VOLUME THREE to:

Petition of BNE Energy Inc.

for a Declaratory Ruling for the Location, Construction and Operation

of a 4.8 MW Wind Renewable Generating Project on Flagg Hill Road in Colebrook, Connecticut ("Wind Colebrook South")

December 6, 2010

EXHIBITS

EXHIBIT I

Terrestrial Wildlife Habitat & Wetland Impact Analysis

Wind Colebrook South

17 & 29 Flagg Hill Road

Colebrook, Connecticut

Prepared for

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1 Introduction

BNE Energy Inc. ("BNE") is proposing to construct and operate a wind generating project on its properties located at 29 Flagg Hill Road and 17 Flagg Hill Road in Colebrook, Connecticut (the "Property"). The 79.44-acre Property is located along the Norfolk town line and approximately 600 feet north of the Winsted/Winchester town line. BNE proposes to install three GE 1.6 MW wind turbines at the Property: one in the northwest corner of the property, one in the northeast corner of the property and one in the southern portion of the Property. The hub height of the turbines will be 100 meters, which is the equivalent of 328 feet. The blade diameter of the turbines will be 82 meters (269 feet) up to a maximum of 100 meters (328 feet). In addition to the three turbines, the development will include an access road, associated ground equipment including an electrical collector yard and associated utility infrastructure so that the turbines can be interconnected to the electrical grid (collectively "Wind Colebrook South" or the "Project"). Current access to the Property exists off of Flagg Hill Road. BNE proposes to construct a new driveway over the 17 Flagg Hill Road parcel it has acquired to facilitate access during construction and operation of Wind Colebrook South. The *Property Location Map, USGS*, provided as Figure 1 depicts the approximate Property boundary location.

The overall goal of this study is to identify and document the vegetative and wetland communities existing on the entire 79.44-acre Property and to determine the potential impacts of the proposed wind development on terrestrial wildlife and wetlands.

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Property Description

The Property is located in the southwest corner of the town of Colebrook. It is situated on the west side of Flagg Hill Road and west of Route 44. The Property is generally characterized by second growth, northern hardwood forest, but also includes a small hilltop clearing which was recently created to collect wind data, as well as a large wetland complex that includes a ±6.70-acre beaver pond that is centrally located within the Property. An unnamed perennial watercourse outlets from the pond in the vicinity of the southern Property boundary, flowing south.

Topography and Drainage Basins

The topography is characterized by a moderately sloping hilltop which occupies the eastern portion of the Property. A large wetland corridor occupies the west/central portion of the Property with upland areas occurring in the northwest and southwest corners of the Property. The highest elevations occur at approximately 1490 feet on the aforementioned hilltop. The lowest elevations are approximately 1290 feet along Flagg Hill Road.

The Property is located in the Mad River drainage basin. This drainage basin is located within the Farmington Subregional Basin, which is within the Connecticut Major Basin.

Geology

According to the Bedrock Geological Map of Connecticut (Connecticut Geological and Natural History Survey, 1985), the bedrock underlying the Property is characterized as rusty mica schist and gneiss. Schist is a coarse to very coarse grained, strongly to very strongly layered metamorphic rock whose layering is typically defined by parallel alignment of micas. Primarily composed of mica, quartz, and feldspar; occasionally spotted with conspicuous garnets. Gneiss is medium to coarse grained metamorphic rock characterized by compositional banding of light and dark minerals, typically composed of quartz, feldspar, and various amounts of dark minerals. It occurs with a variety of compositions and is a characteristic rock of the uplands.

The Surficial Materials Map of Connecticut indicates that most of the Property is underlain by thin till. Thin till is characterized by areas where till is less than 10-15 feet thick and including areas of bedrock outcrop where till is absent. Comprised of upper till, it is characterized by a loose to moderately compact substrate, generally sandy and

commonly stony. Two facies are present in some places; a looser, coarser-grained ablation facies, melted out from subglacial position; and a more compact finer-grained lodgement facies deposited subglacially. In general, both facies of upper till derived from the red Mesozoic sedimentary rocks of the central lowland of Connecticut are finer-grained, more compact, less stony and have fewer surface boulders than upper till derived from crystalline rocks of the eastern and western highlands.

Mapped Soil Types

Digitally available updated soil survey information was obtained from the Natural Resources Conservation Service (NRCS). Soil classifications present on the Site are as follows:

Glacial Till (unstratified sand, silt & rock) deposited upland soils:

- Bice fine sandy loam (417)
- Schroon fine sandy loam (418)
- Brayton loam (442)

Glacial Till (unstratified sand, silt & rock) deposited wetland soils:

- Brayton-Loonmeadow complex (442)
- Ridgebury, Leicester, and Whitman (3)

Organic (peat & muck) derived wetland soils:

- Wonsqueak mucky peat (437)

These soil types were generally field confirmed during a wetland investigation and delineation conducted by Vanasse Hangen Brustlin, Inc. (VHB) personnel. Details of the wetland delineation as well as detailed published soils information including a soil map and soil description report are contained within the *Wetlands Delineation Report* provided in Attachment A.

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Habitat Study Methodology

The wildlife habitat evaluation was divided into three parts: 1) Vegetation Assessment, 2) Habitat Structure Assessment and 3) Wildlife Analysis. All three components of the wildlife habitat evaluation were completed for the entire Property. This section discusses the methodology used to perform the wildlife habitat study.

Vegetation Assessment

The Property was segmented into four major habitat types, which were delineated using upland and wetland boundaries and dominant vegetative cover types. The boundaries of each habitat type are outlined in the *Habitat Type Map*, which is provided as Figure 2. The four habitat types identified are second growth northern hardwood forest (includes areas interspersed with early successional forest), Palustrine forested wetland, Palustrine open water (beaver pond, which includes a fringe of emergent wetland on the north side) and early old field meadow. The dominant tree, shrub and herbaceous layers of each habitat type were identified and documented by VHB personnel experienced in plant identification. Representative photographs of the dominant habitat types are included in the *Photographic Documentation* provided in Attachment B.

Habitat Structure Assessment

Various habitat structural features were identified and documented for each habitat type. Forested areas were evaluated for canopy cover, perch height and midstory composition. All habitat areas were assessed to determine soil and substrate type, depth to bedrock, slash piles, depth of leaf litter, topography and groundwater elevation. The locations of dirt paths, structures and stone walls were also documented. VHB personnel searched for and documented the occurrence of burrows, tree cavities, snags and vernal pools (no vernal pool habitat was identified on the Property).

Wildlife Analysis

VHB personnel used DeGraaf and Yamasaki's *New England Wildlife: Habitat, Natural History, and Distribution* (2001) as a reference and general predictive tool to identify potential fauna that may be occupying the Property. This reference book provides a

compendium of natural history, distribution, and habitat relationships for 338 terrestrial and aquatic wildlife species that breed, winter, or reside in New England. The 2001 edition of the book is a revision of DeGraaf and Rudis' *New England Wildlife* (1986). The book provides a set of matrices based on dominant cover type that determine which avian, amphibian, reptile, and mammal species may occupy an area based on general and specific habitat requirements. The habitat types found on the Property were correlated with cover types used in the matrices, and a list of potential species was identified. Based on this methodology, the list of potential wildlife species is typically quite extensive due to the general associations made between habitat types and typical species anticipated to use these habitat types. State-specific information about the distribution and habitat requirements of amphibians, reptiles, and some mammals was used to help narrow the list of potential species anticipated to utilize the habitats found on the Property. Klemens' *Amphibians and Reptiles of Connecticut and Adjacent Regions* (1993), and *Amphibians and Reptiles in Connecticut* by the same author (2000) provide distribution information and specific habitat comments pertinent to Connecticut's physiography, providing a more localized view of potential amphibian and reptile species. Wildlife fact sheets from the CTDEP Wildlife Division, and articles from the Wildlife Division's bimonthly magazine, *Connecticut Wildlife*, were also used to identify potential locations of mammal and other taxa within the state. The list of potential species (Table 1) that may be utilizing the Property is included in the Mammal and Herpetofauna Evaluation section of this report.

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Habitat Descriptions

Four major habitat types exist on the Property, including second growth northern hardwood forest (includes areas interspersed with early successional forest), Palustrine forested wetland, Palustrine open water (beaver pond, which includes a fringe of emergent wetland on the north side) and early old field meadow.

Second Growth Northern Hardwood Forest

Forested uplands on the Property are characterized as a northern hardwood forest type and dominated by deciduous poletimber (trees 4.0 to 11.9 inches diameter at breast height [DBH]) and scattered sawtimber size trees (12+ inches DBH). Much of the scattered sawtimber consists of eastern white pine *(Pinus strobus)*. Red maple *(Acer rubrum),* American beech *(Fagus grandifolia)* and black birch *(Betula lenta)* are the dominant species on the eastern and central portion of the Property, with eastern hemlock *(Tsuga canadensis),* sugar maple *(Acer saccharinum)*, yellow birch *(Betula allegheniensis)*, red oak *(Quercus rubra),* eastern hemlock *(Tsuga canadensis)*, black cherry *(Prunus serotina)* and young striped maple *(Acer pensylvanicum)*. Colonization by black birch, American beech, black cherry and *Rubus* occurs in areas where timber harvesting has occurred and the over-story has been partially removed. In areas where timber harvesting has been less intensive, the forest understory is relatively open, but where vegetated is dominated by mountain laurel. The understory generally lacks a diverse shrub component, and is particularly lacking fruit-bearing shrubs except in wetlands.

In the vicinity of the eastern Property boundary and north of the beaver pond, areas of early successional forest are interspersed with second growth forest (see attached *Habitat Type Map* provided as Figure 2). This area is the result of more intensive timber harvesting activities that created significant openings in the tree canopy. Areas of early successional forest are characterized by a vigorous understory dominated by mountain laurel *(Kalmia latifolia),* black birch and American beech. Areas of forest abutting the hilltop meadow are also characterized as early successional forest type. This area is also characterized by a vigorous understory dominated by pioneer tree species such as black birch, yellow birch and black cherry, with more shade tolerant species such as American beech and eastern hemlock also occurring. This type of habitat feature, which is characterized as a transitional area between meadow and forest, is known as a "feathered edge."

Rotting logs, woody debris, and slash are abundant throughout the Property in both forested uplands and wetlands. Tree cavities in forested uplands and in wetlands occurred primarily in trees less than 18 inches DBH. Trees greater than 18 inches were not abundant within the

Property due to historic logging activities. Several species of medium-sized mammals prefer trees of this diameter for nesting, and their nesting presence on the Property may be limited by the low number of large trees.

Palustrine Forested Wetlands

Three wetland systems were delineated on the Property. Two additional systems (Wetlands 3 & 4) were delineated off-site to the south, due to their close proximity to the Property. These wetlands are depicted within the *Wetlands Delineation Report* attached hereto as Attachment A.

Wetland 1 is a large headwater wetland draining southerly toward the Mad River. This wetland complex is characterized by a variety of wetland classes and cover types including deciduous and hemlock forest, emergent marsh and open water. The dominant feature of this system is a large beaver pond encompassing approximately 6.70 acres. Forested wetland lobes extend to the north and west of the beaver pond and drain into this system. The forested wetland lobe extending to the north of the pond is seasonally saturated and dominated by hardwood tree species such as red maple, yellow birch and American beech. The wetland lobe extending to the west of the pond is a seasonally/permanently saturated hemlock wetland. This wetland area includes an intermittent watercourse generally having a diffuse meandering flow pattern drains into the beaver pond from a wetland located west of the Property. Open water areas associated with the beaver pond are permanently inundated and generally with aquatic vegetation.

Wetland 2 is a forested wetland finger which is an extension of a larger system located on the adjacent property to the north. While the narrow wetland interior is generally void of woody vegetation, the fringes are dominated by American beech and eastern hemlock.

Wetland 3 is a seasonally saturated forested wetland located to the south of the southern Property boundary (off-site). It is a portion of a larger wetland extending off-site in a southeasterly direction. Dominant vegetation includes eastern hemlock, American beech, yellow birch, black birch, red maple and mountain laurel on the fringes. This wetland system drains off-site towards the east.

Wetland 4 is a seasonally saturated forested wetland located to the south of the southern Property boundary (off-site). It is a portion of a larger wetland draining southwesterly to an unnamed perennial watercourse which drains from the beaver pond. Dominant vegetation includes eastern hemlock, American beech, yellow birch and black birch.

Wetland 5 is a forested hillside seep wetland draining northeast along the east Property boundary. An intermittent watercourse feature, having diffuse flows and intermittent channel, flows within the wetland interior. Flows are conveyed beneath an existing gravel driveway with a 36-inch corrugated metal pipe. An additional intermittent watercourse feature was delineated along the west side of the existing driveway. This feature is characterized as a dug drainage ditch that intercepts groundwater (has base flow). It drains into Wetland 5 north of the existing driveway. Dominant vegetation includes white ash

(Fraxinus americana), sugar maple, yellow birch, black birch, American beech, spicebush and elderberry *(Sambucus canadensis)*.

Palustrine Open Water (Beaver Pond)

A ±6.70-acre beaver pond is centrally located within the Property and is characterized by shallow, open water. The pond contains an abundance of standing dead snags and some occasional basking logs as well as floating-leaved surface plants, which may provide forage for some species. The southeastern side of the pond is fringed by a narrow band of Palustrine Emergent wetlands dominated by various shrubs, *Carex* and *Juncus* species. During January field investigations, the entire pond was frozen over and walkable. Several beaver dams were observed at the southern extent of this pond restricting the outlet to an unnamed perennial watercourse, which flows south from the pond.

