under conditions that conformed to the seasonal and meteorological parameters as described above, with one exception. During the June 16/17 survey, at Station Number 5, clouds moved into the area and covered approximately 70 to 80% of the sky over the observation area. However, that particular survey began with cloud cover of approximately 20% (consistent with the survey protocol), with cloud cover gradually becoming more extensive as the survey progressed. However, in AECOM's opinion, the 70 to 80% cloud cover at this one observation station had no effect on the survey results.

The seasonal and meteorological parameters outlined above (Section 3) are important as the Whip-poor-will tends to call more frequently under these conditions (Wilson, 2008). The increased calling frequency, combined with conditions that allow for better hearing by observers, could therefore lead to a potential increase in detection rate. These protocol conditions were satisfied

during the overall survey, thereby maximizing the potential for hearing or observing Whip-poor-wills, if present along the ROW segment.

Only three bird species were heard or observed during the Whip-poor-will survey. These include the American Robin (*Turdus migratorius*), Blue Jay (*Cyanocitta cristata*) and Barred Owl (*Strix varia*).

5.0 Discussion

The Whip-poor-will has been declining throughout its range in eastern North America for at least several decades (Hunt, 2008, Wilson, 2008). This decline is expressed by the limited data available from sources such as the breeding bird surveys, numerous anecdotal accounts, and most recently by data collected in five second-round Breeding Bird Atlases (Hunt, 2008). As members of the Nightjar Family, the Whip-poor-will is among the most enigmatic group of birds in the world. Very little is known about the basic aspects of the species' life history, such as habitat requirements, demographics, and population density because of the difficulty in studying their nocturnal lifestyle (Wilson, 2008).

The 2011 Whip-poor-will survey represents the second year in which investigations for this species have been conducted along CL&P's ROW in Putnam. After the 2008 surveys failed to result in any Whip-poor-will observations, the 2011 surveys were performed using updated and modified investigation protocols designed to maximize the potential for observations of this species. Nonetheless, the 2011 surveys also failed to locate any sign that Whip-poor-will presently use this segment of CL&P's ROW.

Based upon two years of breeding season survey data separated in time by three years, in AECOM's opinion, it is unlikely that this species occurs in the subject survey corridor. Therefore, no construction phase avoidance and mitigation measures appear warranted for this species.

6.0 Literature Cited

Bevier, L.R. (Ed.) 1994, The Atlas of Breeding Birds of Connecticut, State Geological and Natural History Survey of Connecticut, Hartford, CT.

Hunt, P.D. 2007. Northeast Nightjar Survey: 2007 Summary. Reports to Nuttall Ornithological Club and American Bird Conservancy. Audubon Society of New Hampshire, Concord.

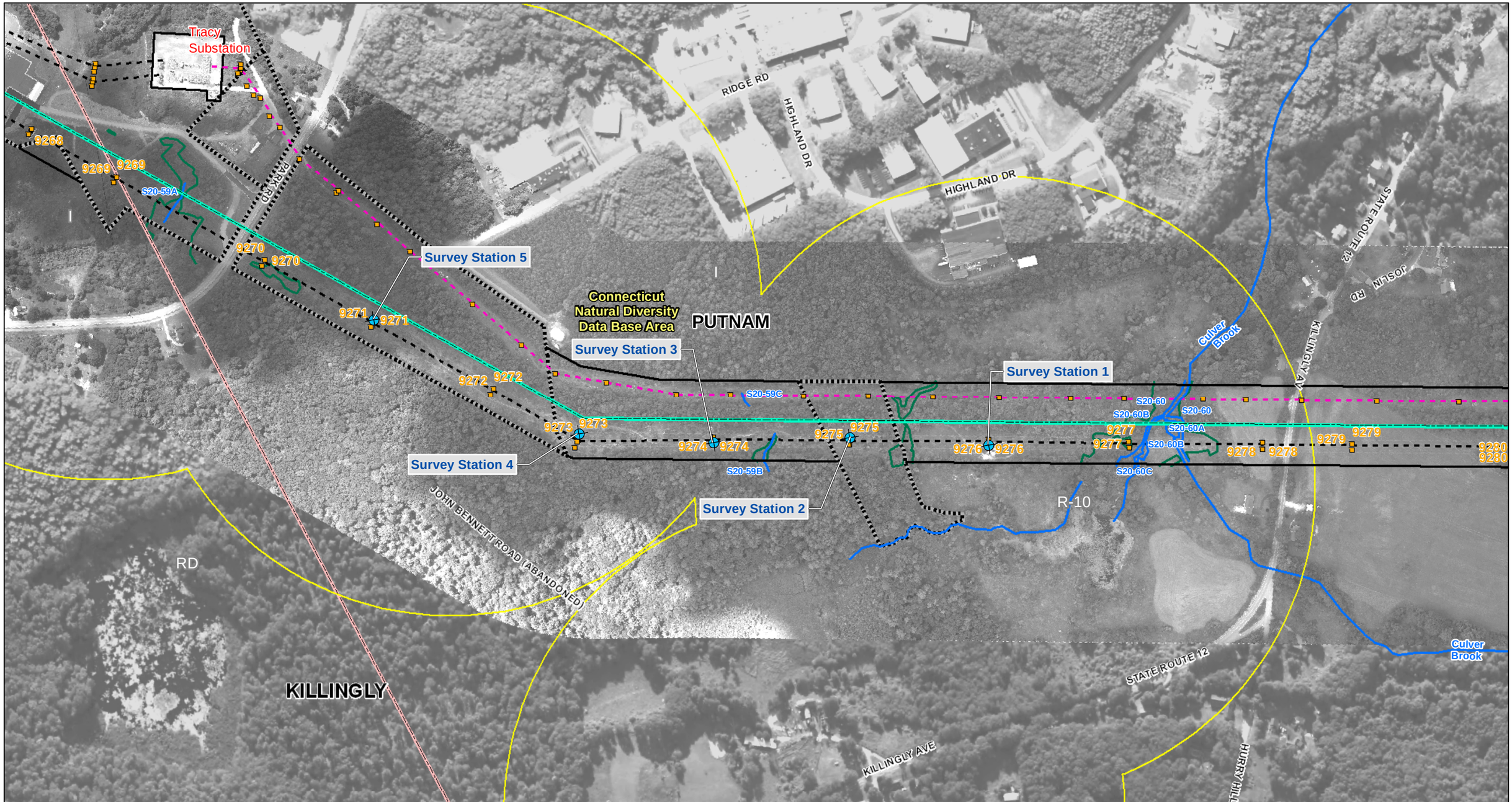
Hunt, P.D. 2008. Northeast Nightjar Survey: 2008 and 2007 Data Analysis Summary. Reports to Nuttall Ornithological Club and American Bird Conservancy. Audubon Society of New Hampshire, Concord.

Wilson, M. D. 2008. The Nightjar Survey Network: Program construction and 2007 Southeastern Nightar Survey Results. Center for Conservation Biology Technical Report Series, CCBTR-08-001.

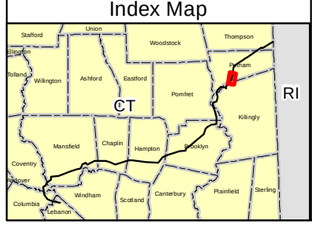
Attachment A

Whip-poor-will Survey Stations

Path: Y:\Projects\NorthEast_Utilities\CT_Interstate_NEW\MXD\Rare_Species\2011_07_28_Whip_poor_will_Figure\Figure_1_Whip_Poor_Will.mxd



Index Map



Legend

- Right-of-Way (Existing)
- Proposed 345-kV Line (Centerline)
- Existing Distribution Line
- Existing Transmission Line (Centerline)
- Existing Structure
- Existing Structure (Guy Relocation)
- Survey Stations
- Connecticut Natural Diversity Data Base Area
- Town/State Boundary
- Northeast Utilities Property
- Wetland Boundary
- Watercourse

Data Source: CT NAIP 2010 Aerial Imagery; Optimal Geomatics 2007 Aerial Imagery; CT DEP 2010; B&McD 2010; AECOM 2007-2011; FEMA Flood 2009.

1:4,800

0 400 800 Feet

Interstate Reliability Project

2011 Whip-poor-will Survey Stations 1-5

Figure 1

Connecticut Light & Power
A Northeast Utilities Company

AECOM

Date: July 2011

Attachment B

Whip-poor-will Survey Data Forms

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 15-16, 2011

Station Number: 1

Time: 9:26 PM – 9:56 PM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 58° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: Mostly Clear

Moon Phase: Full

Observations:

Blue Jay audible to east of survey point.

No other audible bird species.

AECOM

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 15-16, 2011

Station Number: 2

Time: 10:05 PM – 10:35 PM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 57° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: Mostly Clear

Moon Phase: Full

Observations:

Blue Jay audible to east of survey point.

No other audible bird species.

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 15-16, 2011

Station Number: 3

Time: 10:40 PM – 11:10 PM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 55° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: Mostly Clear

Moon Phase: Full

Observations:

Blue Jay and American Robin audible to east of survey point.

No other audible bird species.

AECOM

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 15-16, 2011

Station Number: 4

Time: 11:16 PM – 11:46 PM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 54° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: Clear

Moon Phase: Full

Observations:

No audible bird species.

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 15-16, 2011

Station Number: 5

Time: 11:53 PM – 12:23 AM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 53° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: Clear

Moon Phase: Full

Observations:

American Robin audible to west.

AECOM

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 16-17, 2011

Station Number: 1

Time: 10:57 PM – 11:27 PM

Investigators: Tim O'Sullivan, Jim Berg

Weather Conditions:

Temperature: 66° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: 20%, Light

Moon Phase: Waning Gibbous

Observations:

Blue Jay audible to west of survey point.

Juvenile Barred Owls (2-3) audible to east of survey point. Confirmed with visual ID.

No other audible bird species.

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 16-17, 2011

Station Number: 2

Time: 11:33 PM – 12:03 AM

Investigators: Tim O'Sullivan, Jim Berg

Weather Conditions:

Temperature: 64° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: 20%, Light

Moon Phase: Waning Gibbous

Observations:

Blue Jay audible to west of survey point.

Juvenile Barred Owls (2-3) audible to east of survey point. Confirmed with visual ID.

No other audible bird species.

AECOM

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 16-17, 2011

Station Number: 3

Time: 12:09 AM – 12:39 AM

Investigators: Tim O'Sullivan, Jim Berg

Weather Conditions:

Temperature: 59° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: 35-40%, Light

Moon Phase: Waning Gibbous

Observations:

Juvenile Barred Owls (2-3) audible to east of survey point. Confirmed with visual ID.

No other audible bird species.

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 16-17, 2011

Station Number: 4

Time: 12:47 AM – 1:17 AM

Investigators: Tim O'Sullivan, Jim Berg

Weather Conditions:

Temperature: 61° F

Wind Speed: 5-10 MPH

Wind Direction: Southwest

Cloud Cover: 40%, Light

Moon Phase: Waning Gibbous

Observations:

Adult Barred Owl (1) audible to east of survey point.

No other audible bird species.

AECOM

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 16-17, 2011

Station Number: 5

Time: 1:23 AM – 1:53 AM

Investigators: Tim O'Sullivan, Jim Berg

Weather Conditions:

Temperature: 64° F

Wind Speed: 5-10 MPH

Wind Direction: South west

Cloud Cover: 70-80%

Moon Phase: Waning Gibbous

Observations:

No audible bird species.

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 20-21, 2011

Station Number: 1

Time: 11:55 PM – 12:25 AM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 56° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: Mostly clear

Moon Phase: Waning Gibbous

Observations:

Juvenile Barred Owls (2-3) audible to east of survey point.

No other audible bird species.

AECOM

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 20-21, 2011

Station Number: 2

Time: 12:36 AM – 1:06 AM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 58° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: Mostly clear

Moon Phase: Waning Gibbous

Observations:

Juvenile Barred Owls (2-3) audible to east of survey point.

No other audible bird species.

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 20-21, 2011

Station Number: 3

Time: 1:11 AM – 1:41 AM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 54° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: Mostly clear

Moon Phase: Waning Gibbous

Observations:

Juvenile Barred Owls (2-3) audible to east of survey point.

No other audible bird species.

AECOM

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 20-21, 2011

Station Number: 4

Time: 1:47 AM – 2:17 AM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 56° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: Mostly clear

Moon Phase: Waning Gibbous

Observations:

Juvenile Barred Owls (2-3) audible to east of survey point.

Blue Jay calling to west of station.

No other audible bird species.

Whip-poor-will Survey Data Form

Interstate Reliability Project

Date: June 20-21, 2011

Station Number: 5

Time: 2:26 AM – 2:56 AM

Investigators: Tim O'Sullivan, Julie Stearns

Weather Conditions:

Temperature: 55° F

Wind Speed: Calm/light

Wind Direction: Variable

Cloud Cover: 20 %

Moon Phase: Waning Gibbous

Observations:

No audible bird species.

EX. 2: Final Report: Insect Survey for the Interstate Reliability Project

FINAL REPORT
INSECT SURVEY
for the

INTERSTATE RELIABILITY PROJECT

18 APRIL, 2011

Transmission line right-of-way north of the Lake Road Switching Station (Town of Killingly)--one of two "Portfolio" sites identified in this report

Prepared for:
The Connecticut Light and Power Company

David L. Wagner and Ken Metzler
Center for Conservation and Biodiversity
University of Connecticut

EXECUTIVE SUMMARY

In 2008, the University of Connecticut, Center for Conservation and Biodiversity was commissioned by the Connecticut Light and Power Company (CL&P) to conduct a survey for Lepidoptera (butterflies and moths) and other invertebrates of conservation interest along the rights-of-way (ROWs) of the approximately 37-mile Connecticut section of the proposed Interstate Reliability Project (IRP). The IRP, a three-state electric transmission system improvement project proposed by CL&P and National Grid USA, would include the construction and operation of new 345-kilovolt (kV) electric transmission lines and related modifications to existing substations and switching stations.

The proposed new 345-kV transmission lines are planned for location along existing transmission line ROWs in northeastern Connecticut, northwestern Rhode Island, and southern Massachusetts. The Connecticut portion of the IRP would be constructed and operated by CL&P, and would be aligned adjacent to existing CL&P 345-kV transmission lines, extending from CL&P's Card Street Substation (Town of Lebanon, New London County), north-northeast to CL&P's Lake Road Switching Station and Killingly Substation (both located in the Town of Killingly, Windham County) and then to an interconnection with National Grid's transmission facilities at the Connecticut – Rhode Island border (Town of Thompson, Windham County).

In conjunction with the present operation of the existing overhead transmission lines, CL&P routinely conducts vegetation management activities to promote or maintain shrub or other low-growth plant species within the ROWs. The new 345-kV transmission lines would be located adjacent to the existing overhead lines, generally on un-managed portions of CL&P's utility easements. The development of the new 345-kV lines would require an expansion in the width of the vegetatively managed portions of the ROWs by approximately 70 to 90 feet in most areas. CL&P also has established access roads along the presently managed portions of the ROWs and, as part of the IRP, would improve such existing roads or develop new temporary and permanent access roads to facilitate the construction and/or maintenance of the new 345-kV lines.

The Center for Conservation and Biodiversity team for the Lepidoptera and other invertebrate surveys was led by Dr. David L. Wagner and Ken Metzler, who are the authors of this report. The team's survey approach emphasized an assessment of plant community types known to have associated rare Lepidoptera or other insect species. Data on rare community types along the transmission line ROWs were gathered from the review of aerial photography, soil maps, a video fly-over of the proposed Connecticut IRP route provided by CL&P, vegetation maps prepared by AECOM Environmental (CL&P's environmental consultant), and interviews, and then walks of the entire length of the ROWs, from the Card Street Substation to the Connecticut – Rhode Island border.

Preliminary field reconnaissance of the ROWs was conducted in May 2008, with formal field investigations (walk overs) of the ROWs performed in May 2009. In early 2010, the team returned to all sites deemed to be of potential conservation interest to map plant communities and important hostplant species (included as Appendix B). Five community/hostplant types were distinguished and mapped: bluestem grassland, lowbush blueberry, scrub oak, wild indigo, and bluestem-scrub oak-low bush blueberry mosaic.

As a result of these investigations, two portfolio sites, arguably of regional or even global significance, were identified along the transmission line ROWs. These sites, both of which are located along segments of transmission line ROWs in the eastern portion of the IRP area, are:

(1) The section of transmission line ROW extending from River Road, west of the Quinebaug River, to the southwest-facing slope above Park Road/Tracy Road (Towns of Putnam and Killingly, and including the ROW in the vicinity of CL&P's Lake Road Switching Station, Killingly Substation, and Tracy Substation); and

(2) The transmission line ROW that extends from Elmwood Hill Road in the Town of Thompson, northeast to the Connecticut – Rhode Island border.

Supplemental day-time reconnaissance collection efforts emphasized surveys for state-listed butterflies, and particularly *Callophrys irus* (Frosted Elfin), a globally imperiled animal (NatureServe 2010, Schweitzer et al. 2010). The entire length of the transmission line ROWs was walked in May 2009, during the peak of the insect's flight season, to document activity and suitable habitats. Seven populations were located, six of which were new colonies for Connecticut. Night-time blacklight sampling was limited to sections of the ROWs likely to harbor rare species as determined by the plant communities present along a given section of the transmission line ROW. In essence, sites with known hostplant or plant communities as identified in Table 2 were surveyed. Fifty blacklight trap samples yielded more than 5,700 moths: 424 species of moths were identified from these samples (included were four of 17 species listed below).

Seventeen butterfly and moth species deemed to be of conservation importance were found along the IRP ROWs. Ten of these are state-listed:

- *Apamea burgessi* (Burgess Cutworm) (Special Concern)
- *Callophrys irus* (Frosted Elfin) (Threatened)
- *Erynnis brizo* (Sleepy Duskywing) (Special Concern)
- *Erynnis persius* (Persius Duskywing) (Endangered) (verification on ID pending)
- *Euchlaena madusaria* (Scrub Euchlaena) (Threatened)
- *Eucoptocnemis fimbriaris* (no common name) (Special Concern)
- *Hemiaris gracilis* (Slender Clearwing) (Threatened)
- *Hemileuca maia* (Buck Moth) (Endangered)
- *Metarranthis apiciaria* (Barrens Metarranthis) (Endangered)

- *Sympistis perscripta* (=*Lepipolys perscripta*) (Scribbled Sallow) (Special Concern)

A total of 23 rare animal occurrences for state-listed species were documented. These are listed in Table 4. Rare animal forms for each have been submitted to the State of Connecticut Department of Environmental Protection (CTDEP).

The most significant of these is the Barrens Metarranthis (*Metarranthis apiciaria*). The colony north of Louisa Viens Road (N41°52'37", W71°53'60") (Town of Killingly) that the team discovered in 2008 has yielded more individuals than have been seen for the entirety of New England over the last half century. The Louisa Viens-Killingly Substation colony of this globally imperiled animal ranks second only to the oak-savanna population of Iroquois County, Illinois and adjacent Newton County, Indiana.

In addition to the above, seven other rare moths were recovered in 2008 and 2009 from the 37-mile IRP ROWs: *Acronicta falcula*, *A. fragilis*, *Derrima stellata, Digrammia equivocata*, *Hyparpax aurora, Schinia obscurata,* and *Schinia septentrionalis*. While not yet legally protected, it is our belief these warrant legal protection and that several are more imperiled than many of the moths on Connecticut's list of Endangered, Threatened, and Special Concern Species (CTDEP 2010).

Our report ends with a summary emphasizing management recommendations for construction work and vegetation management along the IRP. We do not expect the expansion of the width of the vegetatively managed portions of the 37-mile ROWs to be detrimental to the rare species identified in this report as being of conservation concern as long as native vegetation and soils will not be greatly (or permanently) impacted by construction efforts, structures, buildings, and management practices. To the contrary, as long as impacts are minimized to a few key sites, the expansion of the vegetatively managed portions of the ROWs should be advantageous to many of the rare taxa identified in this survey because they are early successional animals that require foodplants that grow in open habitats.

In addition to this report, we are submitting numerous electronic supplementary documents: light trap data for the (>5700) moths that were identified, plant community maps with their associated ARCVIEW shape files, our desktop (= aerial and map study) assessment of the IRP ROW, copies of the rare animal forms, and resumes/curriculum vitae for the key investigators (i.e., Wagner, Metzler, and Meleg [the project coordinator]).

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- ARCVIEW shape files
  - Shape files
  - Attribute Table
- Desktop Evaluation Workbook
- Moth Data
- Rare Animal Forms
- Table 3: Occurrence for state-listed butterflies and moths along IRP ROWs (expanded)
- Resumes and curriculum vitae for Wagner, Metzler, and Meleg

1. INTRODUCTION

The Connecticut Light and Power Company (CL&P) and National Grid USA (National Grid) propose to construct and operate a new 345-kilovolt (kV) overhead transmission line and associated facilities in order to improve the electric transmission systems of Connecticut, Rhode Island, and Massachusetts. These new facilities, referred to collectively as the Interstate Reliability Project (IRP), are proposed to help provide safe, reliable, and economic transmission service and to increase the electric system's ability to meet growing power demands and comply with mandatory federal and regional reliability standards and criteria.

CL&P would construct and operate the Connecticut portion of the IRP. In Connecticut, the new 345-kV transmission line is proposed for alignment along CL&P's existing 300-foot-wide (average) transmission line rights-of-way (ROWs), adjacent to existing overhead 345-kV lines. Along these ROWs, the new 345-kV line would extend for approximately 37 miles, from CL&P's Card Street Substation in the Town of Lebanon to CL&P's Lake Road Switching Station and Killingly Substation in the Town of Killingly, and from there to an interconnection with National Grid's 345-kV line facilities at the Connecticut – Rhode Island border. Figure 1 illustrates the proposed location of the Connecticut portion of the IRP.

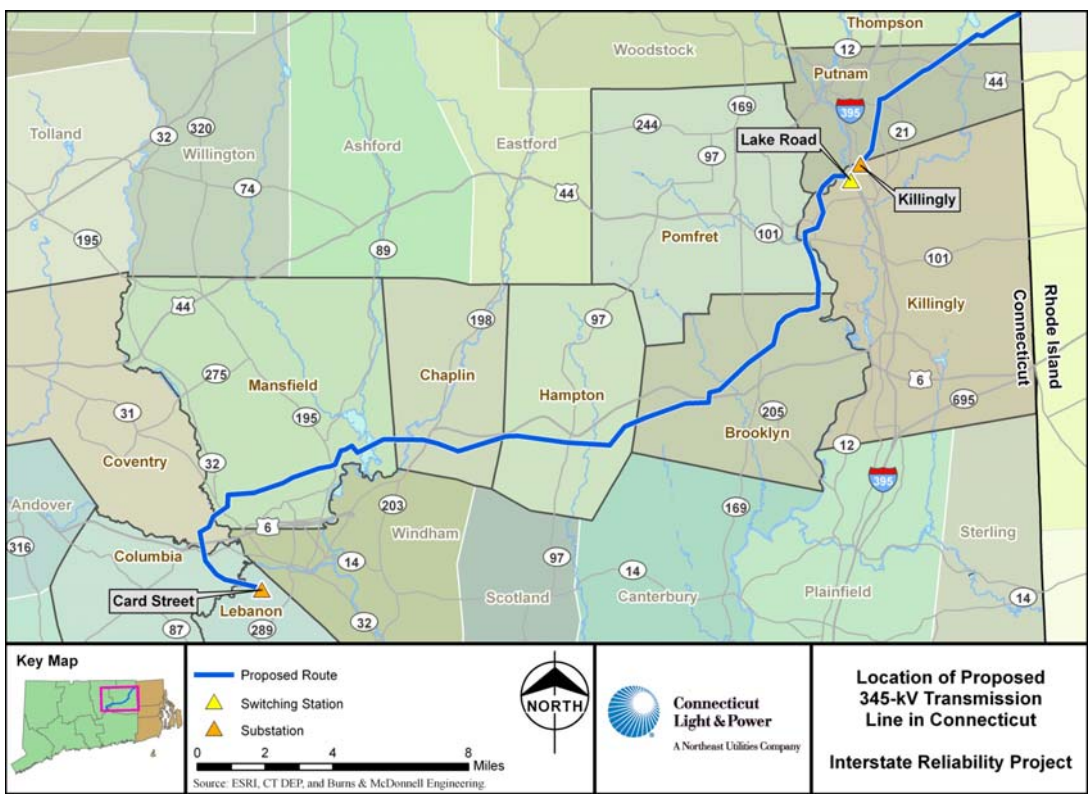


Figure 1: Overview Map of Connecticut Portion of IRP

As part of the operation and maintenance of the existing overhead transmission lines along the 37-mile ROWs, CL&P routinely conducts vegetation management activities to promote or maintain shrub or other low-growth plant species, as is required beneath and in the vicinity of overhead transmission lines. The new 345-kV transmission lines would be located adjacent to the existing overhead lines, generally on un-managed portions of CL&P's utility easements. The development of the new 345-kV lines would require an expansion in the width of the vegetatively managed portions of the ROWs by approximately 70 to 90 feet in most areas.

In 2008, the University of Connecticut, Center for Conservation and Biodiversity (CCB) was contacted by CL&P to conduct field surveys for species of state-listed invertebrates (butterflies, moths) that had been identified, based on CL&P's consultations with the Connecticut Department of Environmental Protection (CTDEP), as being proximate to the Connecticut portion of the IRP ROWs (refer to Table 1). CL&P commissioned the surveys as part of the planning process for the IRP, including the preparation of applications to federal and state regulatory agencies for project approval or certification.

The CCB surveys were designed and implemented under the direction of Dr. David L. Wagner, working with Ken Metzler, and CCB and subconsultant Lepidoptera and insect experts. (For the purposes of this report, references to "team" refer to this CCB survey team. References to "we" and "our" refer the Dr. Wagner and Mr. Metzler, the authors of the report.)

Based on CL&P's initial consultations with CTDEP, 12 species were identified as potentially inhabiting portions of the IRP area (refer to letter from Julie Victoria of the CTDEP Wildlife Division dated 25 February, 2008; electronic copies supplied in "CTDEP Natural Diversity Database [NDDB] Letters"). Additional letters and email correspondence from CTDEP (Julia Victoria and Dawn McKay) in 2009 identified three additional species. The CTDEP indicated that field investigations would be required to determine the potential occurrence of these species along the IRP ROWs.

A synopsis of the 15 target species listed in the CTDEP NDDB as requiring a status assessment are listed in Table 1.

While the CTDEP only required CL&P to survey for state-listed taxa within a 1-mile radius (along the transmission line ROWs) of a NDDB occurrence, we embraced a broader view, and sought to evaluate the entire length of the 37-mile transmission line ROWs for invertebrates and habitat likely to be of conservation importance. But because we had a finite budget, limited window of time, and only four field biologists with the necessary taxonomic and methodological familiarity with the target species, our assessment was habitat- (and larval foodplant-) based, with limited (supplemental) diurnal and nocturnal sampling of the most promising sites likely to harbor rare taxa. In addition to the 15 lepidopterans flagged by the CTDEP NDDB, our assessment and field surveys considered tiger beetles, dragonflies, and damselflies.

Table 1: Rare species of terrestrial insects listed in letters from the CTDEP as being approximate to the IRP ROWs

Scientific Name	Common Name	Map Sheets[1] (Site Name)
Apamea burgessi	Burgess' Cutworm	3 of 15 (Mansfield Hollow); 6 of 15 (Route 6)
Chaetaglaea cerata	No common name	3 of 15 (Mansfield Hollow)
Callophrys irus	Frosted Elfin	3 of 15 (Mansfield Hollow); 4 of 15 (Sherman's Corner); 8 of 15 (Route 6)
Chlosyne harrisii	Harris' Checkerspot	4 of 15 (Sherman's Corner)
Erynnis brizo	Sleepy Duskywing	3 of 15 (Mansfield Hollow)
Erynnis horatius	Horace's Duskywing	2 of 15 (Perkins Corner, Mansfield); 3 of 15 (Mansfield Hollow); 4 of 15 (Sherman's Corner)
Euchlaena madusaria	Shrub Euchlaena	3 of 15 (Mansfield Hollow)
Eucoptocnemus fimbriaris	No common name	3 of 15 (Mansfield Hollow)
Hemaris gracilis	Slender Clearwing	(Killingly)
Lepipolys perscripta	Scribbled Sallow	3 of 15 (Mansfield Hollow); (Thompson)
Lycaena epixanthe	Bog Copper	14 of 15 (Plains Road)
Metarranthis apiciaria	Barrens Metarranthis	(Killingly)
Schinia spinosae	Jointweed Flower Moth	3 of 15 (Mansfield Hollow)
Zale obliqua	Oblique Zale	3 of 15 (Mansfield Hollow)
Zanclognatha martha	Martha's Zanclognatha	3 of 15 (Mansfield Hollow)

1. Map sheets refer to the 1"=400' scale aerial photo based maps provided by CL&P and identified as Volume 9 of CL&P's draft Municipal Consultation Filing / application to the Connecticut Siting Council for the IRP.

2. OBJECTIVES

The purpose of the survey was to assess the occurrence or likelihood of state-listed species along the entire proposed 37-mile IRP transmission line ROWs as such occurrences would be relevant to siting, permitting, construction, vegetation management, and other related CL&P activities. We established five primary goals for our survey, as follows:

(1) Survey for the invertebrates (see Tables 1 and 2) listed in the CTDEP's NDDB as known to occur on or proximate to the IRP ROWs in Connecticut;

(2) Census Frosted Elfin (*Callophrys irus*) populations at all known NDDB sites and assess habitat along the entire length of the IRP ROWs for habitat appropriate for this globally imperiled and declining butterfly;

(3) Assess the viability and habitat requirements of *Metarranthis apiciaria*, a rare and globally endangered animal (Schweitzer et al. 2010) that was discovered along the IPR ROW in Killingly in June of 2008;

(4) Emphasize a community-level assessment of rare community types using walk-throughs, aerial photography, CL&P's flyover video, Google Earth, and available soil and plant community data to delineate areas/communities likely to harbor populations of state-listed wildlife; and

(5) Generate ARCVIEW shape files for significant communities types, based on data generated in (3) and (4), above.

3. METHODS

Personnel and Management: Prior to the initiation of the field work in March and April 2009, we assembled a team of experienced field entomologists to carry out the field surveys along the IRP ROWs. The team included: Richard Chyinski (Salem), Ben Williams (Pomfret), Juan Sanchez (Chaplin) (henceforth referred to as the subcontractors), and Alex Meleg. Meleg, a University of Connecticut Ecology and Evolutionary Biology major, served as the project coordinator. His responsibilities included overseeing daily activities, trap sorting, and data entry and management. David Wagner, the principal investigator (PI or DLW), was responsible for project oversight and training, all identifications, submission of rare animal forms, and preparation of the final report.

Our team met biweekly at the beginning of the project to review sampling methods, taxonomy and field characters for all state-listed species, as well as to evaluate maps, videos, and aerial imagery along the entire ROW. Dr. Wagner met or spoke with Meleg daily to direct the project.

In November 2009, Ken Metzler, retired CTDEP state ecologist and rare-species biologist, was hired to carry out the vegetation mapping above. Qualifications of the PI, Meleg, and Metzler are detailed in Section 6.

Fieldwork: We began voluntary visits to the 37-mile-long transmission ROWs in May 2008. The entire length was walked by one of us in May. In May 2008, we made a few visits to the section of the ROW located west of Interstate 395 (i.e., in the towns of Killingly and Thompson). Thereafter, we occasionally ran blacklight traps along this section of the ROW.

Our official visits began in May 2009 and continued through early February 2010. Dates of all significant captures are given below in the species accounts, in the rare animal forms, and for moths, are repeated in Appendix C. Butterfly surveys were limited to days with daytime highs above 60˚F and winds less than 15 mph.

Significant plant communities, as defined below, were mapped in January to April 2010, after accumulated snowfall had melted, when Metzler could accurately map little bluestem, lowbush blueberry, and other plants of relevance to the rare species documented in 2008 and 2009.

Focal Species: The 15 state-listed Lepidoptera identified by the CTDEP as being present on or proximate to the transmission line ROWs are listed in Table 1 and also identified in Table 2, which lists each species' host plants, habitat, and seasonal occurrence period. In addition to these 15 species, four other state-listed moths that we thought might also occur along the ROW were targeted: *Hemileuca maia*, *Meropleon ambifuscum*, *Psectraglaea carnosa*, and *Speranza exornata* (= *Itame* sp. 1).

Table 2. Focal State-listed Lepidoptera (CTDEP 2010)

Scientific Name	State Status	Seasonality (adult)	Hostplants	Habitat/Comments
BUTTERFLIES				
Callophrys irus	Threatened	May into very early June	wild indigo and lupine	sandplains, grasslands, and transmission line ROWs
Chlosyne harrisii	Endangered	June	flat-topped aster	wet and mesic meadows; possibly extirpated (last known Connecticut colony was in Chaplin along IRP ROW)
Erynnis brizo	Special Concern	May into early June	scrub and other red oaks	barrens, scrub, and open woodlands
Erynnis horatius	Special Concern	May into early June, then again in July	scrub and other oaks	barrens, scrub, and open woodlands
Lycaena epixanthe	Threatened	June into early July	cranberry	bogs and acid wetlands with host
MOTHS				
Apamea burgessi	Special Concern	late August into September	dry season grasses such as little bluestem	grasslands, sandplains, barrens, and other open, dry sites
Chaetaglaea cerata	Special Concern	September into early October	unknown, likely various heaths and/or scrub oak	dry fields, scrub, balds, open woodlands
Euchlaena madusaria	Special Concern	June and August	presumably lowbush blueberry	lowbush blueberry heathlands and grasslands with host
Eucoptocnemis fimbriaris	Special Concern	mid August into September	dry season grasses such as little bluestem	grasslands, sandplains, barrens, and other open, dry sites
Hemaris gracilis	Threatened	May and June	lowbush blueberry	heathlands
*Hemileuca maia**	Endangered	late September into early October	scrub oak	scrub oak barrens
Sympistis (*Lepipolys*) *perscripta*	Special Concern	June	toadflax	sandplains and open disturbed sites
*Meropleon ambifuscum**	Special Concern	mostly September	big bluestem (*Andropogon gerardii*)	wetlands
Metaranthis apiciaia	Endangered	June	unknown	barrens, shrublands, and open woodlands
*Psectraglaea carnosa**	Threatened	early October	often assoc. with lowbush blueberry	barrens and heathlands
Schinia spinosae	Special Concern	September	common jointweed	sandplains and open disturbed sites
Zale obliqua	Special Concern	June	pitch pine	pine barrens
Zanclognatha martha	Threatened	late June into early July	general feeder	late successional pine barrens

* Species not yet listed in CTDEP NDDB as being present in IRP corridor but potentially present.

Finally, we also made an effort to survey for state-listed tiger beetles, dragonflies, and damselflies that might occur in or along the transmission line ROWs. All notable captures are mentioned in the results.

Of the principal target species listed in Table 2, *Callophrys irus* (Frosted Elfin) and *Metarranthis apiciaria* (Barrens Metarranthis) are considered to be globally imperiled animals (NatureServe 2010, Schweitzer et al. 2011). Eastern Connecticut is a stronghold for both of these globally rare animals. Stated differently, our efforts in eastern Connecticut are of significance to the long-term (evolutionary) welfare of these two organisms.

Visual Surveys: Field surveys for adult butterflies, diurnal moths, and larvae were carried out during our daytime visits to the proposed IRP ROWs. At each site, where a rare species was encountered, we made a population count, recorded GPS coordinates, and (where appropriate) noted hostplant stems (where the larval foodplant is known). Visits to the transmission line ROWs were only made when weather conditions were favorable for insect flight activity. Our most intensive diurnal collections, made from mid May through the first week of June 2009, were focused on *Callophrys irus* (Frosted Elfin).

Moth Sampling: We employed 15W blacklight traps manufactured by Leroy Koehn (an industry standard). Battery-run traps were operated all night in sites with vegetation likely to support rare species. The traps were retrieved the next morning and stored in a walk-in refrigerator until they could be processed. Macrolepidopterans were sorted, identified by DLW, and counted. (Numerous Microlepidopterans were saved and prepared but not identified.) A total of 50 traps were deployed over 38 nights. All sites and dates are given in Appendix A.

Vouchering: Specimen or photographic vouchers were taken for most state-listed species, except for many of the Frosted Elfin sightings. All collections were made under David L. Wagner's state-issued, scientific collecting permit. More than 500 specimen vouchers of various Lepidoptera, carabid beetles, and scarab beetles, including examples of all state-listed species, were prepared and deposited at the University of Connecticut. All specimen and photographic vouchers have been deposited at the University of Connecticut.

Habitat Mapping Methods: Habitat and hostplant mapping for observed state-listed butterflies and moths was conducted primarily by field delineation of visible plant associations using a hand-held Trimble GeoExplorer GPS datalogger. Because of heavy snows, we had to delay our habitat mapping until 2010. From January to early April 2010, each ROW section deemed to have habitat of potential conservation importance was visited by Ken Metzler, with assistance from Alex Meleg and Juan Sanchez. All target hostplant habitats were delineated by walking their perimeters with the GPS unit. Once in the office, these data were differentially corrected and exported as ARCGIS shapefiles using Trimble Pathfinder software, and then projected in the Connecticut State Plane coordinate system (NAD83, feet) on either 2004 black and white or 2008 NAIP

digital orthophotographs. Once projected, each habitat polygon was screen-corrected, as necessary, to the visible features on the imagery. An associated attribute table for each mapped unit was also prepared, including features such as site name, habitat type, associated plant species, and management concerns (see Excel file "Powerline Attribute Table" submitted with this report).

A few habitat polygons were determined solely by screen interpretation due to difficulty of access or other logistical reasons. These, as well as all screen-corrected polygons, are identified as such in the attribute table. Our combination of field-collected lines and interpreted polygons were converted into the final habitat shapefile that is included in this report. Five principal hostplant/community mapping units were identified: bluestem grassland, lowbush blueberry, scrub oak, wild indigo, and bluestem-scrub oak-low bush blueberry mosaic. We define each of the five mapped community types below.

- **Bluestem grassland**: This habitat is distinguished by its occurrence on dry shallow soils over bedrock or on dry sand and gravel and by the visible dominance of little bluestem (*Schizachyrium scoparium*) and/or broomsedge (*Andropogon virginicum*). In most mapped occurrences, these grasses are intermixed with sweetfern (*Comptonia perigrina*), low bush blueberries (*Vaccinium* spp.), huckleberry (*Gaylussacia baccata*), and others. On sandy sites, pinweed (*Lechea* spp.), switchgrass (*Panicum virgatum*), bushcover (*Lespediza capitata* and/or *Lespediza hirta*), and jointweed (*Polygonatum articulata*) are frequently present.

- **Low bush blueberry**: This habitat is distinguished by its occurrence on dry shallow soils over bedrock or on dry sand and gravel and the visible dominance of low bush blueberry (*Vaccinium angustifolium* and/or *Vaccinium pallidum*) occurring as a low heath less than 1 foot in height. In most mapped occurrences, low bush blueberry is intermixed with little bluestem (*Schizachyrium scoparium*), bracken (*Pteridium aqualinum*), sweetfern (*Comptonia perigrina*), huckleberry (*Gaylussacia baccata*), and other associated plants.

- **Scrub oak**: This habitat is distinguished by its occurrence on sand and gravel soils and the dominance of scrub oak (*Quercus ilicifolia*) shrubs. Within the observed habitats, scrub oak occurs as a tall shrub (less than 10 feet in height), and appears to have been treated with herbicides to contain its height. This is unnecessary, since this is near the maximum height that this plant can attain. Fortunately, scrub oak has vigorous regeneration capacities, and in most occurrences, it was observed re-sprouting from its base. Scrub oak habitats occur intermixed with hazel (*Corylus americana*), sweetfern (*Comptonia perigrina*), bayberry (*Morella pensylvanica*), low bush blueberry (*Vaccinium* spp.), huckleberry (*Gaylussacia baccata*), and little bluestem (*Schizachyrium scoparium*).

- **Bluestem-scrub oak-low bush blueberry mosaic**: This habitat is distinguished by its occurrence on sand and gravel soils as an intricate mosaic of patches of

little bluestem (*Schizachyrium scoparium*), low bush blueberries (*Vaccinium angustifolium* and/or *Vaccinium pallidum*), and scrub oak (*Quercus ilicifolia*). In most mapped occurrences, this habitat also contains hazel (*Corylus americana*), sweetfern (*Comptonia perigrina*), bayberry (*Morella pensylvanica*), and scattered pitch pine (*Pinus rigida*). This habitat was mapped as a mosaic due to the complexity of mapping small, interconnected patches.

- **Wild indigo**: This mapping unit occurs primarily as a linear feature along existing on-ROW access roads and is found on dry soils. The presence of wild indigo (*Baptisia tinctoria*) distinguishes this mapping unit. Larger areas, adjacent to access roads, with appreciable amounts of wild indigo were delineated as well. Associated plants are variable, but reflect affinities to the dry sites described above.

4. RESULTS

Initial Assessment: As described above, our approach emphasized the assessment of rare habitat types, particularly those with stands of hostplants used by the target species of Lepidoptera in Table 2. We selected this assessment approach taking into consideration the enormity of ROW areas involved; the limited time frame for the performance of the surveys (i.e., the scope of the investigations did not encompass multi-year field seasons); number and taxonomic breadth of state-listed species; unfavorable weather, and other logistic issues..

In March and April of 2009, the PI, project coordinator (Alex Meleg), and subcontractors repeatedly reviewed the IRP transmission line fly-over video and consulted soil and vegetation maps for the entire length of the proposed 345-kV transmission line routes to identify areas likely to harbor the state-listed species that were to be the focus of our survey. Additionally, four team members then divided the ROWs into quarters for study, using aerial imagery in Google Earth and Bing Maps: Chyinski (west end), Sanchez (middle west section), Meleg (middle east), and Wagner (east end). In mid-April 2009, over the course of one two-hour meeting, our team again viewed the video fly-over and collectively identified and discussed all sites likely to harbor rare species.

In addition, on 15 April 2009, Wagner met with the AECOM team of biologists who had performed the vegetation and wetland mapping of the IRP ROWs in 2007 and 2008 to discuss mapping, soils, plant community types, and known hostplant stands for all plants likely to be relevant to our survey.

Ground Truthing: In May 2009, during the flight season of the Frosted Elfin, one of our two globally imperiled target taxa, we physically walked the entire the 37-mile ROW to verify our "desk top" assessment and to identify quality stands of known larval foodplants and other vegetation likely to be of conservation importance. In addition much of the transmission line was walked in 2008 to gather preliminary data relevant to this study.

As a result of the above early assessment, we identified 26 sites that appeared to be appropriate for rare invertebrates. These are detailed in Table 3, below. An expanded version of this table, collected into an Excel workbook ("Table 3_ Desktop _Evaluation _Workbook"), also lists stands of three important hostplant taxa known from each of these sites (i.e., *Baptisia tinctoria*, *Quercus ilicifolia*, and *Vaccinium angustifolium*).

Table 3. Pre-fieldwork assessment of IRP POW segments potentially supporting state-listed butterfly and moth species.

Area/Location (Town)	West End	East End	Included Power Pole Numbers	Survey Priority	Comments + Target Species + Access
Connecticut – Rhode Island border to Elmwood Road (Thompson)	71°49'2.53"W	71°47'53.15"W	9333-9323	Very High	This looks like dry sandy habitat and is among most significant habitat on the 37-mile ROW. *Baptisia* present abundant [9329-9333]. *Callophrys irus, Erynnis brizo, Hemaris gracilis present*; no doubt other state-listed moths will be found. Scrub oak and low bush blueberry present. Western end overgrown with invasives.
South side of Elmwood Road, (Thompson)	71°49'17.38"W	71°49'2.80"W	9322-9320	High	Looks potentially suitable but somewhat overgrown with invasives at least in vicinity of Elmwood Hill Road
West of Quaddick Town Farm Road, (Thompson)	71°49'28.37"W	71°49'17.74"W	9320-9318	High	Looks potentially suitable
South end of Lower Pond wetland, (Thompson)	71°49'58.81"W	71°49'28.37"W	9318-9314	Very High	South end of Lower Pond wetland; exceptional habitat. Ownership includes The Nature Conservancy and Wyndam Land Trust. Evidently there is *Epigaea* in area. Target species: *Williamsonia lintneri, Mitoura hesseli.* Sand exposure looks promising. Target taxa: *Callophrys polios*; tiger beetles, etc.
Rte 44-Fox Rd., (Putnam)	71°51'12.49"W	71°50'48.98"W	9305-9302	Moderate	
Fox Rd -Aldrich Rd, (Putnam)	71°51'54.43"W	71°51'38.50"W	9297-9295	Moderate	Many shrubs but some scattered *Baptisia*
Park Road, (Putnam)	71°53'16.19"W	71°52'57.21"W	9278-9270	High	dry shrubland, looks promising
Tracy Substation, (Killingly)	71°53'40.74"W	71°53'17.39"W	9270-9265	High	Hazel-scrub oak shrubland, looks very promising
Louisa Viens Road-Killingly Substation, (Killingly)	71°54'12.74"W	71°53'43.39"W	9264-9260	Very High	*Hemaris gracilis* and *Metarranthis apiciaria* present; *Hemileuca maia* (proximate)*;* easy access to this site off of Int. 395. Mowers should avoid area in order to preserve patches of low bush blueberry
River Road Sandplain, (Putnam)	71°54'27.85"W	71°54'14.40"W	9259-9254	High	Large sand plain. *Hemaris gracilis* and *Hemileuca maia* (caterpillars taken on scrub oak on 5/31/09)
North of Lake Road, (Killingly)	71°54'46.18"W	71°54'48.99"W	9249-9253	High	*Callophrys irus* taken here and abundant *Baptisia*
South of Lake Road (Killingly)	71°54'56.47"W	71°54'46.18"W	9242-9248	High	*Baptisia* present
Wetland near Darby Road, (Brooklyn)	71°55'49.71"W	71°56'6.64"W	9211-9209	High	expansive promising habitat

Area/Location (Town)	West End	East End	Included Power Pole Numbers	Survey Priority	Comments + Target Species + Access
Scrub-shrub / wetland near Rte 169 (Brooklyn)	71°56'25.46"W	71°56'29.06"W	9204-9203	High	expansive promising habitat
Windham Road--Rte 6 (Brooklyn)	72° 0' 33.33" W	71° 58' 40.74"W	9180-9178	Moderate	Dry area possible; ledge; needs more checking
Stetson Road -- Windham Road, (Brooklyn)	72° 0' 33.33" W	71° 58' 53.33" W	9172-9168	Very High	*Baptisia* present
Stetson Road (Brooklyn)-- Drain Road (Hampton)	72° 01' 54.76" W	72° 00' 33..86" W	9162-9159 & 9157-9156	Very High	*Baptisia* present
Rte 97-S Brook Road (Hampton)	72° 5' 36.42" W	72° 3' 32.60" W	9138-9133 & 9131-9130	Very High	Dry, sandy stretch; *Baptisia*/other host plants, *Callophrys irus* found on 5/13/09
S Brook Road (Hampton)-- Chewink Road, (Chaplin)	72° 7' 15.62" W	72° 0' 33.33" W	9122-9120 & 9117-9112	Very High	Large colony of *Callophrys irus*, *Baptisia* abundant
Rte 6 -- Chewink Road (Chaplin)	72° 8'22.14"W	72° 7' 15.62" W	9108-9101	Very High	Known *Callophrys irus* sight and possible *Chlosyne harrisii*
Rte 6 -- Natchaug River (Chaplin)	72° 8'53.93"W	72° 8'22.88"W	9099-9096	High	*Baptisia* on ridge above river--other host plant species present
S Bedlam Road (Chaplin)- Bassetts Bridge Road, (Mansfield)	72° 9'54.95"W	72° 9'38.18"W	9089-9088	Very High	This section from road to road should not be mowed, Large stands of *Baptisia* and *Vaccinium angustifolium*
Rt 195 west to Mansfield City Rd, (Mansfield)	72°11'57.22"W	72°12'16.45"W	9068-9063	Very high	Good habitat; *Baptisia* common and *Callophrys irus*
Mansfield City Rd west to Rte 3, (Mansfield)	72°14' 08.01"W	72°15'16.45"W	9047-9042	Moderate	Some *Baptisia; Vaccinium angustifolium* stands present
Flanders River Road (Coventry)	72°15' 41.79"W	72°15' 45.30"W	9033-9032	Moderate	Disturbed sandy areas both sides of Rd (within 200') small quantity of *Baptisia* on east side
South side of east bound lane of Rte 6 (Coventry)	72°16'04.66"W	72°16' 03.27"W	9028-9027	High	*Baptisia* and *Vaccinium angustifolium* from Rte 6 to old railroad ROW need to survey

Two segments of the 37-mile ROW proved to be especially significant for rare species--together they account for 65% of the rare species occurrences recorded over the course of our study. Each is shown below, with the areas of special importance delimited by peacock blue bars (one at the west end and one at the east end). In the summary and management section of this report, we refer to these as the two "portfolio" sites.

The first and most important ROW segment is located in Killingly and extends from just west of the Quinebaug River to the southwest-facing slope above Park Street (Figure 2). Five state-listed and three "other significant species" (see below) were recorded along this section of the IRP ROW. This is the single most important section of the transmission line ROW in that at least one and perhaps two globally imperiled species have colonies here: *Metarranthis apiciaria* and *Erynnis persius* (final determination on *E. persius* is pending—see below).

While no rare species occurrences map to the segment of transmission line ROW between Interstate 395 and CL&P's Killingly Substation, we consider this section to be important habitat in that it contains abundant hostplants (scrub oak, heath, and hazel). We did not "discover" or recognize its conservation value until very late in October of 2009 (after the field season was over).

Figure 2. Portfolio Site Located along CL&P Transmission line ROW North of Lake Road Switching Station and Extending through Killingly Substation (East of Interstate 395)

If the western edge of this portfolio section were to include the transmission line ROW in the vicinity of Lake Road (i.e., were one to extend the western reach another 1.8 miles),

an additional two species/element occurrences would be added. Likewise, if the eastern section were extended to just north of Hurry Hill Road, the best example of a sandplain grassland would be included (N41° 54.05', W71° 52.82'). It is likely that this area was historically part of the northern reach of glacial Lake Quinebaug--thus accounting for the rich sand (gravel and silt) soils/deposits along this section of the proposed IRP ROW.

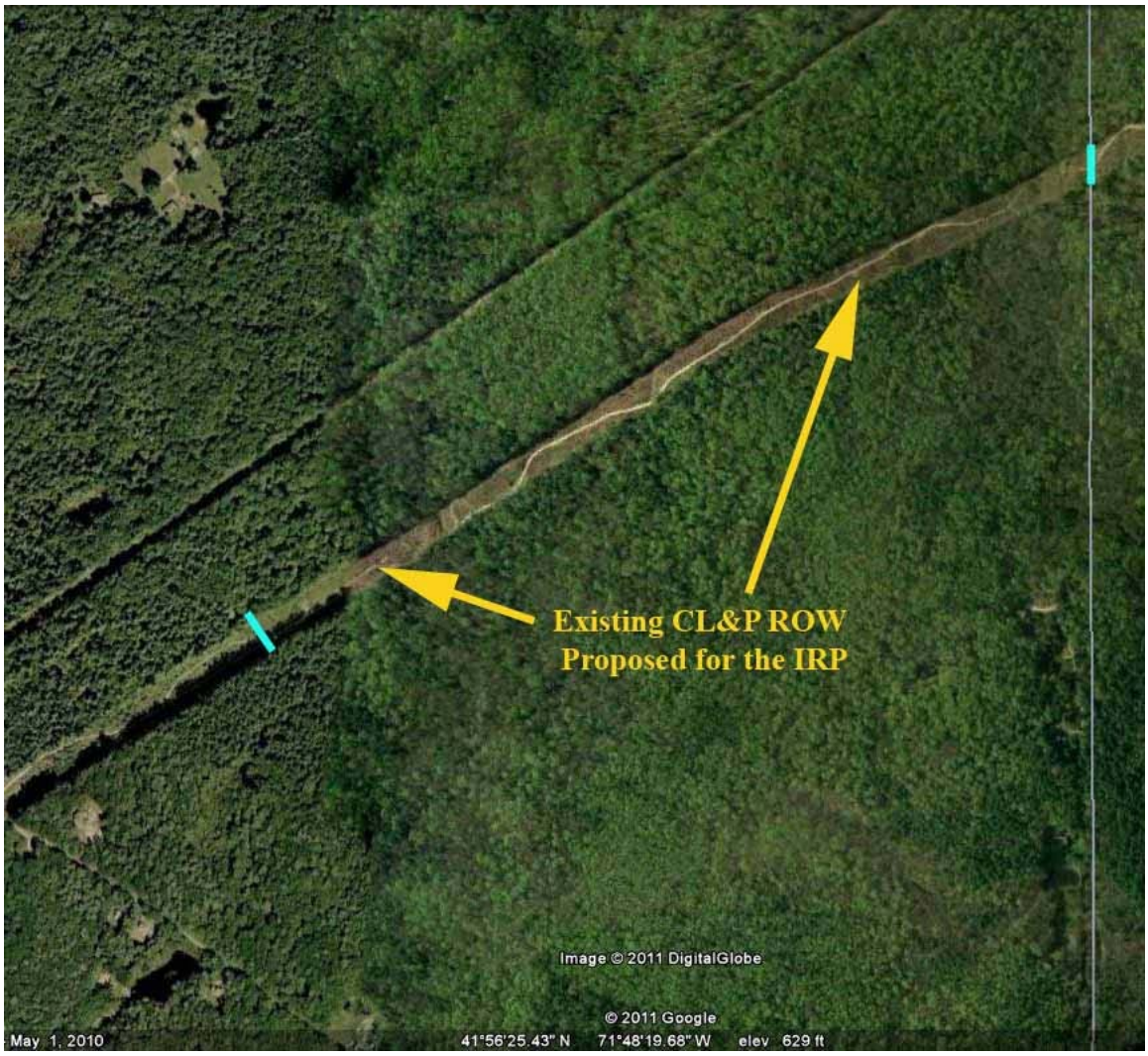


Figure 3. Portfolio Site Located along CL&P Transmission Line ROW in the Town of Thompson (East of Elmwood Hill Road to the Connecticut – Rhode Island Border (The peacock bars delimit the high-quality habitat section.)

A second portion of the transmission line ROW that we deem to be habitat of high conservation value is located in the Town of Thompson, extending from Elmwood Hill Road northeast to the Connecticut – Rhode Island border (refer to Figure 3). The section closest to the road is overrun with invasive species (mostly autumn olive), and hence (presently) is of lesser ecological importance than the portfolio site in Killingly. Four state-listed and two "other significant species" (see below) were recorded along this ROW segment. One of these species, *Digrammia equivocata,* represents a state record

and is thought to be globally rare. This is the only record of this organism in the state (and may be the only extant colony known for New England).

Moth Trap Data: We ran 15W blacklight bucket traps at sites that we thought might yield rare species. A total of 50 trap samples deployed over 38 nights were collected, sorted, identified, and counted over the course of the study. At total of 5,787 moths were identified to species or species group (Appendix A). These included 237 species of Noctuidae, 99 Geometridae, 26 Arctiidae, 24 Notodontidae, 10 Sphingidae, and 7 Saturniidae. Appendix A provides an annotated list of the 424 identified species. An Excel worksheet detailing the contents of each of the 50 traps samples, including date, GPS location, and number of individuals, recorded is included as one of the electronic files accompanying this report ("Appendix A: Moth Trap Full Data_Electronic Version").

Rare Species Recovery: Ten state-listed species were confirmed along the IRP ROW in 2008 and 2009[1] (see Table 4). These species accounted for a total of 23 separate occurrences (= unique sites/dates). Associated event data: locality, GPS coordinates, and date of observation are collected in Table 4. Additional fields (data) associated with these collections appear in an Excel worksheet ("Table 4_Rare Animal Occurrences").

In May 2009, a single specimen of what may be *Erynnis persius* (Persius Duskywing) (State Endangered) was taken west of the Killingly Substation (in the vicinity of Louisa Viens Road in Killingly). We will need to dissect the specimen to examine its genitalia or send it to the Smithsonian Institution to have the identification verified. An additional seven species that we feel are worthy of state listing the next time Connecticut's Endangered Species legislation (CTDEP 2010) is revised were recovered along the transmission line ROW.

Below we list the 17 conservation (management) targets and then provide synopses for each.

IRP Lepidoptera Species of Conservation Importance

Family Geometridae
Digrammia equivocata (no common name) (worthy of listing but life history unknown)
Euchlaena madusaria (Scrub Euchlaena) (Threatened)
Metarranthis apiciaria (Barrens Metarranthis) (Endangered)

Family Hesperiidae
Erynnis brizo (Sleepy Duskywing) (Special Concern)
Erynnis persius (Persius Duskywing) (Endangered) (verification on ID pending)

Family Lycaenidae
Callophrys irus (Frosted Elfin) (Threatened)

Family Noctuidae

[1] *Erynnis persius* requires confirmation (dissection) and thus its listing here is tentative.

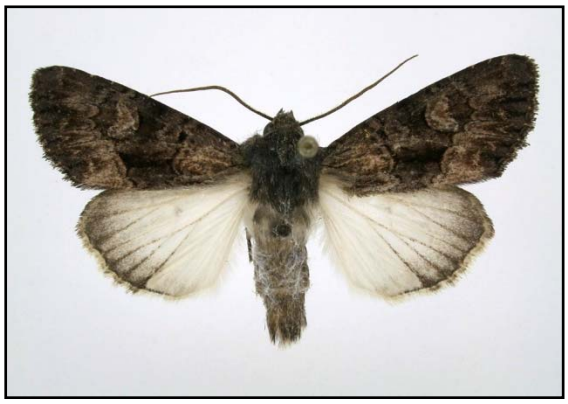
Acronicta falcula (Hazel Dagger) (worthy of listing as State Threatened)
Acronicta fragilis (Fragile Dagger) (worthy of listing as State Special Concern)
Apamea burgessi (Burgess Cutworm) (Special Concern)
Derrima stellata (Pink Star Moth) (worthy of listing as Special Concern)
Eucoptocnemis fimbriaris (no common name) (Special Concern)
Sympistis perscripta (=*Lepipolys perscripta*) (Scribbled Sallow) (Special Concern)
Schinia obscurata (rarely encountered species)
Schinia septentrionalis (worthy of listing as State Threatened)

Family Notodontidae
Hyparpax aurora (Pink Prominent) (worthy of listing as State Threatened)

Family Saturniidae:
Hemileuca maia (Buck Moth) (Endangered)

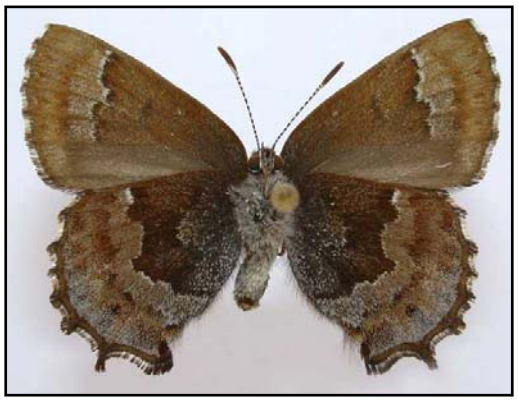
Family Sphingidae
Hemiaris gracilis (Slender Clearwing) (Threatened)

Species Synopses



***Apamea burgessi* (Burgess Cutworm) (Family Noctuidae).** This fall-flying owlet is listed as a Special Concern Species (CTDEP 2010). It occurs locally in grasslands from eastern Massachusetts south to New Jersey (Mikkola et al. 2009). It is known from a number of locations in the central and eastern areas of Connecticut: Mansfield Hollow-Windham Airport, Moody Road (LEGO Inc.) in Enfield, Simsbury Airport, Brickyard Road in Farmington, Toelles Road in Wallingford, Bradley International Airport, West Thompson Lake, and most recently from Old Iron Mine Road area in Bloomfield. Forbes (1954) characterized the species as "Rare and local except along the coast." We associate the moth with grasslands where little bluestem (*Schizachyrium scoparius*) grows in abundance.

While the early stages are unknown (Mikkola et al. 2009), Mark Mello unearthed a larva from the roots of little bluestem in July 2009 that is believed to represent this species (David L. Wagner personal communication). We took adults in light traps from Killingly, just north of Louisa Viens Road (N41°52'36.30", W71°53'52.32") on 7 September, 2009, and east of Route 6 in Chaplin (N41°45.928,W71°48.545) on 12 September, 2009.



***Callophrys irus* (Frosted Elfin)** (Family Lycaenidae). The Frosted Elfin's State Heritage Program rank is S2S3 (Wagner 2007, Schweitzer et al. 2011) and it is currently listed as a Species of Special Concern by CTDEP (2010). Its global G3 rank (Nature Serve 2010) indicates that it is a global conservative target. The butterfly is widely considered to be declining across much of its range (Check and Tudor 2005, NatureServe 2010, Schweitzer et al. 2011). Eastern Connecticut is one of the insect's strongholds with many of the largest and best known colonies in southern New England located along transmission line ROWs in eastern Connecticut (Schweitzer et al. 2011).

Adults emerge in mid May and fly through the early days of June (Glassberg 1999, Opler 1998, Albanese et al. 2007). Given good weather it is an easy species to locate because the males are territorial and conspicuous in habit, frequently darting out from their perch to investigate flying insects that pass near their perch. Larvae feed exclusively on wild lupine (*Lupinus perennis*) and wild indigo (*Baptisia tinctoria*) (Forbes 1960, Cech and Tudor 2005, Albanese et al. 2007, Schweitzer et al. 2011). In the Northeast, Frosted Elfin caterpillars mature by the 10th of July and then crawl into the litter to pupate. They spend the next 10 months of their life as pupae, waiting for the first warm days of May to emerge (Albanese 2007).

We recorded the butterfly at nine sites in 2009 (see Table 3): these range from Sawmill Brook Lane in Mansfield east to Elmwood Hill Road in Thompson. Essentially, every large *Baptisia* stand yielded adults. Metzler has mapped all the larger stands along the length of the IRP ROWs (see Appendix B).

***Erynnis brizo* (Sleepy Duskywing)** (Family Hesperiidae). The Sleepy Duskywing is listed as Threatened by the state (CTDEP 2010). It is a spring-active denizen of open sunny oak woodlands and barrens (Opler 1998, Wagner et al. 2003, O'Donnell et al. 2007). In the Northeast, it is most commonly encountered in oak woodlands, especially those with an abundance of black, scarlet, and scrub oak (*Quercus ilicifolia*), all of which are known to serve as hosts for the larvae. Larvae occur through the summer and fall months, residing in a silken shelter, and only drop to the ground at leaf fall.

While formerly widespread in Connecticut, this species has declined markedly as a result of reforestation—only four colonies were found in Connecticut during the five-year run of the recently completed Connecticut Butterfly Atlas Project. A single individual was seen and photographed on 11 May, 2009, by Bill Banks, Lenny Brown, and Richard Chyinski off of Elmwood Hill Road (N 41° 56.364' W71°48.693). They submitted the rare animal form for their sighting, but because their record was based on a voucher that could not be verified (only on a digital image), the occurrence was not accepted by CTDEP.

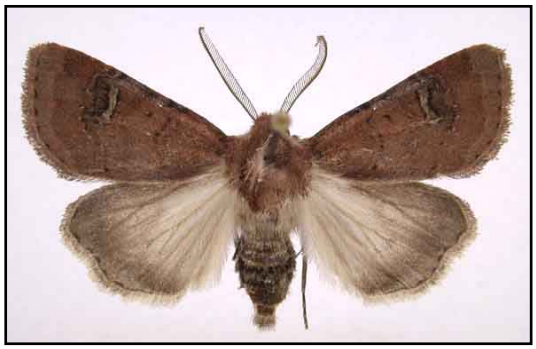
***Erynnis persius* (Persius Duskywing)** (Family Hesperiidae). This species seems to be slipping towards extinction in the Northeast (Cech and Tudor 2005, O'Donnell et al. 2007, Schweitzer et al. 2011). Its NatureServe global rank is G5T1T3, making it the rarest insect (that may have been) recovered in this survey. It is listed as an Endangered Species by the State of Connecticut (CTDEP 2010). It is historical in New Hampshire, Rhode Island, New York, New Jersey, Maryland, Virginia, and in extreme southern Ontario. There are no colonies in Connecticut where the animal is considered secure, i.e., the few confirmed records in the past two decades are for singletons, seen along the eastern border of the state. Schweitzer et al. (2011) provide extensive information on the species' decline in the Northeast.

It is a spring-active denizen of open, sunny oak woodlands, balds, and barrens. The few recent adult records in Connecticut and Massachusetts indicate that the species is on the wing from about the 10th to 25th of May, and often flies about a week earlier than the Wild Indigo Duskywing (*E. baptisiae*), where they occur together. Adults like to perch on small oaks with their wings wrapped around the stem as shown to the right. Larvae feed on either lupine (*Lupinus*) and/or wild indigo (*Baptisia*). Cech and Tudor (2005) provide additional life history details. Larvae occur through the summer and fall months, residing in a silken shelter, and drop to the ground at leaf fall.

Photo: Massachusetts Butterfly Club

Juan Sanchez and Ryan Wagner took a single male *Erynnis* (vouchered) on 12 May 2009 near Louisa Viens Road (N41° 52.608' W71° 53.773'). This species is exceptionally difficult to identify. The collection date, size, coloration, and distribution of male androconial setae (see Forbes 1960, O'Donnell 2007) are all consistent with *E. persius*. However, authoritative identification requires an examination of the male genitalia which has not yet been done. So its inclusion in this report is provisional. A rare animal form will be submitted after confirmation of the identification.

***Euchlaena madusaria* (Heath Euchlaena)** (Family Geometridae). This handsome moth is listed as a State Special Concern Species. It occurs from Massachusetts to North Carolina, extending west to Texas and Colorado (Forbes 1948). Prior to our discovery of a colony in Thompson, it was known from just two sites in Connecticut: Bradley International Airport and the pine-oak barren below Mansfield Hollow Dam in Mansfield Hollow. It is closely associated with low heaths and in particular lowbush blueberry (*Vaccinium angustifolium*). A single specimen was taken below Lower Pond in Thompson, Connecticut (N41°55.976, W71°49.752), on 19 August, 2009, in a blacklight trap.



***Eucoptocnemus fimbriaris* (No common name)** (Family Noctuidae). This moth is listed as a Species of Special Concern by Connecticut (CTDEP 2010). It is a species of little bluestem grasslands and other dry, sandy (and often disturbed) sites. We are aware of only a handful of colonies in Connecticut: i.e., those at Mansfield Hollow-Windham Airport, Enfield (Moody Road, LEGO Inc.), Toelles Road in Wallingford, and the recently discovered colony along Old Iron Mine Road in Bloomfield. The species is completely absent from mesic grasslands, such as those at George Seymour State Park (Haddam, CT).

While the early stages are unknown (Lafontaine 2004), the larvae of related genera feed on grasses. A single adult was taken in a light trap north of Lake Road (N41°51'51.76", W71°54'48.23") on 30 September, 2009.

