

## **Attachment K-Attachment B**

### **Inventory of Vernal Pools**

This Appendix was formatted in its entirety as part of the Final FERC 7(c) Application, filed on November 20, 2015 (PF-14-22-000), Environmental Reports, Volume I; therefore, appendix references and page numbers contained within this document are not consistent with this permit application.

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**INVENTORY OF VERNAL POOLS ALONG THE MASSACHUSETTS, NEW  
HAMPSHIRE, AND CONNECTICUT PORTIONS OF THE NORTHEAST ENERGY  
DIRECT PROJECT**

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**November 2015**

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## 1.0 INTRODUCTION

Tennessee Gas Pipeline Company, L.L.C. (“Tennessee” or “TGP”) is filing an application seeking the issuance of a certificate of public convenience and necessity from the Federal Energy Regulatory Commission (“Commission” or “FERC”) for the construction and operation of the proposed Northeast Energy Direct Project (“NED Project” or “Project”). Tennessee proposes to expand and modify its existing pipeline system in Pennsylvania, New York, Massachusetts, New Hampshire, and Connecticut. The NED Project is being developed to meet the increased demand in the Northeast United States (“U.S.”) for transportation capacity of natural gas.

Vernal pool surveys were conducted in Massachusetts, New Hampshire, and Connecticut. The proposed Project mainline pipeline facilities in Massachusetts consist of approximately 64 miles of 30-inch-diameter pipeline, beginning at the New York/Massachusetts border and extending to the Massachusetts/New Hampshire border in Franklin County in western Massachusetts, generally co-located with an existing utility corridor to the extent practicable, feasible, and in compliance with existing law.

The proposed Project mainline pipeline facilities in New Hampshire consist of approximately 70 miles of 30-inch diameter pipeline, beginning at the Massachusetts border in Winchester, New Hampshire and extending eastward to the Massachusetts border in Pelham, New Hampshire, generally co-located with an existing utility corridor to the extent practicable, feasible, and in compliance with existing law. Additionally, approximately 58 miles of various laterals and pipeline looping segments are proposed in Massachusetts, New Hampshire, and Connecticut to serve local markets

On behalf of Tennessee, AECOM performed vernal pool surveys along all of the proposed Project routes and variations described above where access was available during the spring of 2015. Surveys included all temporarily flooded palustrine wetlands and flooded isolated depressions encountered that might support breeding habitat for obligate vernal pool amphibians and associated plant and aquatic macro-invertebrate communities. Vernal pool surveys are scheduled to continue in 2016 as survey access to additional properties become available. Impacts to each pool’s adjacent landscape will be assessed following requirements outlined by the U.S. Army Corps of Engineers (“USACE”) New England District. Because the route determination and survey access permission process is ongoing, additional delineation submissions will be necessary to complete the process of jurisdictional boundary line verification and approval.

This report discusses the methods used to identify the vernal pools encountered along the Massachusetts, New Hampshire, and Connecticut portions of the Project and summarizes the findings of the surveys. Vernal Pool Habitat Data Forms for all pools, documenting the biological evidence which supports these determinations, are included in Attachment A.

## 2.0 VERNAL POOL HABITAT DEFINITIONS

State and federal agencies apply slightly different definitions to describe vernal pools. The following summarizes the definitions used by Massachusetts, New Hampshire, Connecticut, and the 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.

The Massachusetts Wetlands Protection Act (310 CMR 10.00) defines vernal pool habitat as “confined basin depressions, which, at least in most years, hold water for a minimum of two continuous months during the spring and/or summer, and which are free of adult fish populations. These areas are essential breeding habitat, and provide other extremely important wildlife habitat functions during the non-breeding season as well, for a variety of amphibian species such as wood frogs (*Lithobates sylvatica*) and the spotted salamander (*Ambystoma maculatum*) and are important habitat for other wildlife species.”

The New Hampshire Code of Administrative Rules defines a vernal pool as “a surface water or wetland, including an area intentionally created for purposes of compensatory mitigation, which provides breeding habitat for amphibians and invertebrates that have adapted to the unique environments provided by such pools.” A vernal pool cannot be the result of on-going anthropogenic activities that are not intended to provide compensatory mitigation. Under the same definition, a vernal pool typically has the following characteristics: cycles annually from flooded to dry conditions, forms in a shallow depression or basin, has no permanently flowing outlet, holds water for at least two continuous months following spring ice-out, lacks a viable fish population, and supports primary or secondary vernal pool indicator species. (Env-Wt 101.106).

Many organisms critically rely upon vernal pool habitat for reproductive success. These species are referred to as obligate or primary vernal pool species. Obligate or primary 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*);
- Blue-spotted salamander (*Ambystoma laterale*);
- Marbled salamander (*Ambystoma opacum*); and
- Fairy shrimp (*Branchiopoda anostraca*).



Facultative or secondary 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*), American toad (*Anaxurus americanus*), gray treefrog (*Hyla versicolor*) and spotted turtle (*Clemmys guttata*). Facultative or secondary species such as those mentioned above can utilize vernal pool habitats. However, these amphibian species can also breed successfully in the margins of permanent water bodies including streams, rivers, and lakes.

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.

The USACE District of New England requires detailed impact assessments of proposed work performed within and adjacent to vernal pools. These assessments will include an evaluation of impacts to the vernal pool, the vernal pool envelope (landscape within 0-100 feet from the pool edge) and the critical terrestrial habitats (landscape within 100-750 feet from the pool edge). Tennessee has already implemented some Project modifications based on the data collected to date.

Wetland areas associated with the Project rights-of-way (“ROW”) were surveyed to identify the presence or absence of obligate or primary vernal pool species (presence/absence surveys). Where obligate or primary species were observed, the area was further investigated to identify whether the state and federal vernal pool criteria had been satisfied. Observed facultative or secondary species were noted on the Vernal Pool Data Forms (Attachment A), but these species were not used to identify an area as 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 2015 breeding season and that met the majority of the state and federal vernal pool criteria discussed above. All potential vernal pools on parcels where access was granted were surveyed at the appropriate time of year for documenting obligate species. The process of identifying vernal pools, evaluating impacts and avoiding and minimizing impacts to the extent practicable will continue as access to more parcels become available.

### 3.0 FIELD INVESTIGATIONS

AECOM conducted the vernal pool surveys in the spring of 2015 from April 21 to May 20. These survey periods correspond to the appropriate times of the year to identify areas that may function as vernal pools based on the presence of egg masses and developing larvae.

All wetland areas to which Tennessee had access in the above-referenced time period were investigated to determine if breeding amphibians, both obligate/primary and facultative/secondary, were present in an effort to identify vernal pools. To facilitate the surveys, biologists were provided Project-specific wetland mapping, YUMA GPS/data collection Units, dip nets, and digital cameras.

The surveys were done after the first significant rainfall events in the spring, when evening low temperatures remained in the 40s (° Fahrenheit). These weather conditions facilitate inward migration of amphibians to the pools for the purpose of breeding. Surveys began at the southern and eastern extents of the Project and worked northerly and westerly to take advantage of spatial and elevational variations in breeding times. Biologists conducted visual surveys and used dip nets to sweep the water column to assist in determining the presence or absence of amphibians and other vernal pool species. Choruses of breeding frogs were noted when audible.

Biologists followed survey and documentation procedures outlined by the USACE – New England District, *Vernal Pool Assessment Guidelines* and completed the USACE Vernal Pool Characterization Form for each pool encountered. Evidence of amphibian breeding, including but not limited to wood frog chorusing, mole salamander spermatophores, egg masses and amphibian larvae, were recorded on these Vernal Pool Data Forms and are included in this report as Attachment A. 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 habitat onto field mapping and/or used a 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.

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

#### **Wood Frog**

In New England, 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 early April. 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 the only frog 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 except for eastern spadefoot toads (*Scaphiopus holbrookii*), 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.

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 larvae, slugs, snails, and annelids (Klemens 1993).

### **Spotted Salamander**

In New England, 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 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 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 observed marbled salamanders were more prevalent in rural areas of Connecticut; however, some individuals were also collected 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 1<sup>st</sup> of August. Adults are generally only active on rainy nights. The majority of adults are at breeding pools by the 26<sup>th</sup> of August, with some stragglers arriving as late as the 10<sup>th</sup> 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).

### **Jefferson Salamander Complex**

Blue-spotted salamanders (*Ambystoma laterale*) and Jefferson salamanders (*Ambystoma jeffersonianum*) are both species of mole salamanders found in Massachusetts, New Hampshire, and Connecticut. Both species are obligate indicators of vernal pools and are both protected in all three states. These species are also both members of a group of salamanders that form the *Ambystoma jeffersonianum* complex.

Blue-spotted salamanders are medium sized salamanders with conspicuous patterns of pale or sky blue blotches or spots randomly distributed over a base color of dark gray to black. These spots or blotches are abundant over the entire body of juvenile salamanders, but tend to be more concentrated along the sides of adult members of the species. Blue-spotted salamander larvae have external gills that appear bushy and are not easily distinguished from other species of salamander in the *Ambystoma* genus.

Jefferson salamanders are slender salamanders with a body 4 to 7 inches long. Slightly larger than the blue-spotted salamander, the Jefferson salamander displays similar color patterns. Spots or blotches on the Jefferson salamander may be smaller than the blue-spotted salamanders and appear on a more brown colored background. The Jefferson salamander appears to prefer small pools with forest canopy cover as habitat while blue-spotted salamanders appear to prefer breeding in floodplains (Colburn 2004).

Both the Jefferson salamander and the blue-spotted salamander are part of an intricate group of salamanders known as the Jefferson complex. This group also includes a group of unisexual *Ambystoma* salamanders of a hybrid lineage. Unisexual *Ambystoma* salamanders in this complex have variable nuclear genomes consisting of both Blue-spotted salamanders and Jefferson

salamanders and have a mitochondrial genome from one of several species of *Ambystoma* salamanders, usually the Streamside salamander (*Ambystoma barbouri*). The Streamside salamander's range is further south and west than the Jefferson or Blue-spotted salamanders and genetic research shows that the separate species may share a maternal ancestor from approximately five million years ago. The Jefferson complex salamander is not a true hybrid as once thought. It now appears that this genetically unique complex derived from an intricate evolutionary process that formed to perpetuate the ability of the separate species to reproduce throughout fragmented habitat by retaining and passing on selective genomes. The Jefferson salamander complex is protected in Connecticut.

### **Fairy Shrimp**

Fairy shrimp, a crustacean, are among the most distinctive invertebrate indicators of vernal pools. Several species of these shrimp can be found in vernal pools in the glaciated northeast, all belonging to the genus *Eubranchipus*. Their name is derived from the seemingly "magical" way they appear in tiny woodland pools, sometimes appearing suddenly in places where they have not been seen for years. They are present for short periods of the year, weeks to months at most, before rapidly disappearing due to warming water. Fairy shrimp hatch from specialized eggs, or cysts, that lie on the bottom of vernal pools. Hatching is stimulated by flooding, which happens in late fall, winter, or early spring (Colburn 2004).

Fairy shrimp adult body lengths range from approximately 0.6 to 1.5 inches and have striking color combinations including orange, blue, red, and bronze. They move by swimming upside down, propelled by many pairs of feathery legs. Females are identified by having smaller heads than males and exhibiting two egg sacs (known as ovisacs) where the thorax and abdomen meet. Fairy shrimp are filter feeders as well as an important food source for larger invertebrates and waterfowl making them a significant part of the vernal pool ecosystem.

Fairy shrimp exhibit a very selective life history pattern. They are most readily found in flooded vernal pools in early spring and do not generally tolerate warm water temperatures. As a general rule, fairy shrimp are not found in northeastern vernal pools when the temperature of the pool reaches above 68 to 72 degrees Fahrenheit. Sometimes young shrimp and mature adults can be seen under ice. This life history pattern is perfectly adapted to life in vernal pools, removing fairy shrimp from the pools before most amphibian larvae have hatched and invertebrate predators have become abundant (Colburn 2004).

## 4.0 RESULTS

As summarized in Table 1, based on the 2015 breeding season field surveys, 108 wetlands located along the Project corridor were determined to contain vernal pools for obligate species. Eight vernal pools appear to be isolated, pending further access permission. As a result, a total of 116 vernal pools were identified along the Project corridor and ROWs.

The Eastern spadefoot toad is listed by Connecticut as state-endangered, and Massachusetts as state-threatened. The Jefferson Salamander is a Species of Special Concern in Massachusetts, New Hampshire, and Connecticut. The Blue-spotted salamander is state-endangered in New Hampshire, and is a species of special concern in Massachusetts. A pool that was surveyed in Massachusetts was found to contain what appeared to be a blue-spotted salamander egg mass. Additional surveys are planned for this pool in 2016 for confirmation. Project construction workspace has been modified to avoid this pool by more than 750 feet.

Surveys for state-listed salamanders are scheduled for early spring 2016 in Massachusetts and Connecticut. Surveys will follow protocols approved by the Massachusetts Natural Heritage and Endangered Species Program (“MANHESP”) and the CTDEEP. The MANHESP has provided mapping of Priority Habitat for state-listed salamanders to guide surveys, and habitat evaluations were conducted in the fall of 2015 to guide surveys in Connecticut. The Connecticut Natural Diversity Database (“CTNDDDB”) will also likely provide information identifying habitat and/or areas of concern.

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 season of 2015 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.

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
<b>Massachusetts Vernal Pools</b>									
Andover	Lynnfield Lateral	N	7.45	AN-AC3-VP001	AN-K-W008	42.60543	-71.1709	PFO	3 spotted salamander egg masses
	Lynnfield Lateral	N	7.45	AN-AC3-VP002	AN-K-W008	42.60504	-71.1709	PFO	4 spotted salamander egg masses, 11 wood frog egg masses, wood frog tadpoles
	Lynnfield Lateral	N	7.45	AN-AC3-VP003	AN-P-W002	42.60443	-71.1704	PEM	44 wood frog egg masses, 13 spotted salamander egg masses, caddisflies
	Lynnfield Lateral	N	7.6	AN-AC3-VP004	AN-K-W010	42.60031	-71.168	PFO	2 spotted salamander egg masses, 14 wood frog egg masses, wood frog tadpoles
	Lynnfield Lateral	N	7.45	AN-AC3-VP005	Isolated Vernal Pool	42.60216	-71.1688	PEM	38 spotted salamander egg masses, 7 wood frog egg masses, wood frog tadpoles, fairy shrimp, spotted turtles
Ashfield	Wright to Dracut Pipeline Segment	G	27	AS-AC4-VP001	AS-M-W001	42.52761	-72.8751	PSS	4 spotted salamander egg masses, spotted salamander larvae, caddisflies
	Wright to Dracut Pipeline Segment	G	27.45	AS-AC4-VP002	AS-M-W001	42.52793	-72.8745	PFO	6 spotted salamander egg masses, spotted salamander larvae, 3 wood frog egg masses, wood frog tadpoles, caddisflies

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	Wright to Dracut Pipeline Segment	G	27.45	AS-AC4-VP003	AS-M-W001	42.52852	-72.8733	PSS	11 spotted salamander egg masses, spotted salamander larvae, 12 wood frog egg masses, wood frog tadpoles, caddisflies, predaceous diving beetles
	Wright to Dracut Pipeline Segment	G	27.45	AS-AC4-VP004	AS-M-W004	42.52901	-72.8643	PEM	22 spotted salamander egg masses, spotted salamander larvae, 4 wood frog egg masses, wood frog tadpoles, predaceous diving beetles, caddisflies
	Wright to Dracut Pipeline Segment	G	28.85	AS-AC4-VP005	AS-M-W010	42.53319	-72.8368	PFO	2 spotted salamander egg masses, spotted salamander larvae, 3 blue-spotted salamander egg masses, blue-spotted salamander larvae, caddisflies, spring peepers, dragonfly larvae and exuviae
	Wright to Dracut Pipeline Segment	G	28.85	AS-AC4-VP006	AS-M-W011	42.53331	-72.8352	PSS	17 spotted salamander egg masses, spotted salamander larvae
	Wright to Dracut Pipeline Segment	G	28.85	AS-AC4-VP007	AS-M-W012	42.53372	-72.8335	OTHER	14 spotted salamander egg masses, spotted salamander larvae, caddisflies

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	Wright to Dracut Pipeline Segment	G	28.85	AS-AC4-VP008	AS-M-W012	42.53383	-72.8327	PFO	4 spotted salamander egg masses, spotted salamander larvae, caddisflies
	Wright to Dracut Pipeline Segment	G	29.6	AS-AC4-VP009	AS-M-W015	42.53517	-72.8239	PFO	7 spotted salamander egg masses, spotted salamander larvae, 2 wood frog egg masses, wood frog larvae, wood frog tadpoles
	Wright to Dracut Pipeline Segment	H	0.95	AS-AC4-VP010	AS-M-W019	42.53959	-72.7477	PEM	21 spotted salamander egg masses, spotted salamander larvae, dragonfly larvae or exuviae, predaceous diving beetles
Dracut	Wright to Dracut Pipeline Segment	K	N/A	DR-AC3-VP001	DR-A-W002	42.67801	-71.2837	PFO	3 spotted salamander egg masses
	Maritimes Delivery Line	L	0.75	DR-AC3-VP002	DR-J-W006	42.68853	-71.2625	PFO	2 spotted salamander egg masses, 85 wood frog egg masses, wood frog tadpoles, caddisflies
	Wright to Dracut Pipeline Segment	K	0.75	DR-AC3-VP003	DR-J-W003	42.68559	-71.264	PFO	Fairy shrimp
	Wright to Dracut Pipeline Segment	K	1.3	DR-AC3-VP004	DR-N-W004	42.69095	-71.27	PSS	7 wood frog egg masses, wood frog tadpoles, caddisflies

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	Haverhill Lateral	P	N/A	DR-AC3-VP005	DR-E-W008	42.69354	-71.2565	PEM	Wood frog tadpoles, caddisflies
	Haverhill Lateral	P	N/A	DR-AC3-VP006	DR-E-W001	42.69083	-71.2596	PFO	2 spotted salamander egg masses, 7 wood frog egg masses, wood frog tadpoles, caddisflies
	Haverhill Lateral	P	N/A	DR-AC3-VP007	DR-E-W008	42.6939	-71.2564	PFO	3 spotted salamander egg masses, 2 wood frog egg masses, caddisflies
	Wright to Dracut Pipeline Segment	K	N/A	DR-AC3-VP008	DR-D-W002	42.68317	-71.2815	PFO	2 spotted salamander egg masses, 13 wood frog egg masses, wood frog tadpoles
	Wright to Dracut Pipeline Segment	K	N/A	DR-AC3-VP009	DR-D-W004	42.68255	-71.2811	PFO	13 spotted salamander egg masses, 3 wood frog egg masses, wood frog tadpoles
	Wright to Dracut Pipeline Segment	K	N/A	DR-AC3-VP010	DR-G-W005	42.6814	-71.2808	PFO	29 spotted salamander egg masses, 12 wood frog egg masses, wood frog tadpoles, caddisflies
	Wright to Dracut Pipeline Segment	K	N/A	DR-AC3-VP011	DR-D-W003	42.68316	-71.2806	PFO	2 spotted salamander egg masses, 8 wood frog egg masses, wood frog tadpoles, caddisflies
	Wright to Dracut Pipeline Segment	K	N/A	DR-AC3-VP012	DR-D-W005	42.68282	-71.2804	PFO	9 spotted salamander egg masses, wood frog tadpoles

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
Erving	Wright to Dracut Pipeline Segment	H	16.3	ER-AC3-VP001	ER-M-W002	42.582	-72.4778	PFO	Wood frog tadpoles
Hancock	Wright to Dracut Pipeline Segment	G	1.45	HA-AC4-VP001	Isolated Vernal Pool	42.53676	-73.3085	PEM	31 spotted salamander egg masses, spotted salamander larvae, 2 wood frog egg masses, spire-shaped snails or shells
Hinsdale	Wright to Dracut Pipeline Segment	G	13.75	HN-AC4-VP001	HN-M-W002	42.47281	-73.1102	PFO	13 spotted salamander egg masses, spotted salamander larvae, 1 wood frog egg mass, wood frog tadpoles, caddisflies, mosquito larvae, true fly larvae or pupae
	Wright to Dracut Pipeline Segment	G	13.75	HN-AC4-VP002	HN-M-W003	42.47152	-73.1081	PFO	15 spotted salamander egg masses, spotted salamander larvae, mosquito larvae
	Wright to Dracut Pipeline Segment	G	13.8	HN-AC4-VP003	HN-M-W005	42.46922	-73.102	PEM	47 spotted salamander egg masses, spotted salamander larvae, 2 wood frog egg masses, wood frog tadpoles, spire-shaped snails or shells
	Wright to Dracut Pipeline Segment	G	15.35	HN-AC4-VP004	HN-M-W008	42.47106	-73.0798	PEM	18 blue spotted salamander egg masses, blue spotted salamander larvae