Early Old Field Meadow

A recently created hilltop meadow, approximately 3.50 acres in size, is situated in the eastern portion of the Property at the highest elevation. Dominant species observed includes a variety of grasses, *Rubus spp., Solidago spp,* and New York fern *(Thelypteris noveboracensis)*. This area is maintained as a meadow and as such is subject to regular mowing.

Fauna

This section describes the results of the field investigation conducted by VHB biologists in January, March, and October 2010, as well as a subsequent desktop wildlife evaluation.

Mammal and Herpetofauna Evaluation

A mammal and herpetofauna evaluation was conducted to determine possible amphibian, reptile, and mammal species that may be using the habitats found on the Property. In addition to field investigations in which direct signs of wildlife were recorded, potential species were identified using the habitat matrices provided in *New England Wildlife*. The matrices featured in *New England Wildlife* include 11 forested cover types and 27 non-forested cover types. Species are listed taxonomically, and habitat use for each species associated with each cover type is identified in terms of seasonal use (breeding season or winter season), activity (feeding or shelter), and preference (preferred habitat or utilized habitat). Special habitat features unique to each species and required for occupancy (i.e., nesting, denning, or feeding) are also briefly described. Species with large home ranges that may nest or den off-site but could use the Property for foraging were considered to potentially occur.

To identify potential wildlife species occurring on the Property in both uplands and forested wetlands, the Northern Hardwoods column of the *New England Wildlife* matrix was used. This type of forest is described by DeGraaf and Yamasaki as including cover types dominated by sugar maple/ash, sugar maple/beech/yellow birch, and beech/red maple, which accurately

describes the dominant cover types identified throughout most of the forested portion of the Property. In southern New England, northern hardwoods grade into a mixed hardwood forest type, with associated species include eastern white pine, red maple, white ash, paper birch, sweet birch, hemlock, and black cherry. This type of transition area also occurs on the Property. Forest stand sizes used in the *New England Wildlife* analysis included S (regeneration through seedlings), Sp (sapling through poletimber), St (sawtimber), and U (uneven-aged).

To identify potential wildlife species occurring in the hilltop meadow portion of the Property, the Forb column of the *New England Wildlife* matrix was used as it most closely resembles the meadow habitat occupying the Property. The authors describe this habitat type as "broad-leaved herbaceous cover such as goldenrod and sensitive fern." Grass is also prevalent in this portion of the Property, but it lacks shrubs and saplings, and thus does not yet fit the Old Field/Shrub habitat type.

Wildlife species associated with the beaver pond were correlated using the Pond column of the Nonforested Habitat matrix in *New England Wildlife.* The authors describe a Pond as a permanent, palustrine waterbody characterized by emergent and/or floating-leaved plants, up to 20 acres in size.

Table 1 lists all potential mammal, reptile and amphibian species identified through the *New England Wildlife* matrices as potentially occurring on the Property based on existing cover types and special habitat features required for occupancy. Special habitat features required by each species are also described. Species that appear in bold print were directly observed during on-site investigations. A narrative description of the most likely species to occur on the Property is also provided below. This description includes any direct or indirect observations of the species, identifies how the species might use habitat within the Property.

Ungulates

Ungulates, or hooved animals, which may occur on the Property include white-tailed deer (*Odocoileus virginianus*) and moose (*Alces alces*). White-tailed deer are an abundant and widespread species throughout Connecticut. Deer may use the Property differently depending on the season, such as foraging on oak acorns and beechnuts in the fall, browsing on bark from young maple trees and hemlock twigs in the winter, and feeding on a variety of forbes, grasses, and sedges during the spring and summer. During a January 2010 site visit with snow cover, the tracks of several species of wildlife were visible, but deer tracks were noticeably absent, suggesting that winter food sources may not be abundant. However during a brief site visit in October 2010, numerous buck rubs were observed in the second growth forest area southwest of the meadow.

Moose have not historically been common in Connecticut, although the current resident population is growing and is now believed to consist of approximately 100 individuals. Sightings in the northwestern corner of the state have increased significantly, as growing populations from Massachusetts and New York spill over the borders into Connecticut. In addition, moose that are relocated by CTDEP from other, more urban parts of the state are often brought to northern Litchfield County because it offers better habitat and is less densely settled. The Property includes second-growth forest and wetland habitat, both of which are

attractive to moose. Moose may feed on wetland plants in the summer and forage in upland regenerating forested areas in the winter. Nearby Beckley Pond, an extensive wetland system located west of the Property, may also attract moose to the general area. The home range of a moose varies by region, gender, and season, but can stretch from 4 to 60 square miles. There was no evidence of moose observed during site visits.

Large to Medium-sized Mammals

Tracks of red fox (*Vulpes vulpes*) and coyote (*Canis latrans*) were observed throughout the Property during field investigations. Coyote tracks were also observed at the frozen pond in the vicinity of two beaver (*Castor canadensis*) lodges. Foxes and coyotes often stalk wetlands seeking prey. Both species also hunt along the edges of second-growth forests and fields, such as occur on the Property. An approximately seven-acre early successional field located on adjacent property to the north of the Property may also attract these species to the general area. Coyote, originally a western plains species, was not reported in Connecticut until the 1950s, but is now considered widespread and relatively common throughout the state. Red fox, a mix of the native red fox of North America and the European red fox, is also widespread and common, having adapted to some degree of suburbanization.

Scratch marks on a snag in the pond holding a wood duck nest box suggest the presence of raccoon (*Procyon lotor*), a common and abundant species in Connecticut. Other medium-sized forest-dwelling mammals likely to occur within the Property include fisher (*Martes pennanti*), which favors coniferous or mixed forests with continuous canopy, and porcupine (*Erethizon dorsatum*), which favors northern hardwood forest species including eastern hemlock, which is a major food source during winter months. Due to restoration efforts by CTDEP, fisher populations in Connecticut are rebounding after extirpation in the early 1900s caused by loss of forested habitat and over-hunting. This species is the primary predator of porcupine.

The Property has the potential to be incorporated into the home range of a black bear (*Ursus americanus*), which can extend from six to 20 miles for a female and far greater an area for males. Suitable winter den habitat was not observed on-site, although black bears have been known to den in only semi-protected areas such as under fallen trees and against slash piles. Wetland habitat may provide foraging opportunities for black bear during spring and summer months. Beechnuts and acorns may supply a fall food source, although many of the beech trees on the Property are suppressed and may not produce significant mast crops.

Small Mammals

Gray squirrel (*Sciurius carolinensis*) and eastern cottontail (*Sylivilagus floridanus*) tracks were observed in the snow during a January 2010 field visit, and a red squirrel (*Tamiasciurus hudsonicus*) was observed running to a tree near the entrance to the Property. Northern flying squirrel (*Glaucomys sabrinus*) is another possible resident of the Property, potentially occurring in sawtimer-sized uplands in the eastern portion of the Property where there is a greater percentage of northern hardwood trees. Little is currently known about the population of northern flying squirrels in Connecticut, but they are not believed to ever have been as numerous as southern flying squirrels (*Glaucomys volans*). The latter species also could potentially occur on the Property, inhabiting sawtimber areas where northern red oak is more prevalent. Eastern chipmunk (*Tamias striatus*) is also a likely resident of the Property.

Although chipmunks generally remain below ground in winter months, during the other seasons of the year they will feed on a variety of items that occur on-site, including mushrooms, red maple seeds, beechnuts, and black cherry fruits. A number of small rodents also have the potential to occur on-site, such as deer mouse (*Peromyscus maniculatus*), white-footed mouse (*Peromyscus leucopus*), house mouse (*Mus musculus*), and southern red-backed vole (*Clethrionomys gapperi*). These species serve as prey for a variety of larger predators.

Reptiles, Amphibians, and Fish

The Property contains wetland and wooded habitat that may support several species of herpetofauna (reptiles and amphibians). There are unlikely to be fish within the Property as both the inlet to the beaver pond appears to be an intermittent watercourse, however surveys were not conducted for this resource. There are also no vernal pools observed on the Property, and species associated with these ephemeral waterbodies are unlikely to occur on the Property.

Turtles

The high elevation of the project site (~1,300 to 1,500 feet) and the till substrate likely limit the presence of several species of turtle that are common elsewhere in Connecticut. Marsh and pond species such as painted turtle (*Chrysemys picta*) and spotted turtle (*Clemmys guttata*) are uncommon at elevations above 900 feet in Connecticut (Klemens 1993), and are unlikely to occur on the Property due to the high elevation. Snapping turtles (*Chelydra s. serpentina*) occur in a range of elevations and a variety of wetland habitats, including beaver impoundments, and as a result is perhaps the most likely resident turtle species. This species is widespread throughout the state.

Snakes

Similar to turtles, several species of snakes that are otherwise widespread throughout Connecticut are uncommon at high elevations. Thus the potential diversity of snakes on the Property may be limited. Species that are more common at high elevations and might occur in forested or pond-like landscapes include northern redbelly (*Storeria occipitomaculata*), a species that is widespread in Litchfield County, and eastern garter snake (*Thamnophis sirtalis*), an abundant and widespread species that can be found in a variety of ecological environments in Connecticut, including forests and shrub swamp/marsh complexes. Eastern milk snake (*Lampropeltis t. triangulum*), a species that flourishes in human-altered landscapes, might be found in the eastern portion of the Property where there is a mix of fields, woods, and human habitation.

Salamanders

Wetland habitat on the Property may not be ideal for a number of salamander species. There are no vernal pools on-Site, and the major wetland system is comprised of a beaver pond with permanent water that is likely too deep for salamanders. The probable lack of fish in the pond though is beneficial should aquatic-breeding amphibians occur on-Site. Species that are most likely to be present on the Property are red-spotted newt (*Notophthalmus viridescens*) and northern redback salamander (*Plethodon cinereus*). Both species are widespread throughout Connecticut, and red-spotted newt appears to be more common in areas of higher elevation. Adult red-spotted news are fully aquatic and could be found in the beaver pond, lurking in

weedy areas with submerged vegetation. The moist woods surrounding the pond may provide suitable habitat for juvenile red-spotted newts, which are known as red efts. Red efts are terrestrial and will live in the forest for up to seven years under damp leaves, brush piles, or logs until they are ready to move to the pond. Redback salamander is considered the most widely distributed and abundant salamander in Connecticut, and very likely occurs throughout the wooded uplands of the Property. This species is terrestrial and not dependent on standing water, and can be found in a variety of forested habitats. An all red-phase of northern redback salamander occurs in upland areas of northern Litchfield County, most frequently in the towns of Colebrook, Norfolk, and Winchester (Klemens 2000).

Frogs and Toads

Green frogs (*Rana clamitans*) and American bullfrogs (*Rana catesbiana*) are likely to be found in the pond. Both species use a wide variety of aquatic habitats with permanent water, and are widely distributed in southern New England to elevations of nearly 2,000 feet. American toad (*Bufo americanus*), a terrestrial woodland species except during the breeding season, uses a variety of aquatic habitats for mating and depositing eggs; this species may use the shallower edges of the pond for these purposes. American toads are abundant and widespread. Gray tree frog (*Hyla versicolor*), another largely terrestrial amphibian species, may occupy the forested area surrounding the pond and breed in shallow pools and patches along the edge. This species is known to occur at high elevations. Northern spring peeper (*Pseudacris c. crucifer*) is considered widespread and ubiquitous in New England, occurring in a range of habitats at elevations of up to 2,000 feet. The preferred habitat of this species is moist deciduous woodlands and spring peepers might be expected in the forested wetland on the north side of the pond.

Natural Diversity Data Base Species

VHB conducted a CTDEP Natural Diversity Data Base (NDDB) map review for potential threatened or endangered species or designated critical habitats in proximity to the Property. VHB found that the most recent (updated August 2010) digitally available NDDB map depicts an area of concern on the eastern portion of the Property in the vicinity of Flagg Hill Road (see Figure 3, *Environmental Resources Screen*). As such, VHB completed and submitted a NDDB Review Request Form and supporting materials to the CTDEP Bureau of Natural Resources to determine if a potential conflict exists between the proposed development and a species or natural community of concern. Correspondence from the Bureau of Natural Resources revealed that Great St. John's-wort *(Hypericum ascyron)*, a state species of special concern plant, occurs in a wetland to the east of the Property, across Flagg Hill Road. CTDEP has recommended that if any direct or indirect activities are proposed for this area, that a description of work is provided to CTDEP in order to avoid negative effects to the species and its habitat. VHB has submitted a letter and plans to CTDEP to confirm that the proposed development will not adversely affect this species (See Attachment C). Great St. John's-wort prefers streambanks, wet meadows and thickets (Connecticut Botanical Society). Direct wetland impacts associated with the Project are limited to a historically disturbed forested wetland not associated with a watercourse and as such are not likely to affect this species.