***Hemaris gracilis* (Slender Clearwing)** (Family Sphingidae). This State Threatened species (CTDEP 2010) is seldom encountered. Its NatureServe global rank is G3G4. Schweitzer et al. (2011) provide a lengthy discussion about the insect's (apparent) rarity in their recent treatment on rare Lepidoptera of eastern woodlands. Prior to the discovery of the moth north of Louisa Viens Road in May 2008, the moth had only been seen once in Connecticut in the past three decades, when a single adult was found ascending Canaan Mountain in Litchfield County. Larvae are specialists on lowbush blueberries, and especially *Vaccinium angustifolium* (Williams 1979, Wagner

2005, Schweitzer et al. 2011). There is a single generation each year, with adults flying from mid May into June.

It is a difficult species to census in that it is entirely diurnal, dependent on warm sunny weather, occurs at low density, and is both nervous and wary, making both approach and capture difficult. The latter is often necessary as two other congeners, the Hummingbird and Bumblebee Clearwings, *Hemaris thysbe* and *H. diffinis*, fly with it in May. All three species were seen nectaring at the same mountain laurel patch in May 2008 (Louisa Viens Road) and at a blooming azalea (east of Park Street) the next year. Given that we were able to locate four colonies over the course of the study (see Table 3), it is our guess that all large lowbush blueberry stands mapped by Metzler in Appendix B have a high probability of supporting at least small colonies of this moth, especially those from Lake Road eastward.

***Hemileuca maia* (Buck Moth)** (Family Saturniidae). This moth is listed as Endangered in the state (CTDEP 2010). Its State Heritage Program rank for Connecticut is S1; its global rank is G5 (Nature Serve 2010). Prior to our discovery of the species in Putnam, the last observed individual in the state was seen by Mike Thomas in Sterling in October 2005, along the Rhode Island border near Oneco.

Hemileuca maia female broadcasting sex pheromone (from the orange gland at the abdominal terminus).

In New England, the Buck Moth is restricted to expansive, open (=sunny), pitch pine-scrub oak barrens and woodlands with high summer temperatures. It is considered one of the prime indictors of high quality barren habitats in the Northeast and, as such, is regarded as a good conservation target, particularly because its ecological requirements are well understood. Mated females deposit their eggs in rings on the terminal twigs of scrub oak (*Quercus ilicifolia*) in the Northeast--the principal host for the early instars in New England (Tuskes et al. 1996, Wagner et al. 2003).

We encountered a single a larval cluster on scrub oak on 30 May, 2009, just east of the active quarry along River Road (N41°52'36.53", W71°54'16.97"). A few larvae were kept to confirm the identification. One female buck moth emerged in October 2009 and is deposited at the University of Connecticut. This record represents the first breeding record of the species in Connecticut in many decades. Unfortunately the late frost experienced in May of 2009, likely took a heavy toll if not eliminated the population at the site. Two attempts to locate additional examples of this species and the New England Buck Moth (*Hemileuca lucina*) (see below) in May and June of 2010 met with failure.

***Metarranthis apiciaria* (Barrens Metarranthis)** (Family Geometridae).

The moth's Global Heritage Rank is G1G3, making it one of the rarest invertebrates in southern New England. The animal's state legal status was recently upgraded to Endangered (CTDEP 2010). According to Schweitzer et al. (2011), the "species has become much rarer since the 1920s or 1930s and its current range is probably greatly reduced." The colony north of Louisa Viens Road (N41°52'36.94", W71°53'59.97") that we discovered in 2008 yielded eight adults in a single light trap sample on 22 June. This is more individuals than have been seen for the entirety of New England over the last half century. As presently known, the Louisa Viens Road colony ranks second in importance globally, only behind that of the oak savanna population of Iroquois County, Illinois and adjacent Newton County, Indiana.

The insect's early stages are wholly unknown (Schweitzer et al. 2011). It is associated with sandy areas with scrub oak (*Quercus ilicifolia*), but whether *Q. ilicifolia* is in fact a host has not been determined. Other members of the genus are polyphagous on woody plants (Wagner et al. 2002). There is some indication that the caterpillars behave as climbing cutworms, feeding at night and crawling into litter during the day (Wagner 2005). The adults fly in the second half of June. They are nocturnal, and unfortunately, fly late at night—few individuals are seen before 2:00 AM (Jim Vargo personal communication).

In addition to the May 2008 collection, adults were taken in light traps at the Louisa Viens site on 26 June and 7 July, 2009. Effort was also placed on larval surveys with beating sheets to recover caterpillars from potential hostplants in July and August of 2009 without success. In 2009, a second colony was discovered nearby, east of the Tracy Substation (N41°52'57.90", W71°53'20.77"), on 25 June.

***Sympistis perscripta* (Scribbled Sallow)** (Family Noctuidae). This rarely encountered moth is a denizen of sandplains and xeric, sandy or rocky sites. It also inhabits coastal strand communities and disturbed sites with the larval host, Canada toadflax (*Linaria canadensis*) (Wagner et al. 2011). There is one generation in Connecticut with adults flying from late May into early June; caterpillars mostly in late June, feeding mostly on flowers and seeds of the host.

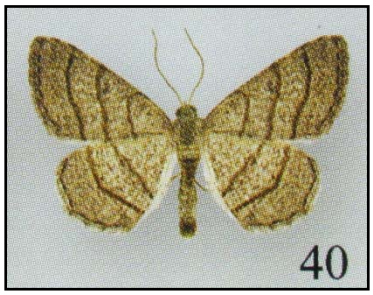
A single caterpillar of this Special Concern Species (shown to left) was taken under the transmission line ROW east of Elmwood Hill Road (N41°56′24.03″, W71°48′37.88″), on 14 June, 2008, by Mike Thomas. Thomas' rare animal form is included with this report.

Other Significant Species: In addition to the above state-protected Lepidoptera, seven other rare to very rare (or at least rarely collected) moths were recovered along the IRP ROWs in 2008 and 2009: *Acronicta falcula*, *A. fragilis*, *Derrima stellata, Digrammia equivocata*, *Hyparpax aurora, Schinia obscurata,* and *Schinia septentrionalis*. While not yet legally protected, it is our belief most of these warrant protection and may in fact be more imperiled than many of the taxa on the Connecticut's list of Endangered, Threatened, and Special Concern Species (CTDEP 2010).

***Acronicta falcula* (Hazel Dagger)** (Family Noctuidae). Larvae were taken twice at the Attawaugan-Killingly (N41°52'36.30", W71°53'52.32") site: 27 August, 2008, (n=2) and 26 June, 2009 (n=2). This species is very rare in collections and is probably worthy of legislative protection under Connecticut's Endangered Species Law. Larvae are specialists on hazels (*Corylus*) (Wagner et al. 2011). Focused light trapping for this species in 2009 (admittedly a wet, cold year) failed to yield any adults.

***Acronicta fragilis* (Fragile Dagger)** (Family Noctuidae). This is an extremely rare moth in Connecticut, and represented by only two records from east of the Connecticut River. Further, the eastern Connecticut captures are largely disjunct from others in the Northeast which typically come from mountainous areas. The larvae are likely feeding on a plant in the Rosaceae (Wagner et al. 2011). A single adult was taken along Lake Road (N41.86°, W71.91°) on 8 June, 2009 in a blacklight trap.

***Derrima stellata* (Pink Star Moth)** (Family Noctuidae): This beautiful, obscure moth is known from Maine to central Florida (Hardwick 1996), and is an inhabitant of sandplains and other open, xeric habitats. It is arguably the most beautiful moth in eastern North America for which the biology remains unknown. Presumably, the caterpillar is subterranean and emerges to feed from the soil only after darkness has set in. Because it is a member of the flower moth subfamily (Noctuidae: Heliothinae), it is likely that its caterpillar feeds on the inflorescences of either a dicot or grass. It is known from several coastal sites and just a few inland sites. Two adults were taken in a trap on 23 July, 2009 in a sand pit along State Route 101 in Pomfret (N41°50'54.33" W71°55'25.11").



***Digrammia equivocata* (no common name)** (Family Geometridae) (image reproduced from Ferguson 2008) This is an exceptionally rare species. It was recognized as distinct only recently by Ferguson (2008). A single specimen was taken in a blacklight trap on 3 June on the transmission line ROW east of Elmwood Rood (N41°56'29.72", W71°48'25.40"). While the species is geographically widspread, being known from Manitoba south to Iowa and Missouri, east to coastal Massachusetts, it is known from less than 50 specimens. The hostplant is unknown but related *Digrammia* species feed on *Salix* (willows). There is a single flight in the Northeast with adult captures from mid June to the end of July. The site north of Elmwood Hill Road (N41.94°, W71.80°), where the adult was taken in a light trap on 3 June, 2009, is worthy of further evaluation and protection as three other rare species were seen in the vicinity of where the light trap was placed: *Callophrys irus, Erynnis brizo*, and *Hemiaris gracilis*.

***Hyparpax aurora* (Pink Prominent)** (Family Notodontidae). This is a scarce moth in the Northeast that is becoming increasingly rare in Connecticut. It is closely associated with pitch pine-scrub oak barrens in New England. Larvae are specialists on oak, and especially scrub oak in our region; it is also reported to feed on *Viburnum*, perhaps erroneously (Wagner 2005). Mike Thomas took a single female along the transmission line ROW east of Elmwood Hill Road (N41°56′24.03″, W71°48′37.88″) on 14 June, 2008.

***Schinia obscurata* (Fleabane Flower Moth)** (Family Noctuidae). This is a scarce moth in collections and widely regarded to be rare. Its biology and life history are incompletely known (Hardwick 1996). We took three adults in a light trap in the sand quarry along River Road in Putnam (N41.872, W71.911). We returned on 15 and 16 July, 2009 to look for larvae on what we believed to be the probable host, *Erigeron annuus*, and were rewarded with several larvae—eight were taken over the two days. Recently, an adult emerged from the collections, confirming our initial identification.

***Schinia septentrionalis* (Northern Flower Moth)** (Family Noctuidae). This is a prairie species that extends eastward mostly along the Eastern Seaboard in open habitats (such as transmission line ROWs). The species has declined over much of its eastern range: it is historic and quite possibly extirpated from Quebec, New Jersey, Delaware, and Pennsylvania (NatureServe 2010; Schweitzer et al. 2011). Its larvae feed on the flowers and seeds of blue-leaves asters (Schweitzer et al. 2011). A small colony, closely tied to *Aster linariifolius,* occurs along the IRP transmission line immediately east of Route 6 in Chaplin (N 41° 45.898', W 72° 8.360'). A single adult was also taken at the colony of 25 August, 2009, in a light trap. Likely the next time the state's endangered species legislation is reviewed, we will push for this species to be listed as endangered.

Other scarce species taken over the course of the survey that we associate with open, dry oak woodlands, barrens, and shrublands include: *Cisthene packardi* and *Virbia laeta* (both Arctiidae); *Abagrotis magnicupida* and *Bagisara rectifascia*, (Noctuidae); and *Nemoria rubrifrontaria* (Geometridae).

Again, occurrence data for all species taken in a light trap are provided in "Appendix A_Moth Trap Full Data_Electronic Version."

Rare Animal Forms: By state law, and in accordance with Dr. Wagner's state-issued collecting permit, rare animal forms must be completed and submitted to the CTDEP for entry into the State's Natural Diversity Database. Rare animal forms (one for each record/occurrence in Table 4) were submitted to the State of Connecticut in early 2010. Electronic copies of each of these forms have been collected into a single folder ("Rare Animal Forms") on the CD that accompanies this report. We have yet to submit a form for the putative Persius Duskywing, whose identity remains in question, and requires genitalic dissection.

Other State-listed Invertebrates. While we were not under contractual obligation to conduct surveys of other state-rare species, we did assess habitat suitability and conduct a preliminary survey for tiger beetles, dragonflies, damselflies, and other state-listed taxa. No other rare taxa were encountered despite two trips by undergraduates to the Lower Pond area to sample dragonflies and damselflies and tiger beetles in sandy areas, and other reconnaissance collection efforts. This is not to say with additional effort, especially by an accomplished authority, that additional rarities will not turn up along the IRP ROWs. The expansive wetland south of Lower Pond is of high quality, and may be home to one or more state-listed species.

Hostplant-Plant Community Mapping:

Five hostplant/community units were mapped: bluestem grassland, lowbush blueberry, scrub oak, wild indigo, and bluestem-scrub oak-low bush blueberry mosaic. These polygons are figured in a set of 17 maps included as Appendix B.

Of the dozens of plant communities/hostplant stands mapped, the habitats in the proximity to the Quinebaug River in Killingly had the greatest diversity of habitats, plant species, and rare butterflies and moths. These areas include the Louisa Viens site, the River Road site, and the Tracy Road Substation site. The occurrence of dry sandy soils on these sites provide the necessary conditions to support a naturally open habit that supports a number of host plants not found elsewhere along the ROWs, with the notable occurrence of numerous stems of scrub oak (*Quercus ilicifolia*). In contrast, other dry habitat sites mapped within the ROWs occur on shallow deposits of glacial till over bedrock outcrops, with the disturbance created by access road maintenance artificially creating the open conditions necessary for the occurrence of important host plants such as low bush blueberries (*Vaccinium angustifolium* and *V. pallidum*) and wild indigo (*Baptisia tinctoria*).

Within the mapped sites, notable occurrences of bluestem (*Schizachyrium scoparium* and *Andropogon virginicum*) occur on the Park Road site, north of Hurry Hill Road, the Quaddick Farm Road/Munyan Road site, the Route 6 Chaplin east site, and in the vicinity of the Tracy Road Substation. Notable occurrences of wild indigo (*Baptisia tinctoria*) occur along existing ROW access (maintenance) roads on the Lake Road site, the Bassett Bridge Road site, and the Route 6 Chaplin east site. The most notable lowbush blueberry (*Vaccinium angustifolium* and *V. pallidum*) habitats occur on the Sawmill Brook Lane site and the Elmwood Hill Road site.

The shape file and associated attribute data for all mapped sites have been included in a single folder ("Shape Files") on CD submitted with this report.

Table 4: Occurrence for State-listed Butterflies and Moths along the IRP ROWs

TAXON SPECIES	GPS COORDINATES	TOWN	SITE NAME	DATE
Apamea burgessi	N41°52'36.30", W71°53'52.32"	Killingly	Louisa Viens Drive	7-Sep-09
Apamea burgessi	N41°45.928,W71°48.545	Chaplin	East of Rt. 6	12-Sep-09
Callophrys irus	N41°56'29.72",W71°48'25.40"	Thompson	Elmwood Hill Road transmission line ROW	22-May-09
Callophrys irus	N41°45'42.50",W72°07'36.10"	Chaplin	East of Rt. 6	16-May-09
Callophrys irus	N41°45'50.1", W72°03'43.3"	Brooklyn	Route 97 Transmission line ROW	13-May-09
Callophrys irus	N41°52'57.90",W71°53'20.77"	Killingly	Tracy Road substation ROW	26-May-09
Callophrys irus	N41°51'16.89",W71°54'58.49"	Killingly	Lake Road transmission line	19-May-09
Callophrys irus	N41°50'13.40",W71°55'0.00"	Pomfret	Route 101 Transmission line ROW	21-May-09
Callophrys irus	N41°45'12.90", W72°12'4.98"	Mansfield	ROW north of Sawmill Brook Lane	20-May-09
Erynnis brizo	N41° 56.364' W71°48.693'	Thompson	Elmwood Hill Road transmission line	11-May-09
Erynnis persius?	N41° 52.608' W71° 53.773'	Killingly	Louisa Viens Drive	12-May-09
Euchlaena madusaria	N41°55.976,W71°49.752	Thompson	Munyan Road, Lower Pond	19-Aug-09
Eucoptocnemis fimbriaris	N41°51'51.76", W71°54'48.23"	Killingly	Lake Road transmission line	30-Sep-09
Hemaris gracilis	N41°53'9.80", W71°53'7.07"	Killingly	Park Street transmission line ROW	26-May-09
Hemaris gracilis	N41°52'32.03", W71°54'24.84"	Pomfret	River Road, quarry & adjoining ROW	30-May-09
Hemaris gracilis	N41°56'18.77", W71°48'48.87"	Thompson	Elmwood Hill Road transmission line	22-May-09
Hemaris gracilis	N41°52'36.30", W71°53'52.32"	Killingly	Louisa Viens Drive	8-Jun-08
Hemileuca maia	N41°52'36.53", W71°54'16.97"	Pomfret	River Road, quarry & adjoining ROW	30-May-09
Metarranthis apiciaria	N41°52'36.94",W71°53'59.97"	Killingly	Louisa Viens Drive	22-Jun-08
Metarranthis apiciaria	N41°52'36.94",W71°53'59.97"	Killingly	Louisa Viens Drive	26-Jun-09
Metarranthis apiciaria	N41°52'36.94",W71°53'59.97"	Killingly	Louisa Viens Drive	7-Jul-09
Metarranthis apiciaria	N41°52'57.90",W71°53'20.77"	Killingly	Tracy Road substation Transmission line ROW	25-Jun-09
Sympistis pescripta	N41°56'29.72",W71°48'25.40"	Thompson	Elmwood Hill Road transmission line ROW	14-Jun-08

5. SUMMARY AND MANAGEMENT RECOMMENDATIONS

Our habitat assessment of the IRP ROWs, with an emphasis on those communities important to rare Lepidoptera, was quadruply redundant: (1) we studied aerial photography, a fly-over video, and soil maps of the ROWs extensively, (2) we walked the entirety of the 37-mile ROWs once and, in most cases, two times, (3) we met with the AECOM field team that performed the vegetative community mapping along the ROWs in 2008 and 2009, and (4) from January to April 2010, we mapped rare plant communities likely to harbor state-listed butterflies and moths.

In principle, we don't expect the IRP expansion of the vegetatively managed portions of the 37-mile ROWs to be detrimental to the rare species identified in this report as being of conservation concern as long as native vegetation and soils will not be greatly (or permanently) impacted by construction efforts, structures, buildings, and management practices. To the contrary, as long as impacts are minimized at a few key sites, the expansion of the vegetatively managed portions of the CL&P ROWs should be advantageous to many of the rare taxa identified in this survey because they are early successional animals that require foodplants that grow in open habitats.

The present (dirt) access roads located along the existing CL&P ROWs (within the portions of the ROWs under or near the existing transmission lines that are presently managed in shrubland or low growth vegetation) have proven beneficial for several state-listed species, e.g., those species that are reliant on *Baptisia* (wild indigo), such as the *Callophrys irus* (Frosted Elfin) and *Erynnis persius* (Persius Duskywing). Much of the mapped *Baptisia* (as identified in Appendix B) occurs along the transmission line access roads. This being the case, were these access roads to be graveled or paved, much habitat important to state-rare species would be lost. Widening and re-grading of service roads would be less problematic, and would usually only impact a colony temporarily. Once construction is complete, *Baptisia,* would likely regrow and in some cases increase in abundance in these areas.

Dirt access roads also provide critical habitat for hundreds of ground nesting vertebrates and invertebrates. More than 160 species of pollinators (wild bees) are known to reside under transmission lines in eastern Connecticut (Appendix C --Wagner and Ascher in prep.). One recently collected bee (*Epeoloides pilosula*) found under a transmission line in New London, Connecticut, was regarded to be extinct in the United States, prior to its discovery in 2006 and 2008 along a ROW off of Chesterfield Road in Montville (Wagner and Ascher 2008). This rare bee has subsequently been listed as an Endangered Species by the State of Connecticut (CTDEP 2010).

Permanent loss of habitat to construction activities, including gravel roads, clearing for work staging areas, and new transmission line structures, should be minimized or avoided altogether from the two portfolio sandplain-shrubland sites: i.e., the segments of ROW that extend roughly from River Road to Park Street (in Killingly), and the Elmwood Road site, which extends along the IRP ROW from Elmwood Hill Road to the Connecticut – Rhode Island border (in Thompson). These two ROW segments yielded more than half

(15/23) of the occurrences for state-listed species, and most of the records for the "other significant species" that will be candidates for state listing, the next time Connecticut revises its endangered species legislation.

Activities that would remove or impact habitat from either of the portfolio sites should be carefully considered. At a minimum, additional rare species survey efforts at these portfolio sites would be warranted, because this report is, as noted above, an assessment of critical habitat, and not a comprehensive survey of rare invertebrate colony locations along the IRP ROWs.

We do not consider off-site mitigation desirable for either of the portfolio site segments of the IRP ROW. This is because the soils and underlying geology along the ROWs at these two sites are responsible for the composition of the overlying plant communities. Both sites are currently home to globally significant conservation targets, whose biologies and habitat needs are, at best, incompletely understood. Off-site mitigation efforts would have an unacceptably high risk of failure. Conversely, any efforts to widen the managed portions of the ROWs through the portfolio sites, develop a vegetation management plan for the portfolio sites, or to prepare a long-term management plan for the rare species, should be viewed in an especially favorable light.

Another reason to discourage off-site mitigation is the matter of vegetation management. Utilities are obligated to actively manage the vegetation within ROWs. A remote mitigation site may not be under as effective vegetation management, and would almost certainly require separate monitoring, much additional expense, and attention (in perpetuity).

Overall, we are impressed with the existing CL&P vegetation management and use practices along the 37-mile IRP route. The existence/persistence of many of the rare animal occurrences depends on the maintenance of early successional habitats, which CL&P promotes through its vegetation management programs for overhead transmission lines. We encountered many segments of the transmission line ROWs where invasives were winning the battle over native taxa: in some locations, multiflora rose, bittersweet, Morrow's honeysuckle, and autumn olive formed impenetrable masses. Given our findings, we think it important that CL&P focus on the suppression of invasives at the sites noted above in Tables 2 and 3. Most pernicious, in our view, is autumn olive because this species (being a nitrogen fixer) is able to rapidly colonize and proliferate in sandy soils and other xeric habitats—the very habitats that support the greatest number of the conservation targets identified in this survey. The ROW section east of Elmwood Hill is in special need of attention so that additional acreage is not lost to invasives. Second in importance to invasive species management would be the conservation of scrub oak trees along the ROWs. We saw dozens if not hundreds of dead stems of scrub oak (*Quercus ilicifolia*), mostly from Lake Road eastward, that had been herbicided over the course of the last five years. Scrub oak hosts more state-rare species than any other plant in the Connecticut flora. No less than 16 species of moths and butterflies rely on this plant in the Northeast (see also Table 1 in Wagner et al. 2003). Because the maximum height of this plant would never exceed 20 feet, it should be recognized as a

management goal, not a management threat to the delivery of power. Vegetation plans for the transmission line ROWs need to make it clear to contractors that this is a highly desirable species that should not be cut or poisoned henceforth, and that either incentives or disincentives relevant to the long-term persistence of scrub oak management be added to vegetation contract language. No less than three (*Hemileuca maia*, *Erynnis brizo,* and *Hypapax aurora*) and perhaps four (*Metarranthis apiciaria*) of the moths mentioned in this report are scrub oak specialists in New England. All larger stands of scrub oak along the 37-mile ROW have been mapped by Metzler. Data have been submitted with shape polygons, and all large stands are mapped in Appendix B.

Likewise, lowbush blueberries (*Vaccinium angustifolium* and *V. pallidum*) were identified by Wagner et al. (2003) as being of special importance to rare species of moths and Lepidoptera in the Northeast. Eight of the 56 (14%) shrubland Lepidoptera deemed to be of conservation importance in the Northeastern United States are known associates of lowbush blueberries. Two of the 13 rare species identified in this report likely use blueberries as the larval hostplant: *Hemiaris gracilis* and *Euchlaena madusaria*. Larger stands of lowbush blueberry were mapped by Metzler. Data have been collected and submitted as shape polygons with this report; in addition these stands are mapped in Appendix B.

We reiterate that this was a preliminary survey of key habitats supplemented with modest field sampling. Our field surveys were challenged by unfavorable weather: 2009 was the coldest, rainiest spring and early summer on record. If IRP construction and operation activities were to result in permanent impacts (i.e., development with impervious surfaces, gravel roads, substation or switching expansion outside of currently used areas) to sites with rare species or important plant communities, more focused surveys would be warranted.

Future efforts: Two exemplary communities/sites that we discovered late in 2009 were never sampled with blacklight traps: the Hurry Hill Road sandplain grassland (N41° 54.05', W71° 52.82') and the scrub oak-hazel-heath shrubland between Route 395 and the Tracy Substation (roughly extending from N41° 52.687', W71° 53.682' to N41° 52.836', W71° 53.528'). Both are particularly worthy of follow-up survey efforts. Additional inventory efforts would also be warranted at the two portfolio sites along the IRP ROW, i.e., the segment of ROW in Killingly north and east of Louisa Viens Road and the section that extends northeastward from Elmwood Hill Road (to the Connecticut – Rhode Island border). It might be especially worthwhile and interesting to look at the pollinators (wild bees) along these ecologically important sections of the IRP ROW. Likewise, any efforts to discover more about the life history (and especially foodplant requirements) of the Barrens Metarranthis (*Metarranthis apiciaria*) would be extremely valuable, given that this once widespread moth seems to be slipping towards extinction.

6. QUALIFICATIONS OF THE PI AND KEY PERSONNEL

Wagner (the PI) is an active member of the CTDEP's Advisory Committee for Rare and Endangered Species. He has conducted biotic surveys and inventories for state-listed invertebrates in Connecticut for The Nature Conservancy, the State of Connecticut, the U.S. Fish and Wildlife Service, and more than a dozen environmental consulting firms and contractors. He recently completed a book on *Rare, Declining, and Poorly Known Butterflies and Moths (Lepidoptera) of Forests and Woodlands in the Eastern United States* (Schweitzer et al. August 2011).

Ken Metzler retired from the CTDEP in 2009, where he was employed as Connecticut's rare species biologist-community ecologist. For the last decade of his service at the CTDEP, he served as the "state botanist." Of special note, Metzler recently authored "*The Vegetation of Connecticut*."

Alex Meleg has worked in Wagner's lab for three years and has participated in a number of previous environmental consulting efforts, including a massive, summer-long survey for rare Odonata along the Housatonic River in western Massachusetts in 2008-2009.

Our curriculum vitae/resumes are included as electronic documents accompanying this report.

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APPENDIX A - LIGHT TRAP DATA

FAMILY Genus, and Species	Comments	Number Trapped
FAMILY APATELODAE		
Apatelodes torrefacta		3
Olceclostera angelica		17
FAMILY ARCTIIDAE		
Cisseps fluvicollis		35
Cisthene packardi	Scarce; dry oak woodlands and barrens species	7
Clemensia albata		1
Crambidia pallida		149
Ctenucha virginica		3
Cycnia tenera		6
Grammia charlotta		13
Grammia figurata		36
Grammia nais		10
Grammia phalerata		16
Grammia virgo		3
Grammia vittata	Possibly a synonym of *G. nais*	7
Halysidota tessellaris		86
Halysidota sp.		1
Haploa lecontei		1
Hyphantria cunea		14
Hypoprepia fucosa		13
Lophocampa caryae		10
Phragmatobia fuliginosa		4
Phragmatobia lineata		2
Phragmatobia sp.		1
Pyrrharctia isabella		13
Spilosoma congrua		24
Spilosoma latipennis		3
Spilosoma virginica		4
Virbia aurantiaca		68
Virbia laeta	Scarce; dry oak woodlands and barrens species	3
Virbia ferruginosa		38
Virbia opella		8
FAMILY DREPANIDAE		
Drepana arcuata		6
Drepana bilineata		6
Euthyatira pudens		1
FAMILY GEOMETRIDAE		
Aethalura intertexta		2

FAMILY Genus, and Species	Comments	Number Trapped
Anagoga occiduaria		1
Anavitrinella pampinaria		4
Antepione thisoaria		13
Besma quercivoraria		10
Biston betularia		3
Cabera erythemaria		5
Cabera variolaria		2
Campaea perlata		85
Caripeta divisata		2
Caripeta piniata		7
Chlorochlamys chloroleucaria		5
Chloroprucha insulsaria		1
Coryphista meadii		1
Cyclophora pendulinaria		112
Digrammia equivocata	extremely rare in East; STATE RECORD	1
Digrammia gnophosaria	curiously local in Connecticut	2
Ectropis crepuscularia		6
Ennomos magnaria		2
Ennomos subsignarius		3
Epirrhoe alternata		9
Euchlaena irraria		3
Euchlaena johnsonaria		35
Euchlaena madusaria	State-listed	3
Euchlaena marginaria		1
Euchlaena muzaria		2
Euchlaena obtusaria	marginally distinct from *muzaria*; rare in CT	2
Euchlaena serrata		29
Eufidonia notataria/convergaria complex		22
Eulithis diversilineata		2
Eulithis diversilineata?		2
Euphyia unangulata		11
Eupithecia absynthiata		4
Eupithecia miserulata		4
Eupithecia palpata		1
Eupithecia sp.		2
Eusarca confusaria		17
Eutrapela clemataria		2
Haematopis grataria		1
Hethemia pistasciaria		3
Homochlodes fritillaria		19
Hormisa intestinata		2
Hydria prunivorata		4
Hypagyrtis piniata		7

FAMILY Genus, and Species	Comments	Number Trapped
Hypagyrtis unipuncta		42
Hypagyrtis sp.		1
Idaea demissaria		3
Iridopsis larvaria		6
Iridopsis vellivolata		1
Itame pustularia		21
Lambdina fervidaria		1
Lambdina fiscellaria		36
Lomographa vestaliata		13
Lytrosis unitaria		8
Macaria aemultaria		3
Macaria nr. *bicolorata*	confirm ID; *M. bicolorata* is a rare moth in CT	1
Macaria bisignata		113
Macaria distribuaria		2
Macaria fissinotata		3
Macaria fissinotata/pinistrobata		1
Macaria minorata		24
Macaria multilineata		1
Macaria pinistrobata		98
Macaria signaria?	identification questionable	16
Melanolophia canadaria		14
Melanolophia signaria		2
Mesoleuca ruficilliata		1
Metarranthis angularia		1
Metarranthis duaria		4
Metarranthis hypochraria		1
*Metarranthis n.sp.(*near *duaria)*		1
Metarranthis refracteria		7
Metarranthis apiciaria	Globally rare; State Endangered	4
Nematocampa resistaria		6
Nemoria bistriairia		6
Nemoria mimosaria		8
Nemoria rubrifrontaria	uncommon in Connecticut; and regionally scarce	5
Nepytia "pellucidaria"		42
Nepytia canosaria		7
Orthonama centrostrigaria		2
Orthonama obstipata		8
Pasiphila rectangulata		10
Patalyne olyznaria		3
Pero honestaria		2
Pero hubneraria		24
Pero morrisonaria		8
Pero sp.		1

FAMILY Genus, and Species	Comments	Number Trapped
Plagodis alcoolaria		8
Plagodis fervidaria		3
Plagodis serinaria		3
Plagodis sp.		1
Pleuroprucha insulsaria		1
Probole alienaria		7
Probole amicaria	probably same as *alienaria*	6
Prochoerodes lineola		71
Protoboarmia porcelaria		37
Scopula inductata		3
Scopula limboundaria		20
Selenia kentaria		1
Synchlora aerata		5
Tacparia atropunctata		11
Tacperia detersata		1
Tetracis cachexiata		13
Tetracis crocallata		1
Thera contracta		1
Xanthorhoe ferrugata		3
Xanthorhoe lacustrata		2
Xanthorhoe sp.		1
Xanthotype urticaria		6
FAMILY LASIOCAMPIDAE		
Malacosoma americana		75
Malacosoma distria		170
Phyllodesma americana		20
Tolype laricis		99
Tolype velleda		5
FAMILY LIMACODIDAE		
Adoneta spinuloides		1
Apoda biguttata		2
Euclea delphinii		4
Parasa chloris		2
Prolimacodes badia		3
Tortricidia pallida		3
Tortricidia testacea		2
FAMILY LYMANTRIIDAE		
Dasychira cinnamomea		1
Dasychira obliquata		13
Dasychira obliquata?		1
Dasychira plagiata/pinicola		1
Lymantia dispar		6
Orgyia definita		9

FAMILY Genus, and Species	Comments	Number Trapped
Orgyia leucostigma		26
FAMILY MEGALOPYGIDAE		
Megalopyge crispata		35
FAMILY MIMALLONIDAE		
Lacosoma chiridota		5
FAMILY NOCTUIDAE		
Abagrotis alternata		7
Abagrotis cupida	Very uncommon moth	5
Abagrotis cupida?		2
Abagrotis magnicupida	Uncommon and local moth in Connecticut	1?
Abagrotis sp.		1
Abrostola urentis		2
Acronicta afflicta		1
Acronicta americana		1
Acronicta clarescens		1
Acronicta fragilis	Very rare in eastern Connecticut	1
Acronicta haesitata		9
Acronicta hasta		1
Acronicta increta		12
Acronicta laetifica		1
Acronicta modica		4
Acronicta oblinita		1
Acronicta ovata		3
Acronicta retardata		1
Acronicta sperata		20
Acronicta superans		1
Acronicta sp.		3
Agnorisma badinodis		15
Agrapha oxygramma		1
Agriopodes fallax		2
Agrotis ipsilon		8
Agrotis venerabilis		16
Agrotis volubilis		1
Aletia oxygala		4
Allagrapha aerea		3
Amolita fessa		4
Amolita fessa?		1
Amolita roseola		14
Amphipoea americana		21
Amphipoea velata		5
Amphipyra pyramidoides		3
Anagrapha falcifera		5

FAMILY Genus, and Species	Comments	Number Trapped
Anicla illapsa		34
Anomis commoda		1
Anorthodes tarda		2
Apamea burgessi	State-listed species	2
Apamea devastator		2
Apamea dubitans		1
Apamea helva		2
Apamea lignicolora		3
Apamea sp.		1
Apamea vulgaris		1
Arachnara oblonga		4
Autographa praeationis		2
Bagisara rectifascia	Uncommon and very local moth in Connecticut	6
Baileya ophthalmica		4
Balsa tristrigella		2
Bleptina caradrinalis		100
Caenurgina crassiuscula		143
Caenurgina erechtea		1
Callipistria cordata		3
Callipistria mollissima		7
Calyptra canadensis		3
Capsis curvata		1
Catocala amatrix		1
Catocala amica		1
Catocala andromedae		1
Catocala antinympha		11
Catocala cara		1
Catocala coccinata		2
Catocala crataegi/mira		1
Catocala dejecta		1
Catocala gracilis		2
Catocala gracilis/sordida		1
Catocala grynea		1
Catocala habilis		3
Catocala ilia		5
Catocala lineella		5
Catocala micronympha		2
Catocala obscura		2
Catocala palaeogama		1
Catocala praeclara		1
Catocala relicta		1
Catocala reticta		6
Catocala serena		3
Catocala sordida		1
Catocala ultronia		8
Catocala unijuga		1

FAMILY Genus, and Species	Comments	Number Trapped
Chrysonympha formosa		2
Chytolita morbidalis		15
Chytolita petrealis		2
Chytonix palliatricula		22
Colocasia propinquilinea		14
Condica videns		8
Cosmia calami		10
Crambodes talidiformis		1
Dargida diffusa		5
Deltote bellicula		37
Derrima stellata	Uncommon to rare, very local; assoc. with sandplains	2
Drasteria grandirena		3
Elaphria festivoides		7
Elaphria festivoides complex		13
Epiglaea apiata		1
Eucirroedia pampina		5
Eucoptocnemis fimbraris	State-listed species	1
Euplexia benesimilis		11
Eurois occulta	Uncommon in Connecticut	2
Euxoa messoria?		1
Euxoa tessellata		5
Euxoa valleripennis		12
Feltia geniculata		16
Feltia herilis		59
Feltia jaculifera		58
Feltia subgothica		10
Feltia tricosa		11
Feltia sp.		34
Gabara subnivosella		26
Galgula partita		2
Heptagrotis phyllophora		45
Homorthodes furfurata		11
Hypena baltimoralis		3
Hypena manalis		1
Hypena palparia		3
Hypena scabra		2
Hypenodes fractilinea		2
Hyperstrotia secta		1
Hyperstrotia villificans		46
Hyppa sp.		1
Hyppa xyliniodes		1
Idia aemula		30
Idia americalis		61
Idia denticulalis		1

FAMILY Genus, and Species	Comments	Number Trapped
Idia dimenduendis		52
Idia forbesi		6
Idia n. sp. nr. *laurenti*	Evidently rare, undescribed species	1
Idia lubricalis		5
Idia rotundalis		94
Idia scobialis		1
Idia sp.		1
Lacanobia grandis		3
Lacinipolia lorea		2
Lacinipolia meditata		21
Lacinipolia renigera		37
Lascoria ambigualis		1
Ledaea perditalis		1
Leucania commoides		33
Leucania insueta		10
Leucania lapidaria		7
Leucania linda		1
Leucania linda?		2
Leucania phragmitidicola		4
Leucania pseudargyria		15
Leucania ursula		13
Leucania sp.		2
Leuconycta diphteroides		2
Machrochilo absorptalis		9
Macrochilo hypocritalis		11
Macrochilo litophora		4
Macrochilo orciferalis		114
Maliattha synochitis		51
Marathyssa inficita		1
Meganola minuscula		1
Meganola phylla		8
Meganola sp.		1
Meropleon diversicolor		2
Metalectra discalis		1
Metalectra quadrisignata		1
Morrisonia confusa		1
Nedra ramosula		1
Nephalodes minians		94
Noctua pronuba		53
Ochrapleura implecta		5
Ogdoconta cinereola		2
Oligia fractilinea		2
Oligia fractilinea?		1
Oligia illocata		1
Orthodes crenulata		4
Orthodes cynica		71

FAMILY Genus, and Species	Comments	Number Trapped
Palthis angulalis		2
Palthis asopialis		9
Pangrapta decoralis		75
Panopoda carneicosta		1
Panopoda rufimargo		15
Panthea furcilla		17
Papaipema baptisiae		2
Papaipema inquaesita		3
Papaipema lysimachiae		26
Papaipema ptersii		9
Papaipema sp.		1
Phalaenostola laurentioides		125
Phalaenostola metonalis		30
Phlaenophana paramusalis		2
Phlogophora irus		1
Phlogophora periculosa		2
Polia detracta		81
Polia goodelli		4
Polia imbrifera		3
Polia latex		1
Polia purpurissata		1
Protdeltote albidula		2
Protodeltote muscosula		2
Protolampra brunneicollis		6
Protorthodes oviduca		31
Proxenus miranda		7
Pseudaletia pseudargyria		1
Pseudaletia unipuncta		8
Pseudeustrotia carneola		9
Pseudorthodes vecors		15
Raphia frater		1
Renia discoloralis		15
Renia factiosalis		17
Renia flavipunctalis		59
Renia nemoralis		3
Renia nemoralis?		13
Renia sobrialis		20
Rivula propinquinalis		5
Schinia arcigera		3
Schinia lynx		1
Schinia nundina		2
Schinia obscurata	Uncommon and local	3
Schinia septentrionalis	Rare moth; declining across its range	1
Schinia trifascia		1
Scolecocampa liburna		6
Scoliopteryx libatrix		3

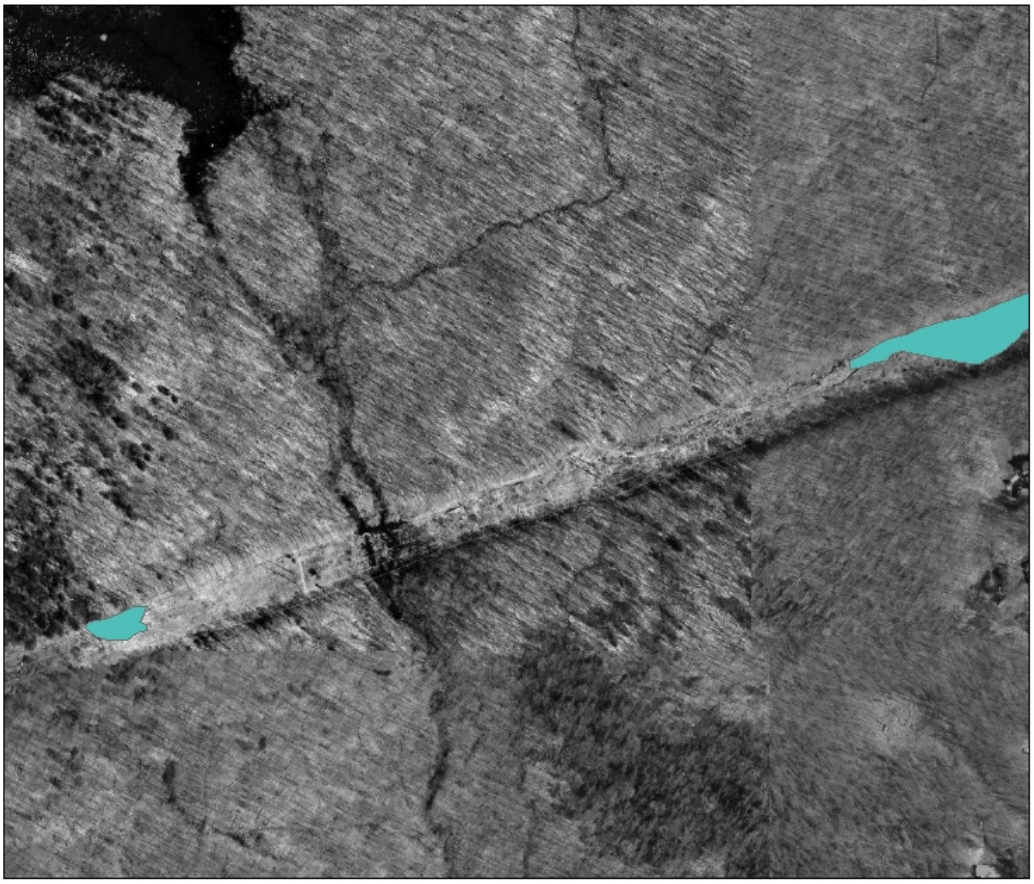
FAMILY Genus, and Species	Comments	Number Trapped
Sideris congermana		1
Sideris rosea		1
Spaelotis clandestina		1
Spiramater lutra		10
Spodoptera ornithogalli		2
Sunira bicolorago		3
Sutyna privata		15
Tarachidia candefacta		6
Tarachidia erastrioides		2
Tricholita signata		18
Ulolonche culea		98
Ulolonche modesta		84
Xestia adela		6
Xestia badicollis		17
Xestia badicollis/elimata		14
Xestia bicarnea		13
Xestia dilucida		62
Xestia dolosa		4
Xestia elimata		2
Xestia normaniana		9
Xestia praevia		3
Xestia smithii		89
Xestia sp.		2
Zale minerea		1
Zanclognatha cruralis		4
Zanclognatha jacchusalis	in sense of Covell	11
Zanclognatha laevigata		3
Zanclognatha lituralis		6
Zanclognatha ochreipennis	in sense of Covell	14
Zanclognatha protumnusalis	including *dentatus*	7
Zanclognatha sp.		1
FAMILY NOTODONTIDAE		
Clostera strigosus		1
Datana angusii		2
Datana contracta		1
Datana drexelii		17
Datana intergerrima		1
Datana ministra		2
Gluphisia septentrionis		10
Heterocampa biundata		3
Heterocampa guttivitta		20
Heterocampa obliqua		10
Hyperaeshra georgica		11
Lochmaeus bilineata		2

FAMILY Genus, and Species	Comments	Number Trapped
Lochmaeus manteo		7
Macrourocampa marthesia		31
Natada gibbosa		37
Nerice bidentata		1
Oligocentria lignicolor		1
Oligocentria semirufescens		5
Peridea angulosa		42
Peridea ferruginea		5
Phoesia rimosa		8
Schizura ipomaeae		4
Schizura leptinoides		1
Schizura unicornis		3
Symmrista canicosta/albifrons		13
FAMILY SATURNIIDAE		
Actia luna		2
Anisota senatoria	Identification uncertain	9
Anisota virginiensis		4
Antherea polyphemus		3
Apatelodes torrefacta		4
Automeris io		13
Dryocampa rubicunda		16
FAMILY SESIIDAE		
Synanthedon acerni		1
FAMILY SPHINGIDAE		
Ceratomia undulosa		1
Cressonia juglandis		4
Darapsa myron		2
Deidamia inscripta		3
Hyles lineata		1
Lapara bombycoides		25
Paonias astylus		1
Paonias exacaetus		41
Paonias myops		3
Sphinx gordius		19
FAMILY URANIIDAE		
Calledapteryx dryopterata		1
FAMILY ZYGAENIDAE		
Pyromorpha dimidiata		5
Total		**5787**

APPENDIX B - HABITAT POLYGONS (MAPPED PLANT COMMUNITIES). The following 17 maps, arranged west to east, show the extent of significant larval hostplant stands:

Sawmill Brook Lane (Mansfield) (centroid: 41°45'5.88"N 72°12'33.11"W)
Sawmill Brook Lane (Mansfield) (centroid: 41°45'11.95"N 72°12'8.80"W)
Bassett's Bridge Road (Mansfield) (centroid: 41°45'56.36"N 72° 9'54.15"W)
Rt 6 Chaplin West (Chaplin) (centroid: 41°45'56.04"N 72° 8'52.83"W)
Rt 6 Chaplin East (Chaplin) (centroid: 41°45'51.10"N 72° 8'4.94"W)
Rt 6 Chaplin East (Chaplin) (centroid: 41°45'43.42"N 72° 7'38.60"W)
Brook Road West (Chaplin) (centroid: 41°45'43.61"N 72° 6'50.78"W)
Brook Road West (Chaplin) (centroid: 41°45'53.82"N 72° 6'7.14"W)
Rt 97 West Hampton (Hampton) (centroid: 41°45'56.62"N 72° 4'40.75"W)
Lake Road East (Killingly) (centroid: 41°51'28.61"N 71°54'50.05"W)
Lake Road North (Killingly) (centroid: 41°51'58.71"N 71°54'49.97"W)
River Road East (Putnam) - Louisa Viens Drive (Killingly) (centroid: 41°52'36.22"N 71°54'7.36"W)
Tracy Road Substation (Putnam - Killingly) (centroid: 41°52'47.39"N 71°53'33.08"W)
Park Road East (Putnam) (centroid: 41°53'19.34"N 71°53'0.04"W)
Quaddick Farm Road West (Thompson) – Munyan Road (Thompson-Putnam) (centroid
41°56'0.11"N 71°49'40.77"W)
Elmwood Hill Road East (Thompson) (centroid 41°56'20.43"N 71°48'46.09"W)
Elmwood Hill Road East (Thompson) (centroid 41°56'31.96"N 71°48'20.58"W)

Sawmill Brook Lane
Mansfield



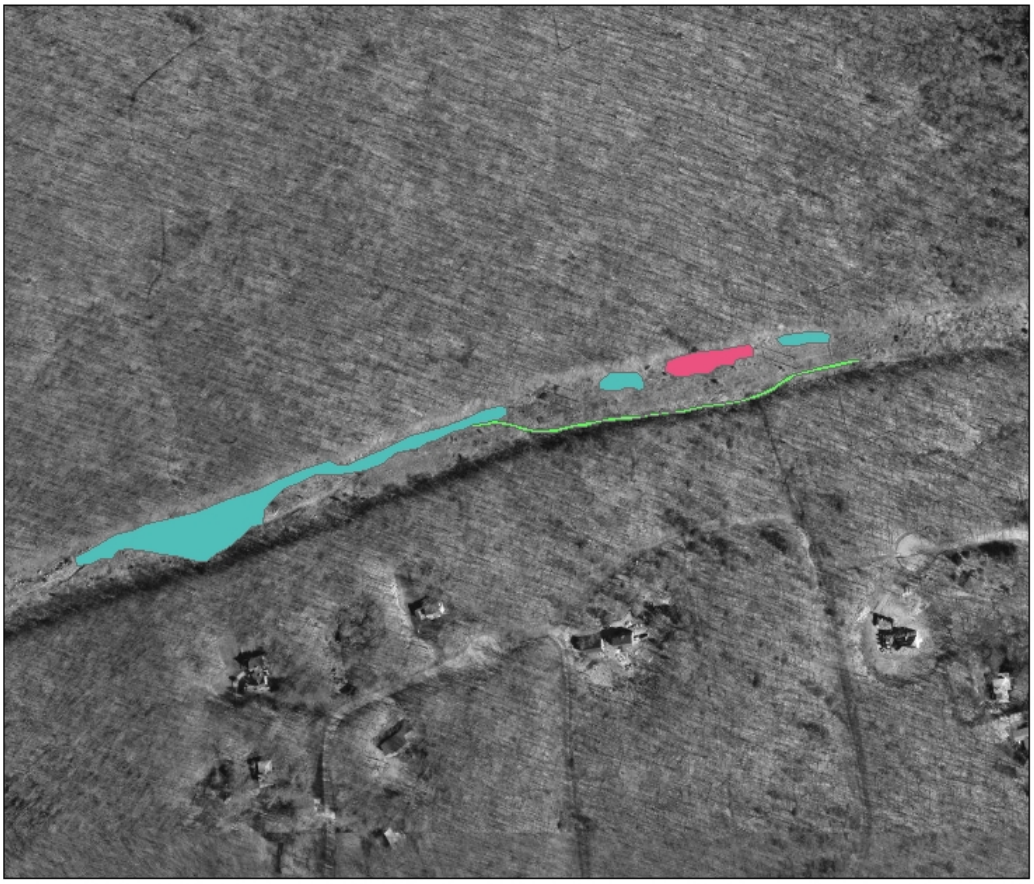
0 160 320 640 960 1,280 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Sawmill Brook Lane
Mansfield



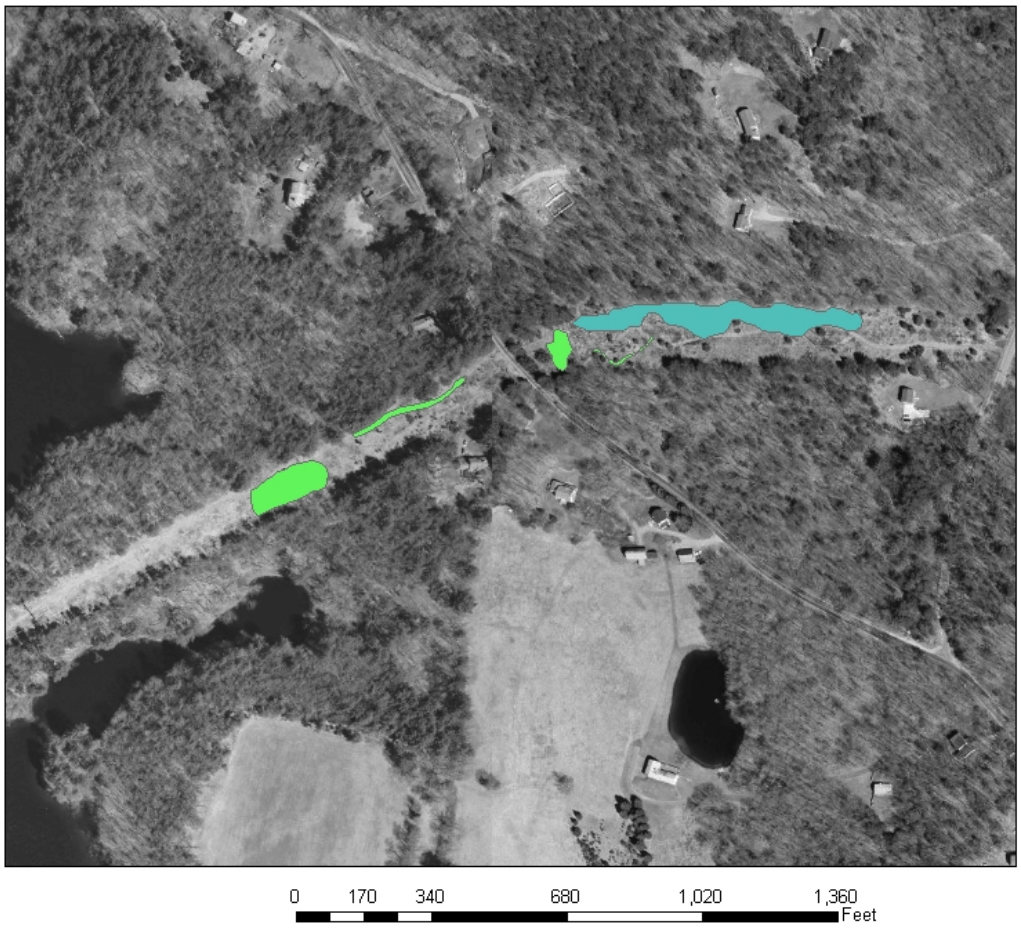
0 160 320 640 960 1,280 Feet

Habitat Types

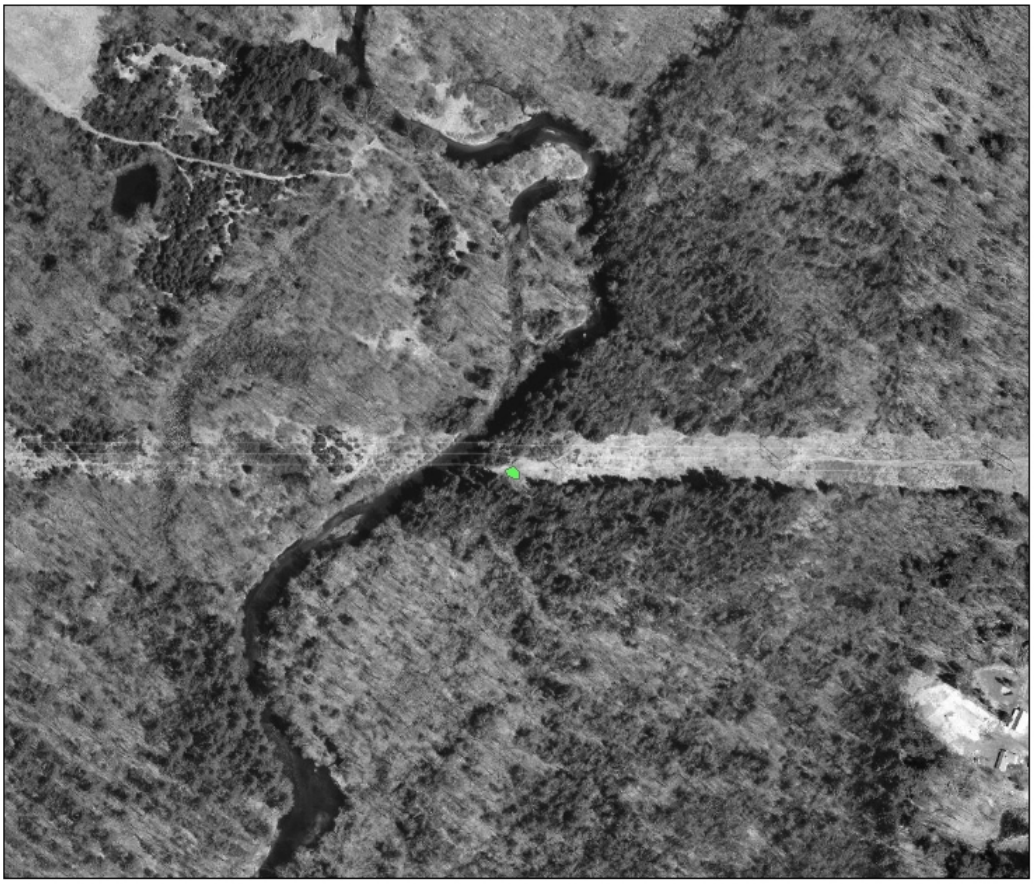
- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Bassett's Bridge Road
Mansfield



Rt 6 Chaplin West
Chaplin



0 175 350 700 1,050 1,400 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Rt 6 Chaplin East
Chaplin

0 225 450 900 1,350 1,800 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Rt 6 Chaplin East
Chaplin

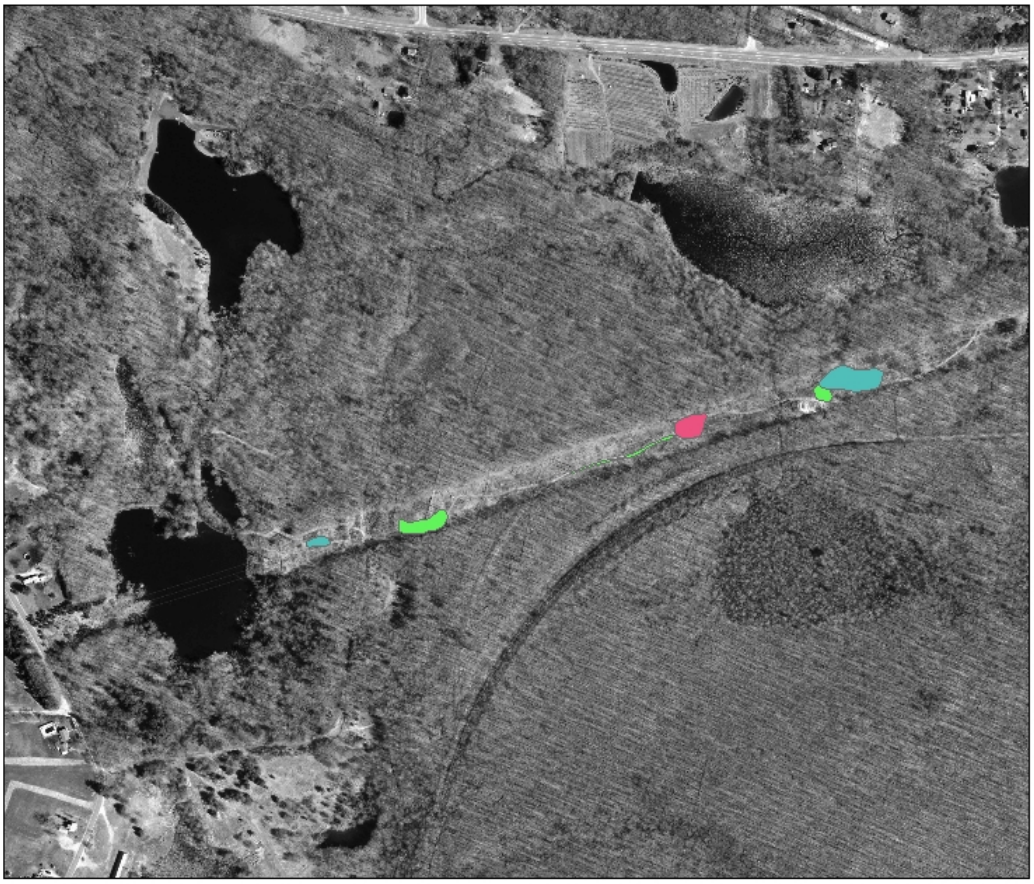
0 180 360 720 1,080 1,440 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Brook Road West
Chaplin



0 312.5 625 1,250 1,875 2,500 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Brook Road West
Chaplin

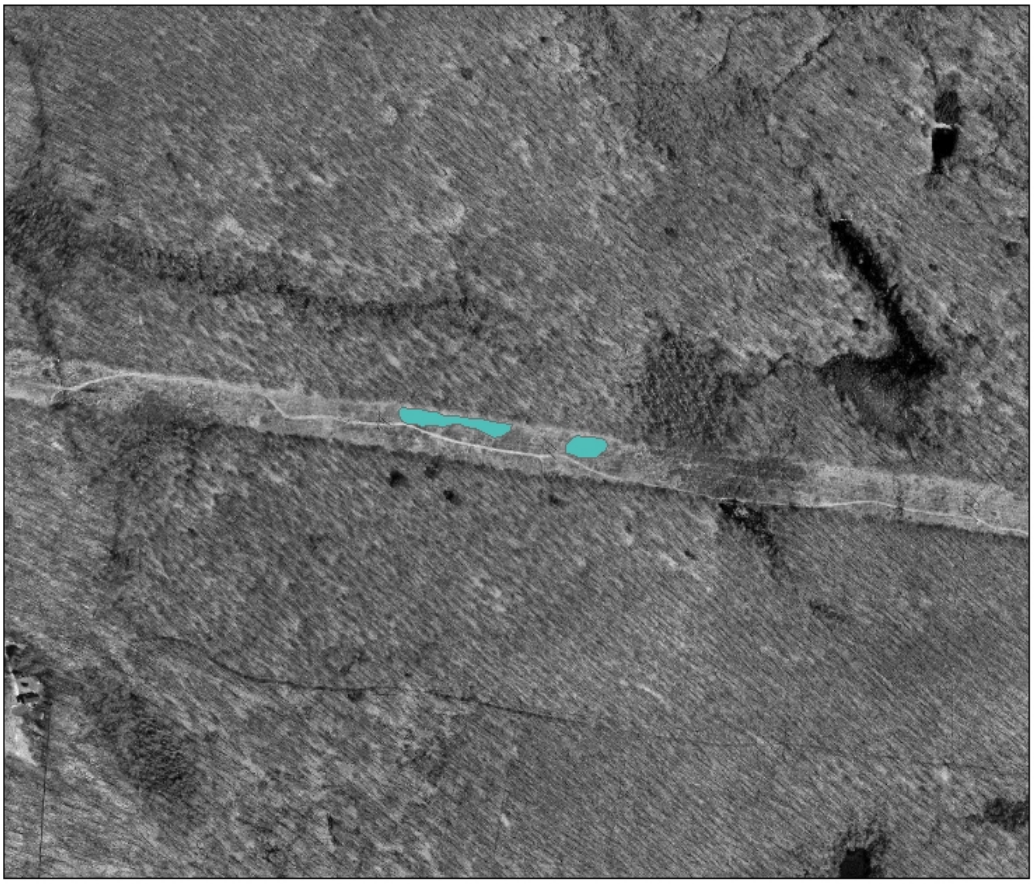
0 312.5 625 1,250 1,875 2,500 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Rt 97 West
Hampton



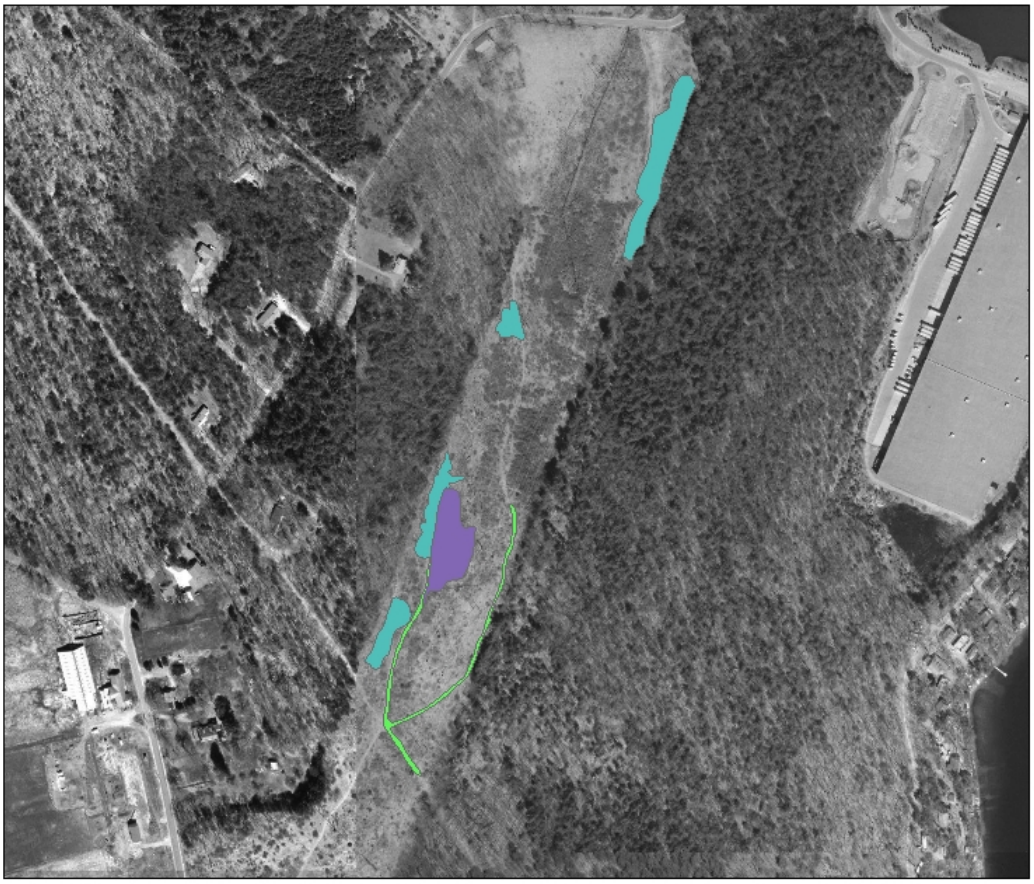
0 240 480 960 1,440 1,920 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Lake Road East
Killingly