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	Wright to Dracut Pipeline Segment	G	15.35	HN-AC4-VP005	HN-M-W008	42.47151	-73.0799	PSS	5 spotted salamander egg masses, spotted salamander larvae, spire-shaped snails or shells
	Wright to Dracut Pipeline Segment	G	15.6	HN-AC4-VP006	HN-M-W010	42.47272	-73.0734	PEM	15 spotted salamander egg masses, spotted salamander larvae, 100+ wood frog tadpoles
Lunenburg	Fitchburg Lateral Extension	Q	N/A	LU-AC3-VP001	LU-D-W001	42.5863	-71.7599	PEM	15 spotted salamander egg masses, 1 unidentified mole salamander egg mass, wood frog tadpoles
	Fitchburg Lateral Extension	Q	N/A	LU-AC3-VP002	Isolated Vernal Pool	42.59443	-71.7567	PSS	7 spotted salamander egg masses, wood frog tadpoles, caddisflies
	Fitchburg Lateral Extension	Q	N/A	LU-AC3-VP003	Isolated Vernal Pool	42.58452	-71.7672	PEM	2 spotted salamander egg masses, wood frog tadpoles, American toads
	Fitchburg Lateral Extension	Q	N/A	LU-AC3-VP004	Isolated Vernal Pool	42.58457	-71.7664	PFO	5 spotted salamander egg masses, wood frog tadpoles, caddisflies
Lynnfield	Peabody Lateral	O	1.7	LY-AC4-VP001	LY-M-W002	42.56563	-71.0501	PEM	4 spotted salamander egg masses, 2 wood frog egg masses, caddisflies

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	Peabody Lateral	O	1.9	LY-AC4-VP002	LY-K-W001	42.56615	-71.0448	PFO	16 spotted salamander egg masses, 2 wood frog egg masses, wood frog tadpoles, caddisflies
	Peabody Lateral	O	2.3	LY-AC4-VP003	LY-M-W003	42.56604	-71.0381	OTHER	22 spotted salamander egg masses
	Peabody Lateral	O	2.25	LY-AC4-VP004	LY-M-W003	42.56605	-71.0385	OTHER	27 spotted salamander egg masses
	Peabody Lateral	O	1.3	LY-AC4-VP005	LY-M-W002	42.56559	-71.057	PFO	4 spotted salamander egg masses, wood frog tadpoles, caddisflies, spire-shaped snails or shells
Methuen	Haverhill Lateral	P	N/A	ME-AC3-VP001	UNKNOWN	42.71229	-71.2434	PSS	Wood frog tadpoles, caddisflies
	Haverhill Lateral	P	4.9	ME-AC3-VP002	ME-P-W004	42.71856	-71.2297	OTHER	8 spotted salamander egg masses, caddisflies
	Haverhill Lateral	P	6.3	ME-AC3-VP003	ME-P-W001	42.74022	-71.2233	PFO	14 wood frog egg masses, wood frog tadpoles
	Haverhill Lateral	P	6.5	ME-AC3-VP004	ME-P-W001	42.7404	-71.2189	PFO	Wood frog tadpoles, caddisflies

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	Haverhill Lateral	P	6.9	ME-AC3-VP005	ME-P-W002	42.74246	-71.2111	PFO	Fairy shrimp, wood frog tadpoles
Montague	Wright to Dracut Pipeline Segment	H	11.6	MO-AC3-VP001	UNKNOWN	42.56462	-72.5541	PFO	Wood frog tadpoles
Northfield	Wright to Dracut Pipeline Segment	H	23.2	NO-AC3-VP001	NO-M-W002A	42.65843	-72.424808 59700	OTHER	21 spotted salamander egg masses, 1 wood frog egg mass
	Wright to Dracut Pipeline Segment	H	23.15	NO-AC3-VP002	NO-M-W001	42.6566	-72.4265	PEM	43 spotted salamander egg masses, 4 wood frog egg masses, wood frog tadpoles
	Wright to Dracut Pipeline Segment	H	23.8	NO-AC3-VP003	NO-L-W005	42.66581	-72.4197	PFO	31 spotted salamander egg masses, 9 wood frog egg masses, caddisflies
	Wright to Dracut Pipeline Segment	H	23.8	NO-AC3-VP004	NO-G-W004	42.66693	-72.419	PEM	3 spotted salamander egg masses
	Wright to Dracut Pipeline Segment	H	23.8	NO-AC3-VP005	NO-L-W007	42.66555	-72.4178	POW	12 spotted salamander egg masses, 3 wood frog egg masses
	Wright to Dracut Pipeline Segment	H	23.8	NO-AC3-VP006	NO-L-W015	42.66758	-72.4143	PEM	36 spotted salamander egg masses



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Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	Wright to Dracut Pipeline Segment	H	23.8	NO-AC3-VP007	NO-L-W014	42.66577	-72.4074	PFO	26 spotted salamander egg masses, caddisflies
	Wright to Dracut Pipeline Segment	H	23.8	NO-AC3-VP008	NO-L-W023	42.66281	-72.4046	PEM	14 spotted salamander egg masses
Plainfield	Wright to Dracut Pipeline Segment	G	22.05	PL-AC4-VP001	PL-E-W001	42.50932	-72.9647	OTHER	15 spotted salamander egg masses, spotted salamander larvae, 2 wood frog egg masses, wood frog tadpoles, caddisflies, mosquito larvae
	Wright to Dracut Pipeline Segment	G	22.025	PL-AC4-VP002	PL-M-W004	42.50933	-72.9653	PFO	2 spotted salamander egg masses, spotted salamander larvae
	Wright to Dracut Pipeline Segment	G	21.6	PL-AC4-VP003	Isolated Vernal Pool	42.50672	-72.9723	POW	18 spotted salamander egg masses, spotted salamander larvae, 4 wood frog egg masses, wood frog tadpoles, caddisflies, mosquito larvae
	Wright to Dracut Pipeline Segment	G	23.25	PL-AC4-VP004	PL-M-W002	42.5149	-72.9434	PEM	7 blue spotted salamander egg masses, blue spotted salamander larvae, 37 spotted salamander egg masses, spotted salamander larvae, caddisflies, predaceous diving beetles, spring peepers

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**Vernal Pool Habitat Identified Along the Proposed Project ROWs**

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	Wright to Dracut Pipeline Segment	G	24.8	PL-AC4-VP005	PL-M-W011	42.52411	-72.91910 048200	PEM	1 spotted salamander egg mass, spotted salamander larvae, 3 wood frog egg masses, wood frog tadpoles
	Wright to Dracut Pipeline Segment	G	25.55	PL-AC4-VP006	PL-E-W002	42.52408	-72.9024	PSS	43 spotted salamander egg masses, spotted salamander larvae, 5 wood frog egg masses, wood frog tadpoles, fairy shrimp, mayflies
	Wright to Dracut Pipeline Segment	G	25.35	PL-AC4-VP007	PL-E-W003	42.52388	-72.908	PSS	4 spotted salamander egg masses, spotted salamander larvae, mosquito larvae
	Wright to Dracut Pipeline Segment	G	24.85	PL-AC4-VP008	PL-E-W003	42.52444	-72.9119	PEM	6 spotted salamander egg masses, spotted salamander larvae, 1 wood frog egg mass, wood frog tadpoles, mosquito larvae, spring peepers
	Wright to Dracut Pipeline Segment	G	26.7	PL-AC4-VP009	PL-M-W009	42.52699	-72.8801	PSS	52 spotted salamander egg masses, spotted salamander larvae, wood frog tadpoles, fairy shrimp, caddisflies, dragonfly larvae or exuviae, wood turtles
Tewksbury	Lynnfield Lateral	N	3.3	TK-AC3-VP001	TK-K-W002	42.64205	-71.2232	OTHER	5 wood frog egg masses, wood frog tadpoles

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**Vernal Pool Habitat Identified Along the Proposed Project ROWs**

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	Lynnfield Lateral	N	5.6	TK-AC3-VP002	UNKNOWN	42.62379	-71.1869	PFO	3 wood frog egg masses, wood frog tadpoles
	Lynnfield Lateral	N	5.5	TK-AC3-VP003	UNKNOWN	42.62468	-71.1892	PFO	18 spotted salamander egg masses, 8 wood frog egg masses, wood frog tadpoles, caddisflies
Warwick	Wright to Dracut Pipeline Segment	H	27.75	WK-AC3-VP001	WK-M-W001	42.71844	-72.4052	PSS	7 spotted salamander egg masses, wood frog tadpoles
Windsor	Wright to Dracut Pipeline Segment	G	17.3	WN-AC4-VP001	WR-M-W011	42.47974	-73.0435	PEM	12 spotted salamander egg masses, spotted salamander larvae, 22 wood frog egg masses, wood frog tadpoles, spire-shaped snails or shells, mosquito larvae
	Wright to Dracut Pipeline Segment	G	17.65	WN-AC4-VP002	WR-M-W002	42.4818	-73.035	PEM	14 spotted salamander egg masses, spotted salamander larvae, 1 wood frog egg mass
	Wright to Dracut Pipeline Segment	G	17.45	WN-AC4-VP003	WR-M-W006	42.48105	-73.039	PEM	15 spotted salamander egg masses, spotted salamander larvae
<b>New Hampshire Vernal Pools</b>									
Greenville	Wright to Dracut Pipeline Segment	J	7.65	GN-U-VP001	GN-M-W001	42.78725	-71.7968	PSS	Damselflies, Mayflies

**Table 1**  
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Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
Hudson	Wright to Dracut Pipeline Segment	J	32.9	HD-T-VP001	HD-G-W003	42.80822	-71.3771	PSS	Wood frog tadpoles, caddisflies, true fly larvae or pupae
Litchfield	Wright to Dracut Pipeline Segment	J	26.9	LT-U-VP001	LT-G-W002	42.83138	-71.4678	POW	1 wood frog egg mass, wood frog tadpoles, caddisflies, true fly larvae or pupae
	Wright to Dracut Pipeline Segment	J	27.03	LT-U-VP002	LT-G-W003	42.83294	-71.4657	PSS	Wood frog tadpoles, mosquito larvae
	Wright to Dracut Pipeline Segment	J	27.04	LT-U-VP003	LT-G-W003	42.83266	-71.4654	PSS	2 wood frog egg masses, wood frog tadpoles
	Wright to Dracut Pipeline Segment	J	27.2	LT-U-VP004	LT-G-W003	42.8335	-71.4629	PSS	1 wood frog egg mass, wood frog tadpoles, true fly larvae or pupae
	Wright to Dracut Pipeline Segment	J	27.4	LT-U-VP005	LT-G-W005	42.83419	-71.4585	PSS	Wood frog tadpoles, caddisflies
Londonderry	Wright to Dracut Pipeline Segment	J	29.1	LD-T-VP001	LD-L-W001	42.8418	-71.427	POW	Fairy shrimp, wood frog tadpoles, caddisflies, dragonfly larvae or exuviae, true fly larvae or pupae
	Wright to Dracut Pipeline Segment	J	30.12	LD-U-VP001	LD-L-W006	42.84019	-71.4099	PSS	1 wood frog egg mass, flat-spire snails or shells

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
Mason	Fitchburg Lateral	Q	3.6	MS-U-VP001	Isolated Vernal Pool	42.72469	-71.7428	PFO	Unidentified mole salamander larvae, gray tree frogs, spring peepers
	Fitchburg Lateral	Q	4.65	MS-U-VP002	Isolated Vernal Pool	42.7138	-71.7563	PFO	Damselflies, mayflies, gray tree frogs
New Ipswich	Wright to Dracut Pipeline Segment	J	6	NI-R-VP001	NI-R-W001	42.78296	-71.8293	POW	13 spotted salamander egg masses, 4 wood frog egg masses, caddisflies
	Wright to Dracut Pipeline Segment	J	5.96	NI-R-VP002	NI-R-W001	42.78287	-71.8299	OTHER	Aquatic beetles, true fly larvae or pupae
	Wright to Dracut Pipeline Segment	J	6.03	NI-R-VP003	NI-R-W001	42.7823	-71.8285	OTHER	4 spotted salamander egg masses, 1 wood frog egg mass
	Wright to Dracut Pipeline Segment	J	6.25	NI-R-VP004	NI-R-W001	42.78231	-71.8263	POW	9 spotted salamander egg masses, 4 wood frog egg masses, true fly larvae or pupae, water boatman beetles
	Wright to Dracut Pipeline Segment	J	6.2	NI-R-VP005	NI-R-W001	42.78203	-71.8264	PSS	6 spotted salamander egg masses
Pelham	Wright to Dracut Pipeline Segment	J	37.74	PH-T-VP001	PH-Y-W007	42.75351	-71.3238	PSS	Wood frog tadpoles, aquatic beetle larvae, true fly larvae or pupae

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Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
<b>Connecticut Vernal Pools</b>									
Bloomfield	300 Line CT Loop	S	7.5	BL-AC3-VP002	BL-B-W005	41.84487	-72.7721	PFO	Northern caddisflies
	300 Line CT Loop	S	8.5	BL-AC3-VP003	BL-B-W001	41.85779	-72.762	PFO	3 spotted salamander egg masses, 9 wood frog egg masses, wood frog tadpoles, fingernail clams, Northern caddisflies
	300 Line CT Loop	S	8.55	BL-AC3-VP004	BL-B-W001	41.85788	-72.7619	PFO	2 American toad egg masses, fingernail clams, caddisflies
	300 Line CT Loop	S	9	BL-AC3-VP005	BL-P-W001	41.86391	-72.7587	PFO	25 wood frog egg masses, wood frog tadpoles, caddisflies
	300 Line CT Loop	S	9	BL-AC3-VP006	BL-P-W001	41.86847	-72.7563	PFO	8 spotted salamander egg masses, 40 wood frog egg masses, wood frog tadpoles, caddisflies
	300 Line CT Loop	S	9	BL-AC3-VP007	BL-P-W001	41.86876	-72.7567	PFO	12 wood frog egg masses, wood frog tadpoles, caddisflies
	300 Line CT Loop	S	9	BL-AC3-VP008	BL-P-W001	41.86772	-72.7568	PFO	60 wood frog egg masses, wood frog tadpoles, spotted turtles
	300 Line CT Loop	S	9	BL-AC3-VP009	BL-P-W001	41.86529	-72.7578	PFO	5 wood frog egg masses, wood frog tadpoles, caddisflies
	300 Line CT Loop	S	9	BL-AC3-VP010	BL-P-W001	41.86456	-72.759	PFO	11 wood frog egg masses, wood frog tadpoles, caddisflies

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
	300 Line CT Loop	S	9	BL-AC3-VP011	BL-P-W001	41.86417	-72.7586	PFO	4 wood frog egg masses, wood frog tadpoles
	300 Line CT Loop	S	9.73	BL-AC3-VP012	BL-P-W005	41.87273	-72.7541	PFO	1 spotted salamander egg mass, 40 wood frog egg masses, wood frog tadpoles, caddisflies
	300 Line CT Loop	S	9.7	BL-AC3-VP013	BL-P-W005	41.87374	-72.7539	PFO	2 spotted salamander egg masses, 25 wood frog egg masses, wood frog tadpoles, caddisflies, fingernail clams
	300 Line CT Loop	S	9.8	BL-AC3-VP014	BL-P-W005	41.87451	-72.754	PFO	6 wood frog egg masses, wood frog tadpoles, caddisflies
	300 Line CT Loop	S	9.85	BL-AC3-VP015	BL-P-W005	41.87476	-72.7536	PFO	9 spotted salamander egg masses, 28 wood frog egg masses, wood frog tadpoles
	300 Line CT Loop	S	10.38	BL-AC3-VP016	BL-N-W001	41.8809	-72.7486	OTHER	18 spotted salamander egg masses
	300 Line CT Loop	S	10.4	BL-AC3-VP017	BL-N-W001	41.88119	-72.7485	OTHER	3 spotted salamander egg masses, 9 wood frog egg masses, wood frog tadpoles
East Granby	300 Line CT Loop	S	14.35	EG-AC3-VP001	EG-P-W001	41.92885	-72.7174	PFO	24 spotted salamander egg masses, 11 wood frog egg masses, wood frog tadpoles, caddisflies
	300 Line CT Loop	S	14.3	EG-AC3-VP002	EG-P-W001	41.92851	-72.7175	PFO	4 spotted salamander egg masses, 8 wood frog egg masses, wood frog tadpoles

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

Municipality	Facility Name <sup>1</sup>	Segment <sup>1</sup>	Adjacent Milepost <sup>2</sup>	Vernal Pool Number <sup>3</sup>	Associated Wetland <sup>4</sup>	Latitude	Longitude	Existing Cover Type	Species Observed and/or Heard
Windsor	300 Line CT Loop	S	14.08	WI-AC3-VP001	EG-P-W001	41.92703	-72.7188	OTHER	1 wood frog egg mass, wood frog tadpoles
	300 Line CT Loop	S	14.09	WI-AC3-VP002	EG-P-W001	41.92689	-72.7182	PEM	5 spotted salamander egg masses, 16 wood frog egg masses, wood frog tadpoles, caddisflies
	300 Line CT Loop	S	14.1	WI-AC3-VP003	EG-P-W001	41.92708	-72.718	PEM	4 spotted salamander egg masses, caddisflies
	300 Line CT Loop	S	14.15	WI-AC3-VP004	EG-P-W001	41.92732	-72.7178	PEM	1 spotted salamander egg mass, 11 wood frog egg masses, wood frog tadpoles, caddisflies

Source: The data sets used for vernal pools are field surveyed data

<sup>1</sup> Facility Name and Segment refer to the specific NED pipeline component with which the vernal pool is associated.

<sup>2</sup> Refers to mileposts along the existing pipelines for Connecticut, Massachusetts, and New Hampshire.

<sup>3</sup> Vernal pool habitat number generated by AECOM for identification purposes.

<sup>4</sup> Associated wetland number corresponds to the Project Wetland Identification number. Associated wetland information was interpreted through desktop review of aerial imagery, publically available data, or field surveyed data.