Table 1: New England Wildlife Database Search of Possible Amphibians, Reptiles and Mammals Anticipated To Use the Property

Common Name	Scientific Name	Habitat Type on the Property			Special Habitat features
AMPHIBIANS					
Northern Redback Salamander	*Plethodon cinereus*	Forest			Logs, stumps, rocks, etc.
Red-spotted Newt	*Notophthalmus v. viridescens*	Forest		Pond	Waterbodies with aquatic vegetation for adult newts; juveniles (efts) are terrestrial.
American Bullfrog	*Rana catesbiana*			Pond	Deep permanent water with floating or emergent vegetation.
Eastern American Toad	*Bufo a. americanus*	Forest		Pond	Shallow, still water for breeding.
Gray Treefrog	*Hyla versicolor*	Forest		Pond	Seeps or shallow water adjacent to upland forests for breeding; hibernates under leaves, logs.
Green Frog	*Rana clamitans melanota*			Pond	Margins of riverine or lacustrine habitats for breeding.
Northern Spring Peeper	*Pseudacris c. crucifer*	Forest			Pools for breeding adjacent to forested or shrub habitat.
Pickerel Frog	*Rana palustris*	Forest		Pond	Shallow, clear water of bogs, woodland streams, and lake margins.
REPTILES					
Common Snapping Turtle	*Chelydra s. serpentina*			Pond	Wetlands within 10 km of well-drained, sandy, gravelly, or loamy areas for nesting.
Common Garter Snake	*Thamnophis sirtalis*	Forest	Meadow	Pond	None listed.
Eastern Milk Snake	*Lampropeltis t. triangulum*	Forest	Meadow		Slash, wood piles, debris or loose soils for egg laying.
Northern Redbelly Snake	*Storeria o. occipitomaculata*	Forest			Woodland debris – bark and rotting wood.
Northern Ringneck Snake	*Diadophis punctuatus edwardsii*	Forest			Mesic areas with abundant cover.
Northern Water Snake	*Nerodia s. sipedon*			Pond	Branches, logs overhanging water.
MAMMALS					
Beaver	*Castor canadensis*			Pond	Low gradient woodland streams with adjacent young hardwoods.
Black Bear	*Ursus americanus*	Forest	Meadow	Pond	Dens in semi-protected areas; seeps and wet areas in early spring; mast.
Coyote	***Canis latrans***	Forest	Meadow		Well-drained secluded den sites.
Deer Mouse	*Peromyscus maniculatus*	Forest			Down logs, rotting stumps.

Common Name	Scientific Name	Habitat Type on the Property			Special Habitat features
Eastern Chipmunk	*Tamias striatus*	Forest			Tree or shrub cover; elevated perches, decaying stumps and logs, stone walls.
Eastern Cottontail	***Sylvilagus floridanus***		**Meadow**		**Brush piles, stone walls, dens or burrows; herbaceous and shrubby cover.**
Fisher	*Martes pennanti*	Forest			Hollow trees, logs; dense regenerating softwoods.
Gray Fox	*Urocyon cineroargenteus*	Forest	Meadow	Pond	Hollow logs, tree cavities, rock crevices; tends to hunt forest edges.
Gray Squirrel	***Sciurus carolinensis***	**Forest**			**Mast-producing trees; tall trees for dens and leaf nests.**
House Mouse	*Mus musculus*		Meadow		Buildings in winter; around human habitation.
Long-tailed Weasel	*Mustela frenata*	Forest	Meadow		Areas of abundant prey; previously excavated den sites; areas of abundant prey.
Masked Shrew	*Sorex cinereus*	Forest	Meadow		High humidity, ground cover especially leaves, rotten logs, herbaceous vegetation.
Mink	*Mustela vison*	Forest		Pond	Hollow logs, natural cavities, under tree roots; forest-wetland edges.
Moose	*Alces alces*	Forest		Pond	Wetlands (in summer).
Northern Flying Squirriel	*Glaucomys sabrinus*	Forest			Mature trees, cavities for winter dens; arboreal lichens.
Northern Short-tailed Shrew	*Blarina brevicauda*	Forest	Meadow		Low vegetation, loose leaf litter, high humidity.
Porcupine	*Erethizon dorsatum*	Forest	Meadow		Rock ledges or den trees.
Raccoon	***Procyon lotor***	Forest	Meadow	Pond	Hollow trees, dens usually >10 feet above ground.
Red Fox	*Vulpes vulpes*	Forest	Meadow	Pond	Well-drained den sites; tends to hunt more open or semi-open habitats.
Red Squirrel	***Tamiasciurus hudsonicus***	**Forest**			**Woodlands with mature trees; conifers preferred.**
Short-tailed Weasel	*Mustela erminea*	Forest	Meadow		Dense brushy cover, slash; areas of abundant prey.
Smoky Shrew	*Sorex fumeus*	Forest			Loose, damp leaf litter.
Southern Flying Squirrel	*Glaucmys voluns*	Forest			Mature woodland with cavity trees; favors cavities with entrance diameters of 1.6-2 inches.
Southern Red-backed Vole	*Clethrionomys gapperi*	Forest	Meadow		Springs, brooks, seeps, bogs; debris or slash cover.
Striped Skunk	*Mephitis mephitis*	Forest	Meadow		Well-drained soils for burrows/den sites; open uplands; around human habitation.
Virginia Opossum	*Didelphis virginiana*	Forest	Meadow		Hollow log or tree cavity.
White-footed Mouse	*Peromyscus leucopus*	Forest	Meadow		Down logs rotting stumps, tree cavities, exposed rocks (stone walls, boulders and ledge).

Common Name	Scientific Name	Habitat Type on the Property		Special Habitat features
White-tailed Deer	***Odocoileus virginianus***	Forest	Meadow	Dense cover for winter shelter, adequate browse.
Woodchuck	*Marmota monax*	Forest	Meadow	Open land with well-drained soils in which to burrow.
Woodland Vole	*Microtus pinetorum*	Forest	Meadow	Uses variable depths of leaf litter, duff or grass; moist well-drained soils

Species in bold were observed on the Property

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Terrestrial Wildlife Habitat Impact Analysis

The results of the field inventories and assessment of the wildlife conditions indicate that most of the Property contributes moderate to high value wildlife habitat. Overall, the Property contains good interspersion (intermixing) of habitat types, including upland and wetland forest, various early successional habitat types including meadow and forest, a pond, and an intermittent watercourse. Good habitat interspersion generally attracts a greater diversity of wildlife species. The Property has the potential to support several dozen species of wildlife ranging from amphibians and reptiles to large mammals. Many of the species that have the potential to occur are typical of the northern hardwood forest habitat that dominates the Property. This forest type, which is at its southernmost extent in Connecticut, is abundant in Litchfield County. Thus some wildlife species likely to be found on the Property are limited in their distribution throughout the state, although they are not considered rare species. The Property also occurs at a high elevation (approximately 1,300 to 1,500 feet), which precludes the presence of some species, but likely encourages the presence of others that prefer more mountainous habitat.

Generally speaking, many tree species associated with the northern hardwood forest type are known to provide good sources of food for wildlife. American beech and red oak provide mast crops in the fall and can be an important source of winter food, although they do not begin producing beechnuts and acorns until approximately ages 25 and 40 respectively, and thus although present may not yet contribute mast crops in some areas of the Property. The seeds, foliage, and twigs of eastern hemlock and white pine not only provide winter food sources, but cover as well. And the seeds and buds of red maple and black cherry are good summer food sources.

Mountain laurel is considered of minor food value for terrestrial mammals, but does provide moderate cover. The understory in forested wetland habitat often includes fruiting shrubs such as spicebush and elderberry, which are good summer food sources for wildlife. Aquatic vegetation, macroinvertebrates, and amphibians associated with the beaver pond may provide additional forage for a number of forest-dwelling species. While there is plenty of woody debris, leaf litter, and slash on the forest floor to provide cover and nesting habitat for many small and medium-sized mammals, cavities in trees larger than 18 inches DBH were

not abundant, as trees of this size were themselves not abundant. This may limit nesting on the Property by some medium-sized mammal species.

The forbs and grasses in the meadow likely provide food and coverage for several early successional specialists as well as predators of those species. As the meadow habitat becomes more established and the botanical composition becomes more complex, this area will likely provide improved foraging opportunities for a number of species; if low shrubs and saplings are allowed to develop – establishing more of an old field-type habitat – the value of this habitat to wildlife will likely increase even more. While still relatively common in Connecticut, old field meadows and other early successional habitats are declining in the Northeast due to reforestation and suburban development.

Construction activities associated with the installation of the proposed Project are primarily expected to have a short-term impact on terrestrial wildlife. While construction activities may result in mortality for slower, less mobile wildlife species, such as snakes and toads, erosion and sedimentation controls established around the perimeter of disturbance will provide a protective barrier to help avoid impact to these species. Disturbances from noise and human activity are expected to drive some of the more mobile species from the Property. The proximity of similar forested habitats adjacent to the Property will allow for natural relocation of these individuals from the Project area. After construction activities have been completed, it is expected that many of these individuals and species will return to the Property and occupy suitable habitats once again.

Long-term impacts on wildlife resulting from operation of the proposed Project are expected to be minimal. The site will be unmanned, resulting in minimal human presence throughout the year. While a total of 11.32± acres of the 79.44-acre Property will be disturbed as a result of the development, only 2.69± acres of this disturbance will be permanent. This area is associated with the gravel access road, wind turbines and associated ground equipment. Disturbance activities associated with the proposed Project would primarily affect areas characterized as second growth northern hardwood forest, which is an abundant forest type in proximity to the Property as well as throughout northwest Connecticut. The loss and/or conversion of this small amount of forested habitat is not significant on either a Property or landscape scale, as there are several large areas of similar forested habitat adjacent to and in the vicinity of the Property.

Following development activities, disturbed areas with the exception of the access road, will be planted using a native herbaceous seed mixture. Areas in proximity to the proposed turbines will be maintained as meadow habitat. The addition of meadow habitat adjacent to the existing meadow is likely to be beneficial to species already using this habitat. The introduction of meadow habitat into the forested portions of the Property may benefit some species, but may be detrimental to others. Habitat edges have been identified in some wildlife studies as leading to higher rates of predation for some species.

VHB completed and submitted a CTDEP Natural Diversity Database Review Request Form and supporting materials to CTDEP and received written confirmation that Great St. Johns-wort, a State Species of Special Concern, occurs in a wetland to the east of the Property.

CTDEP has recommended that if any direct or indirect activities are proposed for this area, that a description of work is provided to CTDEP in order to avoid negative effects to the species and its habitat. VHB has submitted a letter and plans to CTDEP in order to confirm that the proposed development will not adversely affect this species.

Perhaps the greatest value of the Property is the role it plays as relatively undeveloped land in the northwest Connecticut landscape. Although Colebrook is still a relatively rural outpost of Connecticut, the proposed Project will help maintain a habitat corridor for wildlife as development pressures increase. The Property borders protected Nature Conservancy land to the west, known as the Wolcott Preserve. The Wolcott Preserve contains Beckley Pond and Beckley Bog, a cold, acid bog with numerous rare plant communities and wildlife species. The Property, which will largely retain its current vegetative characteristics, will effectively create an additional buffer around this sensitive habitat by eliminating the potential for suburban development. This will contribute to maintaining a healthy watershed, as the beaver pond outlets to a tributary of the Mad River, which is tributary to the Rugg Brook Reservoir.

6

Proposed Activities Relative to Wetlands and Impact Analysis

The proposed Project has been largely successful in minimizing direct impact to wetland resources on the Property. However, due to the need to locate turbines in a manner that effectively captures wind and maximizes electrical generation efficiency and the location and proximity of the on-site wetland resources, direct wetland impacts associated with access road construction are required. Where wetland impacts are unavoidable, careful consideration has been give to the location of these impacts in order to minimize the effect on wetland functions and values.

The proposed Project would require permanent direct wetland impacts associated with the construction of a gravel access road over a forested wetland (Wetland 1) totaling approximately 4,702 square feet. In addition, approximately 213 square feet of temporary direct impacts are necessary. These impacts are related to tree clearing necessary to construct this crossing. These impacts are necessary in order to access Turbine Location Three. Additional temporary disturbance activities in proximity to Wetland 1 are required in order to construct the Blade Laydown and Assembly Areas associated Turbines One and Three. These activities include clearing and grading.

Wetland Evaluation

This subsection discusses the functions and values associated with Wetland 1, which is the wetland resource on the Property directly affected by this Project. It should be noted that while the functions and values evaluation was specific to areas of Wetland 1 in proximity to the proposed direct wetland impacts, Wildlife Habitat, Uniqueness/Heritage and Visual Quality/Aesthetics considered the attributes of Wetland 1 in its entirety. Impacts to Wetland 1 have the potential to alter these functions and values irrespective of their location within the wetland system.

This study uses *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach* issued by the U.S. Army Corps of Engineers New England District (ACOE NE), September 1999. This evaluation provides a qualitative approach in which wetland functions can be considered primary, secondary, or unlikely to be provided at a

significant level. Functions and values can be principal if they are an important physical component of a wetland ecosystem (function only), and/or are considered of special value to society, from a local, regional, and/or national perspective. The ACOE NE recommends that wetland functions and be determined through "best professional judgment" based on a qualitative description of the physical attributes of wetlands and the functions and values exhibited. (See summary of *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach* & Wetland Functions and Values Field Forms in Attachment D.) Photographs of Wetland 1 are included in Attachment B.