0 185 370 740 1,110 1,480 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

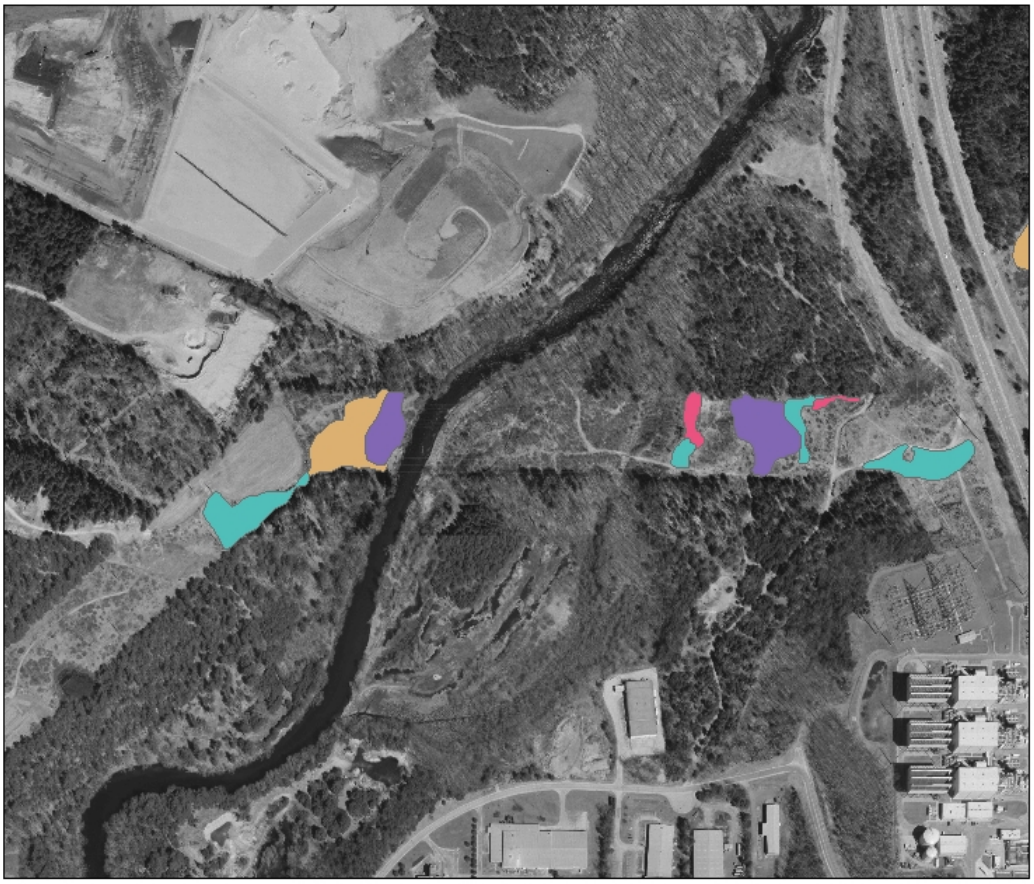
Lake Road North
Killingly

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

River Road East, Putnum
Louisa Viens Drive, Killingly



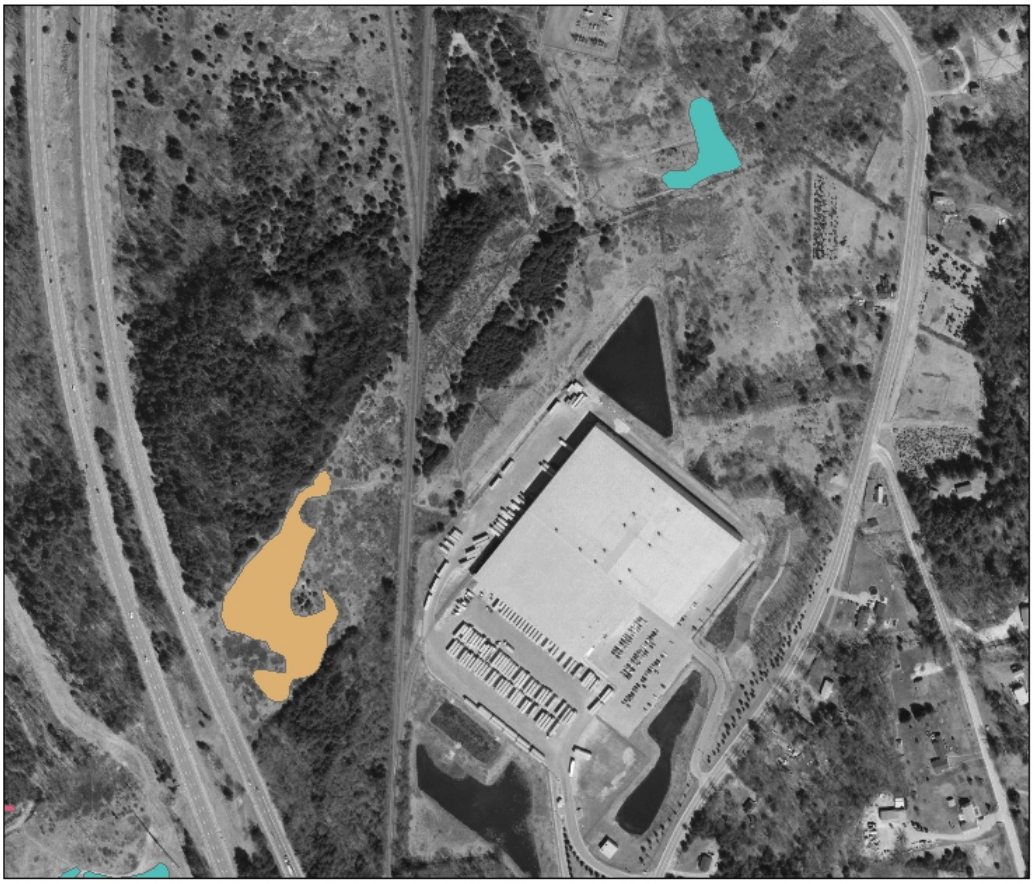
0 330 660 1,320 1,980 2,640 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Tracy Road Substation
Putnum/Killingly



0 245 490 980 1,470 1,960 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Park Road East
Putnum

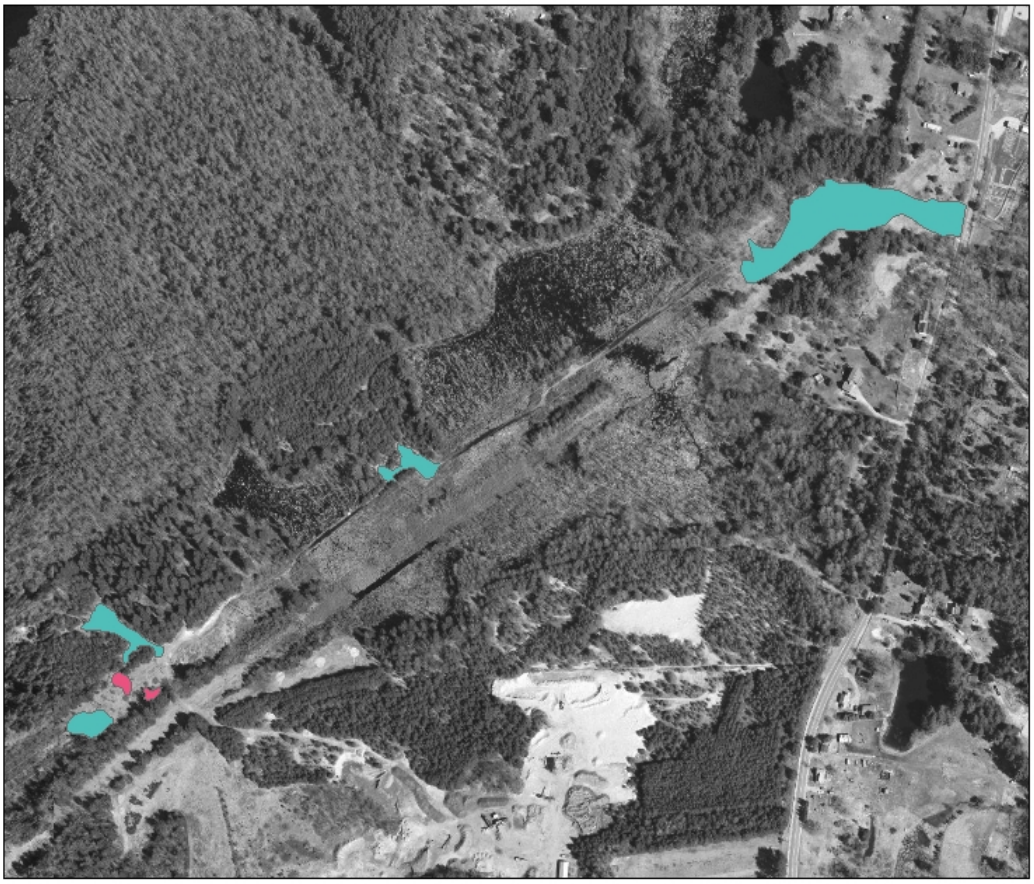
0 245 490 980 1,470 1,960 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Quaddick Farm Road West, Thompson
Munyan Road, Thompson/Putnum



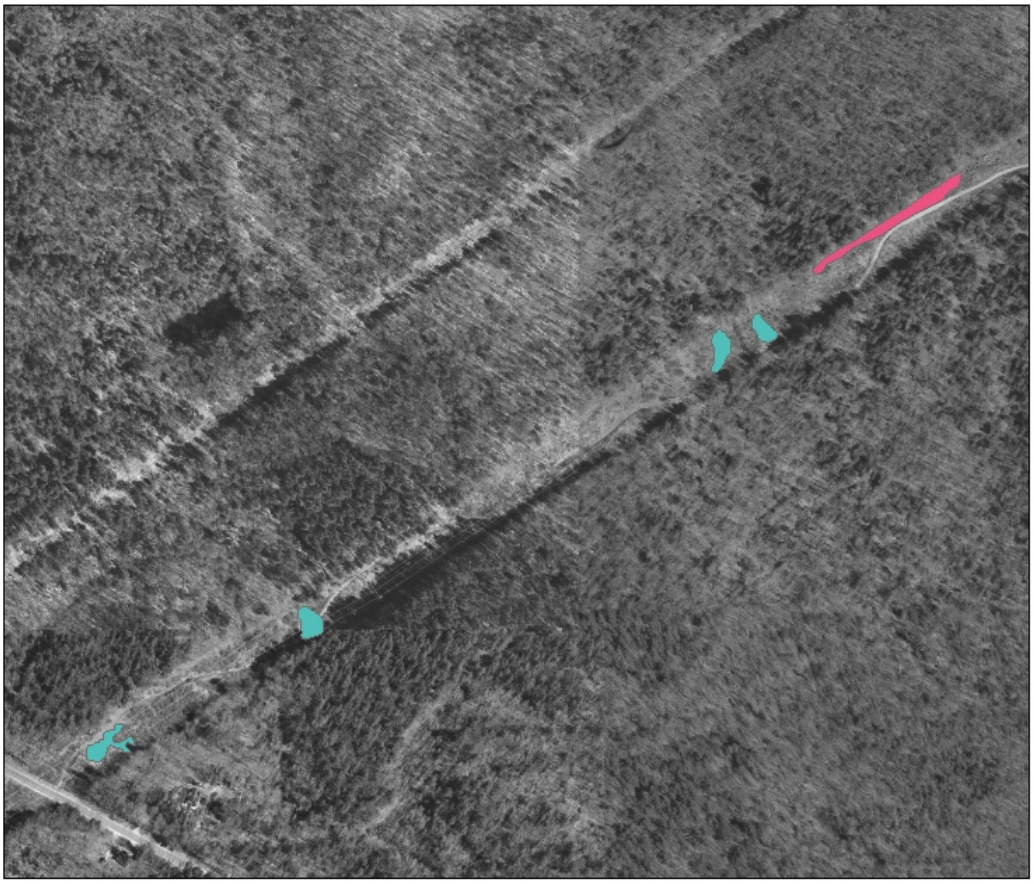
0 250 500 1,000 1,500 2,000 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Elmwood Hill Road East
Thompson



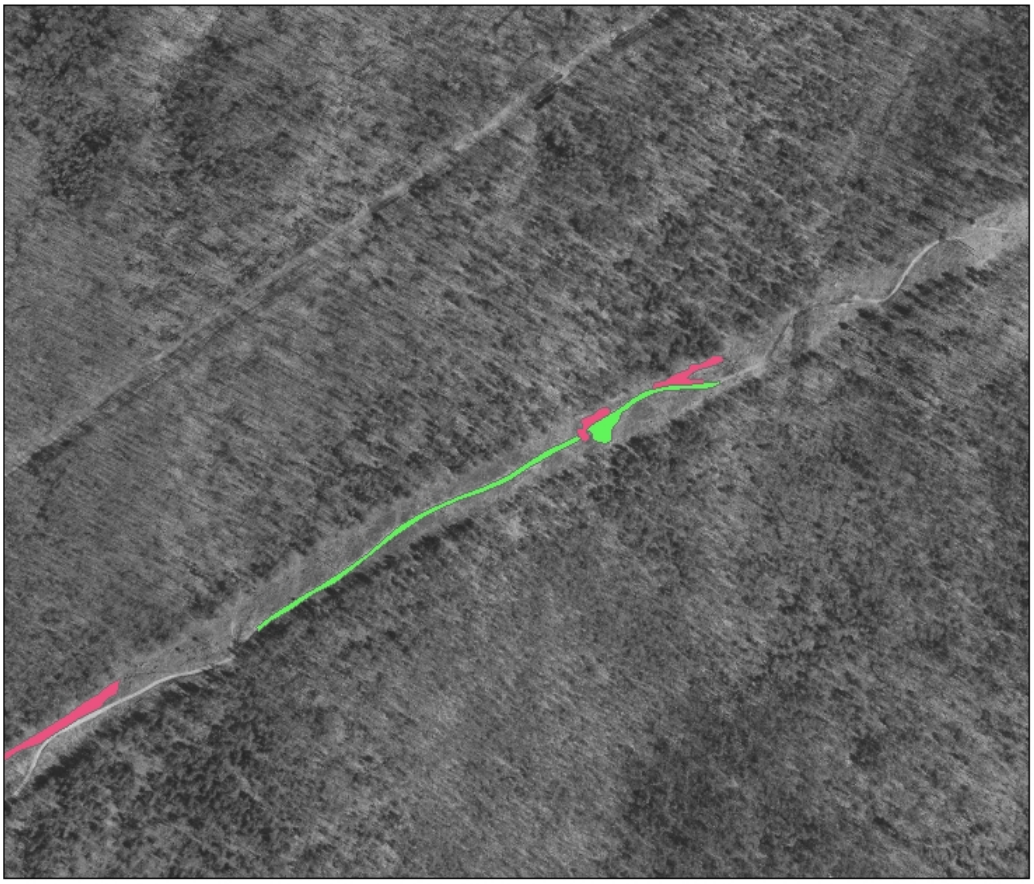
0 250 500 1,000 1,500 2,000 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

Elmwood Hill Road East
Thompson



0 250 500 1,000 1,500 2,000 Feet

Habitat Types

- Bluestem
- LowBush Blueberry
- Mosaic
- Scrub Oak
- Wild Indigo

N

APPENDIX C -

Abstract for Wagner, D. L. and J. S. Ascher. A Powerline Right-of-Way as Habitat for Wild Bees in Southern New England (Hymenoptera: Apoidea: Anthophila) to be submitted to the Annals of the Entomological Society of America

Abstract: Bees were sampled and identified from 19 sites along a transmission line rights-of-way in southeastern Connecticut over a two-year period beginning in June 2005. The 3899 bees, taken in bee bowls (n=2167) and with effort-based net samples (n=1732), included 163 species representing 31 genera and all 6 Nearctic families—more than 20% of the eastern North American bee fauna. One hundred and ten species were represented in bee bowls samples and 133 species in the net samples. Chao richness estimates suggest total faunas of 152, 180, and 204 bee species for the bee bowl, net, and net + bee bowl combined samples, respectively. Seven bees accounted for 50% of all sampled individuals: *Augochlorella aurata* (=*striata*) (Halictidae), *Lasioglossum rohweri* (Halictidae), *Ceratina calcarata* or *dupla* females (Apidae), *Ceratina strenua* (Apidae), *Halictus ligatus* (Halictidae), *Bombus impatiens* (Apidae), and *Apis mellifera* (Apidae). *Bombus affinis*, *B. ashtoni, B. pensylvanicus,* and *B. terricola*--all believed to have been widespread in Connecticut just a decade ago--were not among the 343 *Bombus* individuals representing 8 species taken. One globally rare bee, *Epeoloides pilosula*, formerly thought to be possibly extinct in the United States was recovered from a bee bowl sample. Two rarely collected bees, *Melitta melittoides* and *Colletes productus*, were associated with maleberry (*Lyonia ligustrina*) flowers. Our results underscore the importance of transmission line rights-of-ways to bees, including rare species, in addition to other early successional plants and wildlife in the largely reforested landscapes of the Northeast.

Key Words: early successional communities

EX. 3: Inventory of Vernal Pools and Amphibian Breeding Habitats along the Connecticut Portions of Interstate Reliability Project

INVENTORY OF VERNAL POOLS AND AMPHIBIAN BREEDING HABITATS

ALONG THE CONNECTICUT PORTION OF

THE INTERSTATE RELIABILITY PROJECT

Prepared For:

The Connecticut Light and Power Company

P.O. Box 270
Hartford, Connecticut 06141

Prepared By:

AECOM Environment
10 Orms Street, Suite 405
Providence, Rhode Island 02904

September 2011

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2.0 Vernal Pool and Amphibian Breeding Habitat Definitions 2
3.0 Field Investigations 5
4.0 Results 11

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Table 1: Vernal Pool Habitat Identified Along the Project Corridor

Table 2: Amphibian Breeding Habitat Identified Along the Project Corridor

Table 3: Vernal Pool and Amphibian Breeding Habitat by Municipality

List of Attachments:

Attachment A 2008 Vernal Pool/Amphibian Breeding Habitat Data Forms

Attachment B 2008 Vernal Pool/Amphibian Breeding Habitat Representative Photographs

Attachment C 2011 Vernal Pool/Amphibian Breeding Habitat Data Forms

Attachment D 2011 Vernal Pool/Amphibian Breeding Habitat Representative Photographs

1.0 Introduction

This report provides a summary of vernal pool and amphibian breeding habitat investigations conducted along the Connecticut portion of the Interstate Reliability Project (Project). The Project is a series of proposed improvements to the electrical transmission systems in Connecticut, Rhode Island, and Massachusetts that will improve the bulk power electric transmission system in Southern New England and achieve future compliance with mandatory federal and regional reliability standards.

The Connecticut Light and Power Company (CL&P) will construct, own, and operate the proposed Project facilities located in Connecticut. The proposed facilities in Rhode Island will be owned by the Narragansett Electric Company, and those in Massachusetts will be owned by The New England Power Company. The Narragansett Electric Company and The New England Power Company are wholly-owned subsidiaries of National Grid USA (National Grid).

CL&P and National Grid are proposing the construction of the new 345-kilovolt (kV) transmission lines and associated facilities, which would extend between Lebanon, Connecticut and Millbury, Massachusetts. The Connecticut portion of the Project would consist of the development of new 345-kV lines extending for approximately 36.8 miles east-northeast from CL&P's existing Card Street Substation in Lebanon, to CL&P's existing Lake Road Switching Station in Killingly, and then to the Connecticut/Rhode Island State Border in Thompson.

This report provides the results of vernal pool and amphibian breeding habitat studies conducted along the Connecticut portion of the Project. These studies are as required pursuant to the Connecticut Siting Council's (Council) *Application Guidelines for Electric and Fuel Transmission Line Facility* (April 2010) and also provide data in support of CL&P's applications for other state and federal environmental permits.

As illustrated on the aerial maps in Volumes 9 and 11 of CL&P's Application to the Council, the new 345-kV lines would be aligned along CL&P right-of-ways (ROWs) that are presently occupied by existing 345-kV transmission lines, as well as 115-kV lines and distribution lines in some areas. The 36.8-mile route would traverse the

municipalities of Lebanon, Columbia, Coventry, Mansfield, Chaplin, Hampton, Brooklyn, Pomfret, Killingly, Putnam and Thompson.

Except for 0.9 mile in the Town of Mansfield and 0.5 mile in the Town of Chaplin, where the existing ROW is only 150 feet wide (referred to as the "Mansfield Hollow area"), the existing CL&P ROWs are wide enough (typically 300 feet) to accommodate the new 345-kV lines. To accommodate the new 345-kV line in the Mansfield Hollow area, CL&P is investigating the acquisition of additional easements (55 feet along the 0.9-mile ROW segment and 85 feet along the 0.5-mile segment), as well as other design options.

On behalf of CL&P, AECOM Environment (AECOM) conducted vernal pool and amphibian breeding habitat surveys of the CL&P ROWs along which the proposed 345-kV lines would be located. As part of the surveys, AECOM surveyed the entire width of the ROWs, including the areas proposed for the location of the new 345-kV lines and the areas in the vicinity of the existing transmission lines, where CL&P performs routine vegetation management to promote scrub-shrub habitats consistent with overhead transmission line operation.

These field investigations were conducted in the spring of 2008 and again in the spring of 2011. This report discusses the field methods used to identify vernal pools and amphibian breeding habitat and summarizes the findings of the surveys.

2.0 Vernal Pool and Amphibian Breeding Habitat Definitions

State and federal agencies apply slightly different definitions to describe vernal pools and amphibian breeding habitat. The following summarizes the definitions used by both Connecticut and the U.S. Army Corps of Engineers (USACE).

The Connecticut Department of Energy and Environmental Protection (CTDEEP) defines vernal pools as small bodies of standing fresh water found throughout the spring that typically result from various combinations of snowmelt, precipitation, and high water tables associated with the spring season. These depressions can be natural or man-made (CTDEEP, 2011). In most years, these areas become completely dry, losing water through infiltration and evapotranspiration. Vernal pools vary in many aspects

including appearance, water source, hydroperiod, water quality and surrounding habitats. Field investigations must coincide with the amphibian breeding and/or larval development time periods to determine if an area is functioning as a vernal pool.

In Connecticut, to meet the definition of a vernal pool, the following four criteria must be met:

- Contains water for approximately two months during the growing season;
- Occurs within a confined depression or basin that lacks a permanent outlet stream;
- Lacks any fish populations; and
- Dries out most years, usually by late summer.

Many organisms critically rely upon vernal pool habitat for reproductive success. These species are referred to as obligate vernal pool species. According to the CTDEEP (2011), obligate vernal pool species that may have ranges within the Project area include the following:

- wood frog *(Lithobates sylvatica)*
- Eastern spadefoot toad *(Scaphiopus holbrookii)*
- spotted salamander *(Ambystoma maculatum)*
- Jefferson salamander *(Ambystoma jeffersonianum)*
- marbled salamander *(Ambystoma opacum)*
- fairy shrimp *(Branchiopoda anostraca)*

The Eastern spadefoot toad and Jefferson salamander are listed by Connecticut as State-endangered and species of special concern, respectively. During the vernal pool/amphibian habitat surveys, neither of these species was observed on the Project ROWs. In addition, Project specific consultations with the Connecticut Natural Diversity Database (CT NDDB) did not result in the identification of the potential occurrence of any rare amphibians in relation to the Project.

Facultative vernal pool species are fauna that utilize, but do not necessarily require, vernal pools for reproductive success. Examples of facultative species include spring peeper (*Pseudacris crucifer*), spotted turtle (*Clemmys guttata*), red-spotted newt (*Notophthalmus viridescens viridescens*), green frog (*Rana calimtans*) and bull frog (*Rana catesbeiana*). Facultative species such as those mentioned above can utilize vernal pool habitats. However, these species can also breed successfully in the margins of permanent water bodies including streams, rivers, and lakes.

The USACE's Programmatic General Permit (PGP) for the State of Connecticut defines vernal pools as: an often temporary body of water occurring in a shallow depression of natural or human origin that fills during spring rains and snow melt and typically dries up during summer months. Vernal pools support populations of species specially adapted to reproducing in these habitats. Such species may include wood frogs, mole salamanders (*Ambystoma* sp.), fairy shrimp, fingernail clams (*Sphaeriidae*), and other amphibians, reptiles and invertebrates. Vernal pools lack breeding populations of fish. It is noted in the PGP that the USACE will determine on a case-by-case basis which vernal pools are within their jurisdiction and that all vernal pools are subject to the jurisdiction of the CTDEEP under Connecticut Water Quality Standards.

Wetland areas associated with the Project ROWs were surveyed to identify the presence or absence of obligate vernal pool species (presence/absence surveys). Where obligate species were observed, the area was further investigated to identify whether the state and federal vernal pool criteria had been satisfied. Observed facultative species were noted on the Vernal Pool Data Forms (Attachments A and C), but these species were not used to identify an area as a vernal pool. If an area had facultative species only, it was classified as amphibian breeding habitat but not a vernal pool.

For the purposes of the ROW investigations and this report, a vernal pool was defined as an area that held obligate species in the 2008 and/or 2011 breeding season and that met the majority of the state and federal vernal pool criteria discussed above. Given access constraints to off ROW areas and temporally limited observations, it was not possible to be sure every aspect of the criteria was being met in all cases.

"Amphibian breeding habitat" refers to areas in which signs of amphibian breeding (obligate and/or facultative species) have been observed, but the overall habitat of the area did not meet the specific vernal pool criteria. For example, floodplain areas adjacent to perennial watercourses that were observed to provide amphibian breeding habitat were not identified as vernal pool habitat because of the probable presence of adult fish populations. In addition, obligate vernal pool species are sometimes observed breeding in perennial water bodies. Areas where this occurred were likewise not identified as a vernal pool but were designated as amphibian breeding habitat. In cases where large wetland systems exhibited expansive flooded areas within which obligate vernal pool species were documented as breeding, the breeding evidence was recorded and, if appropriate based upon the observed vernal pool criteria, the areas were identified as a vernal pool. These types of areas are typically referred to as "cryptic vernal pools" and, as their name suggests, may be easily overlooked. Such determinations were made by field biologists during the 2008 and 2011 surveys.

3.0 Field Investigations

AECOM conducted the vernal pool/amphibian breeding habitat surveys in March and April of 2008 and in April and May of 2011. These survey periods correspond to the appropriate times of the year to identify areas that may function as vernal pools and/or amphibian breeding habitat based on the presence of egg masses and developing larvae.[1]

All wetland areas associated with the Project corridor were investigated to determine if breeding amphibians, both obligate and facultative, were present in an effort to identify vernal pools and/or amphibian breeding habitat. To facilitate the surveys, biologists were provided with Project specific wetland mapping, dip nets and digital cameras.

The surveys were done after the first significant rain events in the spring, when evening low temperatures remained in the 40s (^{o} Fahrenheit). These weather conditions facilitate inward migration of amphibians to the pools for the purpose of breeding. Biologists conducted visual surveys and used dip nets to sweep the water column to assist in

[1] Note that the 2011 field surveys commenced later than the 2008 surveys due to the late onset of spring weather, following the severe winter of 2010-2011.

determining the presence or absence of amphibians and other vernal pool species. Choruses of breeding frogs were noted when audible.

Representative photographs of the wetlands and observed species were taken at the majority of the identified vernal pools/amphibian breeding habitats (Attachments B and D). Evidence of amphibian breeding, including but not limited to wood frog chorusing, mole salamander spermatophores, egg masses and amphibian larvae, was recorded on Vernal Pool Data Forms that are included in this report as Attachments A and C. Additional data recorded on the data forms included the approximate size and depth of the observed breeding pool(s), substrate type and general comments, if any.

Lastly, the biologists then sketched the extent of the documented vernal pool/amphibian breeding habitat onto field mapping and/or used a Trimble global positioning system (GPS) data collection device to locate the boundaries or center of pool where possible. Field sketches and GPS data were then digitized onto updated Project mapping. Identified vernal pools and amphibian breeding habitats are presented on the mapping in Volume 11 of the Connecticut Siting Council Application.

Life history information for amphibian and reptile species observed during the course of the surveys is presented below.

Wood Frog

In Connecticut, the wood frog is among the first species to arrive at the breeding pools and begin their loud, duck like mating call. Wood frogs have been documented as breeding in open and closed canopy wetlands (Werner and Glennemeier, 1999). The timing of their movement varies annually, depending on climatic conditions but in general terms they immigrate to breeding sites in most years during late February to mid March. The large scale migration to the breeding pools generally occurs at night during the first few heavy downpours which are accompanied by warmer air temperatures.

Except for the brief period spent at breeding habitats, wood frogs are mainly terrestrial. They utilize all types of forests and woodlands, including maritime, deciduous, and coniferous (Klemens, 1993); as well as a variety of other types of habitats. During the

coldest months wood frogs hibernate under leaf litter, rotting logs, stumps, rocks, and moss. Wood frogs have perfected the cryogenic freezing process. In the winter, as much as 35-45% of the frog's body may freeze, and turn to ice. Ice crystals form beneath the skin and become interspersed among the body's skeletal muscles. During the freeze the frog's breathing, blood flow, and heartbeat cease. Freezing is made possible by specialized proteins and glucose, which prevent intracellular freezing and dehydration.

Compared to other amphibian species that utilize vernal pools for breeding in southern New England, the wood frog is one of the only species that truly can be considered obligate to vernal pools. Wood frogs successfully breed in pools with shorter hydroperiods than any other amphibian in this region, with tadpole metamorphosis often complete by mid-July. Therefore, ponds that dry by August still provide perfectly suitable breeding habitat, whereas it takes much longer for the young of most other species to complete metamorphosis.

Wood frog egg masses are often deposited near the edge of a breeding pool on the water's surface where water temperatures are typically highest. They are usually attached to submerged woody debris and/or herbaceous vegetation. Wood frog egg masses can easily be distinguished from those of the spotted salamander by the lack of an outer gelatinous sheath (see photographs in Attachments B and D).

Newly hatched larvae feed on their egg masses and associated algae, as wood frog tadpoles are microphagous filter-feeders with a largely herbivorous diet. Larger tadpoles use their specialized mouth parts to feed on algae and various microorganisms scraped from aquatic vegetation, decaying plants and some animal matter. Adult wood frogs feed on a variety of invertebrates including flies, beetles, spiders, earthworms, moth larva, slugs, snails, and annelids (Klemens, 1993).

Spotted Salamander

In Connecticut, the spotted salamander is a very common and widespread mole salamander. Collectively, the mole salamanders are a secretive group of salamanders that are primarily active at night. These animals are rarely seen except during their

nocturnal migrations to and from their breeding pools during their brief early spring breeding season. Often, spotted salamanders can be observed migrating to vernal pools in conjunction with wood frogs. Within a few days after mating, eggs are deposited in firm spherical or kidney-shaped masses (see photographs in Attachments B and D) and in most cases are attached to submerged objects such as woody debris or other organic material.

Once hatched, larvae feed predominantly on very small aquatic invertebrates. Larger individuals feed on snails, clams, oligochaete worms, small aquatic insects and their larvae and other invertebrates (Kenney and Burne, 2001). In general, zooplankton is the dietary staple of larvae of all size classes. As adults, spotted salamanders are generalized carnivores that forage in upland habitats for a variety of invertebrates including earthworms, snails, slugs, insects and larvae, spiders, and beetles (Degraaf and Yamasaki, 2001).

While breeding and larval development takes place in aquatic habitats, during most of the year, spotted salamanders reside in upland forests away from breeding pools. Adults typically reside up to 200 meters from breeding pools but have been documented moving greater distances. Spotted salamanders typically live in burrows created by small mammals such as the short-tail shrew (*Blarina brevicauda*). They appear to be habitat generalists, and have been documented in forest habitats including deciduous, coniferous and mixed forest. However, they are most abundant in mature deciduous or mixed deciduous woodlands.

Marbled Salamander

The marbled salamander is an unusual mole salamander in that in Connecticut, it is the only species that breeds in the late summer and early fall, has eggs that hatch in November after pools fill with water, and has larvae that overwinter in vernal pools. All other species breed in the spring (Klemens, 1993). Marbled salamanders tend to prefer large, undisturbed tracts of forest, although they can also occur in distinct, large forested tracts of land (Paton and Egan, 2001). Klemens (1993) also found marbled salamanders were more prevalent in rural areas of Connecticut. However, he also collected some individuals in suburban and urban areas.

In Connecticut, marbled salamanders typically breed in pools found in mixed deciduous or coniferous forest stands. This species appears to prefer dry, friable soils including sand and gravel deposits, as well as rocky slopes, although they are sometimes found in low-lying swampy areas (Klemens, 1993). Marbled salamanders are thought to inhabit somewhat drier areas than other species of *Ambystoma* (DeGraaf and Yamasaki, 2001).

In New England, adults start to immigrate to breeding ponds around the 1st of August. Adults are generally only active on rainy nights. The majority of adults are at breeding pools by the 26th of August, with some stragglers arriving as late as the 10th of September (Paton and Crouch, 2002). Klemens (1993) documented peak breeding in Connecticut from mid-September to early October. Eggs are oviposited in a dry pool area, singly, in small depressions usually beneath a sheltering object such as logs, bark, leaf mold, or other organic debris. Eggs hatch in early November as ponds refill and eggs are flooded. The larvae then overwinter in the pools.

Marbled salamander larvae eat small aquatic insects, crustaceans, and other small invertebrates. They are also cannibalistic. Once wood frog eggs hatch in the spring, marbled salamander larvae readily feed on larval wood frogs and spotted salamanders (Klemens, 1993). Adult marbled salamanders feed on adult and larval insects and crustaceans. They also take earthworms and mollusks (DeGraaf and Yamasaki, 2001).

Spring Peeper

Spring peepers are among the most common frog species in southern New England. However, their diminutive size and cryptic coloration prevent most people from ever noticing them. Ironically, almost everyone has heard their springtime mating calls but fail to recognize the source. When not at breeding pools/ponds, peepers are habitat generalists and utilize habitats which range from mature forests to old field habitats. Although they are most commonly found in or near moist deciduous woodlands they also can be found in coniferous forests, grassy meadows, shrubby fields, gardens, sandy coastal dune habitats, as well as pine barrens (Klemens, 1993).

In southern New England (Rhode Island), spring peepers are found at breeding pools/ponds from mid-March through May (Paton et al., 2000). Once there, males

establish territories from which they actively call to attract females. After pairing up, females deposit eggs on the pool/pond bottom under organic debris such as dead leaves. Upon hatching, larvae tend to congregate in the warm shallows of ponds, in areas with dense vegetation where they are usually "inactive and benthic" - a strategy used as an anti-predator defense (Lawler, 1989).

Spring peeper larvae feed on small aquatic organisms such as diatoms and algae found on submerged organic debris. Adult peepers feed on a variety of small invertebrates, and thus, are beneficial to the environment by acting as natural pest control agents. Spiders account for the bulk of their diet (48%), although they also gorge themselves on mites, sowbugs, leafhoppers, ants, harvestmen, nematode worms, and lepidoptera (moth and butterfly) larvae (Gilhen, 1984).

Spotted Turtle

The spotted turtle is a small turtle (3.5 to 5.5 inch carapace) which favors clean, shallow, slow moving bodies of water with muddy or mucky bottoms. They reside in marshy meadows, forested wetlands, boggy areas and beaver ponds. This turtle has yellow spots on the head, neck, legs, and upper shell or carapace. Background coloration is black. The number and arrangement of spots is extremely variable and changes with age. Hatchling turtles usually have one spot on each plate. Older individuals can be well sprinkled with 100 or more spots but occasionally all black specimens are observed.

Spotted turtles are active from March to October and may be seen singly or in groups basking in the sun. Diet consists of amphibian eggs and larvae, snails, leeches, worms, slugs, spiders and carrion. Diurnal activity is dependent on the time of year and temperature. Early and late in their activity period, daylight activities are spent hunting and basking in the sun. In the evening, spotted turtles submerge and spend the night in the substrate of their wetland habitats or spend the night under vegetation. In summer, when surface waters are limited, spotted turtles may aestivate (be dormant) for extended periods.

Spotted turtles reach sexual maturity at about 7-10 years of age. Mating occurs from March to May and usually takes place in the water. An open site with good sun

exposure, such as a field or the edges of roads is most often chosen for nesting. However, spotted turtles may also deposit their eggs in vegetation such as tussock sedge (*Carex stricta*). The female uses her hind legs and feet to dig a hole that is about 2 to 2.5 inches deep and 2 inches wide. She then lays 3-6 oval shaped eggs that have thin, flexible shells and then covers the eggs.

4.0 Results

As summarized in Tables 1 and 2, based on the 2008 and 2011 breeding season field surveys, 62 wetlands located along the ROWs that the Proposed Route would follow were determined to contain vernal pools for obligate species and 26 wetlands were determined to contain amphibian breeding habitats (i.e., areas not meeting the specific criteria defined by the State of Connecticut to be considered a vernal pool).

Several larger wetlands were found to contain multiple vernal pool and/or amphibian breeding habitat areas. As a result, a total of 88 vernal pools and 29 amphibian breeding habitats were identified along the ROWs. Table 3 identifies the number of vernal pools/amphibian breeding habitats identified in each of the 11 towns crossed by the Project ROWs.

Digital aerial mapping, provided at a scale of 1” = 100’ in Volume 11 of the Council Application, identifies the delineated wetlands and vernal pools along CL&P’s existing ROWs. For wetlands that encompass vernal pools, the vernal pools depicted represent the areas that could be successfully utilized by obligate vernal pool species. Distinct areas within the overall vernal pool where specific data was collected are known as the data collection areas. The size of the data collection areas, as well as the overall vernal pool dimensions, represent data collected during the spring seasons of 2008 and 2011 and can be expected to vary from year-to-year based upon seasonal fluctuations in the water table caused by annual variations in the amount and timing of precipitation. These hydrologic variations could in turn affect where exactly amphibians would deposit egg masses in a given year.

Table 1: Vernal Pool Habitat Identified Along the Proposed Project ROWs

Municipality	Vernal Pool Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Columbia	CO-1-VP	W20-9	9010	4 of 134	10 wood frog egg masses	Managed ROW
Columbia	CO-2-VP	W20-9	9012	5 of 134	2 wood frog egg masses	Managed ROW
Coventry	CV-1-VP	W20-27	9027	11 of 134	2 spotted salamander egg masses; spring peeper breeding chorus; caddisfly larvae	Managed ROW
Mansfield	MA-1-VP	W20-41	9043	18 of 134	14 wood frog egg masses; 4 spotted salamander egg masses	Managed ROW
Mansfield	MA-2-VP	W20-43	9045	18 of 134	2 wood frog egg masses; green frog	Managed ROW
Mansfield	MA-3-VP	W20-43	9045	18 of 134	8 spotted salamander egg masses; 5 wood frog egg masses; wood frog tadpoles; mosquito larvae	PFO
Mansfield	MA-4-VP	W20-43	9045	18 of 134	1 adult wood frog; 50 wood frog egg masses	PFO
Mansfield	MA-5-VP	W20-43	9046	19 of 134	4 spotted salamander egg masses	Managed ROW
Mansfield	MA-6-VP	W20-43	9046	19 of 134	~20 wood frog egg masses; fairy shrimp	Managed ROW
Mansfield	MA-7-VP	W20-43	9046	19 of 134	4 wood frog egg masses; mosquito larvae	PFO
Mansfield	MA-8-VP	W20-44	9048	19 and 20 of 134	100+ spotted salamander egg masses	Managed ROW and POW
Mansfield	MA-9-VP	W20-50	9055	22 of 134	8-10 wood frog egg masses	PFO and Managed ROW
Mansfield	MA-10-VP	W20-53	9060	23 of 134	16 wood frog egg masses; 3 spotted salamander egg masses; fairy shrimp	PFO and Managed ROW
Mansfield	MA-11VP	W20-55	9063	24 of 134	2 wood frog egg masses; wood frog tadpoles	Managed ROW

Table 1: Vernal Pool Habitat Identified Along the Proposed Project ROWs

Municipality	Vernal Pool Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Mansfield	MA-12-VP	W20-56	9064	25 of 134	3 spotted salamander egg masses; water striders	Managed ROW
Mansfield	MA-13-VP	W20-56	9064/9065	25 of 134	8 wood frog egg masses	Managed ROW
Mansfield	MA-14-VP	W20-56	9064/9065	25 of 134	3 wood frog egg masses; 2 spotted salamander egg masses	Managed ROW
Mansfield	MA-15-VP	W20-56	9064/9065	25 of 134	10-15 wood frog egg masses	Managed ROW
Mansfield	MA-16-VP	W20-56	9065	25 of 134	2 wood frog egg masses; wood frog tadpoles; red-backed salamander; green frog adult	Managed ROW
Mansfield	MA-17-VP	W20-64	9079	31 of 134	2 spotted salamander egg masses; spring peeper breeding chorus	Managed ROW
Mansfield	MA-18-VP	W20-63	9079	31 of 134	2 spotted salamander egg masses; spring peeper breeding chorus	Managed ROW - riverine
Mansfield	MA-19-VP	W20-63	9079	31 of 134	1 adult wood frog; *Ambystoma* spermatophores	Managed ROW and PFO
Chaplin	CH-1-VP	W20-70	9095	38 of 134	2 spotted salamander egg masses; spring peeper breeding chorus; caddisfly larvae	Managed ROW and PFO
Chaplin	CH-2-VP	W20-72/73	9095	38 of 134	1 spotted salamander egg mass; wood frog tadpoles; fairy shrimp	Managed ROW and PFO
Chaplin	CH-3-VP	W20-70	9095	38 of 134	Wood frog tadpoles; stonefly larvae; green frogs chorusing	PFO
Chaplin	CH-4-VP	W20-78	9100	40 of 134	1 wood frog egg mass; 3 spotted salamander egg masses; painted turtle; damselfly nymph	PFO

Table 1: Vernal Pool Habitat Identified Along the Proposed Project ROWs

Municipality	Vernal Pool Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Chaplin	CH-5-VP	W20-79	9100	40 of 134	1 spotted salamander egg mass; several wood frog egg masses; fingernail clams; aquatic snails; caddisfly larvae; isopods; green frog	PSS and PFO
Chaplin	CH-6-VP	W20-81	9102	41 of 134	1 wood frog egg mass; 6 spotted salamander egg masses	PFO and Managed ROW
Chaplin	CH-7-VP	W20-81	9102	41 of 134	1000's of wood frog tadpoles; 15 spotted salamander egg masses	Managed ROW
Chaplin	CH-8-VP	W20-81	9103	41 of 134	5 spotted salamander egg masses; American toad eggs; caddisfly larvae	Managed ROW
Chaplin	CH-9-VP	W20-83	9104	41 of 134	25 wood frog egg masses	Managed ROW
Chaplin	CH-10-VP	W20-84	9105	42 of 134	100's of wood frog tadpoles; 5 spotted salamander egg masses	Managed ROW and POW
Chaplin	CH-11-VP	W20-84	9105	42 of 134	10-15 wood frog egg masses; 3-5 spotted salamander egg masses	PFO
Chaplin	CH-12-VP	W20-84	9105	42 of 134	1 wood frog egg mass; 5 spotted salamander egg masses; green frog adults; red-back salamander	PFO
Chaplin	CH-13-VP	W20-87	9113	45 of 134	12 spotted salamander egg masses; green frog adults; 4 ribbon snakes	Managed ROW
Chaplin	CH-14-VP	W20-89	9118	46 and 47 of 134	10-12 wood frog egg masses; 2 spotted salamander egg masses; wood frog tadpoles; caddisfly larvae	Managed ROW

Table 1: Vernal Pool Habitat Identified Along the Proposed Project ROWs

Municipality	Vernal Pool Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Hampton	HA-1-VP	W20-94	9125	50 of 134	5-10 spotted salamander larvae; 10-15 caddisfly cases	PFO
Hampton	HA-2-VP	W20-98	9132	52 and 53 of 134	10-15 wood frog egg masses; 28 spotted salamander egg masses; wood frog tadpoles; caddisfly larvae	Natural PEM
Hampton	HA-3-VP	W20-100	9134	53 of 134	7 spotted salamander egg masses; spotted turtle; green frog adults; gray tree frogs chorusing; caddisfly larvae; pickerel frog	PEM/PSS
Hampton	HA-4-VP	W20-100	9135	54 of 134	8 spotted salamander egg masses; green frog; ribbon snake ; American toad eggs	Managed ROW
Hampton	HA-5-VP	W20-101	9135	54 of 134	14 wood frog egg masses; 28 spotted salamander egg masses; wood frog tadpoles; green frog adult	PFO
Hampton	HA-6-VP	W20-111	9147	58 of 134	7 spotted salamander egg masses; wood frog tadpoles; fairy shrimp; green frog adults; caddisfly larvae	Managed ROW
Hampton	HA-7-VP	W20-113	9147	58 and 59 of 134	9 spotted salamander egg masses; fairy shrimp; green frog adults; caddisfly larvae	PFO
Hampton	HA-8-VP	W20-114	9148	59 of 134	2 spotted salamander egg masses; green frog juvenile; red-backed salamander	PFO
Hampton	HA-9-VP	W20-112A	9148	59 of 134	Fairy shrimp; green frog adults	PFO
Hampton	HA-10-VP	W20-118	9152	61 of 134	9 spotted salamander egg masses; wood frog adults; American toad eggs	Managed ROW

Table 1: Vernal Pool Habitat Identified Along the Proposed Project ROWs

Municipality	Vernal Pool Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Hampton	HA-11-VP	W20-118	9152	61 of 134	4 wood frog egg masses; 57 spotted salamander egg masses; wood frog tadpoles	Managed ROW
Hampton	HA-12-VP	W20-118	9153	61 of 134	105 spotted salamander egg masses; wood frog tadpoles; pickerel frog	Managed ROW
Hampton	HA-13-VP	W20-121	9160	63 of 134	2 spotted salamander egg masses; wood frog tadpoles; amphipods	Managed ROW
Brooklyn	BR-1-VP	W20-123	9165	66 of 134	3 wood frog egg masses; 1 spotted salamander egg mass; amphipods; isopods; spring peepers	PFO
Brooklyn	BR-2-VP	W20-125	9166	66 of 134	Wood frog tadpoles; green frog adults	Managed ROW and PFO
Brooklyn	BR-3-VP	W20-125	9167	66 of 134	2 spotted salamander egg masses; wood frog tadpoles; American toad tadpoles	PFO and Managed ROW
Brooklyn	BR-4-VP	W20-127	9170	68 of 134	1 marbled salamander larvae; wood frog tadpoles; green frog adult; caddisfly larvae	Managed ROW
Brooklyn	BR-5-VP	W20-129	9172	69 of 134	2 spotted salamander egg masses; wood frog tadpoles	Managed ROW
Brooklyn	BR-6-VP	W20-130	9174/9175	70 of 134	150+ wood frog egg masses; 150+ spotted salamander egg masses; spring peeper breeding chorus	PFO
Brooklyn	BR-7-VP	W20-130	9175	70 of 134	51 spotted salamander egg masses; wood frog tadpoles; green frog	Managed ROW
Brooklyn	BR-8-VP	W20-137	9181	72 of 134	12 wood frog egg masses	PFO

Table 1: Vernal Pool Habitat Identified Along the Proposed Project ROWs

Municipality	Vernal Pool Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Brooklyn	BR-9-VP	W20-137	9181	72 of 134	1 adult wood frog; 8 wood frog egg masses; 8 spotted salamander egg masses	Managed ROW
Brooklyn	BR-10-VP	W20-137	9181	72 of 134	3 fairy shrimp	PFO
Brooklyn	BR-11-VP	W20-138	9182	72 and 73 of 134	50 wood frog egg masses; 1 spotted salamander egg mass; wood frog tadpoles; spring peeper breeding chorus; spotted turtle; caddisfly larvae; dragonfly nymph	Managed ROW and PFO
Brooklyn	BR-12-VP	W20-139	9183	73 of 134	5-10 wood frog egg masses; wood frog tadpoles; aquatic beetles	PFO
Brooklyn	BR-13-VP	W20-140	9185	74 of 134	15 spotted salamander egg masses; 3 marbled salamander larvae; spring peeper breeding chorus	PFO
Brooklyn	BR-14-VP	W20-140	9185	74 of 134	1 wood frog egg mass; 4 spotted salamander egg masses; 5-10 fairy shrimp	Managed ROW
Brooklyn	BR-15-VP	W20-143	9186	74 of 134	~ 25 spotted salamander egg masses; wood frog tadpoles	Managed ROW and PFO
Brooklyn	BR-16-VP	W20-149	9189/9190	76 of 134	~ 100 spotted salamander egg masses; caddisfly larvae; leeches	PFO
Brooklyn	BR-17-VP	W20-154	9206	83 of 134	4 spotted salamander egg masses	Managed ROW and PFO
Brooklyn	BR-18-VP	W20-157	9211	85 of 134	1 spotted salamander egg mass	Natural PEM/PSS

Table 1: Vernal Pool Habitat Identified Along the Proposed Project ROWs

Municipality	Vernal Pool Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Brooklyn	BR-19-VP	W20-158	9213	86 of 134	10-15 spotted salamander egg masses; amphibious snails; caddisfly larvae	Managed ROW
Pomfret	PO-1-VP	W20-161	9234	94 of 134	15-20 spotted salamander egg masses; wood frog tadpoles; fairy shrimp; amphibious snails	PFO
Killingly	KI-1-VP	W20-168	9246	99 of 134	3-5 wood frog egg masses; 1 spotted salamander egg mass	Managed ROW
Putnam	PU-1-VP	W20-172	9254	103 of 134	3 spotted salamander egg masses; amphibious snails; caddisfly larvae	Managed ROW
Putnam	PU-2-VP	W20-174	9255	103 of 134	Fairy shrimp; spring peeper adult; caddisfly larvae	Managed ROW and PFO
Putnam	PU-3-VP	W20-175	9256	103 and 104 of 134	~ 50 wood frog tadpoles; fairy shrimp; spotted turtle; amphibious snails; spring peeper adults; caddisfly larvae; dragonfly nymph	Managed ROW/PSS and POW
Putnam	PU-4-VP	W20-176	9256/9257	104 of 134	~ 12 spotted salamander egg masses; fairy shrimp; spring peeper adults; caddisfly larvae	Managed ROW
Killingly	KI-2-VP	W20-177	9260	105 of 134	1 spotted salamander egg mass; fairy shrimp; spring peeper adults; spring peeper breeding chorus; caddisfly larvae	Managed ROW
Killingly	KI-3-VP	W20-178	9261	106 of 134	6-10 spotted salamander egg masses; fairy shrimp; spotted turtle; caddisfly larvae; isopods; amphipods	Managed ROW
Putnam	PU-5-VP	W20-187	9287	116 and 117 of 134	6 wood frog egg masses	Managed ROW

Table 1: Vernal Pool Habitat Identified Along the Proposed Project ROWs

Municipality	Vernal Pool Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Putnam	PU-6-VP	W20-188	9290	118 of 134	6-8 wood frog egg masses; isopods; mosquito larvae	PFO
Putnam	PU-7-VP	W20-191	9295	120 of 134	20-25 wood frog egg masses; 5 spotted salamander egg masses; >10 fairy shrimp; caddisfly larvae	Managed ROW and PFO
Putnam	PU-8-VP	W20-192	9295/9296	120 of 134	20-25 wood frog egg masses; 15-20 spotted salamander egg masses; >50 fairy shrimp; caddisfly larvae	PFO
Putnam	PU-9-VP	W20-194	9300	122 of 134	2 spotted salamander egg masses; 5-10 fingernail clams; red-spotted newt; snapping turtle; dragonfly nymph	Managed ROW and PFO
Putnam	PU-10-VP	W20-195	9301/9302	122 of 134	100+ wood frog egg masses; 20 spotted salamander egg masses; predacious diving beetle larvae; dragonfly nymphs; leeches	Managed ROW and PFO
Putnam	PU-11-VP	W20-195	9303	123 of 134	1 wood frog egg mass; 25-30 spotted salamander egg masses	Managed ROW
Putnam	PU-12-VP	W20-196	9305	124 of 134	8-10 spotted salamander egg masses; spring peeper breeding chorus; hellgrammite; isopods; mosquito larvae	Managed ROW
Putnam	PU-13-VP	W20-197	9306	124 of 134	6 spotted salamander egg masses; spring peeper breeding chorus in adjacent wetland complex	PFO

Table 1: Vernal Pool Habitat Identified Along the Proposed Project ROWs

Municipality	Vernal Pool Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Putnam	PU-14-VP	W20-197	9306/9307	124 of 134	4-6 spotted salamander egg masses; spring peeper breeding chorus; caddisfly larvae	PFO
Putnam	PU-15-VP	W20-199	9312	126 of 134	60+ wood frog egg masses; 25+ spotted salamander egg masses; adult predacious diving beetles; caddisfly larvae; mosquito larvae	Managed ROW and PFO
Thompson	TH-1-VP	W20-207	9324	130 of 134	1 spotted salamander egg mass; caddisfly larvae; isopods	Managed ROW and PFO

1 – Vernal pool habitat number generated by AECOM for identification purposes. Refers to habitat within the CL&P ROWs.
2 – Associated wetland number corresponds to the Project Wetland Identification number.
3 – Refers to number of existing structure along CL&P's existing 345-kV transmission lines.
4 – Volume 11 mapping provided in the Connecticut Siting Council Application.
5 – Managed ROW denotes an area that is some combination of PEM and PSS. In the case of more than one cover type, the cover type which appears first is dominant.
6 – Natural PEM and PSS means that due to the likely hydrology and existing plant communities to either side of the ROW, it is likely that these areas would be PEM and PSS regardless of on-ROW vegetation management practices (i.e., it would be unlikely that these areas would ever develop into a forested condition).

Table 2: Amphibian Breeding Habitat Identified Along the Proposed Project ROWs

Municipality	Amphibian Breeding Habitat Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Coventry	CV-1-ABH	W20-30	9031	12 and 13 of 134	2 spotted salamander egg masses; spring peeper breeding chorus; isopods; oligochaete worm	Managed ROW
Coventry	CV-2-ABH	W20-31	9034	13 of 134	Gray tree frogs chorusing	PFO and Managed ROW
Coventry	CV-3-ABH	W20-31	9034	13 of 134	Gray tree frogs chorusing	Managed ROW
Mansfield	MA-1-ABH	W20-62C	9074	28 of 134	Pickerel frog egg masses	POW
Mansfield/ Chaplin	MA-2/CH-1-ABH	W20-68	9090/9091	36 and 37 of 134	1 wood frog egg mass; spring peeper breeding chorus	Managed ROW
Chaplin	CH-2-ABH	W20-77	9100	40 of 134	Green frogs; painted turtle; damselfly nymphs	Natural PEM/POW and PSS and Managed ROW and PFO
Chaplin	CH-3-ABH	W20-81	9102	41 of 134	1 spotted salamander egg mass; American toad eggs	POW
Chaplin	CH-4-ABH	W20-86	9111	44 of 134	Spring peeper; gray tree frogs calling	Managed ROW and POW
Chaplin	CH-5-ABH	W20-88	9116	46 of 134	7 wood frog egg masses; 6 spotted salamander egg masses; green frog adult	Managed ROW
Chaplin	CH-6-ABH	W20-89	9118	47 of 134	Bull frog tadpoles; red-spotted newt; caddisfly larvae; leech; whirley gigs	Managed ROW/POW
Chaplin	CH-7-ABH	W20-91	9119/9120	47 and 48 of 134	1 spotted salamander egg mass; red-spotted newt; gray tree frogs chorusing; whirley gigs; northern water snake	Natural POW/PEM and PSS

Table 2: Amphibian Breeding Habitat Identified Along the Proposed Project ROWs

Municipality	Amphibian Breeding Habitat Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Hampton	HA-1-ABH	W20-100	9135	54 of 134	Green frog adults; whirley gigs	Managed ROW and PEM
Hampton	HA-2-ABH	W20-100	9135	54 of 134	12 spotted salamander egg masses; whirley gigs; green frog adults; water striders	Managed ROW and PEM/PSS
Hampton	HA-3-ABH	W20-112	9147	58 and 59 of 134	6 spotted salamander egg masses; wood frog tadpoles; green frogs	Managed ROW
Hampton	HA-4-ABH	W20-116	9148	59 of 134	2 spotted salamander egg masses	PFO
Hampton	HA-5-ABH	W20-117	9151	60 of 134	15 spotted salamander egg masses	PFO
Hampton / Brooklyn	HA-6/BR-1-ABH	W20-120	9159/9160/ 9161	63 and 64 of 134	22 spotted salamander egg masses; wood frog tadpoles; green frog tadpoles (2nd year); gray tree frogs calling	PFO and Managed ROW
Brooklyn	BR-2-ABH	W20-122	9163	65 of 134	Wood frog tadpoles; spring peeper breeding chorus; gray tree frogs calling	Natural PEM/PSS
Brooklyn	BR-3-ABH	W20-122	9164	65 of 134	7 spotted salamander egg masses; whirley gigs; green frog adults; bull frog adults; leeches	Natural PEM
Brooklyn	BR-4-ABH	W20-139	9183	73 of 134	9 spotted salamander egg masses; caddisfly larvae	Managed ROW and PFO
Brooklyn	BR-5-ABH	W20-153	9203/9204	81 and 82 of 134	10 spotted salamander egg masses	Natural PEM/PSS and PFO and Managed ROW

Table 2: Amphibian Breeding Habitat Identified Along the Proposed Project ROWs

Municipality	Amphibian Breeding Habitat Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Brooklyn	BR-6-ABH	W20-160	9220	89A of 134	2 spotted salamander egg masses; 100's of green frog tadpoles; aquatic beetles	PFO
Pomfret	PO-1-ABH	W20-162	9236	95 of 134	10-12 spotted salamander egg masses; green frog tadpoles; amphibious snails; caddisfly larvae; dragonfly nymphs	Natural PEM/POW
Killingly	KI-1-ABH	W20-169	9247	99 and 100 of 134	10-14 spotted salamander egg masses; ribbon snake	Managed ROW
Putnam	PU-1-ABH	W20-188	9290	118 of 134	2 wood frog adults; 4-6 spotted salamander egg masses; American toad; green frog adult; American toads audible	Managed ROW
Putnam	PU-2-ABH	W20-190	9293	119 of 134	Green frogs; spring peeper breeding chorus	Managed ROW
Putnam	PU-3-ABH	W20-191	9294/9295	119 and 120 of 134	Green frogs; spring peeper breeding chorus; ~12 painted turtles; caddisfly larvae	Managed ROW
Putnam	PU-4-ABH	W20-198	9311/9312	126 of 134	10-12 spotted salamander egg masses; backswimmers; spring peeper breeding chorus	Natural PEM

Table 2: Amphibian Breeding Habitat Identified Along the Proposed Project ROWs

Municipality	Amphibian Breeding Habitat Number[1]	Associated Wetland[2]	Adjacent CL&P Structure Number[3]	Volume 11 Mapsheet Number[4]	Species Observed and/or Heard	Existing Cover Type[5, 6]
Thompson	TH-1-ABH	W20-203	9316-9318	127, 128, and 129 of 134	2 spotted salamander egg masses; spring peeper breeding chorus; predacious diving beetle larvae; amphibious snails; dragonfly nymph; damselfly nymph; leeches	Natural PEM

1 –Amphibian breeding habitat number generated by AECOM for identification purposes. Refers to amphibian breeding habitat within the CL&P ROWs.
2 – Associated wetland number corresponds to the Project Wetland Identification number.
3 – Refers to number of existing structure along CL&P's existing 345-kV transmission lines.
4 – Volume 11 mapping provided in the Connecticut Siting Council Application.
5 – Managed ROW denotes an area that is some combination of PEM and PSS. In the case of more than one cover type, the cover type which appears first is dominant.
6 – Natural PEM and PSS means that due to the likely hydrology and existing plant communities to either side of the ROW, it is likely that these areas would be PEM and PSS regardless of on-ROW vegetation management practices (i.e., it would be unlikely that these areas would ever develop into a forested condition).

Table 3: Vernal Pool and Amphibian Breeding Habitats by Municipality

Municipality	Vernal Pool	Amphibian Breeding Habitat
Lebanon	0	0
Columbia	2	0
Coventry	1	3
Mansfield	19	2*
Chaplin	14	7*
Hampton	13	6*
Brooklyn	19	6*
Pomfret	1	1
Killingly	3	1
Putnam	15	4
Thompson	1	1
Total*	**88**	**29**

* Indicates that one amphibian breeding habitat occurs along the municipal border between Hampton and Brooklyn; one area considered amphibian breeding habitat occurs along the municipal border between Mansfield and Chaplin. These areas have been included in the inventory for both respective municipalities, but were counted only once in the total number of vernal pools/amphibian breeding habitats.

5.0 References

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Attachment A

2008 Vernal Pool/Amphibian Breeding Habitat Data Forms

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-14-08	**WEATHER CONDITIONS**	Lows 60s / sunny
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	CO-1-VP	**LENGTH & WIDTH**	20x10
TOWN	Columbia	**CLOSEST WETLAND FLAG**	325
AVERAGE WATER DEPTH	12-16”	**COVER TYPE**	PSS/PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
silky dogwood, sensitive fern

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2 / 5	10-15 / 1
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
One dying wood frog observed on initial visit (3-27-08). Wood frog masses observed on 4-14-08 visit.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-27-08	**WEATHER CONDITIONS**	High 30s low 40s / overcast
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	CV-1-VP	**LENGTH & WIDTH**	10x15
TOWN	Coventry	**CLOSEST WETLAND FLAG**	406- 408
AVERAGE WATER DEPTH	6-12”	**COVER TYPE**	PEM/PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, steeplebush

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	10-15
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
The boundary for this area has been modified based on the 2011 surveys. For the purposes of this report, the mapping reflects the new boundary in 2011.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-27-08	**WEATHER CONDITIONS**	High 30s low 40s / overcast
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	CV-1-ABH	**LENGTH & WIDTH**	400x150
TOWN	Coventry	**CLOSEST WETLAND FLAG**	106
AVERAGE WATER DEPTH	36-48”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
button bush, tussock sedge, silky dogwood

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	4	many
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Many spring peeper breeding choruses heard

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Mid 30s low 40s / overcast
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-1-VP	**LENGTH & WIDTH**	30x20
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	205
AVERAGE WATER DEPTH	24-36”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
phragmites, highbush blueberry

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	20
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Thin layer of ice on top of pool

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Low 40s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-2-VP	**LENGTH & WIDTH**	5x10'
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	310
AVERAGE WATER DEPTH	6-12"	**COVER TYPE**	PEM/PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
clethra, steeplebush, sensitive fern

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	2
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding's turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
1 of 4 vernal pools in same wetland complex (W20-43)

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Low 40s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-3-VP	**LENGTH & WIDTH**	5x20'
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	310
AVERAGE WATER DEPTH	8-12"	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
speckled alder, silky dogwood

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	6
x	**Spotted salamander**	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding's turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
2 of 4 vernal pools in the same wetland complex (W20-43). The boundary for this vernal pool was modified in 2011 and for the purposes of this report the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Low 40s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-4-VP	**LENGTH & WIDTH**	50x20
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	313
AVERAGE WATER DEPTH	12-16”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, red maple, highbush blueberry

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	5 / 2	1 / 50
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
3 of 4 vernal pools in same wetland complex (W20-43)

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Low 40s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-5-VP	**LENGTH & WIDTH**	10x20
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	310
AVERAGE WATER DEPTH	6-12”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
cattail, steeplebush

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	50
x	**Spotted salamander**	2	4
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
4 of 4 vernal pools in same wetland complex (W20-43)

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3/31/08	**WEATHER CONDITIONS**	Low 40s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-8-VP	**LENGTH & WIDTH**	50x30
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	102
AVERAGE WATER DEPTH	24-36”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	4
x	Spotted salamander	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

The boundary for this vernal pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Upper 40s, low 50s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-9-VP	**LENGTH & WIDTH**	20x40
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	302
AVERAGE WATER DEPTH	6-10”	**COVER TYPE**	PFO/PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, steeplebush

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	8-10
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Low 40s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-10-VP	**LENGTH & WIDTH**	60x20
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	301
AVERAGE WATER DEPTH	12-16”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
wool grass, tussock sedge, steeplebush, sedge spp.

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	15
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Low 50s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-13-VP	**LENGTH & WIDTH**	5x5
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	202
AVERAGE WATER DEPTH	18-24”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☒ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
steeplebush, reed canary grass

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frogs**	2	8
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
1 of 3 vernal pools within same wetland complex (W20-56)

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Low 40s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-14-VP	**LENGTH & WIDTH**	5x10
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	203
AVERAGE WATER DEPTH	12 – 16”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
cattail, speckled alder, phragmites

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	3
x	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
2 of 3 vernal pools within same wetland complex (W20-56)

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Low 40s / raining
OBSERVERS	JK / SC		

POOL CHARACTERISTICS			
WETLAND #	MA-15-VP	**LENGTH & WIDTH**	10x12
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	206
AVERAGE WATER DEPTH	12 – 16”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
steeplebush, phragmites

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	10-15
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
3 of 3 vernal pools within same wetland complex (W20-56)

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE 4-1-08		**WEATHER CONDITIONS**	Low 50s / drizzling / windy
OBSERVERS	JK / EL		

POOL CHARACTERISTICS			
WETLAND #	MA-19-VP	**LENGTH & WIDTH**	10x20
TOWN	Mansfield	**CLOSEST WETLAND FLAG**	302
AVERAGE WATER DEPTH	12-16”	**COVER TYPE**	PSS/PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
Tussock sedge, steeplebush, clethera alnifolia

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	5	1
x	**Spotted salamander**	4	Many
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Culvert on south side of vernal pool area flows into the same wetlands system on the south side of the ROW.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-2-08	**WEATHER CONDITIONS**	High 30s, low 40s, partly cloudy, windy
OBSERVERS	JK / EL		

POOL CHARACTERISTICS			
WETLAND #	MA-2/CH-1-ABH	**LENGTH & WIDTH**	300x800
TOWN	Mansfield / Chaplin	**CLOSEST WETLAND FLAG**	337
AVERAGE WATER DEPTH	24-36”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	1
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
no – dead batteries

Conclusions / Comments:
Spring peeper breeding choruses heard

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-2-08	**WEATHER CONDITIONS**	Mid 40s / partly cloudy / windy
OBSERVERS	JK / EL		

POOL CHARACTERISTICS			
WETLAND #	CH-1-VP	**LENGTH & WIDTH**	110x40
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	105, 103
AVERAGE WATER DEPTH	12-24”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, steeplebush

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	2	3-5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
x	**Fingernail clams**	5	1
	Marbled salamander		
	Unidentified mole salamander		
x	**Fairy shrimp**	5	5-7

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☒ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☒ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
no – dead batteries

Conclusions / Comments:

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-2-08	**WEATHER CONDITIONS**	Mid 40s / partly cloudy / windy
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	CH-2-VP	**LENGTH & WIDTH**	20x60
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	404
AVERAGE WATER DEPTH	16-20”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
wool grass, sensitive fern, tussock sedge, dogwood

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	**Fairy shrimp**	5	15+

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☒ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
no – dead batteries

Conclusions / Comments:

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-2-08	**WEATHER CONDITIONS**	Upper 40s / low 50s / partly cloudy / windy
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	CH-2-ABH	**LENGTH & WIDTH**	250x150
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	310
AVERAGE WATER DEPTH	12-24" **	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
cattails, tussock sedge

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2 / 5	2 / 1
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding's turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☒ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler's Toad**
- ☒ **Caddis fly case/larvae**

Additional Species Observed:
bullfrog choruses

Photo Documentation:
yes

Conclusions / Comments:
** Large wetland complex that appeared to be very deep in center – 6-8'
This pool was surveyed again in 2011 and for the purposes of this report, the boundary shown on the mapping is a combination of the 2008 and 2011 boundaries.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-8-08	**WEATHER CONDITIONS**	Upper 50s / sunny / breezy
OBSERVERS	JK / EL		

POOL CHARACTERISTICS			
WETLAND #	CH-7-VP	**LENGTH & WIDTH**	75 x 6
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	103
AVERAGE WATER DEPTH	12 – 16"	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☒ **Sand / Silt**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	50+
x	**Spotted salamander**	2	3-5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding's turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-8-08	**WEATHER CONDITIONS**	Low to mid 50s / sunny / breezy
OBSERVERS	JK / EL		

POOL CHARACTERISTICS			
WETLAND #	CH-10-VP	**LENGTH & WIDTH**	30 x 10-15
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	208
AVERAGE WATER DEPTH	6-12”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☒ **Sand / Silt**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	10-15
x	Spotted salamander	2	10-15
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
1 of 2 vernal pools in W20-84; egg masses were observed in large rutted puddle within access road; 1 observed spring peeper was dead

This pool was surveyed again in 2011 and for the purposes of this report, the boundary shown on the mapping is a combination of the 2008 and 2011 boundaries.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-8-08	**WEATHER CONDITIONS**	Low to mid 50s / sunny / breezy
OBSERVERS	JK / EL		

POOL CHARACTERISTICS			
WETLAND #	CH-11-VP	**LENGTH & WIDTH**	50 x 5-15
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	210
AVERAGE WATER DEPTH	6-12”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand / Silt**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
red oak, white oak, red maple

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	10-15
x	Spotted salamander	2	3-5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
2 of 2 vernal pools in same wetland complex (W20-84)

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-8-08	**WEATHER CONDITIONS**	Low 60s / slight breeze / sunny
OBSERVERS	JK / EL		

POOL CHARACTERISTICS			
WETLAND #	CH-4-ABH	**LENGTH & WIDTH**	300 x 800
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	108
AVERAGE WATER DEPTH	12 – 24”	**COVER TYPE**	PEM / POW

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, phragmites

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☒ **Caddis fly case/larvae**

Additional Species Observed:
5 water striders

Photo Documentation:
yes

Conclusions / Comments:
amphibian breeding habitat – not a vernal pool; beaver activity present and fish likely

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-8-08	**WEATHER CONDITIONS**	Low 60s sunny / slight breeze
OBSERVERS	JK / EL		

POOL CHARACTERISTICS			
WETLAND #	CH-13-VP	**LENGTH & WIDTH**	10X5
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	300 – 302
AVERAGE WATER DEPTH	6-8”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
sensitive fern, wool grass, speckled alder, steeplebush, highbush blueberry

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	3
x	Spotted salamander	2	4
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
x	Marbled salamander	3	1
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:
1 ribbon snake; 1 pickerel frog

Photo Documentation:
yes

Conclusions / Comments:
The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT CT Interstate Reliability Project

DATE	4-8-08	**WEATHER**	Upper 50s, low 60s /
OBSERVERS	JK / EL	**CONDITIONS**	sunny / slight breeze

POOL CHARACTERISTICS			
WETLAND #	CH-14-VP	**LENGTH & WIDTH**	20x20
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	111-115
AVERAGE WATER DEPTH	12-16”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	Spotted salamander	2	3-5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☒ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☒ Caddis fly case/larvae

Additional Species Observed:
20+ bullfrog

Photo Documentation:
yes

Conclusions / Comments:
1 of 2 vernal pools within W20-89

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-8-08	**WEATHER**	Upper 50s, low 60s /
OBSERVERS	JK / EL	**CONDITIONS**	sunny / slight breeze

POOL CHARACTERISTICS			
WETLAND #	CH-6-ABH	**LENGTH & WIDTH**	10x15
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	107-110
AVERAGE WATER DEPTH	8 -12”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
phragmites, grass spp., steeplebush, clethera alnifolia

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	10+
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☒ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☒ Caddis fly case/larvae

Additional Species Observed:
20+ bullfrog

Photo Documentation:
yes

Conclusions / Comments:
2 of 2 vernal pools within W20-89

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping. In addition, it was determined that this area should be ABH and not VP due to the presence of fish in 2011.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-8-8	**WEATHER CONDITIONS**	Upper 50s low 60s / no clouds / slight breeze
OBSERVERS	JK /EL		

POOL CHARACTERISTICS			
WETLAND #	CH-7-ABH	**LENGTH & WIDTH**	500x500
TOWN	Chaplin	**CLOSEST WETLAND FLAG**	103, 104
AVERAGE WATER DEPTH	14-22”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, phragmites, speckled alder

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	3
x	**Spotted salamander**	2	4
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☒ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Open water on north side of wetland with depth of 5+ feet

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-9-08	**WEATHER CONDITIONS**	Low 40s / foggy but clearing
OBSERVERS	JK /CN		

POOL CHARACTERISTICS			
WETLAND #	HA-1-VP	**LENGTH & WIDTH**	200x200-250
TOWN	Hampton	**CLOSEST WETLAND FLAG**	108
AVERAGE WATER DEPTH	12-24”	**COVER TYPE**	PFO/PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
stumps, tussock sedge, phragmites, cat-tails

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	2	5-10
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☒ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Beaver activity observed

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-9-08	**WEATHER CONDITIONS**	Low 40s / clearing
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-2-VP	**LENGTH & WIDTH**	100x10-20
TOWN	Hampton	**CLOSEST WETLAND FLAG**	109 / 201
AVERAGE WATER DEPTH	12-18”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
cattail, sedge spp.