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**Attachment A**

**2015 Vernal Pool Habitat Data Forms**

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## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AM-U-VP001  
 Observer: AT      Phone or email:  
 Landowner/Applicant: TANA PROPERTIES      Phone or email:  
 Address: 11 NORTHERN BLVD      City: AMHERST      State: MA      Zip: 03031  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015      Longitude/Latitude (in decimal degrees): 42.81039935, -71.59793444

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ROW CLEARING

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 50%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 3905.61  
 Maximum depth at deepest point at time of survey (include units): 36

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 50% (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 50% (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/15/2015	1	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Flat-spire snails or shells	5/15/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NORTH

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: AN-AC3-VP001  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: GILLETTE COMPANY                      Phone or email:  
 Address: 30 BURTT RD                      City: ANDOVER                      State: MA                      Zip: 01810  
 Location of vernal pool:  
 Survey date(s):: 4/30/2015                      Longitude/Latitude (in decimal degrees): 42.60542918, -71.17093800

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**                      90%

**6. Predominant substrate:**

- Mineral soil                      Depth: 6
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):                      2964.93  
 Maximum depth at deepest point at time of survey (include units):                      1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?                      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     High turbidity     High algae content     Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 75% (16 pts)                       Open (e.g., meadow, agriculture, golf course): 0% (4 pts)  
 Shrub: % (10 pts)                               Developed: 25% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30% (16 pts)                       Open (e.g., meadow, agriculture, golf course): 25% (4 pts)  
 Shrub: % (10 pts)                               Developed: 45% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate     GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs:        \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails):    \_\_\_\_\_

Submergent vegetation:        \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment:    \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/30/2015	3		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**                       Yes                       No

Were spermatophores observed?                       Yes                       No

Were fish observed in the pool?                       Yes                       No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

WATER VERY TANNIC CLOUDY CONDITIONS DIFFICULT VISIBILITY  
 VP ADJACENT TO I-93

PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: AN-AC3-VP002  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: GILLETTE COMPANY                      Phone or email:  
 Address: 30 BURTT RD                      City: ANDOVER                      State: MA                      Zip: 01810  
 Location of vernal pool:  
 Survey date(s):: 4/30/2015                      Longitude/Latitude (in decimal degrees): 42.60504251, -71.17088486

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      PERCHED CULVERT

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Forested wetland (4pts)  | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**      75%

**6. Predominant substrate:**

- |  |  |
|--|--|
| <input type="checkbox"/> Mineral soil                          | Depth: <u>12</u>   |
| <input checked="" type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>DEEP_ZONE</u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      14288.93  
 Maximum depth at deepest point at time of survey (include units):      2'

**8. Hydrology:**

- a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):
- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
  - Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
  - Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
  - Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 60% (16 pts)    
  Open (e.g., meadow, agriculture, golf course): 0% (4 pts)  
 Shrub: % (10 pts)    
  Developed: 40% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30% (16 pts)    
  Open (e.g., meadow, agriculture, golf course): 25% (4 pts)  
 Shrub: % (10 pts)    
  Developed: 45% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate   
 GIS   
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/30/2015	4		
Wood Frog	4/30/2015	11	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

- Presence of Indicator Species**    
 Yes    
 No  
 Were spermatophores observed?    
 Yes    
 No  
 Were fish observed in the pool?    
 Yes    
 No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

VERY TANNIC, OVERCAST DAY, DIFFICULT VISIBILITY  
 ADJACENT TO I-93

PHOTOS



S

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AN-AC3-VP003  
 Observer: C M-H      Phone or email: 503-318-5970  
 Landowner/Applicant: GILLETTE COMPANY      Phone or email:  
 Address: 30 BURTT RD      City: ANDOVER      State: MA      Zip: 01810  
 Location of vernal pool:  
 Survey date(s):: 4/30/2015      Longitude/Latitude (in decimal degrees): 42.60443443, -71.17035572

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input checked="" type="checkbox"/> Herbaceous wetland (4pts) | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)                   | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts)     |   |

**5. Pool canopy cover (%):**      5%

**6. Predominant substrate:**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: ____  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): ____ |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      17125.46  
 Maximum depth at deepest point at time of survey (include units):      2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 95% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 0% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 5% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 25% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 45% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/30/2015	44	Tadpoles	
Spotted Salamander	4/30/2015	13		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/30/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NE



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AN-AC3-VP004  
 Observer: C M-H      Phone or email: 503-318-5970  
 Landowner/Applicant: KELLY, RICHARD J      Phone or email:  
 Address: 3 EXECUTIVE PL      City: ANDOVER      State: MA      Zip: 01810  
 Location of vernal pool:  
 Survey date(s):: 4/30/2015      Longitude/Latitude (in decimal degrees): 42.60030979, -71.16797055

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**
**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      ADJACENT TO UTILITY ROW

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Forested wetland (4pts)  | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**      85%
**6. Predominant substrate:**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: ____  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): ____ |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      1504.37  
 Maximum depth at deepest point at time of survey (include units):      2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 25% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 0% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 55% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 35% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/1/2015	14	Tadpoles	
Spotted Salamander	5/1/2015	2		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AN-AC3-VP005  
 Observer: SH      Phone or email:  
 Landowner/Applicant: KELLY, RICHARD J      Phone or email:  
 Address: 3 EXECUTIVE PL      City: ANDOVER      State: MA      Zip:: 01810  
 Location of vernal pool:  
 Survey date(s):: 4/30/2015      Longitude/Latitude (in decimal degrees): 42.60216401, -71.16883231

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: TREE/BRUSH CLEARING ON TRANSMISSION ROW TO EDGE OF VP

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 20%

**6. Predominant substrate:**

- Mineral soil      Depth: 12
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 4791.26  
 Maximum depth at deepest point at time of survey (include units): 3.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 30% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 60% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 10% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 45% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 35% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate     GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Fairy Shrimp	5/1/2015		Common	
Wood Frog	5/1/2015	7	Tadpoles	
Spotted Salamander	5/1/2015	38		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/1/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
SPOTTED TURTLE	5/1/2015	Few		

Presence of Indicator Species             Yes             No

Were spermatophores observed?         Yes             No

Were fish observed in the pool?         Yes             No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AS-AC4-VP001  
 Observer: JW      Phone or email:  
 Landowner/Applicant: STOCKWELL WALLACE BRUCE      Phone or email:  
 Address: OFF WATSON-SPRUCE CORNER RD City: ASHFIELD      State: MA      Zip: 01330  
 Location of vernal pool:  
 Survey date(s):: 5/14/2015      Longitude/Latitude (in decimal degrees): 42.52760701, -72.87509626

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: POSSIBLE RELIC BEAVER DAM

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 10%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 281.08  
 Maximum depth at deepest point at time of survey (include units): I

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 5% (10 pts)     
  Developed: 45% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 5% (10 pts)     
  Developed: 25% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/14/2015	4	Larvae	
<b>FACULTATIVE SPECIES</b>				
Caddisflies	5/14/2015	Few		
<b>PREDATOR SPECIES</b>				
BULL FROG	5/14/2015	Common		
<b>OTHER SPECIES</b>				
WATER STRIDER	5/14/2015	Common		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 180.00 , MP 27.00



PHOTOS



NW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AS-AC4-VP002  
 Observer: JW      Phone or email:  
 Landowner/Applicant: STOCKWELL WALLACE BRUCE      Phone or email:  
 Address: OFF WATSON-SPRUCE CORNER RD      City: ASHFIELD      State: MA      Zip: 01330  
 Location of vernal pool:  
 Survey date(s):: 5/14/2015      Longitude/Latitude (in decimal degrees): 42.52792531, -72.87451399

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: RELIC BEAVER DAM

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 873.13  
 Maximum depth at deepest point at time of survey (include units): 1.75 FEET

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 60% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 5% (10 pts)                                     
  Developed: 35% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 5% (10 pts)                                     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    
  GIS                     
  Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/14/2015	6	Larvae	
Wood Frog	5/14/2015	3	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/14/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/14/2015	Common		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
RED SPOTTED NEWT	5/14/2015	Common		

Presence of Indicator Species            Yes            No

Were spermatophores observed?        Yes            No

Were fish observed in the pool?        Yes            No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 180.00 , MP 27.05

PHOTOS



SW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AS-AC4-VP003  
 Observer: JW      Phone or email:  
 Landowner/Applicant: STOCKWELL WALLACE BRUCE      Phone or email:  
 Address: OFF WATSON-SPRUCE CORNER RD City: ASHFIELD      State: MA      Zip: 01330  
 Location of vernal pool:  
 Survey date(s):: 5/14/2015      Longitude/Latitude (in decimal degrees): 42.52852160, -72.87334384

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: BEAVER DAM COMPLEX IMPOUNDING ADJACENT STREAM

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 5%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 2538.25  
 Maximum depth at deepest point at time of survey (include units): 5 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear   
  High turbidity   
  High algae content   
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 25% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 70% (10 pts)                             
  Developed: 5% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 60% (10 pts)                             
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate   
 GIS   
 Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/14/2015	12	Tadpoles	
Spotted Salamander	5/14/2015	11	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/14/2015	Few		
Other: PREDACEOUS DIVING BEETLE	5/14/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/14/2015	Common		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
RED SPOTTED NEWT	5/14/2015	Common		

Presence of Indicator Species           
 Yes           
 No

Were spermatophores observed?           
 Yes           
 No

Were fish observed in the pool?           
 Yes           
 No

**SUMMARY**

**22** TOTAL for Pool Characteristics

**26** TOTAL for Pool Envelope and Critical Terrestrial Habitat Area

Other Comments:

LOCATION TRACT# 180.00 , MP 27.10

**PHOTOS**



NW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AS-AC4-VP004  
 Observer: JW      Phone or email:  
 Landowner/Applicant: LILLY SHIRLEY & ALAN W      Phone or email:  
 Address: 966 WATSON-SPRUCE CORNER RD      City: ASHFIELD      State: MA      Zip: 01330  
 Location of vernal pool:  
 Survey date(s):: 5/14/2015      Longitude/Latitude (in decimal degrees): 42.52901097, -72.86424883

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 24
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 33153.06  
 Maximum depth at deepest point at time of survey (include units): 2.75 FEET

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 25% (10 pts)     
  Developed: 25% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 10% (10 pts)     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): >50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/14/2015	22	Larvae	
Wood Frog	5/14/2015	4	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/14/2015	Few		
Other: PREDACEOUS DIVING BEETLE	5/14/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/14/2015	Many		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
RED SPOTTED NEWT	5/14/2015	Common		
MOSQUITO LARVAE	5/14/2015	Many		
WATER STRIDER	5/14/2015	Common		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 187.00 , MP 27.60

**PHOTOS**



WEST

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AS-AC4-VP005  
 Observer: JW      Phone or email:  
 Landowner/Applicant: WMECO      Phone or email:  
 Address: BUG HILL RD      City: ASHFIELD      State: MA      Zip: 01330  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015      Longitude/Latitude (in decimal degrees): 42.53318933, -72.83680735

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**
**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- |   |                                     |   |
|---|-------------------------------------|---|
| <input checked="" type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input type="checkbox"/> Dense till                             | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Forested wetland (4pts)  | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):** 85%
**6. Predominant substrate:**

- |  |   |
|--|---|
| <input type="checkbox"/> Mineral soil                          | Depth: <u>4</u>   |
| <input checked="" type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>DEEPEST ZONE</u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1151.04  
 Maximum depth at deepest point at time of survey (include units): 6

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 10% (10 pts)     
  Developed: 40% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 20% (10 pts)     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/15/2015	2	Larvae	
Blue-spotted Salamander	5/15/2015	3	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Spring Peeper	5/15/2015	Few	ADULT	
Dragonfly larvae or exuviae	5/15/2015	Few		
Caddisflies	5/15/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/15/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
ISOPOD	5/15/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22** TOTAL for Pool Characteristics

**26** TOTAL for Pool Envelope and Critical Terrestrial Habitat Area

Other Comments:

LOCATION TRACT# 198.00, MP 29.00  
DEVELOPED COVER TYPE MEANS POWERLINE EASEMENT

**PHOTOS**



NE

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: AS-AC4-VP006  
 Observer: JW    Phone or email:  
 Landowner/Applicant: WMECO                      Phone or email:  
 Address:                      BUG HILL RD                      City: ASHFIELD                      State: MA                      Zip: 01330  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015                      Longitude/Latitude (in decimal degrees): 42.53331070, -72.83519309

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**
**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: RELIC BEAVER DAM PRESENT

**3. Parent material:**

- |   |                                     |   |
|---|-------------------------------------|---|
| <input checked="" type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input type="checkbox"/> Dense till                             | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input checked="" type="checkbox"/> Shrub wetland (4pts)     | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):** 50%
**6. Predominant substrate:**

- |  |   |
|--|---|
| <input type="checkbox"/> Mineral soil                          | Depth: <u>18</u>  |
| <input checked="" type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>DEEPEST ZONE</u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 27442.09  
 Maximum depth at deepest point at time of survey (include units): 7 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear   
  High turbidity   
  High algae content   
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 10% (10 pts)                             
  Developed: 40% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 20% (10 pts)                             
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate   
 GIS   
 Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/15/2015	17	Larvae	FOUND DEAD ADULT SALAMANDER
<b>FACULTATIVE SPECIES</b>	<b>DATE</b>	<b>ABUNDANCE</b>	<b>NOTES</b>	
<b>PREDATOR SPECIES</b>	<b>DATE</b>	<b>ABUNDANCE</b>	<b>NOTES</b>	
BULL FROG	5/15/2015	Common		
<b>OTHER SPECIES</b>	<b>DATE</b>	<b>ABUNDANCE</b>	<b>NOTES</b>	
RED SPOTTED NEWT	5/15/2015	Few		
LEOPARD FROG	5/15/2015	Few		

Presence of Indicator Species           
 Yes           
 No

Were spermatophores observed?           
 Yes           
 No

Were fish observed in the pool?           
 Yes           
 No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 198.00, MP 29.10  
 DEVELOPED COVER TYPE MEANS POWERLINE EASEMENT

PHOTOS



EAST



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AS-AC4-VP007  
 Observer: JW      Phone or email:  
 Landowner/Applicant: WMECO      Phone or email:  
 Address: BUG HILL RD      City: ASHFIELD      State: MA      Zip: 01330  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015      Longitude/Latitude (in decimal degrees): 42.53372407, -72.83346127

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts)                                 |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input checked="" type="checkbox"/> Other (variable points): SUBSIDENCE, NATURAL DEPRESSION |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):** 90%

**6. Predominant substrate:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: <u>    </u>  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>    </u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 339.62  
 Maximum depth at deepest point at time of survey (include units): 14 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 20% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 90% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/15/2015	14	Larvae	
<b>FACULTATIVE SPECIES</b>				
Caddisflies	5/15/2015	Many		
MOSQUITO LARVAE	5/15/2015	Many		
<b>PREDATOR SPECIES</b>				
BULL FROG	5/15/2015	Few		
<b>OTHER SPECIES</b>				

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 200.00, MP 29.20  
 DEVELOPED AREA MEANS POWERLINE EASEMENT

PHOTOS



NORTH

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AS-AC4-VP008  
 Observer: JW      Phone or email:  
 Landowner/Applicant: WMECO      Phone or email:  
 Address: BUG HILL RD      City: ASHFIELD      State: MA      Zip: 01330  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015      Longitude/Latitude (in decimal degrees): 42.53383222, -72.83269769

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 95%

**6. Predominant substrate:**

- Mineral soil      Depth: 20
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 0  
 Maximum depth at deepest point at time of survey (include units): 13 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear   
  High turbidity   
  High algae content   
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 60% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 40% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate   
 GIS   
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/15/2015	4	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/15/2015	Few		
MOSQUITO LARVAE	5/15/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species   
 Yes   
 No

Were spermatophores observed?   
 Yes   
 No

Were fish observed in the pool?   
 Yes   
 No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 200.00, MP 29.25  
 DEVELOPED AREA MEANS POWERLINE EASEMENT

PHOTOS



SW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AS-AC4-VP009  
 Observer: JW      Phone or email:  
 Landowner/Applicant: WALKER NORMAN S      Phone or email:  
 Address: 411 HAWLEY RD      City: ASHFIELD      State: MA      Zip: 01330  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015      Longitude/Latitude (in decimal degrees): 42.53517010, -72.82387542

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 85%

**6. Predominant substrate:**

- Mineral soil      Depth: 14
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 0  
 Maximum depth at deepest point at time of survey (include units): 5 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 30% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 90% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, sedges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/15/2015	2	Larvae	ALSO OBSERVED A FEW TADPOLES
Spotted Salamander	5/15/2015	7	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
MOSQUITO LARVAE	5/15/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
RED SPOTTED NEWT	5/15/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 206.00, MP 29.70  
DEVELOPED AREA MEANS POWERLINE EASEMENT



PHOTOS



WEST

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: AS-AC4-VP010  
 Observer: JW      Phone or email:  
 Landowner/Applicant: PYLANT JOHN      Phone or email:  
 Address: 582 PFERSICK RD      City: ASHFIELD      State: MA      Zip: 01370  
 Location of vernal pool:  
 Survey date(s):: 5/16/2015      Longitude/Latitude (in decimal degrees): 42.53959400, -72.74773650

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: RELIC BEAVER DAM IMPOUNDING WATER

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 10%

**6. Predominant substrate:**

- Mineral soil      Depth: 14
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST POOL

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 3490.38  
 Maximum depth at deepest point at time of survey (include units): 3 FEET

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 20% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 90% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/16/2015	21	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Dragonfly larvae or exuviae	5/16/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
PREDACEOUS DIVING BEETLE	5/16/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
WATER STRIDER	5/16/2015	Common		
RED BELLY NEWT	5/16/2015	Common		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22** TOTAL for Pool Characteristics

**16** TOTAL for Pool Envelope and Critical Terrestrial Habitat Area

Other Comments:

LOCATION TRACT# 236.01, MP 0.95  
DEVELOPED LAND TYPE MEANS POWERLINE EASEMENT

**PHOTOS**



NORTH

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BK-U-VP001  
 Observer: AT      Phone or email:  
 Landowner/Applicant: AXELSON, SCOTT R      Phone or email:  
 Address: RUONALA RD      City: BROOKLINE      State: MA      Zip: 03033  
 Location of vernal pool:  
 Survey date(s):: 5/19/2015      Longitude/Latitude (in decimal degrees): 42.79203477, -71.66194885

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 70%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 90.34  
 Maximum depth at deepest point at time of survey (include units): 6

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 50% (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 49% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 49% (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/19/2015			adult
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Spring Peeper	5/19/2015	Few		
Gray Tree Frog	5/19/2015	Few	heard 5/18/15	
Dragonfly larvae or exuviae	5/19/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: DR-AC3-VP001  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: Loon Realty LLC    Phone or email:  
 Address: 274 LOON HILL RD    City: DRACUT    State: MA    Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/01/2015    Longitude/Latitude (in decimal degrees): 42.67801250, -71.28366854

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Forested wetland (4pts)  | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):** 65%

**6. Predominant substrate:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: <u>    </u>  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>    </u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 721.30  
 Maximum depth at deepest point at time of survey (include units): 1.2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)     Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate             GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/2/2015	3		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**             Yes             No

Were spermatophores observed?             Yes             No

Were fish observed in the pool?             Yes             No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



S

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: DR-AC3-VP002  
 Observer: SH      Phone or email:  
 Landowner/Applicant: DRACO HOMES INC.      Phone or email:  
 Address: 43 BERUBE LN      City: DRACUT      State: MA      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/04/2015      Longitude/Latitude (in decimal degrees): 42.68853363, -71.26252475

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: BEAVER ACTIVITY

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 65%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 92310.89  
 Maximum depth at deepest point at time of survey (include units): 3.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 50% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 50% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 50% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate     GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: >50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/5/2015	85	Tadpoles	
Spotted Salamander	5/5/2015	2		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/5/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species             Yes             No

Were spermatophores observed?         Yes             No

Were fish observed in the pool?         Yes             No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

2/3 FORESTED WETLAND  
1/3 HERBACEOUS WETLAND

BEAVER DAM IMPOUNDMENT

PHOTOS



NE



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: DR-AC3-VP003  
 Observer: SH      Phone or email:  
 Landowner/Applicant: DRACO HOMES INC.      Phone or email:  
 Address: 43 BERUBE LN      City: DRACUT      State: MA      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/04/2015      Longitude/Latitude (in decimal degrees): 42.68559229, -71.26402532

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: TREE/BRUSH CLEARING ON ADJACENT ROW

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 60%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 3336.61  
 Maximum depth at deepest point at time of survey (include units): 3'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 60% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 40% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 0% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 40% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 45% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Fairy Shrimp	5/5/2015		Few	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
GREEN FROG	5/5/2015	Common		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



E



## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: DR-AC3-VP004  
 Observer: SH    Phone or email:  
 Landowner/Applicant: NEW ENGLAND POWER COMPANY                      Phone or email:  
 Address: 40 SYLVAN RD                      City: DRACUT                      State: MA                      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/06/2015                      Longitude/Latitude (in decimal degrees): 42.69095177, -71.27003717

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):                      RECENTLY MOWED FLOODED ROW WITH TIRE RUTS

Pool Origin:    Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:    RECENTLY MOWED

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input checked="" type="checkbox"/> Shrub wetland (4pts)     | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**    0%

**6. Predominant substrate:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: <u>    </u>  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>    </u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):    304.75  
 Maximum depth at deepest point at time of survey (include units):    6"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?    Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 5% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 95% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 55% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: >50%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/6/2015	7	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/6/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

- Presence of Indicator Species**     
 Yes     
 No  
 Were spermatophores observed?     
 Yes     
 No  
 Were fish observed in the pool?     
 Yes     
 No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: DR-AC3-VP005  
 Observer: SH      Phone or email:  
 Landowner/Applicant: COUTURE DONALD A. (TE)      Phone or email:  
 Address: 23 MONTE ROAD      City: DRACUT      State: MA      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/06/2015      Longitude/Latitude (in decimal degrees): 42.69353930, -71.25648500

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: IN UTILITY ROW

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 2189.56  
 Maximum depth at deepest point at time of survey (include units): 1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 30% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 70% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 45% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 35% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): >50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/7/2015		Tadpoles	1/2" LONG TADPOLES
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/7/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

- Presence of Indicator Species**     
 Yes     
 No  
 Were spermatophores observed?     
 Yes     
 No  
 Were fish observed in the pool?     
 Yes     
 No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NE