Wetland 1

Wetland 1 is a large headwater wetland complex that is dominated by a beaver pond which is centrally located within the Property. The portion of this wetland that would be subject to disturbance, along the northern Property boundary, is characterized as a seasonally saturated forested wetland. The topography is generally flat with a slight gradient from north to south (towards the beaver pond). It is dominated by yellow birch, red maple, American beech, eastern hemlock, New York fern *(Thelypterus noveboracensis)*, wood fern *(Dryopteris sp.)*, royal fern *(Osmunda regalis)* and swamp dewberry *(Rubus hispidus)*. This area was previously utilized for a skid road crossing and as such the density of trees is slightly lower than in the adjacent areas.

Biological Functions

The portion of Wetland 1 that would be subject to disturbance is not associated with a watercourse and therefore does not provide fish and shellfish habitat.

This wetland, in its entirety, provides wildlife habitat at a principal level. It is the headwaters of a riparian system draining southerly and surrounded by large areas of undeveloped land.

The portion of this wetland that would be subject to disturbance is not effective at providing significant production export. This portion of the wetland does not support a large diversity of vegetation, wildlife food sources or commercially used products. In addition, this area is not associated with a watercourse and does not experience a large amount of "flushing". Portions of this wetland further south that include the beaver pond and associated perennial watercourse likely provides this function.

Hydrologic Functions

The portion of this wetland that would be subject to disturbance does not provide flood flow alteration at a principal or secondary level. It is limited in its opportunity to provide this function by a general lack of impervious cover and development in proximity. Additionally, this wetland is a headwater system and would not be subject to cumulative stormwater inputs. The effectiveness of this wetland to provide this function is limited by its lack of a watercourse feature, slight gradient, lack of depth and narrow configuration. However, this wetland would be effective at providing this function further to the south. This area includes a large beaver pond, contributing watercourse and constricted outlet (beaver dam at the outlet to a perennial watercourse).

This wetland does not provide groundwater recharge or discharge functions at a principal or secondary level. It is not characterized by slopes or seepage areas where groundwater exfiltration is occurring.

Water Quality

The portion of this wetland that would be subject to disturbance does not provide sediment, toxicant or pathogen retention, nutrient removal, nutrient retention or nutrient transformation at a principal level or secondary level. However, areas of the wetland to the south, where open water, emergent vegetation and long retention times exist, would provide this function at a secondary level. While this wetland may be effective at providing this function at a high level due to its limited gradient and long retention times, it is limited in its opportunity to provide this function as it is primarily surrounded by undeveloped land.

This wetland does not provide sediment/shoreline stabilizations functions at a principal or secondary level. This wetland is not associated with open water or watercourses having high flow velocities.

Societal Values

Wetland 1 occurs on privately-owned property and as such does not have the opportunity to provide significant value to society with regard to recreation and education/scientific study values.

If this area should open to the public this wetland could provide recreation. This wetland contains a large beaver pond and could be used for boating and hunting. It would be limited in its opportunity to provide this function due to its inaccessibility.

This wetland provides uniqueness and heritage, visual quality and aesthetic values at a secondary level. It is a large undisturbed system dominated by open water. It is limited by its difficult access.

VHB found that the most recent (updated August 2010) digitally available NDDB map depicts an area of concern over the Property. VHB completed and submitting a NDDB Review Request Form and supporting materials to the CTDEP Bureau of Natural Resources to determine if a potential conflict exists between the proposed development and any listed species or natural community of concern. VHB received a response letter dated September 9, 2010 indicating that Great St. Johns-wort *(Hypericum ascyron)* grows in a wetland east of the project site. Its preferred habitat includes streambanks, wet meadows and thickets (Connecticut Botanical Society). This habitat does not occur in the area of proposed wetland impacts.

Wetland Function-Value Evaluation Summary

Total area of wetland unknown Human Made? no Is wetland part of a wildlife corridor? yes or a "habitat Island"? no

Adjacent land use undeveloped land Distance to nearest roadway or other development ±1400 feet

Dominant wetland systems present Palustrine – Open Water Contiguous undeveloped buffer zone present yes

Is the wetland a separate hydraulic system? no If not, where does the wetland lie in the drainage basin? headwater system

How many Tributaries contribute to the wetland? none Wildlife & vegetation diversity/abundance (see wetland description)

Wetland ID **Wetland 1**

Latitude _____ Longitude _____

Prepared by MD Date 11-02-10

Proposed wetland activities

Type: filling/clearing Area 4,915 sq ft

Corps manual wetland delineation

Completed? Y _____ N X

Function/Value	Suitability Y	Suitability N	Rationale (Reference #) *	Principal Function(s)/Values(s)	Comments
Fish and Shellfish Habitat (freshwater)		X	1, 2		Intermittent watercourse is not in proximity to disturbance.
Fish and Shellfish Habitat (marine)		X			This habitat does not exist in the wetland.
Wildlife Habitat	X		1, 2, 3, 4, 5, 6, 7, 8, 9, 12, 14, 15, 17, 18, 19, 20, 21, 22	X	Wetland provides this function at a principal level. This evaluation includes wetland in its entirety, not just area of impact.
Production Export			1, 2, 4, 5, 7, 8, 12		Wetland provides this function; however area of activity does not.
Flood-flow Alteration			1, 2, 3, 5, 6, 7, 8, 9, 18		Wetland provides this function; however area of activity does not.
Groundwater Recharge/Discharge			1, 2, 6, 12, 15		No groundwater recharge as wetland is underlain by till. Groundwater discharge is occurring at a secondary level.
Sediment/Toxicant/Pathogen Retention			4, 6, 7, 8		Wetland provides this function; however area of activity does not.
Nutrient Removal/Retention/Transformation			7, 8, 9		Wetland provides this function; however area of activity does not.
Sediment/Shoreline Stabilization			2, 9		Wetland does not provide this function.
Recreation		X	5, 6, 7, 9		No recreation opportunities available.
Educational/Scientific Value		X	2, 4, 5		No educational/scientific opportunities available.
Uniqueness/Heritage	X		3, 4, 6, 12, 13, 14, 16, 17, 18, 19, 22, 27		Provided at a secondary level. Wetland is on private property.
Visual Quality/Aesthetics	X		1, 2, 5, 7, 8, 10, 11, 12		Provided at a secondary level. Wetland is on private property.
Threatened or Endangered Species Habitat		X			Not within NDDB designated area of concern

* Refer to Attachment D for rationale descriptions

Impact Analysis

The proposed Project would require permanent direct wetland impacts associated with the construction of a gravel access road over a forested wetland (Wetland 1) totaling approximately 4,702 square feet. In addition, approximately 213 square feet of temporary direct impacts related to tree clearing are necessary. These impacts are required in order to access Turbine Location Three. The location of this wetland crossing was chosen following careful consideration in order to minimize the effects on the functions and values associated with Wetland 1. This crossing is situated in an area of the wetland that has been subject to historic disturbance associated with a logging road crossing. No watercourse feature is associated with this crossing.

The proposed crossing is located within an area of this wetland that has been subject to disturbance associated with a logging road crossing. This area is characterized as a seasonally saturated forested wetland. It lacks a watercourse feature, diversity of cover types and habitat structure that are present in other portions of the wetland. While this particular area provides limited Wildlife Habitat functions, it is a portion of a larger intact wetland corridor that, in its entirety provides this function at a principal level. Impacts associated with the proposed access road crossing will not have a significant adverse effect on this function. Tree clearing associated with the proposed access road crossing has been minimized to the greatest extent possible. Additionally, the surface of the proposed gravel access road will be located approximately one foot above the existing wetland surface grade. As such, it will not impede movement of herpitofauna and other smaller wildlife species that may exist within this corridor.

Areas within Wetland 1 adjacent to the access road that will be subject to temporary disturbance related to tree clearing (±213 square feet) will be restored with native wetland plants following construction. Additional temporary disturbance activities in proximity to Wetland 1, including clearing and grading, are required in order to construct the Blade Laydown and Assembly Areas associated Turbines One and Three. These activities include clearing and grading. Best Management Practices will be utilized in accordance with the *2002 Connecticut Guidelines for Erosion and Sediment Control* throughout the course of construction activities on the Property and maintained until disturbed areas have been permanently stabilized. Silt fencing and hay bales will generally be installed around the perimeter of construction activities protecting nearby resources, including the nearby wetlands. A Wildlife/Conservation seed mix containing native grasses and forbs will be used to stabilize exposed areas post construction. Following establishment of these plantings and permanent stabilization of exposed soils, erosion control measures will be removed so as not to impede migration of wildlife utilizing the Property.

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Summary

The proposed Project would require permanent direct wetland impacts associated with the construction of a gravel access road over a forested wetland (Wetland 1) totaling approximately 4,702 square feet as well as approximately 213 square feet of temporary direct impacts related to tree clearing. Impacts associated with the proposed access road crossing will not have a significant adverse effect on Wildlife Habitat, the principal function associated with this wetland. Following construction activities, disturbed areas in proximity to wetland resources on the Property will be restored with a variety of native vegetation.

Overall the Property provides moderate to high wildlife habitat, and has the potential to be used by several dozen species, including some that are limited in their distribution in Connecticut. The proposed Project would temporarily disturb some species of wildlife during construction activities, and would permanently convert approximately 2.69 acres of forested habitat to gravel access road. It is not anticipated that the loss of this small amount of forested habitat will have a significant or long-term negative impact on most local terrestrial wildlife populations. The proposed Project may actually help local wildlife populations by preserving open space and protecting existing habitat from suburban development.

Overall the proposed development is not anticipated to have a significant, long-term impact on terrestrial wildlife or wetlands.

Figures

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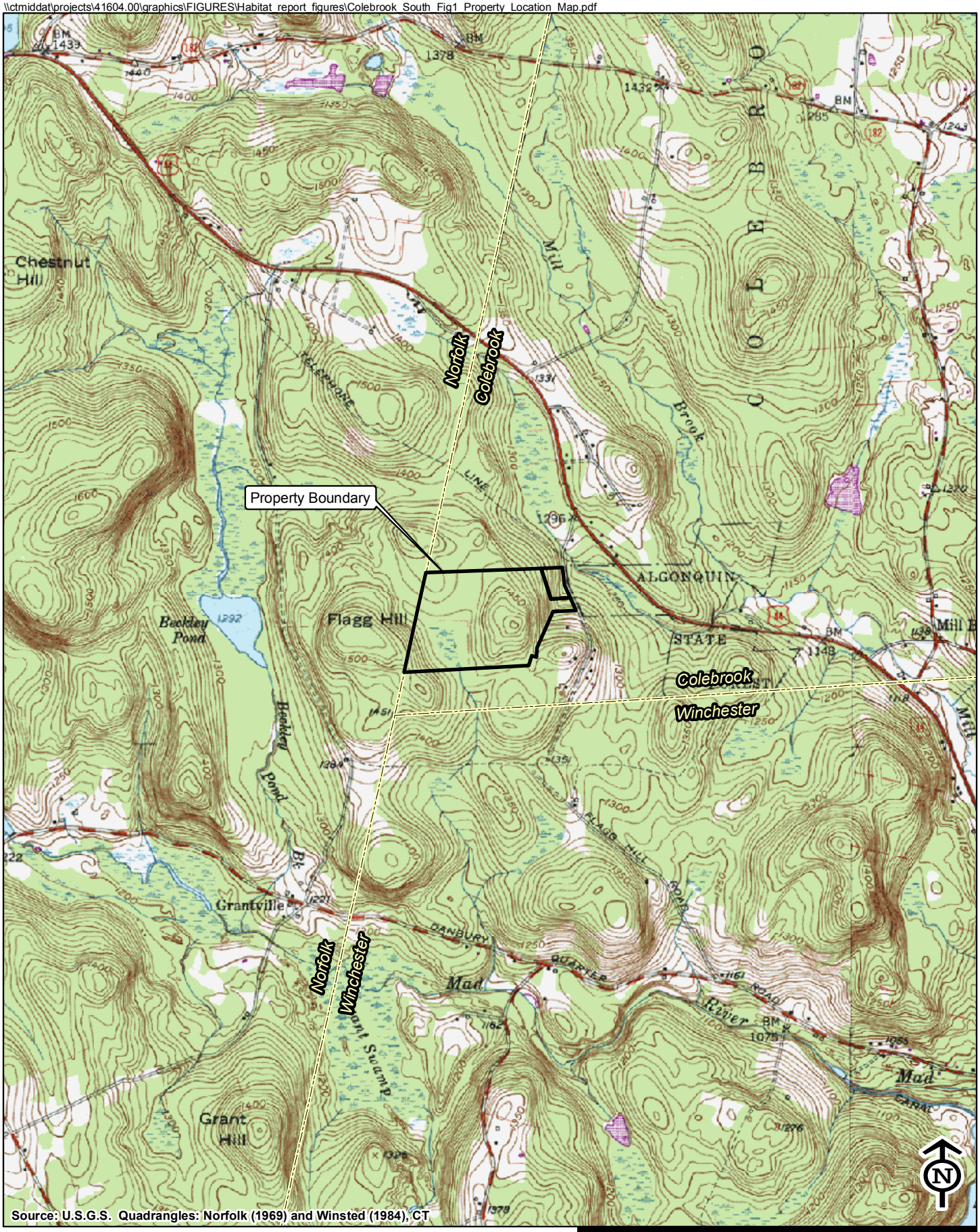
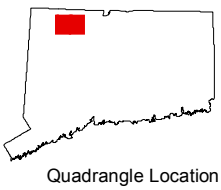