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	6
x	**Spotted salamander**	2	9
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☒ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Large silty puddle within access road extends from the north side of vernal pool – 3 spotted salamander egg masses and 1 adult spring peeper observed in puddle. Spring peeper breeding choruses heard upon approach.

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-9-08	**WEATHER CONDITIONS**	Low 50s / clearing
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-3-VP	**LENGTH & WIDTH**	100x10-20
TOWN	Hampton	**CLOSEST WETLAND FLAG**	331
AVERAGE WATER DEPTH	6-10”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	2	12
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:
ribbon snake

Photo Documentation:
yes

Conclusions / Comments:
1 of 2 vernal pools within W20-100

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-9-08	**WEATHER CONDITIONS**	Low 50s / clearing
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-4-VP	**LENGTH & WIDTH**	15-20x30
TOWN	Hampton	**CLOSEST WETLAND FLAG**	308
AVERAGE WATER DEPTH	18-24”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	8
x	Spotted salamander	2	20-25
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
2 of 2 vernal pools within W20-100

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-9-08	**WEATHER CONDITIONS**	High 50s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-6-VP	**LENGTH & WIDTH**	20x3-5
TOWN	Hampton	**CLOSEST WETLAND FLAG**	401
AVERAGE WATER DEPTH	6-8”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	4
x	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
“Classic” vernal pool

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-9-08	**WEATHER CONDITIONS**	50s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-3-ABH	**LENGTH & WIDTH**	5-15 x 150
TOWN	Hampton	**CLOSEST WETLAND FLAG**	401
AVERAGE WATER DEPTH	12-16”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	75+
x	Spotted salamander	2	40+
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	5	5-10

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-9-08	**WEATHER CONDITIONS**	50s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-7-VP	**LENGTH & WIDTH**	10x20
TOWN	Hampton	**CLOSEST WETLAND FLAG**	404
AVERAGE WATER DEPTH	8-12”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
spirea latifolia

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	5+
x	Spotted salamander	2	5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	5	10+

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☒ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-9-08	**WEATHER CONDITIONS**	50s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-8-VP	**LENGTH & WIDTH**	20x10
TOWN	Hampton	**CLOSEST WETLAND FLAG**	100-110
AVERAGE WATER DEPTH	4-6”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	Spotted salamander	2	4
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☒ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-9-08	**WEATHER CONDITIONS**	50s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-4-ABH	**LENGTH & WIDTH**	20x10
TOWN	Hampton	**CLOSEST WETLAND FLAG**	100-110
AVERAGE WATER DEPTH	6-8”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☒ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Amphibian breeding habitat; stream (bank to bank = approximately 3 ft) with flow and high potential of fish presence

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	50s / cloudy but clearing
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-10-VP	**LENGTH & WIDTH**	20x5
TOWN	Hampton	**CLOSEST WETLAND FLAG**	106
AVERAGE WATER DEPTH	6-8”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, steeplebush

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	12
x	**Spotted salamander**	2	15
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
1 of 3 vernal pools in W20-118 ; three large puddles in dirt access road 5-20 feet apart; only two data sheets taken due to proximity of vernal pool areas.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	50s / cloudy but clearing
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-11-VP	**LENGTH & WIDTH**	20x5; 40x5
TOWN	Hampton	**CLOSEST WETLAND FLAG**	106
AVERAGE WATER DEPTH	6-12”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, steeplebush

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	50
x	**Spotted salamander**	2	50
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
2 & 3 of 3 vernal pools in W20-118; three large puddles in dirt access road 5-20 feet apart; only two data forms taken given close proximity of vernal pools

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	High 60s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	HA-6/BR-1-ABH	**LENGTH & WIDTH**	50x3-20
TOWN	Hampton / Brooklyn	**CLOSEST WETLAND FLAG**	210
AVERAGE WATER DEPTH	6-12”	**COVER TYPE**	PSS / PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	2	15+
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☒ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:
snapping turtle

Photo Documentation:
yes

Conclusions / Comments:
This area was surveyed in 2011 and the entire area was identified as ABH due to the presence of a stream and a lack of suitable breeding habitat. For the purposes of this report, the 2011 boundary and classification are shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	60s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	BR-2-ABH	**LENGTH & WIDTH**	75x50
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	113
AVERAGE WATER DEPTH	4-6”	**COVER TYPE**	PSS / PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
phragmites

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	1 / 2 / 5	N/A/200 / 1
x	**Spotted salamander**	2	5-10
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☒ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
1 of 2 vernal pools within W20-122; channel on south side of vernal pool area flows into pond.
This area was surveyed in 2011 and the entire area was identified as ABH due to the presence of a stream. For the purposes of this report, the 2011 boundary and classification are shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	60s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	BR-3-ABH	**LENGTH & WIDTH**	50x100-200
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	217
AVERAGE WATER DEPTH	12-36”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
cattails, tussock sedge

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	15
x	**Spotted salamander**	2	10
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☒ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
2 of 2 vernal pools within W20-122; channel on south side of vernal pool area flows into pond.

This area was surveyed in 2011 and the entire area was identified as ABH due to the presence of a stream and year-round hydrology. For the purposes of this report, the 2011 classification is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	60s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	BR-1-VP	**LENGTH & WIDTH**	5x5
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	310
AVERAGE WATER DEPTH	12-18”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	1;2	N/A / 10-15
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
3 pooled areas near tower 9165 wit h small dimension. Appeared to have the potentia l to function as vernal pools but no obligate or facultative species were observed. This fourth, larger (75x30) area identified had obligate vernal pool species in 2008 season.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	60s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	BR-2-VP	**LENGTH & WIDTH**	20x100
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	310
AVERAGE WATER DEPTH	6-8”	**COVER TYPE**	PFO / PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
white pine and sweet birch

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	2
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
1 of 2 vernal pools in W20-125.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	70s / sunny
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	BR-3-VP	**LENGTH & WIDTH**	100x20-25
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	207
AVERAGE WATER DEPTH	6-8”	**COVER TYPE**	PSS / PFO

SUBSTRATE TYPE:
- ☐ Peat
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	10+
x	Spotted salamander	2	10+
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
2 of 2 vernal pools in W20-125.

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	70s / sunny
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	BR-4-VP	**LENGTH & WIDTH**	100x20-25
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	207
AVERAGE WATER DEPTH	18-24”	**COVER TYPE**	PSS / PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
spicebush, clethra alnifolia, steeplebush

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	50+
x	**Spotted salamander**	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	70s / sunny
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	BR-5-VP	**LENGTH & WIDTH**	30x5-10
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	401
AVERAGE WATER DEPTH	8-12”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
clethera alnifolia, mountain laurel

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	150+
x	**Spotted salamander**	2	7-10
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Large puddle along access path

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	70s / sunny
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	BR-6-VP	**LENGTH & WIDTH**	50x15
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	106
AVERAGE WATER DEPTH	4-6”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
cattails

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	150+
x	**Spotted salamander**	2	150+
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Water seeping from the vernal pool into a large puddle within the access road into the other side of the wetland that did not function as a vernal pool / amphibian breeding habitat

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	Low 70s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	BR-8-VP	**LENGTH & WIDTH**	10x10
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	201
AVERAGE WATER DEPTH	4-6”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
phragmites

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	12
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
no

Conclusions / Comments:
1 of 3 vernal pools in W20-137

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	Low 70s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	BR-9-VP	**LENGTH & WIDTH**	60x20-25
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	209
AVERAGE WATER DEPTH	12”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2 / 5	8 / 1
x	Spotted salamander	2	8
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
2 of 3 vernal pools in W20-137

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	Low 70s / sunny
OBSERVERS	JK / CN		

POOL CHARACTERISTICS			
WETLAND #	BR-10-VP	**LENGTH & WIDTH**	60x20-25
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	209
AVERAGE WATER DEPTH	8-12”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	5	3

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
3 of 3 vernal pools in W20-137

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-11-08	**WEATHER CONDITIONS**	40s / overcast
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	BR-12-VP	**LENGTH & WIDTH**	75x75
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	203
AVERAGE WATER DEPTH	12-16”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
red oak, button bush, winterberry, sphagnum moss

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	15-20
x	Spotted salamander	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	5	3

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:
tadpole spp.

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-11-08	**WEATHER CONDITIONS**	40s / overcast
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	BR-14-VP	**LENGTH & WIDTH**	100x20-25
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	401
AVERAGE WATER DEPTH	6-12”	**COVER TYPE**	PFO / PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
skunk cabbage, red maple, sugar maple

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	1
x	Spotted salamander	2	4
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	5	5-10

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-11-08	**WEATHER CONDITIONS**	Low 50s / raining
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	BR-15-VP	**LENGTH & WIDTH**	30x10
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	302-307
AVERAGE WATER DEPTH	6-8”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, skunk cabbage, cattails

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-11-08	**WEATHER CONDITIONS**	50s / overcast
OBSERVERS	JK / NL		

POOL CHARACTERISTICS			
WETLAND #	BR-16-VP	**LENGTH & WIDTH**	5-15x75
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	381
AVERAGE WATER DEPTH	12-24”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, speckled alder, grass spp.

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	20+
x	**Spotted salamander**	2 / 4	10 / 50+
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-14-08	**WEATHER CONDITIONS**	50s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	BR-5-ABH	**LENGTH & WIDTH**	300x150
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	204
AVERAGE WATER DEPTH	15”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
cattails, phragmites

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	Spotted salamander	2	10
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Entire wetland is ABH, photographs and datasheet filled out within noted area

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-14-08	**WEATHER CONDITIONS**	50s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	BR-17-VP	**LENGTH & WIDTH**	30x8
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	204
AVERAGE WATER DEPTH	15”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
speckled alder, pussy willow, skunk cabbage

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	Spotted salamander	2	4
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-14-08	**WEATHER CONDITIONS**	40s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	BR-18-VP	**LENGTH & WIDTH**	40x30
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	310
AVERAGE WATER DEPTH	15”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, purple loosestrife

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☒ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4/14/08	**WEATHER CONDITIONS**	30s / clear
OBSERVERS	JB /MW		

POOL CHARACTERISTICS			
WETLAND #	BR-19-VP	**LENGTH & WIDTH**	350x100
TOWN	Brooklyn	**CLOSEST WETLAND FLAG**	408
AVERAGE WATER DEPTH	22”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
steeplebush, red twig dogwood, edlerberry

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2 / 3	1 / many
x	**Spotted salamander**	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	**Fairy shrimp**	5	many

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-11-08	**WEATHER CONDITIONS**	50s / cloudy
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PO-1-ABH	**LENGTH & WIDTH**	
TOWN	Pomfret	**CLOSEST WETLAND FLAG**	232, 117, 301
AVERAGE WATER DEPTH	36"+	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
silky dogwood

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	27
x	Spotted salamander	2	11
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding's turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☒ Spring peepers
- ☐ American toads
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Large wetland complex with hydrologic connection to Quinebaug River / amphibian breeding habitat

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	70s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	KI-1-VP	**LENGTH & WIDTH**	175x40
TOWN	Killingly	**CLOSEST WETLAND FLAG**	318
AVERAGE WATER DEPTH	10"	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
highbush blueberry, swamp azalea

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	17
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding's turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	70s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	KI-1-ABH	**LENGTH & WIDTH**	150x50
TOWN	Killlingly	**CLOSEST WETLAND FLAG**	440
AVERAGE WATER DEPTH	6”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
tussock sedge, highbush blueberry

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	2	5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
The classification for this pool was modified in 2011 and for the purposes of this report, the 2011 classification is shown on the mapping. The presence of a stream in the makes this area ABH.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-11-08	**WEATHER CONDITIONS**	Upper 40s / cloudy
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-1-VP	**LENGTH & WIDTH**	75x40
TOWN	Putnam	**CLOSEST WETLAND FLAG**	321-326
AVERAGE WATER DEPTH	20”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☒ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
cattail, reed canary grass

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	**Spotted salamander**	2	8
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-11-08	**WEATHER CONDITIONS**	40s / cloudy
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-2-VP	**LENGTH & WIDTH**	150x50
TOWN	Putnam	**CLOSEST WETLAND FLAG**	304-307
AVERAGE WATER DEPTH	18”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
water willow

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	**Fairy shrimp**	5	many

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-11-08	**WEATHER CONDITIONS**	40s / cloudy
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-3-VP	**LENGTH & WIDTH**	175x40
TOWN	Putnam	**CLOSEST WETLAND FLAG**	308-312
AVERAGE WATER DEPTH	24”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
sedge spp.

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	**Fairy shrimp**	5	many

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Gravel mine / pool extends off ROW

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-11-08	**WEATHER CONDITIONS**	40s / cloudy
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-4-VP	**LENGTH & WIDTH**	150x80
TOWN	Putnam	**CLOSEST WETLAND FLAG**	All "400" flags
AVERAGE WATER DEPTH	24"	**COVER TYPE**	PSS / POW

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
water willow

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	5	many

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding's turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	60s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	KI-2-VP	**LENGTH & WIDTH**	125x35
TOWN	Killingly	**CLOSEST WETLAND FLAG**	All "400" series flags
AVERAGE WATER DEPTH	20"	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
meadowsweet, sedge spp.

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	2	many

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding's turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-10-08	**WEATHER CONDITIONS**	60s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	KI-3-VP	**LENGTH & WIDTH**	275x30
TOWN	Killingly	**CLOSEST WETLAND FLAG**	111-114
AVERAGE WATER DEPTH	24”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
reed canary grass, tussock sedge

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	Spotted salamander	2	5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	5	many

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☒ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-3-08	**WEATHER CONDITIONS**	Upper 40s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-5-VP	**LENGTH & WIDTH**	15X8
TOWN	Putnam	**CLOSEST WETLAND FLAG**	104, 106
AVERAGE WATER DEPTH	9”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
sedge spp.

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood Frog	2	6
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-3-08	**WEATHER CONDITIONS**	40s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-6-VP	**LENGTH & WIDTH**	30x20
TOWN	Putnam	**CLOSEST WETLAND FLAG**	221
AVERAGE WATER DEPTH	10”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
red maple, skunk cabbage, tussock sedge

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	3
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-3-08	**WEATHER CONDITIONS**	Upper 30s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-7-VP	**LENGTH & WIDTH**	65x30
TOWN	Putnam	**CLOSEST WETLAND FLAG**	100-104
AVERAGE WATER DEPTH	60”	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ Peat
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
cattails

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	5	many

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☒ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-3-08	**WEATHER CONDITIONS**	30s / clear
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-8-VP	**LENGTH & WIDTH**	70x40
TOWN	Putnam	**CLOSEST WETLAND FLAG**	408-410
AVERAGE WATER DEPTH	60”	**COVER TYPE**	PFO / POW

SUBSTRATE TYPE:
- ☐ Peat
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
red maple, highbush blueberry

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
x	Wood frog	2	50-60
x	Spotted salamander	2	12
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
x	Fairy shrimp	5	many

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☐ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:
mallard nest with 7 eggs in stump

Photo Documentation:
yes

Conclusions / Comments:
Salamander spermatophores present

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-1-08	**WEATHER CONDITIONS**	60s / cloudy / windy
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-9-VP	**LENGTH & WIDTH**	300x150
TOWN	Putnam	**CLOSEST WETLAND FLAG**	104
AVERAGE WATER DEPTH	24”	**COVER TYPE**	PEM / PSS

SUBSTRATE TYPE:
- ☐ Peat
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☒ Mud/Muck

DOMINANT VEGETATION WITHIN POOL:
cattail, highbush blueberry

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
x	Spotted salamander	2	4
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ Red-spotted newt adults
- ☐ Spotted turtles
- ☐ Blanding’s turtles
- ☐ Painted turtles
- ☐ Snapping turtles
- ☐ Predacious diving beetles
- ☐ Dragonfly nymphs
- ☐ Amphibious snails
- ☒ Spring peepers
- ☐ American toads
- ☐ Fowler’s Toad
- ☐ Caddis fly case/larvae

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Salamander spermatophores present

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-1-08	**WEATHER CONDITIONS**	60s / cloudy
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-10-VP	**LENGTH & WIDTH**	100x30
TOWN	Putnam	**CLOSEST WETLAND FLAG**	204
AVERAGE WATER DEPTH	15”	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
red maple, highbush blueberry

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	1 / 2	N/A / 2
x	**Spotted salamander**	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
1 of 3 vernal pool areas within W20-195

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping. The new boundary includes pools PU-10 and PU-11 that were identified in the 2008 survey.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-1-08	**WEATHER CONDITIONS**	60s cloudy
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-10-VP	**LENGTH & WIDTH**	150X30
TOWN	Putnam	**CLOSEST WETLAND FLAG**	210
AVERAGE WATER DEPTH	36”	**COVER TYPE**	PEM / PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- X **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
cattails

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
X	**Wood frog**	1	NA
x	**Spotted salamander**	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Fingernail Clams**
- ☐ **Amphibious snails**
- X **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymphs**
- ☐ **Damselfly nymphs**
- ☐ **Leeches**
- ☐ **Pickerel Frogs**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
2 of 3 vernal pool areas in W20-195

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping. The new boundary includes pools PU-10 and PU-11 that were identified in the 2008 survey.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-1-08	**WEATHER CONDITIONS**	Showers, 60's
OBSERVERS	JB, MW		

POOL CHARACTERISTICS			
WETLAND #	PU-11-VP	**LENGTH & WIDTH**	60x20
TOWN	Putnam	**CLOSEST WETLAND FLAG**	N/A
AVERAGE WATER DEPTH	12"	**COVER TYPE**	PEM

SUBSTRATE TYPE:
- ☐ **Peat**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- X **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
cattail, tussock sedge

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2, 5	1, 1
x	**Spotted salamander**	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding's turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Fingernail Clams**
- ☐ **Amphibious snails**
- X **Spring peepers (chorus)**
- ☐ **American toads**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymphs**
- ☐ **Damselfly nymphs**
- ☐ **Leeches**
- ☐ **Pickerel Frogs**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
3 of 3 vernal pool areas in W20-195

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-1-08	**WEATHER CONDITIONS**	60s / rain
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-14-VP	**LENGTH & WIDTH**	400x100
TOWN	Putnam	**CLOSEST WETLAND FLAG**	229
AVERAGE WATER DEPTH	10"	**COVER TYPE**	PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
red maple, skunk cabbage

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	3
x	**Spotted salamander**	2	5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding's turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
Salamander spermatophores present

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	CT Interstate Reliability Project		
DATE	4-1-08	**WEATHER CONDITIONS**	60s / rain
OBSERVERS	JB / MW		

POOL CHARACTERISTICS			
WETLAND #	PU-15-VP	**LENGTH & WIDTH**	300x200
TOWN	Putnam	**CLOSEST WETLAND FLAG**	112
AVERAGE WATER DEPTH	12”	**COVER TYPE**	PSS / PFO

SUBSTRATE TYPE:
- ☐ **Peat**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
eastern white pine, red maple, highbush blueberry

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2 / 5	50 / 1
x	**Spotted salamander**	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Amphibious snails**
- ☒ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:

VERNAL POOL DATA FORM
2008 FIELD SEASON

PROJECT	Connecticut Interstate Reliability Project		
DATE	3-31-08	**WEATHER CONDITIONS**	Rain, 40’s
OBSERVERS	JB, MW		

POOL CHARACTERISTICS			
WETLAND #	TH-1-VP	**LENGTH & WIDTH**	95x75
TOWN	Thompson	**CLOSEST WETLAND FLAG**	129
AVERAGE WATER DEPTH	12”	**COVER TYPE**	PSS

SUBSTRATE TYPE:
- ☐ **Peat**
- X **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Mud/Muck**

DOMINANT VEGETATION WITHIN POOL:
highbush blueberry, sedge spp.

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**

	OBLIGATE SPECIES	CODE	QUANTITY
x	**Wood frog**	2	3
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:
- ☐ **Red-spotted newt adults**
- ☐ **Spotted turtles**
- ☐ **Blanding’s turtles**
- ☐ **Painted turtles**
- ☐ **Snapping turtles**
- ☐ **Predacious diving beetles**
- ☐ **Dragonfly nymphs**
- ☐ **Fingernail Clams**
- ☐ **Amphibious snails**
- ☐ **Spring peepers**
- ☐ **American toads**
- ☐ **Fowler’s Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymphs**
- ☐ **Damselfly nymphs**
- ☐ **Leeches**
- ☐ **Pickerel Frogs**

Additional Species Observed:

Photo Documentation:
yes

Conclusions / Comments:
eggs SW of WF129

The boundary for this pool was modified in 2011 and for the purposes of this report, the 2011 boundary is shown on the mapping.

Attachment B

2008 Vernal Pool/Amphibian Breeding Habitat Representative Site Photographs

CO-1-VP in wetland W20-9.

CV-1-VP in wetland W20-27.

CV-1-ABH in wetland W20-30 looking northeast.

MA-1-VP in wetland W20-41 looking west.

MA-2-VP in wetland W20-43.

MA-3-VP in W20-43 with spotted salamander egg mass.

MA-4-VP in wetland W20-43.

MA-5-VP in wetland W20-43. Wood frog egg masses.

MA-6-VP in wetland W20-44.

MA-7-VP in wetland W20-50. Wood frog egg masses.

Privileged and Confidential
Inventory of Vernal Pool and Amphibian Breeding Habitats
Connecticut Interstate Reliability Project
Representative Photographs

MA-10-VP in wetland W20-53.

MA-13-VP in wetland W20-56.

MA-14-VP in wetland W20-56.

MA-15-VP in wetland W20-56. Wood frog egg mass.

Privileged and Confidential
Inventory of Vernal Pool and Amphibian Breeding Habitats
Connecticut Interstate Reliability Project
Representative Photographs

MA-19-VP in wetland W20-63.

CH-2-ABH in wetland W20-77. Looking south.

CH-7-VP in wetland W20-81. Spotted Salamander egg mass.

CH-10-VP in wetland W20-84. Looking north.

CH-11-VP in wetland W20-84.

CH-11-VP in wetland W20-84. Spotted Salamander egg masses.

CH-4-ABH in wetland W20-86. Looking east.

CH-4-ABH in wetland W20-86.

CH-13-VP in wetland W20-87.

Ribbon snake (Species of Special Concern) in CH-13-VP.

CH-14-VP in wetland W20-89.

CH-6-ABH in wetland W20-89.

CH-6-ABH in wetland W20-89. Red spotted newt.

CH-7-ABH in wetland W20-91.

CH-7-ABH in wetland W20-91.

HA-1-VP in wetland W20-94.

HA-2-VP in wetland W20-98.

Spotted Salamander egg masses in HA-2-VP.

HA-3-VP in wetland W20-100.

HA-4-VP in wetland W20-100.

HA-4-VP in wetland W20-100.

HA-6-VP in wetland W20-111.

HA-3-ABH in wetland W20-112.

HA-7-VP in wetland W20-113.

Privileged and Confidential
Inventory of Vernal Pool and Amphibian Breeding Habitats
Connecticut Interstate Reliability Project
Representative Photographs

HA-10-VP in wetland W20-118.

HA-11-VP in wetland W20-118.

HA-6/BR-1-ABH in wetland W20-120.

BR-2-ABH in wetland W20-122.

BR-3-ABH in wetland W20-122. Spotted turtle.

BR-2-VP in wetland W20-125.

BR-3-VP in wetland W20-125.

BR-4-VP in wetland W20-127.

BR-5-VP in wetland W20-129.

BR-6-VP in wetland W20-130. Looking east.

BR-8-VP in wetland W20-137.

BR-9-VP in wetland W20-137.

BR-12-VP in wetland W20-139.

BR-14-VP in wetland W20-140.

BR-15-VP in wetland W20-143.

BR-16-VP in wetland W20-149. Looking west.

BR-5-ABH in wetland W20-153. Looking northeast.

BR-17-VP in wetland W20-154. North view.

BR-18-VP in wetland W20-157. Southeast view.

BR-19-VP in wetland W20-158. Northwest view.

Privileged and Confidential
Inventory of Vernal Pool and Amphibian Breeding Habitats
Connecticut Interstate Reliability Project
Representative Photographs

PO-1-ABH in wetland W20-162. North view.

KI-1-VP in wetland W20-168. Southwest view.

KI-1-ABH in wetland W20-169. Southwest view.

PU-3-VP in wetland W20-175. South view.

PU-4-VP in wetland W20-176. West view.

KI-2-VP in wetland W20-177. South view.

KI-3-VP in wetland W20-178. South view.

PU-5-VP in wetland W20-187. South view.

PU-6-VP in wetland W20-188. North view.

PU-7-VP in wetland W20-191. South view.

PU-8-VP in wetland W20-192. Northeast view.

PU-9-VP in wetland W20-194. South view.

PU-10-VP in wetland W20-195. East view.

PU-10-VP in wetland W20-195. Northeast view.

PU-11-VP in wetland W20-195. South view.

PU-14-VP in wetland W20-197. East view.

Privileged and Confidential
Inventory of Vernal Pool and Amphibian Breeding Habitats
Connecticut Interstate Reliability Project
Representative Photographs

PU-15-VP in wetland W20-199. South view.

TH-1-VP in wetland W20-207. South view.

Attachment C

2011 Vernal Pool/Amphibian Breeding Habitat Data Forms

POOL # CO-1-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, 60°	**TIME OF DAY**	9:20
DATE	4/18/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ E.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-9/ 4/134	**LENGTH & WIDTH**	75' X 25'
TOWN	Columbia	**CLOSEST EXISTING STRUCTURE NUMBER**	9010
ISOLATED POOL Y / N	N (has outlet)		
AVG. WATER DEPTH	1'	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	1.25'	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Carex. sp.	*Salix* sp.	
	Alnus rugosa	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	10
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing west

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

45% PSS	**45% PFO**	**0% PEM**
0% UF	**10% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # CO-2-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, 60°	**TIME OF DAY**	14:00
DATE	4/18/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ E.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-9/ 5/134	**LENGTH & WIDTH**	250'x30'
TOWN	Columbia	**CLOSEST EXISTING STRUCTURE NUMBER**	9012
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	6-8"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	12"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Typha latifolia	*Rhododendron viscosum*	
Phragmites australis	*Toxicodendron vernix*	
Carex sp.	*Spiraea* sp.	
Symplocarpus foetidus	*Lyonia ligustrina*	
Scirpus cyperinus		

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	2 communal
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
Part of large wetland system but no defined pool (cryptic vernal pool)

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

40% PSS	**0% PFO**	**40% PEM**
20% UF	**0% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # CV-1-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Rainy, 50°	**TIME OF DAY**	15:00
DATE	4/20/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-27/ 11/134	**LENGTH & WIDTH**	60' X 30'
TOWN	Coventry	**CLOSEST EXISTING STRUCTURE NUMBER**	9027
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	1'	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	1.5'	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Juncus effusus
Scirpus cyperinus
Phalaris arundinacea

Shrub/Sapling:
Spiraea latifolia
Spiraea tomentosa

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Part of large wetland system but no defined pool (cryptic vernal pool).

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

25% PSS **0% PFO** **10% PEM**

40% UF **25% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # CV-1-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, 40°	**TIME OF DAY**	8:00
DATE	4/20/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-30/ 12 & 13/134	**LENGTH & WIDTH**	300' x ROW width
TOWN	Coventry	**CLOSEST EXISTING STRUCTURE NUMBER**	9031
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	2'	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	Unknown	**PRESENCE OF FISH Y / N**	Unknown

SUBSTRATE:

- ☐ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta

Shrub/Sapling:
Vaccinium corymbosum
Alnus rugosa
Cornus amomum
Lyonia ligustrina

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper (chorusing)
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Oligochaete worm, isopods

Photo Documentation (note direction):
Two photos: Facing north and facing south

Conclusions / Comments:

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

40% PSS **0% PFO** **0% PEM**

30% UF **20% OFS** **10% Other / define:**

<10% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**
Less than 10% of the pool within the ROW.

POOL # CV-2-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, 40°	**TIME OF DAY**	10:00
DATE	4/20/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-31/ 13/134	**LENGTH & WIDTH**	150'x100'
TOWN	Coventry	**CLOSEST EXISTING STRUCTURE NUMBER**	9034
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	2'	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	3'	**PRESENCE OF FISH Y / N**	Possible when river floods

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex sp.
Phalaris arundinacea

Shrub/Sapling:
Cornus amomum

Tree:
Carpinus caroliniana
Quercus alba
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Gray tree frogs chorusing

Photo Documentation (note direction):
Facing northwest

Conclusions / Comments:
Flooded backwater of Willimantic River

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**0% PFO**	**0% PEM**
70% UF	**20% OFS**	**10% Other / define:** river
<10% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # CV-3-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, 40°	**TIME OF DAY**	10:00
DATE	4/20/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-31/ 13/134	**LENGTH & WIDTH**	75'x25'
TOWN	Coventry	**CLOSEST EXISTING STRUCTURE NUMBER**	9034
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	1'	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	1.5'	**PRESENCE OF FISH Y / N**	Possible when river floods

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex sp.
Juncus effusus

Shrub/Sapling:
Cornus amomum

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Gray tree frogs chorusing

Photo Documentation (note direction):
Facing southeast

Conclusions / Comments:
Flooded backwater of Willimantic River

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**50% PFO**	**20% PEM**
0% UF	**30% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # MA-1-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, 50°	**TIME OF DAY**	16:30
DATE	4/21/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-41/ 18/134	**LENGTH & WIDTH**	60'x15'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9043
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	1'	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	2'	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Phragmites australis
Carex sp.

Shrub/Sapling:
Lyonia ligustrina

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	14
	Spotted salamander	2	4
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing west

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS	**10% PFO**	**20% PEM**
0% UF	**40% OFS**	**0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # MA-2-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, 50°	**TIME OF DAY**	15:30
DATE	4/21/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-43/ 18/134	**LENGTH & WIDTH**	40'x40'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9045
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	12"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:
Vaccinium corymbosum
Lyonia ligustrina
Cornus amomum
Lindera benzoin

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	2 individual + 1 communal
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog

Photo Documentation (note direction):
Facing north

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

50% PSS	**20% PFO**	**0% PEM**
0% UF	**30% OFS**	**0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # MA-3-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, 50°	**TIME OF DAY**	15:00
DATE	4/21/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-43/ 18/134	**LENGTH & WIDTH**	125'x40'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9045
ISOLATED POOL Y / N	Y- but part of complex		
AVG. WATER DEPTH	8-12"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	14"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Symplocarpus foetidus	*Vaccinium corymbosum*	*Acer rubrum*
Sphagnum sp.	*Lyonia ligustrina*	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2/3	5 communal
	Spotted salamander	2	8
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Mosquito larvae

Photo Documentation (note direction):
Facing south

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS	**30% PFO**	**0% PEM**
40% UF	**0% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # MA-6-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, 50°	**TIME OF DAY**	14:30
DATE	4/21/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-43/ 19/134	**LENGTH & WIDTH**	100'x20'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9046
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	20"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Symplocarpus foetidus	*Lindera benzoin*	
Typha latifolia	*Spiraea* sp.	
Juncus effusus	*Lyonia ligustrina*	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	~20
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog chorusing

Photo Documentation (note direction):
Facing south

Conclusions / Comments:
Most egg masses concentrated north end of pool- one mass on south end.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

60% PSS	**20% PFO**	**0% PEM**
10% UF	**10% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # MA-7-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, 50°	**TIME OF DAY**	14:30
DATE	4/21/11	**TIME SPENT AT POOL**	30 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-43/ 19/134	**LENGTH & WIDTH**	250'x70'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9046
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	14"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Symplocarpus foetidus	*Lindera benzoin*	*Tsuga canadensis*
Sphagnum sp.	*Vaccinium corymbosum*	*Acer rubrum*
	Betula nigra	*Betula nigra*

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	4 communal
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Mosquito larvae

Photo Documentation (note direction):
Facing south

Conclusions / Comments:
Large PFO with pit/mound topography with egg masses in hollows (cryptic vernal pool).

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**75% PFO**	**0% PEM**
25% UF	**0% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # MA-8-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, 50°	**TIME OF DAY**	13:30
DATE	4/21/11	**TIME SPENT AT POOL**	1 hour
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-44/ 19 & 20/134	**LENGTH & WIDTH**	100'x100'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9048
ISOLATED POOL Y / N	N- inlet & outlet		
AVG. WATER DEPTH	Unknown	**DOMINANT COVER TYPE**	POW
MAX. WATER DEPTH	>4'	**PRESENCE OF FISH Y / N**	Unknown

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	100+
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Beaver sign: dam and gnawed stumps

Photo Documentation (note direction):
Facing north, also pictures of area where pond crosses existing access road and has egg masses.

Conclusions / Comments:
Pool created by beaver activity- egg masses on edge of pool all the way around. Water is deep (presumably semi-permanent) and pond seems productive.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

20% PSS	**0% PFO**	**0% PEM**
40% UF	**40% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # MA-10-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overast, 65°	**TIME OF DAY**	10:00
DATE	4/27/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-53/ 23/134	**LENGTH & WIDTH**	150'x30'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9060
ISOLATED POOL Y / N	Y- but part of a wetland		
AVG. WATER DEPTH	18"	**DOMINANT COVER TYPE**	PFO around pool
MAX. WATER DEPTH	2'	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:
Vaccinium corymbosum

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	16
	Spotted salamander	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing west

Conclusions / Comments:

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS	40% PFO	0% PEM
30% UF	20% OFS	0% Other / define:
0% of pool w/in managed portion of ROW	100% of pool within forested area of ROW	

POOL # MA-11-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overast, 65°	**TIME OF DAY**	10:30
DATE	4/27/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-55/ 24/134	**LENGTH & WIDTH**	15' X 15'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9063
ISOLATED POOL Y / N	N connected to s20-16		
AVG. WATER DEPTH	14"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	18"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Sphagnum
Phragmites australis
Carex sp.

Shrub/Sapling:
Cornus amomum
Lyonia ligustrina
Spiraea sp.

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2/3	2/ many
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing southeast

Conclusions / Comments:

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

60% PSS	10% PFO	0% PEM
0% UF	30% OFS	0% Other / define:
100% of pool w/in managed portion of ROW	0% of pool within forested area of ROW	

POOL # MA-12-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, 65°	**TIME OF DAY**	11:00
DATE	4/27/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-56/ 25/134	**LENGTH & WIDTH**	5' X 3'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9064
ISOLATED POOL Y / N	N- part of large wetland		
AVG. WATER DEPTH	9"	**DOMINANT COVER TYPE**	PEM/ PSS
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Carex stricta	*Alnus rugosa*	
Symplocarpus foetidus	*Lyonia ligustrina*	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Water striders

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Pit/ mound topography with spotted salamander masses in a couple hollows (cryptic vernal pool).

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

40% PSS	**0% PFO**	**50% PEM**
0% UF	**10% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # MA-16-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, 65°	**TIME OF DAY**	11:30
DATE	4/27/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-56/ 25/134	**LENGTH & WIDTH**	15' X 10'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9065
ISOLATED POOL Y / N	Y-part of wetland		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	18"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Scirpus cyperinus	*Spiraea tomentosa*	
Sphagnum sp.		

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2/3	2/ many
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☒ Pickerel Frog

Additional Species Observed:
Adult red-backed salamander, and adult green frog.

Photo Documentation (note direction):
Facing southeast

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

50% PSS	**25% PFO**	**0% PEM**
0% UF	**25% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # MA-1-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy ~45°	**TIME OF DAY**	11:00
DATE	4/22/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-62c/ 29/134	**LENGTH & WIDTH**	100' X 100'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9074
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	Unknown	**DOMINANT COVER TYPE**	OW
MAX. WATER DEPTH	>5'	**PRESENCE OF FISH Y / N**	Yes

SUBSTRATE:

- ☐ **Mud/Muck**
- ☐ **Leaf Litter**
- ☒ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Pickerel frog egg mass

Photo Documentation (note direction):
Facing southwest

Conclusions / Comments:

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS **0% PFO** **0% PEM**

20% UF **0% OFS** **80% Other / define:** pasture

85% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # MA-17-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, ~50°	**TIME OF DAY**	10:00
DATE	4/22/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-63/ 31/134	**LENGTH & WIDTH**	10' X 30'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9079
ISOLATED POOL Y / N	N- part of stream		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	unknown

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Sphagnum

Shrub/Sapling:
Spiraea sp.
Rhododendron viscosum
Acer rubrum

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Spring peeper chorusing.

Photo Documentation (note direction):
Facing north

Conclusions / Comments:
Flow in wetland, but slower than in MA-18-VP on the other side of access road and with no defined banks- not flagged as a stream.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

50% PSS **20% PFO** **0% PEM**

15% UF **15% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # MA-18-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, ~50°	**TIME OF DAY**	10:00
DATE	4/22/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-63/ 31/134	**LENGTH & WIDTH**	8' X 20'
TOWN	Mansfield	**CLOSEST EXISTING STRUCTURE NUMBER**	9079
ISOLATED POOL Y / N	N- part of stream		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	Riverine RSB4
MAX. WATER DEPTH	8"	**PRESENCE OF FISH Y / N**	unknown

SUBSTRATE:

- ☐ **Mud/Muck**
- ☐ **Leaf Litter**
- ☒ **Sand**
- ☐ **Gravel**
- ☒ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Symplocarpus foetidus

Shrub/Sapling:

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Spring peeper chorusing.

Photo Documentation (note direction):
Facing south

Conclusions / Comments:
Within stream channel

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

40% PSS **0% PFO** **0% PEM**

20% UF **40% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # CH-1-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, ~70°	**TIME OF DAY**	14:00
DATE	4/27/11	**TIME SPENT AT POOL**	30 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-70/ 38/134	**LENGTH & WIDTH**	
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9095
ISOLATED POOL Y / N	Inlet		
AVG. WATER DEPTH	2'	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	3'	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta

Shrub/Sapling:
Spiraea sp.
Alnus rugosa
Cornus amomum

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Spring peeper chorusing, tree frog calling.

Photo Documentation (note direction):
Facing northwest

Conclusions / Comments:
All of wetland appears to provide breeding habitat.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

40% PSS **30% PFO** **0% PEM**

30% UF **0% OFS** **0% Other / define:**

30% of pool w/in managed portion of ROW **70% of pool within forested area of ROW**

POOL # CH-2-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, ~70°	**TIME OF DAY**	15:00
DATE	4/27/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-72/ 38/134	**LENGTH & WIDTH**	150'x50'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9095
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	24"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous: *Carex stricta*

Shrub/Sapling: *Spiraea* sp.

Tree: *Acer rubrum*

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	several
	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	1

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog calling.

Photo Documentation (note direction):
Facing west

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

50% PSS	**10% PFO**	**0% PEM**
0% UF	**40% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # CH-3-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, ~70°	**TIME OF DAY**	14:30
DATE	4/27/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ A.M.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-70/ 38/134	**LENGTH & WIDTH**	20' X 30'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9095
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	16"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous: *Carex stricta*, *Symplocarpus foetidus*

Shrub/Sapling: *Vaccinium corymbosum*, *Sambucus canadensis*

Tree: *Acer rubrum*

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	several
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Stonefly larvae, green frog calling.

Photo Documentation (note direction):
Facing east

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

50% PSS	**10% PFO**	**0% PEM**
40% UF	**0% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # CH-2-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Rainy, ~60°	**TIME OF DAY**	8:30
DATE	4/28/11	**TIME SPENT AT POOL**	30 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-77/ 40/134	**LENGTH & WIDTH**	250'x200'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9100
ISOLATED POOL Y / N	N- outlet		
AVG. WATER DEPTH	Unknown	**DOMINANT COVER TYPE**	POW/ PSS
MAX. WATER DEPTH	Unknown	**PRESENCE OF FISH Y / N**	probably

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Myriophyllum spicatum

Shrub/Sapling:
Rhododendron viscosum
Vaccinium corymbosum

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☒ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☒ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frogs

Photo Documentation (note direction):
Facing southeast

Conclusions / Comments:

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS **20% PFO** **0% PEM**

40% UF **0% OFS** **10% Other / define:** road/ parking lot

50% of pool w/in managed portion of ROW **50% of pool within forested area of ROW**

POOL # CH-4-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Rainy, ~60°	**TIME OF DAY**	9:45
DATE	4/28/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-78/ 40/134	**LENGTH & WIDTH**	50' X 30'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9100
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	18"	**DOMINANT COVER TYPE**	PFO (around edge)/ POW
MAX. WATER DEPTH	24"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:
Acer rubrum
Vaccinium corymbosum

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	1
	Spotted salamander	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☒ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☒ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Isopods.

Photo Documentation (note direction):
Facing south

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS **20% PFO** **0% PEM**

70% UF **0% OFS** **10% Other / define:**

0% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**
100% of pool outside ROW

POOL # CH-5-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Rainy, ~60°	**TIME OF DAY**	10:30
DATE	4/28/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-79/ 40/134	**LENGTH & WIDTH**	100'x50'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9100
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	24"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	36"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Symplocarpus foetidus

Shrub/Sapling:
Acer rubrum
Vaccinium corymbosum
Pinus strobus
Cephalanthus occidentalis

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	several
	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams	4	several
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☒ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Isopods and green frog

Photo Documentation (note direction):
Facing north

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS **0% PFO** **0% PEM**

60% UF **10% OFS** **30% Other / define: parking lot/ road**

0% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**
100% of pool outside of ROW

POOL # CH-3-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Light rain, ~60°	**TIME OF DAY**	13:30
DATE	4/28/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-81/ 41/134	**LENGTH & WIDTH**	25' X 8'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9102
ISOLATED POOL Y / N	N- part of stream		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	POW
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	unknown

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta

Shrub/Sapling:

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☒ American toad (eggs)
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Part of stream channel where access road crosses.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS **0% PFO** **80% PEM**

0% UF **10% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # CH-6-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Light rain, ~60°	**TIME OF DAY**	14:00
DATE	4/28/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-81/ 41/134	**LENGTH & WIDTH**	200'x100'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9102
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	10"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	12"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ Mud/Muck
- ☒ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Peat

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Symplocarpus foetidus

Shrub/Sapling:
Rhododendron viscosum
Vaccinium corymbosum

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	1
	Spotted salamander	2	6
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Cryptic vernal pool

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	20% PFO	0% PEM
60% UF	20% OFS	0% Other / define:
20% of pool w/in managed portion of ROW	80% of pool within forested area of ROW	

POOL # CH-7-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Light rain, ~60°	**TIME OF DAY**	13:45
DATE	4/28/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-81/ 41/134	**LENGTH & WIDTH**	150'x10'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9102
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	POW
MAX. WATER DEPTH	16"	**PRESENCE OF FISH Y / N**	unknown

SUBSTRATE:

- ☒ Mud/Muck
- ☐ Leaf Litter
- ☐ Sand
- ☐ Gravel
- ☐ Cobble
- ☐ Peat

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta

Shrub/Sapling:
Lyonia ligustrina
Spiraea latifolia
Rhododendron viscosum
Spiraea tomentosa

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	1000s
	Spotted salamander	2	15
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing east

Conclusions / Comments:

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

50% PSS	20% PFO	10% PEM
0% UF	20% OFS	0% Other / define:
100% of pool w/in managed portion of ROW	0% of pool within forested area of ROW	

POOL # CH-8-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Light rain, ~60°	**TIME OF DAY**	13:00
DATE	4/28/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-81/ 41/134	**LENGTH & WIDTH**	20' X 5'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9103
ISOLATED POOL Y / N	N- outlet you south		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	9"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex sp.
Onoclea sensibilis

Shrub/Sapling:

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☒ American toad (eggs)
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Water striders.

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
In access road tire ruts

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS **20% PFO** **40% PEM**

0% UF **40% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # CH-9-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Light rain, ~60°	**TIME OF DAY**	12:30
DATE	4/28/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-83/ 41/134	**LENGTH & WIDTH**	25' X 10'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9104
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex sp.
Symplocarpus foetidus

Shrub/Sapling:
Spiraea tomentosa
Spiraea latifolia

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	~25
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
Access road tire ruts with wood frog tadpoles. Questionable VP.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS **15% PFO** **15% PEM**

0% UF **40% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # CH-10-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Light rain, ~60°	**TIME OF DAY**	12:00
DATE	4/28/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-84/ 42/134	**LENGTH & WIDTH**	60' X 20'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9105
ISOLATED POOL Y / N	See below		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	POW
MAX. WATER DEPTH	9"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	100s
	Spotted salamander	2	5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
Access road tire ruts with wood frog tadpoles. Unvegetated water overflow down access road to w20-83.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

40% PSS	**20% PFO**	**0% PEM**
0% UF	**40% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # CH-12-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Light rain, ~60°	**TIME OF DAY**	12:00
DATE	4/28/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-84/ 42/134	**LENGTH & WIDTH**	50'x20'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9105
ISOLATED POOL Y / N	Part of wetland system		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:
Vaccinium corymbosum
Betula allegheniensis

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	1
	Spotted salamander	2	5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adults, red-backed salamander.

Photo Documentation (note direction):
Facing north

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS	**30% PFO**	**0% PEM**
50% UF	**10% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # CH-4-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Light rain, ~60°	**TIME OF DAY**	11:30
DATE	4/28/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	R.W./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-86/ 42/134	**LENGTH & WIDTH**	550' x ROW width
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9111
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	Unknown	**DOMINANT COVER TYPE**	POW
MAX. WATER DEPTH	Unknown	**PRESENCE OF FISH Y / N**	probably

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Carex stricta		
Typha latifolia		
Sphagnum		
Nymphea sp.		

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☒ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Gray tree frogs calling.

Photo Documentation (note direction):
Facing east

Conclusions / Comments:

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**20% PFO**	**0% PEM**
70% UF	**10% OFS**	**0% Other / define:**

50% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**
50% outside ROW

POOL # CH-13-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, breezy	**TIME OF DAY**	10:30
DATE	4/29/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	45/134	**LENGTH & WIDTH**	100'x50'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9113
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	14"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Sphagnum	*Vaccinium corymbosum*	
Carex stricta	*Ilex verticillata*	
Calamagrostis canadensis	*Amelanchier* sp.	
Symplocarpus foetidus		

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	12
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Green frog adults, four ribbon snakes.

Photo Documentation (note direction):
Facing north

Conclusions / Comments:
Pool has intermittent stream flowing out of it.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

5% PSS	**20% PFO**	**0% PEM**
10% UF	**65% OFS**	**0% Other / define:**

90% of pool w/in managed portion of ROW **10% of pool within forested area of ROW**

POOL # CH-5-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, breezy	**TIME OF DAY**	11:00
DATE	4/29/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-88 - 46/134	**LENGTH & WIDTH**	75'x25'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9116
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	12"	**PRESENCE OF FISH Y / N**	N (none observed)

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Juncus sp.
Calamagrostis canadensis

Shrub/Sapling:
Spiraea latifolia
Clethra alnifolia
Salix sp.
Amelanchier sp.

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	7
	Spotted salamander	2	6
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adult.

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
Pool has stream running through it, pool exists in tire ruts of access road.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

25% PSS	**0% PFO**	**45% PEM**
0% UF	**30% OFS**	**0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # CH-6-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot, breezy	**TIME OF DAY**	11:50
DATE	4/29/11	**TIME SPENT AT POOL**	25 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-189 - 47/134	**LENGTH & WIDTH**	126'x100'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9118
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	>3'	**DOMINANT COVER TYPE**	PUB
MAX. WATER DEPTH	>3'	**PRESENCE OF FISH Y / N**	Y

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☒ **Sand**
- ☒ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Juncus effusus
Potamogeton sp.
Glyceria sp.

Shrub/Sapling:

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☒ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☒ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Bull frog tadpoles, whirley gigs

Photo Documentation (note direction):

Conclusions / Comments:
Not a vernal pool, permanently flooded, fish and bull frog tadpoles.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS	**5% PFO**	**0% PEM**
65% UF	**20% OFS**	**0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # CH-14-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot, breezy	**TIME OF DAY**	11:32
DATE	4/29/11	**TIME SPENT AT POOL**	25 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-89 - 47/134	**LENGTH & WIDTH**	100'x50'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9118
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	16"	**DOMINANT COVER TYPE**	PEM/PSS
MAX. WATER DEPTH	30"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Scirpus cyperinus
Carex stricta
Phragmites australis

Shrub/Sapling:
Spiraea tomentosa

Tree:

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2/3	10-12/ many
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☒ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Water strider, 6-spot spider, whirley gig beetles

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
Egg masses well degraded, cannot estimate- many tadpoles, though.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

25% PSS **0% PFO** **0% PEM**

40% UF **25% OFS** **10% Other / define:** other pool

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # CH-7-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	12:45
DATE	4/29/11	**TIME SPENT AT POOL**	45 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	47 & 48/134	**LENGTH & WIDTH**	1000'x300'
TOWN	Chaplin	**CLOSEST EXISTING STRUCTURE NUMBER**	9118
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	>3'	**DOMINANT COVER TYPE**	PEM/PSS/PUB
MAX. WATER DEPTH	>3'	**PRESENCE OF FISH Y / N**	Very likely

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Phragmites australis

Shrub/Sapling:
Vaccinium corymbosum
Spiraea latifolia

Tree:
Acer rubrum

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☒ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Whirley gigs, gray tree frog chorus, water snake

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
Not really a pool at all, very big PEM/PSS/PUB/ wetland system. Likely other amphibian species breeding here.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS **0% PFO** **0% PEM**

0% UF **0% OFS** **0% Other / define:**

NA% of pool w/in managed portion of ROW **NA% of pool within forested area of ROW**

POOL # HA-2-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	10:25
DATE	5/2/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-98 - 53/134	**LENGTH & WIDTH**	150'x70'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9132
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	24"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	>36"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Glyceria sp.
Typha latifolia
Symplocarpus foetidus

Shrub/Sapling:
Vaccinium corymbosum

Tree:
Acer rubrum (along edges)

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2/3	~10-15/ many
	Spotted salamander	2	28
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☒ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:

Photo Documentation (note direction):
Facing east (took two pictures to include access road crossing through wetland).

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

45% PSS **25% PFO** **0% PEM**

25% UF (birch, oak, maple) **5% OFS** **0% Other / define:**

10% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # HA-3-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, warm	**TIME OF DAY**	11:17
DATE	5/2/11	**TIME SPENT AT POOL**	35 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-100 - 53/134	**LENGTH & WIDTH**	130'x70'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9134
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PEM/PSS
MAX. WATER DEPTH	12-14"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Sphagnum
Carex stricta
Symplocarpus foetidus

Shrub/Sapling:
Vaccinium corymbosum
Clethra alnifolia

Tree:
Acer rubrum

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	7
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☒ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☒ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☒ **Pickerel Frog**

Additional Species Observed:
Many green frog adults. Gray tree frogs chorusing nearby.

Photo Documentation (note direction):
Facing north

Conclusions / Comments:
Pool is quite shallow with scattered pockets between tussocks and sphagnum.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS **60% PFO** **10% PEM**

0% UF **0% OFS** **0% Other / define:**

0% of pool w/in managed portion of ROW **100% of pool within forested area of ROW**

POOL # HA-1-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	12:00
DATE	5/2/11	**TIME SPENT AT POOL**	25 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	54/134	**LENGTH & WIDTH**	150'x80'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9135
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	30"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	>48"	**PRESENCE OF FISH Y / N**	N (none observed but possible)

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	Shrub/Sapling:	Tree:
Scirpus cyperinus	*Spiraea latifolia*	*Betula populifolia*
Carex stricta	*Clethra alnifolia*	*Acer rubrum*
	Vaccinium corymbosum	
	.	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adults, whirley gigs.

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Pool is amphibian breeding habitat, permanently flooded with perennial stream beaver impoundment. No breeding amphibian observed.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

25% PSS	**15% PFO**	**20% PEM**
40% UF	**0% OFS**	**0% Other / define:**
15% of pool w/in managed portion of ROW	**85% of pool within forested area of ROW**	

POOL # HA-2-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	12:26
DATE	5/2/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-100 - 54/134	**LENGTH & WIDTH**	60'x25'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9135
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	24"	**DOMINANT COVER TYPE**	No veg in pool- around edge
MAX. WATER DEPTH	>36"	**PRESENCE OF FISH Y / N**	N (none observed but possible)

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	Shrub/Sapling:	Tree:
Symplocarpus foetidus	*Clethra alnifolia*	*Betula populifolia*
	Rhododendron viscosum	
	.	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	12
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Whirley gigs, water striders and green frog adults.

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
Pool is amphibian breeding habitat, permanently flooded beaver impoundment with perennial stream running through.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS	**50% PFO**	**0% PEM**
10% UF	**10% OFS**	**0% Other / define:**
75% of pool w/in managed portion of ROW	**25% of pool within forested area of ROW**	

POOL # HA-4-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	11:45
DATE	5/2/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-100 - 54/134	**LENGTH & WIDTH**	30'x30'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9135
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PEM (mostly mud without veg.)
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Typha latifolia	*Spiraea latifolia*	
Symplocarpus foetidus	*Clethra alnifolia*	
	.	

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	8
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☒ **American toad** (eggs)
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Green frog, ribbon snake.

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Pool is quite small depression in old access road through wetland-road no longer in use. New access from trucks and ATVs to south of pool. Mostly mud with no vegetation.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS	**0% PFO**	**30% PEM**
40% UF	**0% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # HA-5-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, warm	**TIME OF DAY**	12:45
DATE	5/2/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-101 - 54/134	**LENGTH & WIDTH**	50'x20'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9135
ISOLATED POOL Y / N	N (intermittent stream)		
AVG. WATER DEPTH	24"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	48"+	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Carex stricta		*Betula allegheniensis*
		Betula lenta
		Quercus rubra
	.	

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2/3	14/ many
	Spotted salamander	2	28
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Green frog adult.

Photo Documentation (note direction):
Facing south

Conclusions / Comments:
Pool is mostly outside of ROW in forested area

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**2% PFO**	**0% PEM**
60% UF	**38% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**10% of pool within forested area of ROW** 90% is outside of ROW	

POOL # HA-6-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, warm	**TIME OF DAY**	17:30
DATE	5/2/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-111 - 58/134	**LENGTH & WIDTH**	65'x30'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9147
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	16"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	30"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Glyceria sp.

Shrub/Sapling:
Vaccinium corymbosum
Vitis sp.
Amelanchier sp.
.

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	Many
	Spotted salamander	2	7
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adults.

Photo Documentation (note direction):
Facing south

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

5% PSS **0% PFO** **0% PEM**

35% UF **60% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # HA-3-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, warm	**TIME OF DAY**	17:15
DATE	5/2/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-112 - 59/134	**LENGTH & WIDTH**	170'x90'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9147
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	20"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	>36"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Glyceria sp.

Shrub/Sapling:
Vaccinium corymbosum
Amelanchier sp.
.

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	Many
	Spotted salamander	2	6
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frogs.

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Aquatic vegetation and presence of 2nd year green frog tadpoles indicates this may be permanently flooded- amphibian breeding habitat.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

20% PSS **0% PFO** **10% PEM**

25% UF **45% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # HA-7-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, warm	**TIME OF DAY**	16:53
DATE	5/2/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-113 - 59/134	**LENGTH & WIDTH**	75'x50'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9147
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	24"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:
Vaccinium corymbosum

Tree:
Pinus strobus
Acer rubrum

.

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	9
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adults.

Photo Documentation (note direction):
Facing west

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**0% PFO**	**0% PEM**
60% UF	**15% OFS**	**25% Other / define:** open water
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # HA-8-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, warm	**TIME OF DAY**	16:05
DATE	5/2/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-114 - 59/134	**LENGTH & WIDTH**	10' X 25'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9148
ISOLATED POOL Y / N	N (intermittent flow)		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	12"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Symplocarpus foetidus

Shrub/Sapling:

Tree:
Pinus strobus
Acer rubrum

.

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog juvenile, red-backed salamander.

Photo Documentation (note direction):
Facing northeast

Conclusions / Comments:
Very shallow and small and may not have sufficient hydrology.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**10% PFO**	**0% PEM**
70% UF	**20% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # HA-9-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, warm	**TIME OF DAY**	16:30
DATE	5/2/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-112A - 59/134	**LENGTH & WIDTH**	10' X 30'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9148
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	14"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Sphagnum

Shrub/Sapling:

Tree:
Pinus strobus
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adults.

Photo Documentation (note direction):
Facing northwest

Conclusions / Comments:
Pool is outside of ROW. Very small.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS **0% PFO** **0% PEM**

90% UF **10% OFS** **0% Other / define:**

0% of pool w/in managed portion of ROW
100% outside of the ROW

0% of pool within forested area of ROW

POOL # HA-5-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, warm	**TIME OF DAY**	15:20
DATE	5/2/11	**TIME SPENT AT POOL**	
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-117 - 60/134	**LENGTH & WIDTH**	40'x30'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9151
ISOLATED POOL Y / N	N (intermittent stream)		
AVG. WATER DEPTH	10"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	24"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Symplocarpus foetidus
Carex stricta

Shrub/Sapling:
Alnus rugosa
Spiraea latifolia

Tree:
Prunus serotina
Acer rubrum
Picea sp.

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	15
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
None.

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
Stream is probably intermittent- amphibian breeding habitat and not vernal pool due to the proximity and direct connection with a permanent fish pond.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

45% PSS **25% PFO** **5% PEM**

10% UF **15% OFS** **0% Other / define:**

0% of pool w/in managed portion of ROW

100% of pool within forested area of ROW

POOL # HA-10-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, warm, breezy	**TIME OF DAY**	9:30
DATE	5/3/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-118 - 61/134	**LENGTH & WIDTH**	40'x20'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9152
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PEM/PSS
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Phalaris arundinacea	*Vaccinium corymbosum*	
Eleocharis sp.	*Spiraea latifolia*	
	.	

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	5	many
	Spotted salamander	2	9
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☒ **American toad** (eggs/ tadpoles)
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:

Photo Documentation (note direction):
Facing northeast

Conclusions / Comments:
Pool is small tire rut in ROW access road.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS **30% PFO** **30% PEM**

0% UF **0% OFS** **10% Other / define:** Paved Road

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # HA-11-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	9:45
DATE	5/3/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-118 - 61/134	**LENGTH & WIDTH**	60' X 20'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9152
ISOLATED POOL Y / N	N (intermittent stream)		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	18"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Glyceria sp.	*Clethra alnifolia*	
Sphagnum	*Cornus amomum*	
Carex stricta	*Spiraea tomentosa*	
	Vitis sp.	

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2/3	4/ many
	Spotted salamander	2	57
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:

Photo Documentation (note direction):
Facing northeast

Conclusions / Comments:
Pool is small tire rut in ROW access road.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

25% PSS **40% PFO** **25% PEM**

0% UF **0% OFS** **10% Other / define:** Paved Road

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # HA-12-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot, breezy	**TIME OF DAY**	10:25
DATE	5/3/11	**TIME SPENT AT POOL**	
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-118 - 61/134	**LENGTH & WIDTH**	200' X 10'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9153
ISOLATED POOL Y / N	N (intermittent stream)		
AVG. WATER DEPTH	10"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	24"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Glyceria sp.
Carex stricta

Shrub/Sapling:
Vaccinium corymbosum
Alnus rugosa
Spiraea latifolia
Salix sp.

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	Many
	Spotted salamander	2	105
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☒ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing southwest

Conclusions / Comments:
This pool is a remnant access road.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

40% PSS **40% PFO** **20% PEM**

0% UF **0% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # HA-13-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	12:05
DATE	5/3/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-121 - 61/134	**LENGTH & WIDTH**	30'x20'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9160
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	24"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	40"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Dulichium arundinaceum

Shrub/Sapling:
Vaccinium corymbosum
Aronia arbutifolia

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	Many
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Amphipods

Photo Documentation (note direction):
Facing southwest

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

25% PSS **0% PFO** **0% PEM**

40% UF **35% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # HA-6/BR-1 ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	11:20
DATE	5/3/11	**TIME SPENT AT POOL**	25 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-120 - 63/134	**LENGTH & WIDTH**	1200'x200'
TOWN	Hampton	**CLOSEST EXISTING STRUCTURE NUMBER**	9159/9160
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	10"	**DOMINANT COVER TYPE**	PEM/ PSS
MAX. WATER DEPTH	18"	**PRESENCE OF FISH Y / N**	N (crayfish)

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:
No vegetation in pool, listed vegetation was along the edges.

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Sphagnum	*Vaccinium corymbosum*	
Symplocarpus foetidus	*Clethra alnifolia*	
Osmunda cinnemomea		

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	Few
	Spotted salamander	2	22
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Green frog tadpoles (2nd year), gray tree frogs calling, crayfish

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Wood frog tadpoles only observed at eastern end of tire rut.
Pool contains indicators of permanent hydrology.
This pool currently mapped as VPH- consider changing to ABH.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

55% PSS	**5% PFO**	**20% PEM**
10% UF	**10% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # BR-2-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	13:00
DATE	5/3/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-122 - 65/134	**LENGTH & WIDTH**	190'x50'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9163
ISOLATED POOL Y / N	N (intermittent outlet)		
AVG. WATER DEPTH	>3'	**DOMINANT COVER TYPE**	PEM/ PSS
MAX. WATER DEPTH	>3'	**PRESENCE OF FISH Y / N**	N (not observed but possible)

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Symplocarpus foetidus	*Clethra alnifolia*	*Acer rubrum*
.	*Vaccinium corymbosum*	

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	Some
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☒ **Spring peeper** (calling)
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Gray tree frogs calling

Photo Documentation (note direction):
Facing southeast

Conclusions / Comments:
Wetland is currently mapped as VPH, wetland is permanent with small stream and should be ABH.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**0% PFO**	**0% PEM**
0% UF	**0% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**50% of pool within forested area of ROW** Half of the pool is outside of the ROW limits.	

POOL # BR-3-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	13:00
DATE	5/3/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-122 - 65/134	**LENGTH & WIDTH**	200'x175'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9164
ISOLATED POOL Y / N	N (intermittent outlet)		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	24"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Nuphar variagatum	*Vaccinium corymbosum*	
Sparganium sp.	*Acer rubrum*	
Carex stricta		
Scirpus cyperinus		
Phragmites australis, Typha latifolia		

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	7
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☒ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Whirley gigs, green frog adults, bull frog adults

Photo Documentation (note direction):

Conclusions / Comments:
Pool mapped in 2008 as VP – change to ABH

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS	**30% PFO**	**0% PEM**
0% UF	**60% OFS**	**0% Other / define:**
60% of pool w/in managed portion of ROW	**40% of pool within forested area of ROW**	

POOL # BR-1-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	13:22
DATE	5/3/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-123 - 66/134	**LENGTH & WIDTH**	90'x30'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9165
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	14"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Symplocarpus foetidus		*Acer rubrum*
Osmunda cinnemomea		*Quercus rubra*
		Tsuga canadensis

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	3
	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Amphipods, isopods

Photo Documentation (note direction):
Facing west

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**80% PFO**	**0% PEM**
20% UF	**0% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # BR-2-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, warm	**TIME OF DAY**	17:15
DATE	5/3/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-125/ 66/134	**LENGTH & WIDTH**	80' X 40'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9166
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PEM/PFO
MAX. WATER DEPTH	12"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Sphagnum
Juncus effusus
Glyceria sp.

Shrub/Sapling:
Kalmia angustifolia

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	Several/many
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adult

Photo Documentation (note direction):
Facing south

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS	**0% PFO**	**20% PEM**
40% UF	**30% OFS**	**0% Other / define:**
90% of pool w/in managed portion of ROW	**10% of pool within forested area of ROW**	

POOL # BR-3-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, warm	**TIME OF DAY**	17:00
DATE	5/3/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-125/ 66/134	**LENGTH & WIDTH**	170'x65'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9167
ISOLATED POOL Y / N			
AVG. WATER DEPTH		**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH		**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Aquatic spp.