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: DR-AC3-VP006  
 Observer: SH      Phone or email:  
 Landowner/Applicant: MONTE CARL JR.      Phone or email:  
 Address: 470 WHEELER RD      City: DRACUT      State: MA      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/06/2015      Longitude/Latitude (in decimal degrees): 42.69083040, -71.25960065

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**
**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: PART OF POOL IN ROW

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Forested wetland (4pts)  | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):** 60%
**6. Predominant substrate:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: <u>    </u>  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>    </u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 8587.52  
 Maximum depth at deepest point at time of survey (include units): 2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: >50%

Emergent vegetation (grasses, seges, rushes, cattails): >50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/7/2015	7	Tadpoles	1/2" TADPOLES
Spotted Salamander	5/7/2015	2		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/7/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:



PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: DR-AC3-VP007  
 Observer: SH      Phone or email:  
 Landowner/Applicant: COUTURE DONALD A. (TE)      Phone or email:  
 Address: 23 MONTE ROAD      City: DRACUT      State: MA      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/06/2015      Longitude/Latitude (in decimal degrees): 42.69389595, -71.25640993

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ADJACENT TO ROW

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 80%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 301.35  
 Maximum depth at deepest point at time of survey (include units): 1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 85% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 40% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 40% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/7/2015	3		
Wood Frog	5/7/2015	2		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/7/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



S

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: DR-AC3-VP008  
 Observer: SH      Phone or email:  
 Landowner/Applicant: VINAL RICHARD & BERNICE TRSTS      Phone or email:  
 Address: 561 BROADWAY RD      City: DRACUT      State: MA      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/08/2015      Longitude/Latitude (in decimal degrees): 42.68317439, -71.28148241

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 65%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1732.49  
 Maximum depth at deepest point at time of survey (include units): 3.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 20% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 40% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/8/2015	13	Tadpoles	
Spotted Salamander	5/8/2015	2		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
NORTHERN LEOPARD FROG	5/8/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

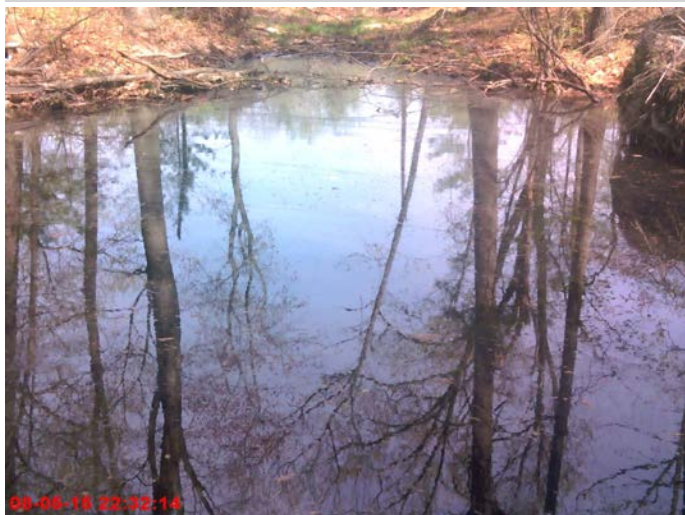
**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: DR-AC3-VP009  
 Observer: SH      Phone or email:  
 Landowner/Applicant: VINAL RICHARD & BERNICE TRSTS      Phone or email:  
 Address: 561 BROADWAY RD      City: DRACUT      State: MA      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/08/2015      Longitude/Latitude (in decimal degrees): 42.68255004, -71.28111851

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 80%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 2391.86  
 Maximum depth at deepest point at time of survey (include units): 1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 0% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 25% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/8/2015	13		
Wood Frog	5/8/2015	3	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



S

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: DR-AC3-VP010  
 Observer: SH      Phone or email:  
 Landowner/Applicant: VINAL RICHARD & BERNICE TRSTS      Phone or email:  
 Address: 561 BROADWAY RD      City: DRACUT      State: MA      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/08/2015      Longitude/Latitude (in decimal degrees): 42.68139533, -71.28077888

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 85%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 3012.76  
 Maximum depth at deepest point at time of survey (include units): 4'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     High turbidity     High algae content     Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)                       Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                               Developed: 0% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 90% (16 pts)                       Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                               Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate     GIS                       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, sedges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/8/2015	29		
Wood Frog	5/8/2015	12	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/8/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species     Yes     No

Were spermatophores observed?     Yes     No

Were fish observed in the pool?     Yes     No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: DR-AC3-VP011  
 Observer: SH      Phone or email:  
 Landowner/Applicant: VINAL RICHARD & BERNICE TRSTS      Phone or email:  
 Address: 561 BROADWAY RD      City: DRACUT      State: MA      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/12/2015      Longitude/Latitude (in decimal degrees): 42.68315954, -71.28056577

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 70%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 2737.91  
 Maximum depth at deepest point at time of survey (include units): 1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 20% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 25% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: >50%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/13/2015	8	Tadpoles	
Spotted Salamander	5/13/2015	2		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/13/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N



## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: DR-AC3-VP012  
 Observer: SH    Phone or email:  
 Landowner/Applicant: VINAL RICHARD & BERNICE TRSTS                      Phone or email:  
 Address: 561 BROADWAY RD                      City: DRACUT                      State: MA                      Zip: 01826  
 Location of vernal pool:  
 Survey date(s):: 5/12/2015                      Longitude/Latitude (in decimal degrees): 42.68281804, -71.28037546

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 80%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1235.83  
 Maximum depth at deepest point at time of survey (include units): 2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 30% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 25% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/13/2015	9		
Wood Frog	5/13/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

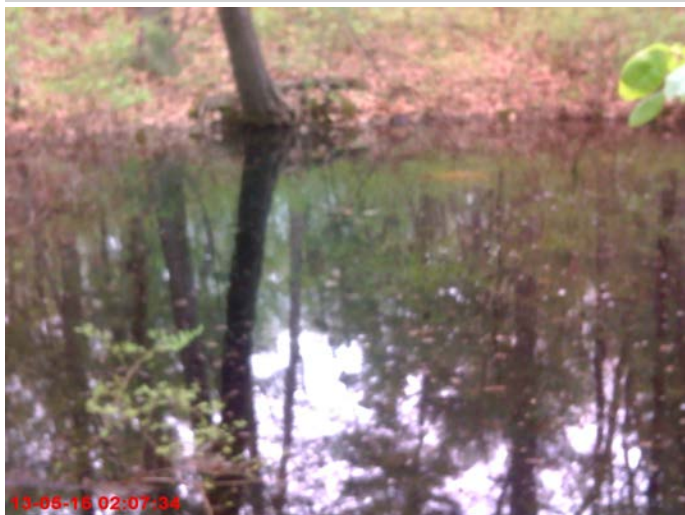
**SUMMARY**

**24 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: ER-AC3-VP001  
 Observer: SH      Phone or email:  
 Landowner/Applicant: CLARK ROBERT      Phone or email:  
 Address: 209 OLD STATE ROAD      City: ERVING      State: MA      Zip: 01344  
 Location of vernal pool:  
 Survey date(s):: 5/14/2015      Longitude/Latitude (in decimal degrees): 42.58200167, -72.47782529

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 85%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 875.77  
 Maximum depth at deepest point at time of survey (include units): 3"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 95% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/16/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: HA-AC4-VP001  
 Observer: JW      Phone or email:  
 Landowner/Applicant: Whitman Farm Family Trust      Phone or email:  
 Address: 107 POTTER MTN RD      City: HANCOCK      State: MA      Zip:: 01201  
 Location of vernal pool:  
 Survey date(s):: 5/06/2015      Longitude/Latitude (in decimal degrees): 42.53675883, -73.30845343

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: Within a farm field, live stock area, wetland fenced off goats outside area. small rock dams and walls shaping area of larger wetland surrounding pool.

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 5
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): deepest zone

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 10521.86  
 Maximum depth at deepest point at time of survey (include units): 6 inches

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested:   %      (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 95%      (4 pts)  
 Shrub: 5%      (10 pts)     
  Developed:   %      (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30%      (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 65%      (4 pts)  
 Shrub:   %      (10 pts)     
  Developed: 5%      (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate       GIS       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs:      <10%

Emergent vegetation (grasses, seges, rushes, cattails):      >50%

Submergent vegetation:      <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment:      1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/6/2015	31	Larvae	VERY YOUNG LARVAE
Wood Frog	5/6/2015	2	Tadpoles	JUST EGG MASSES
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Spire-shaped snails or shells	5/6/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULLFROG	5/6/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

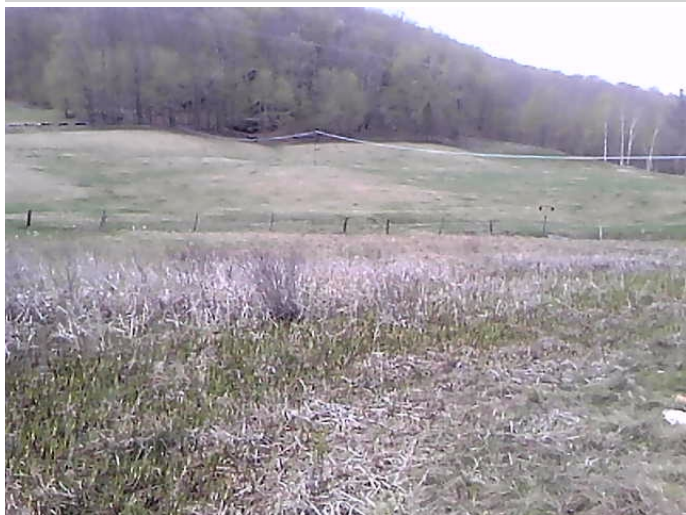
**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATED TRACT 9.01, MP 1.75



PHOTOS



SOUTH

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: LU-AC3-VP001  
 Observer: SH      Phone or email:  
 Landowner/Applicant: TWIN CITY BAPTIST TEMPLE INC      Phone or email:  
 Address: 194 ELECTRIC AVE      City: LUNENBURG      State: MA      Zip: 01462  
 Location of vernal pool:  
 Survey date(s):: 5/11/2015      Longitude/Latitude (in decimal degrees): 42.58630101, -71.75992564

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: TIRE RUTS THROUGH POOL LOCATED ON EXISTING ROW

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 20%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 707.21  
 Maximum depth at deepest point at time of survey (include units): 1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 15% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 85% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 65% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 35% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/11/2015	15		
Unidentified Mole Salamander	5/11/2015	1		4 EGGS IN TUBULAR EGG MASS POSSIBLE BLUE SPOTTED OR JEFF
Wood Frog	5/11/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



E

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: LU-AC3-VP002  
 Observer: SH      Phone or email:  
 Landowner/Applicant: Brixmor GA Lunenberg Crossing LLC      Phone or email:  
 Address: 301 MASS AVE      City: LUNENBURG      State: MA      Zip: 01462  
 Location of vernal pool:  
 Survey date(s):: 5/11/2015      Longitude/Latitude (in decimal degrees): 42.59443424, -71.75664896

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: RETENTION BASIN SHOPPING PLAZA

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 15%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 8413.73  
 Maximum depth at deepest point at time of survey (include units): 1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: % (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 55% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 45% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 40% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 40% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): >50%

Submergent vegetation: >50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/11/2015	7		
Wood Frog	5/11/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/11/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



S

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: LU-AC3-VP003  
 Observer: SH    Phone or email:  
 Landowner/Applicant: TWIN CITY BAPTIST TEMPLE INC                      Phone or email:  
 Address: 101 PLEASANT ST                      City: LUNENBURG                      State: MA                      Zip: 01462  
 Location of vernal pool:  
 Survey date(s):: 5/11/2015                      Longitude/Latitude (in decimal degrees): 42.58451940, -71.76716736

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: TIRE RUTS LOCATED IN UTILITY ROW ON ACCESS ROAD

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input checked="" type="checkbox"/> Herbaceous wetland (4pts) | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)                   | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts)     |   |

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: <u>    </u>  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>    </u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1525.77  
 Maximum depth at deepest point at time of survey (include units): 6"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 15% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 85% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 85% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate   
 GIS                     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, sedges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: None

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/12/2015	2		
Wood Frog	5/12/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
American Toad	5/12/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species           
 Yes           
 No

Were spermatophores observed?           
 Yes           
 No

Were fish observed in the pool?           
 Yes           
 No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



SW

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: LU-AC3-VP004  
 Observer: SH    Phone or email:  
 Landowner/Applicant: TWIN CITY BAPTIST TEMPLE INC                      Phone or email:  
 Address: 101 PLEASANT ST                      City: LUNENBURG                      State: MA                      Zip: 01462  
 Location of vernal pool:  
 Survey date(s):: 5/11/2015                      Longitude/Latitude (in decimal degrees): 42.58457314, -71.76634843

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 90%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 683.30  
 Maximum depth at deepest point at time of survey (include units): 8"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 30% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 85% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: >50%

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/12/2015	5		
Wood Frog	5/12/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/12/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



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## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: LY-AC4-VP001  
 Observer: SH      Phone or email:  
 Landowner/Applicant: LYNNFIELD CTR WATER DIST      Phone or email:  
 Address: Not Listed      City: LYNNFIELD      State: MA      Zip: 01940  
 Location of vernal pool:  
 Survey date(s):: 5/19/2015      Longitude/Latitude (in decimal degrees): 42.56563311, -71.05007509

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ATV TIRE RUTS

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 25%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 6046.76  
 Maximum depth at deepest point at time of survey (include units): 4"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 50% (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 25% (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/19/2015	2		
Spotted Salamander	5/19/2015	4		BUSTED EGG MASSES
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/19/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULLFROG	5/19/2015	Few		
CRAYFISH	5/19/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
GIANT WATER BUG	5/19/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22** TOTAL for Pool Characteristics

**26** TOTAL for Pool Envelope and Critical Terrestrial Habitat Area

Other Comments:

HMM#2417  
MILE 1.69

**PHOTOS**



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## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: LY-AC4-VP002  
 Observer: SH    Phone or email:  
 Landowner/Applicant: LYNNFIELD CTR WATER DIST                      Phone or email:  
 Address: Not Listed                                      City: LYNNFIELD                      State: MA                      Zip: 01940  
 Location of vernal pool:  
 Survey date(s):: 5/19/2015                      Longitude/Latitude (in decimal degrees): 42.56614979, -71.04480806

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")
- Loose till
- Peat
- Dense till
- Alluvium
- Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)
- Herbaceous wetland (4pts)
- Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)
- Open water (2 pts)
- Other (variable points):
- Peatland (acidic fen or bog) (4pts)
- Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 90%

**6. Predominant substrate:**

- Mineral soil
- Depth: 4
- Organic matter (peat/muck)
- Sampling location (e.g.,deepest zone, edge,etc.): DEEP

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 3521.23  
 Maximum depth at deepest point at time of survey (include units): 6"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 100% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/20/2015	2	Tadpoles	
Spotted Salamander	5/20/2015	16		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/20/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



20-05-15 00:20:29

NW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: LY-AC4-VP003  
 Observer: SH      Phone or email:  
 Landowner/Applicant: LYNNFIELD CTR WATER DIST      Phone or email:  
 Address: 100 RESEARCH DR      City: LYNNFIELD      State: MA      Zip: 01940  
 Location of vernal pool:  
 Survey date(s):: 5/19/2015      Longitude/Latitude (in decimal degrees): 42.56603820, -71.03811259

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      ATV ACCESS ROAD TIRE RUTS

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):      IMPOUNDED SURFACE WATER
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**      55%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      554.78  
 Maximum depth at deepest point at time of survey (include units):      4"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**14 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course):   % (4 pts)  
 Shrub:   % (10 pts)                                     
  Developed:   % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 100% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course):   % (4 pts)  
 Shrub:   % (10 pts)                                     
  Developed:   % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    GIS                     
  Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs:   NA  

Emergent vegetation (grasses, seges, rushes, cattails):   NA  

Submergent vegetation:   NA  

Dead branches and downed woody material (branches/twigs) available for egg attachment:   1 - 10  

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/20/2015	22		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULLFROG	5/20/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species            Yes            No

Were spermatophores observed?        Yes            No

Were fish observed in the pool?        Yes            No

**SUMMARY**

**14 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

HMM#2371  
MILE 2.3

PHOTOS



E

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: LY-AC4-VP004  
 Observer: SH    Phone or email:  
 Landowner/Applicant: LYNNFIELD CTR WATER DIST                      Phone or email:  
 Address: 100 RESEARCH DR                      City: LYNNFIELD                      State: MA                      Zip: 01940  
 Location of vernal pool:  
 Survey date(s):: 5/19/2015                      Longitude/Latitude (in decimal degrees): 42.56604682, -71.03854014

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**
**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:    ATV ACCESS ROAD TIRE RUTS

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):    IMPOUNDED WATER ON ACCESS ROAD
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**    55%
**6. Predominant substrate:**

- Mineral soil                      Depth: \_\_\_
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.): \_\_\_

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):    449.04

Maximum depth at deepest point at time of survey (include units):    5"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?    Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 100% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate     GIS                       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/20/2015	27		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULLFROG	5/20/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species             Yes             No

Were spermatophores observed?         Yes             No

Were fish observed in the pool?         Yes             No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

HMM#2371  
MILE 2.29



PHOTOS



E

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: LY-AC4-VP005  
 Observer: SH      Phone or email:  
 Landowner/Applicant: LYNNFIELD CTR WATER DIST      Phone or email:  
 Address: 83 PHILLIPS ROAD      City: LYNNFIELD      State: MA      Zip: 01940  
 Location of vernal pool:  
 Survey date(s):: 5/19/2015      Longitude/Latitude (in decimal degrees): 42.56558853, -71.05702496

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 80%

**6. Predominant substrate:**

- Mineral soil      Depth: 10"
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1983.76  
 Maximum depth at deepest point at time of survey (include units): 12"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 90% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate      GIS                       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/20/2015		Tadpoles	
Spotted Salamander	5/20/2015	4		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Spire-shaped snails or shells	5/20/2015	Many		
Caddisflies	5/20/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species             Yes             No

Were spermatophores observed?         Yes             No

Were fish observed in the pool?         Yes             No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

HMM# 2395  
MILE 1.35

PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: ME-AC3-VP001  
 Observer: SH      Phone or email:  
 Landowner/Applicant: BENSON ANN S RLE      Phone or email:  
 Address: 97 MYRTLE ST      City: METHUEN      State: MA      Zip: 01844  
 Location of vernal pool:  
 Survey date(s):: 5/07/2015      Longitude/Latitude (in decimal degrees): 42.71229294, -71.24343385

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: IN UTILITY ROW

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 15%

**6. Predominant substrate:**

- Mineral soil      Depth: 18
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 13398.21  
 Maximum depth at deepest point at time of survey (include units): 2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 50% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 50% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate   
 GIS                     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: >50%

Emergent vegetation (grasses, seges, rushes, cattails): >50%

Submergent vegetation: >50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/8/2015		Tadpoles	
<b>FACULTATIVE SPECIES</b>				
Caddisflies	5/8/2015	Common		
<b>PREDATOR SPECIES</b>				
<b>OTHER SPECIES</b>				
GREEN FROG	5/8/2015	Common		

Presence of Indicator Species     Yes     No

Were spermatophores observed?     Yes     No

Were fish observed in the pool?     Yes     No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NE

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: ME-AC3-VP002  
 Observer: SH    Phone or email:  
 Landowner/Applicant: COLLIER DIANE                      Phone or email:  
 Address: 532 FOREST ST LT A                      City: METHUEN                      State: MA                      Zip: 01844  
 Location of vernal pool:  
 Survey date(s):: 5/07/2015                      Longitude/Latitude (in decimal degrees): 42.71855934, -71.22968805

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):                      MANMADE

Pool Origin: Small pond/constructed pond

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):                      MANMADE POND
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**                      10%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):                      3987.98  
 Maximum depth at deepest point at time of survey (include units):                      5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?                      Permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**14 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 30% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 70% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 25% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate    
 GIS                     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: None

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/8/2015	8		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/8/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

- Presence of Indicator Species**                     
 Yes                     
 No  
Were spermatophores observed?                     
 Yes                     
 No  
Were fish observed in the pool?                     
 Yes                     
 No