1,000 500 0 1,000 Feet

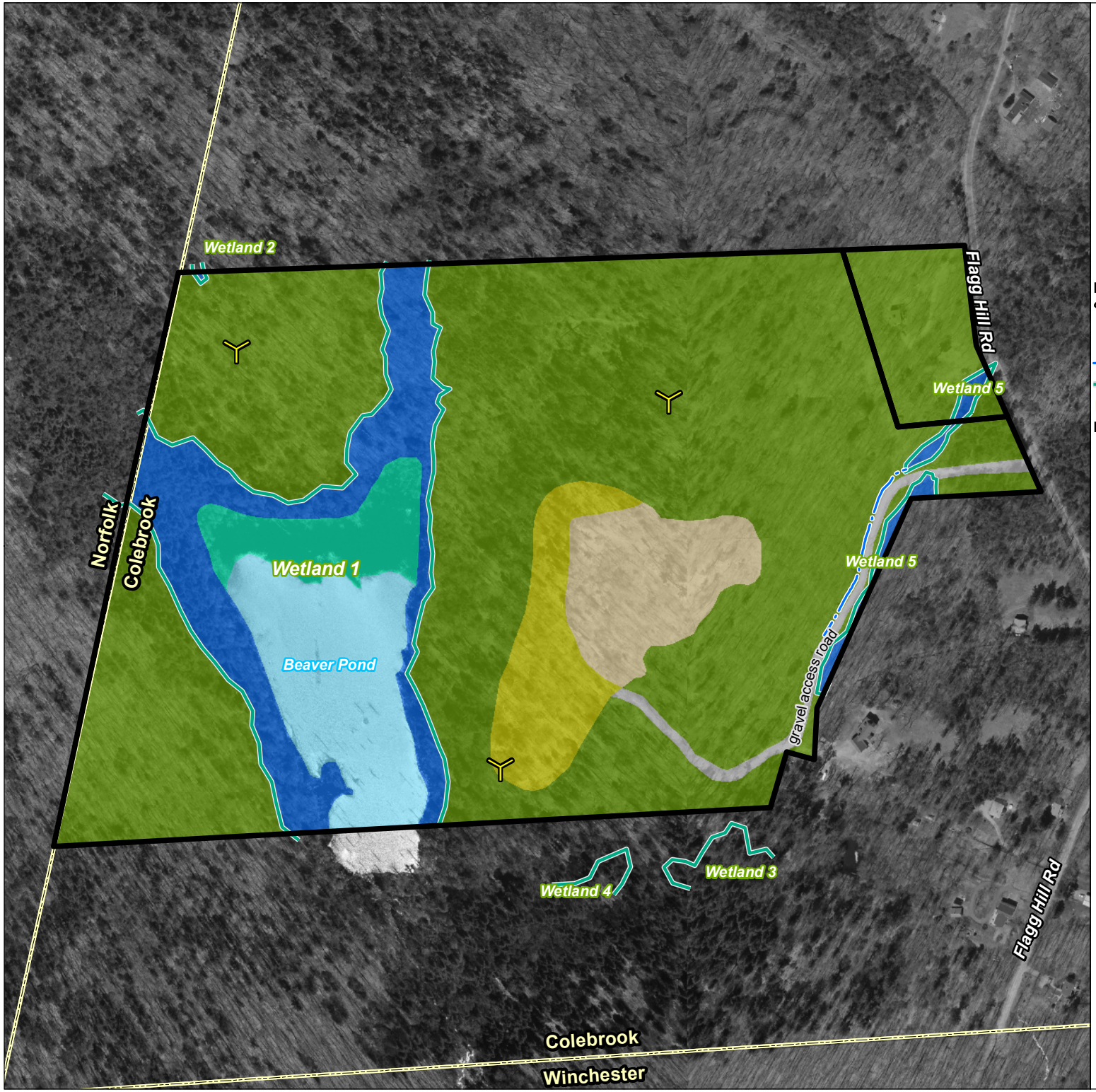
Vanasse Hangen Brustlin, Inc.

Figure 1
Property Location Map
Wind Colebrook South
BNE Energy, Inc.
29 and 17 Flagg Hill Road
Colebrook, Connecticut

BNE Energy Inc.
Producer of green clean energy

Figure 2
Habitat Type Map

Wind Colebrook South
BNE Energy, Inc.
29 and 17 Flagg Hill Road
Colebrook, Connecticut



Legend

- Proposed Wind Turbine Location
- Property Boundary
- Intermittent Watercourse
- Delineated Wetland Boundary
- Town Line

Habitat Type

- Early Successional Northern Hardwood Forest
- Early Old Field Meadow
- Second Growth Northern Hardwood Forest
- Forest Wetland
- Scrub/Shrub - Emergent Wetland
- Open Water (Beaver Pond)
- Gravel Access Road

Base Map Source: ConnDOT 2004 aerial photograph with 0.5-foot resolution.

N

250 125 0 250 Feet

BNE Energy Inc.
Producer of green clean energy

VHB Vanasse Hangen Brustlin, Inc.

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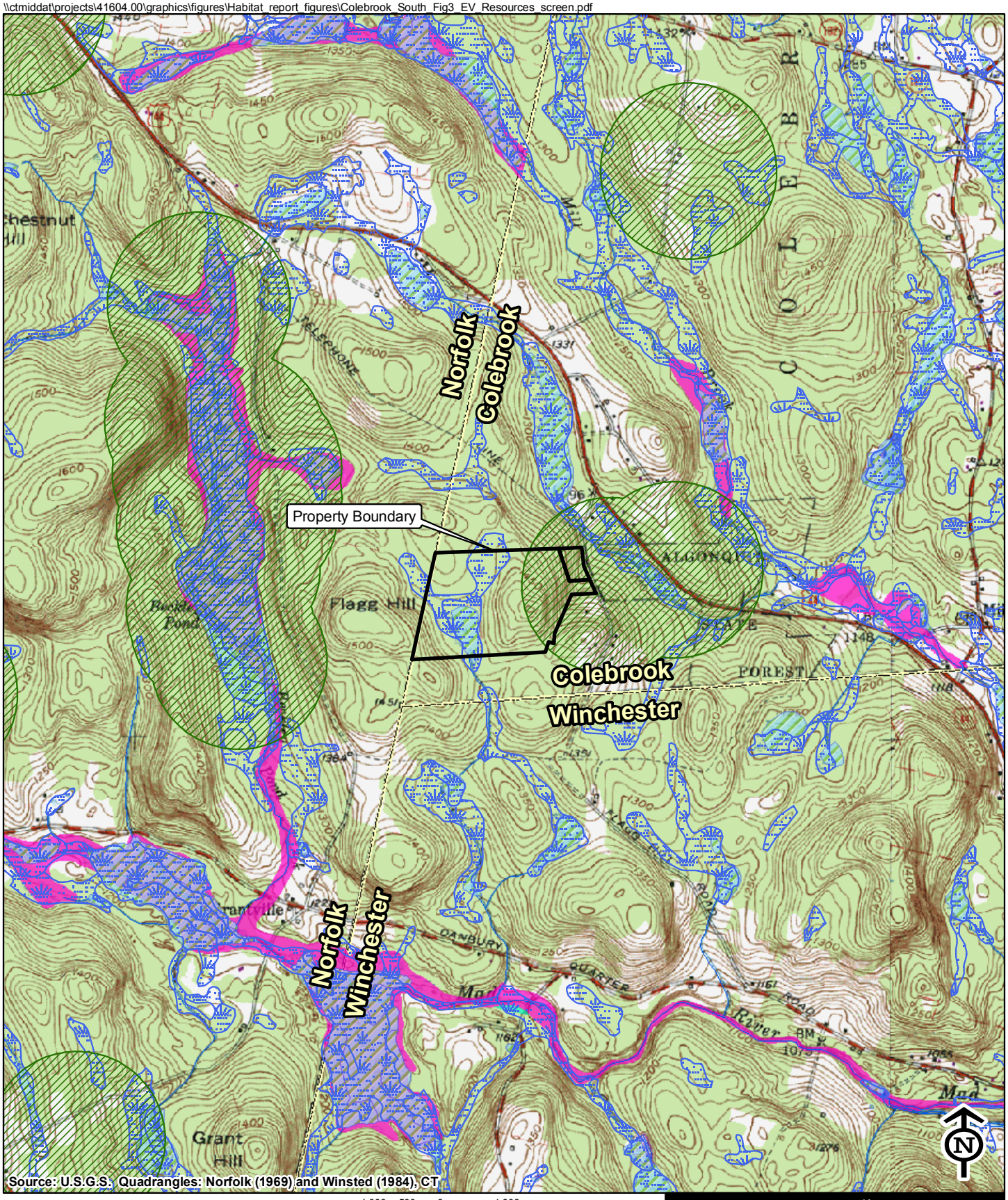

Legend

- Property Boundary
- NDDB Areas (buffered; last updated 08/2010)
- CTDEP Wetlands
- National Wetland Inventory Wetlands
- Open Water
- Town Line

FEMA Flood Zone

- 100 Year Flood Zone
- 500 Year Flood Zone
- Floodway in Zone AE
- Other Flood Areas

Vanasse Hangen Brustlin, Inc.

Figure 3
Environmental Resources Screen
Wind Colebrook South
BNE Energy, Inc.
29 and 17 Flagg Hill Road
Colebrook, Connecticut

November 16, 2010

BNE Energy Inc.
Producer of green clean energy

Attachment A
Wetlands Delineation Report

WETLANDS DELINEATION REPORT

Vanasse Hangen Brustlin, Inc.

Date: March 30, 2010

Project No.: 41604.00

Prepared For: BNE Energy Inc.
29 South Main Street
Town Center Suite 200
West Hartford, CT 06107

Site Location: 29 Flagg Hill Road
Colebrook, Connecticut

Site Map: VHB Wetland Resources Map

Inspection Date: January 29 & March 16, 2010

Field Conditions: Weather: cloudy, teens/sunny, 50's
Snow Depth: 2-6 inches/0-3 inches
General Soil Moisture: moist
Frost Depth: 0-3 inches/0 inches

Type of Wetlands Identified and Delineated:

Connecticut Inland Wetlands and Watercourses	☒
Tidal Wetlands	☐
U.S. Army Corps of Engineers	☐

Local Regulated Upland Review Areas: Wetlands: 100 feet Watercourses: 100 feet

Field Numbering Sequence of Wetlands Boundary: Connecticut – WF 1-05 to 1-41, 1-50 to 1-81, 1-91 to 1-112, WF 2-01 to 2-06, WF 3-01 to 3-14, WF 4-01 to 4-08, WF 5-01 to 5-12, 5-18 to 5-45, IWC 5-01 to 5-12
[as depicted on attached Wetland Resources Map]

The classification systems of the National Cooperative Soil Survey, the U.S. Department of Agriculture, Natural Resources Conservation Service, County Soil Survey Identification Legend, Connecticut Department of Environmental Protection and United States Army Corps of Engineers New England District were used in this investigation.

All established wetlands boundary lines are subject to change until officially adopted by local, state, or federal regulatory agencies.

The wetlands delineation was conducted and reviewed by:

Matthew Davison
Registered Soil Scientist

Enclosures

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Middletown, Connecticut 06457-1847
860.632.1500 ▪ FAX 860.632.7879
email: info@vhb.com
www.vhb.com

Attachments

- Wetland Delineation Field Forms
- Soil Map
- Soil Report
- VHB Wetland Resources Map

Wetland Delineation Field Form

Project Address:	29 Flagg Hill Road Colebrook, Connecticut	Project Number:	41604
Inspection Date:	January 29, 2010	Inspector:	Matthew Davison
Wetland I.D.:	Wetland 1		

Field Conditions:	Weather: cloudy, teens	Snow Depth: 2-6 inches
	General Soil Moisture: moist	Frost Depth: 0-3 inches
Type of Wetland Delineation:	Connecticut ☒	
	ACOE ☐	
	Tidal ☐	
Field Numbering Sequence: WF 1-05 to 1-41, 1-50 to 1-81, 1-91 to 1-112		

WETLAND HYDROLOGY:

NONTIDAL

Regularly Flooded ☐	Irregularly Flooded ☐	Permanently Flooded ☒
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☒	Seasonally Saturated – seepage ☐	Seasonally Saturated ☒
Comments: Wetland includes permanently flooded beaver pond and saturated forested wetlands.		

TIDAL

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Seasonally Flooded ☐	Temporarily Flooded ☐	
Comments: N/A		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: Palustrine Open Water (POW), Palustrine Forested (PFO)		

CLASS:

Emergent ☐	Scrub-shrub ☐	Forested ☒
Open Water ☒	Disturbed ☐	Wet Meadow ☐
Comments: see above		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☒	Tidal ☐
Comments: An intermittent watercourse flows from the west property boundary to a beaver pond within the wetland interior.		

SPECIAL AQUATIC HABITAT:

Vernal Pool ☐	Other ☐	
Comments: N/A		

Wetland Delineation Field Form (Cont.)