Shrub/Sapling:
Vaccinium corymbosum

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	Several/many
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☒ American toad (tadpoles)
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing northeast

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**15% PFO**	**30% PEM**
35% UF	**20% OFS**	**0% Other / define:**
10% of pool w/in managed portion of ROW	**90% of pool within forested area of ROW**	

POOL # BR-4-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, warm	**TIME OF DAY**	16:30
DATE	5/3/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-127/ 68/134	**LENGTH & WIDTH**	100'x40'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9170
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	16"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Sphagnum
Carex stricta

Shrub/Sapling:
Clethra alnifolia
Vaccinium corymbosum
Lyonia ligustrina
Spiraea tomentosa

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	many
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander	4	1
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adult

Photo Documentation (note direction):

Conclusions / Comments:
Small shallow pool

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS	**25% PFO**	**0% PEM**
0% UF	**65% OFS**	**0% Other / define:**
90% of pool w/in managed portion of ROW	**10% of pool within forested area of ROW**	

POOL # BR-5-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, hot	**TIME OF DAY**	16:05
DATE	5/3/11	**TIME SPENT AT POOL**	10 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-129 - 69/134	**LENGTH & WIDTH**	130'x40'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9172
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PEM/ PSS
MAX. WATER DEPTH	12" (in one spot)	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Juncus effusus
Carex stricta

Shrub/Sapling:
Betula allegheniensis
Vaccinium corymbosum

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	many
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adult

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
Pool is in tire ruts in access road; mostly very shallow. Rest of the scrub-shrub wetland does not have standing water.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

40% PSS	**0% PFO**	**0% PEM**
40% UF	**20% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # BR-7-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, warm	**TIME OF DAY**	15:39
DATE	5/3/11	**TIME SPENT AT POOL**	15 minutes
OBSERVERS	S.E./ J.H.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-130 - 70/134	**LENGTH & WIDTH**	75'x10'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9175
ISOLATED POOL Y / N	Y (intermittent outlet)		
AVG. WATER DEPTH	14"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	24"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Symplocarpus foetidus

Shrub/Sapling:
Spiraea latifolia

Tree:

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	many
	Spotted salamander	2	51
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Green frog

Photo Documentation (note direction):
Facing east

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS **10% PFO** **50% PEM**

0% UF **10% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # BR-11-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, calm, 55°F	**TIME OF DAY**	9:50
DATE	5/4/11	**TIME SPENT AT POOL**	~ 20 minutes
OBSERVERS	J.S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-138/ 73/134	**LENGTH & WIDTH**	~250' X 75'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9182
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PEM/ PFO
MAX. WATER DEPTH	18"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Typha latifolia
Symplocarpus foetidus

Shrub/Sapling:
Ilex verticillata
Lyonia ligustrina

Tree:
Acer rubrum

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2, 3	50, many
	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☒ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☒ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☒ **Caddis fly case/larvae**
- ☒ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Peepers chorusing

Photo Documentation (note direction):
Facing north on managed and unmanaged ROW

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS **60% PFO** **5% PEM**

0% UF **25% OFS** **0% Other / define:**

50% of pool w/in managed portion of ROW **50% of pool within forested area of ROW**

POOL # BR-4-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, calm, ~50°F	**TIME OF DAY**	9:05
DATE	5/4/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	J.B./ J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-139/ 73/134	**LENGTH & WIDTH**	90'x70'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9183
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PSS/PFO
MAX. WATER DEPTH	3'+	**PRESENCE OF FISH Y / N**	Not likely

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Carex stricta	*Vaccinium corymbosum*	*Acer rubrum*
Juncus effusus	*Cephalanthus occidentalis*	*Quercus alba*
		Carya ovata
		Betula allegheniensis

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	9
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☒ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:

Photo Documentation (note direction):
Facing southeast

Conclusions / Comments:
Functioning as vernal pool habitat in some areas but maintaining water year round in others.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

50% PSS	**0% PFO**	**0% PEM**
40% UF	**10% OFS**	**0% Other / define:**
90% of pool w/in managed portion of ROW	**10% of pool within forested area of ROW**	

POOL # BR-12-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, calm, ~50°F	**TIME OF DAY**	9:28
DATE	5/4/11	**TIME SPENT AT POOL**	~15 minutes
OBSERVERS	J.B./ J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-139/ 73/134	**LENGTH & WIDTH**	~120' X 40'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9183
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	4"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	13"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Symplocarpus foetidus	*Clethra alnifolia*	*Acer rubrum*
Carex sp.	*Ilex verticillata*	*Quercus palustris*
		Betula allegheniensis
		Ulmus americana

Breeding Criteria Codes

1	**Breeding chorus**
2	**Egg masses**
3	**Frog tadpoles**
4	**Salamander larvae**
5	**Presence of adults**
6	**Spermatophores**

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2, 3	5-10 old, many
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ **Red-spotted newt (adult)**
- ☐ **Spotted turtle**
- ☐ **Blanding's turtle**
- ☐ **Painted turtle**
- ☐ **Snapping turtle**
- ☐ **Predacious diving beetle (adult)**
- ☐ **Predacious diving beetle (larva)**
- ☐ **Amphibious snails**
- ☐ **Spring peeper**
- ☐ **American toad**
- ☐ **Fowler's Toad**
- ☐ **Caddis fly case/larvae**
- ☐ **Dragonfly nymph**
- ☐ **Damselfly nymph**
- ☐ **Leech**
- ☐ **Pickerel Frog**

Additional Species Observed:
Aquatic beetles

Photo Documentation (note direction):
Facing east

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**20% PFO**	**0% PEM**
80% UF	**0% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # BR-13-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, calm, ~50°F	**TIME OF DAY**	8:10
DATE	5/4/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	J.B./ J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-140/ 74/134	**LENGTH & WIDTH**	~110' X 100'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9185
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	10"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	15"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Symplocarpus foetidus	*Lindera benzoin*	*Acer rubrum*
Carex stricta	*Vaccinium corymbosum*	*Betula lenta*
Osmunda cinnemomea		

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	15
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander	4	3
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Peepers chorusing

Photo Documentation (note direction):
Facing northeast

Conclusions / Comments:

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

20% PSS	45% PFO	0% PEM
25% UF	10% OFS	0% Other / define:
0% of pool w/in managed portion of ROW	100% of pool within forested area of ROW	

POOL # BR-15-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, 70°F, breezy	**TIME OF DAY**	14:35
DATE	5/3/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	J.B./ J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-143/ 74/134	**LENGTH & WIDTH**	190'x90'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9186
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PEM/ PFO
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Typha latifolia	*Salix* sp.	*Acer rubrum*
Carex stricta	*Alnus rugosa*	
Scirpus pungens	*Spiraea tomentosa*	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	many
	Spotted salamander	2	~25
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing southwest

Conclusions / Comments:

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS	0% PFO	40% PEM
10% UF	20% OFS	0% Other / define:
70% of pool w/in managed portion of ROW	30% of pool within forested area of ROW	

POOL # BR-16-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Overcast, 70°F	**TIME OF DAY**	13:50
DATE	5/3/11	**TIME SPENT AT POOL**	~15 minutes
OBSERVERS	J.B./ J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-149/ 76/134	**LENGTH & WIDTH**	120' X 30'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9189
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	15"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	3'+	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Symplocarpus foetidus
Carex stricta

Shrub/Sapling:
Vaccinium corymbosum

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	~100
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☒ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing northwest

Conclusions / Comments:

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

25% PSS	75% PFO	0% PEM
0% UF	0% OFS	0% Other / define:
0% of pool w/in managed portion of ROW	100% of pool within forested area of ROW	

POOL # BR-19-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	100% cloudy, calm, 60°F	**TIME OF DAY**	8:40
DATE	5/3/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	J.B./ J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-158/ 86/134	**LENGTH & WIDTH**	300'x80'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9213
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	30"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**
- X **Aquatic vegetation**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Juncus effusus

Shrub/Sapling:
Cephalanthus occidentalis
Spiraea tomentosa

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	10-15
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☒ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing northeast

Conclusions / Comments:

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

15% PSS	50% PFO	0% PEM
0% UF	35% OFS	0% Other / define:
100% of pool w/in managed portion of ROW	0% of pool within forested area of ROW	

POOL # BR-6-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	80% cloud cover, slight breeze, 65°F	**TIME OF DAY**	13:22
DATE	5/2/11	**TIME SPENT AT POOL**	~25 minutes
OBSERVERS	J.B./ J.W.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-160/ 89A/134	**LENGTH & WIDTH**	180' X 100'
TOWN	Brooklyn	**CLOSEST EXISTING STRUCTURE NUMBER**	9220
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	15"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	3'+	**PRESENCE OF FISH Y / N**	Y

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous: *Carex sp.*

Shrub/Sapling:

Tree: *Acer rubrum*

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Hundreds of green frog tadpoles, coleoptera.

Photo Documentation (note direction):
Facing northwest

Conclusions / Comments:
Pooled area of S2-53 serving as amphibian breeding habitat.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

25% PSS	**10% PFO**	**25% PEM**
40% UF	**0% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # PO-1-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Clear, sunny, 65°F	**TIME OF DAY**	10:40
DATE	5/2/11	**TIME SPENT AT POOL**	~15 minutes
OBSERVERS	J.B./ J.W.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-161/ 94/134	**LENGTH & WIDTH**	100' X 60'
TOWN	Pomfret	**CLOSEST EXISTING STRUCTURE NUMBER**	9234
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	3'	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous: *Symplocarpus foetidus* *Juncus* sp.

Shrub/Sapling: *Cephalanthus occidentalis*

Tree: *Quercus palustris*

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	many
	Spotted salamander	2	15-20
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☒ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing east

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**10% PFO**	**0% PEM**
70% UF	**0% OFS**	**25% Other / define:** ag field
0% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW** 100% outside ROW boundary	

POOL # PO-1-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Clear, sunny, 65°F	**TIME OF DAY**	10:10
DATE	5/2/11	**TIME SPENT AT POOL**	~30 minutes
OBSERVERS	J.B./ J.W.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-134/ 95/134	**LENGTH & WIDTH**	500' x 500'
TOWN	Pomfret	**CLOSEST EXISTING STRUCTURE NUMBER**	9236
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	18"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	36"+	**PRESENCE OF FISH Y / N**	Y (Backwater of River)

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Juncus effusus
Phalaris arundinacea

Shrub/Sapling:
Rosa multiflora

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	10-12
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☒ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☒ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog tadpoles

Photo Documentation (note direction):
Facing southeast

Conclusions / Comments:
Amphibian breeding habitat is flooded backwater of Quinebaug River.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

40% PSS	**20% PFO**	**40% PEM**
0% UF	**0% OFS**	**0% Other / define:**
80% of pool w/in managed portion of ROW	**20% of pool within forested area of ROW**	

POOL # KI-1-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Windy, rainy	**TIME OF DAY**	16:00
DATE	4/28/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	S.E./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-168/99/134	**LENGTH & WIDTH**	175'x75'
TOWN	Killingly	**CLOSEST EXISTING STRUCTURE NUMBER**	9246
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	8"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	12"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☐ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta

Shrub/Sapling:
Vaccinium corymbosum
Ilex verticillata

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	3-5
	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
None

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Pool is mostly too shallow for breeding except for a couple 10-12" pockets.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

25% PSS	**5% PFO**	**0% PEM**
35% UF	**35% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # KI-1-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Rain, wind	**TIME OF DAY**	15:30
DATE	4/28/11	**TIME SPENT AT POOL**	45 minutes
OBSERVERS	S.E./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-169, 99 & 100/134	**LENGTH & WIDTH**	250'x75'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9247
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	6"	**DOMINANT COVER TYPE**	PEM/PSS
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous: *Carex stricta*

Shrub/Sapling: *Vaccinium corymbosum*, *Alnus rugosa*, *Lyonia ligustrina*

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	10-14
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Ribbon snake

Photo Documentation (note direction):
Facing south

Conclusions / Comments:
No actual pool, small flowing stream/ ditch drains outside of ditch/ stream with little or no standing water.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

65% PSS	**0% PFO**	**35% PEM**
0% UF	**0% OFS**	**0% Other / define:**
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # PU-1-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, rain, 55°	**TIME OF DAY**	13:10
DATE	5/4/11	**TIME SPENT AT POOL**	~15 minutes
OBSERVERS	J.B./J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-172/ 103/134	**LENGTH & WIDTH**	~75'x50'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9254
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	3'+	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☐ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous: *Typha latifolia*

Shrub/Sapling: *Salix* sp.

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	3
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☒ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing west

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

20% PSS	**0% PFO**	**0% PEM**
0% UF	**0% OFS**	**80% Other / define:** ag. field
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # PU-2-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	100% cloudy, rain, 50°	**TIME OF DAY**	12:30
DATE	5/11/11	**TIME SPENT AT POOL**	~10 minutes
OBSERVERS	J.B./ J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-174/ 103/134	**LENGTH & WIDTH**	150'x110'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9255
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	10"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	20"+	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:
Cephalanthus occidentalis

Tree:
Acer rubrum
Quercus palustris
Pinus strobus

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing west

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS **20% PFO** **0% PEM**

40% UF **0% OFS** **40% Other / define:** ag. field

10% of pool w/in managed portion of ROW **10% of pool within forested area of ROW**
Majority of pool is outside of the ROW

POOL # PU-3-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	100% cloudy, rain, 50°	**TIME OF DAY**	12:20
DATE	5/11/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	J.B./ J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-175/ 104/134	**LENGTH & WIDTH**	150'x80'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9256
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	12"	**DOMINANT COVER TYPE**	PEM/PSS/PFO
MAX. WATER DEPTH	3'+	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Carex sp.

Shrub/Sapling:
Cephalanthus occidentalis
Vaccinium corymbosum
Lyonia ligustrina

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	3	~50
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☒ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☒ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☒ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Chorusing peepers

Photo Documentation (note direction):
Facing east

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS **0% PFO** **0% PEM**

45% UF **0% OFS** **55% Other / define:** ag. field

50% of pool w/in managed portion of ROW **25% of pool within forested area of ROW**
25% of pool outside of ROW in forested area

POOL # PU-4-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	100% cloudy, rain, 50°	**TIME OF DAY**	11:50
DATE	5/4/11	**TIME SPENT AT POOL**	~15 minutes
OBSERVERS	J.B./ J.S.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-176/ 104/134	**LENGTH & WIDTH**	120' X 100'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9256/9257
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	18-24"	**DOMINANT COVER TYPE**	PSS/ PFO
MAX. WATER DEPTH	3'+	**PRESENCE OF FISH Y / N**	

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:
Cephalanthus occidentalis

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	~12
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing northwest

Conclusions / Comments:
Previous boundary still OK

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS **0% PFO** **0% PEM**

50% UF **10% OFS** **40% Other / define:** ag. field

50% of pool w/in managed portion of ROW **50% of pool within forested area of ROW**

POOL # KI-2-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Windy, rain	**TIME OF DAY**	10:30
DATE	4/28/11	**TIME SPENT AT POOL**	25 minutes
OBSERVERS	S.E./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-177/105/134	**LENGTH & WIDTH**	100'x75'
TOWN	Killingly	**CLOSEST EXISTING STRUCTURE NUMBER**	9260
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	24"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	3'+	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Juncus effusus

Shrub/Sapling:
Spiraea latifolia
Vitis sp.
Cornus amomum

Tree:
Quercus sp.

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Chorusing spring peepers

Photo Documentation (note direction):
Facing north

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

65% PSS **0% PFO** **0% PEM**

25% UF **15% OFS** **0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # KI-3-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Warm, rain	**TIME OF DAY**	10:00
DATE	4/28/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	S.E./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-178/106/134	**LENGTH & WIDTH**	200'x60'
TOWN	Killingly	**CLOSEST EXISTING STRUCTURE NUMBER**	9261
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	20"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	3'	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	Shrub/Sapling:	Tree:
Symplocarpus foetidus	*Cornus amomum*	*Acer rubrum*
Carex stricta	*Vitis labrusca*	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	6-10
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	many

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☒ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Caddisflies, isopods, amphipods

Photo Documentation (note direction):
Facing east

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

35% PSS	**10% PFO**	**0% PEM**
5% UF	**50% OFS**	**0% Other / define:**

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**

POOL # PU-1-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, drizzle ~60° F	**TIME OF DAY**	12:26
DATE	4/25/11	**TIME SPENT AT POOL**	~45 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-188 - 118/134	**LENGTH & WIDTH**	375'x150'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9290
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	6-8"	**DOMINANT COVER TYPE**	PEM/ PSS
MAX. WATER DEPTH	>2'	**PRESENCE OF FISH Y / N**	Y

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	Shrub/Sapling:	Tree:
Carex stricta	*Lyonia ligustrina*	*Acer rubrum*
Symplocarpus foetidus	*Vaccinium corymbosum*	*Pinus strobus*
Sphagnum sp.	*Alnus rugosa*	
	Rhamnus frangula	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	5	2
	Spotted salamander	2	4-6
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☒ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog

Photo Documentation (note direction):

Conclusions / Comments:
Unidentified fish observed in Culver Brook, which is connected to amphibian breeding habitat. Toads audible.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

__50_% PSS	**__30_% PFO**	**_____% PEM**
___20% UF	**_____% OFS**	**_____% Other / define:**

_90__% of pool w/in managed portion of ROW **_10__% of pool within forested area of ROW**

POOL # PU-6-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, drizzle ~60° F	**TIME OF DAY**	11:30
DATE	4/25/11	**TIME SPENT AT POOL**	~15 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-188 - 118/134	**LENGTH & WIDTH**	~15' X 30'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9290
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	6-8"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	10"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex spp.
Symplocarpus foetidus

Shrub/Sapling:
Rhododendrum viscosum
Vaccinium corymbosum
Ilex verticillata

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	6-8
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Isopods, mosquito larvae

Photo Documentation (note direction):
Facing north

Conclusions / Comments:
Small vernal pool developed in *Acer rubrum* wind throw.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS **90% PFO** **0% PEM**

10% UF **0% OFS** **0% Other / define:**

0% of pool w/in managed portion of ROW **100% of pool within forested area of ROW**

POOL # PU-2-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy ~60° F	**TIME OF DAY**	10:20
DATE	4/25/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-190 - 119/134	**LENGTH & WIDTH**	100'x100'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9293
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	1-2'	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	>6'	**PRESENCE OF FISH Y / N**	Y

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Typha latifolia
Carex stricta
Carex spp.

Shrub/Sapling:
Vaccinium corymbosum
Cornus amomum
Ilex verticillata

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frogs, chorusing spring peepers

Photo Documentation (note direction):
Facing south

Conclusions / Comments:

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

__80% PSS **_____% PFO** **_____% PEM**

_____% UF **_____% OFS** **20% Other / define: road**

90% of pool w/in managed portion of ROW **10% of pool within forested area of ROW**

POOL # PU-3-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Mostly cloudy ~60° F	**TIME OF DAY**	10:00
DATE	4/25/11	**TIME SPENT AT POOL**	~45 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-191 - 119 & 120/134	**LENGTH & WIDTH**	1200'x175'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9294
ISOLATED POOL Y / N			
AVG. WATER DEPTH	~2'	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	>6'	**PRESENCE OF FISH Y / N**	Y

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Typha latifolia
Carex stricta
Symplocarpus foetidus

Shrub/Sapling:
Viburnam dentatum
Vaccinium corymbosum
Ilex verticillata
Rhamnus frangula
Lyonia ligustrina

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander		
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☒ Painted turtle (~12)
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frogs, chorusing spring peepers

Photo Documentation (note direction):
Facing north

Conclusions / Comments:
Associated with Little Dam Tavern Brook

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

_10__% PSS **_25__% PFO** **_____% PEM**

_15__% UF **_40__% OFS** **10% Other / define: road/yard**

_90__% of pool w/in managed portion of ROW **_10__% of pool within forested area of ROW**

POOL # PU-7-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy ~55° F	**TIME OF DAY**	9:25
DATE	4/25/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	120/134	**LENGTH & WIDTH**	75' X 30'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9295
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	20-24"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	~30"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Typha latifolia

Shrub/Sapling:
Ilex verticillata
Vaccinium corymbosum

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	20-25
	Spotted salamander	2	5
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	>10

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Mosquito larvae

Photo Documentation (note direction):
Facing southwest

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

20% PSS **10% PFO** **0% PEM**

20% UF **50% OFS** **0% Other / define:**

90% of pool w/in managed portion of ROW **10% of pool within forested area of ROW**

POOL # PU-8-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy ~55° F	**TIME OF DAY**	8:40
DATE	4/25/11	**TIME SPENT AT POOL**	~30 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-192 - 120/134	**LENGTH & WIDTH**	125' X 60'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9295/ 9296
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	20-24"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	~36"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:

Shrub/Sapling:
Ilex verticillata
Vaccinium corymbosum
Cephalanthus occidentalis

Tree:
Acer rubrum
Quercus palustris

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	20-25
	Spotted salamander	2	15-20
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp	5	>50

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Green frog adults

Photo Documentation (note direction):
Facing west

Conclusions / Comments:
High quality vernal pool.

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**0% PFO**	**0% PEM**
80% UF	**20% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # PU-9-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Partly cloudy, windy 50° F	**TIME OF DAY**	11:39
DATE	4/21/11	**TIME SPENT AT POOL**	~30 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-194 - 122/134	**LENGTH & WIDTH**	200' X 150'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9300
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	12-14"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	20"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Typha latifolia
Decodon verticillatus

Shrub/Sapling:
Alnus rugosa
Vaccinium corymbosum

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams	5	5-10
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☒ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☒ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☒ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing east

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS	**20% PFO**	**15% PEM**
10% UF	**25% OFS**	**20% Other / define:** hay field
90% of pool w/in managed portion of ROW	**10% of pool within forested area of ROW**	

POOL # PU-10-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Mostly sunny, windy 50° F	**TIME OF DAY**	10:45
DATE	4/21/11	**TIME SPENT AT POOL**	~1 hour
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-195 - 122/134	**LENGTH & WIDTH**	350'x125'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9301
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	12-16"	**DOMINANT COVER TYPE**	PEM/ PSS
MAX. WATER DEPTH	>5'	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	Shrub/Sapling:	Tree:
Typha latifolia	*Lyonia ligustrina*	*Acer rubrum*
Carex stricta	*Vaccinium corymbosum*	*Pinus strobus*
Symplocarpus foetidus	*Rhododendron viscosum*	*Betula allegheniensis*
	Rhamnus frangula	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	100+
	Spotted salamander	2	20
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☒ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☒ Dragonfly nymph
- ☐ Damselfly nymph
- ☒ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Bullfrog larvae

Photo Documentation (note direction):
Facing northeast

Conclusions / Comments:

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS	20% PFO	0% PEM
30% UF	20% OFS	0% Other / define:
80% of pool w/in managed portion of ROW	20% of pool within forested area of ROW	

POOL # PU-11-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Mostly sunny	**TIME OF DAY**	9:45
DATE	4/21/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-195 - 123/134	**LENGTH & WIDTH**	60' X 15'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9303
ISOLATED POOL Y / N	Y		
AVG. WATER DEPTH	10-14"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	18"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	Shrub/Sapling:	Tree:
Typha latifolia	*Spiraea tomentosa*	
Carex stricta	*Vaccinium corymbosum*	
	Spiraea latifolia	

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	1
	Spotted salamander	2	25-30
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
Facing northeast

Conclusions / Comments:

☒ Vernal Pool ☐ Amphibian Breeding Habitat

COVER TYPE (100 FEET FROM EDGE OF POOL):

50% PSS	20% PFO	5% PEM
20% UF	5% OFS	0% Other / define:
100% of pool w/in managed portion of ROW	0% of pool within forested area of ROW	

POOL # PU-12-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Sunny, ~50°F, windy	**TIME OF DAY**	9:00
DATE	4/21/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-196 - 124/134	**LENGTH & WIDTH**	20' X 60'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9303
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	10-12"	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	18"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Typha latifolia
Carex stricta
Scirpus sp.

Shrub/Sapling:
Viburnum recognitum

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	8-10
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Hellgrammite, isopods, mosquito larvae

Photo Documentation (note direction):
Facing south

Conclusions / Comments:
Chorusing spring peepers

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

5% PSS	**0% PFO**	**30% PEM**
0% UF	**20% OFS**	**45% Other / define:** Rt. 44
100% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW**	

POOL # PU-13-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Partly cloudy, ~50°F, slight breeze	**TIME OF DAY**	8:50
DATE	4/21/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-197/ 124/ 134	**LENGTH & WIDTH**	75' X 20'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9303
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	4"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	6"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Symplocarpus foetidus
Carex stricta

Shrub/Sapling:
Viburnum recognitum

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	6
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Pipers chorusing in larger wetland complex

Photo Documentation (note direction):
Facing northeast at pool area

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS	**15% PFO**	**40% PEM**
35% UF	**0% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # PU-13-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Partly cloudy, ~50°F, slight breeze	**TIME OF DAY**	8:50
DATE	4/21/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-197/ 124/ 134	**LENGTH & WIDTH**	75' X 20'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9303
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	4"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	6"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Symplocarpus foetidus	*Viburnum recognitum*	*Acer rubrum*
Carex stricta		

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	6
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Pipers chorusing in larger wetland complex

Photo Documentation (note direction):
Facing northeast at pool area

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

10% PSS	**15% PFO**	**40% PEM**
35% UF	**0% OFS**	**0% Other / define:**
0% of pool w/in managed portion of ROW	**100% of pool within forested area of ROW**	

POOL # PU-14-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Mostly sunny, ~50°F	**TIME OF DAY**	8:30
DATE	4/21/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-197 - 124/ 134	**LENGTH & WIDTH**	400'x120'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9306/9307
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	6-8"	**DOMINANT COVER TYPE**	PFO
MAX. WATER DEPTH	8-10"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:	**Shrub/Sapling:**	**Tree:**
Symplocarpus foetidus	*Ilex verticillata*	*Acer rubrum*
Osmunda cinnemomea	*Vaccinium corymbosum*	*Pinus strobus*

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	4-6
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:

Photo Documentation (note direction):
facing northeast

Conclusions / Comments:
Chorusing spring peepers

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

0% PSS	**30% PFO**	**40% PEM**
30% UF	**0% OFS**	**0% Other / define:**
<5% of pool w/in managed portion of ROW	**95% of pool within forested area of ROW**	

POOL # PU-4-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, ~50°F	**TIME OF DAY**	16:00
DATE	4/20/11	**TIME SPENT AT POOL**	~30 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-198 - 126/ 134	**LENGTH & WIDTH**	200'x100' main area
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9311, 9312
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	NA	**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH	NA	**PRESENCE OF FISH Y / N**	Y

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☒ **Sand**
- ☒ **Gravel**
- ☒ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Carex spp.
Typha latifolia

Shrub/Sapling:
Vaccinium corymbosum

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	10-12
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Backswimmers

Photo Documentation (note direction):
Facing east

Conclusions / Comments:
Associated with Munson Brook and adjacent wetlands. Chorusing spring peepers.

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

20% PSS	**0% PFO**	**0% PEM**
40% UF	**40% OFS**	**0% Other / define:**
50% of pool w/in managed portion of ROW	**0% of pool within forested area of ROW** Balance of "pool" areas already within open canopy.	

POOL # PU-15-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, ~50°F	**TIME OF DAY**	15:18
DATE	4/20/11	**TIME SPENT AT POOL**	~20 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-199 - 126/ 134	**LENGTH & WIDTH**	~200' X 100'
TOWN	Putnam	**CLOSEST EXISTING STRUCTURE NUMBER**	9312
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	12-14"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	18-20"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta

Shrub/Sapling:
Vaccinium corymbosum
Lyonia ligustrina
Rhamnus frangula

Tree:
Acer rubrum

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog	2	60+
	Spotted salamander	2	25+
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☒ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Mosquito larvae

Photo Documentation (note direction):
Facing south

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

15% PSS	**10% PFO**	**5% PEM**
30% UF	**40% OFS**	**0% Other / define:**
90% of pool w/in managed portion of ROW	**10% of pool within forested area of ROW**	

POOL # TH-1-ABH

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, ~45°F	**TIME OF DAY**	12:40
DATE	4/20/11	**TIME SPENT AT POOL**	~1 hour
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-203 - 128 & 129/134	**LENGTH & WIDTH**	1400'x300'
TOWN	Thompson	**CLOSEST EXISTING STRUCTURE NUMBER**	9316-9318
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH		**DOMINANT COVER TYPE**	PEM
MAX. WATER DEPTH		**PRESENCE OF FISH Y / N**	

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta
Typha latifolia
Typha angustifolium
Phragmites australis

Shrub/Sapling:
Vaccinium corymbosum
Spiraea tomentosa

Tree:
Chamaecyparis thyoides

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	2
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☒ Predacious diving beetle (larva)
- ☒ Amphibious snails
- ☒ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☐ Caddis fly case/larvae
- ☒ Dragonfly nymph
- ☒ Damselfly nymph
- ☒ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Water boatman, backswimmer, water strider

Photo Documentation (note direction):
Facing north

Conclusions / Comments:
Spring peepers chorusing

☐ **Vernal Pool** ☒ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

_10% PSS **__% PFO** **__60% PEM**

___15% UF **__15% OFS** **_____% Other / define:**

__50% of pool w/in managed portion of ROW **___50% of pool within forested area of ROW**

POOL # TH-1-VP

INTERSTATE RELIABILITY PROJECT VERNAL POOL / AMPHIBIAN BREEDING HABITAT DATA FORM
2011 FIELD SEASON

WEATHER CONDITIONS	Cloudy, ~45°F	**TIME OF DAY**	10:15
DATE	4/20/11	**TIME SPENT AT POOL**	20 minutes
OBSERVERS	T.O'S./ J.B.		
POOL CHARACTERISTICS			
WETLAND # / MAPSHEET #	W20-207/ 130/134	**LENGTH & WIDTH**	~100' X 75'
TOWN	Thompson	**CLOSEST EXISTING STRUCTURE NUMBER**	9324
ISOLATED POOL Y / N	N		
AVG. WATER DEPTH	~10-12"	**DOMINANT COVER TYPE**	PSS
MAX. WATER DEPTH	~16-18"	**PRESENCE OF FISH Y / N**	N

SUBSTRATE:

- ☒ **Mud/Muck**
- ☒ **Leaf Litter**
- ☐ **Sand**
- ☐ **Gravel**
- ☐ **Cobble**
- ☐ **Peat**

DOMINANT VEGETATION WITHIN POOL BY STRATUM:

Herbaceous:
Carex stricta

Shrub/Sapling:
Vaccinium corymbosum
Ilex verticillata

Tree:

Breeding Criteria Codes

1	Breeding chorus
2	Egg masses
3	Frog tadpoles
4	Salamander larvae
5	Presence of adults
6	Spermatophores

	OBLIGATE SPECIES	CODE	QUANTITY
	Wood frog		
	Spotted salamander	2	1
	Jefferson salamander		
	Blue-spotted salamander		
	Spadefoot toad		
	Fingernail clams		
	Marbled salamander		
	Unidentified mole salamander		
	Fairy shrimp		

FACULTATIVE SPECIES:

- ☐ Red-spotted newt (adult)
- ☐ Spotted turtle
- ☐ Blanding's turtle
- ☐ Painted turtle
- ☐ Snapping turtle
- ☐ Predacious diving beetle (adult)
- ☐ Predacious diving beetle (larva)
- ☐ Amphibious snails
- ☐ Spring peeper
- ☐ American toad
- ☐ Fowler's Toad
- ☒ Caddis fly case/larvae
- ☐ Dragonfly nymph
- ☐ Damselfly nymph
- ☐ Leech
- ☐ Pickerel Frog

Additional Species Observed:
Isopods

Photo Documentation (note direction):
Facing south

Conclusions / Comments:

☒ **Vernal Pool** ☐ **Amphibian Breeding Habitat**

COVER TYPE (100 FEET FROM EDGE OF POOL):

30% PSS **10% PFO** **10% PEM**

20% UF **25% OFS** **5% Other / define:** access road

100% of pool w/in managed portion of ROW **0% of pool within forested area of ROW**
Pool continues off of ROW to south

Attachment D

2011 Vernal Pool/Amphibian Breeding Habitat Representative Site Photographs

Northwest view of CV-1-VP

West view of MA-1-VP

North view of MA-2-VP

South view of MA-3-VP

South view of MA-6-VP

South view of MA-7-VP

North view of MA-8-VP

West view of MA-10-VP

Southeast view of MA-11-VP

East view of MA-12-VP

Southeast view of MA-16-VP

Northwest view of MA-17-VP

Southeast view of MA-18-VP

Northwest view of CH-1-VP

West view of CH-2-VP

East view of CH-3-VP

South view of CH-4-VP

North view of CH-5-VP

East view of CH-6-VP

East view of CH-7-VP

East view of CH-8-VP

West view of CH-9-VP

West view of CH-10-VP

North view of CH-12-VP

North view of CH-13-VP

Southwest view of CH-14-VP

Southwest view of HA-2-VP

South view of HA-3-VP

West view of HA-4-VP

South view of HA-5-VP

South view of HA-6-VP

East view of HA-7-VP

Northeast view of HA-8-VP

Northwest view of HA-9-VP

Northeast view of HA-10-VP

Northeast view of HA-11-VP

Southwest view of HA-12-VP

Southwest view of HA-13-VP

West view of BR-1-VP

South view of BR-2-VP

North view of BR-3-VP

North view of BR-4-VP

West view of BR-5-VP

East view of BR-7-VP

North view of BR-11-VP

East view of BR-12-VP

Northeast view of BR-13-VP

Southwest view of BR-15-VP

Northwest view of BR-16-VP

Northeast view of BR-19-VP

East view of PO-1-VP

Northeast view of KI-1-VP

West view of PU-1-VP

West view of PU-2-VP

East view of PU-3-VP

Northwest view of PU-4-VP

North view of KI-2-VP

East view of KI-3-VP

North view of PU-6-VP

Southwest view of PU-7-VP

West view of PU-8-VP

East view of PU-9-VP

Northeast view of PU-10-VP

Northeast view of PU-11-VP

South view of PU-12-VP

Northeast view of PU-13-VP

Northeast view of PU-14-VP

South view of PU-15-VP

South view of TH-1-VP

North view of CV-1-ABH

CV-2-ABH

CV-3-ABH

MA-1-ABH

Southeast view of CH-2-ABH

East view of CH-3-ABH

East view of CH-4-ABH

West view of CH-5-ABH

South view of CH-6-ABH

North view of HA-1-ABH

East view of HA-2-ABH

Southeast view of HA-3-ABH

West view of HA-5-ABH

East view of HA-6/BR-1-ABH

Southeast view of BR-2-ABH

North view of BR-3-ABH

Southeast view of BR-4-ABH

Northwest view of BR-6-ABH

Southeast view of PO-1-ABH

South view of KI-1-ABH

East view of PU-1-ABH

South view of PU-2-ABH

North view of PU-3-ABH

East view of PU-4-ABH

North view of TH-1-ABH

EX. 4: Agency Correspondence

CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL AND GEOGRAPHIC INFORMATION CENTER
79 Elm Street, Store Level
Hartford, Connecticut 06106-5127
Natural Diversity Data Base

September 24, 2002

Karen Hanecak
ESS Group, Inc.
401 Wampanoag Trail, Suite 400
East Providence, RI 02915

Re: Northeast Utilities Connecticut
Right of Way, (various towns)

Dear Ms. Hanecak:

I have completed the state listed plant species review of the proposed and alternate route for the proposed construction of a 38 mile electric transmission line from Lebanon, CT to the Rhode Island border. Based on Natural Diversity Data Base information, there is one sensitive plant area on the proposed alternate route. I have attached a map showing the location of Threadfoot, *Podostemum ceratophyllum*. This aquatic plant species is listed as State Special Concern and had been documented growing in the Mt. Hope River. I have indicated the sensitive river crossing where I recommend that best management practices be implemented to control/prevent erosion and siltation into the Mt. Hope River. There are no known locations of State listed plants that would be affected by the proposed route.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Environmental & Geographic Information Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions (424-3589). Thank you for consulting the Natural Diversity Data Base.

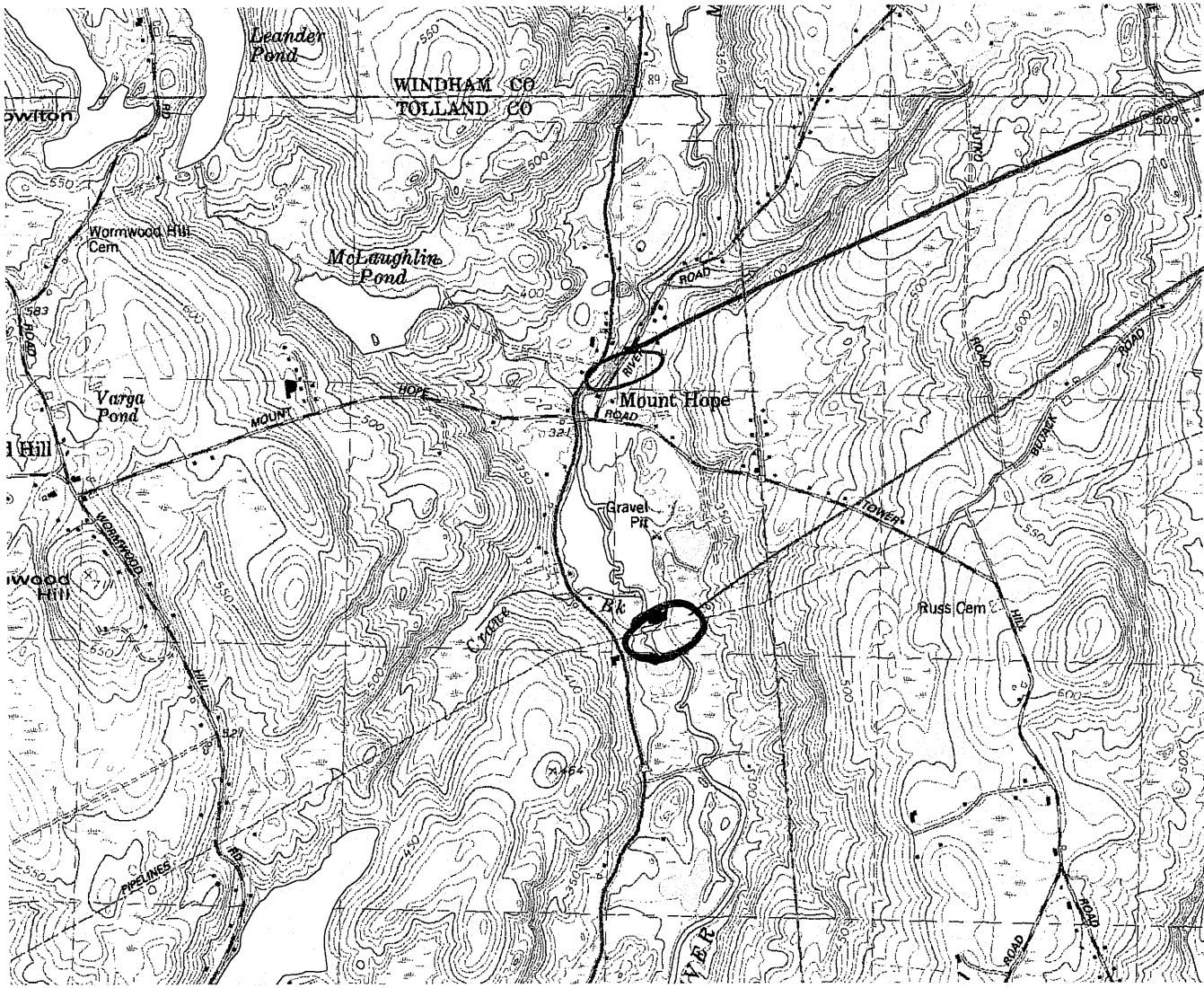
Sincerely,

Nancy Murray
Biologist/Environmental Analyst III

NMM/md

Attachment: map

Mount Hope River Site



state listed plant location

sensitive river crossing

EO.Point Reps - All Attributes
- Animal Assemblage
- Coastal/Marine Community - Other Classification
- Freshwater Community - Other Classification
- Invertebrate Animal
- Nonvascular Plant
- Other (Botanical)
- Other (Ecological)
- Terrestrial Community - Other Classification
- Vascular Plant
- Vertebrate Animal
- No Data

EO.Source Polygons
- Animal Assemblage
- Coastal/Marine Community - Other Classification
- Freshwater Community - Other Classification
- Invertebrate Animal
- Nonvascular Plant
- Other (Botanical)
- Other (Ecological)
- Terrestrial Community - Other Classification
- Vascular Plant
- Vertebrate Animal
- No Data
- Named Stream.Lines
- Named Lake.Polygons
- Town.Polygons
- Towns_longisland.Polygons
- Annotation.Points

0.8 0 0.8 1.6 Miles

N W E S

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ENVIRONMENTAL & GEOGRAPHIC INFORMATION CENTER
79 Elm Street, Store Level
Hartford, CT 06106
Natural Diversity Data Base

July 20, 2004

Ms. Karen Hanecak
ESS Group, Inc.
401 Wampanoag Trail, Suite 400
East Providence, RI 02915

re: Proposed Construction of a 38 Mile Electric Transmission Line From Lebanon, Connecticut to the Rhode Island Border along a Northeast Utilities Right of Way

Dear Ms. Hanecak:

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed construction of a 38- mile electric transmission line from Lebanon, Connecticut to the Rhode Island border along a Northeast Utilities right–of-way. According to our information, there are known extant populations of state-listed species that occur within the vicinity of both the proposed route and the alternative route for this project. Nancy Murray (DEP-EGIC, 860-424-3589) our program botanist will write to you directly with her comments regarding state-listed plant species and significant natural communities that may be impacted by this project. Please direct your questions on the plants and communities to Ms. Murray.

I have sent your letter and map to Julie Victoria (DEP-Wildlife; 860-642-7239) for further review. I highlighted areas along the two routes that intersect with populations of state-listed animal species for her. Ms. Victoria will determine and identify which populations of state-listed animal species along this new transmission may be impacted by this project. She will write to you directly with her comments.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at 424-3592. Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Sincerely,

D. M. McKay

Dawn M. McKay
Biologist/Environmental Analyst

Cc: Julie Victoria, NDDB # 13319

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

August 2, 2004

Ms. Karen Hanecak
ESS Group, Inc.
401 Wampanoag Trail, Suite 400
East Providence, RI 02915

Re: proposed construction of a 38 mile Transmission Line from Lebanon to RI

Dear Ms. Hanecak:

Your request for information was forwarded to me on 7/28/04 by Dawn McKay of the Department of Environmental Protection's (DEP) Environmental & Geographic Information Center (EGIC) Data Base. According to their records 13 state listed species occur in the vicinity of this project.

Species Name	Common Name	Status	Contact Person
Botauras lentiginosus	American Bittern	Endangered	J. Dickson
Podilymbus podiceps	Pied-billed grebe	Endangered	J. Dickson
Gomphus adelphus	Moustached Clubtail	Threatened	J. Victoria
Callophrys irus	Frosted elfin	Threatened	J. Victoria
Anas discors	Blue-winged Teal	Threatened	J. Dickson
Progne subis	Purple Martin	Threatened	J. Dickson
Clemmys insculpta	Wood Turtle	Special Concern	J. Victoria
Gyraulus circumstriatus	Aquatic snail	Special Concern	J. Victoria
Heterodon platyrhinos	Eastern Hognose snake	Special Concern	J. Victoria
Lepipolys perscripta	notuid moth	Special Concern	J. Victoria
Aegolius acadicus	Northern saw-whet owl	Special Concern	J. Victoria
Passerculus sandwichensis	Savannah Sparrow	Special Concern	J. Dickson
Caprimulgus vociferus	Whip-poor-will	Special Concern	J. Dickson

I am sending the maps of areas that Dawn McKay supplied to me where these species intersect the proposed route. I cannot tell what the impact to the species will be without project details.

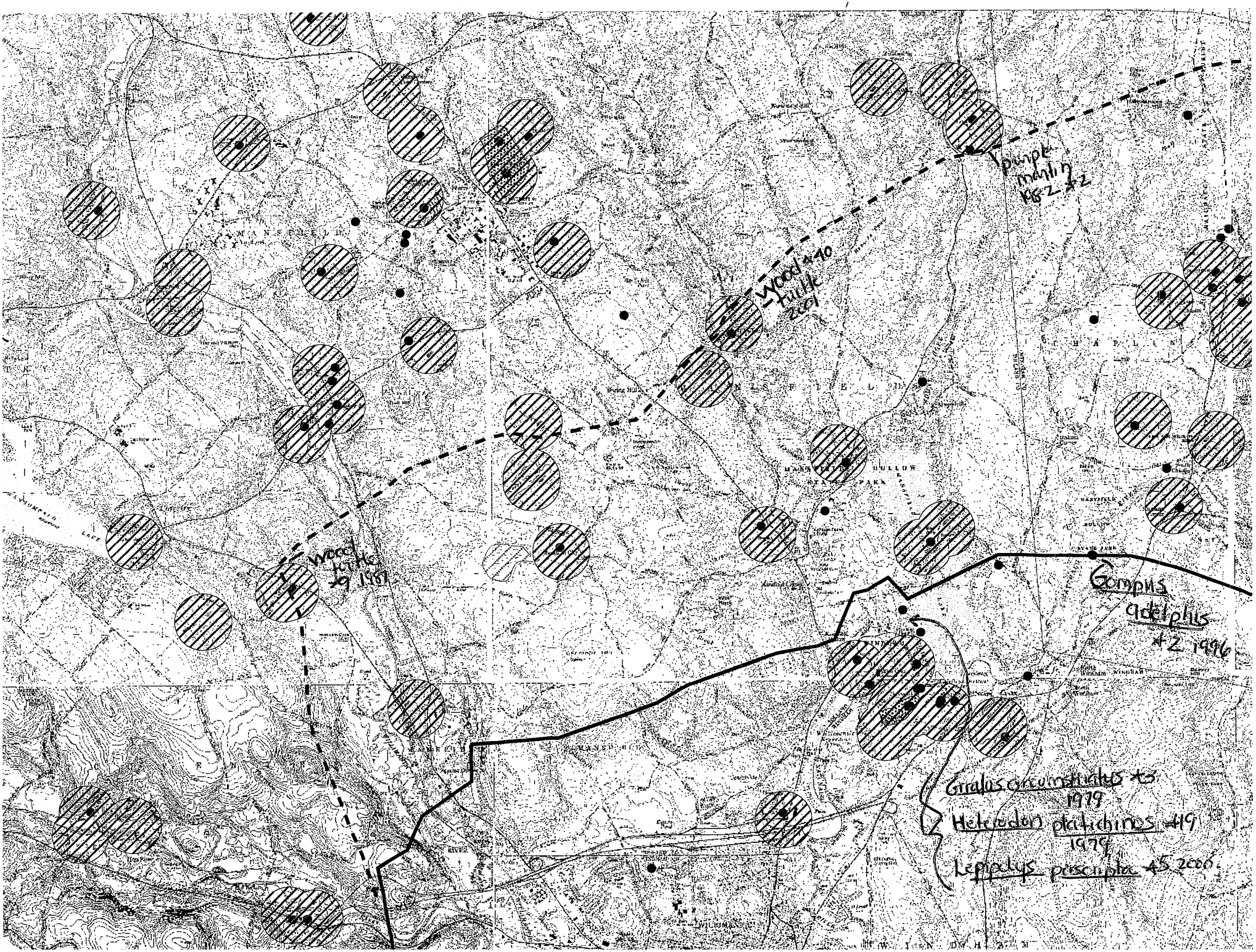
Please be advised that should state permits be required or should state involvement occur in some other fashion, specific restrictions or conditions relating to the species discussed above may apply. In this situation, additional evaluation of the proposal by the Wildlife Division should be requested.

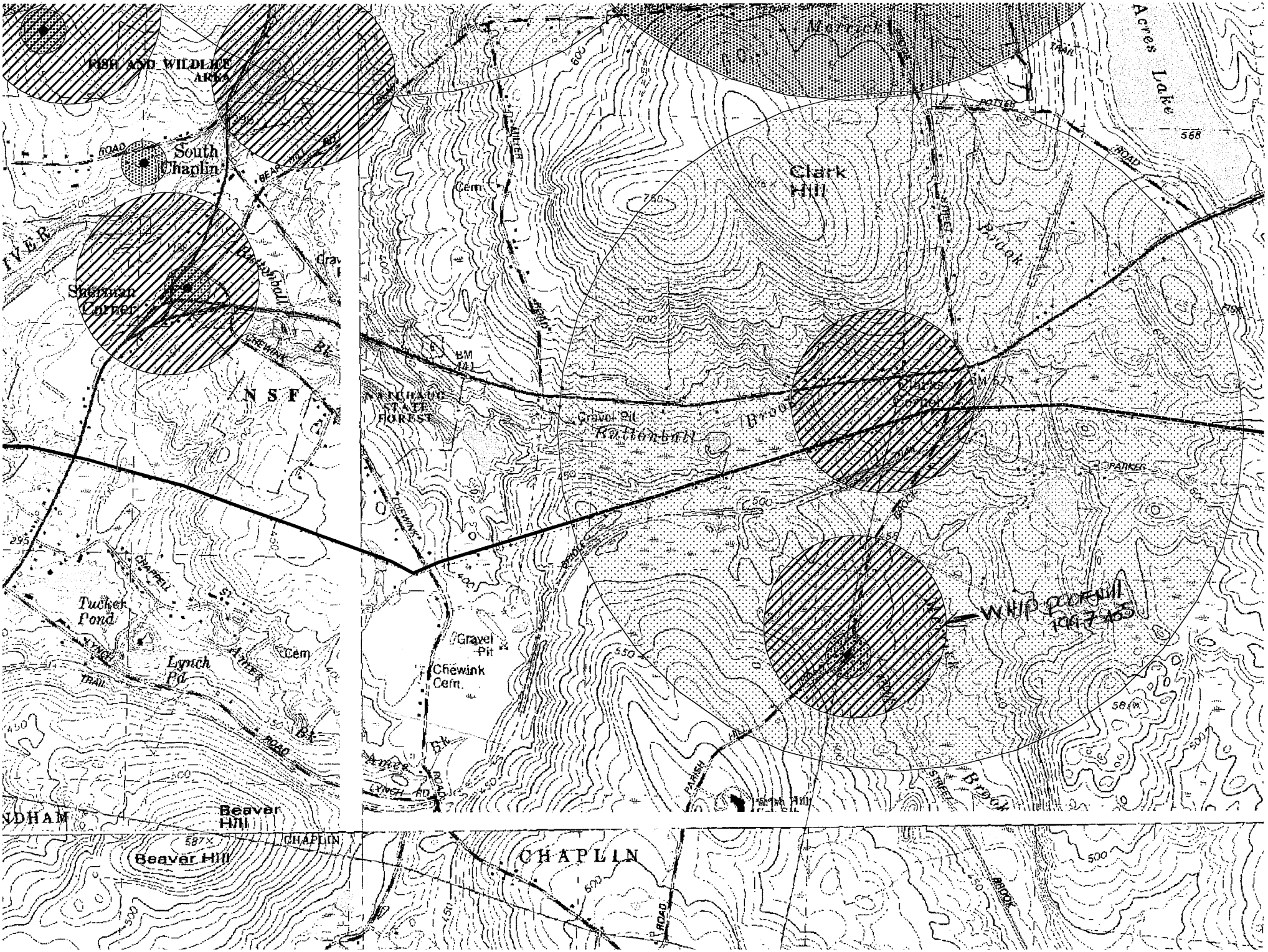
The Wildlife Division has not made an on-site inspection of the project area nor been provided with details or a timetable of the work to be done. Consultation with the Wildlife Division should not be substituted for on-site surveys required for environmental assessments. If the Wildlife Division can assist you further, please feel free to contact me at 860-642-7239 or Jenny Dickson at 860-675-8130. Thank you for the opportunity to comment.

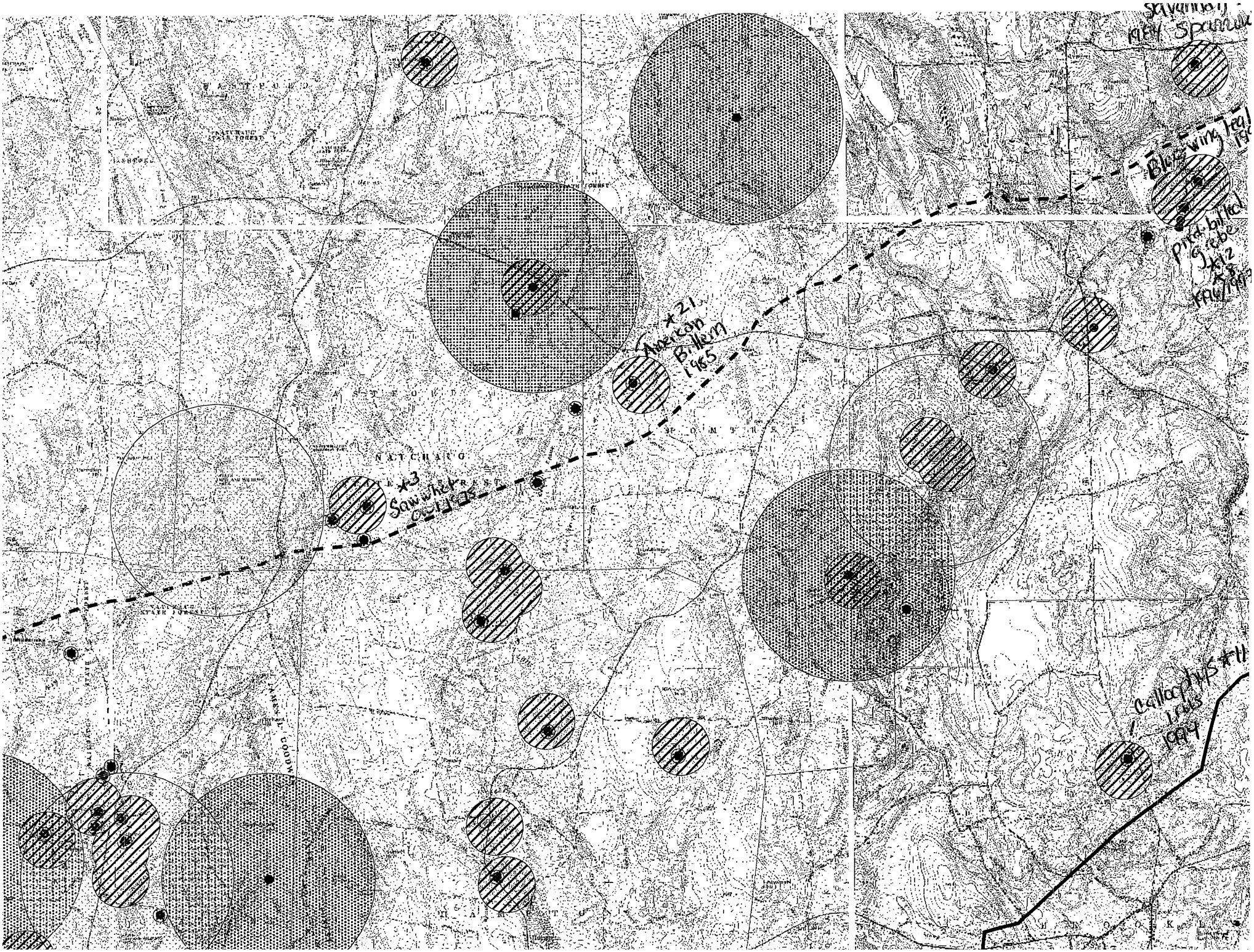
Sincerely,

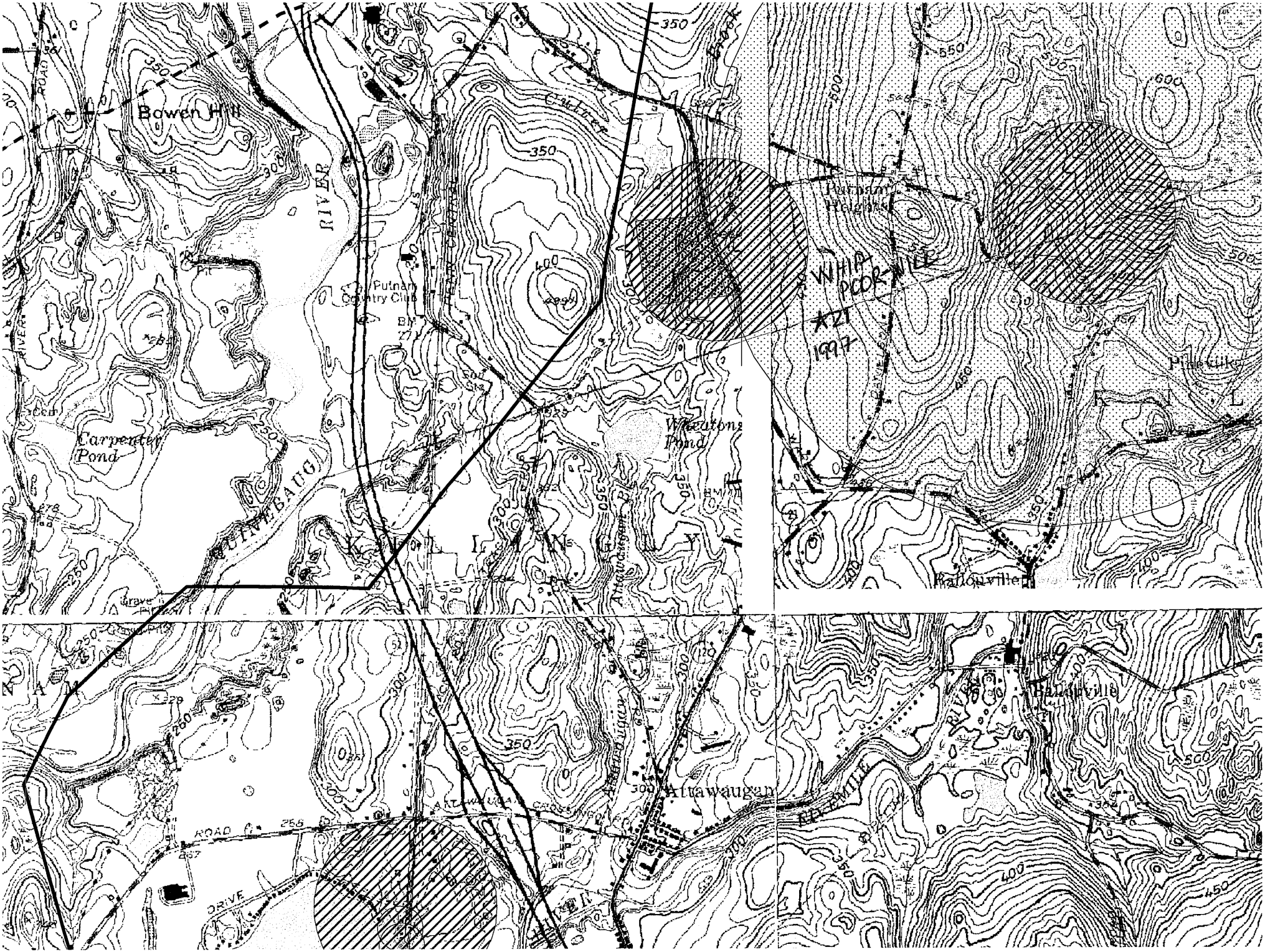
Julie Victoria,Wildlife Biologist
Franklin Swamp Wildlife Management Area
391 Route 32
N. Franklin, CT 06254

cc: D. McKay – 13275
J. Dickson


purple martin
#82 #2
wood turtle
#40
2001
wood turtle
#9 1991
Gomphus adelphus
#2 1996
Gratus circumstriatus #3
1979
Heteroden platichinos #19
1979
Lepidys prescripta #5 2006


FISH AND WILDLIFE AREA
South Chaplin
Sherman Corner
NSF
Tucker Pond
Lynch Pd
Cem
Beaver Hill
CHAPLIN
Cem
Clark Hill
Gravel Pit
Chewink Cem.
Gravel Pit
Kettenbull
Acres Lake
568
WHIP poorwill
1997 x65


Savannah
1984 Sparrow
Blue-winged Teal
Pied-billed Grebe
x12
x5
American Bittern
1965
x21
Sandhill Crane
x3
Callaqua
1994
x11
NATCHEZ
POINTREST
WESTFORD
HEARNE
LAKE
COOON


Bowen Hill
RIVER
Putnam Country Club
Carpenter Pond
Wheatons Pond
Putnam Heights
WHIP POOR-WILL
★21
1997
Pilletville
Ballouville
Attawaugan
ROAD
DRIVE

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ENVIRONMENTAL & GEOGRAPHIC INFORMATION CENTER
79 Elm Street, Store Level
Hartford, CT 06106
Natural Diversity Data Base

October 6, 2004

Ms. Laura Ernst
ESS Group. Inc.
401 Wampanoag, Suite 400
East Providence, RI 02915

re: Northeast Utilities, Connecticut to Rhode Island Project, Additional Route Alternatives- Mansfield Overhead and Mansfield Underground – that cross Lebanon, Windham and Chaplin, Connecticut

Dear Ms. Ernst:

Thank you for your letter regarding the Northeast Utilities Connecticut to Rhode Island Project with two additional route alternatives, Mansfield Overhead and Mansfield Underground, that cross Lebanon, Windham and Chaplin, Connecticut. I have enclosed a map that indicates three areas along these two alternative routes that may have conflicts with state-listed wildlife species and significant natural communities. I have designated these areas as A, B and C on the map. The following state-listed species and significant natural communities occur in these areas:

A. Poor Fen, a significant natural community
State Endangered *Williamsonia lintneri* (banded bog skimmer)
State Special Concern *Lycaena epixanthe* (bog copper)

B. Atlantic White Cedar Basin Swamp, a significant natural community
State Special Concern *Gyraulus circumstriatus* (aquatic snail)
State Special Concern *Hetaerina americana* (American rubyspot)
State Special Concern *Callophrys henrici* (Henry's elfin)

C. State Threatened *Callophrys irus* (frosted elfin)
State Threatened *Gomphus adelphus* (moustached clubtail)

Our program ecologist, Mr. Ken Metzler (DEP-EGIC; 860-424-3585) recommends that direct impacts to the poor fen and Atlantic White Cedar Basin Swamp along your route should be avoided at all costs. If you have additional questions regarding these communities or methods to avoid direct impacts to these significant communities, please contact Mr. Metzler. Ms. Julie Victoria (DEP-Wildlife; 860-642-7239) will assess the impacts of your alternative routes for the state-listed wildlife species, all of which are invertebrates. You may contact Ms. Victoria directly if you require further details on these species.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at 424-3592. Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

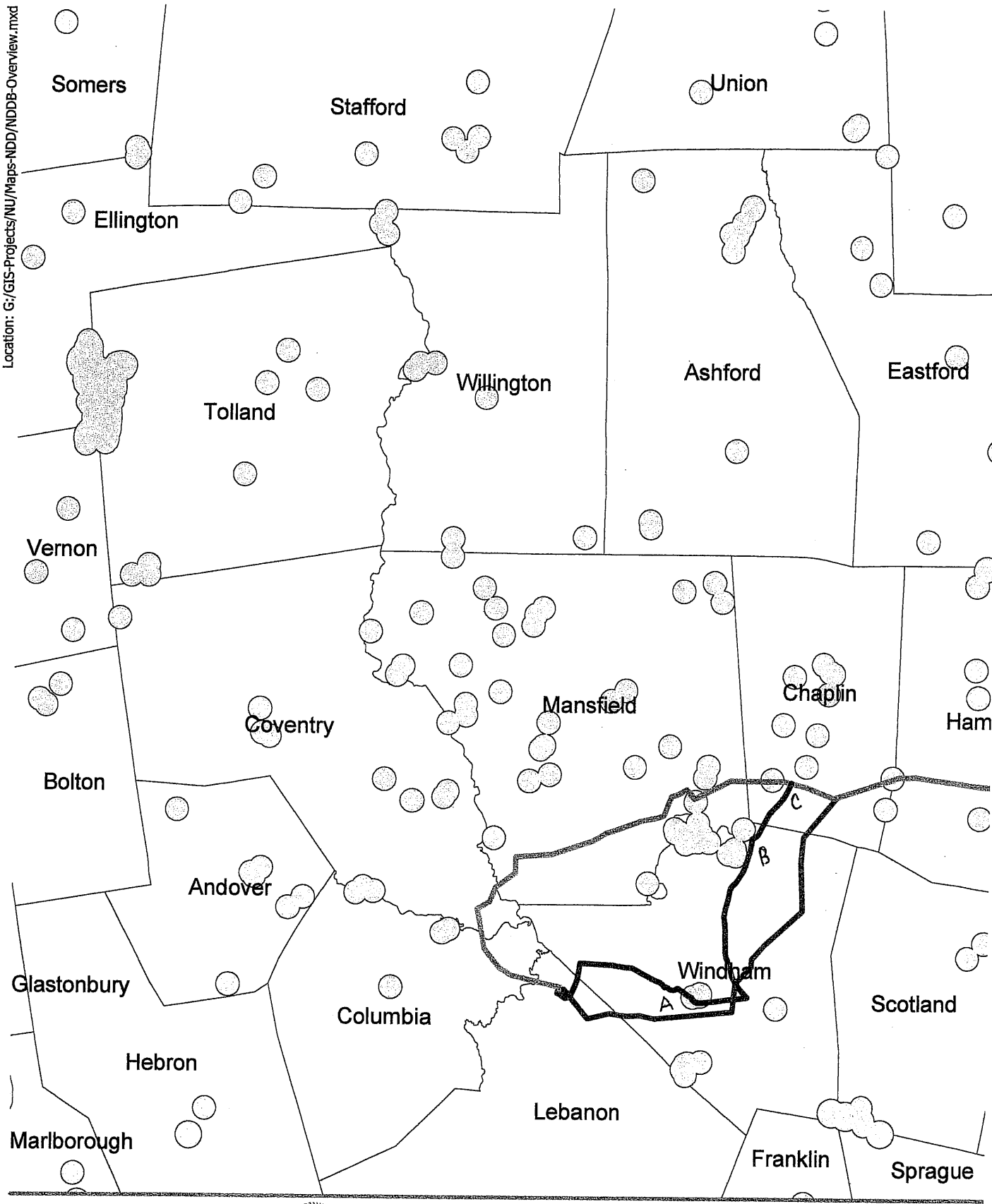
Sincerely,

D.M. McKay

Dawn M. McKay
Biologist/Environmental Analyst

Cc Julie Victoria, NDDB # 13447

Location: G:/GIS-Projects/NU/Maps-NDD/NDDB-Overview.mxd



ESS Group, Inc.
Engineers
Scientists
Consultants

Northeast Utilities System

Connecticut to Rhode Island Project

Scale: 1" = 15,000'

Source: 1) CTDEP, Towns, 1998 2) BMCD, Alternative Routes, 2004
3) CTDEP, Natural Diversity Database, 2004 4) RIGIS, Town Boundaries, 1997

LEGEND

- Existing ROW Altern
- Mansfield OH Altern
- Mansfield UG Altern
- Rhode Island Towns

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRANKLIN WILDLIFE MANAGEMENT AREA
391 ROUTE 32
NORTH FRANKLIN, CT 06254
TELEPHONE: (860) 642-7239

February 25, 2008

Mr. Donald D. Biondi
Transmission Siting and Permitting
Northeast Utilities System
107 Selden Street
Berlin, CT 06037

re: CL&P CT Interstate Reliability Project Brooklyn to Windham, CT

Dear Mr. Biondi:

Your request for information was reviewed on 1/9/08 with Dawn McKay of the Department of Environmental Protection's (DEP) Natural Diversity Data Base. Their records indicated the following map by map.