**SUMMARY**

**14 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



E

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: ME-AC3-VP003  
 Observer: SH    Phone or email:  
 Landowner/Applicant: BETHUNE QUENTIN A                      Phone or email:  
 Address: 145 HAMPSHIRE RD                      City: METHUEN                      State: MA                      Zip: 01844  
 Location of vernal pool:  
 Survey date(s):: 5/08/2015                      Longitude/Latitude (in decimal degrees): 42.74022444, -71.22333393

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 65%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1478.36  
 Maximum depth at deepest point at time of survey (include units): 6"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 95% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 40% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 55% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/9/2015	14	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: ME-AC3-VP004  
 Observer: SH      Phone or email:  
 Landowner/Applicant: IANNUCILLI MARK S      Phone or email:  
 Address: 117 HAMPSHIRE RD      City: METHUEN      State: MA      Zip: 01844  
 Location of vernal pool:  
 Survey date(s):: 5/08/2015      Longitude/Latitude (in decimal degrees): 42.74039684, -71.21887515

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 50%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 8307.81  
 Maximum depth at deepest point at time of survey (include units): 1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 95% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 20% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 75% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate             GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: >50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/9/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/9/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
GREEN FROG	5/9/2015			

Presence of Indicator Species             Yes             No

Were spermatophores observed?             Yes             No

Were fish observed in the pool?             Yes             No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NW



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: ME-AC3-VP005  
 Observer: SH      Phone or email:  
 Landowner/Applicant: LIPONIS BESSIE      Phone or email:  
 Address: VP HAMPSHIRE RD      City: METHUEN      State: MA      Zip: 01844  
 Location of vernal pool:  
 Survey date(s):: 5/08/2015      Longitude/Latitude (in decimal degrees): 42.74246351, -71.21111157

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 95%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 388.37  
 Maximum depth at deepest point at time of survey (include units): 4"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 5% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/9/2015		Tadpoles	
Fairy Shrimp	5/9/2015		Common	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

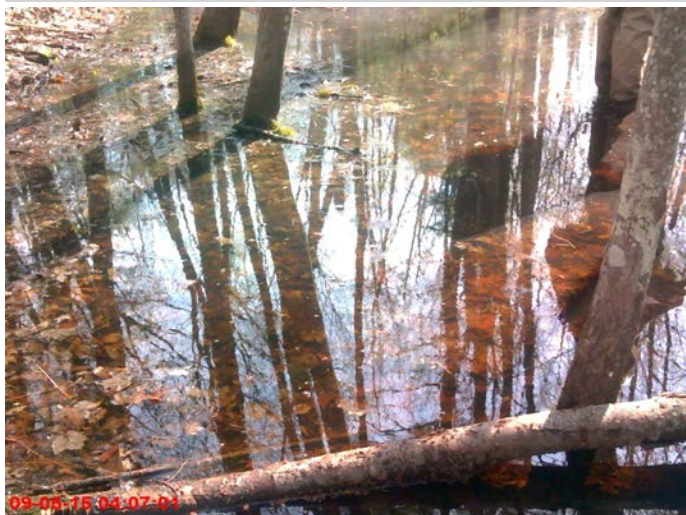
**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



SW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: MO-AC3-VP001  
 Observer: SH      Phone or email:  
 Landowner/Applicant: QUINNEHTUK COMPANY THE (WMECO)      Phone or email:  
 Address: GREENFIELD RD      City: MONTAGUE      State: MA      Zip: 01351  
 Location of vernal pool:  
 Survey date(s):: 5/16/2015      Longitude/Latitude (in decimal degrees): 42.56462497, -72.55408575

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ROW

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 90%

**6. Predominant substrate:**

- Mineral soil      Depth: 12
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 7283.88  
 Maximum depth at deepest point at time of survey (include units): 1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 70% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 30% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 55% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 40% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate             GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: >50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/17/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**             Yes             No

Were spermatophores observed?             Yes             No

Were fish observed in the pool?             Yes             No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: NO-AC3-VP001  
 Observer: SH    Phone or email:  
 Landowner/Applicant: Ethier Jeffrey R. & Antes James H                      Phone or email:  
 Address: OLD WENDELL RD                      City: NORTHFIELD                      State: MA                      Zip:: 01360  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015                      Longitude/Latitude (in decimal degrees): 42.65842790, -72.42480859

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):                      SHALLOW AQUITARD - POOL ON TOP OF HILL WITH EXPOSEDBEDROCK

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: TRANSMISSION LINES AND GRAVEL ACCESS ROAD

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**                      5%

**6. Predominant substrate:**

- Mineral soil                      Depth: \_\_\_
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.): \_\_\_

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):                      884.09

Maximum depth at deepest point at time of survey (include units):                      1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?                      Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**14 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 45% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 40% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 15% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 85% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: None

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/14/2015	21		
Wood Frog	5/14/2015	1		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
EASTERN NEWT	5/14/2015	Common		
BULLFROG	5/14/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**14 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:



PHOTOS



S

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: NO-AC3-VP002  
 Observer: SH    Phone or email:  
 Landowner/Applicant: Ethier Jeffrey R. & Antes James H                      Phone or email:  
 Address: OLD WENDELL RD                      City: NORTHFIELD                      State: MA                      Zip: 01360  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015                      Longitude/Latitude (in decimal degrees): 42.65660113, -72.42647877

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 5%

**6. Predominant substrate:**

- Mineral soil                      Depth: 4
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 526.76  
 Maximum depth at deepest point at time of survey (include units): 1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 30% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 65% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 5% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 85% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): >50%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: None

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/14/2015	4	Tadpoles	
Spotted Salamander	5/14/2015	43		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
EASTERN NEWT	5/14/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
GREEN FROG	5/14/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



E

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NO-AC3-VP003  
 Observer: SH      Phone or email:  
 Landowner/Applicant: NELSON JERE      Phone or email:  
 Address: GULF RD      City: NORTHFIELD      State: MA      Zip:: 01360  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015      Longitude/Latitude (in decimal degrees): 42.66581153, -72.41966189

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ADJACENT TO LOGGING ROAD  
 DRAINAGE PIPE WITH CULVERT UNDER ROAD

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 40%

**6. Predominant substrate:**

- Mineral soil      Depth: 12
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): MID

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 2303.49  
 Maximum depth at deepest point at time of survey (include units): 5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 50% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 55% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 45% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/15/2015	9		
Spotted Salamander	5/15/2015	31		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/15/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULLFROG	5/15/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



SW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NO-AC3-VP004  
 Observer: SH      Phone or email:  
 Landowner/Applicant: NELSON JERE      Phone or email:  
 Address: GULF RD      City: NORTHFIELD      State: MA      Zip: 01360  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015      Longitude/Latitude (in decimal degrees): 42.66692625, -72.41901680

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input checked="" type="checkbox"/> Herbaceous wetland (4pts) | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)                   | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts)     |   |

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- |  |  |
|--|--|
| <input type="checkbox"/> Mineral soil                          | Depth: <u>24</u>   |
| <input checked="" type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>DEEP_ZONE</u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1221.94  
 Maximum depth at deepest point at time of survey (include units): 3'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 30% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 70% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 55% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 45% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: >50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/15/2015	3		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULLFROG	5/15/2015	Common		
EASTERN NEWT	5/15/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NO-AC3-VP005  
 Observer: SH      Phone or email:  
 Landowner/Applicant: NELSON JERE      Phone or email:  
 Address: GULF RD      City: NORTHFIELD      State: MA      Zip: 01360  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015      Longitude/Latitude (in decimal degrees): 42.6655481, -72.41781388

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Small pond/constructed pond

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input checked="" type="checkbox"/> Open water (2 pts)    | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: <u>    </u>  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>    </u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1831.37  
 Maximum depth at deepest point at time of survey (include units): 2.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: % (16 pts)    
  Open (e.g., meadow, agriculture, golf course): 100% (4 pts)  
 Shrub: % (10 pts)    
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)    
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)    
  Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate   
 GIS   
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: >50%

Dead branches and downed woody material (branches/twigs) available for egg attachment:     

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/15/2015	12		
Wood Frog	5/15/2015	3		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
GREEN FROG	5/15/2015	Few		

Presence of Indicator Species      Yes      No

Were spermatophores observed?      Yes      No

Were fish observed in the pool?      Yes      No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NE

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NO-AC3-VP006  
 Observer: SH      Phone or email:  
 Landowner/Applicant: NELSON JERE      Phone or email:  
 Address: GULF RD      City: NORTHFIELD      State: MA      Zip: 01360  
 Location of vernal pool:  
 Survey date(s):: 5/15/2015      Longitude/Latitude (in decimal degrees): 42.66757985, -72.41425838

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ADJACENT TO LOGGING ROAD

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input checked="" type="checkbox"/> Herbaceous wetland (4pts) | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)                   | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts)     |   |

**5. Pool canopy cover (%):** 15%

**6. Predominant substrate:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: <u>    </u>  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>    </u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1683.96  
 Maximum depth at deepest point at time of survey (include units): 2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 75% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 25% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate      GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/16/2015	36		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULLFROG	5/16/2015	Common		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
GREEN FROG	5/16/2015	Common		

Presence of Indicator Species      Yes      No

Were spermatophores observed?      Yes      No

Were fish observed in the pool?      Yes      No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NO-AC3-VP007  
 Observer: SH      Phone or email:  
 Landowner/Applicant: Not Listed      Phone or email:  
 Address: Not Listed      City: NORTHFIELD      State: MA      Zip: 01360  
 Location of vernal pool:  
 Survey date(s):: 5/16/2015      Longitude/Latitude (in decimal degrees): 42.66576862, -72.40735057

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 95%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 340.99  
 Maximum depth at deepest point at time of survey (include units): 6"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 90% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/17/2015	26		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/17/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



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## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NO-AC3-VP008  
 Observer: SH      Phone or email:  
 Landowner/Applicant: Not Listed      Phone or email:  
 Address: Not Listed      City: NORTHFIELD      State: MA      Zip: 01360  
 Location of vernal pool:  
 Survey date(s):: 5/16/2015      Longitude/Latitude (in decimal degrees): 42.66280998, -72.40462592

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: POOL IN WETLAND CONNECTED TO LARGE POND

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 10%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 3137.43  
 Maximum depth at deepest point at time of survey (include units): 8"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 45% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 55% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/17/2015	14		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

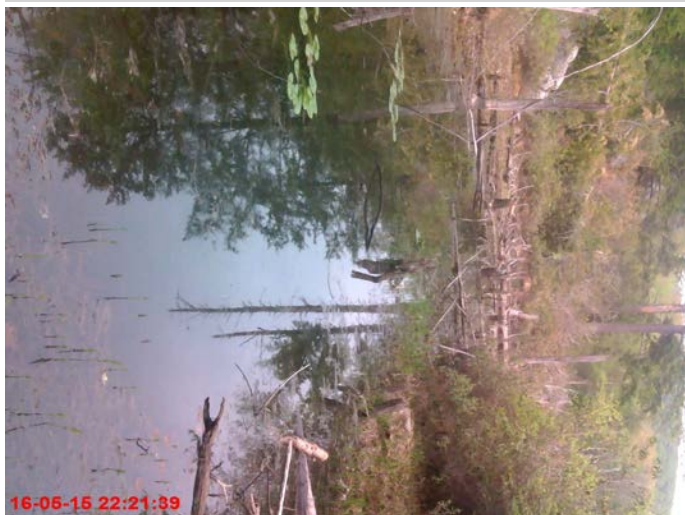
**SUMMARY**

**18 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: PL-AC4-VP001  
 Observer: ED    Phone or email:  
 Landowner/Applicant: AESCHBACK Alice L                      Phone or email:  
 Address: 229 WEST STREET                      City: PLAINFIELD                      State: MA                      Zip:: 01070  
 Location of vernal pool:  
 Survey date(s):: 5/09/2015                      Longitude/Latitude (in decimal degrees): 42.50931578, -72.96473188

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: OLD ROAD WITH DEPRESSION

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: APPEARS AS IF THE DEPRESSION WAS DUG BY MAN SOME TIME AGO.

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points): DEEP MANMADE DEPRESSION IN UPLAND FOREST
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 80%

**6. Predominant substrate:**

- Mineral soil                      Depth: 2
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 423.07  
 Maximum depth at deepest point at time of survey (include units): 12 INCHES OF WATER

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 50% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 30% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/9/2015	15	Larvae	
Wood Frog	5/9/2015	2	Tadpoles	DISPERSED EGG MASSES WITH TADPOLE.
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/9/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
MOSQUITOES	5/9/2015	Few		
PICKEREL FROG	5/9/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No



**SUMMARY****20** TOTAL for Pool Characteristics**16** TOTAL for Pool Envelope and Critical Terrestrial Habitat AreaOther Comments:

LOCATION TRACT#144.00 , MP 22.10

DEVELOPED LAND MEANS OVERHEAD POWERLINE

ACTIVE CONSTRUCTION AT TIME OF VISIT

**PHOTOS**

NORTH

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: PL-AC4-VP002  
 Observer: ED    Phone or email:  
 Landowner/Applicant: AESCHBACK Alice L                      Phone or email:  
 Address: 229 WEST STREET                      City: PLAINFIELD                      State: MA                      Zip: 01070  
 Location of vernal pool:  
 Survey date(s):: 5/09/2015                      Longitude/Latitude (in decimal degrees): 42.50933229, -72.96526518

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**
**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: UP ROOTED TREE HAS CREATED THE CREEPER FOR THE POOL

**3. Parent material:**

- |   |                                     |   |
|---|-------------------------------------|---|
| <input checked="" type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input type="checkbox"/> Dense till                             | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Forested wetland (4pts)  | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):** 100%
**6. Predominant substrate:**

- |  |   |
|--|---|
| <input type="checkbox"/> Mineral soil                          | Depth: <u>5</u>   |
| <input checked="" type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>DEEPEST ZONE</u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 372.66  
 Maximum depth at deepest point at time of survey (include units): 5 INCHES OF WATER

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     High turbidity     High algae content     Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)                       Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                               Developed: 20% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 90% (16 pts)                       Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                               Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate     GIS                       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/9/2015	2	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**                       Yes                       No

Were spermatophores observed?                       Yes                       No

Were fish observed in the pool?                       Yes                       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT#144.00 , MP 22.05

DEVELOPED LAND MEANS OVERHEAD POWERLINE .

PHOTOS



NORTH

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: PL-AC4-VP003  
 Observer: ED    Phone or email:  
 Landowner/Applicant: HARRISON WILLIAM G SR & MARY E                      Phone or email:  
 Address: 267 WEST STREET                      City: PLAINFIELD                      State: MA                      Zip: 01070  
 Location of vernal pool:  
 Survey date(s):: 5/09/2015                      Longitude/Latitude (in decimal degrees): 42.50671580, -72.97225858

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: WITHIN OLD FORSTRY ROAD

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: DEPRESSION IN OLD FORESTRY ROAD

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 40%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 273.43  
 Maximum depth at deepest point at time of survey (include units): 5 INCHES OF WATER

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 50% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 40% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/9/2015	18	Larvae	
Wood Frog	5/9/2015	4	Tadpoles	TADPOLES OBSERVED ON DISPERSED EGG MASSES
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/9/2015	Few		
MOSQUITO LARVAE	5/9/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
NEWT	5/9/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22** TOTAL for Pool Characteristics

**16** TOTAL for Pool Envelope and Critical Terrestrial Habitat Area

Other Comments:

LOCATION TRACT#143.00 , MP 21.65

DEVELOPED LAND MEANS OVERHEAD POWERLINE CORRIDOR

**PHOTOS**



SOUTH

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: PL-AC4-VP004  
 Observer: ED      Phone or email:  
 Landowner/Applicant: WESTERN MASS ELECTRIC CO      Phone or email:  
 Address: PROSPECT STREET      City: PLAINFIELD      State: MA      Zip: 01070  
 Location of vernal pool:  
 Survey date(s):: 5/12/2015      Longitude/Latitude (in decimal degrees): 42.51490199, -72.94341628

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Small pond/constructed pond

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ACTIVE BEAVER SITE

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 10
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 18597.17  
 Maximum depth at deepest point at time of survey (include units): 30 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 30% (10 pts)                             
  Developed: 20% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 20% (10 pts)                             
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    
  GIS                     
  Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): >50%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Blue-spotted Salamander	5/12/2015	7	Larvae	
Spotted Salamander	5/12/2015	37	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/12/2015	Common		
Spring Peeper	5/12/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/12/2015	Common		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
WATER STRIDERS	5/12/2015	Many		
PREDACEOUS DIVING BEETLES	5/12/2015	Few		

Presence of Indicator Species    Yes      No

Were spermatophores observed?    Yes      No

Were fish observed in the pool?    Yes      No

**SUMMARY****18 TOTAL for Pool Characteristics****26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**Other Comments:

LOCATION TRACT# 146.00, MP 23.25

DEVELOPED MEANS OVERHEAD POWERLINE CORRIDOR

PSS COMPLEX CONTINUES NORTH OUT OF CORRIDOR AND INTO RED PARCEL APPEARS TO BE A VERNAL POOL

**PHOTOS**

NORTH

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: PL-AC4-VP005  
 Observer: JW      Phone or email:  
 Landowner/Applicant: WESTERN MASS ELECTRIC CO      Phone or email:  
 Address: WEST MAIN STREET      City: PLAINFIELD      State: MA      Zip: 01070  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015      Longitude/Latitude (in decimal degrees): 42.52410576, -72.91910048

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: OLD ACCESS ROAD ALONG ROW, TIRE RUTS THROUGH NATURAL PEM

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 807.54  
 Maximum depth at deepest point at time of survey (include units): 6

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 15% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 70% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 15% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 20% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 70% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): >50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/13/2015	1	Larvae	
Wood Frog	5/13/2015	3	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
WATER STRIDER	5/13/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 158.00 , MP 24.70

PHOTOS



NORTH

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: PL-AC4-VP006  
 Observer: JW      Phone or email:  
 Landowner/Applicant: CLARK DANA M BRIAN E & AARON W      Phone or email:  
 Address: PARSONS AVENUE      City: PLAINFIELD      State: MA      Zip:: 01070  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015      Longitude/Latitude (in decimal degrees): 42.52408029, -72.90236233

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: NORTH SIDE IN ACCESS ROAD IN DEVELOPED POWERLINE ROW, SOUTH SIDE PART OF PSS

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 17889.55  
 Maximum depth at deepest point at time of survey (include units): 7 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 25% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 70% (10 pts)     
  Developed: 5% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 45% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 45% (10 pts)     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: >50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/13/2015	43	Larvae	
Wood Frog	5/13/2015	5	Tadpoles	
Fairy Shrimp	5/13/2015	5	Few	
Blue-spotted Salamander	5/13/2015	2	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
MAYFLY	5/13/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 165.00 ,MP 25.60

PHOTOS



EAST



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: PL-AC4-VP007  
 Observer: JW      Phone or email:  
 Landowner/Applicant: CLARK DANA M BRIAN E & AARON W      Phone or email:  
 Address: PARSONS AVENUE      City: PLAINFIELD      State: MA      Zip: 01070  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015      Longitude/Latitude (in decimal degrees): 42.52387528, -72.90801692

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: RECENT ACCESS ROAD ACTIVITIES CREATED DEEP RUT

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 712.86  
 Maximum depth at deepest point at time of survey (include units): 7 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear       High turbidity       High algae content       Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)       Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 25% (10 pts)       Developed: 25% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)       Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 25% (10 pts)       Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate       GIS       Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/13/2015	4	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
MOSQUITO LARVAE	5/13/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/13/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 165.00 ,MP 25.30

PHOTOS



NW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: PL-AC4-VP008  
 Observer: JW      Phone or email:  
 Landowner/Applicant: PYTKO ROBERT      Phone or email:  
 Address: NORTH UNION STREET      City: PLAINFIELD      State: MA      Zip: 01070  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015      Longitude/Latitude (in decimal degrees): 42.52444393, -72.91186159

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 10%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 791.52  
 Maximum depth at deepest point at time of survey (include units): 8 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 50% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/13/2015	6	Larvae	
Wood Frog	5/13/2015	1	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Spring Peeper	5/13/2015	Few		
MOSQUITO LARVAE	5/13/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/13/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 163.00 , MP 25.10

PHOTOS



SOUTH

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: PL-AC4-VP009  
 Observer: JW      Phone or email:  
 Landowner/Applicant: STOCKWELL WALLACE B & L. SYLVANE      Phone or email:  
 Address: GRANT STREET      City: PLAINFIELD      State: MA      Zip: 01070  
 Location of vernal pool:  
 Survey date(s):: 5/14/2015      Longitude/Latitude (in decimal degrees): 42.52699100, -72.88005995