MAPPED SOILS:

SOIL SERIES (Map Unit Symbol)	WET	UP	NRCS MAPPED	FIELD IDD/ CONFIRMED
Bice fine sandy loam (417)	☐	☒	☒	☒
Schroon fine sandy loam (418)	☐	☒	☐	☒
Brayton-Loonmeadow complex (443)	☒	☐	☒	☒
Wonsqueak mucky peat (437)	☒	☐	☒	☐
	☐	☐	☐	☐

DOMINANT PLANTS:

red maple *(Acer rubrum)*	mountain laurel *(Kalmia latifolia)*
American beech *(Fagus grandifolia)*	
yellow birch *(Betula allegheniensis)*	
black birch *(Betula lenta)*	
eastern hemlock *(Tsuga Canadensis)*	
Winterberry *(Ilex verticillata)*	

WETLAND NARRATIVE:

Wetland 1 is a large wetland complex that is dominated by a beaver pond. Forested wetland lobes extend to the north and west of the beaver pond and drain into this system. Within the western lobe, an intermittent watercourse generally having a diffuse meandering flow pattern drains into the beaver pond from the west property boundary. While soil characteristics within this wetland complex are consistent throughout with the aforementioned soil catena, the vegetation and hydrology vary. Open water areas are permanently inundated and generally unvegetated. The forested wetland lobe extending to the north of the pond is seasonally saturated and dominated by hardwood tree species such as red maple, yellow birch and American beech. The wetland lobe extending to the west of the pond is a seasonally saturated hemlock wetland.

Wetland Delineation Field Form

Project Address:	29 Flagg Hill Road Colebrook, Connecticut	Project Number:	41604
Inspection Date:	January 29, 2010	Inspector:	Matthew Davison
Wetland I.D.:	Wetland 2		

Field Conditions:	Weather: cloudy, teens	Snow Depth: 2-6 inches
	General Soil Moisture: moist	Frost Depth: 0-3 inches
Type of Wetland Delineation:	Connecticut ☒	
	ACOE ☐	
	Tidal ☐	
Field Numbering Sequence: WF 2-01 to 2-06		

WETLAND HYDROLOGY:

NONTIDAL

Regularly Flooded ☐	Irregularly Flooded ☐	Permanently Flooded ☐
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☐	Seasonally Saturated ☒
Comments: Wetland is a seasonally saturated depressional feature.		

TIDAL

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Seasonally Flooded ☐	Temporarily Flooded ☐	
Comments: N/A		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: Palustrine Forested Wetland (PFO)		

CLASS:

Emergent ☐	Scrub-shrub ☐	Forested ☒
Open Water ☒	Disturbed ☐	Wet Meadow ☐
Comments: see above		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☐	Tidal ☐
Comments: N/A		

SPECIAL AQUATIC HABITAT:

Vernal Pool ☐	Other ☐	
Comments: N/A		

Wetland Delineation Field Form (Cont.)

MAPPED SOILS:

SOIL SERIES (Map Unit Symbol)	WET	UP	NRCS MAPPED	FIELD IDD/ CONFIRMED
Bice fine sandy loam (417)	☐	☒	☒	☒
Schroon fine sandy loam (418)	☐	☒	☒	☒
Brayton loam (442)	☒	☐	☐	☒
	☐	☐	☐	☐

DOMINANT PLANTS:

eastern hemlock *(Tsuga Canadensis)*	
American beech *(Fagus grandifolia)*	

WETLAND NARRATIVE:

Wetland 2 is a small wetland finger extending onto the site from a wetland on the adjacent property to the north. While the narrow interior is generally void of woody vegetation, the fringes are dominated by American beech and eastern hemlock.

Wetland Delineation Field Form

Project Address:	29 Flagg Hill Road Colebrook, Connecticut	Project Number:	41604
Inspection Date:	March 16, 2010	Inspector:	Matthew Davison
Wetland I.D.:	Wetland 3		

Field Conditions:	Weather: sunny, 50's	Snow Depth: 0-3 inches
	General Soil Moisture: moist	Frost Depth: 0 inches
Type of Wetland Delineation:	Connecticut ☒	
	ACOE ☐	
	Tidal ☐	
Field Numbering Sequence: WF 3-01 to 3-14		

WETLAND HYDROLOGY:

NONTIDAL

Regularly Flooded ☐	Irregularly Flooded ☐	Permanently Flooded ☐
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☐	Seasonally Saturated ☒
Comments: Wetland is a seasonally saturated depressional feature.		

TIDAL

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Seasonally Flooded ☐	Temporarily Flooded ☐	
Comments: N/A		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: Palustrine Forested Wetland (PFO), which transitions to scrub-shrub off property.		

CLASS:

Emergent ☐	Scrub-shrub ☐	Forested ☒
Open Water ☐	Disturbed ☐	Wet Meadow ☐
Comments: see above		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☐	Tidal ☐
Comments: N/A		

SPECIAL AQUATIC HABITAT:

Vernal Pool ☐	Other ☐	
Comments: N/A		

Wetland Delineation Field Form (Cont.)

MAPPED SOILS:

SOIL SERIES (Map Unit Symbol)	WET	UP	NRCS MAPPED	FIELD IDD/ CONFIRMED
Bice fine sandy loam (417)	☐	☒	☒	☒
Schroon fine sandy loam (418)	☐	☒	☒	☒
Brayton loam (442)	☒	☐	☐	☒
	☐	☐	☐	☐

DOMINANT PLANTS:

eastern hemlock *(Tsuga Canadensis)*	
American beech *(Fagus grandifolia)*	
black birch *(Betula lenta)*	
yellow birch *(Betula allegheniensis)*	
red maple *(Acer rubrum)*	
mountain laurel *(Kalmia latifolia)*	

WETLAND NARRATIVE:

Wetland 3 is a seasonally saturated forested wetland located along the southern property boundary. It is a portion of a larger wetland extending in a southeasterly direction. This wetland drains towards the east.

Wetland Delineation Field Form

Project Address:	29 Flagg Hill Road Colebrook, Connecticut	Project Number:	41604
Inspection Date:	March 16, 2010	Inspector:	Matthew Davison
Wetland I.D.:	Wetland 4		

Field Conditions:	Weather: sunny, 50's	Snow Depth: 0-3 inches
	General Soil Moisture: moist	Frost Depth: 0 inches
Type of Wetland Delineation:	Connecticut ☒	
	ACOE ☐	
	Tidal ☐	
Field Numbering Sequence: WF 4-01 to 4-08		

WETLAND HYDROLOGY:

NONTIDAL

Regularly Flooded ☐	Irregularly Flooded ☐	Permanently Flooded ☐
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☐	Seasonally Saturated ☒
Comments: Wetland is a seasonally saturated depressional feature.		

TIDAL

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Seasonally Flooded ☐	Temporarily Flooded ☐	
Comments: N/A		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: Palustrine Forested Wetland (PFO), with scrub-shrub areas to the southwest of the delineated area.		

CLASS:

Emergent ☐	Scrub-shrub ☐	Forested ☒
Open Water ☐	Disturbed ☐	Wet Meadow ☐
Comments: see above		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☐	Tidal ☐
Comments: N/A		

SPECIAL AQUATIC HABITAT:

Vernal Pool ☐	Other ☐	
Comments: N/A		

Wetland Delineation Field Form (Cont.)

MAPPED SOILS:

SOIL SERIES (Map Unit Symbol)	WET	UP	NRCS MAPPED	FIELD IDD/ CONFIRMED
Bice fine sandy loam (417)	☐	☒	☒	☒
Schroon fine sandy loam (418)	☐	☒	☒	☒
Brayton loam (442)	☒	☐	☐	☒
	☐	☐	☐	☐

DOMINANT PLANTS:

eastern hemlock *(Tsuga Canadensis)*	
black birch *(Betula lenta)*	
yellow birch *(Betula allegheniensis)*	
American beech *(Fagus grandifolia)*	

WETLAND NARRATIVE:

Wetland 4 is a seasonally saturated forested wetland located to the south of the southern property boundary (off-site). It is a portion of a larger wetland draining southwesterly to an unnamed perennial watercourse.

Wetland Delineation Field Form

Project Address:	29 Flagg Hill Road Colebrook, Connecticut	Project Number:	41604
Inspection Date:	March 16, 2010	Inspector:	Matthew Davison
Wetland I.D.:	Wetland 5		

Field Conditions:	Weather: sunny, 50's	Snow Depth: 0-3 inches
	General Soil Moisture: moist	Frost Depth: 0 inches
Type of Wetland Delineation:	Connecticut ☒	
	ACOE ☐	
	Tidal ☐	
Field Numbering Sequence: WF 5-01 to 5-12, 5-18 to 5-45, IWC 5-01 to 5-12		

WETLAND HYDROLOGY:

NONTIDAL

Regularly Flooded ☐	Irregularly Flooded ☐	Permanently Flooded ☐
Semipermanently Flooded ☐	Seasonally Flooded ☐	Temporarily Flooded ☐
Permanently Saturated ☐	Seasonally Saturated – seepage ☒	Seasonally Saturated ☐
Comments: Hillside seep wetland.		

TIDAL

Subtidal ☐	Regularly Flooded ☐	Irregularly Flooded ☐
Seasonally Flooded ☐	Temporarily Flooded ☐	
Comments: N/A		

WETLAND TYPE:

SYSTEM:

Estuarine ☐	Riverine ☐	Palustrine ☒
Lacustrine ☐	Marine ☐	
Comments: Palustrine Forested (PFO)		

CLASS:

Emergent ☐	Scrub-shrub ☐	Forested ☒
Open Water ☐	Disturbed ☐	Wet Meadow ☐
Comments: See above		

WATERCOURSE TYPE:

Perennial ☐	Intermittent ☒	Tidal ☐
Comments: Features include a narrow watercourse within the wetland interior and a dug drainage ditch along the west side of the driveway that intercepts groundwater (has base flow), drains into Wetland 5.		

SPECIAL AQUATIC HABITAT:

Vernal Pool ☐	Other ☐	
Comments: N/A		

Wetland Delineation Field Form (Cont.)

MAPPED SOILS:

SOIL SERIES (Map Unit Symbol)	WET	UP	NRCS MAPPED	FIELD IDD/ CONFIRMED
Bice fine sandy loam (417)	☐	☒	☒	☒
Schroon fine sandy loam (418)	☐	☒	☒	☒
Brayton loam (442)	☒	☐	☐	☒
Ridgebury, Leicester, Whitman (3)	☒	☐	☐	☒
	☐	☐	☐	☐

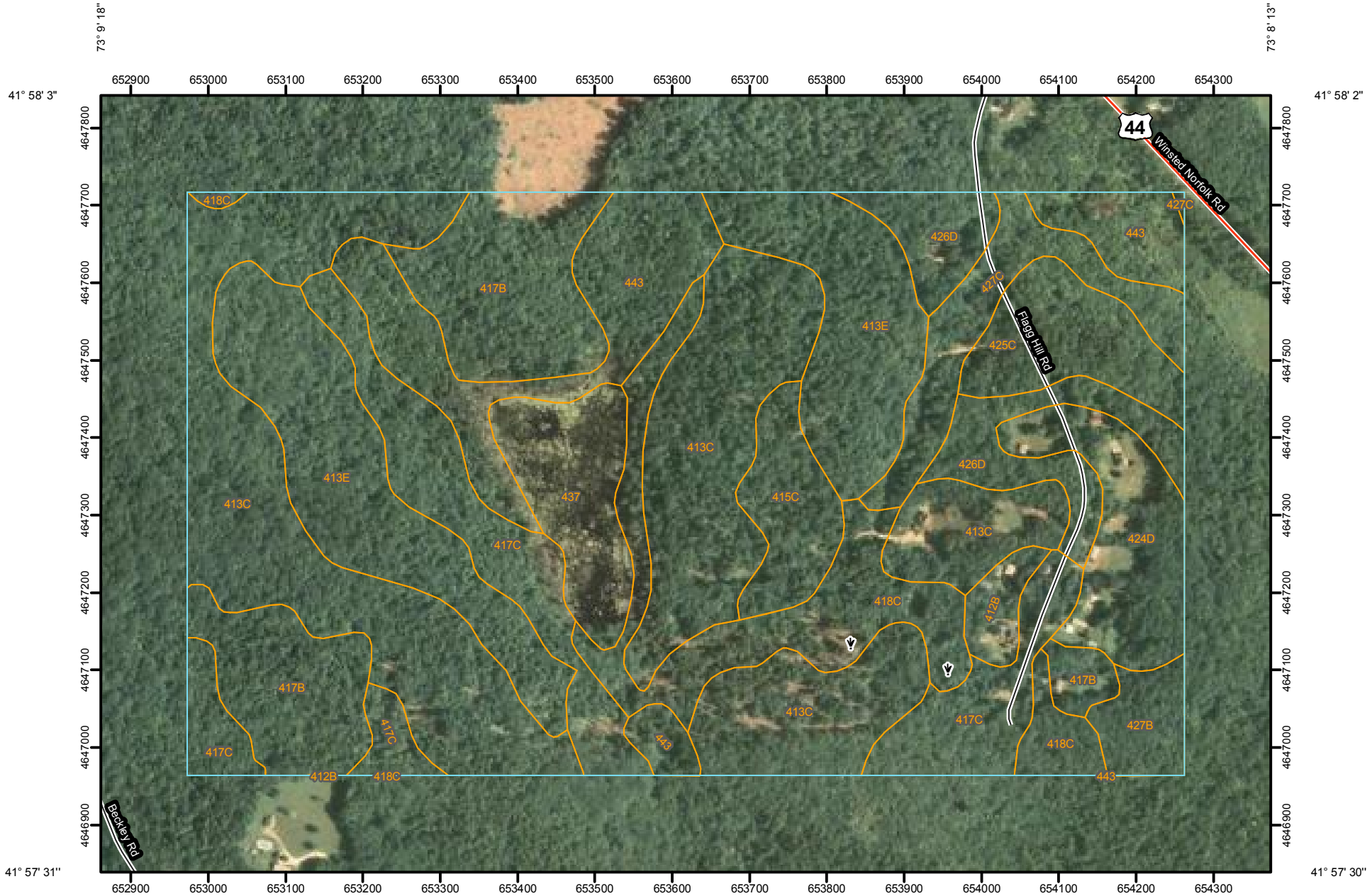
DOMINANT PLANTS:

white ash	
black birch	
yellow birch	
American beech	
sugar maple	
spicebush	

WETLAND NARRATIVE:

Wetland 5 is a forested hillside seep wetland draining northeast along the east property boundary. An intermittent watercourse feature, having diffuse flows and intermittent channel, flows within the wetland interior. Flows are conveyed beneath an existing gravel driveway with a 36" CMP. An additional intermittent watercourse feature was delineated along the west side of the existing driveway. This feature is characterized as a dug drainage ditch that intercepts groundwater (has base flow). It drains into Wetland 5 north of the existing driveway.