Mapsheet 02 of 15 near the Perkins Corner area of Mansfield
Special Concern: Horace's duskywing (*Erynnis horatius*) butterfly is more restricted to xeric rocky areas and barrens north of southern New Jersey.

If this habitat will be impacted by this project, the DEP Wildlife Division recommends that a lepidopterist conduct surveys for these species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the lepidopterist' qualifications. The Wildlife Division does not maintain a list of lepidopterists in the state. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Mapsheet 03 of 15 near Mansfield Hollow area
Endangered: Horned Lark (*Eremophila alpestris*) and Grasshopper sparrow (*Ammodramus savannarum*)
Threatened: The Frosted elfin (*Callophryus irus*), Sleepy duskywing (*Erynnis brizo*), and the American kestrel (*Falco sparverius*).
Special Concern: a noctuid moth species (*Zale obliqua*), the Pine Barrens Noctuid moth (*Zanclognatha martha*), Horace's duskywing (*Erynnis horatius*), Eastern hognose snake (*Heterodon platirhinos*), an aquatic snail (*Gyraulus circumstriatus*), Scribbled sallow (*Lepipolys perscripta*), four noctuid moth species (*Apamea burgessi, Chaetaglaea cerata, Eucoptocnemis fimbriaris,* and *Shinia spinosae*), and Shrub euchlaena (*Euchlaena madusaria*), Savannah sparrow (*Passerculus sandwichensis*) and Eastern Meadowlark (*Sturnella magna)*

The Savannah Sparrow is a bird that nests in open, grassy areas. Its breeding season is approximately from May through August and it is during this period that the species is most susceptible to disturbances in its habitat. Minimizing impact to open fields, meadows, marshes, and other grassy areas during this time period will likewise minimize impact to this species.

The Grasshopper Sparrow nests in open, grassy areas. Their breeding season is approximately from May through August and it is during this period that these species are most susceptible to disturbances in their habitat. Minimizing impact to open fields, meadows, marshes, and other grassy areas during this time period will likewise minimize impact to these species.

The Eastern meadowlark is a bird that nests and forages in large open, grassy areas (typically fields that are 15 acres or greater). Its breeding season is approximately May through August. It is during the breeding season that these birds are most susceptible to human disturbance. Minimizing impacts to open grassy fields and meadows will likewise minimize impacts to this species.

The noctuid moth (*Apamea burgessi*) favors xeric, sandy sites. The host plant of *Schinia spinosa* is not known, however, the caterpillars of this moth are associated with the host plant – jointweed. Protection of these host plants will benefit this species. The noctuid moth species (*Zale obliqua*) and the Pine Barrens

noctuid moth are associated with pitch pines (*Pinus rigida*), dry grassy or sandy fields with remnant pine barrens and scrub oak barrens. Protection of their host plants will benefit these species.

The aquatic snail (*Gyraulus circumstriatus*) will be affected by activities that degrade the water quality, particularly the dissolved oxygen and dissolved salts. In addition, activities that affect the water depth will affect this species which prefers shallow areas less than 3 meters deep where its food supply is abundant. They feed on the coating of living algae that covers most submerged surfaces. Fluctuations in water depth of 3 feet or more at one time will be too much for a slow moving invertebrate species to respond to.

Numbers of Frosted elfin, are declining nationally. This moth species is associated with the plant species *Lupinus perennis* but that may not be its only food plant. Sleepy duskywing (*Erynnis brizo*), another butterfly, has a listed habitat of oak or oak-pine scrub, chaparral, barrens; on well-drained sandy or shaly soils. The caterpillar hosts are oak or oak-pine scrub, chaparral, barrens; on well-drained sandy or shaly soils. Horace's Duskywing butterfly is more restricted to xeric rocky areas and barrens north of southern New Jersey.

The Scribbled sallow moth favors disturbed sandy soil habitats with the host plant *Lineria canadensis*, Blue Toadflax. The noctuid moth species *Eucoptcnemis fimbriaris* is associated with pitch pines (*Pinus rigida*), dry grassy or sandy fields with remnant pine barrens and scrub oak barrens. The noctuid moth (*Apamea burgessi*) favors xeric, sandy sites. The host plant of *Schinia spinosa* is not known, however, the caterpillars of this moth are associated with the host plant – jointweed. Protection of these host plants will benefit this species. The noctuid moth *Chaetaglaea cerata,* favors pitch pine-scrub oak barrens and heathlands on sandplains.

American kestrel (*Falco sparverius*) nest in late March - April in open areas like woodland edges, parks, and open field habitat. They are cavity nesters and seek out abandoned woodpecker or flicker holes to nest. They catch and eat mice, voles, shrews and insects. They winter over much of the nesting range. If kestrels are nesting then I recommend that work not be done near the nest during the nesting season (February - July) and that a sufficient buffer zone be left around the nest to minimize disturbance. This buffer should be determined after the nest is located.

Kestrels are cavity nesters and will nest in artificial nesting boxes that are placed in the area. Artificial nesting box plans will be provided at your request. The Wildlife Division would welcome the opportunity to work with your company to put up kestrel nesting boxes on your property in good habitat. Nesting boxes and silvicultural practices that maintain high densities of nesting and roosting cavities in trees with a minimum diameter of 30.5 cm will benefit this species.

Eastern hognose snakes favor dry sandy areas with well drained gravelly soils. This species is dormant from November 1 to April 1. It has been negatively impacted by the loss of suitable habitat. Construction should be done during the dormant season.

The nesting season for horned lark (*Eremophila alpestris*) extends from the end of March to the middle of August. Construction should be done during the non-breeding season.

All these species have been negatively impacted by the loss of their associated plant species and habitats. If favored plants are going to be impacted by this project these species may be affected. The DEP Wildlife Division recommends that a lepidopterist conduct surveys for these species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the lepidopterist' qualifications. The Wildlife Division does not maintain a list of lepidopterists in the state. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Mapsheet 04 of 15 south of Sherman Corner area
Threatened: The Frosted elfin (*Callophryus irus*), Harris' checkerspot (*Chlosyne harrisii*) and the Moustached clubtail (*Gomphus adelphus*)
Special Concern: Horace's duskywing (*Erynnis horatius*),

Numbers of Frosted elfin, are declining nationally. This moth species is associated with the plant species *Lupinus perennis* but that may not be its only food plant. The Harris' checkerspot (*Chlosyne harrisii*) butterfly is

This species has been negatively impacted by the loss of their associated plant species and habitats. If favored plants are going to be impacted by this project these species may be affected. The DEP Wildlife Division recommends that a lepidopterist conduct surveys for these species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the lepidopterist' qualifications. The Wildlife Division does not maintain a list of lepidopterists in the state. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Mapsheet 09 of 15; yellow hatched circle to left of route
Special Concern: Wood Turtle (*Glyptemys insculpta*)

Wood Turtles require riparian habitats bordered by flood plains, woodlands or meadows. Their summer habitat includes pastures, old fields, woodlands, power line cuts and railroad beds bordering or adjacent to streams ,and rivers. They hibernate submerged in tangled tree roots along the river banks or in deep pools from November 1 to April 1. Wood turtles can use areas up to 1500 feet from the streams/rivers where they are found. This species is dormant from November 1 to April 1. They have been negatively impacted by the loss of suitable habitat. If wood turtle habitat is present, the Wildlife Division recommends that work be done during the dormant period, which is November 1 to April 1, to avoid affecting wood turtles.

Mapsheet 10 of 15: yellow hatched circle to the north and right of the route
Special Concern: Whip-poor-will (*Caprimulgus vociferus*)

Whip-poor-wills favor forest habitat with an open understory, often adjacent to areas of shrubby, herbaceous habitat. These ground-nesting birds are found in Connecticut during the breeding season (late May through July) and spend the winter in South America. If timber harvesting is an activity that will be considered for this open space parcel, whip-poor-wills may ultimately benefit from the earlier forest growth stages created. Any forestry operation should be conducted outside of the breeding season, so that the potential for destruction of nests, eggs, or young is reduced.

Mapsheet 11 of 15: yellow hatched circle that intersects route
Special Concern: Eastern Ribbon snake (*Thamnophis sauritus*)

Eastern ribbon snakes inhabit areas with shallow water, grassy or shrubby areas bordering streams and wooded swamps. They also prefer sunny areas with low dense vegetation near shallow water areas. Their diet consists of insects, fish, frogs, salamanders and toads. If Ribbon snake habitat is present, the Wildlife Division recommends that work be done during the dormant period, which is November 1 to April 1, to avoid affecting Ribbon snakes.

Mapsheet 14 of 15: near Plains Road
Endangered: Banded Bog Skimmer Dragonfly (*Williamsonia lintneri*)
Special Concern: Bog Copper butterfly (*Lycaena epixanthe*)

The Bog Copper is a fairly conspicuous butterfly that is associated with sphagnum bogs in Connecticut. Activities that alter the physical or chemical nature of the aquatic habitat, cause siltation or any source of pollution will be detrimental. Any work that will detrimentally impact the associated sphagnum bog will affect this species. The Banded Bog Skimmer dragonfly is associated with fen/bog habitat. Again, activities that alter the physical or chemical nature of the aquatic habitat, cause siltation or any source of pollution will be detrimental. Any work that will detrimentally impact the associated sphagnum bog or wetland will affect these species.

Standard protocols for protection of wetlands should be followed and maintained during the course of the project. Additionally, all silt fencing should be removed after soils are stable so that reptile and amphibian movement between uplands and wetlands is not restricted.

Please be advised that the Wildlife Division has not made a field inspection of the project nor have we seen detailed timetables for work to be done. Should state permits be required or should state involvement occur in some other fashion, specific restrictions or conditions relating to the species discussed above may apply. In this situation, additional evaluation of the proposal by the DEP Wildlife Division should be requested.

found in moist areas like marshes, bog edges, pastures and meadows. The host plant is flat-topped white aster (*Aster umbellatus*). The adult females lay eggs in clusters under host plant leaves. The caterpillars feed on leaves communally in a web and partially-grown caterpillars hibernate at the base of the host plant. Horace's Duskywing butterfly is more restricted to xeric rocky areas and barrens north of southern New Jersey. Moustache Clubtail dragonfly (*Gomphus adelphus*) is found on chest high vegetation along river banks.

All these species have been negatively impacted by the loss of their associated plant species and habitats. If favored plants are going to be impacted by this project these species may be affected. The DEP Wildlife Division recommends that an invertebrate biologist/ lepidopterist conduct surveys for these species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the biologist'/lepidopterist' qualifications. The Wildlife Division does not maintain a list of biologist/lepidopterists in the state. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Same map - on the lower branch Blue Route
Threatened: Harris' checkerspot (*Chlosyne harrisii*)
Special Concern: American Rubyspot damselfly (*Hetaerina americana*)

American rubyspot damselfly is found on sunny riverbanks with plants or grasses along the banks or on emergent rocks in the river.

The Harris' checkerspot (*Chlosyne harrisii*) butterfly is found in moist areas like marshes, bog edges, pastures and meadows. The host plant is flat-topped white aster (*Aster umbellatus*). The adult females lay eggs in clusters under host plant leaves. The caterpillars feed on leaves communally in a web and partially-grown caterpillars hibernate at the base of the host plant.

If any wetland habitats are to be altered, it may affect this species and the DEP Wildlife Division would recommend that a invertebrate biologist conduct surveys for this species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the biologist' qualifications. The Wildlife Division does not maintain a list of biologists in the state. The results of these investigations should be forwarded to the Wildlife Division and, after evaluation, recommendations can be provided.

Mapsheet 05 of 15: yellow hatched circle near Merrick Brook
Special Concern: Whip-poor-will (*Caprimulgus vociferus*)

Whip-poor-wills favor forest habitat with an open understory, often adjacent to areas of shrubby, herbaceous habitat. These ground-nesting birds are found in Connecticut during the breeding season (late May through July) and spend the winter in South America. If timber harvesting is an activity that will be considered for this open space parcel, whip-poor-wills may ultimately benefit from the earlier forest growth stages created. Any forestry operation should be conducted outside of the breeding season, so that the potential for destruction of nests, eggs, or young is reduced.

Mapsheet 06 of 15: yellow hatched circle that intersects route
Special Concern: a noctuid moth (*Apamea burgessi*)

The noctuid moth (*Apamea burgessi*) favors xeric, sandy sites. If this favored habitat is going to be impacted by this project than the noctuid moth may be affected. The DEP Widlife Division recommends that a lepidopterist conduct surveys for this species. A report summarizing the results of such survey should include habitat descriptions, invertebrate species list and a statement/resume giving the lepidopterist' qualifications. The Wildlife Division does not maintain a list of lepidopterists in the state. A DEP Wildlife Division permit may be required by the lepidopterist to conduct survey work, you should ask if your lepidopterist has one. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

Mapsheet 08 of 15: yellow hatch circle to the left of the route
Threatened: The Frosted elfin butterfly (*Callophryus irus*)

Numbers of Frosted elfin, are declining nationally. This moth species is associated with the plant species *Lupinus perennis* but that may not be its only food plant.

Consultation with the Wildlife Division should not be substituted for on-site surveys required for environmental assessments. If you have any additional questions, please feel free to contact me at Julie.Victoria@po.state.ct.us, please reference the NDDB # at the bottom of this letter when you e-mail. Jenny Dickson (860-675-8130) can further assist you in the impact on the Grasshopper Sparrows, Savannah sparrows, Horned Larks, Whip-poor-wills and Eastern meadowlarks. Thank you for the opportunity to comment.

Sincerely,

Julie Victoria, Wildlife Biologist
Franklin Swamp Wildlife Management Area
391 Route 32
N. Franklin, CT 06254

cc: NDDB – 15775
J. Dickson

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Natural Resources
Wildlife Division
79 Elm Street, Sixth Floor
Hartford, CT 06106
Natural Diversity Data Base

March 17, 2008

Mr. Donald D. Biondi
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270

re: The Connecticut Light and Power Company Connecticut Interstate Reliability Project in Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson, and Windham Connecticut

Dear Mr. Biondi:

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed Connecticut Light and Power Company Connecticut Interstate Reliability Project in Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson, and Windham, Connecticut. I have determined that this project will not impact any known extant population of state-listed plant species that may occur within the study corridor. A separate letter regarding the impact to state-listed animals species that may occur in this study area will be sent by another biologist within the Wildlife Division.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the DEP's Natural History Survey and cooperating units of Department of Environmental Protection's private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at 424-3592. Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Sincerely,

Dawn M. McKay
Biologist/Environmental Analyst 3

Cc: NDDB File # 15775

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
FRANKLIN WILDLIFE MANAGEMENT AREA
391 ROUTE 32
NORTH FRANKLIN, CT 06254
TELEPHONE: (860) 642-7239

April 15, 2008

Mr. Donald D. Biondi
Transmission Siting and Permitting
Northeast Utilities System
107 Selden Street
Berlin, CT 06037

re: CL&P CT Interstate Reliability Project Brooklyn to Windham, CT

Dear Mr. Biondi:

Your letter and request for concurrence that your proceedings to date are consistent with the expectations of the Connecticut Department of Environmental Protection's (DEP) Wildlife Division relative to the Project was forwarded to me on 4/14/09.

As a clarification, the DEP Natural Diversity Data Base (D. McKay) maintains the plant and animal records and the DEP Wildlife Divison (J. Victoria) provides recommendation or requests for surveys regarding listed animal species. Also, the 4/1/08 meeting was primarily to discuss the Springfield Reliability Project and the Jefferson salamander – not this project. To that end, the Wildlife Division is still not clear about the work that will be done. The application indicates the plan is to upgrade transmission facilities, but no details are provided.

The DEP Wildlife Division's expectation with all these species would be: are they there? is their habitat there? and how will your project impact them? Regretfully, having listed those questions, there is very little in the materials provided to concur with.

State-listed Bird Surveys:
Six listed species were documented in my 2/25/08 letter. Four days of ground surveys in two towns were conducted. Four of these bird species were encountered. How will their habitats be impacted by this proposed project? What is the proposed mitigation plan to avoid or minimize those impacts?

Lepidoptera:
CL&P anticipates having Dr. Wagner conduct required field surveys. The Wildlife Division will await the results of Dr. Wagner's work and hopes that he will address how the species and their habitats will be impacted by this proposed project and what the proposed mitigation plan will be to avoid or minimize those impacts.

Turtles
The recommendations that were listed in my 2/25/08 letter were repeated here along with a line about a turtle mitigation plan being presented to the CT DEP NDDB by CL&P for review and approval. Since no turtle surveys are planned, the DEP Wildilfe Division assumes that CL&P is considering that the turtles are present and we will await being presented with the mitigation plan.

Snakes
Again, the recommendations that were listed in my 2/25/08 letter were repeated here along with an update after the April 1, 2008 meeting about doing work during the snakes' active period. Since no snake surveys are planned, the DEP Wildilfe Division assumes that CL&P is considering that the snakes are present. Since construction details have not been presented to the DEP Wildlife Division, a mitigation plan would also be appropriate for this species group so that impacts can be avoided or minimized.

Aquatic Snail and Odonates
No species specific surveys are planned for these species. The DEP Wildlife Division has not seen construction details, however, CL&P indicates that no in-water work activities are proposed. The following recommendation that CT DEP stressed is listed: proper installation and maintenance of erosion and

sediment controls as well as maintaining an undisturbed riparian buffer zone to the subject water bodies – but there is no indication that this will be CL&P's course of action.

Please be advised that the Wildlife Division has not made a field inspection of the project nor have we seen detailed timetables for work to be done. Should state permits be required or should state involvement occur in some other fashion, specific restrictions or conditions relating to the species discussed above may apply. In this situation, additional evaluation of the proposal by the DEP Wildlife Division should be requested. Consultation with the Wildlife Division should not be substituted for on-site surveys required for environmental assessments. If you have any additional questions, please feel free to contact me at Julie.Victoria@ct.gov, please reference the NDDB # at the bottom of this letter when you e-mail. Thank you for the opportunity to comment.

Dawn McKay indicates that if you can send her a digital overlay of the revised Project area, she can make sure that you have the most recent information available from the CT DEP Natural Diversity Database. She can be reached at 860-424-3592 or dawn.mckay@ct.gov

Sincerely,

Julie Victoria
Wildlife Biologist
Franklin Swamp Wildlife Management Area
391 Route 32
N. Franklin, CT 06254

cc: NDDB – 15775
J. Dickson
T. O'Sullivan

Berg, Jim

From:	Victoria, Julie [Julie.Victoria@ct.gov]
Sent:	Tuesday, June 16, 2009 2:21 PM
To:	McKay, Dawn; Berg, Jim
Cc:	Victoria, Julie
Subject:	RE: Rare Species Information NDDB # 15775
Importance:	Low
Follow Up Flag:	Follow up
Flag Status:	Red

For the three additional species:

The state threatened Slender Clearwing moth (*Hemaris gracilis*) is found in open wooded areas where the larval host plant, blueberry, occurs. The larvae are reported to feed on blueberry (*Vaccinium*) and other heaths (*Ericaceae*) in eastern North America. The adults visit flowers during the day. Overwinters as a pupa underground or among ground litter. This species has two broods annually.

The state species of special concern (*Metarranthis apiciaria)* Barrens Metarranthis moth occurred historically in the vicinity of this project. Their habitat is not well understood. It may range from dry rocky woods to pitch pine barrens.

The state species of special concern, a noctuid moth (*Lepipolys perscripta*) favors disturbed sandy soil habitats with the host plant *Lineria canadensis*, Blue Toadflax. This species has been negatively impacted by the loss of their associated plant species and habitat. If favored plants are going to be impacted by this project then the moth may be affected.

The Wildlife Division recommends that a lepidopterist familiar with the habitat requirements of these three species conduct surveys if favored plants are going to be affected. A report summarizing the results of such surveys should include habitat descriptions, invertebrate species list and a statement/resume giving the lepidopterist' qualifications. The DEP does not maintain a list of lepidopterists in the state. A DEP permit may be required by the lepidopterist to conduct survey work, you should ask if your lepidopterist has one. The results of this investigation can be forwarded to the Wildlife Division and, after evaluation, recommendations for additional surveys, if any, will be made.

From: McKay, Dawn
Sent: Monday, June 08, 2009 12:07 PM
To: 'Jim.Berg@aecom.com'
Cc: Victoria, Julie
Subject: FW: Rare Species Information NDDB # 15775

Jim,
Thank you for the maps of the additional two (new) polygon areas along CL&P Connecticut Interstate Reliability Project (NDDB# 15775) that you needed reviewed by our program. I was able to complete my review and found

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Natural Resources
Wildlife Division
79 Elm Street, Sixth Floor
Hartford, CT 06106
Natural Diversity Data Base

March 8, 2010

Mr. Donald D. Biondi
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270

re: The Connecticut Light and Power Company Connecticut Interstate Reliability Project in Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson, and Windham, Connecticut

Dear Mr. Biondi:

I have reviewed Natural Diversity Data Base maps and correspondence files regarding the area delineated on the maps you provided showing the project mapping that was updated in January 2010 for the proposed project listed above. I have determined that CL&P is in receipt of the most recent updated state-listed species and habitat information that is available for this project.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the DEP's Natural History Survey and cooperating units of Department of Environmental Protection's private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at 860-424-3592. Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Sincerely,

Dm. McKay

Dawn M. McKay
Biologist/Environmental Analyst 3

Cc: NDDB File # 15775

CONNECTICUT NATURAL DIVERSITY DATABASE

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ENVIRONMENTAL AND GEOGRAPHIC INFORMATION CENTER
79 Elm Street, Store Level
Hartford, Connecticut 06106-5127
Natural Diversity Data Base

September 24, 2002

Karen Hanecak
ESS Group, Inc.
401 Wampanoag Trail, Suite 400
East Providence, RI 02915

Re: Northeast Utilities Connecticut
Right of Way, (various towns)

Dear Ms. Hanecak:

I have completed the state listed plant species review of the proposed and alternate route for the proposed construction of a 38 mile electric transmission line from Lebanon, CT to the Rhode Island border. Based on Natural Diversity Data Base information, there is one sensitive plant area on the proposed alternate route. I have attached a map showing the location of Threadfoot, *Podostemum ceratophyllum*. This aquatic plant species is listed as State Special Concern and had been documented growing in the Mt. Hope River. I have indicated the sensitive river crossing where I recommend that best management practices be implemented to control/prevent erosion and siltation into the Mt. Hope River. There are no known locations of State listed plants that would be affected by the proposed route.

Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Environmental & Geographic Information Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substituted for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions (424-3589). Thank you for consulting the Natural Diversity Data Base.

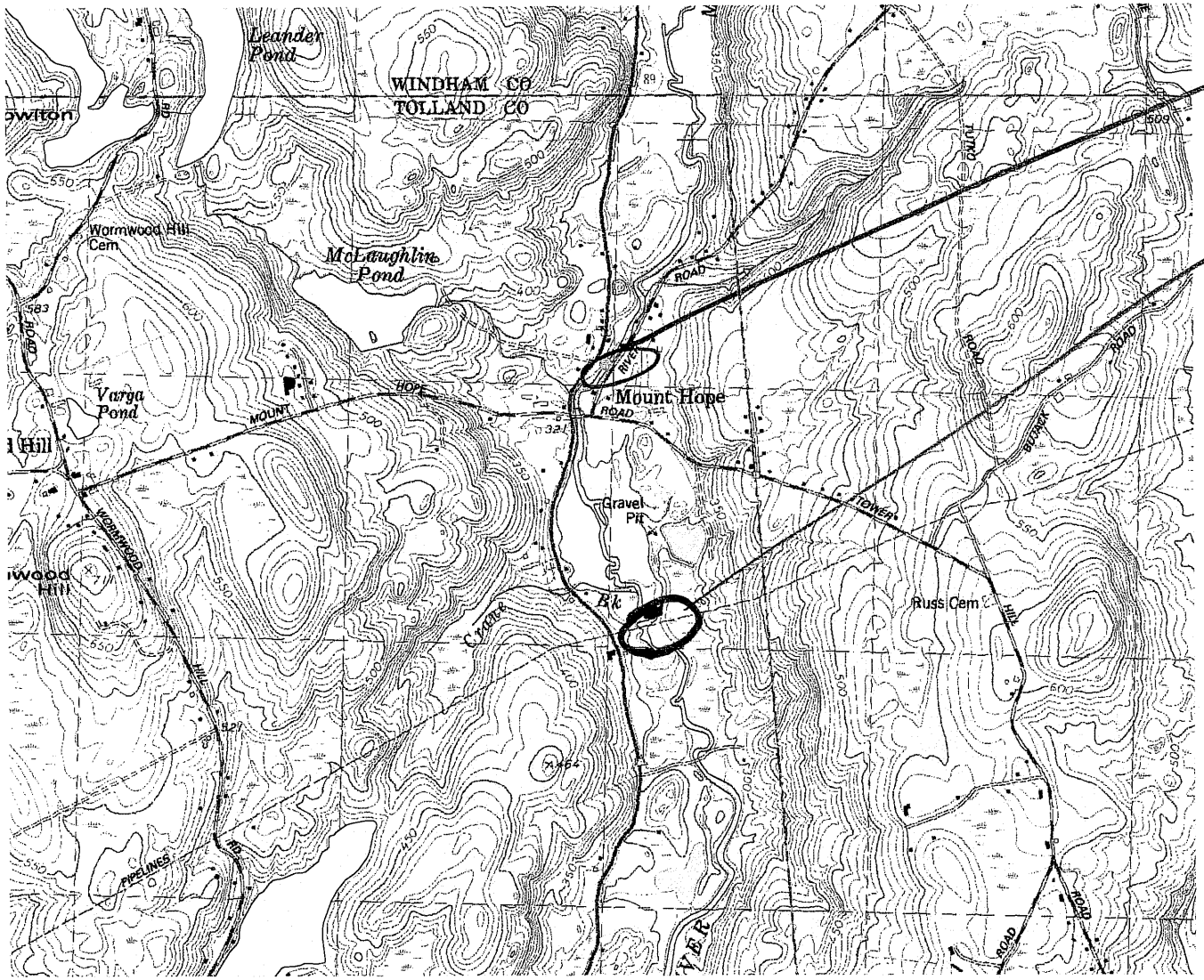
Sincerely,

Nancy Murray
Biologist/Environmental Analyst III

NMM/md

Attachment: map

Mount Hope River Site



state listed plant location

sensitive river crossing

EO.Point Reps - All Attributes
- Animal Assemblage
- Coastal/Marine Community - Other Classification
- Freshwater Community - Other Classification
- Invertebrate Animal
- Nonvascular Plant
- Other (Botanical)
- Other (Ecological)
- Terrestrial Community - Other Classification
- Vascular Plant
- Vertebrate Animal
- No Data

EO.Source Polygons
- Animal Assemblage
- Coastal/Marine Community - Other Classification
- Freshwater Community - Other Classification
- Invertebrate Animal
- Nonvascular Plant
- Other (Botanical)
- Other (Ecological)
- Terrestrial Community - Other Classification
- Vascular Plant
- Vertebrate Animal
- No Data

- Named Stream.Lines
- Named Lake.Polygons
- Town.Polygons
- Towns_longisland.Polygons
- Annotation.Points

0.8 0 0.8 1.6 Miles

N W E S

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ENVIRONMENTAL & GEOGRAPHIC INFORMATION CENTER
79 Elm Street, Store Level
Hartford, CT 06106
Natural Diversity Data Base

July 20, 2004

Ms. Karen Hanecak
ESS Group, Inc.
401 Wampanoag Trail, Suite 400
East Providence, RI 02915

re: Proposed Construction of a 38 Mile Electric Transmission Line From Lebanon, Connecticut to the Rhode Island Border along a Northeast Utilities Right of Way

Dear Ms. Hanecak:

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed construction of a 38- mile electric transmission line from Lebanon, Connecticut to the Rhode Island border along a Northeast Utilities right–of-way. According to our information, there are known extant populations of state-listed species that occur within the vicinity of both the proposed route and the alternative route for this project. Nancy Murray (DEP-EGIC, 860-424-3589) our program botanist will write to you directly with her comments regarding state-listed plant species and significant natural communities that may be impacted by this project. Please direct your questions on the plants and communities to Ms. Murray.

I have sent your letter and map to Julie Victoria (DEP-Wildlife; 860-642-7239) for further review. I highlighted areas along the two routes that intersect with populations of state-listed animal species for her. Ms. Victoria will determine and identify which populations of state-listed animal species along this new transmission may be impacted by this project. She will write to you directly with her comments.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at 424-3592. Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Sincerely,

D M. McKay

Dawn M. McKay
Biologist/Environmental Analyst

Cc: Julie Victoria, NDDB # 13319

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

ENVIRONMENTAL & GEOGRAPHIC INFORMATION CENTER
79 Elm Street, Store Level
Hartford, CT 06106
Natural Diversity Data Base

October 6, 2004

Ms. Laura Ernst
ESS Group. Inc.
401 Wampanoag, Suite 400
East Providence, RI 02915

re: Northeast Utilities, Connecticut to Rhode Island Project, Additional Route Alternatives- Mansfield Overhead and Mansfield Underground – that cross Lebanon, Windham and Chaplin, Connecticut

Dear Ms. Ernst:

Thank you for your letter regarding the Northeast Utilities Connecticut to Rhode Island Project with two additional route alternatives, Mansfield Overhead and Mansfield Underground, that cross Lebanon, Windham and Chaplin, Connecticut. I have enclosed a map that indicates three areas along these two alternative routes that may have conflicts with state-listed wildlife species and significant natural communities. I have designated these areas as A, B and C on the map. The following state-listed species and significant natural communities occur in these areas:

A. Poor Fen, a significant natural community
State Endangered *Williamsonia lintneri* (banded bog skimmer)
State Special Concern *Lycaena epixanthe* (bog copper)

B. Atlantic White Cedar Basin Swamp, a significant natural community
State Special Concern *Gyraulus circumstriatus* (aquatic snail)
State Special Concern *Hetaerina americana* (American rubyspot)
State Special Concern *Callophrys henrici* (Henry's elfin)

C. State Threatened *Callophrys irus* (frosted elfin)
State Threatened *Gomphus adelphus* (moustached clubtail)

Our program ecologist, Mr. Ken Metzler (DEP-EGIC; 860-424-3585) recommends that direct impacts to the poor fen and Atlantic White Cedar Basin Swamp along your route should be avoided at all costs. If you have additional questions regarding these communities or methods to avoid direct impacts to these significant communities, please contact Mr. Metzler. Ms. Julie Victoria (DEP-Wildlife; 860-642-7239) will assess the impacts of your alternative routes for the state-listed wildlife species, all of which are invertebrates. You may contact Ms. Victoria directly if you require further details on these species.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Natural Resources Center's Geological and Natural History Survey and cooperating units of DEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at 424-3592. Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

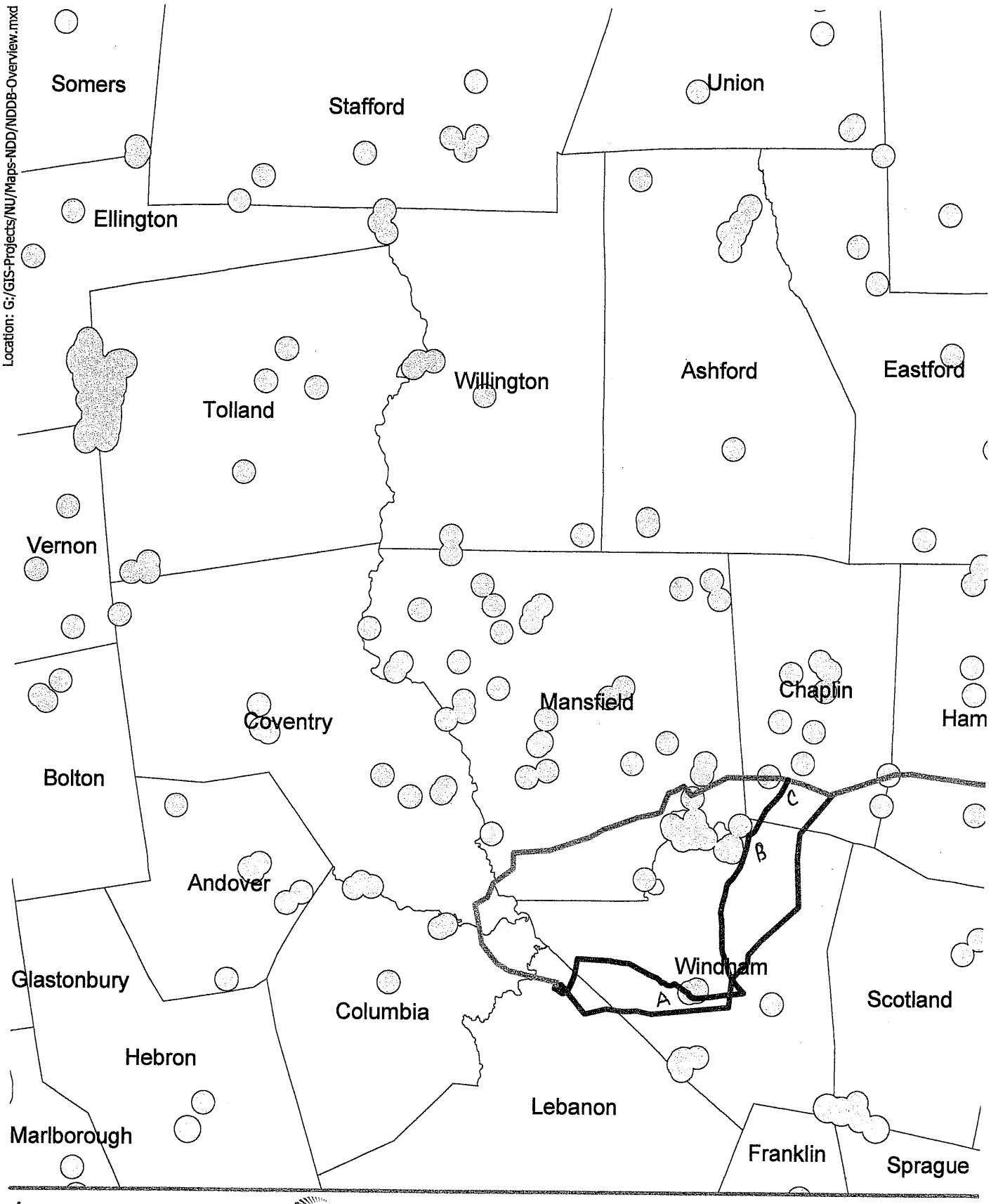
Sincerely,

DM. McKay

Dawn M. McKay
Biologist/Environmental Analyst

Cc Julie Victoria, NDDB # 13447

Location: G:/GIS-Projects/NU/Maps-NDD/NDDB-Overview.mxd



ESS Group, Inc.
Engineers
Scientists
Consultants

Northeast Utilities System

Connecticut to Rhode Island Project

Scale: 1" = 15,000'

Source: 1) CTDEP, Towns, 1998 2) BMCD, Alternative Routes, 2004
3) CTDEP, Natural Diversity Database, 2004 4) RIGIS, Town Boundaries, 1997

LEGEND

- Existing ROW Altern
- Mansfield OH Altern
- Mansfield UG Altern
- Rhode Island Towns

Northeast Utilities System

107 Selden Street, Berlin, CT 06037
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

October 11, 2007

Natural Diversity Data Base/Data Request
Environmental & Geographic Information Center
Ms. Dawn McKay
Connecticut Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Re: The Connecticut Light and Power Company
Connecticut Interstate Reliability Project
Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson & Windham, Connecticut

Dear Ms. McKay,

The Connecticut Light and Power Company intends to initiate planning, siting, and permitting tasks required to upgrade and expand its electric transmission facilities in portions of eastern Connecticut. The purpose of these proposed modifications, which will be required along several different electric transmission lines, is to help alleviate numerous thermal and voltage problems on the electric system. The study area includes portions of the municipalities of Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson & Windham, Connecticut. The attached USGS map set (CT Interstate Reliability Project Natural Diversity Map Sheets 1 through 15) show the project location in these areas.

This request specifically addresses the requirement for documented consultation in regard to compliance with the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1531 *et seq.*) and the Connecticut Endangered Species Statutes (Title 26, Chapter 495, Sections 26-303 to 26-316 of the Connecticut General Statutes). We respectfully request correspondence from your office regarding the occurrence of any species of special concern (rare), threatened species or endangered species ("RT&E") and/or their critical habitats within the 1,000 foot study corridor as depicted on the attached USGS topographic figures. In addition, we've also included a CD with ARC-GIS shapefiles of the proposed project study area to facilitate your review.

Please note that a previous request and determination was made concerning a preliminary portion of this project in July 2004. We are requesting an update to the information previously provided by the CT NDDB. Please find correspondence and mapping related to that request included. Also, please note that not all routes referenced in the July 2004 correspondence are being considered for the current project.

Thank you for your assistance. Please forward correspondence to my attention, and, if possible, please forward copies to ENSR at the below noted address. Should you have any questions please contact me at 860-665-6716 or Timothy O'Sullivan (ENSR) at 860-429-5323 (ext. 229).

Sincerely,

Donald D. Biondi
Transmission Siting and Permitting

Attachments

Cc: T. O'Sullivan, ENSR, 11 Phelps Way, P.O. Box 506, Willington, CT 06279
J. Durand, ENSR
S. Thornhill, Burns & McDonnell
K. Gerling, Burns & McDonnell

Connecticut Natural Diversity Data Base Review Request Form

Please complete this form *only* if you have conducted a review which determined that your activity is located in an area of concern.

Name: **Donald D. Biondi**

Affiliation: **Northeast Utilities System -Transmission Siting & Permitting**

Mailing Address: **107 Selden Street**

City/Town: **Berlin** State: **CT** Zip Code: **06037**

Business Phone: **860-665-6716** ext. **14** Fax: **860-665-2820**

Contact Person: **Donald Biondi** Title: **Land Planning Consult.**

Project or Site Name: **Connecticut Interstate Reliability Project**

Project Location

Town: **See Attached** USGS Quad: **See Attached**

Brief Description of Proposed Activities:

Planning, siting, and permitting tasks to upgrade The Connecticut Light & Power Company's electric transmission facilities in New London, Tolland, and Windham Counties, Connecticut.

Have you conducted a "State and Federal Listed Species and Natural Communities Map" review?

☒ Yes ☐ No Date of Map: **June 2007**

Has a field survey been previously conducted to determine the presence of any endangered, threatened or special concern species? ☐ Yes ☒ No

If yes, provide the following information and submit a copy of the field survey with this form.

Biologists Name:

Address:

If the project will require a permit, list type of permit, agency and date or proposed date of application:

Connecticut Siting Council Certificate of Environmental Compatibility and Public Need

(See reverse side - you must sign the certification on the reverse side of this form)

The Connecticut Natural Diversity Data Base (CT NDDB) information will be used for:

☒ permit application

☒ environmental assessment (give reasons for assessment):

Assess improvements & upgrades to CL&P's existing electric transmission system grid in eastern Connecticut.

☐ other (specify):

"I certify that the information supplied on this form is complete and accurate, and that any material supplied by the CT NDDB will not be published without prior permission."

Signature _____ Date 10-11-07

All requests must include a USGS topographic map with the project boundary clearly delineated.

Return completed form to:

WILDLIFE DIVISION
BUREAU OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM ST, 6TH FLOOR
HARTFORD, CT 06106-5127

* You must submit a copy of this completed form with your registration or permit application.

Attachment 1: Project Location

Towns:

Brooklyn

Chaplin

Columbia

Coventry

Hampton

Killingly

Lebanon

Mansfield

Putnam

Pomfret

Thompson

Windham

USGS Quads:

Columbia

Danielson

Hampton

Putnam

Spring Hill

Willimantic

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Natural Resources
Wildlife Division
79 Elm Street, Sixth Floor
Hartford, CT 06106
Natural Diversity Data Base

March 17, 2008

Mr. Donald D. Biondi
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270

re: The Connecticut Light and Power Company Connecticut Interstate Reliability Project in Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson, and Windham Connecticut

Dear Mr. Biondi:

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed Connecticut Light and Power Company Connecticut Interstate Reliability Project in Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson, and Windham, Connecticut. I have determined that this project will not impact any known extant population of state-listed plant species that may occur within the study corridor. A separate letter regarding the impact to state-listed animals species that may occur in this study area will be sent by another biologist within the Wildlife Division.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the DEP's Natural History Survey and cooperating units of Department of Environmental Protection's private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at 424-3592. Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEP for the proposed site.

Sincerely,

Dawn M. McKay
Biologist/Environmental Analyst 3

Cc: NDDB File # 15775

Connecticut Light & Power
The Northeast Utilities System

NEEWS
Interstate Reliability Project

March 17, 2009

Ms. Dawn McKay, Biologist
Connecticut Department of Environmental Protection
Natural Diversity Database
Bureau of Natural Resources
Wildlife Division
79 Elm Street, Sixth Floor
Hartford, CT 06106

RE: Update on The Connecticut Light and Power's Portion of the Interstate Reliability Project Rare, Threatened, and Endangered Species Surveys

Dear Ms. McKay:

The intention of this letter is two-fold: 1) The Connecticut Light and Power Company (CL&P) seeks to confirm they are in receipt of the most recent rare, threatened and endangered species/habitat information and have suitably followed the Connecticut Department of Environmental Protection's (CT DEP) directives for the Interstate Reliability Project (Project). We respectfully request written confirmation to this effect, and 2) update the CT DEP on rare, threatened, and endangered species correspondence and surveys performed in connection with the Project. For your convenience, a chronological summary of rare, threatened, and endangered species deliberations, correspondence and activities to date for the Project is provided below.

CL&P is refining the constructibility mapping for the Project. When this review is complete, CL&P will seek to meet with the CT DEP to develop appropriate rare, threatened, and endangered species mitigation measures for the Project. CL&P has recently become aware that the CT DEP Natural Diversity Database (NDDB) updated their rare, threatened, and endangered species habitat locations (polygons) as of December 2008. CL&P requests a review of the new habitat areas that have been identified along the Project routes.

Initial Identification of Project Scope and Rare, Threatened, and Endangered Species

CL&P submitted a rare, threatened, and endangered species request for the Project to the CT DEP NDDB in a letter dated October 11, 2007 (Attachment A). The letter included an attachment presenting one set (15 mapsheets) of United States Geological Survey (USGS) topographic mapping depicting the Project study area within the municipalities of Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson, and Windham, Connecticut.

The CT DEP NDDB responded to the October 11, 2007 CL&P request with two letters; one dated February 25, 2008 from Ms. Julie Victoria (Attachment B) and the other dated March 17, 2008 from Ms. Dawn McKay (Attachment C).

The CT DEP NDDB response letter dated February 25, 2008 identified on 10 of the 15 USGS maps potential habitat which may support populations of rare, threatened, and endangered species. These maps covered portions of the Proposed Route (previously referred to as the Green Route and also as the Primary Route Under Consideration) as well as the potential variations to that route. CL&P further notes, that the March 17, 2008 CT DEP NDDB response letter from Ms. Dawn McKay indicated that the Project will not impact any known extant population of state-listed plant species that may occur within the study corridor. As a result of

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Northeast Utilities System
P.O. Box 270
Hartford, CT 06141-0270

a review of the CT DEP NDDB letters pertaining to rare, threatened, and endangered species, CL&P generated a species summary table that lists all of the listed species associated with the Project and the Project segment in which they occur (Attachment D).

During the course of the correspondence described above, CL&P representatives met with the CT DEP NDDB on April 1, 2008 to discuss the potential rare, threatened, and endangered species implications for the Project. The following is a summary of the species surveys and related activities completed for the Project, as well as species specific discussions and anticipated actions.

Field Surveys for Rare, Threatened, and Endangered Animal Species

State-Listed Bird Surveys

The February 25, 2008 CT DEP NDDB response letter indicated that there are records of several state listed species, specifically the horned lark (*Eremophila alpestris*), grasshopper sparrow (*Ammodramus savannarum*), American kestrel (*Falco sparverius*), savannah sparrow (*Passerculus sandwichensis*), Eastern meadowlark (*Sturnella magna*), and whip-poor-will (*Caprimulgus vociferus*) in the vicinity of the Project site in Mansfield and Putnam. Horned lark and grasshopper sparrow are listed by the CT DEP NDDB as Endangered (E). American kestrel is listed as Threatened (T). Savannah sparrow, Eastern meadowlark and whip-poor-will are listed as species of Special Concern (SC).

In response to the CT DEP NDDB's request for a breeding season survey, wildlife biologists conducted four ground surveys for potential nesting habitat along the CL&P transmission line right-of-way (ROW), stretching from Bassetts Bridge Road to Mansfield Hollow Lake in Mansfield, and from Killingly Avenue (Route 12) to approximately Ridge Road in Putnam. Fieldwork was conducted on May 27 and 29, 2008 in Mansfield and on June 3 and 5, 2008 in Putnam. The purpose of the surveys was to determine if the subject species are currently utilizing the ROW as nesting habitat (Attachment E).

As a result of the surveys, AECOM Environment/ENSR made the following observations:

- On May 27, 2008 a female American kestrel was observed perching on the top of a derrick of an unused water well drilling rig in an active farm field approximately 600 feet west of the CL&P ROW in Mansfield;
- On May 27 and 29, 2008 a single Eastern meadowlark was heard singing in and observed flying from the same farm field where the American kestrel was noted; and
- On May 27 and 29, 2008, two brown thrashers were observed repeatedly flying in and out of a large multiflora rose bush on land controlled by the United States Army Corps of Engineers south of the active farm field.

AECOM Environment/ENSR biologists identified an area of potential American kestrel and Eastern meadowlark foraging habitat along the CL&P ROW in an area of Mansfield Hollow State Park in the Town of Mansfield. The potential foraging habitat is located within the existing ROW to the north and south of Bassetts Bridge Road, between existing pole structure numbers 9081 and 9082 and as shown on Figure 1 in Attachment E.

Additional Rare, Threatened, and Endangered Species Concerns

Lepidoptera (Butterfly's and Moths)

As identified in the February 25, 2008 letter from the CT DEP, several species of state listed butterflies were noted as potentially occurring within the Project area (both the Proposed Route and potential variations). The listed species in the Project area include the frosted elfin (*Callophryus irus*) (T), Horace's duskywing

(*Erynnis horatius*) (SC), Harris' checkerspot (*Chlosyne harrisii*) (T), the sleepy duskywing (*Erynnis brizo*) (T), and the bog copper butterfly (*Lycaena epixanthe*) (SC).

Additionally, eight species of moth were identified as potentially occurring within the Project area. The state listed species include the oblique zale moth (*Zale olbiqua*) (SC); the pine barrens noctuid moth (*Zanclognatha martha*) (T); the scribbled sallow (*Lepipolys perscripta*) (SC); four species of Noctuid moths: *Apamea burgessi* (SC), *Chaetaglaea cerata* (SC), *Eucoptocnemis fimbriaris* (SC), *Shinia spinosae* (SC); and the shrub euchlaena moth (*Euchlaena madusaria*) (SC).

CL&P consulted with a recognized expert lepidopterist, Dr. David Wagner of the University of Connecticut, regarding conducting species specific butterfly and moth surveys for the Project. CL&P anticipates working with Dr. Wagner to conduct any required field surveys.

Turtles

One species of turtle, the state-listed wood turtle (*Glyptemys insculpta*) (SC) was identified by the CT DEP NDDB as potentially occurring in the Project area. No species-specific surveys are currently proposed prior to Project construction. Instead, a turtle mitigation plan will be presented to the CT DEP NDDB by CL&P for review and approval. The CT DEP NDDB has recommended habitat characterization surveys to determine the locations of potentially suitable habitats, pre-construction sweep surveys to locate and remove any wood turtles from the active work areas, pre-construction reconnaissance surveys for nesting habitat, installation of turtle exclusion fencing, contractor awareness training and the parking of equipment on established roadways and other designated areas at night, as opposed to areas that could potentially serve as wood turtle habitat. The CT DEP NDDB has also recommended maintaining a riparian buffer along perennial watercourses, which could potentially provide habitat for this species.

Snakes

Two state-listed snakes, the Eastern hognose snake (*Heterodon platirhinos*) (SC), and the Eastern ribbon snake (*Thamnophis sauritus*) (SC), were identified by the CT DEP NDDB as potentially occurring in the Project area. No species-specific surveys are currently proposed for these species prior to Project construction. The CT DEP NDDB has recommended pre-construction sweep surveys, especially when there is a temporary stop in construction, since the snakes may relocate back onto the ROW and could possibly be attracted to unoccupied equipment which could potentially provide cover and/or heat. CT DEP NDDB has also recommended multiple reconnaissance sweeps to monitor snake activity during construction. Initially CT DEP recommended that construction be conducted during the dormant season for these snake species (November 1 to April 1). As a result of the April 1, 2008 meeting, CT DEP NDDB amended their recommendations to state that construction be performed during the active period for snakes (spring, summer, and fall) in order to avoid unknown hibernation sites.

Aquatic Snail

The state listed aquatic snail (*Gyraulus circumstriatus*) (SC) was identified by the CT DEP NDDB as potentially occurring within the Project area near Mansfield Hollow Lake. The CT DEP NDDB is not overly concerned with potential impacts to this species provided there are no in-water work activities proposed as a result of the Project. The CT DEP NDDB has stressed the importance of proper installation and maintenance of erosion and sediment controls as well as maintaining an undisturbed riparian buffer zone to the subject water bodies. No species-specific surveys are proposed for this species.

Odonates

Three state-listed species of odonates were identified by the CT DEP NDDB as potentially occurring in the Project area. These species include the state listed moustached clubtail (*Gomphus adelphus*) (T), the

banded bog skimmer dragonfly (*Williamsonia lintneri*) (E), and the American rubyspot damselfly (*Hetaerina americana*) (SC). As there are no in-water work activities proposed, construction activities should not adversely affect odonates. However, as with the aquatic snail, the CT DEP NDDB has stressed the importance of proper installation and maintenance of erosion and sediment controls as well as maintaining an undisturbed riparian buffer zone to the subject water bodies. No species specific surveys are proposed for these species.

Conclusions

CL&P is seeking to confirm that we are in receipt of the most recent, updated species/habitat information available from the CT DEP NDDB. Attachment F contains revised USGS Mapping of the Project area highlighting the CT DEP NDDB's new polygon locations.

In addition, we request concurrence that our proceedings to date are consistent with the expectations of the CT DEP NDDB relative to the Project.

Thank you for your attention to this request. If you have questions pertaining to any of the information within this report please call me at 860-665-6716 or Tim O'Sullivan (AECOM Environment) at 860-429-5323, extension 229.

Sincerely,

Northeast Utilities Service Company

Donald D. Biondi
Transmission Siting and Permitting

Attachments:
- A NU rare species data request, dated October 11, 2007
- B CT DEP response letter dated February 25, 2008
- C CT DEP response letter dated March 17, 2008
- D Project CT rare species summary table
- E Breeding Bird Survey Addendum
- F USGS Mapping (updated February 2009)

CC: Julie Victoria, CT DEP
T. Mele, Northeast Utilities System
D. Lukehart, Northeast Utilities System
J. Buckley, Burns & McDonnell
J. Durand, AECOM Environment

Northeast Utilities System
P.O. Box 270
Hartford, CT 06141-0270

Berg, Jim

From: McKay, Dawn [Dawn.McKay@ct.gov]
Sent: Tuesday, June 02, 2009 1:18 PM
To: Berg, Jim
Cc: Victoria, Julie; Dickson, Jenny
Subject: FW: Rare Species Information NDDB # 15775
Follow Up Flag: Follow up
Flag Status: Red
Attachments: DOC060209.pdf

Jim,
Thank you for the maps of the two (new) polygon areas along CL&P Connecticut Interstate Reliability Project (NDDB# 15775) that you needed reviewed by our program. I was able to complete my review and found that these polygons (a new polygon in Pomfret and a new polygon in Mansfield) represent known extant populations of State Threatened *Callophrys irus* (frosted elfin). In both cases, the occurrence of this butterfly was found within the power line corridor. You may refer to Julie's original letter to you dated February 25, 2008 and her most recent letter dated April 15, 2009 regarding the conservation and habitat of this butterfly. If you have additional questions on this butterfly you may direct them to Julie (860-642-7239). Thank you for providing me with the opportunity to ensure that this project has the most up to date information available. Please let me know if you need further assistance.
Dawn M. McKay
860-424-3592

From: Berg, Jim [mailto:Jim.Berg@aecom.com]
Sent: Tuesday, June 02, 2009 11:55 AM
To: McKay, Dawn
Subject: Rare Species Information NDDB # 15775

Dawn,

Per our conversation on June 2, 2009, I am attaching a file containing two polygon areas within the project area for which we do not have current rare species information. These areas were identified while reviewing the updated NDDB mapping as it pertains to the project area. Could you please send the corresponding rare species data for each of these polygon areas? This email serves as a follow-up to a letter submitted on March 17, 2009 for NDDB Project 15775.

Could you please confirm that these maps are sufficient for you to complete your review?

Thank you for taking the time to review these polygon areas.

Jim Berg
860-429-5323 xt 232

Berg, Jim

From: McKay, Dawn [Dawn.McKay@ct.gov]
Sent: Monday, June 08, 2009 12:07 PM
To: Berg, Jim
Cc: Victoria, Julie
Subject: FW: Rare Species Information NDDB # 15775
Follow Up Flag: Follow up
Flag Status: Red
Attachments: irp-polygons for d.mckay set two.pdf

Jim,
Thank you for the maps of the additional two (new) polygon areas along CL&P Connecticut Interstate Reliability Project (NDDB# 15775) that you needed reviewed by our program. I was able to complete my review and found that these polygons (a new polygon in Killingly and a new polygon in Thompson) represent known extant populations of state listed moth species.

The polygon in Killingly represents State Special Concern (historic) *Metarranthis apiciara* (barrens metarranthis moth) and State Threatened *Hemaris gracilis* (slender clearwing).

The Thompson polygon represents State Special Concern *Lepipolys prescripta* (a noctuid moth).

The extant populations of the moths were all found within the power line corridor. I don't believe you have received habitat information or conservation suggestions for *Metarranthis apiciara , Hemaris gracilis or Lepipolys prescripta* as these species were not included in our original correspondence and this is a new site for review. Julie will write to you about their habitat and conservation. If you have additional questions on any of the moths you may direct them to Julie (860-642-7239).

Thank you for providing me with the opportunity to ensure that this project has the most up to date information available. Please let me know if you need further assistance.

Dawn M. McKay
860-424-3592

From: Berg, Jim [mailto:Jim.Berg@aecom.com]
Sent: Tuesday, June 02, 2009 3:25 PM
To: McKay, Dawn
Subject: RE: Rare Species Information NDDB # 15775

Dawn,

Thank you for your quick response. Unfortunately, I was unaware that there were a total of 4 polygon areas with no species data. I've attached an additional set of two maps with polygon areas within the project corridor for which we have no species information. These areas were identified while reviewing the updated NDDB mapping as it pertains to the project area. Could you please send the corresponding rare species data for each of these polygon areas? This email serves as a follow-up to a letter submitted on March 17, 2009 for NDDB Project 15775.

Thank you for taking the time to review these polygon areas.

Jim Berg
860-429-5323 xt 232

From: McKay, Dawn [mailto:Dawn.McKay@ct.gov]
Sent: Tue 6/2/2009 1:18 PM
To: Berg, Jim
Cc: Victoria, Julie; Dickson, Jenny
Subject: FW: Rare Species Information NDDB # 15775

Jim,
Thank you for the maps of the two (new) polygon areas along CL&P Connecticut Interstate Reliability Project (NDDB# 15775) that you needed reviewed by our program. I was able to complete my review and found that these polygons (a new polygon in Pomfret and a new polygon in Mansfield) represent known extant populations of State Threatened *Callophrys irus* (frosted elfin). In both cases, the occurrence of this butterfly was found within the power line corridor. You may refer to Julie's original letter to you dated February 25, 2008 and her most recent letter dated April 15, 2009 regarding the conservation and habitat of this butterfly. If you have additional questions on this butterfly you may direct them to Julie (860-642-7239). Thank you for providing me with the opportunity to ensure that this project has the most up to date information available. Please let me know if you need further assistance.
Dawn M. McKay
860-424-3592

From: Berg, Jim [mailto:Jim.Berg@aecom.com]
Sent: Tuesday, June 02, 2009 11:55 AM
To: McKay, Dawn
Subject: Rare Species Information NDDB # 15775

Dawn,

Per our conversation on June 2, 2009, I am attaching a file containing two polygon areas within the project area for which we do not have current rare species information. These areas were identified while reviewing the updated NDDB mapping as it pertains to the project area. Could you please send the corresponding rare species data for each of these polygon areas? This email serves as a follow-up to a letter submitted on March 17, 2009 for NDDB Project 15775.

Could you please confirm that these maps are sufficient for you to complete your review?

Thank you for taking the time to review these polygon areas.

Jim Berg
860-429-5323 xt 232

Connecticut Light & Power
The Northeast Utilities System

NEEWS
Interstate Reliability Project

March 19, 2010

Ms. Dawn McKay, Biologist
Connecticut Department of Environmental Protection
Natural Diversity Database
Bureau of Natural Resources
Wildlife Division
79 Elm Street, Sixth Floor
Hartford, CT 06106

RE: Update on The Connecticut Light and Power's Portion of the Interstate Reliability Project

Dear Ms. McKay:

The Connecticut Light and Power Company (CL&P) is aware that the Natural Diversity Database (NDDB) updated its rare, threatened, and endangered species habitat locations (polygons) as of December 2009. In light of these updates, we seek to confirm we are in receipt of the most recent rare, threatened and endangered species/habitat information and have suitably followed the Connecticut Department of Environmental Protection's (CT DEP) recommendations for the Interstate Reliability Project (Project). We respectfully request correspondence from your office regarding the occurrence of any species of special concern (rare), threatened species or endangered species (RT&E) and/or their critical habitats within or adjacent to the Project right-of-way (ROW) as depicted on the attached USGS topographic figures (Attachment 1). In addition, we've also included a CD with ARC-GIS shapefiles of the Project ROW to facilitate your review. For your convenience, a summary of rare, threatened, and endangered species correspondence to date for the Project is provided in Table 1 below.

CL&P requests a review of any new habitat areas that have been identified along the Project ROW.

Previous correspondence is summarized as follows:

Table 1: Connecticut Rare, Threatened, Endangered Species Correspondence

Date	To	From	Comments
October 11, 2007	Ms. Dawn McKay	Mr. Donald Biondi	Initial project data request
February 25, 2008	Mr. Donald Biondi	Ms. Julie Victoria	Response letter
March 17, 2008	Mr. Donald Biondi	Ms. Dawn McKay	Response letter
March 17, 2009	Ms. Dawn McKay	Mr. Donald Biondi	Updated project data request 2009
April 15, 2009	Mr. Donald Biondi	Ms. Julie Victoria	Response letter
June 2, 2009	Mr. Jim Berg	Ms. Dawn McKay	Email correspondence
June 8, 2009	Mr. Jim Berg	Ms. Dawn McKay	Email correspondence
June 16, 2009	Mr. Jim Berg	Ms. Julie Victoria	Email correspondence

Northeast Utilities System
P.O. Box 270
Hartford, CT 06141-0270

Table 2 below, provides a summary of all rare, threatened, and endangered species included in previous responses from the NDDB.

Table 2: Rare, Threatened, and Endangered Species Summary Table

Common Name	Scientific Name	Town	Status
	Birds		
Horned lark	*Eremophila alpestris*	Mansfield	Endangered
Grasshopper sparrow	*Ammodramus savannarum*	Mansfield	Endangered
American kestrel	*Falco sparverius*	Mansfield	Threatened
Savannah sparrow	*Passerculus sandwichensis*	Mansfield	Special Concern
Eastern meadowlark	*Sturnella magna*	Mansfield	Special Concern
Whip-poor-will	*Caprimulgus vociferus*	Putnam	Special Concern
	Lepidoptera		
Frosted elfin	*Callophyrus irus*	Mansfield, Chaplin, and Brooklyn	Threatened
Horace's duskywing	*Erynnis horatius*	Mansfield and Chaplin	Special Concern
Harris' checkerspot	*Chlosyne harrisii*	Mansfield, Chaplin and Windham	Threatened
Sleepy duskywing	*Erynnis brizo*	Mansfield	Threatened
Bog copper butterfly	*Lycaena epixanthe*	Windham	Special Concern
Oblique zale moth	*Zale olbiqua*	Mansfield	Special Concern
Pine barrens noctid moth	*Zanclognatha Martha*	Mansfield	Threatened
Scribbled sallow	*Lepipolys perscripta*	Mansfield	Special Concern
Noctuid moth	*Apamea burgessi*	Mansfield	Special Concern
Noctuid moth	*Chaetaglaea cerata*	Mansfield	Special Concern
Noctuid moth	*Eucoptocnemis fimbriaris*	Mansfield	Special Concern
Noctuid moth	*Shinia spinosae*	Mansfield	Special Concern
Shrub euchlaena moth	*Euchlaena madusaria*	Mansfield	Special Concern
	Turtles		
Wood turtle	*Glyptemys insculpta*	Pomfret	Special Concern
	Snakes		
Eastern hognose snake	*Heterodon platirhinos*	Mansfield	Special Concern
Eastern ribbon snake	*Thamnophis sauritus*	Putnam	Special Concern
	Snails		
Aquatic snail	*Gyraulus circumstriatus*	Mansfield	Special Concern
	Odonates		
Moustached clubtail	*Gomphus adelphus*	Mansfield and Chaplin	Threatened
Banded bog skimmer dragonfly	*Williamsonia lintnen*	Windham	Endangered
American rubyspot damselfly	*Hetaerina Americana*	Windham	Special Concern

Northeast Utilities System
P.O. Box 270
Hartford, CT 06141-0270

Conclusions

CL&P is seeking to confirm that we are in receipt of the most recent, updated species/habitat information and locations available from the CT DEP NDDB.

Thank you for your attention to this request. If you have questions pertaining to any of the information or past correspondence presented within this letter please call me at 860-665-6716 or Tim O'Sullivan (AECOM Environment) at 860-429-5323, extension 229.