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ACCESS ROAD CULVERT IS CLOGGED UP AND IMPOUNDING WATER

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 10%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 9581.46  
 Maximum depth at deepest point at time of survey (include units): 2.75 FEET

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**26 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 40% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 10% (10 pts)     
  Developed: 50% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 10% (10 pts)     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/14/2015	52	Larvae	
Wood Frog	5/14/2015	0	Tadpoles	
Fairy Shrimp	5/14/2015	0	Common	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/14/2015	Few		
Dragonfly larvae or exuviae	5/14/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/14/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
WOOD TURTLE	5/14/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No



**SUMMARY**

**26 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 179.00 , MP 26.75

**PHOTOS**



NORTH

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: TK-AC3-VP001  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: LEE SAI-KWONG                      Phone or email:  
 Address: 540 LOWELL ST                      City: TEWKSBURY                      State: MA                      Zip:: 01876  
 Location of vernal pool:  
 Survey date(s):: 4/28/2015                      Longitude/Latitude (in decimal degrees): 42.64205036, -71.22314672

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      APPEARS TO BE MANMADE POSSIBLY STONE LINED

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts)         |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input checked="" type="checkbox"/> Other (variable points): UPLAND |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**      80%

**6. Predominant substrate:**

- |  |  |
|--|--|
| <input type="checkbox"/> Mineral soil                          | Depth: <u>6</u>  |
| <input checked="" type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>DEEP_ZONE</u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      876.31  
 Maximum depth at deepest point at time of survey (include units):      2.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 60% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 40% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 25% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 60% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate      GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/29/2015	5	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**                       Yes                       No

Were spermatophores observed?                       Yes                       No

Were fish observed in the pool?                       Yes                       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: TK-AC3-VP002  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: Hewlett Packard Company                      Phone or email:  
 Address: 14 KIMBERLEY DR/ADJACENT                      City: TEWKSBURY                      State: MA                      Zip: 01876  
 Location of vernal pool:  
 Survey date(s):: 4/29/2015                      Longitude/Latitude (in decimal degrees): 42.62379332, -71.18692149

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**                      40%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 371.87  
 Maximum depth at deepest point at time of survey (include units): 6"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 30% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 50% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/29/2015	3	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: TK-AC3-VP003  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: Hewlett Packard Company                      Phone or email:  
 Address: 14 KIMBERLEY DR/ADJACENT                      City: TEWKSBURY                      State: MA                      Zip: 01876  
 Location of vernal pool:  
 Survey date(s):: 4/29/2015                      Longitude/Latitude (in decimal degrees): 42.62467923, -71.18923602

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: NONE

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 40%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1571.28  
 Maximum depth at deepest point at time of survey (include units): 8"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 65% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 35% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 50% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/30/2015	8	Tadpoles	
Spotted Salamander	4/30/2015	18		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/30/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

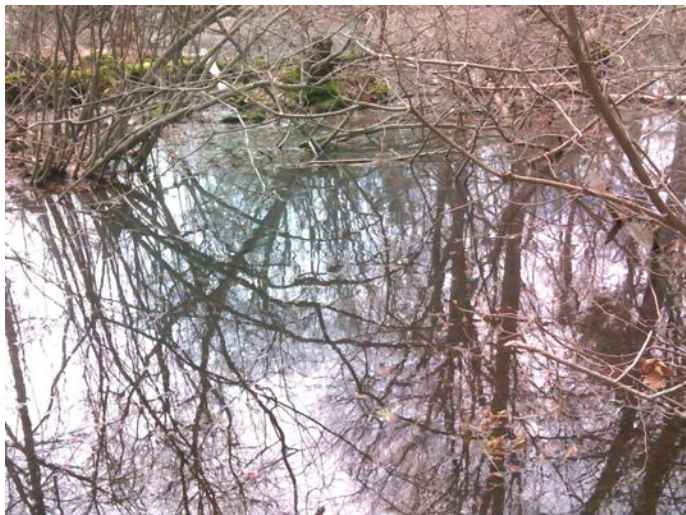
**SUMMARY**

**20 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



S

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: WK-AC3-VP001  
 Observer: SH      Phone or email:  
 Landowner/Applicant: CUTTING ABEL      Phone or email:  
 Address: TOWER RD      City: WARWICK      State: MA      Zip: 01378  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015      Longitude/Latitude (in decimal degrees): 42.71843537, -72.40517931

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 20%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 5951.81  
 Maximum depth at deepest point at time of survey (include units): 3"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 95% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 85% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: >50%

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/14/2015	7		
Wood Frog	5/14/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



S

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: WN-AC4-VP001  
 Observer: JW      Phone or email:  
 Landowner/Applicant: WESTERN MASS ELECTRIC CO      Phone or email:  
 Address: PERU ROAD      City: WINDSOR      State: MA      Zip:: 01270  
 Location of vernal pool:  
 Survey date(s):: 5/08/2015      Longitude/Latitude (in decimal degrees): 42.47974241, -73.04346559

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: POOL IS LOCATED UNDER THE OVER HEAD POWER LINES AND HAS TIRE RUTS THROUGH THE EXTENT.

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 9
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 2360.49  
 Maximum depth at deepest point at time of survey (include units): 6 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 25% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 25% (10 pts)                             
  Developed: 50% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: 30% (10 pts)                             
  Developed: 25% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    
  GIS                     
  Aerial photo estimate

**30 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/8/2015	12	Larvae	
Wood Frog	5/8/2015	22	Tadpoles	BUSTED MASSES WITH TADPOLES ALL OVER THEM
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Spire-shaped snails or shells	5/8/2015	Common		
Other:WATER STRIDERS	5/8/2015	Common		
MOSQUITO LARVAE	5/8/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULLFROG	5/8/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species            Yes            No

Were spermatophores observed?        Yes            No

Were fish observed in the pool?        Yes            No

**SUMMARY****22** TOTAL for Pool Characteristics**30** TOTAL for Pool Envelope and Critical Terrestrial Habitat AreaOther Comments:

DEVELOPED MEANS THE OVER HEAD POWERLINE CORRIDOR

EGG MASSES SEEN IN TIRE RUTS ON CENTERLINE

LOCATION TRACT 97.00, MP 17.25

**PHOTOS**

SW



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: WN-AC4-VP002  
 Observer: JW      Phone or email:  
 Landowner/Applicant: IWANOWICZ JAMES J      Phone or email:  
 Address: PERU ROAD      City: WINDSOR      State: MA      Zip:: 01270  
 Location of vernal pool:  
 Survey date(s):: 5/08/2015      Longitude/Latitude (in decimal degrees): 42.48180114, -73.03501886

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: POOL IS LOCATED IN OPEN EXISTING CORRIDOR OF OVERHEAD POWERLINES. RECENT FORESTRY ACTIVITY HAS CREATED RUTS IN A PEM WETLAND.

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 4950.80  
 Maximum depth at deepest point at time of survey (include units): 4

**8. Hydrology:**

- a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):
- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
  - Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
  - Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
  - Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 50% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 30% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/8/2015	14	Larvae	EGG MASSES IN TIRE RUTS MOST NOT ATTACHED TO ANYTHING
Wood Frog	5/8/2015	1		NO TADPOLES SEEN AROUND SINGLE FIST SIZE EGG MASS
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY****18 TOTAL for Pool Characteristics****16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**Other Comments:

DEVELOPED LAND MEANS WITHIN THE OVERHEAD POWERLINE CORRIDOR

LOW QUALITY POOL INCIDENTAL CREATION WITHIN PEM WETLAND FROM FORESTRY OPERATIONS

LOCATION TRACT 98.01, MP 17.70

**PHOTOS**

NW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: WN-AC4-VP003  
 Observer: JW      Phone or email:  
 Landowner/Applicant: KOCZELA BRIAN E & ANN M      Phone or email:  
 Address: 550 EAST WINDSOR ROAD      City: WINDSOR      State: MA      Zip:: 01270  
 Location of vernal pool:  
 Survey date(s):: 5/08/2015      Longitude/Latitude (in decimal degrees): 42.48105209, -73.03902822

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: POOL IS LOCATED WITHIN THE OPEN CORRIDOR OF THE EXISTING OVER HEAD POWERLINE CORRIDOR.

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 5
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 2043.71  
 Maximum depth at deepest point at time of survey (include units): 3 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear   
  High turbidity   
  High algae content   
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 50% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 30% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate   
 GIS   
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/8/2015	15	Larvae	EGG MASSES IN TIRE RUTS MOST NOT ATTACHED TO ANYTHING
<b>FACULTATIVE SPECIES</b>				
Other:WATER STRIDERS	5/8/2015	Few		
<b>PREDATOR SPECIES</b>				
<b>OTHER SPECIES</b>				

Presence of Indicator Species           
 Yes           
 No

Were spermatophores observed?           
 Yes           
 No

Were fish observed in the pool?           
 Yes           
 No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

DEVELOPED LAND MEANS OVERHEAD POWERLINE CORRIDOR

LOW QUALITY POOL INCIDENTAL CREATION

LOCATION TRACT 99.00, MP 18.00

PHOTOS



NE

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: GN-U-VP001  
 Observer: AT      Phone or email:  
 Landowner/Applicant: Buttrick Benjamin S      Phone or email:  
 Address: 377 ADAMS HILL ROAD      City: GREENVILLE      State: NH      Zip: 03048  
 Location of vernal pool:  
 Survey date(s):: 5/20/2015      Longitude/Latitude (in decimal degrees): 42.78724800, -71.79675135

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: recent clearing in powerline cut

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 157.47  
 Maximum depth at deepest point at time of survey (include units): 6

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 10% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 90% (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 35% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 65% (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: >50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
<b>FACULTATIVE SPECIES</b>				
Other:mayfly	5/20/2015	Few		
Other:damsel fly	5/20/2015	Few		
<b>PREDATOR SPECIES</b>				
<b>OTHER SPECIES</b>				

- Presence of Indicator Species**       Yes       No  
 Were spermatophores observed?       Yes       No  
 Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:



PHOTOS



NORTHEAST

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: HD-T-VP001  
 Observer: EL    Phone or email:  
 Landowner/Applicant: VIGEANT LEONARD A.TR/VIGEANT JANE M. TR                      Phone or email:  
 Address: 13 A LENNY LANE                      City: HUDSON                      State: NH                      Zip: 03051  
 Location of vernal pool:  
 Survey date(s):: 5/11/2015                      Longitude/Latitude (in decimal degrees): 42.80821504, -71.37706193

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: In powerline ROW

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 5%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 129.14  
 Maximum depth at deepest point at time of survey (include units): 4 inches

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested:   % (16 pts)                     
  Open (e.g., meadow, agriculture, golf course):   % (4 pts)  
 Shrub: 100% (10 pts)                     
  Developed:   % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 20% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course):   % (4 pts)  
 Shrub: 80% (10 pts)                     
  Developed:   % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    
  GIS                     
  Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs:   NA

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/11/2015	0	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
True fly larvae or pupae	5/11/2015	Few		
Caddisflies	5/11/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species      Yes      No

Were spermatophores observed?      Yes      No

Were fish observed in the pool?      Yes      No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

atv rut with wood frog tadpoles

PHOTOS



south

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: HN-AC4-VP001  
 Observer: ED      Phone or email:  
 Landowner/Applicant: CITY OF PITTSFIELD      Phone or email:  
 Address: FRANK SCHNOPP RD      City: HINSDALE      State: NH      Zip:: 01226  
 Location of vernal pool:  
 Survey date(s):: 5/07/2015      Longitude/Latitude (in decimal degrees): 42.47281213, -73.11018057

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: WEST SIDE OF POOL HAS 10 FOOT HIGH CONSTRUCTED ACCESS ROAD TO POWERLINE EASMENT

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 95%

**6. Predominant substrate:**

- Mineral soil      Depth: 5
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 688.14  
 Maximum depth at deepest point at time of survey (include units): 6 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 20% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 25% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    
  GIS                     
  Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/7/2015	13	Larvae	
Wood Frog	5/7/2015	1	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/7/2015	Common		
True fly larvae or pupae	5/7/2015	Common		
Other:MOSQUITO LARVAE	5/7/2015	Many		
Other:WATER STRIDER	5/7/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/7/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species            Yes            No

Were spermatophores observed?        Yes            No

Were fish observed in the pool?        Yes            No

**SUMMARY**

**22** TOTAL for Pool Characteristics

**16** TOTAL for Pool Envelope and Critical Terrestrial Habitat Area

Other Comments:

LOCATION ON TRACT 83.00, MP 13.60

DEVELOPED LAND MEANS POWER LINE CORRIDOR

**PHOTOS**



EAST

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: HN-AC4-VP002  
 Observer: ED      Phone or email:  
 Landowner/Applicant: CITY OF PITTSFIELD      Phone or email:  
 Address: FRANK SCHNOPP RD      City: HINSDALE      State: NH      Zip: 01226  
 Location of vernal pool:  
 Survey date(s):: 5/07/2015      Longitude/Latitude (in decimal degrees): 42.47151651, -73.10810695

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 95%

**6. Predominant substrate:**

- Mineral soil      Depth: 8 INCHES
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 463.12  
 Maximum depth at deepest point at time of survey (include units): 4 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 90% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 10% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/7/2015	15	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Other:PICKEREL FROG	5/7/2015	Few	EGG MASS 1	
MOSQUITO LARVAE	5/7/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION ON TRACT 83.00, MP 13.70

DEVELOPED LAND MEANS POWER LINE CORRIDOR

PHOTOS



WEST

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: HN-AC4-VP003  
 Observer: ED      Phone or email:  
 Landowner/Applicant: CITY OF PITTSFIELD      Phone or email:  
 Address: FRANK SCHNOPP RD      City: HINSDALE      State: NH      Zip:: 01226  
 Location of vernal pool:  
 Survey date(s):: 5/07/2015      Longitude/Latitude (in decimal degrees): 42.46922160, -73.10196175

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: POOL IS LOCATED IN THE RELIC POWER LINE ACCESS ROAD. APPEARS COMPACTED HYDRIC SOIL IS HOLDING WATER.

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1021.84  
 Maximum depth at deepest point at time of survey (include units): 6 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 20% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 95% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    
  GIS                     
  Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): >50%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/7/2015	2	Tadpoles	OBSERVED OVER AND AROUND BUSTED EGG MASSES
Spotted Salamander	5/7/2015	47	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Spire-shaped snails or shells	5/7/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
NEWT	5/7/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species            Yes            No

Were spermatophores observed?        Yes            No

Were fish observed in the pool?        Yes            No

**SUMMARY**

**24** TOTAL for Pool Characteristics

**16** TOTAL for Pool Envelope and Critical Terrestrial Habitat Area

Other Comments:

LOCATION TRACT 83.00, MP 14.10

DEVELOPED LAND IMPLIES POWER LINE CORRIDOR

**PHOTOS**



NW

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: HN-AC4-VP004  
 Observer: JW    Phone or email:  
 Landowner/Applicant: THE FIRE DISTRICT OF DALTON                      Phone or email:  
 Address: NEW WINDSOR RD                      City: HINSDALE                      State: NH                      Zip:: 01235  
 Location of vernal pool:  
 Survey date(s):: 5/11/2015                      Longitude/Latitude (in decimal degrees): 42.47105757, -73.07979653

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: OLD BEAVER DAM HAS IMPOUNDED WATER

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil                      Depth: 12
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 5308.29  
 Maximum depth at deepest point at time of survey (include units): 2.5 FEET

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 50% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 25% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Blue-spotted Salamander	5/11/2015	18	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Other:RED SPOTTED NEWT	5/11/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/11/2015	Common		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
PICKEREL FROG	5/11/2015	Common		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 88.00 , MP 15.30 (SOUTH CORRIDOR LINE)

PHOTOS



SE



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: HN-AC4-VP005  
 Observer: JW      Phone or email:  
 Landowner/Applicant: THE FIRE DISTRICT OF DALTON      Phone or email:  
 Address: NEW WINDSOR RD      City: HINSDALE      State: NH      Zip:: 01235  
 Location of vernal pool:  
 Survey date(s):: 5/11/2015      Longitude/Latitude (in decimal degrees): 42.47150882, -73.07984824

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: OLD BEAVER DAM HAS IMPOUNDED WATER

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 9
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1950.13  
 Maximum depth at deepest point at time of survey (include units): 6 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**26 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 20% (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 20% (10 pts)     
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	5/11/2015	5	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Spire-shaped snails or shells	5/11/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
BULL FROG	5/11/2015	Common		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
PICKEREL FROG	5/11/2015	Common		
RED SPOTTED NEWT	5/11/2015	Common		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**26 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 88.00, MP 15.30 (CL)

PHOTOS



WEST

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: HN-AC4-VP006  
 Observer: JW      Phone or email:  
 Landowner/Applicant: THE FIRE DISTRICT OF DALTON      Phone or email:  
 Address: NEW WINDSOR RD      City: HINSDALE      State: NH      Zip:: 01235  
 Location of vernal pool:  
 Survey date(s):: 5/11/2015      Longitude/Latitude (in decimal degrees): 42.47271670, -73.07343038

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ACTIVITY ALONG CONSTRUCTION ACCESS ROAD HAS CREATED RUTS THROUGH WETLAND AREA

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 0  
 Maximum depth at deepest point at time of survey (include units): 4 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 20% (16 pts)    
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)    
  Developed: 80% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)    
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)    
  Developed: 30% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate      GIS      Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: NA

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/11/2015	0	Tadpoles	HUNDREDS OF TADPOLES OBSERVED, EGG MASSES DEVoured
Spotted Salamander	5/11/2015	15	Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Other:PICKEREL FROG	5/11/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

- Presence of Indicator Species**      Yes      No  
 Were spermatophores observed?      Yes      No  
 Were fish observed in the pool?      Yes      No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

LOCATION TRACT# 88.00, MP 15.65

PHOTOS



NE

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: LD-T-VP001  
 Observer: BE    Phone or email:  
 Landowner/Applicant: COTE ROLAND J & SUSAN J                      Phone or email:  
 Address: 8 MORWAY DR                      City: LONDONDERRY                      State: NH                      Zip: 03053  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015                      Longitude/Latitude (in decimal degrees): 42.84180344, -71.42698538

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: No

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 10%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 4051.78  
 Maximum depth at deepest point at time of survey (include units): 24 in

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 25% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 25% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Fairy Shrimp	5/13/2015		Common	Caught in all dipnet samples
Wood Frog	5/13/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
True fly larvae or pupae	5/13/2015	Many		
Dragonfly larvae or exuviae	5/13/2015	Few		
Caddisflies	5/13/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

pond appears suitable for blanding's and spotted turtle. landowner mentioned seeing turtles regularly



PHOTOS



NORTHEAST

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: LD-U-VP001  
 Observer: AT      Phone or email:  
 Landowner/Applicant: AGRELLA THOMAS D & MICHELLE E      Phone or email:  
 Address: 46 ELWOOD RD      City: LONDONDERRY      State: NH      Zip: 03053  
 Location of vernal pool:  
 Survey date(s):: 5/14/2015      Longitude/Latitude (in decimal degrees): 42.84019406, -71.40989147

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 20%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): EDGE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 492.95  
 Maximum depth at deepest point at time of survey (include units): 12 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 15% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/14/2015	1		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Flat-spire snails or shells	5/14/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



EAST

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: LT-U-VP001  
 Observer: AT    Phone or email:  
 Landowner/Applicant: WILSON SCOTT C                      Phone or email:  
 Address: 33 BRICK YARD DR                      City: LITCHFIELD                      State: NH                      Zip: 03052  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015                      Longitude/Latitude (in decimal degrees): 42.83138362, -71.46776763

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: Powerline ROW maintenance

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 560.86  
 Maximum depth at deepest point at time of survey (include units): 18in

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**14 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 50% (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 20% (10 pts)     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/13/2015	1	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/13/2015	Many		
Other:	5/13/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
truefly larvae	5/13/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**14 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



SOUTH

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: LT-U-VP002  
 Observer: AT    Phone or email:  
 Landowner/Applicant: SCOPELITES KARI                      Phone or email:  
 Address: 30 BRICK YARD DR                      City: LITCHFIELD                      State: NH                      Zip: 03052  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015                      Longitude/Latitude (in decimal degrees): 42.83293938, -71.46568283

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: LOGGING

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil                      Depth: 9
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 352.63  
 Maximum depth at deepest point at time of survey (include units): 9

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 50% (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 35% (10 pts)     
  Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate     
 GIS     
 Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/13/2015	0	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
GREEN FROG	5/13/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