Soil Map—State of Connecticut
(29 Flagg Hill Road, Colebrook)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:7,180 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 7, Dec 3, 2009

Date(s) aerial images were photographed: 8/14/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
412B	Bice fine sandy loam, 3 to 8 percent slopes	2.4	1.0%
413C	Bice-Millsite complex, 3 to 15 percent slopes, very rocky	63.6	26.5%
413E	Bice-Millsite complex, 15 to 45 percent slopes, very rocky	32.1	13.4%
415C	Westminster-Millsite-Rock outcrop complex, 3 to 15 percent slopes	6.4	2.7%
417B	Bice fine sandy loam, 3 to 8 percent slopes, very stony	23.3	9.7%
417C	Bice fine sandy loam, 8 to 15 percent slopes, very stony	23.8	9.9%
418C	Schroon fine sandy loam, 2 to 15 percent slopes, very stony	17.0	7.1%
424D	Shelburne fine sandy loam, 15 to 25 percent slopes	10.6	4.4%
425C	Shelburne fine sandy loam, 8 to 15 percent slopes, very stony	8.3	3.5%
426D	Shelburne fine sandy loam, 15 to 35 percent slopes, extremely stony	10.8	4.5%
427B	Ashfield fine sandy loam, 2 to 8 percent slopes, very stony	3.6	1.5%
427C	Ashfield fine sandy loam, 8 to 15 percent slopes, very stony	8.6	3.6%
437	Wonsqueak mucky peat	9.2	3.8%
443	Brayton-Loonmeadow complex, extremely stony	20.4	8.5%
Totals for Area of Interest		**240.3**	**100.0%**

Map Unit Description (Brief)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the selected area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit. A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

The "Map Unit Description (Brief)" report gives a brief, general description of the major soils that occur in a map unit. Descriptions of nonsoil (miscellaneous areas) and minor map unit components may or may not be included. This description is written by the local soil scientists responsible for the respective soil survey area data. A more detailed description can be generated by the "Map Unit Description" report.

Additional information about the map units described in this report is available in other Soil Data Mart reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the Soil Data Mart reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description (Brief)

State of Connecticut

Description Category: SOI

Map Unit: 412B—Bice fine sandy loam, 3 to 8 percent slopes

Bice Fine Sandy Loam, 3 To 8 Percent Slopes This map unit is in the New England and Eastern New York Upland, Northern Part Major Land Resource Area. The mean annual precipitation is 35 to 55 inches (889 to 1397 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Bice soils. 15 percent minor components. Bice soils This component occurs on upland hill landforms. The parent material consists of loamy melt-out till derived from granite, gneiss, and schist. The slope ranges from 3 to 8 percent and the runoff class is low. The depth to a restrictive feature is greater than 60 inches. The drainage class is well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 7.0 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 2e Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 7 inches; fine sandy loam 7 to 16 inches; fine sandy loam 16 to 24 inches; gravelly fine sandy loam 24 to 60 inches; gravelly sandy loam

Map Unit: 413C—Bice-Millsite complex, 3 to 15 percent slopes, very rocky

Bice-Millsite Complex, 3 To 15 Percent Slopes, Very Rocky This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 35 to 55 inches (889 to 1397 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 45 percent Bice soils, 40 percent Millsite soils. 15 percent minor components. Bice soils This component occurs on upland hill landforms. The parent material consists of melt-out till derived from granite, gneiss, and schist. The slope ranges from 3 to 15 percent and the runoff class is low. The depth to a restrictive feature is greater than 60 inches. The drainage class is well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 7.0 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 6s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 7 inches; fine sandy loam 7 to 16 inches; fine sandy loam 16 to 24 inches; gravelly fine sandy loam 24 to 60 inches; gravelly sandy loam Millsite soils This component occurs on upland hill and ridge landforms. The parent material consists of melt-out till derived from gneiss, granite, and schist. The slope ranges from 3 to 15 percent and the runoff class is low. The depth to a restrictive feature is 20 to 40 inches to bedrock (lithic). The drainage class is well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 3.8 inches (moderate) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is none. The Nonirrigated Land Capability Class is 6s Typical Profile: 0 to 1 inches; moderately decomposed plant material 1 to 5 inches; fine sandy loam 5 to 13 inches; stony fine sandy loam 13 to 24 inches; fine sandy loam 24 to 31 inches; sandy loam 31 to 39 inches; bedrock

Map Unit: 413E—Bice-Millsite complex, 15 to 45 percent slopes, very rocky

Bice-Millsite Complex, 15 To 45 Percent Slopes, Very Rocky This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 35 to 55 inches (889 to 1397 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 45 percent Bice soils, 40 percent Millsite soils. 15 percent minor components. Bice soils This component occurs on upland hill landforms. The parent material consists of melt-out till derived from granite, gneiss, and schist. The slope ranges from 15 to 45 percent and the runoff class is medium. The depth to a restrictive feature is greater than 60 inches. The drainage class is well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 7.0 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 7s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 7 inches; fine sandy loam 7 to 16 inches; fine sandy loam 16 to 24 inches; gravelly fine sandy loam 24 to 60 inches; gravelly sandy loam Millsite soils This component occurs on upland hill and ridge landforms. The parent material consists of melt-out till derived from gneiss, granite, and schist. The slope ranges from 15 to 45 percent and the runoff class is medium. The depth to a restrictive feature is 20 to 40 inches to bedrock (lithic). The drainage class is well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 3.8 inches (moderate) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is none. The Nonirrigated Land Capability Class is 7s Typical Profile: 0 to 1 inches; moderately decomposed plant material 1 to 5 inches; fine sandy loam 5 to 13 inches; stony fine sandy loam 13 to 24 inches; fine sandy loam 24 to 31 inches; sandy loam 31 to 39 inches; bedrock

Map Unit: 415C—Westminster-Millsite-Rock outcrop complex, 3 to 15 percent slopes

Westminster-Millsite-Rock Outcrop Complex, 3 To 15 Percent Slopes This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 35 to 55 inches (889 to 1397 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 40 percent Westminster soils, 40 percent Millsite soils, 15 percent Rock Outcrop. 5 percent minor components. Westminster soils This component occurs on upland hill and ridge landforms. The parent material consists of melt-out till derived from schist, granite, and gneiss. The slope ranges from 3 to 15 percent and the runoff class is low. The depth to a restrictive feature is 10 to 20 inches to bedrock (lithic). The drainage class is somewhat excessively drained. The slowest permeability within 60 inches is about 1.98 in/hr (moderately rapid), with about 2.2 inches (very low) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.0 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 7s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 2 inches; moderately decomposed plant material 2 to 5 inches; fine sandy loam 5 to 12 inches; fine sandy loam 12 to 16 inches; fine sandy loam 16 to 27 inches; bedrock Millsite soils This component occurs on upland hill and ridge landforms. The parent material consists of melt-out till derived from granite, gneiss, and schist. The slope ranges from 3 to 15 percent and the runoff class is low. The depth to a restrictive feature is 20 to 40 inches to bedrock (lithic). The drainage class is well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 3.8 inches (moderate) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is none. The Nonirrigated Land Capability Class is 7s Typical Profile: 0 to 1 inches; moderately decomposed plant material 1 to 5 inches; fine sandy loam 5 to 13 inches; stony fine sandy loam 13 to 24 inches; fine sandy loam 24 to 31 inches; sandy loam 31 to 39 inches; bedrock Rock Outcrop This component occurs on bedrock controlled landforms. The slope ranges from 3 to 15 percent and the runoff class is very high. The Nonirrigated Land Capability Class is 8

Map Unit: 417B—Bice fine sandy loam, 3 to 8 percent slopes, very stony

Bice Fine Sandy Loam, 3 To 8 Percent Slopes, Very Stony This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 35 to 55 inches (889 to 1397 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Bice soils. 15 percent minor components. Bice soils This component occurs on upland hill landforms. The parent material consists of melt-out till derived from granite, gneiss, and schist. The slope ranges from 3 to 8 percent and the runoff class is low. The depth to a restrictive feature is greater than 60 inches. The drainage class is well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 7.0 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 6s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 7 inches; fine sandy loam 7 to 16 inches; fine sandy loam 16 to 24 inches; gravelly fine sandy loam 24 to 60 inches; gravelly sandy loam

Map Unit: 417C—Bice fine sandy loam, 8 to 15 percent slopes, very stony

Bice Fine Sandy Loam, 8 To 15 Percent Slopes, Very Stony This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 35 to 55 inches (889 to 1397 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Bice soils. 15 percent minor components. Bice soils This component occurs on upland hill landforms. The parent material consists of melt-out till derived from granite, gneiss, and schist. The slope ranges from 8 to 15 percent and the runoff class is low. The depth to a restrictive feature is greater than 60 inches. The drainage class is well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 7.0 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is greater than 6 feet. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 6s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 7 inches; fine sandy loam 7 to 16 inches; fine sandy loam 16 to 24 inches; gravelly fine sandy loam 24 to 60 inches; gravelly sandy loam

Map Unit: 418C—Schroon fine sandy loam, 2 to 15 percent slopes, very stony

Schroon Fine Sandy Loam, 2 To 15 Percent Slopes, Very Stony This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 32 to 44 inches (813 to 1118 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Schroon soils. 15 percent minor components. Schroon soils This component occurs on upland hill landforms. The parent material consists of melt-out till derived from granite, gneiss, and schist. The slope ranges from 2 to 15 percent and the runoff class is low. The depth to a restrictive feature is greater than 60 inches. The drainage class is moderately well drained. The slowest permeability within 60 inches is about 0.57 in/hr (moderate), with about 7.3 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is about 24 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 6s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 2 inches; moderately decomposed plant material 2 to 3 inches; highly decomposed plant material 3 to 9 inches; fine sandy loam 9 to 14 inches; fine sandy loam 14 to 23 inches; fine sandy loam 23 to 30 inches; sandy loam 30 to 60 inches; sandy loam

Map Unit: 424D—Shelburne fine sandy loam, 15 to 25 percent slopes

Shelburne Fine Sandy Loam, 15 To 25 Percent Slopes This map unit is in the New England and Eastern New York Upland, Northern Part Major Land Resource Area. The mean annual precipitation is 38 to 48 inches (965 to 1219 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Shelburne soils. 15 percent minor components. Shelburne soils This component occurs on upland hill and drumlin landforms. The parent material consists of loamy lodgement till derived from granite, gneiss, and schist. The slope ranges from 15 to 25 percent and the runoff class is very high. The depth to a restrictive feature is 20 to 30 inches to densic material. The drainage class is well drained. The slowest permeability within 60 inches is about 0.00 in/hr (very slow), with about 3.5 inches (moderate) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is about 24 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is none. The Nonirrigated Land Capability Class is 4e Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 2 inches; fine sandy loam 2 to 7 inches; fine sandy loam 7 to 21 inches; gravelly fine sandy loam 21 to 27 inches; bouldery fine sandy loam 27 to 32 inches; gravelly fine sandy loam 32 to 43 inches; fine sandy loam 43 to 55 inches; fine sandy loam 55 to 80 inches; fine sandy loam

Map Unit: 425C—Shelburne fine sandy loam, 8 to 15 percent slopes, very stony

Shelburne Fine Sandy Loam, 8 To 15 Percent Slopes, Very Stony This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 38 to 48 inches (965 to 1219 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Shelburne soils. 15 percent minor components. Shelburne soils This component occurs on upland hill and drumlin landforms. The parent material consists of lodgement till derived from granite, gneiss, and schist. The slope ranges from 8 to 15 percent and the runoff class is low. The depth to a restrictive feature is 20 to 30 inches to densic material. The drainage class is well drained. The slowest permeability within 60 inches is about 0.00 in/hr (very slow), with about 3.5 inches (moderate) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is about 24 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is none. The Nonirrigated Land Capability Class is 6s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 2 inches; fine sandy loam 2 to 7 inches; fine sandy loam 7 to 21 inches; gravelly fine sandy loam 21 to 27 inches; bouldery fine sandy loam 27 to 32 inches; gravelly fine sandy loam 32 to 43 inches; fine sandy loam 43 to 55 inches; fine sandy loam 55 to 80 inches; fine sandy loam

Map Unit: 426D—Shelburne fine sandy loam, 15 to 35 percent slopes, extremely stony