Sincerely,

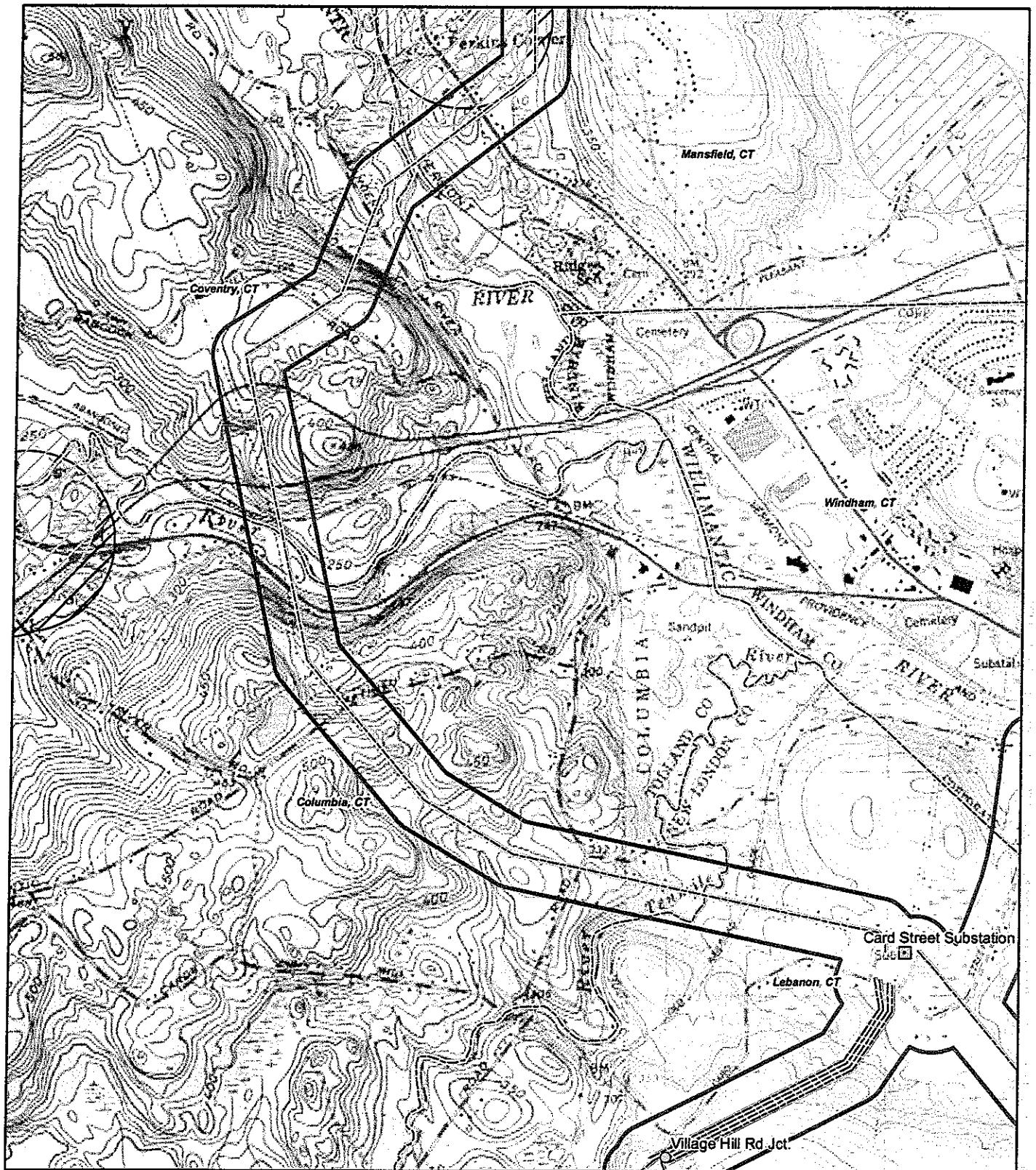
Northeast Utilities Service Company

Donald D Biondi
Transmission Siting and Permitting

Attachment: USGS Mapping (updated January 2010)

CC: Julie Victoria, CT DEP
T Mele, Northeast Utilities System
D Lukehart, Northeast Utilities System
J. Buckley, Burns & McDonnell
T. O'Sullivan, AECOM Environment
J. Durand, AECOM Environment

Northeast Utilities System
P.O. Box 270
Hartford, CT 06141-0270



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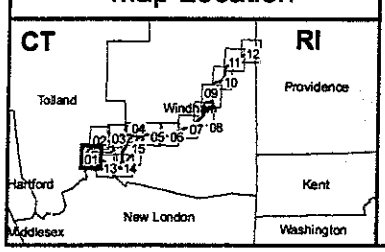

CT Interstate Reliability Project
Natural Diversity Map

- Junction
- Substation
- Switching Station
- 1000 ft Study Corridor
- Town Boundaries
- Proposed Route
- Line Loop 310
- Willimantic South Overhead Variation
- Willimantic South Underground Variation
- CT Natural Diversity Database December 2008
- CT Natural Diversity Database Decmeber 2009
- Mansfield Underground Variation
- Mount Hope Underground Variation
- Brooklyn Overhead Variation
- Brooklyn Underground Variation

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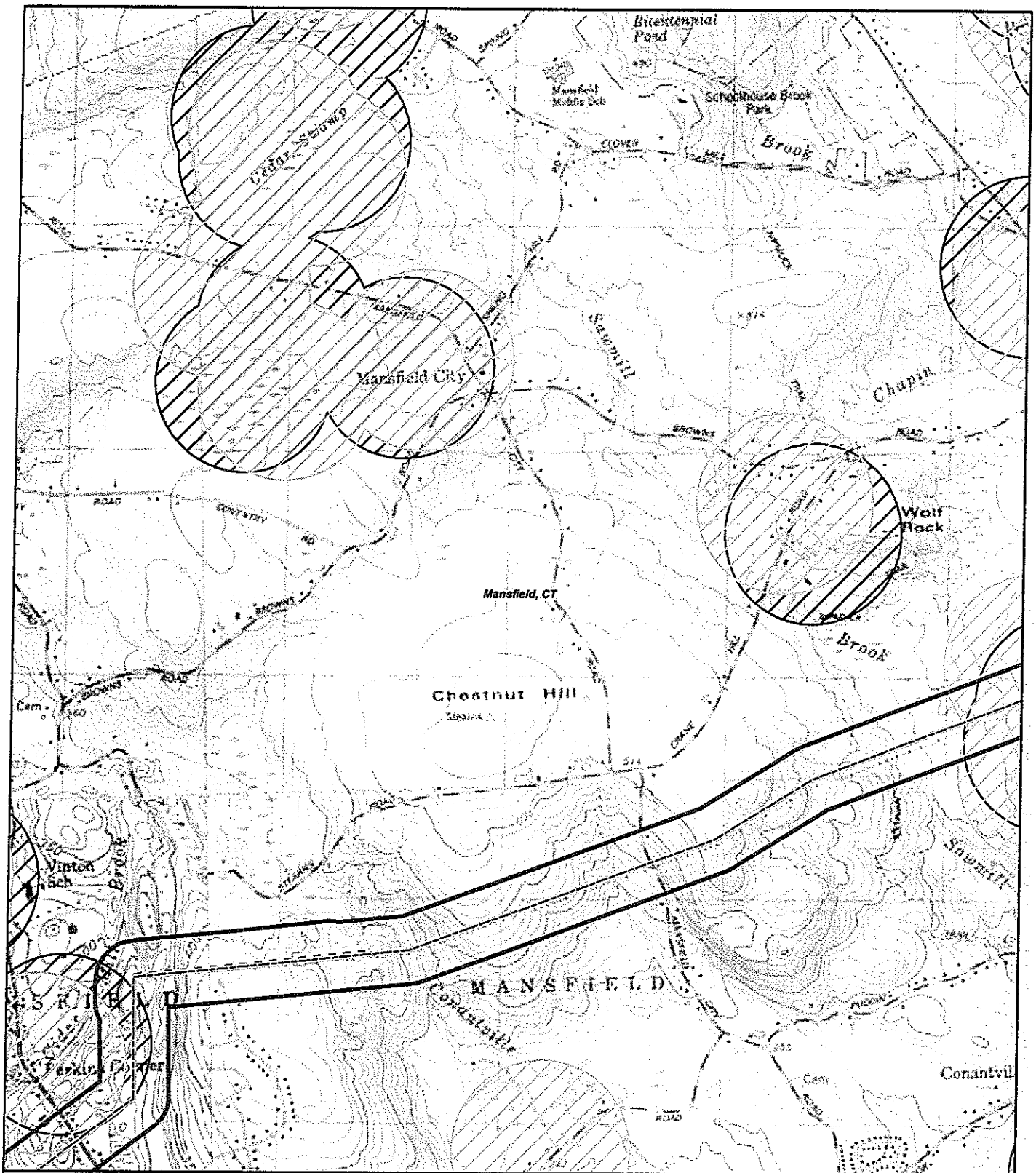
Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

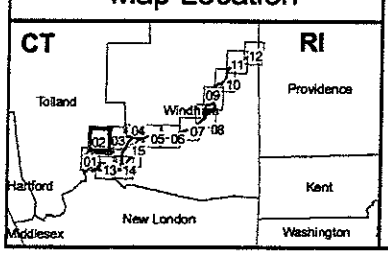
Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 01 of 15
Date: January 2010



Map Location



CT Interstate Reliability Project
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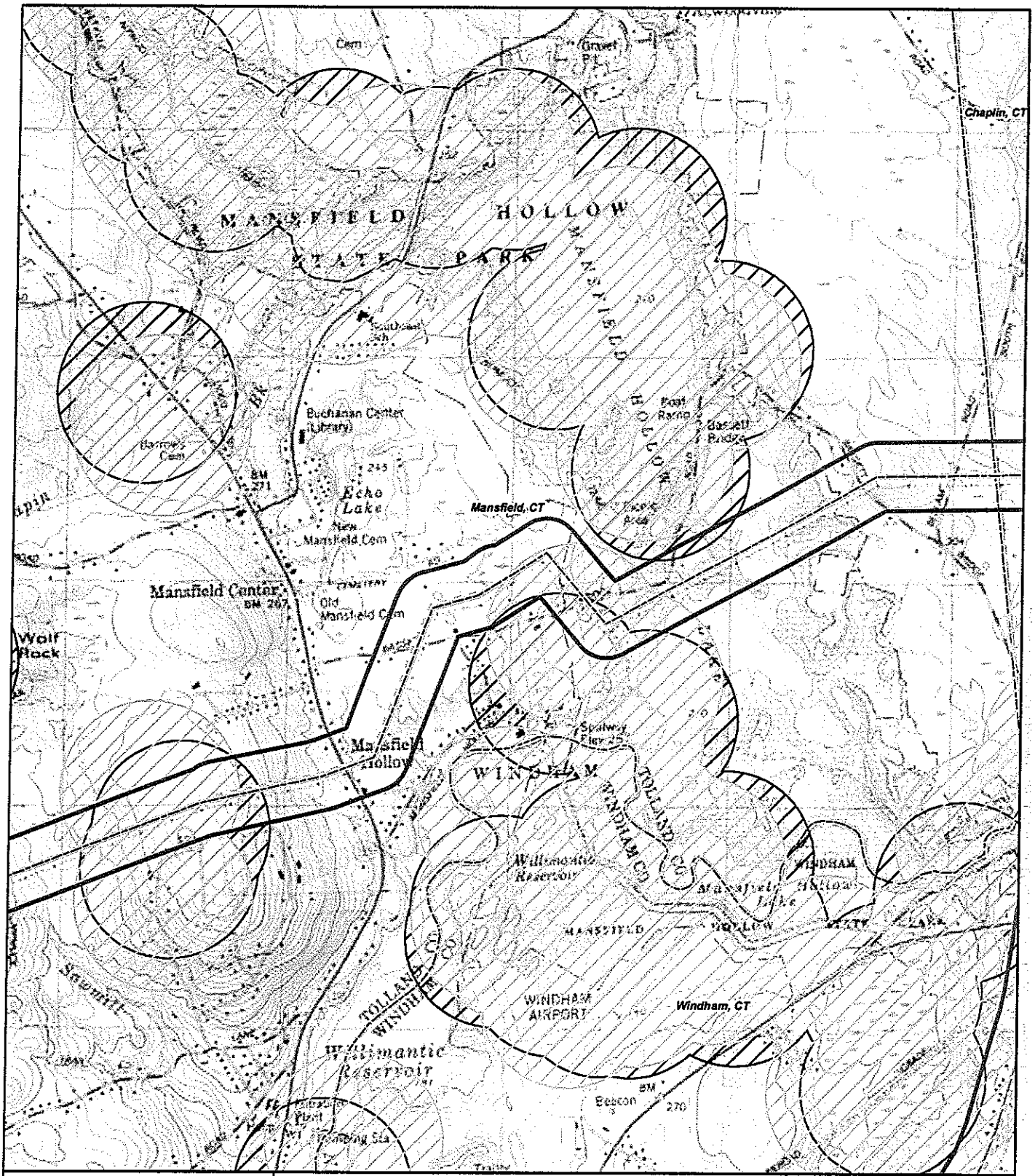
Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

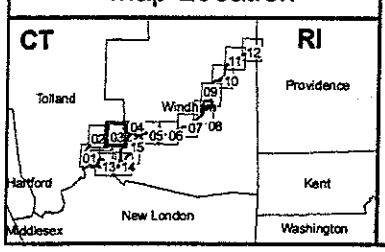
Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 02 of 15
Date: January 2010



Map Location



CT Interstate Reliability Project
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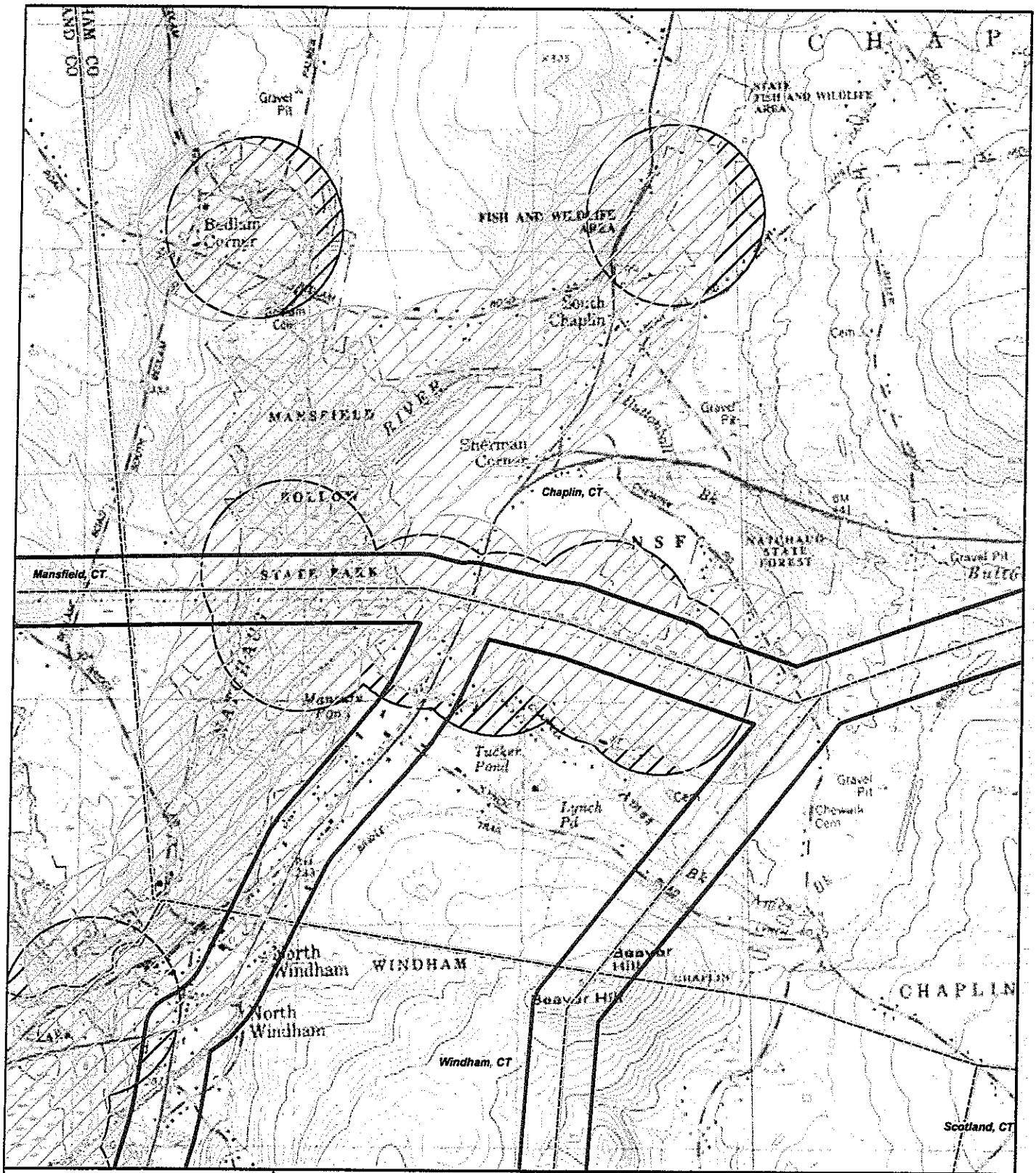
Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 03 of 15
Date: January 2010



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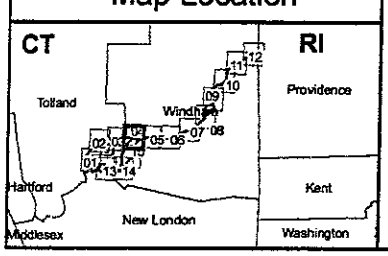

CT Interstate Reliability Project
Natural Diversity Map

- Junction
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- Town Boundaries
- Proposed Route
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Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

Connecticut Light & Power
The Northeast Utilities System

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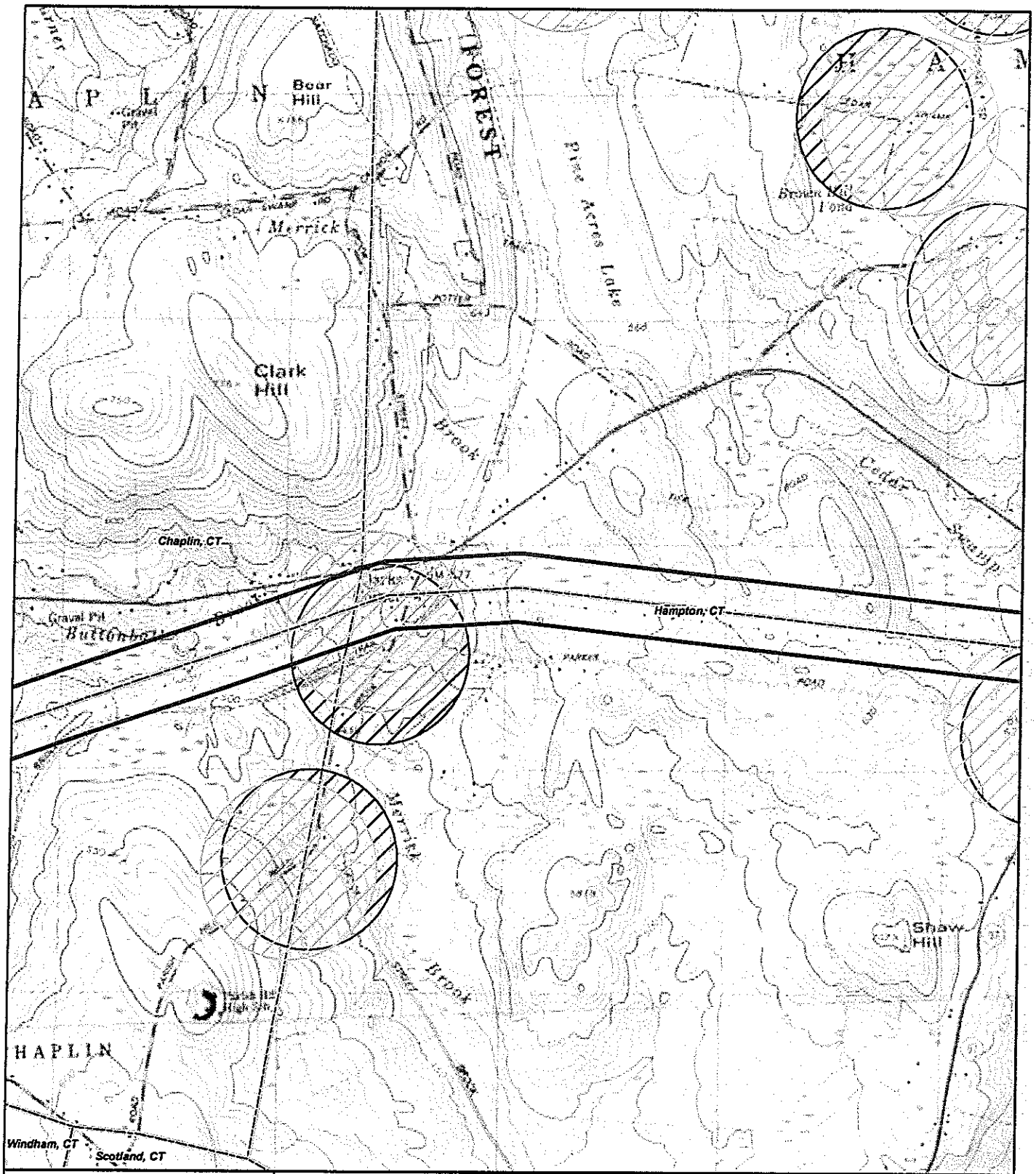
Mapsheet 04 of 15
Date: January 2010



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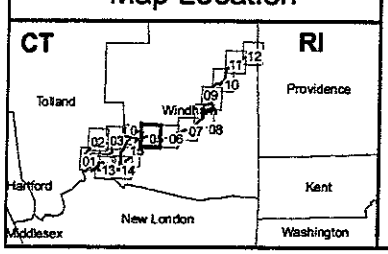

CT Interstate Reliability Project
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Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

Connecticut Light & Power
The Northeast Utilities System

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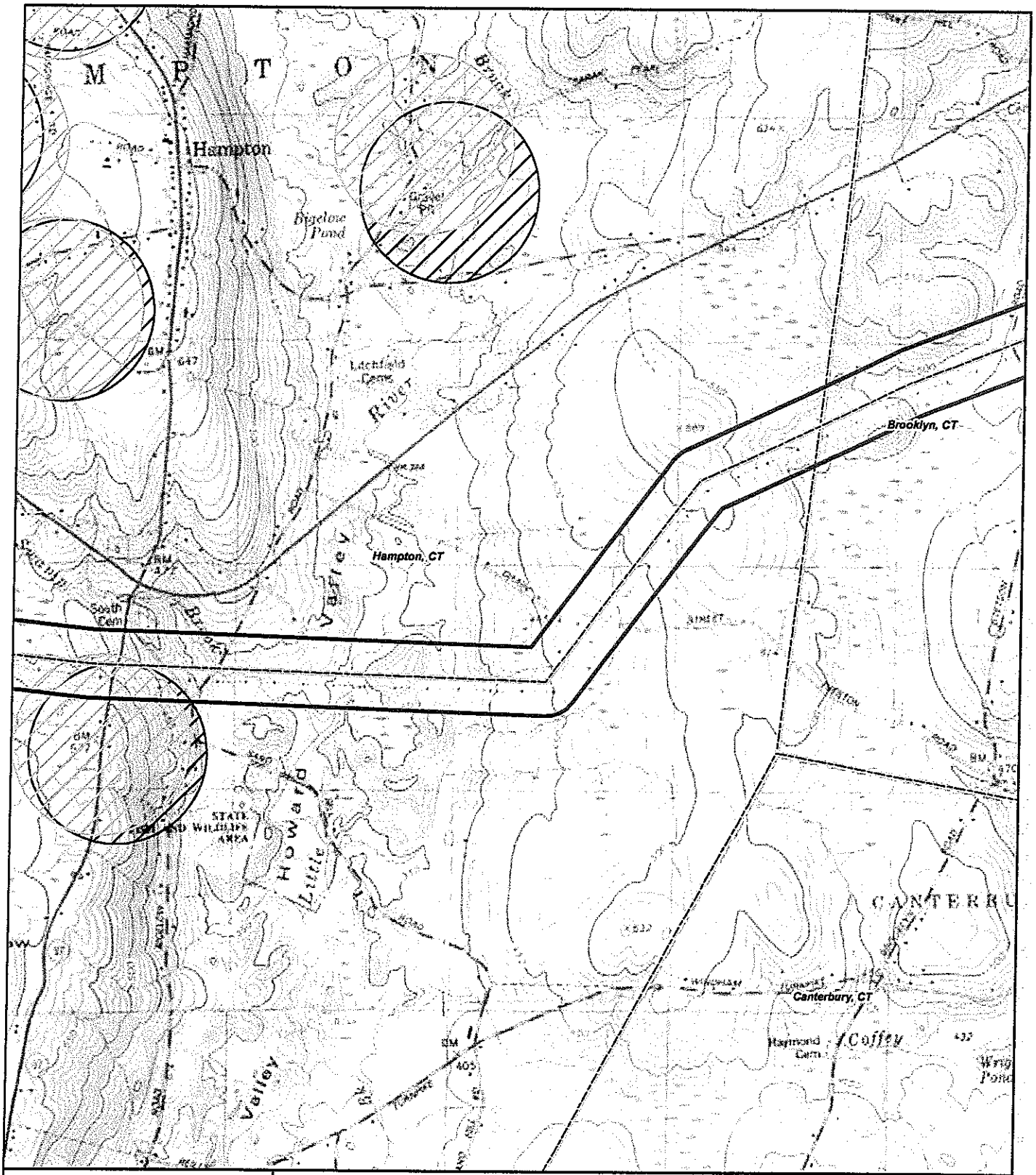
Mapsheet 05 of 15
Date: January 2010



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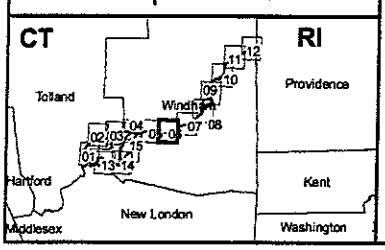

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Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

Connecticut Light & Power
The Northeast Utilities System

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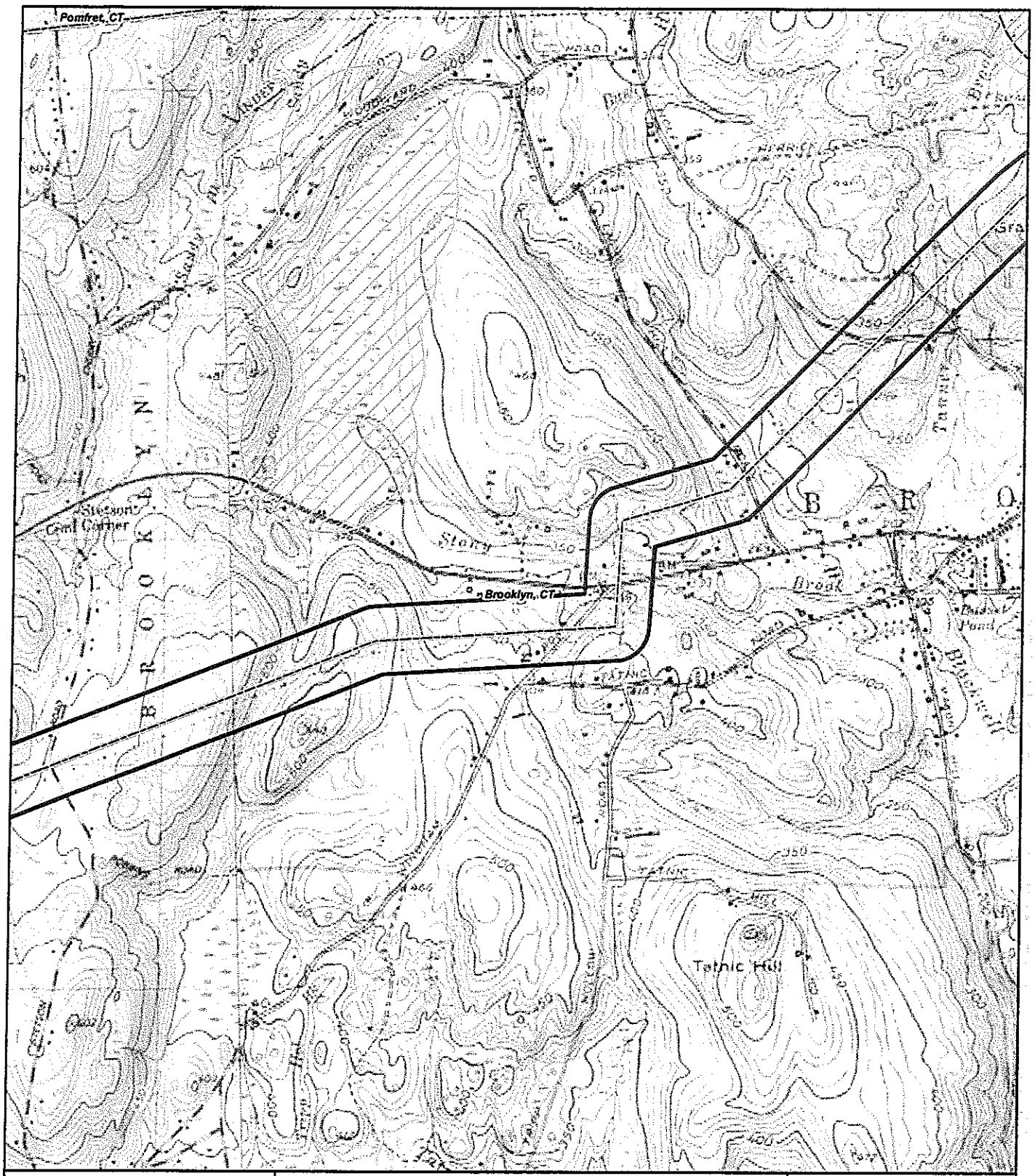
Mapsheet 06 of 15
Date: January 2010



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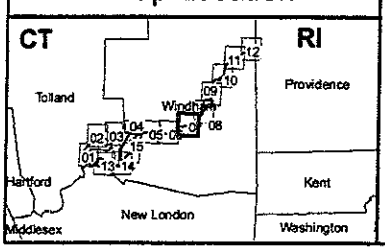

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Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

Connecticut Light & Power
The Northeast Utilities System

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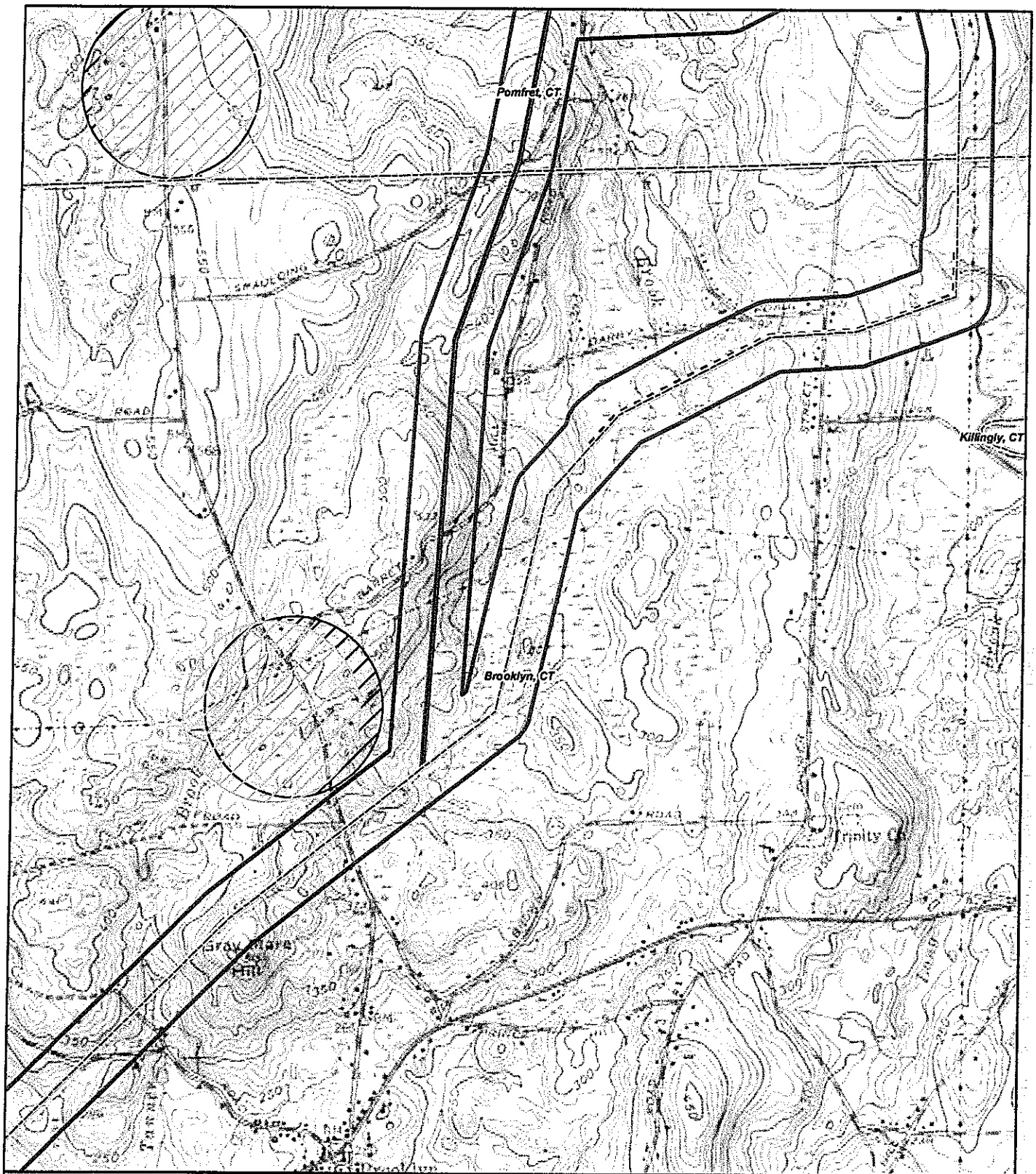
Mapsheet 07 of 15
Date: January 2010



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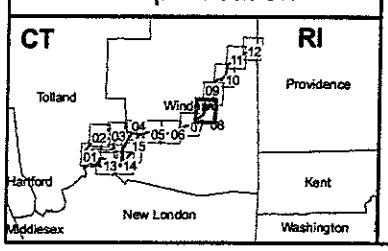

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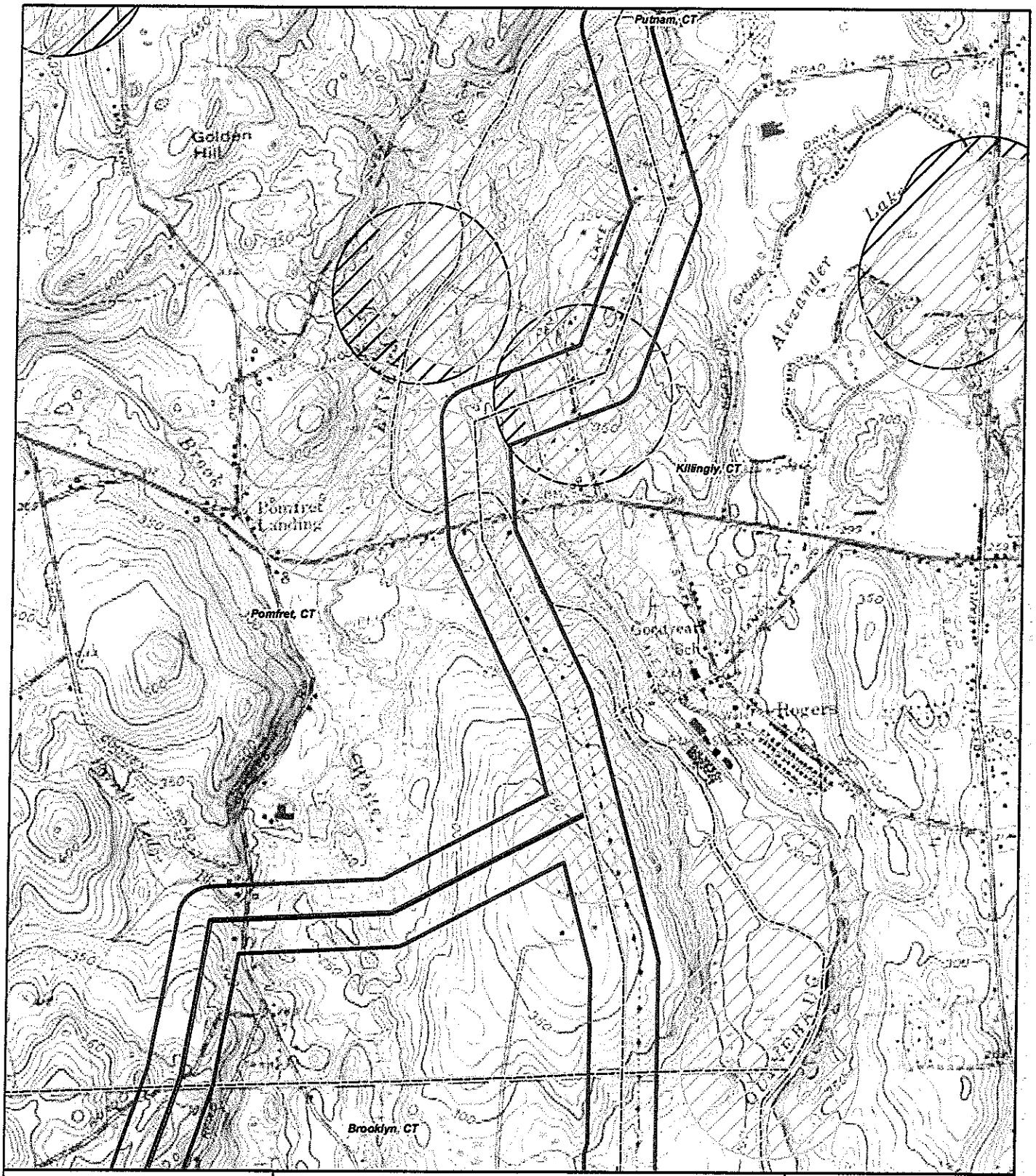
Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 08 of 15
Date: January 2010



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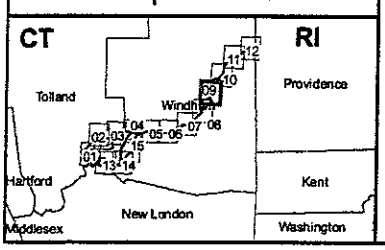

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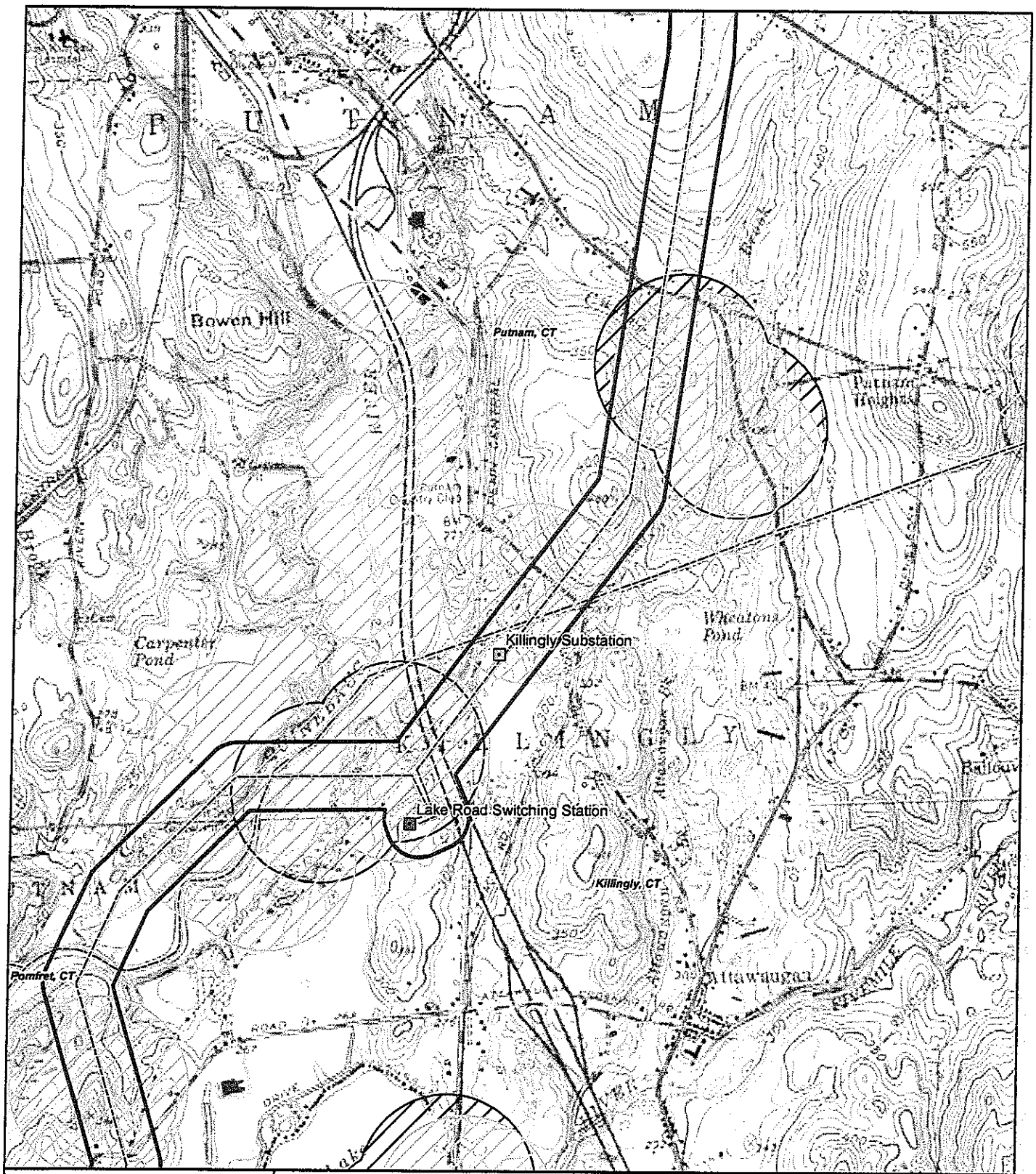
Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 09 of 15
Date: January 2010



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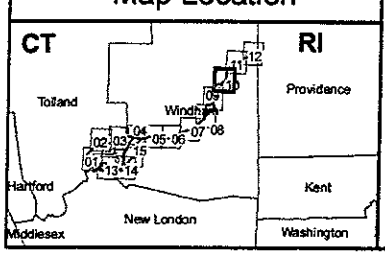

CT Interstate Reliability Project
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Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

Connecticut Light & Power
The Northeast Utilities System

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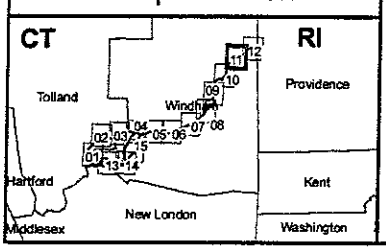
Mapsheet 10 of 15
Date: January 2010

Map Location



CT Interstate Reliability Project
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Data Source: USGS Topo Quads; CT DEP Dec. 2008; Dec. 2009

Connecticut Light & Power
The Northeast Utilities System

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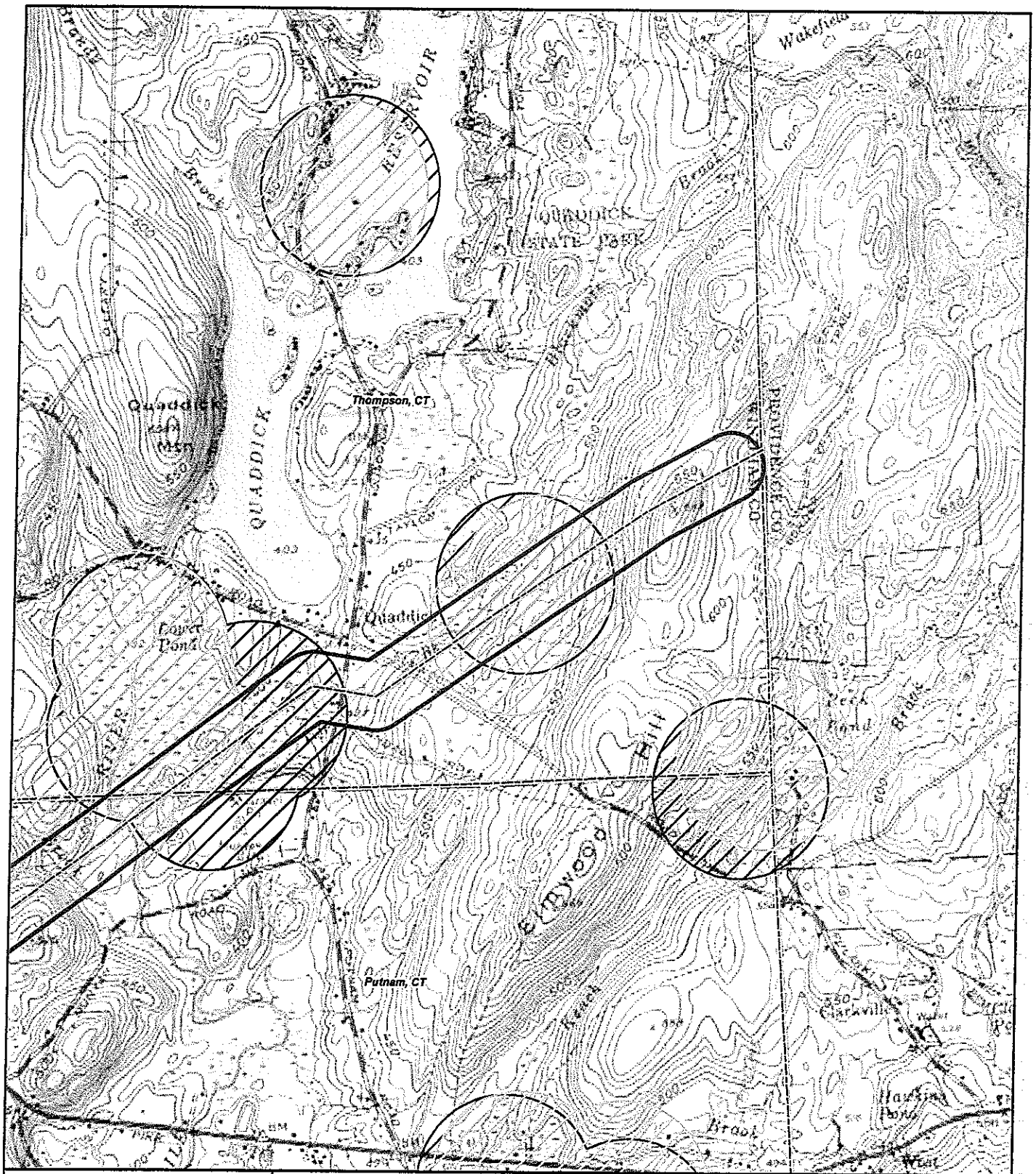
Mapsheet 11 of 15
Date: January 2010



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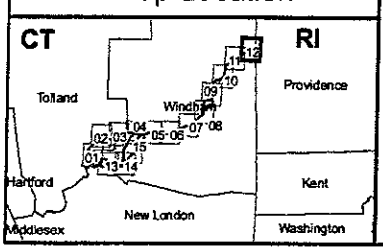

CT Interstate Reliability Project
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Connecticut Light & Power
The Northeast Utilities System

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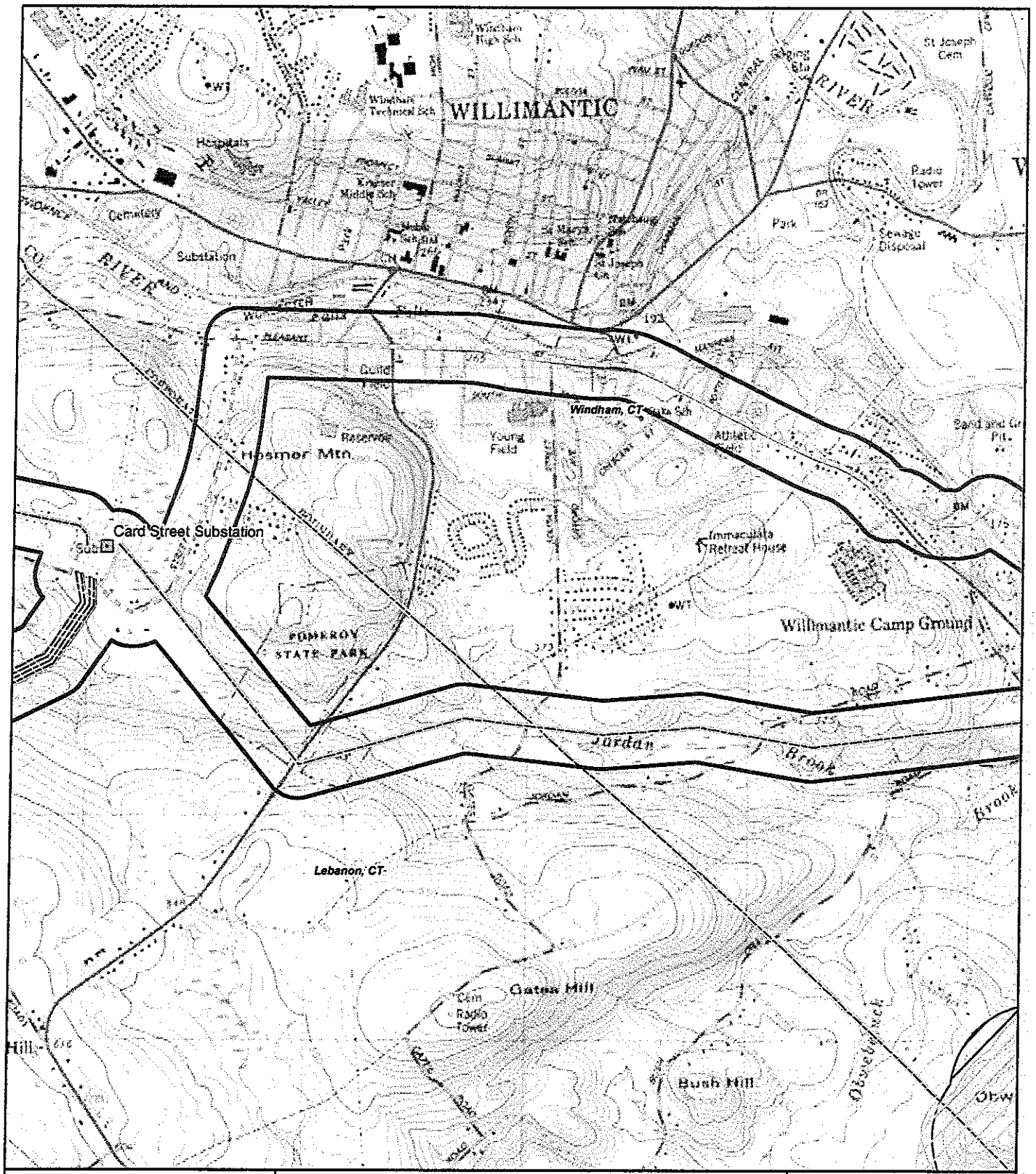
Mapsheet 12 of 15
Date: January 2010



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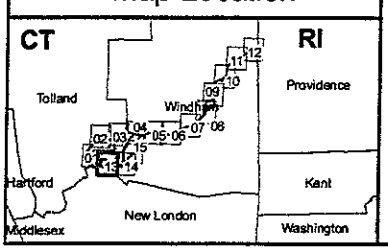

CT Interstate Reliability Project
Natural Diversity Map

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Connecticut Light & Power
The Northeast Utilities System

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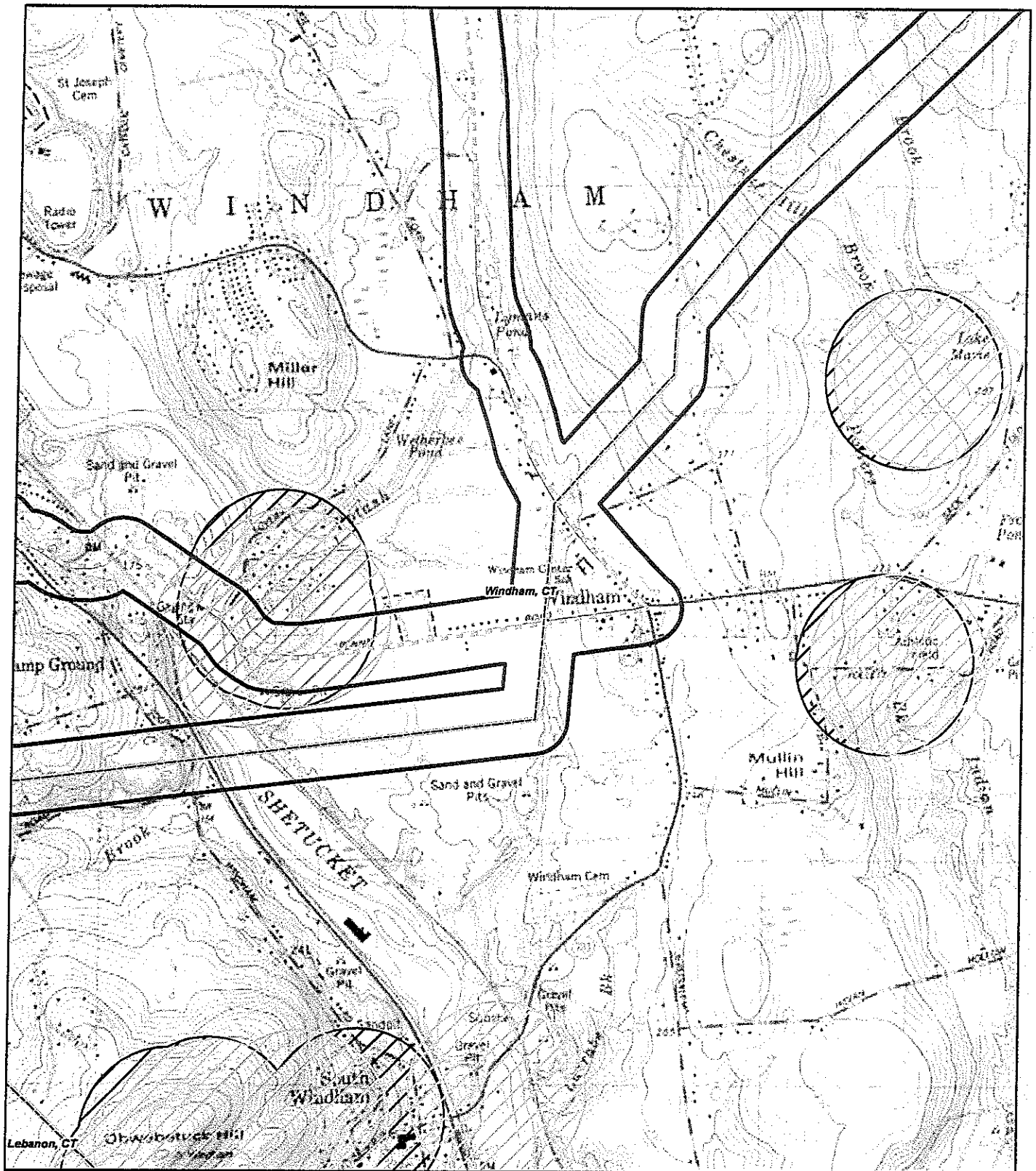
Mapsheet 13 of 15
Date: January 2010



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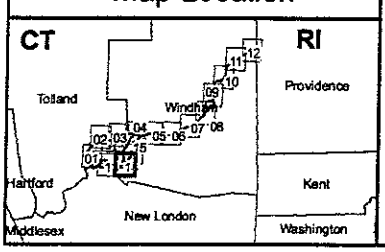

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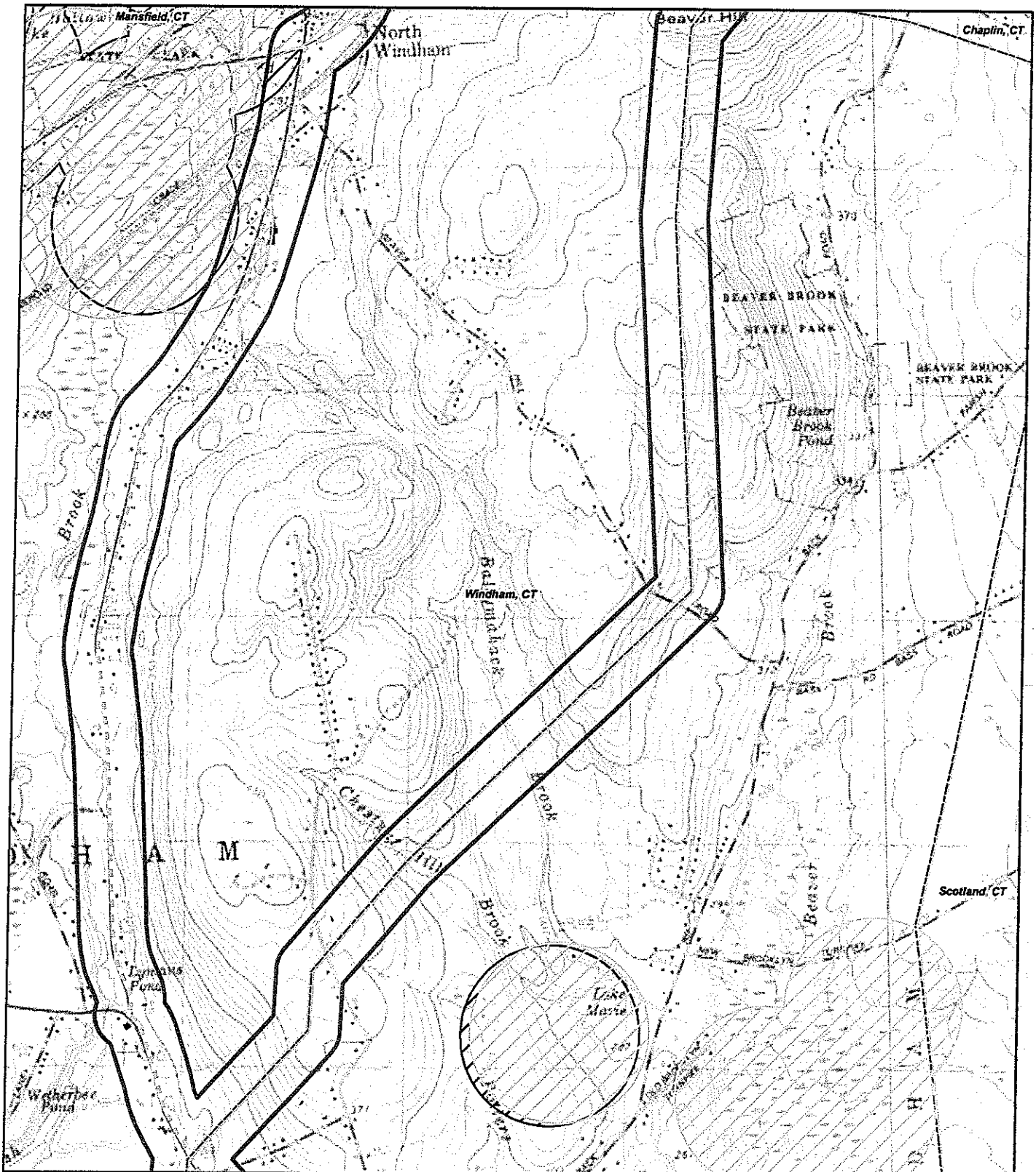
Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 14 of 15
Date: January 2010



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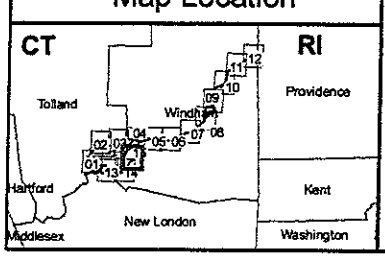

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Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 15 of 15
Date: January 2010

CONNECTICUT COMMISSION ON CULTURE AND TOURISM

Northeast Utilities System

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

June 5, 2008

Dr. David A. Poirier, Staff Archaeologist
Connecticut State Historic Preservation Office
Connecticut Commission on Culture and Tourism
One Constitution Plaza, Second Floor
Hartford, CT 06103

RE: Historical and Archaeological Assessment
CL&P Interstate Reliability Project

Dear Dr. Poirier:

In coordination with utility companies in Massachusetts and Rhode Island, The Connecticut Light and Power Company (CL&P) will be part of a comprehensive regional plan for improving electric transmission in New England, through extensive coordinated improvements in Connecticut, Massachusetts, and Rhode Island. This comprehensive plan is known as the New England East – West Solution (NEEWS). As part of NEEWS, CL&P proposes to construct Connecticut portions of the Interstate Reliability Project (IRP), which would include construction and operation of a new 345-kV transmission line and associated facilities including improvements from the Card Street Substation in Lebanon, Connecticut to the Rhode Island border in Thompson, Connecticut, via the Lake Road Substation in Killingly, Connecticut.

The Primary Route Under Consideration would consist of an approximately 36.5-mile overhead 345-kV transmission line parallel to an existing 345-kV transmission line and constructed entirely within the vacant portion of existing CL&P ROW except for three segments located as follows: traversing the Mansfield Hollow Reservoir and State Park, and a portion of the ROW containing the 310 transmission line near the Card Street Substation. To avoid groups of homes and Connecticut Siting Council (Council) defined statutory facilities, a total of four (4) overhead and five (5) underground variations to the Primary Route Under Consideration were identified.

The location, size, and nature of associated new structures remain undetermined, pending Council approval of a route and completion of a CL&P Development and Management Plan (D&M Plan). CL&P is commencing the process of submitting an application to the Council for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction and operation of the IRP components. Based on consultations among CL&P, Raber Associates, your office, and project managers Burns & McDonnell Engineering Company, Inc., Raber Associates prepared a cultural resources assessment of Primary Route Under Consideration and its variations. The assessment, attached for your review, identifies known or potential archaeological sites within possible project areas, and evaluates the potential for adverse visual or physical effects on significant historic properties. Depending on an approved D&M Plan, additional assessment or reconnaissance investigations will be made in consultation with your office.

Five (5) documented Native American archaeological sites exist close to, or within, the limits of the Primary Route Under Consideration and two route variations. One of these sites has been determined not eligible for the National Register of Historic Places, and the other four have insufficient reported data to make such determination. Background research and field inspection indicated areas sensitive for potential Native American sites along discontinuous areas totaling approximately 64.2 percent of the Primary Route Under Consideration, and 50.8-

83.0% of overhead route variations. Native American sites are not expected in most underground route variations, although sites are possible alongside roadways where off-road facilities are required. With the exception of one National Register property traversed by the Willimantic South Overhead Variation in Windham, there are no reported or likely Euroamerican archaeological sites listed on, or eligible for listing on, the National Register of Historic Places or the State Register of Historic Places in, or adjacent to, the Primary Route Under Consideration or any of the route variations.

Twelve (12) significant historic resources and a National Scenic Byway were identified within approximately 0.25 mile of the Primary Route Under Consideration, and a total of five historic resources were identified within a comparable distance of the Willimantic South and Mount Hope Montessori School overhead variation routes in Windham, Chaplin, and Mansfield. The 0.25 mile distance was selected to evaluate possible visual effects of new overhead transmission structures. With the possible exception of part of the Windham Center Historic District along the Willimantic South Overhead Variation, digital topographic profiles and visual simulations on photographs showing new transmission structures suggest no likely adverse visual effects on significant resources within 0.25 miles of any variation routes.

A total of eight (8) significant aboveground and belowground historic resources were identified within approximately 500 feet of the Willimantic South and Putnam North underground variation routes in Windham and Putnam. The 500 foot distance was chosen to plan for any necessary protective measures against blasting effects.

Please contact me (860-665-6715) if you have any questions or comments on the report.

Thank you for assistance.

Sincerely,

Jeffrey Borne

Jeffrey Borne
Sr. Land Management Administrator

Attachment (2 copies): Historical and Archaeological Assessment for the Connecticut Light & Power Company Interstate Reliability Project, Municipal Consultation Filing, Towns of Lebanon, Columbia, Coventry, Mansfield, Chaplin, Hampton, Brooklyn, Pomfret, Killingly, Putnam, Thompson, and Windham, Connecticut, prepared by Raber Associates.

cc. w/o attachments:
Tony Mele, NU
Donald Biondi, NU
Ed Beene, Burns & McDonnell
Michael Raber, Raber Associates

U.S. FISH AND WILDLIFE SERVICE

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

RE: Environmental Analysis on Northeast Utilities CT Rights of Way

July 20, 2004

Stephen Wood
ESS Group, Inc.
401 Wampanoag Trail, Suite 400
East Providence, RI 02915

Dear Mr. Wood:

I have reviewed your request for information on endangered and threatened species and their habitats for the above-referenced project. My comments are provided in accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

I have searched our database and found no occurrence of species of federal concern along the approximate proposed transmission routes or approximate alternative transmission routes. Based on the project description and location, it appears that no impacts to federally-listed species will occur. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

Thank you for your cooperation and please contact me at 603-223-2541, extension 23, if we can be of further assistance.

Sincerely yours,

Michael J. Amaral

Michael J. Amaral
Endangered Species Specialist
New England Field Office

Northeast Utilities System

107 Selden Street, Berlin, CT 06037
Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(860) 665-5000

October 11, 2007

Mr. Michael J. Amaral
Endangered Species Specialist
U.S. Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

Re: The Connecticut Light and Power Company
Connecticut Interstate Reliability Project
Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson & Windham, Connecticut

Dear Mr. Amaral,

The Connecticut Light and Power Company intends to initiate planning, siting, and permitting tasks required to upgrade and expand its electric transmission facilities in eastern Connecticut. The purpose of these proposed modifications, which will be required along several different electric transmission lines, is to help alleviate numerous thermal and voltage problems on the electric system. The study area includes portions of the municipalities of Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson and Windham, Connecticut. The attached USGS map set (CT Interstate Reliability Project USGS Map Sheets 1 through 15) show the project location in these areas.

This request specifically addresses the requirement for documented consultation in regard to compliance with the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1531 *et seq.*). We respectfully request correspondence from your office regarding the occurrence of any threatened or endangered species ("T&E") and/or their critical habitats within the 1,000 foot study corridor as depicted on the attached USGS topographic figures. In addition, we've also included a CD with ARC-GIS shapefiles of the proposed project study area to facilitate your review.

Please note that a previous request and determination was made concerning a preliminary portion of this project in July 2004. We are requesting an update to the information previously provided by the USFWS in 2004. Please find correspondence and mapping related to that request included. Also, please note that not all routes referenced in the July 2004 correspondence are being considered for the current project.

Thank you for your assistance. Please forward correspondence to my attention, and, if possible, please forward copies to ENSR at the below noted address. Should you have any questions please contact me at 860-665-6716 or Timothy O'Sullivan (ENSR) at 860-429-5323 (ext. 229).

Sincerely,

Donald D. Biondi
Transmission Siting and Permitting

Attachments

Cc: T. O'Sullivan, ENSR, 11 Phelps Way, P.O. Box 506, Willington, CT 06279
J. Durand, ENSR
S. Thornhill, Burns & McDonnell
K. Gerling, Burns & McDonnell

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

November 21, 2007

Donald D. Biondi
Northeast Utilities Service Company
107 Selden Street
Berlin, CT 06037

Dear Mr. Biondi:

This responds to your recent correspondence requesting information on the presence of federally-listed and/or proposed endangered or threatened species in relation to the Connecticut Interstate Reliability Project that will pass through the Towns of Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson and Windham, Connecticut.

No federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project areas. Preparation of a Biological Assessment or further consultation with us under Section 7 of the Endangered Species Act is not required.

While there are no known occurrences of federally-listed species in the project area, the New England cottontail (*Sylvilagus transitionalis*) is known to occur in the Town of Lebanon. The New England cottontail is also known to occur in the Towns of Scotland and Eastford, which are in close proximity to the project. The Service announced the New England cottontail as a Candidate Species for listing on September 12, 2006 in the Federal Register (50 CFR part 17). While the New England cottontail remains an official candidate species, there is currently no legal obligation to avoid affecting the habitat of the species.

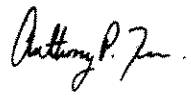
New England cottontails are considered habitat specialists, insofar as they are dependent on early-successional habitats typically described as thickets. In addition to New England cottontails demonstrating a strong affinity for heavy cover, they are also reluctant to stray from it (>5 m). Habitats of this type are typically associated with beaver flowage wetlands, idle agricultural lands, power line corridors, railroad right-of-ways, and patches of regenerating forests. In contrast, eastern cottontails (which can often be found living with New England cottontails) appear to have relatively generalized habitat requirements and can often be found in residential-type habitats, such as private lawns, golf courses, and active agriculture areas.

Vegetation management along utility right-of-ways probably has a significant impact on the New England cottontail. Long-term management that converts scrub-shrub corridors into herbaceous covers serves to eliminate habitat and hinder dispersal while short-term management of shrubs serves as a temporary impact to habitat. These short-term impacts to shrub vegetation are necessary to ensure that successional forces do not proceed to the point where habitat is no longer suitable for the New England cottontail. Given the conservation status of this species, a full federal listing in the future is probable. As such, it may be beneficial to begin a discussion about how your company could manage habitat for this species.

This concludes our review of listed species and critical habitat in the project location and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your coordination. Please contact me at 603-223-2541 if we can be of further assistance or if you would like to initiate a discussion about the New England cottontail.

Sincerely yours,



Anthony P. Tur
Endangered Species Specialist
New England Field Office

CC: ENSR, Willington, CT

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office

70 Commercial Street, Suite 300

Concord, New Hampshire 03301-5087

January 1, 2008

To Whom It May Concern:

This project was reviewed for federally-listed or proposed threatened or endangered species presence per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website (http://www.fws.gov/northeast/newenglandfieldoffice/EndangeredSpec-Consultation.htm). Based on information currently available, no federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service (Service) are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with the Service under Section 7 of the Endangered Species Act is not required.

This concludes the review of listed species and critical habitat in the project location(s) and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this review, unless additional information on listed or proposed species becomes available.

Thank you for your coordination. Please contact us at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Anthony P. Tur

Anthony P. Tur
Endangered Species Specialist
New England Field Office

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087
http://www.fws.gov/northeast/newenglandfieldoffice

January 2, 2009

To Whom It May Concern:

This project was reviewed for the presence of federally-listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

(http://www.fws.gov/northeast/newenglandfieldoffice/EndangeredSpec-Consultation.htm)

Based on the information currently available, no federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service (Service) are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under Section 7 of the Endangered Species Act is not required.

This concludes the review of listed species and critical habitat in the project location(s) and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Mr. Anthony Tur at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

Connecticut Light & Power
The Northeast Utilities System

NEEWS
Interstate Reliability Project

March 17, 2009

Mr. Michael J. Amaral
Endangered Species Specialist
U.S. Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

Re: The Connecticut Light and Power Company
Interstate Reliability Project (Connecticut)
Located In the Municipalities of Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson & Windham, Connecticut

Dear Mr. Amaral:

The Connecticut Light and Power Company (CL&P) is applying for permits required to upgrade and expand its electric transmission facilities in eastern Connecticut. The purpose of the proposed modifications, which are located along an existing transmission line right-of-way (ROW), is to address numerous reliability problems in the electrical transmission system. The Interstate Reliability Project (Project) consists of the Proposed Route, 310 Line Loop and route variations, that pass through the municipalities of Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson and Windham, Connecticut. The U.S. Geological Survey (USGS) maps in Attachment A depict the Project areas.