EAST

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: LT-U-VP003  
 Observer: AT      Phone or email:  
 Landowner/Applicant: SCOPELITES KARI      Phone or email:  
 Address: 30 BRICK YARD DR      City: LITCHFIELD      State: NH      Zip:: 03052  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015      Longitude/Latitude (in decimal degrees): 42.83265723, -71.46540394

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ROW MAINTENANCE  
LANDOWNER IMPACTS

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 24
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 178.75  
 Maximum depth at deepest point at time of survey (include units): 12 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: 40% (10 pts)                             
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 40% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: 40% (10 pts)                             
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    GIS                       Aerial photo estimate

**30 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): <10%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/13/2015	2	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species            Yes            No

Were spermatophores observed?        Yes            No

Were fish observed in the pool?        Yes            No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**30 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NORTH

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: LT-U-VP004  
 Observer: AT    Phone or email:  
 Landowner/Applicant: K & M DEVELOPERS LLC                      Phone or email:  
 Address: 40 BRICK YARD DR                      City: LITCHFIELD                      State: NH                      Zip: 03052  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015                      Longitude/Latitude (in decimal degrees): 42.83350379, -71.46285771

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Ditch along road or rut from vehicle

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ATV TRAIL

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 5%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1398.09  
 Maximum depth at deepest point at time of survey (include units): 8 INCHES

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 50% (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 50% (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/13/2015	1	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
True fly larvae or pupae	5/13/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
PAINTED TURTLE	5/13/2015	Few		
PICKEREL FROG	5/13/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NORTH



## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: LT-U-VP005  
 Observer: AT    Phone or email:  
 Landowner/Applicant: K & M DEVELOPERS LLC                      Phone or email:  
 Address: 40 BRICK YARD DR                      City: LITCHFIELD                      State: NH                      Zip: 03052  
 Location of vernal pool:  
 Survey date(s):: 5/13/2015                      Longitude/Latitude (in decimal degrees): 42.83419006, -71.45844626

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural, but altered

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ATV TRAIL

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**       6  

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):   5188.12    
 Maximum depth at deepest point at time of survey (include units):   36 INCHES  

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?   Semi-permanent  

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 45% (10 pts)                             
  Developed: 5% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 45% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 45% (10 pts)                             
  Developed: 10% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    
  GIS                     
  Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: NA

Emergent vegetation (grasses, seges, rushes, cattails): NA

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: 1 - 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/13/2015		Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	5/13/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
STONE FLY	5/13/2015	Few		

Presence of Indicator Species            Yes            No

Were spermatophores observed?        Yes            No

Were fish observed in the pool?        Yes            No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

**PHOTOS**



**EAST  
ATV TRAILING**

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: MS-U-VP001  
 Observer: AT      Phone or email:  
 Landowner/Applicant: COLLETON TIMOTHY A.      Phone or email:  
 Address: 475 TOWNSEND ROAD      City: MASON      State: NH      Zip: 03048  
 Location of vernal pool:  
 Survey date(s):: 5/19/2015      Longitude/Latitude (in decimal degrees): 42.72469387, -71.74276085

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: recently logged adjacent forest

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 70%

**6. Predominant substrate:**

- Mineral soil      Depth: 24
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 6812.32  
 Maximum depth at deepest point at time of survey (include units): 24

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Semi-permanent

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     High turbidity     High algae content     Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 35% (16 pts)                       Open (e.g., meadow, agriculture, golf course): 30% (4 pts)  
 Shrub: 35% (10 pts)                       Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 35% (16 pts)                       Open (e.g., meadow, agriculture, golf course): 30% (4 pts)  
 Shrub: 30% (10 pts)                       Developed: 5% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate     GIS     Aerial photo estimate

**30 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: <10%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Unidentified Mole Salamander	5/19/2015		Larvae	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Spring Peeper	5/19/2015	Few		
Gray Tree Frog	5/19/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species     Yes     No

Were spermatophores observed?     Yes     No

Were fish observed in the pool?     Yes     No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**30 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

**PHOTOS**



SOUTH



SOUTHWEST



NORTHWEST



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: MS-U-VP002  
 Observer: AT      Phone or email:  
 Landowner/Applicant: ROTA DANE L.      Phone or email:  
 Address: 1199 VALLEY ROAD      City: MASON      State: NH      Zip: 03048  
 Location of vernal pool:  
 Survey date(s):: 5/19/2015      Longitude/Latitude (in decimal degrees): 42.71380138, -71.75627788

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 75%

**6. Predominant substrate:**

- Mineral soil      Depth: 4
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 134.15  
 Maximum depth at deepest point at time of survey (include units): 4

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**26 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 5% (10 pts)     
  Developed: 15% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: 5% (10 pts)     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: <10%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: 10-50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
<b>FACULTATIVE SPECIES</b>				
Other:damsel fly	5/19/2015	Few		
Gray Tree Frog	5/19/2015	Few		
Other:mayfly	5/19/2015	Common		
<b>PREDATOR SPECIES</b>				
<b>OTHER SPECIES</b>				

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**26 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

**PHOTOS**

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NI-R-VP001  
 Observer: E. Lema, J.Sweitzer      Phone or email: elema@normandean.com  
 Landowner/Applicant: TAFT FAMILY TRUST      Phone or email:  
 Address: TOBEY HIGHWAY      City: NEW IPSWICH      State: NH      Zip: 03071  
 Location of vernal pool:  
 Survey date(s):: 4/24/2015      Longitude/Latitude (in decimal degrees): 42.78296397, -71.82928573

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      area logged ~5 yrs ago

**3. Parent material:**

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input checked="" type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input type="checkbox"/> Dense till                  | <input type="checkbox"/> Alluvium              | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input checked="" type="checkbox"/> Open water (2 pts)    | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**      10%

**6. Predominant substrate:**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Mineral soil    | Depth:      ___  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.):      ___ |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      234.00  
 Maximum depth at deepest point at time of survey (include units):      36"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 100% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/24/2015	4		
Spotted Salamander	4/25/2015	13		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/24/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
green frog tadpoles, 2nd year	4/24/2015	Few		
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

pool in an old excavated borrow/gravel pit area. hydrology likely permanent in most years due to presence of green frog tadpoles

PHOTOS



East

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NI-R-VP002  
 Observer: E. Lema, J. Sweitzer      Phone or email: elema@normandean.com  
 Landowner/Applicant: TAFT FAMILY TRUST      Phone or email:  
 Address: TOBEY HIGHWAY      City: NEW IPSWICH      State: NH      Zip: 03071  
 Location of vernal pool:  
 Survey date(s):: 4/24/2015      Longitude/Latitude (in decimal degrees): 42.78287000, -71.82985890

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**
**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      area logged ~5 yrs ago

**3. Parent material:**

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input checked="" type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input type="checkbox"/> Dense till                  | <input type="checkbox"/> Alluvium              | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts)   |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input checked="" type="checkbox"/> Other (variable points):      sesonal unvegetated, ephemeral pool |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**      60%
**6. Predominant substrate:**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Mineral soil    | Depth:      ___  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.):      ___ |

**7. Pool sizes:**

 Approximate dimensions of pool (at maximum capacity) (sq. feet):      774.76

 Maximum depth at deepest point at time of survey (include units):      30"
**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear       High turbidity       High algae content       Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)       Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)       Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 100% (16 pts)       Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)       Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate       GIS       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
<b>FACULTATIVE SPECIES</b>	<b>DATE</b>	<b>ABUNDANCE</b>	<b>NOTES</b>	
Other:true fly larvae	4/24/2015	Many		
Other:aquatic beetles	4/24/2015	Many		
<b>PREDATOR SPECIES</b>	<b>DATE</b>	<b>ABUNDANCE</b>	<b>NOTES</b>	
<b>OTHER SPECIES</b>	<b>DATE</b>	<b>ABUNDANCE</b>	<b>NOTES</b>	

**Presence of Indicator Species**       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

contains two secondary indicators per NH regs. no egg masses observed, likely a very ephemeral pool

PHOTOS



S



E



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NI-R-VP003  
 Observer: E. Lema, J. Sweitzer      Phone or email: elema@normandean.com  
 Landowner/Applicant: TAFT FAMILY TRUST      Phone or email:  
 Address: TOBEY HIGHWAY      City: NEW IPSWICH      State: NH      Zip: 03071  
 Location of vernal pool:  
 Survey date(s):: 4/24/2015      Longitude/Latitude (in decimal degrees): 42.78229975, -71.82845382

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      depression in ATV/access road. extremely disturbed.

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points): unvegetated shallow
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**      0%

**6. Predominant substrate:**

- Mineral soil      Depth: \_\_\_\_
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): \_\_\_\_

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      116.04  
 Maximum depth at deepest point at time of survey (include units):      8"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 90% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate      GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/24/2015	4		
Wood Frog	4/24/2015	1		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
COLEOPTERA BEETLE	4/24/2015			
WATER STRIDER	4/24/2015			

Presence of Indicator Species                       Yes                       No

Were spermatophores observed?                       Yes                       No

Were fish observed in the pool?                       Yes                       No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

very degraded low quality, likely a sink.

PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NI-R-VP004  
 Observer: E. Lema, J. Sweitzer      Phone or email: elema@normandean.com  
 Landowner/Applicant: TAFT FAMILY TRUST      Phone or email:  
 Address: TOBEY HIGHWAY      City: NEW IPSWICH      State: NH      Zip: 03071  
 Location of vernal pool:  
 Survey date(s):: 4/24/2015      Longitude/Latitude (in decimal degrees): 42.78230633, -71.82631224

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      subject to routine vegetation clearing due to ROW maintenance

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input checked="" type="checkbox"/> Open water (2 pts)    | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**      0%

**6. Predominant substrate:**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Mineral soil    | Depth: ____  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): ____ |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      659.37  
 Maximum depth at deepest point at time of survey (include units):      48"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 60% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 40% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate    
  GIS                     
  Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/24/2015	4		
Spotted Salamander	4/24/2015	9		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Other:water boatman	4/24/2015	Few		
Other:true fly larvae	4/25/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
water striders	4/24/2015	Common		

Presence of Indicator Species            Yes            No

Were spermatophores observed?        Yes            No

Were fish observed in the pool?        Yes            No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

deep pool in cleared ROW, likely permanent hydroperiod

PHOTOS



E

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: NI-R-VP005  
 Observer: E. Lema, J. Sweitzer      Phone or email: elema@normandean.com  
 Landowner/Applicant: TAFT FAMILY TRUST      Phone or email:  
 Address: TOBEY HIGHWAY      City: NEW IPSWICH      State: NH      Zip: 03071  
 Location of vernal pool:  
 Survey date(s):: 4/24/2015      Longitude/Latitude (in decimal degrees): 42.78202834, -71.82635557

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      subject to routine ROW clearing

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**      20%

**6. Predominant substrate:**

- Mineral soil      Depth: 4"
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): deepest portion

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      354.99  
 Maximum depth at deepest point at time of survey (include units):      24"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**24 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 50% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 30% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/24/2015	6		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**24 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

pool vegetated. typha and spiraea throughout.



PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: PH-T-VP001  
 Observer: EL      Phone or email:  
 Landowner/Applicant: CARTER EUGENE P & DOROTHY      Phone or email:  
 Address: 15 KATIE LANE      City: PELHAM      State: NH      Zip: 03076  
 Location of vernal pool:  
 Survey date(s):: 5/14/2015      Longitude/Latitude (in decimal degrees): 42.75350689, -71.32384328

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin: Natural Depression

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: mowed right of way

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 0%

**6. Predominant substrate:**

- Mineral soil      Depth: 14 in
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): interior

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 3822.33  
 Maximum depth at deepest point at time of survey (include units): 20 in

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? Seasonal

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested:   % (16 pts)                     
  Open (e.g., meadow, agriculture, golf course):   % (4 pts)  
 Shrub: 100% (10 pts)                     
  Developed:   % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 20% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course):   % (4 pts)  
 Shrub: 80% (10 pts)                     
  Developed:   % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:    Field estimate     
  GIS                     
  Aerial photo estimate

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: 10-50%

Emergent vegetation (grasses, seges, rushes, cattails): 10-50%

Submergent vegetation: >50%

Dead branches and downed woody material (branches/twigs) available for egg attachment: greater than 10

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	5/14/2015	0	Tadpoles	many
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Aquatic Beetle Larvae	5/14/2015	Common		
Other:bug larvae	5/14/2015	Common		
True fly larvae or pupae	5/14/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**26 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



EAST

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP002  
 Observer: CLARE MURPHY-HAGAN      Phone or email: 503-318-5970  
 Landowner/Applicant: KALINOSKI MARY K TRUST &      Phone or email:  
 Address: 1 STUART DR      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool: 300' SW X BETWEEN DUNCASTER RD AND STUART DR  
 Survey date(s):: 4/21/2015      Longitude/Latitude (in decimal degrees): 41.84487088, -72.77205469

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      ADJACENT TO DISTURBED ROW AND RESIDENTIAL AREA

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**      15%

**6. Predominant substrate:**

- Mineral soil      Depth: 24
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):      DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      176.08  
 Maximum depth at deepest point at time of survey (include units):      1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 60% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: 5% (10 pts)                                     
  Developed: 15% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 35% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 35% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate             GIS                       Aerial photo estimate

**30 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
<b>FACULTATIVE SPECIES</b>	<b>DATE</b>	<b>ABUNDANCE</b>	<b>NOTES</b>	
Caddisflies	4/22/2015	Few	LIMNephilidae	
<b>PREDATOR SPECIES</b>	<b>DATE</b>	<b>ABUNDANCE</b>	<b>NOTES</b>	
<b>OTHER SPECIES</b>	<b>DATE</b>	<b>ABUNDANCE</b>	<b>NOTES</b>	
GREEN FROG	4/22/2015	Common		

**Presence of Indicator Species**             Yes             No

Were spermatophores observed?             Yes             No

Were fish observed in the pool?             Yes             No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**30 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

NO EGG MASS/TADPOLES PRESENT

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP003  
 Observer: CLARE MURPHY-HAGAN      Phone or email: 503-318-5970  
 Landowner/Applicant: Not Listed      Phone or email:  
 Address: LL# 722      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool: SW ON ROW OFF TERRY PLAINS RD ABOUT .10 MI IN EAST OF ROW  
 Survey date(s):: 4/22/2015      Longitude/Latitude (in decimal degrees): 41.85779353, -72.76202982

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: ADJACENT TO ROW RECENT TREE CLEARING

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 70%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g., deepest zone, edge, etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 724.02  
 Maximum depth at deepest point at time of survey (include units): 1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 85% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 40% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/22/2015	3		
Wood Frog	4/22/2015	9	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Fingernail Clams	4/22/2015	Common		
Caddisflies	4/22/2015	Many	LIMNEPHILIDAE	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
GREEN FROG	4/22/2015	Common		
BULLFROG	4/22/2015	Few		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

20 TOTAL for Pool Characteristics

20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area

Other Comments:

Around MP 8.6

**PHOTOS**



SW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP004  
 Observer: CLARE MURPHY-HAGAN      Phone or email: 503-318-5970  
 Landowner/Applicant: Not Listed      Phone or email:  
 Address: LL# 722      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool: .10 MI SW ON ROW OFF TERRY PLAINS RD  
 Survey date(s):: 4/22/2015      Longitude/Latitude (in decimal degrees): 41.85787713, -72.76192791

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      ADJACENT TO DISTURBED ROW RECENT TREE CLEARING

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**      75%

**6. Predominant substrate:**

- Mineral soil      Depth: \_\_\_\_
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): \_\_\_\_

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      1322.54  
 Maximum depth at deepest point at time of survey (include units):      1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 85% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 50% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 40% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
<b>FACULTATIVE SPECIES</b>				
Caddisflies	4/23/2015	Common		
American Toad	4/23/2015	Few		2 HATCHED EGG MASSES
Fingernail Clams	4/23/2015	Few		
<b>PREDATOR SPECIES</b>				
<b>OTHER SPECIES</b>				
GREEN FROGS	4/23/2015	Common		

Presence of Indicator Species     
 Yes     
 No

Were spermatophores observed?     
 Yes     
 No

Were fish observed in the pool?     
 Yes     
 No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NE

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP005  
 Observer: CLARE MURPHY-HAGAN      Phone or email: 503-318-5970  
 Landowner/Applicant: BLOOMFIELD TOWN OF      Phone or email:  
 Address: 800 BLOOMFIELD AVENUE      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool: TERRY PLAINS RD NORTH ON ROW APPROX .35 MI 20 YDS EAST OF ROW  
 Survey date(s):: 4/22/2015      Longitude/Latitude (in decimal degrees): 41.86391319, -72.75864866

### A. VERNAL POOL CHARACTERISTICS (fill in all information known):

#### 1. Landscape Setting (check all that apply):

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

#### 2. Vernal pool condition:

Describe any recent modifications to the pool and associated landscape: ADJACENT TO DISTURBED ROW

#### 3. Parent material:

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

#### 4. Aquatic resource type that best applies to this pool (choose dominant):

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

#### 5. Pool canopy cover (%): 95%

#### 6. Predominant substrate:

- Mineral soil      Depth: \_\_\_\_
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): \_\_\_\_

#### 7. Pool sizes:

Approximate dimensions of pool (at maximum capacity) (sq. feet): 492.74  
 Maximum depth at deepest point at time of survey (include units): 1'

#### 8. Hydrology:

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 75% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 25% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 30% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 70% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate         GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/23/2015	25	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/23/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species             Yes             No

Were spermatophores observed?         Yes             No

Were fish observed in the pool?         Yes             No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

**PHOTOS**



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP006  
 Observer: C M-H      Phone or email: 503-318-5970  
 Landowner/Applicant: THORNTON DAVID G REV TR & LYNDA J TR &      Phone or email:  
 Address: 17 BIRCH KNOLL ROAD      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool: .25 MI SOUTH ON ROW OFF ADAMS RD  
 Survey date(s):: 4/23/2015      Longitude/Latitude (in decimal degrees): 41.86846862, -72.75627377

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**
**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      ADJACENT TO DISTURBED VEG ON ROW

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Forested wetland (4pts)  | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**      50%
**6. Predominant substrate:**

- |  |   |
|--|---|
| <input type="checkbox"/> Mineral soil                          | Depth: <u>6</u>   |
| <input checked="" type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>DEEPEST ZONE</u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      2016.25  
 Maximum depth at deepest point at time of survey (include units):      3'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 95% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 25% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/23/2015	8		
Wood Frog	4/23/2015	40	Tadpoles	EGG MASSES CLUSTERED IN NW CORNER OF POOL
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/23/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP007  
 Observer: C M-H      Phone or email: 5033185970  
 Landowner/Applicant: THORNTON DAVID G REV TR & LYNDA J TR &      Phone or email:  
 Address: 17 BIRCH KNOLL ROAD      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015      Longitude/Latitude (in decimal degrees): 41.86875626, -72.75666877

### A. VERNAL POOL CHARACTERISTICS (fill in all information known):

#### 1. Landscape Setting (check all that apply):

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

#### 2. Vernal pool condition:

Describe any recent modifications to the pool and associated landscape:

#### 3. Parent material:

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

#### 4. Aquatic resource type that best applies to this pool (choose dominant):

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

#### 5. Pool canopy cover (%): 65%

#### 6. Predominant substrate:

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

#### 7. Pool sizes:

Approximate dimensions of pool (at maximum capacity) (sq. feet): 4414.90  
 Maximum depth at deepest point at time of survey (include units): 2'

#### 8. Hydrology:

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/24/2015	12	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/24/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NW

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: BL-AC3-VP008  
 Observer: CM-H    Phone or email: 503-318-5970  
 Landowner/Applicant: THORNTON DAVID G REV TR & LYNDA J TR &                      Phone or email:  
 Address: 17 BIRCH KNOLL ROAD                      City: BLOOMFIELD                      State: CT                      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015                      Longitude/Latitude (in decimal degrees): 41.86772102, -72.75679331

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      NEAR DISTURBED ROW

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Forested wetland (4pts)  | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**      25%

**6. Predominant substrate:**

- |  |   |
|--|---|
| <input type="checkbox"/> Mineral soil                          | Depth: <u>6</u>   |
| <input checked="" type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>DEEPEST ZONE</u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      1620.03  
 Maximum depth at deepest point at time of survey (include units):      1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 50% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 50% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 85% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate         GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/24/2015	60	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	
SPOTTEDTURTLE	4/24/2015	Few		

Presence of Indicator Species             Yes             No

Were spermatophores observed?         Yes             No

Were fish observed in the pool?         Yes             No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:



PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP009  
 Observer: C M-H      Phone or email: 503-318-5970  
 Landowner/Applicant: BLOOMFIELD TOWN OF      Phone or email:  
 Address: 800 BLOOMFIELD AVENUE      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015      Longitude/Latitude (in decimal degrees): 41.86529475, -72.75774925

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**      85%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      942.48  
 Maximum depth at deepest point at time of survey (include units):      1.5

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 90% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 75% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 25% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/24/2015	5	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/24/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NE

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP010  
 Observer: C M-H      Phone or email: 503-318-5970  
 Landowner/Applicant: BLOOMFIELD TOWN OF      Phone or email:  
 Address: 800 BLOOMFIELD AVENUE      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015      Longitude/Latitude (in decimal degrees): 41.86455680, -72.75896582

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      ADJACENT TO ROW

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**      95%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      301.88  
 Maximum depth at deepest point at time of survey (include units):      1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 95% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 90% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:  Field estimate       GIS       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/24/2015	11	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/24/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



SW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP011  
 Observer: C M-H      Phone or email: 5033185970  
 Landowner/Applicant: BLOOMFIELD TOWN OF      Phone or email:  
 Address: 800 BLOOMFIELD AVENUE      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015      Longitude/Latitude (in decimal degrees): 41.86417066, -72.75857816

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**
**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:      NEXT TO ROW

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Forested wetland (4pts)  | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts) |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input type="checkbox"/> Other (variable points):           |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**      95%
**6. Predominant substrate:**

- |  |   |
|--|---|
| <input type="checkbox"/> Mineral soil                          | Depth: <u>6</u>   |
| <input checked="" type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.): <u>DEEPEST ZONE</u> |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      884.48  
 Maximum depth at deepest point at time of survey (include units):      1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 90% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 40% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/24/2015	4	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



E

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: BL-AC3-VP012  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: BLOOMFIELD TOWN OF                      Phone or email:  
 Address: 800 BLOOMFIELD AVENUE                      City: BLOOMFIELD                      State: CT                      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015                      Longitude/Latitude (in decimal degrees): 41.87273434, -72.75413726

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 100%

**6. Predominant substrate:**

- Mineral soil                      Depth: 6
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 3670.86  
 Maximum depth at deepest point at time of survey (include units): 2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate    
 GIS                     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/24/2015	1		
Wood Frog	4/24/2015	40	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/24/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species           
 Yes           
 No

Were spermatophores observed?           
 Yes           
 No

Were fish observed in the pool?           
 Yes           
 No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



W

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP013  
 Observer: C M-H      Phone or email: 5033185970  
 Landowner/Applicant: BLOOMFIELD TOWN OF      Phone or email:  
 Address: 800 BLOOMFIELD AVENUE      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015      Longitude/Latitude (in decimal degrees): 41.87374363, -72.75389188

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**      20%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      682.05  
 Maximum depth at deepest point at time of survey (include units):      1.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/24/2015	2		
Wood Frog	4/24/2015	25	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Fingernail Clams	4/24/2015	Common		
Caddisflies	4/24/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



24-04-15 02:22:58

NW



## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: BL-AC3-VP014  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: BLOOMFIELD TOWN OF                      Phone or email:  
 Address: 800 BLOOMFIELD AVENUE                      City: BLOOMFIELD                      State: CT                      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015                      Longitude/Latitude (in decimal degrees): 41.87451086, -72.75394708

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 15%

**6. Predominant substrate:**

- Mineral soil                      Depth: 6
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1406.67  
 Maximum depth at deepest point at time of survey (include units): 1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     High turbidity     High algae content     Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)                       Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                               Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 90% (16 pts)                       Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)                               Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate     GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/24/2015	6	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/24/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

- Presence of Indicator Species**                       Yes                       No  
Were spermatophores observed?                       Yes                       No  
Were fish observed in the pool?                       Yes                       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: BL-AC3-VP015  
 Observer: CM-H      Phone or email: 5033185970  
 Landowner/Applicant: CASEY WILLIAM JR &      Phone or email:  
 Address: 41 HABITAT LANE      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015      Longitude/Latitude (in decimal degrees): 41.87476286, -72.75356359

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**      70%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):      802.16  
 Maximum depth at deepest point at time of survey (include units):      2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?      \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: 20% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate      GIS                       Aerial photo estimate

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/24/2015	28	Tadpoles	
Spotted Salamander	4/24/2015	9		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species             Yes             No

Were spermatophores observed?         Yes             No

Were fish observed in the pool?         Yes             No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**16 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: BL-AC3-VP016  
 Observer: C M-H    Phone or email: 5033185970  
 Landowner/Applicant: BLOOMFIELD TOWN OF                      Phone or email:  
 Address: 800 BLOOMFIELD AVENUE                      City: BLOOMFIELD                      State: CT                      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/23/2015                      Longitude/Latitude (in decimal degrees): 41.88089876, -72.74858651

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):                      SCoured OUT CULVERT OUTLET

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:                      DRAINS MANMADE RETENTON POND

**3. Parent material:**

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> Glacial fluvial ("outwash") | <input type="checkbox"/> Loose till | <input type="checkbox"/> Peat                     |
| <input checked="" type="checkbox"/> Dense till       | <input type="checkbox"/> Alluvium   | <input type="checkbox"/> Coastal marine sediments |

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Forested wetland (4pts)             | <input type="checkbox"/> Herbaceous wetland (4pts)        | <input type="checkbox"/> Floodplain (overflow/oxbow) (3pts)                               |
| <input type="checkbox"/> Shrub wetland (4pts)                | <input type="checkbox"/> Open water (2 pts)               | <input checked="" type="checkbox"/> Other (variable points):                      MANMADE |
| <input type="checkbox"/> Peatland (acidic fen or bog) (4pts) | <input type="checkbox"/> Intermittent stream reach (2pts) |   |

**5. Pool canopy cover (%):**                      90%

**6. Predominant substrate:**

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Mineral soil    | Depth:   __  |
| <input type="checkbox"/> Organic matter (peat/muck) | Sampling location (e.g.,deepest zone, edge,etc.):   __ |

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):                      69.30  
 Maximum depth at deepest point at time of survey (include units):                      2

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?                      \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)
- Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     High turbidity     High algae content     Tannic

**8 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 70% (16 pts)                       Open (e.g., meadow, agriculture, golf course): 30% (4 pts)  
 Shrub: % (10 pts)                               Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)                       Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)                               Developed: 35% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate     GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs:        \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails):    \_\_\_\_\_

Submergent vegetation:        \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment:    \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/25/2015	18		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**                       Yes                       No

Were spermatophores observed?                       Yes                       No

Were fish observed in the pool?                       Yes                       No

**SUMMARY**

**8 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:



PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: BL-AC3-VP017  
 Observer: C M-H    Phone or email: 5033185970  
 Landowner/Applicant: BLOOMFIELD TOWN OF                      Phone or email:  
 Address: 800 BLOOMFIELD AVENUE                      City: BLOOMFIELD                      State: CT                      Zip: 06002  
 Location of vernal pool:  
 Survey date(s):: 4/24/2015                      Longitude/Latitude (in decimal degrees): 41.88118815, -72.74848105

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):                      MANMADE IMPOUNDMENT

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape:                      MANMADE DRAINS HOUSING DEVELOPMENT

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):                      MANMADE WETLAND
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):**                      0%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet):                      2558.31  
 Maximum depth at deepest point at time of survey (include units):                      1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?                          

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**12 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 5% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 95% (4 pts)  
 Shrub: % (10 pts)                             
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 55% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 10% (4 pts)  
 Shrub: % (10 pts)                             
  Developed: 35% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate   
 GIS                     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/25/2015	3		
Wood Frog	4/25/2015	9	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species           
 Yes           
 No

Were spermatophores observed?       
 Yes           
 No

Were fish observed in the pool?       
 Yes           
 No

**SUMMARY**

**12 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NW

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: CT300-VP001  
 Observer: CLARE MURPHY-HAGAN      Phone or email: 503-318-5970  
 Landowner/Applicant: OCONNELL JOHN F JR &      Phone or email:  
 Address: 536 SIMSBURY RD      City: BLOOMFIELD      State: CT      Zip: 06002  
 Location of vernal pool: 200' NORTH OF NATURAL GAS COMPRESSION STATION OFF ROUTE 185  
 Survey date(s):: 4/21/2015      Longitude/Latitude (in decimal degrees): 41.83602097, -72.77954758

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: NATURAL/ UNDISTURBED

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 80%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1142.75  
 Maximum depth at deepest point at time of survey (include units): 2.5'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 95% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: 5% (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 35% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Fairy Shrimp	4/21/2015		Common	
<b>FACULTATIVE SPECIES</b>				
Fingernail Clams	4/21/2015	Few		
<b>PREDATOR SPECIES</b>				
<b>OTHER SPECIES</b>				
NORTHERN LEOPARD FROG	4/21/2015	Few		
WATER STRIDER	4/21/2015	Few		
MOSQUITO	4/21/2015	Many		

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: EG-AC3-VP001  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: KINSLEY LLC    Phone or email:  
 Address: 14 CONNECTICUT SOUTH DRIVE                      City: EAST GRANBY                      State: CT                      Zip: 06026  
 Location of vernal pool:  
 Survey date(s):: 4/27/2015                      Longitude/Latitude (in decimal degrees): 41.92884728, -72.71734584

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: NONE

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 60%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 1648.69  
 Maximum depth at deepest point at time of survey (include units): 1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)



**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**22 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 60% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 35% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/27/2015	11	Tadpoles	
Spotted Salamander	4/27/2015	24		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/27/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

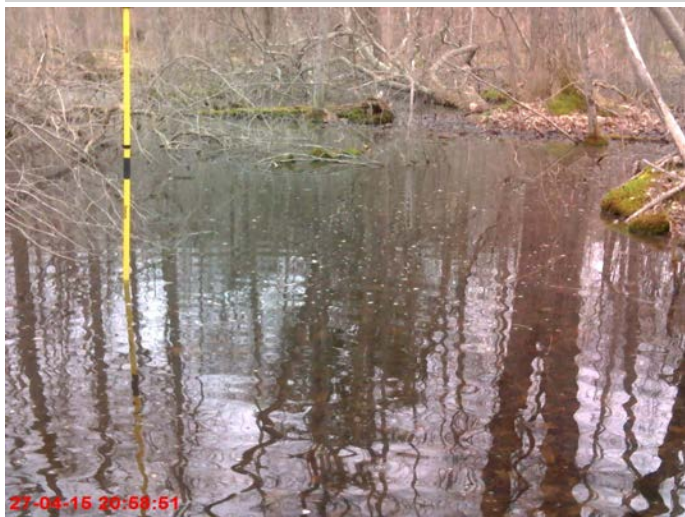
**SUMMARY**

**22 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NW

## Vernal Pool Characterization Form

Project File #60328763                      Project Name: Northeast Energy Direct Project                      Pool ID: EG-AC3-VP002  
 Observer: C M-H    Phone or email: 503-318-5970  
 Landowner/Applicant: KINSLEY LLC    Phone or email:  
 Address: 14 CONNECTICUT SOUTH DRIVE                      City: EAST GRANBY                      State: CT                      Zip: 06026  
 Location of vernal pool:  
 Survey date(s):: 4/27/2015                      Longitude/Latitude (in decimal degrees): 41.92851388, -72.71746022

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: NONE

**3. Parent material:**

- Glacial fluvial ("outwash")                       Loose till                       Peat
- Dense till                       Alluvium                       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)                       Herbaceous wetland (4pts)                       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)                       Open water (2 pts)                       Other (variable points):
- Peatland (acidic fen or bog) (4pts)                       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 95%

**6. Predominant substrate:**

- Mineral soil                      Depth:
- Organic matter (peat/muck)                      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 845.32  
 Maximum depth at deepest point at time of survey (include units): 8"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)                       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 95% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 5% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 15% (4 pts)  
 Shrub: % (10 pts)     
  Developed: 15% (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/27/2015	8	Tadpoles	
Spotted Salamander	4/27/2015	4		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



N

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: WI-AC3-VP001  
 Observer: C M-H      Phone or email: 503-318-5970  
 Landowner/Applicant: LONEWSKI, EUGENE T.      Phone or email:  
 Address: 15 STONE ROAD      City: WINDSOR      State: CT      Zip: 06095  
 Location of vernal pool:  
 Survey date(s):: 4/27/2015      Longitude/Latitude (in decimal degrees): 41.92703261, -72.71884356

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: NONE

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points): UPLAND FOREST
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 40%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEPEST ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 123.59  
 Maximum depth at deepest point at time of survey (include units): 2'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**18 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 100% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): % (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 80% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 20% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate      GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, seges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/27/2015	1	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

**Presence of Indicator Species**                       Yes                       No

Were spermatophores observed?                       Yes                       No

Were fish observed in the pool?                       Yes                       No

**SUMMARY**

**18 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



S



## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: WI-AC3-VP002  
 Observer: C M-H      Phone or email: 503-318-5970  
 Landowner/Applicant: LONEWSKI, EUGENE T.      Phone or email:  
 Address: 15 STONE ROAD      City: WINDSOR      State: CT      Zip:: 06095  
 Location of vernal pool:  
 Survey date(s):: 4/27/2015      Longitude/Latitude (in decimal degrees): 41.92688802, -72.71817871

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: IN ROW COMPACTED SOIL, RECENTLY MOWED, AND TREE CLEARING

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 5%

**6. Predominant substrate:**

- Mineral soil      Depth:
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.):

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 772.75  
 Maximum depth at deepest point at time of survey (include units): 1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water?     

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear     
  High turbidity     
  High algae content     
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 60% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 40% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)     
  Open (e.g., meadow, agriculture, golf course): 30% (4 pts)  
 Shrub: % (10 pts)     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:   
 Field estimate     
 GIS     
 Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Wood Frog	4/28/2015	16	Tadpoles	
Spotted Salamander	4/28/2015	5		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/28/2015	Many		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

PHOTOS



NE

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: WI-AC3-VP003  
 Observer: C M-H      Phone or email: 503-318-5970  
 Landowner/Applicant: KIMBERLY EDITH MAYRAND FAMILY TRUST      Phone or email:  
 Address: 73 WADSWORTH ST.      City: WINDSOR      State: CT      Zip: 06095  
 Location of vernal pool:  
 Survey date(s):: 4/27/2015      Longitude/Latitude (in decimal degrees): 41.92707843, -72.71800873

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: IN ROW COMPACTED SOILS DISTURBED VEG

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 5%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 305.44  
 Maximum depth at deepest point at time of survey (include units): 1'

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? \_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear    
  High turbidity    
  High algae content    
  Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

- Forested: 60% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 40% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)                     
  Open (e.g., meadow, agriculture, golf course): 30% (4 pts)  
 Shrub: % (10 pts)                                     
  Developed: % (0 pts)

Are there one or more barriers to vernal pool fauna movement within the envelope and/or critical terrestrial habitat? If so, check here and see directions for explanation of how to incorporate this information.

Based on:     Field estimate             GIS                       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/28/2015	4		
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/28/2015	Common		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species             Yes             No

Were spermatophores observed?             Yes             No

Were fish observed in the pool?             Yes             No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:

VP IS ON A NO ACCESS PARCEL #758 HOWEVER POOL IS LOCATED IN THE ROW

PHOTOS



NE

## Vernal Pool Characterization Form

Project File #60328763      Project Name: Northeast Energy Direct Project      Pool ID: WI-AC3-VP004  
 Observer: C M-H      Phone or email: 503-318-5907  
 Landowner/Applicant: LONEWSKI, EUGENE T.      Phone or email:  
 Address: 15 STONE ROAD      City: WINDSOR      State: CT      Zip: 06095  
 Location of vernal pool:  
 Survey date(s):: 4/27/2015      Longitude/Latitude (in decimal degrees): 41.92731564, -72.71778343

**A. VERNAL POOL CHARACTERISTICS (fill in all information known):**

**1. Landscape Setting (check all that apply):**

- Upland depression (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of a pool complex (within 1000 feet of one or more other vernal pools)(NA)
- Pool within larger wetland system (4 pts; if this is also in a floodplain, use 2 pts)
- Pool part of wildlife corridor (4 pts)
- Other (variable pts):

Pool Origin:

**2. Vernal pool condition:**

Describe any recent modifications to the pool and associated landscape: IN ROW DISTURBED SOIL AND VEG

**3. Parent material:**

- Glacial fluvial ("outwash")       Loose till       Peat
- Dense till       Alluvium       Coastal marine sediments

**4. Aquatic resource type that best applies to this pool (choose dominant):**

- Forested wetland (4pts)       Herbaceous wetland (4pts)       Floodplain (overflow/oxbow) (3pts)
- Shrub wetland (4pts)       Open water (2 pts)       Other (variable points):
- Peatland (acidic fen or bog) (4pts)       Intermittent stream reach (2pts)

**5. Pool canopy cover (%):** 5%

**6. Predominant substrate:**

- Mineral soil      Depth: 6
- Organic matter (peat/muck)      Sampling location (e.g.,deepest zone, edge,etc.): DEEP\_ZONE

**7. Pool sizes:**

Approximate dimensions of pool (at maximum capacity) (sq. feet): 345.15  
 Maximum depth at deepest point at time of survey (include units): 8"

**8. Hydrology:**

a. Estimated hydroperiod (unless actual, observed hydroperiod value(s) is(are) known, use the presence of these example indicator species to best predict the expected hydroperiod of the pool):

- Dries between early March and early July (e.g., *Thelypteris palustris*, *Carex stricta*, *Impatiens capensis*, *Ilex verticillata*)(6pts)
- Dries between early July and early September (e.g., *Sagittaria latifolia*, *Scirpus cyperinus*, *Dulichium arundinaceum*, *Cephalanthus occ.*)(8pts)
- Dries between early September and early November (e.g., *Eleocharis palustris*, *Glyceria canadensis*, *Utricularia spp.*, *Decodon vert.*)(8pts)
- Dries between early November and late December, or intermittently exposed (e.g., *Nuphar spp.*, *Potamogeton spp.*)(8pts)

How long does pool hold water? \_\_\_\_\_

b. Inlet/Outlet (pick one):

- No inlet/outlet (8 pts)       Permanent inlet or outlet (channel with well-defined banks and permanent flow) (2 pts)
- Temporary inlet/outlet (6 pts)

**9. Water quality:**

- Clear       High turbidity       High algae content       Tannic

**20 TOTAL for Pool Characteristics (out of 28 max.)**

**B. VERNAL POOL ENVELOPE (100 ft) AND CRITICAL HABITAT AREA (100-750 ft) CHARACTERISTICS (fill in all information known):**

**1. Landuse type and approximate percentage within the 100-ft vernal pool envelope:**

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 Shrub: % (10 pts)       Developed: % (0 pts)

**2. Landuse type and approximate percentage within the 100-750-ft vernal pool critical terrestrial habitat:**

- Forested: 70% (16 pts)       Open (e.g., meadow, agriculture, golf course): 30% (4 pts)  
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Based on:     Field estimate       GIS       Aerial photo estimate

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area (out of 32 max.)**

**C. SPECIES PRESENT IN VERNAL POOL**

Vegetation type and percent cover IN THE POOL that can provide egg attachment or offer concealment to aquatic or developing larvae.

Shrubs: \_\_\_\_\_

Emergent vegetation (grasses, sedges, rushes, cattails): \_\_\_\_\_

Submergent vegetation: \_\_\_\_\_

Dead branches and downed woody material (branches/twigs) available for egg attachment: \_\_\_\_\_

INDICATOR SPECIES	DATE	EGG MASSES (#)	TADPOLES/LARVAE	NOTES
Spotted Salamander	4/28/2015	1		
Wood Frog	4/28/2015	11	Tadpoles	
FACULTATIVE SPECIES	DATE	ABUNDANCE	NOTES	
Caddisflies	4/28/2015	Few		
PREDATOR SPECIES	DATE	ABUNDANCE	NOTES	
OTHER SPECIES	DATE	ABUNDANCE	NOTES	

Presence of Indicator Species       Yes       No

Were spermatophores observed?       Yes       No

Were fish observed in the pool?       Yes       No

**SUMMARY**

**20 TOTAL for Pool Characteristics**

**20 TOTAL for Pool Envelope and Critical Terrestrial Habitat Area**

Other Comments:



PHOTOS



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