Requests for information regarding the occurrence of threatened and endangered species/critical habitat in the Project areas were submitted to the U.S. Fish & Wildlife Service (US FWS) (to your attention) on October 11, 2007, during the early planning stages of the Project. CL&P received responses from US FWS on November 21, 2007 stating that no federally-listed threatened, endangered species, or critical habitat under the jurisdiction of the US FWS was known to occur in the Project area. However, the US FWS did indicate that the New England cottontail (*Sylvilagus transitionalis*), a candidate species, is known to occur in the Town of Lebanon. This correspondence is provided in Attachment B.

As requested in response letters from US FWS, CL&P consulted the US FWS website to identify updated listed species occurrence information. Based on this review, the small whorled pogonia (*Isotria medeoloides*) and American chaffseed (*Schwalbea Americana*) were identified as federally-listed species known to occur in several of the counties in the Project area. No other species was listed on the US FWS website to occur within the Project area.

Per the requirement for documented consultation in regard to compliance with the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1531 et seq.), we respectfully request updated correspondence from your office regarding the occurrence of any threatened or endangered species and/or their critical habitat within and adjacent to the Project area as it is currently proposed and depicted on the USGS mapping in Attachment A.

Thank you for your attention to this request. If you have any questions or require further information, please contact me at (860) 665-6716 or Timothy O'Sullivan (AECOM Environment) at (860) 429-5323 ext. 229.

Sincerely,

Donald D. Biondi
Transmission Siting and Permitting

Attachments

Cc: T. Mele, Northeast Utilities System
D. Lukehart, Northeast Utilities System
J. Buckley, Burns & McDonnell
T. O'Sullivan, AECOM Environment
J. Durand, AECOM Environment

Connecticut Light & Power
The Northeast Utilities System

NEEWS
Interstate Reliability Project

March 19, 2010

Mr. Anthony Tur
Endangered Species Biologist
U.S. Fish and Wildlife Service
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

Re: The Connecticut Light and Power Company
Interstate Reliability Project (Connecticut)
Located In the Municipalities of Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson & Windham, Connecticut

Dear Mr. Tur:

The Connecticut Light and Power Company (CL&P) is seeking to renew and update, as applicable, it's consultations with the United States Fish and Wildlife Service (USFWS). CL&P has previously consulted with the USFWS in regard to the Interstate Reliability Project (Project) which consists of the construction of a new 345-kV transmission line and upgrades to existing transmission facilities in the municipalities of Brooklyn, Chaplin, Columbia, Coventry, Hampton, Killingly, Lebanon, Mansfield, Putnam, Pomfret, Thompson and Windham, Connecticut

Requests for information regarding the occurrence of threatened and endangered species/critical habitat in the Project areas were submitted to the USFWS on March 17, 2009, during the early planning stages of the project. CL&P received responses from USFWS on April 20, 2009 stating that no federally-listed threatened, endangered species or critical habitat under the jurisdiction of the USFWS was known to occur in the Project area. However, the USFWS did indicate that the New England cottontail (*Sylvilagus transitionalis*), a candidate species, is known to occur in the Town of Lebanon.

As requested in response letters from USFWS, CL&P consulted the USFWS website on February 3, 2010 to identify updated listed species occurrence information. No other species were listed on the USFWS website occurring within the towns in the Project area.

Per the requirement for documented consultation in regard to compliance with the Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1531 et seq.), we respectfully request updated correspondence from your office confirming the above information. United States Geological Survey (USGS) mapping depicting the Project area is included in Attachment A.

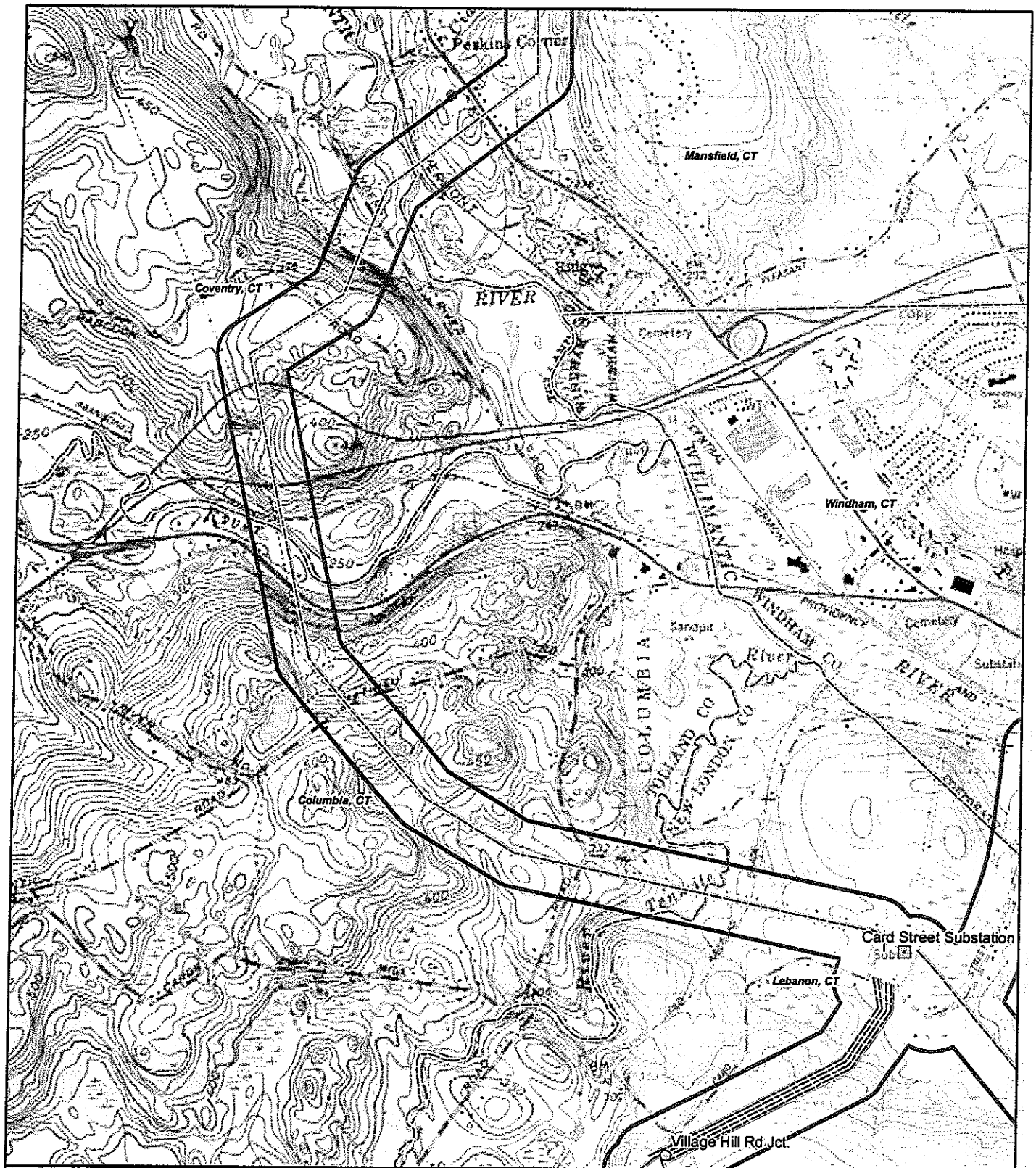
Thank you for your attention to this request. If you have any questions or require further information, please contact me at (860) 665-6716 or Timothy O'Sullivan (AECOM Environment) at (860) 429-5323 ext. 229.

Sincerely,
Northeast Utilities Service Company

Donald D. Biondi
Transmission Siting and Permitting

Attachments: USGS Mapping February 2010

Cc: T. Mele, Northeast Utilities System
D. Lukehart, Northeast Utilities System
J. Buckley, Burns & McDonnell
T. O'Sullivan, AECOM Environment
J. Durand, AECOM Environment



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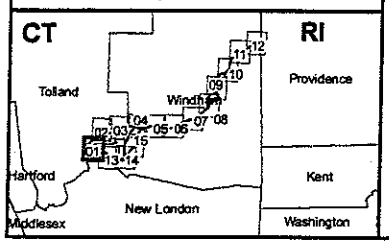

CT Interstate Reliability Project
USGS Map

- Junction
- Substation
- Switching Station
- 1000 ft Study Corridor
- Town Boundaries
- Proposed Route
- Line Loop 310
- Willimantic South Overhead Variation
- Willimantic South Underground Variation
- Mansfield Underground Variation
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- Brooklyn Overhead Variation
- Brooklyn Underground Variation

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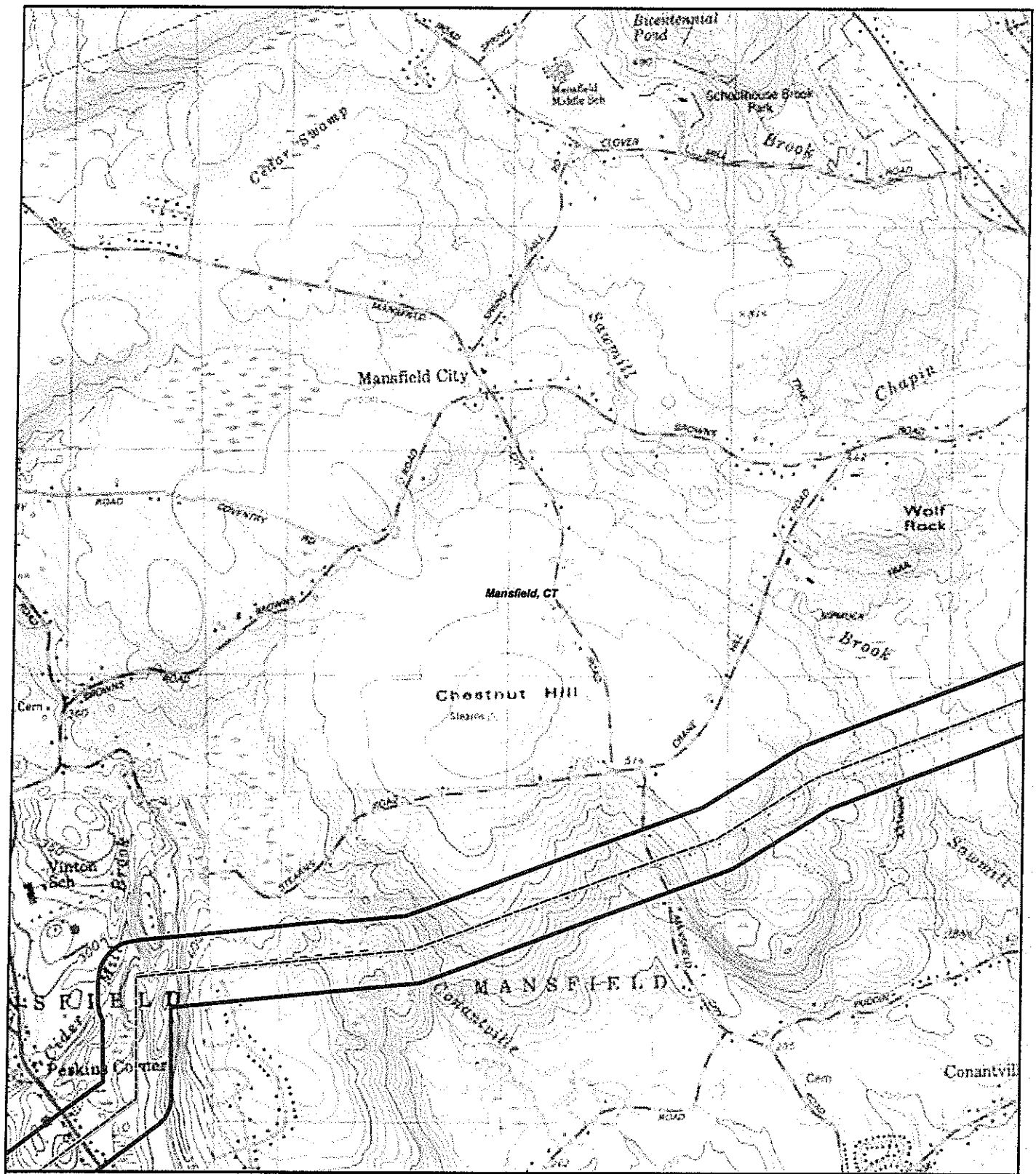
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 01 of 15
Date: February 2010



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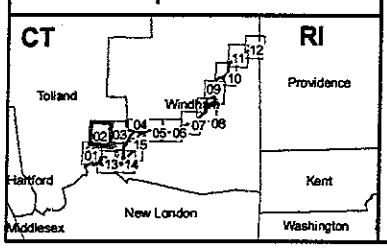

CT Interstate Reliability Project
USGS Map

N W E S

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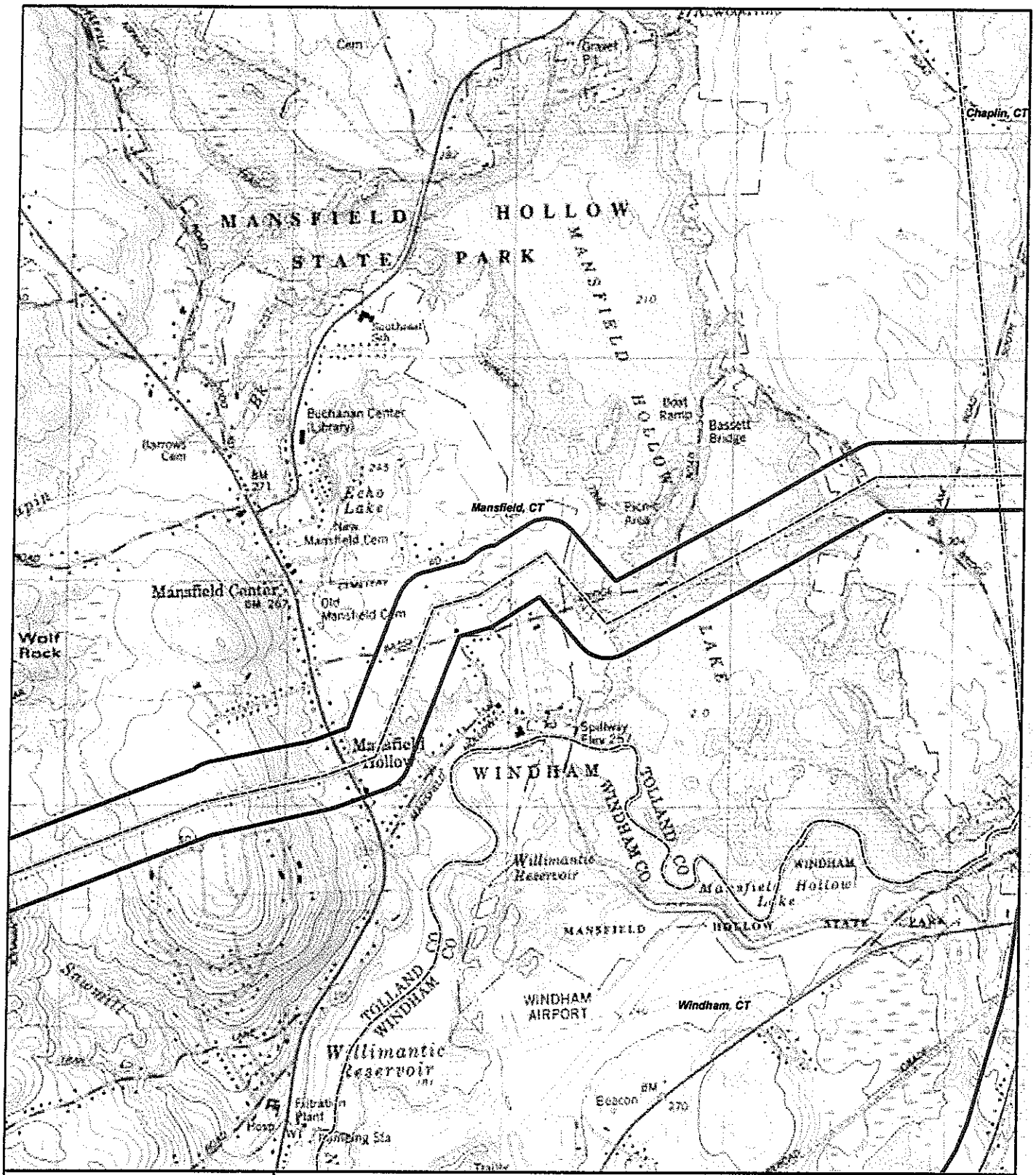
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 02 of 15
Date: February 2010



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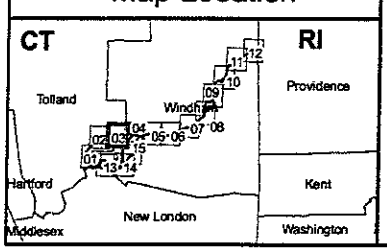

CT Interstate Reliability Project
USGS Map

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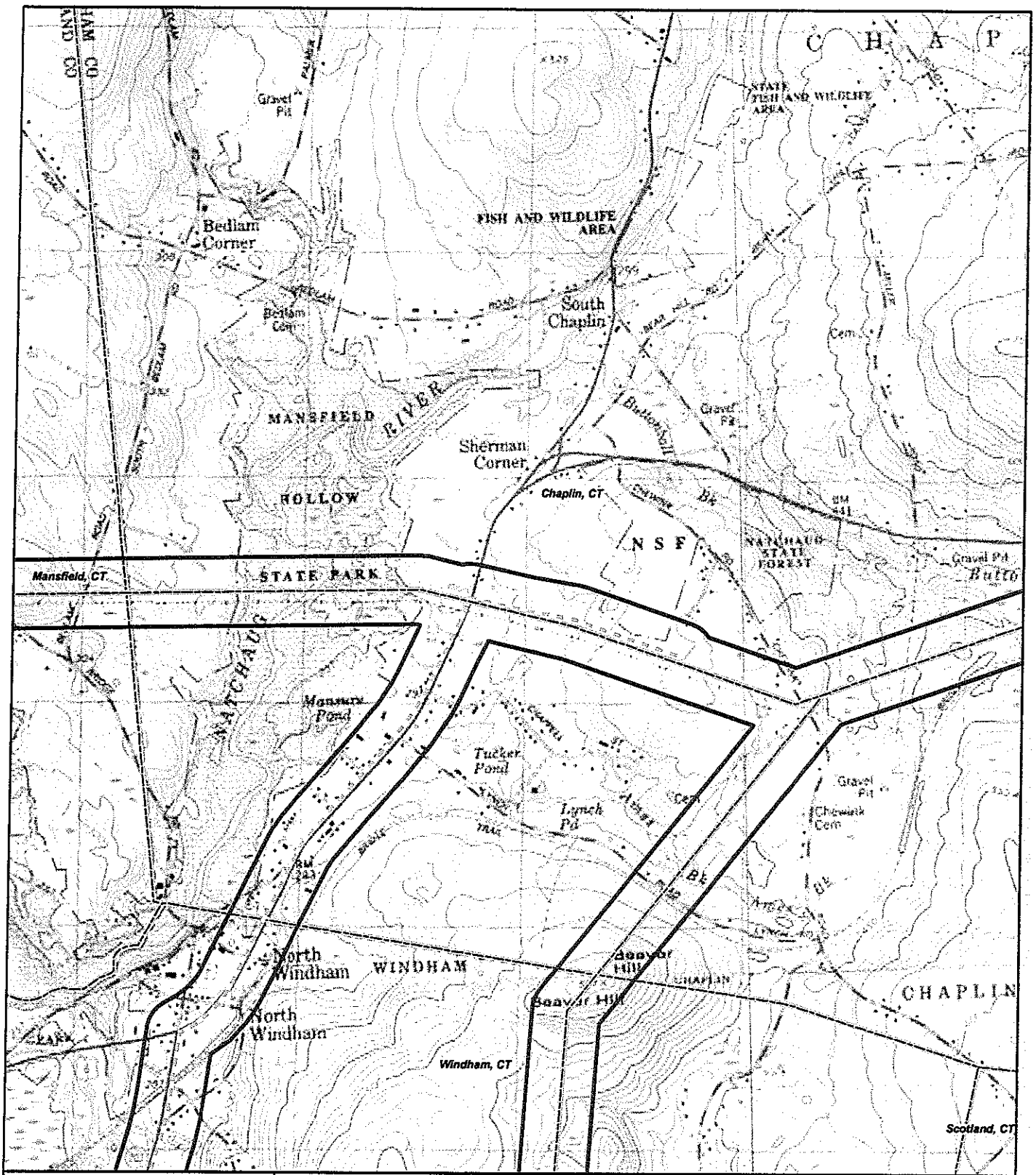
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 03 of 15
Date: February 2010



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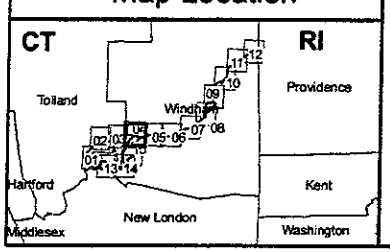

CT Interstate Reliability Project
USGS Map

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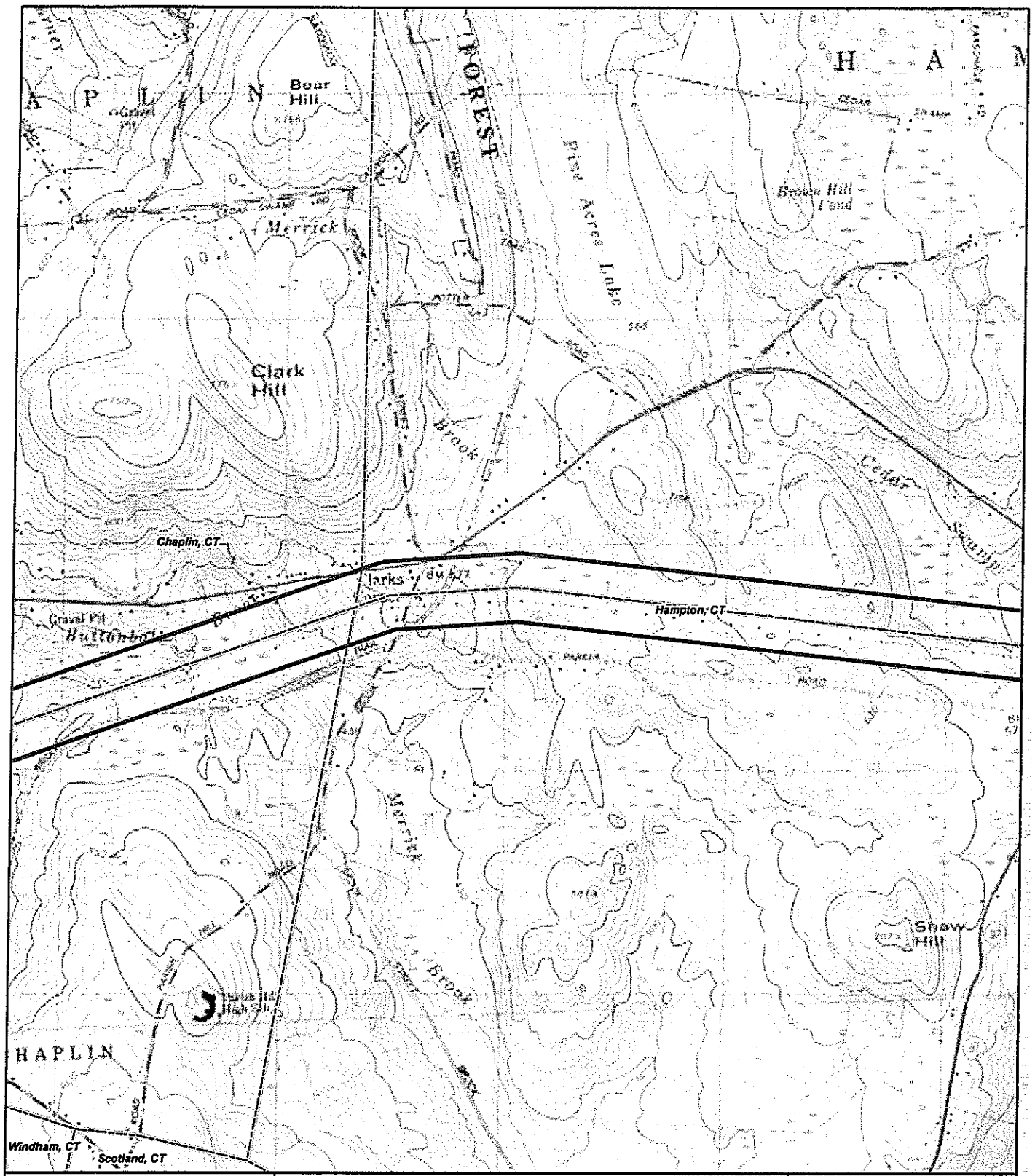
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 04 of 15
Date: February 2010



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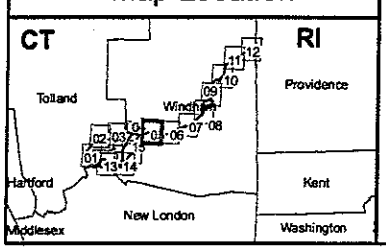

CT Interstate Reliability Project
USGS Map

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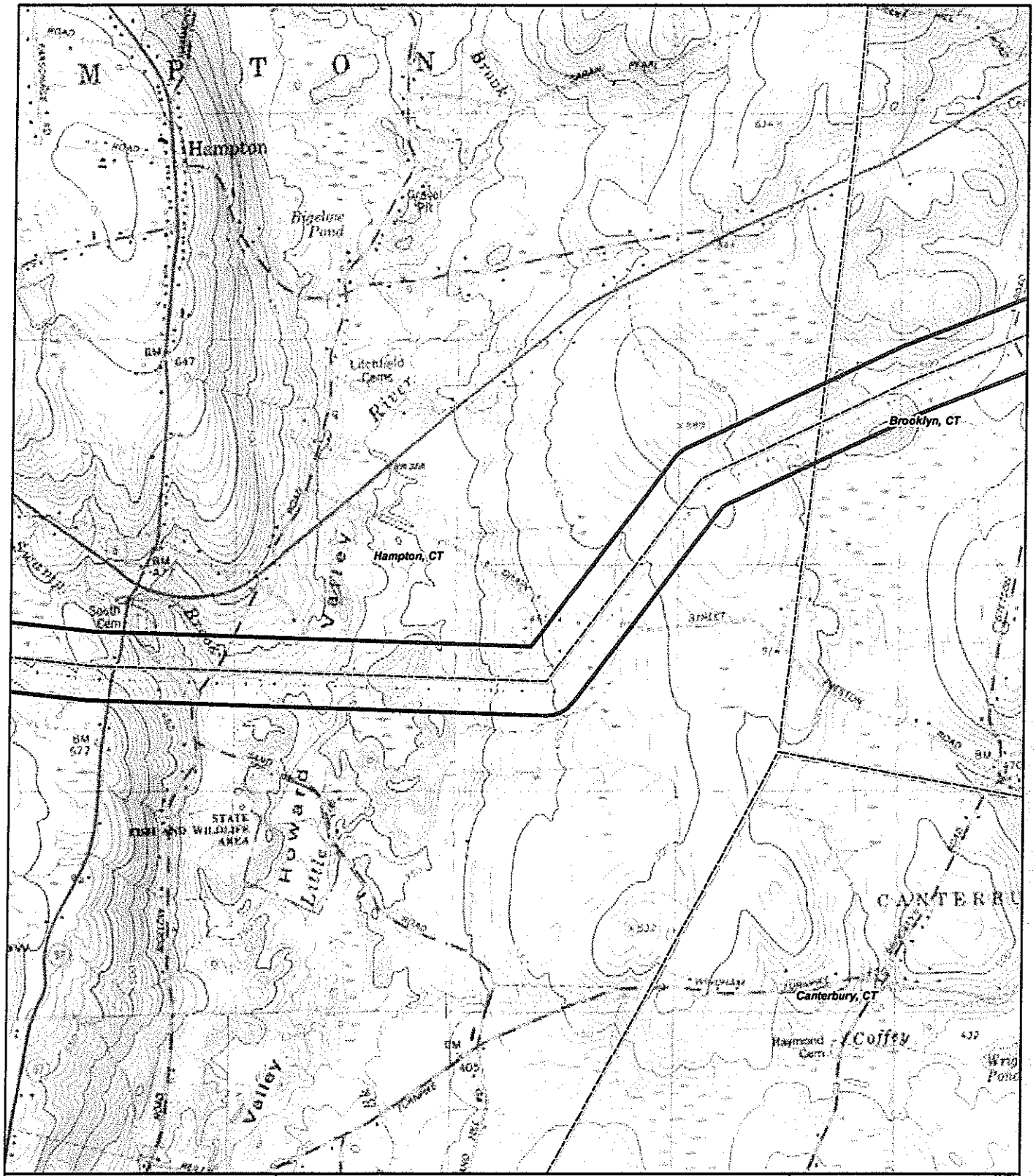
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 05 of 15
Date: February 2010



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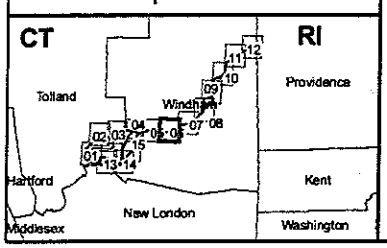

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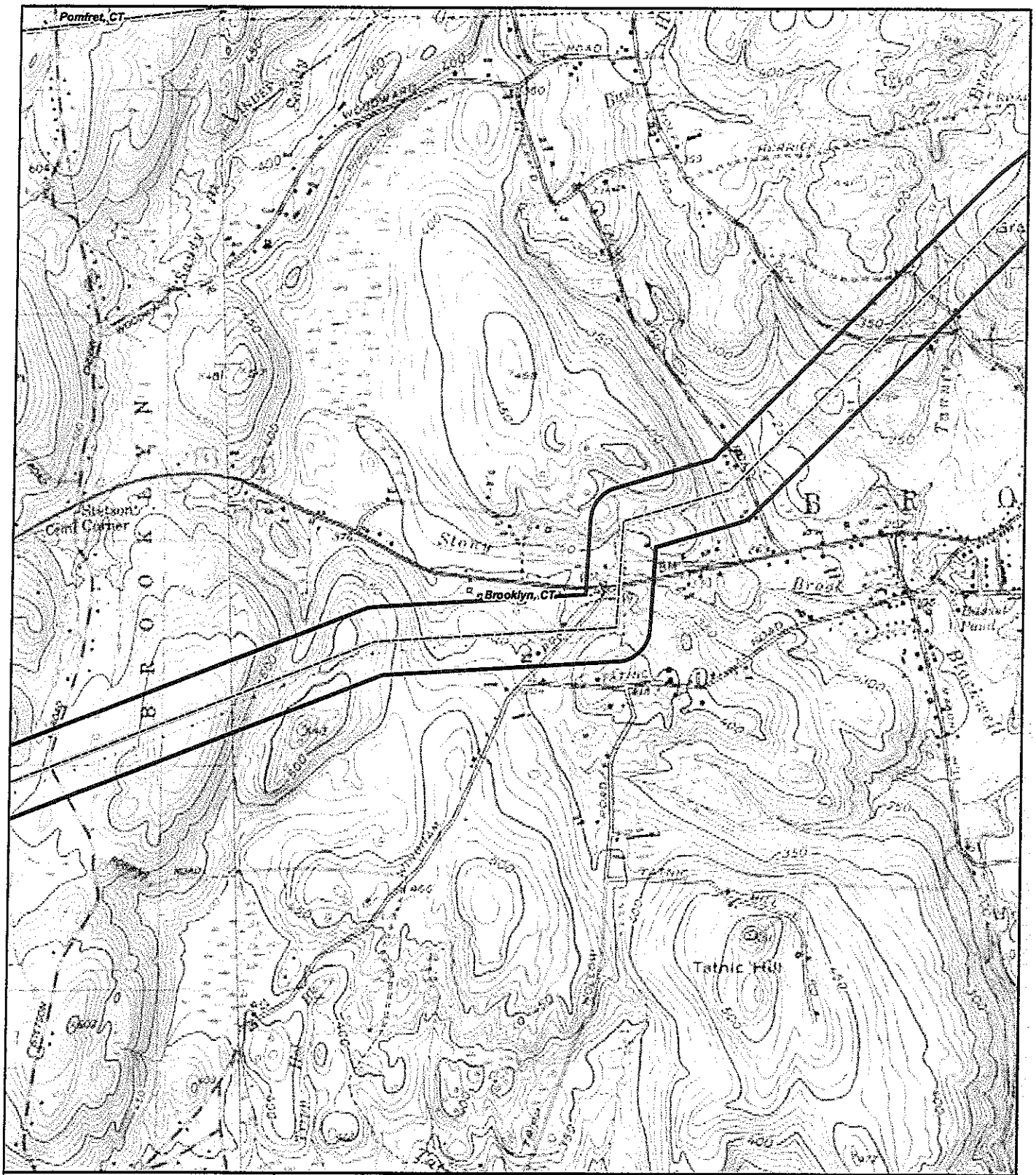
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 06 of 15
Date: February 2010



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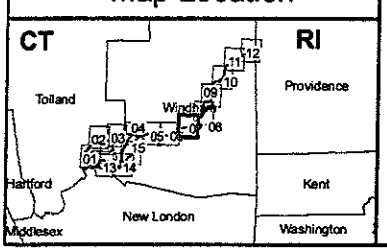

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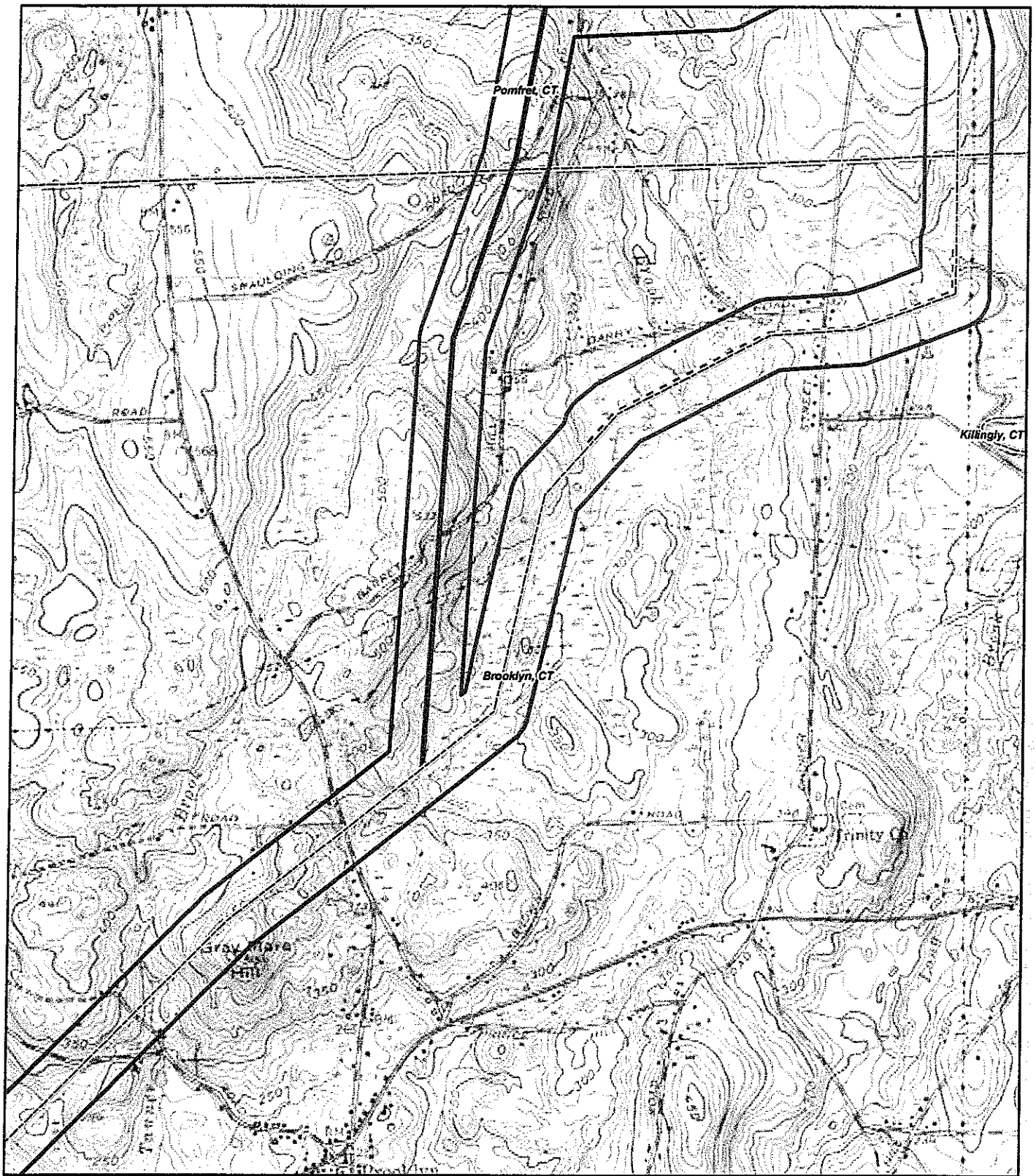
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 07 of 15
Date: February 2010



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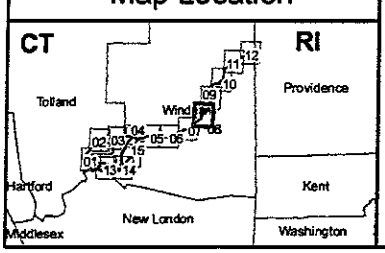

CT Interstate Reliability Project
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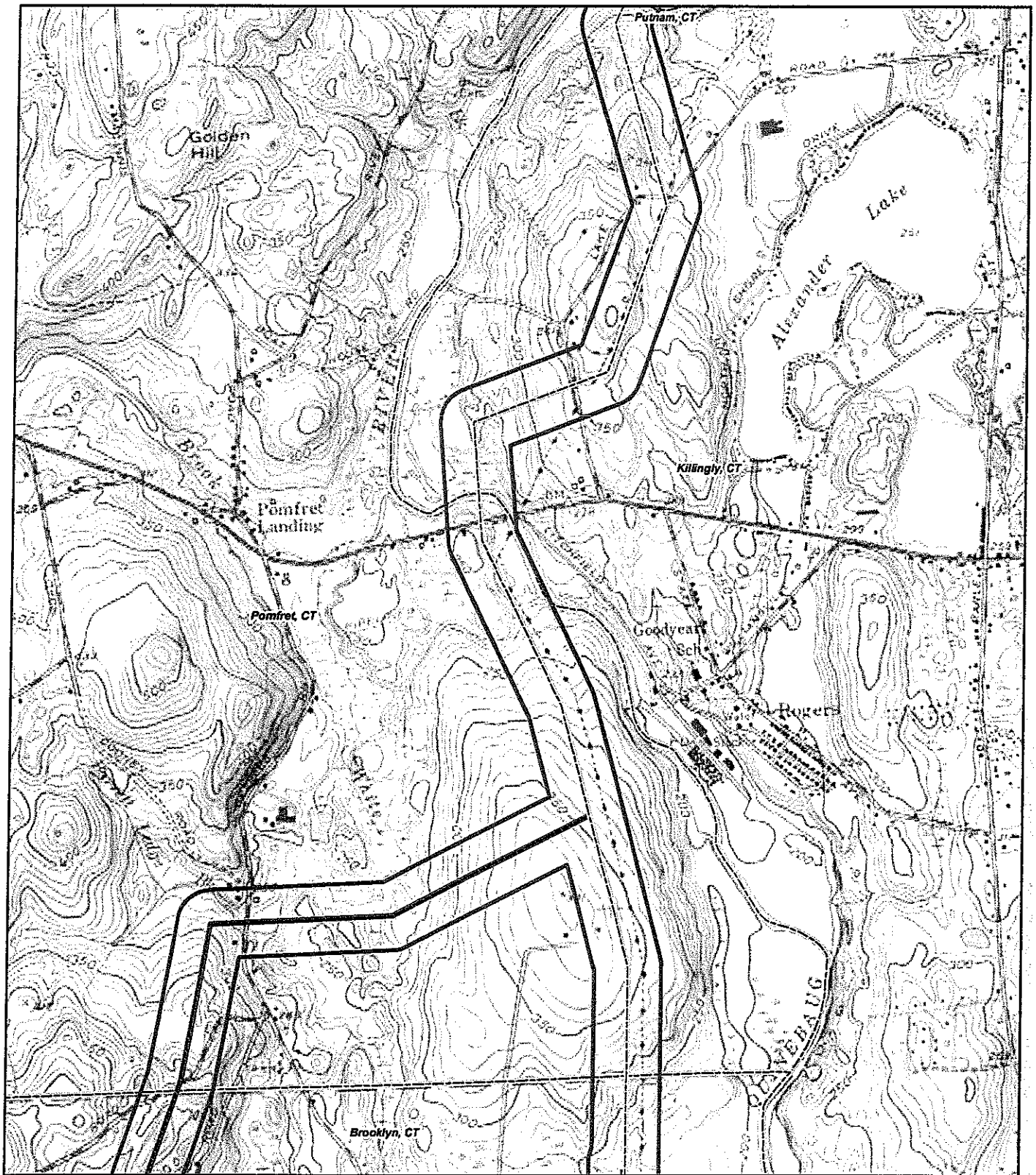
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 08 of 15
Date: February 2010



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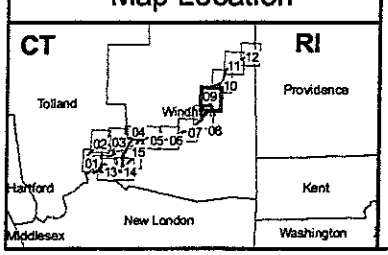

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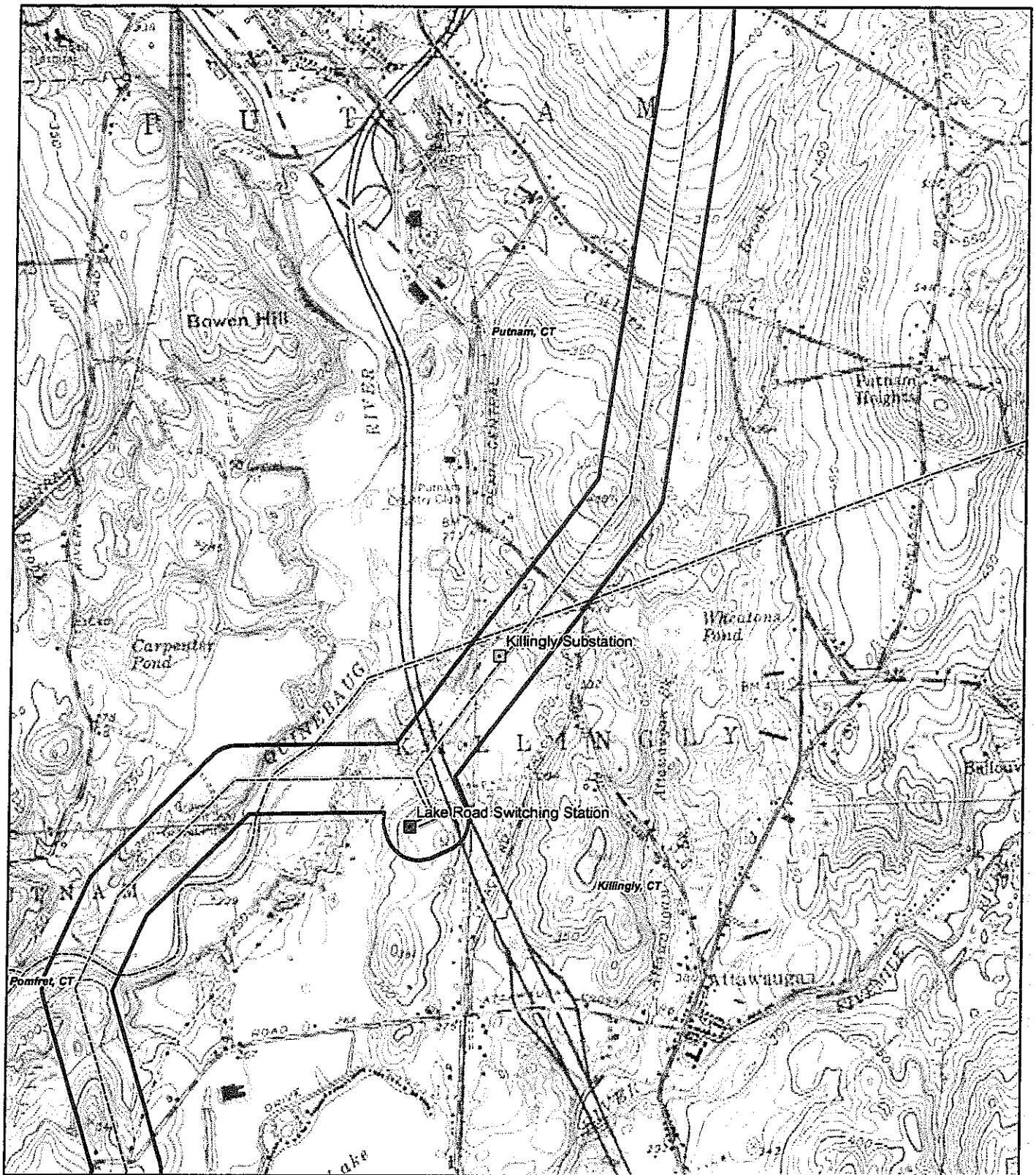
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 09 of 15
Date: February 2010



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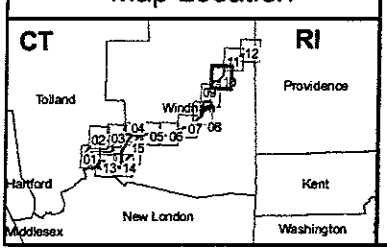

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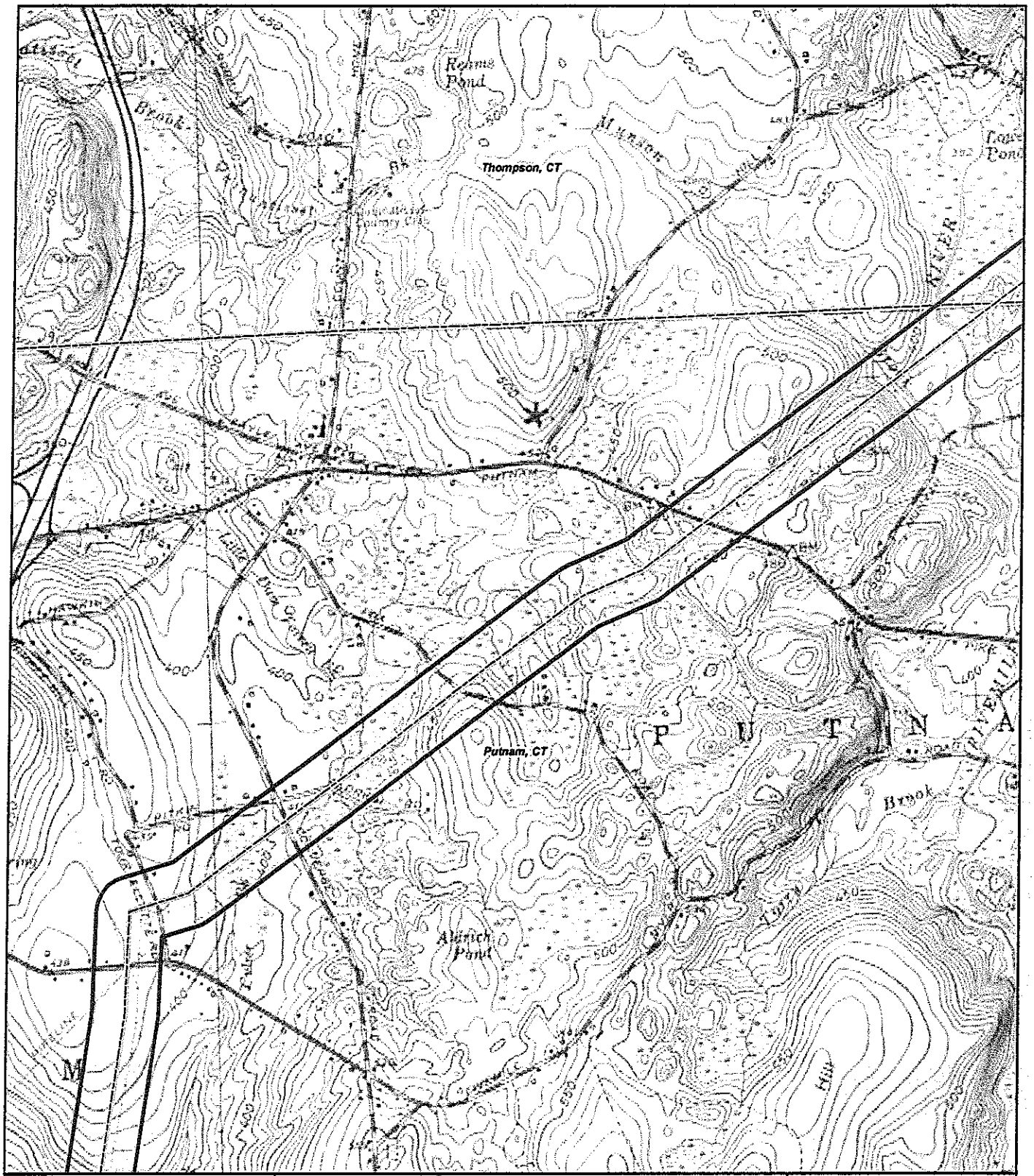
Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 10 of 15
Date: February 2010



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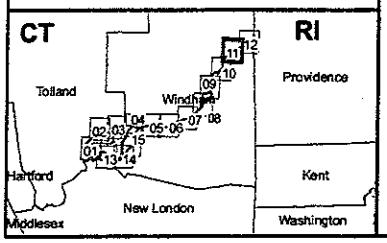

CT Interstate Reliability Project
USGS Map

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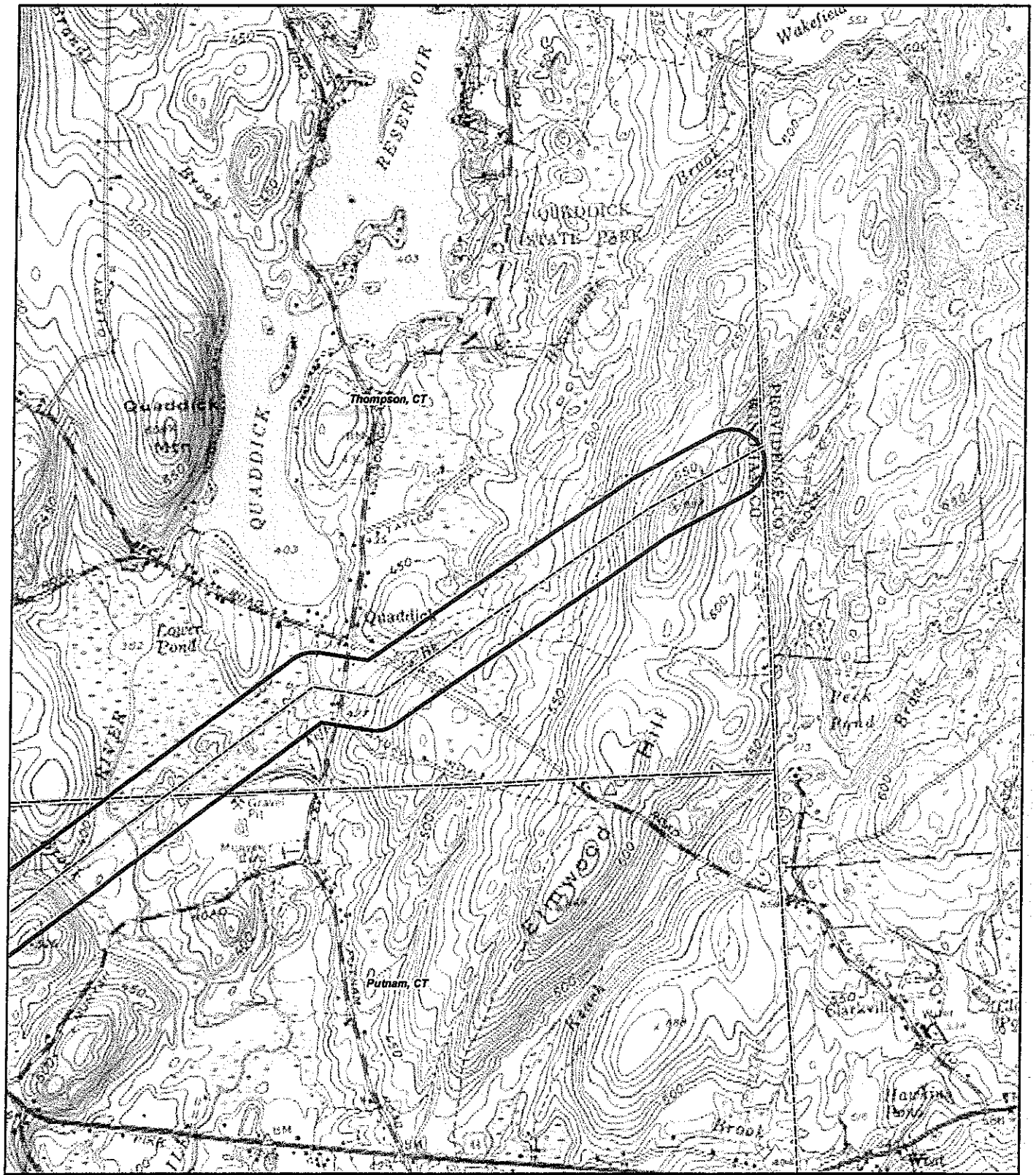
Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 11 of 15
Date: February 2010



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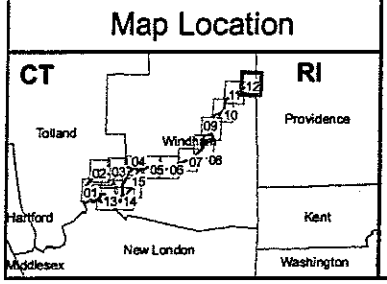

CT Interstate Reliability Project
USGS Map

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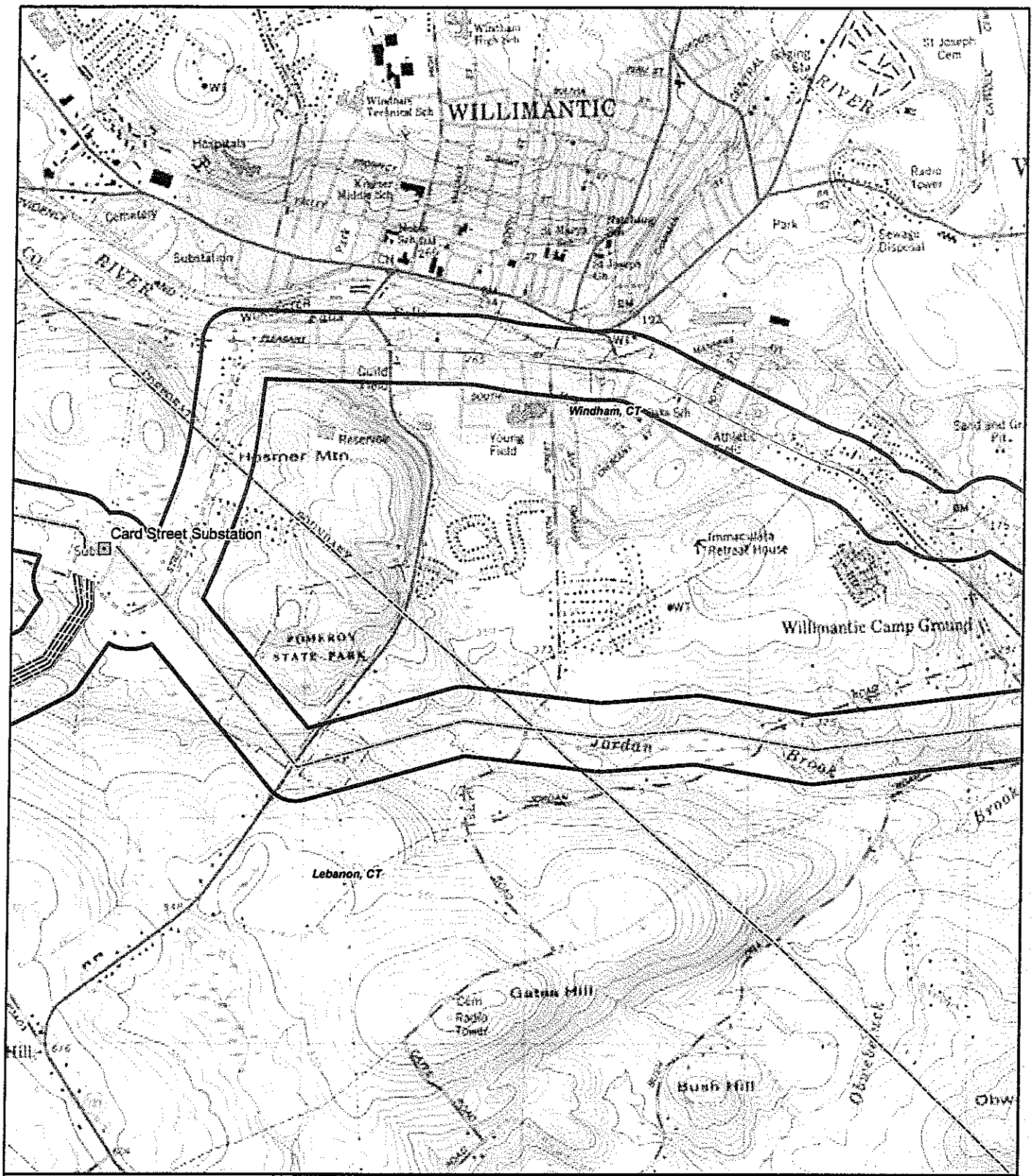
Data Source: USGS Topo Quads;

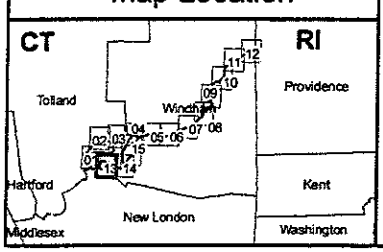
Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 12 of 15
Date: February 2010



Map Location



CT Interstate Reliability Project
USGS Map

- Junction
- Substation
- Switching Station
- 1000 ft Study Corridor
- Town Boundaries
- Proposed Route
- Line Loop 310
- Willimantic South Overhead Variation
- Willimantic South Underground Variation
- Mansfield Underground Variation
- Mount Hope Underground Variation
- Brooklyn Overhead Variation
- Brooklyn Underground Variation

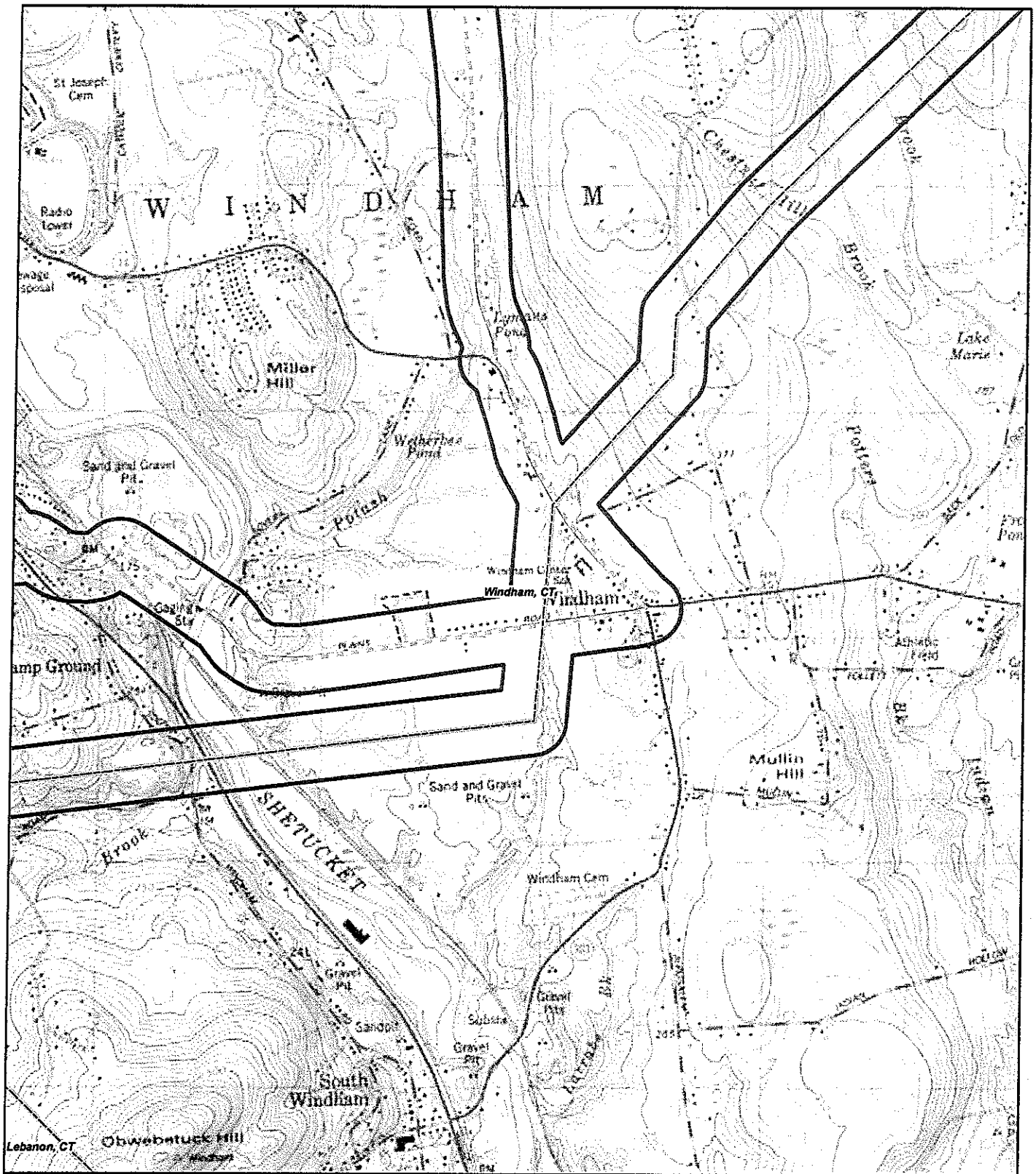
0 1,000 2,000 3,000 Feet 1:24,000

Data Source: USGS Topo Quads;

Connecticut Light & Power
The Northeast Utilities System

AECOM

Mapsheet 13 of 15
Date: February 2010



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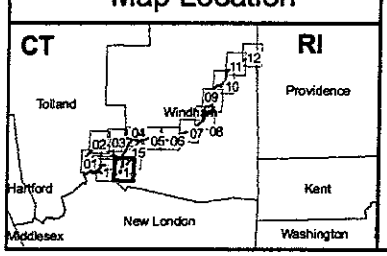

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0 1,000 2,000 3,000 Feet 1:24,000

Data Source: USGS Topo Quads;

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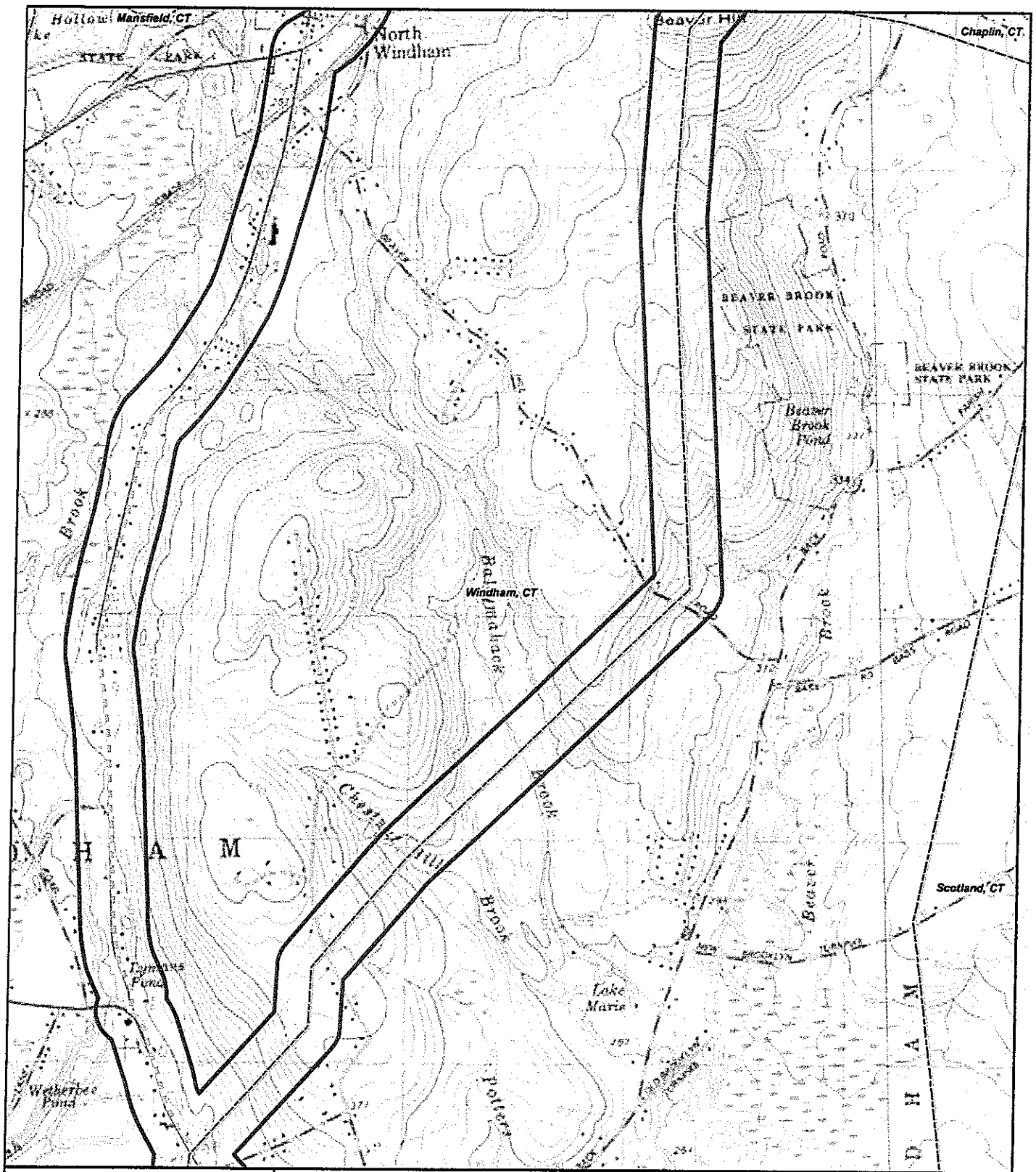
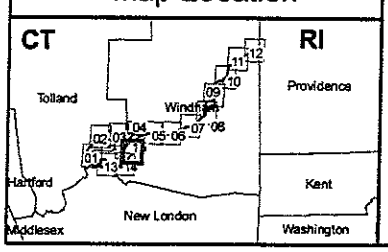
The Northeast Utilities System

AECOM

Mapsheet 14 of 15
Date: February 2010



Map Location



CT Interstate Reliability Project
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Date: February 2010