Shelburne Fine Sandy Loam, 15 To 35 Percent Slopes, Extremely Stony This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 38 to 48 inches (965 to 1219 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Shelburne soils. 15 percent minor components. Shelburne soils This component occurs on upland hill and drumlin landforms. The parent material consists of lodgement till derived from granite, gneiss, and schist. The slope ranges from 15 to 35 percent and the runoff class is very high. The depth to a restrictive feature is 20 to 30 inches to densic material. The drainage class is well drained. The slowest permeability within 60 inches is about 0.00 in/hr (very slow), with about 3.5 inches (moderate) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is about 24 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is none. The Nonirrigated Land Capability Class is 7s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 2 inches; fine sandy loam 2 to 7 inches; fine sandy loam 7 to 21 inches; gravelly fine sandy loam 21 to 27 inches; bouldery fine sandy loam 27 to 32 inches; gravelly fine sandy loam 32 to 43 inches; fine sandy loam 43 to 55 inches; fine sandy loam 55 to 80 inches; fine sandy loam

Map Unit: 427B—Ashfield fine sandy loam, 2 to 8 percent slopes, very stony

Ashfield Fine Sandy Loam, 2 To 8 Percent Slopes, Very Stony This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 36 to 46 inches (914 to 1168 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Ashfield soils. 15 percent minor components. Ashfield soils This component occurs on upland hill and drumlin landforms. The parent material consists of lodgement till derived from granite, gneiss, and schist. The slope ranges from 2 to 8 percent and the runoff class is low. The depth to a restrictive feature is 20 to 33 inches to densic material. The drainage class is moderately well drained. The slowest permeability within 60 inches is about 0.00 in/hr (very slow), with about 3.4 inches (moderate) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is about 18 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 6s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 2 inches; moderately decomposed plant material 2 to 3 inches; highly decomposed plant material 3 to 7 inches; fine sandy loam 7 to 12 inches; fine sandy loam 12 to 18 inches; fine sandy loam 18 to 24 inches; fine sandy loam 24 to 29 inches; fine sandy loam 29 to 44 inches; fine sandy loam 44 to 57 inches; sandy loam 57 to 80 inches; fine sandy loam

Map Unit: 427C—Ashfield fine sandy loam, 8 to 15 percent slopes, very stony

Ashfield Fine Sandy Loam, 8 To 15 Percent Slopes, Very Stony This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 36 to 46 inches (914 to 1168 millimeters) and the average annual air temperature is 39 to 47 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Ashfield soils. 15 percent minor components. Ashfield soils This component occurs on upland hill and drumlin landforms. The parent material consists of lodgement till derived from granite, gneiss, and schist. The slope ranges from 8 to 15 percent and the runoff class is low. The depth to a restrictive feature is 20 to 33 inches to densic material. The drainage class is moderately well drained. The slowest permeability within 60 inches is about 0.00 in/hr (very slow), with about 3.4 inches (moderate) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is about 18 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 6s Typical Profile: 0 to 1 inches; slightly decomposed plant material 1 to 2 inches; moderately decomposed plant material 2 to 3 inches; highly decomposed plant material 3 to 7 inches; fine sandy loam 7 to 12 inches; fine sandy loam 12 to 18 inches; fine sandy loam 18 to 24 inches; fine sandy loam 24 to 29 inches; fine sandy loam 29 to 44 inches; fine sandy loam 44 to 57 inches; sandy loam 57 to 80 inches; fine sandy loam

Map Unit: 437—Wonsqueak mucky peat

Wonsqueak Mucky Peat This map unit is in the New England and Eastern New York Upland, Southern Part Major Land Resource Area. The mean annual precipitation is 36 to 55 inches (914 to 1397 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 85 percent Wonsqueak soils. 15 percent minor components. Wonsqueak soils This component occurs on depression landforms. The parent material consists of woody organic material over loamy drift. The slope ranges from 0 to 2 percent and the runoff class is negligible. The depth to a restrictive feature is greater than 60 inches. The drainage class is very poorly drained. The slowest permeability within 60 inches is about 0.20 in/hr (moderately slow), with about 6.8 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 3.6 LEP (moderate). The flooding frequency for this component is rare. The ponding hazard is frequent. The minimum depth to a seasonal water table, when present, is about 2 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 5w Typical Profile: 0 to 2 inches; mucky peat 2 to 11 inches; muck 11 to 22 inches; muck 22 to 25 inches; mucky silt loam 25 to 45 inches; gravelly fine sandy loam 45 to 60 inches; fine sandy loam

Map Unit: 443—Brayton-Loonmeadow complex, extremely stony

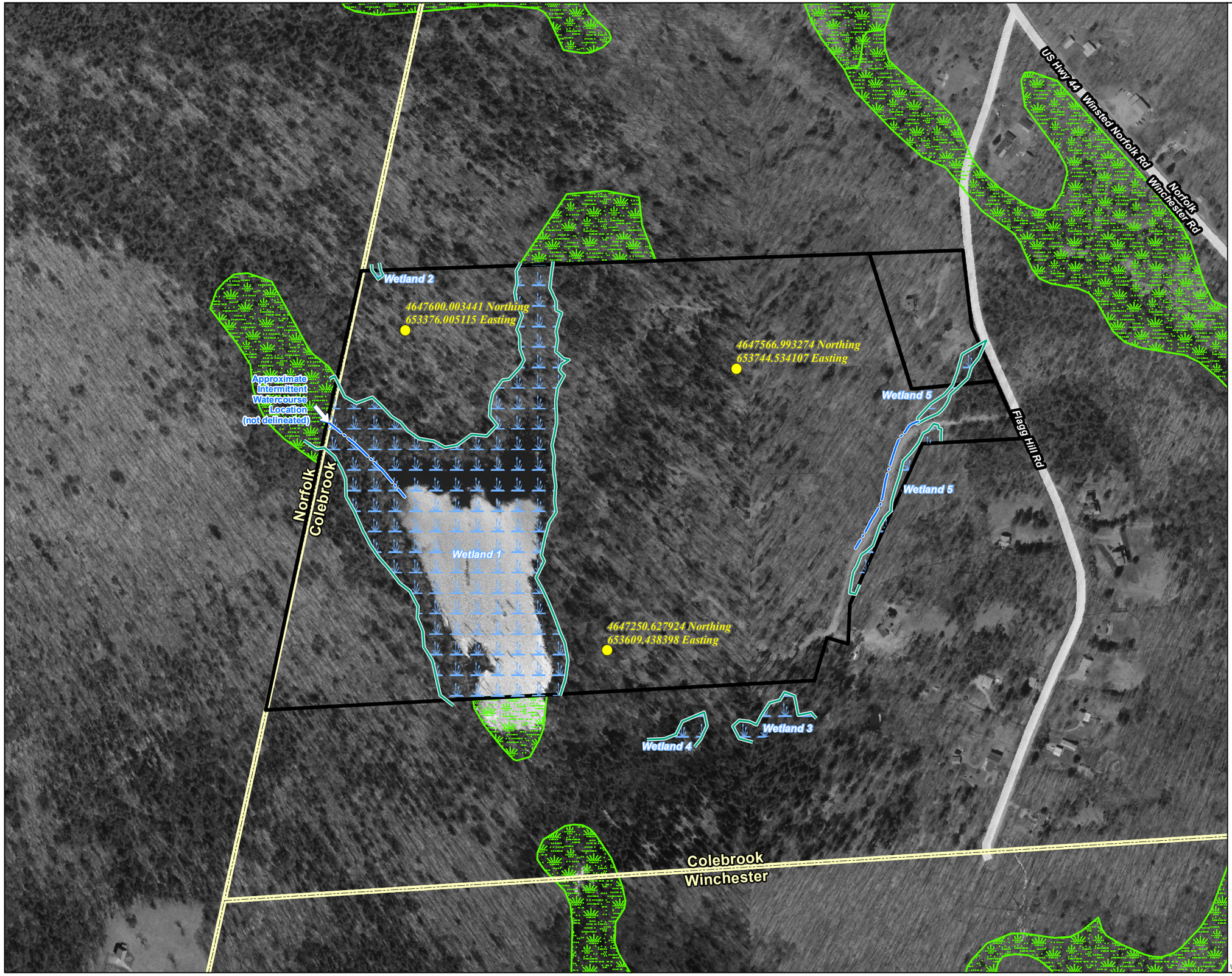
Brayton-Loonmeadow Complex, Extremely Stony This map unit is in the New England and Eastern New York Upland, Northern Part Major Land Resource Area. The mean annual precipitation is 36 to 55 inches (914 to 1400 millimeters) and the average annual air temperature is 39 to 45 degrees F. (4 to 7 degrees C.) This map unit is 50 percent Brayton soils, 35 percent Loonmeadow soils. 15 percent minor components. Brayton soils This component occurs on upland depression and drainageway landforms. The parent material consists of loamy lodgement till derived from phyllite and schist. The slope ranges from 0 to 8 percent and the runoff class is negligible. The depth to a restrictive feature is 20 to 27 inches to densic material. The drainage class is poorly drained. The slowest permeability within 60 inches is about 0.00 in/hr (very slow), with about 3.4 inches (moderate) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is none. The minimum depth to a seasonal water table, when present, is about 6 inches. The maximum calcium carbonate within 40 inches is none. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 7s Typical Profile: 0 to 2 inches; moderately decomposed plant material 2 to 9 inches; loam 9 to 17 inches; gravelly sandy loam 17 to 22 inches; gravelly sandy loam 22 to 27 inches; sandy loam 27 to 42 inches; gravelly sandy loam 42 to 65 inches; gravelly sandy loam Loonmeadow soils This component occurs on upland depression and drainageway landforms. The parent material consists of lodgement till derived from dolomite, phyllite, granite, gneiss and schist. The slope ranges from 0 to 3 percent and the runoff class is negligible. The depth to a restrictive feature is greater than 60 inches. The drainage class is very poorly drained. The slowest permeability within 60 inches is about 0.06 in/hr (slow), with about 7.3 inches (high) available water capacity. The weighted average shrink-swell potential in 10 to 60 inches is about 1.5 LEP (low). The flooding frequency for this component is none. The ponding hazard is frequent. The minimum depth to a seasonal water table, when present, is about 9 inches. The maximum calcium carbonate within 40 inches is 5 percent. The maximum amount of salinity in any layer is about 0 mmhos/cm (nonsaline). The Nonirrigated Land Capability Class is 7s Typical Profile: 0 to 2 inches; slightly decomposed plant material 2 to 9 inches; mucky fine sandy loam 9 to 18 inches; sandy loam 18 to 35 inches; gravelly sandy loam 35 to 80 inches; gravelly sandy loam

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 7, Dec 3, 2009

Wetland Resources Map

Wind Colebrook South
29 Flagg Hill Road
Colebrook, CT



Legend

- Potential Wind Turbine (WT) 1.6 Location
- Intermittent Watercourse
- Delineated Wetland Boundary
- Wetland
- CTDEP Wetland (off site property)
- Site Property Boundary
- Town Boundary

Base Map Source: 2004 aerial photograph with 0.5--foot resolution.

N

400 200 0 400 Feet

VHB Vanasse Hangen Brustlin, Inc.

\\ctmiddat\projects\41604.00\graphics\FIGURES\Wind_Colebrook_North_Wetland_Resources_Map.pdf

Attachment B
Photographic Documentation

Vanasse Hangen Brustlin, Inc.
PHOTOGRAPHIC DOCUMENTATION
Wind Colebrook South, Proposed Wind Energy Development
Colebrook, Connecticut

Photo 1: View of recently created early old field meadow habitat.

Photo 2: View of early successional forest habitat adjacent to the meadow. This area has been subject to recent and more intensive timber harvesting activities than typical forested areas on the Property.

Photo 3: View of typical forest habitat.

Photo 4: View of typical forest habitat.

Photo 5: View of the beaver pond looking south/southwest.

Photo 6: View of the proposed wetland crossing looking west through crossing.

Attachment C
VHB Letter to CTDEP regardingGreat St. John's-wort species

Transportation
Land Development
Environmental
Services

VHB imagination | innovation | energy Creating results for our clients and benefits for our communities

November 30, 2010

Vanasse Hangen Brustlin, Inc.

Ref: 41604.00

Ms. Nancy Murray
Biologist, NDDB Program Coordinator
Bureau of Natural Resources, Inland Fisheries
Natural Diversity Database
79 Elm Street, 6th Floor
Hartford, Connecticut 06106-5127

Re: Great St. John's-wort
Proposed Wind Colebrook South
17 & 29 Flagg Hill Road
Colebrook, CT

Dear Ms. Murray:

Vanasse Hangen Brustlin Inc. (VHB) has been retained by BNE Energy, Inc. ("BNE") to review environmental resource information, including threatened or endangered species or designated critical habitats on property located at 17 & 29 Flagg Hill Road in Colebrook, Connecticut ("Property"). A Property Location Map, provided as Figure 1, is attached for reference. BNE proposes to construct a wind energy facility on the aforementioned Property. The proposed facility includes construction of three 1.6 megawatt GE wind turbines, associated access roads, and utility interconnection to the existing electrical grid. Access to the Property will be from Flagg Hill Road. Activities associated with the proposed wind energy facility include construction of a new access road and installation of associated ground equipment including an electrical collector yard and associated utility infrastructure so that the turbines can be interconnected to the electrical grid. Direct wetland impacts associated with the Project are limited to a portion of seasonally saturated forested wetland that has been previously utilized for a logging road crossing. Great St. John's-wort prefers streambanks, wet meadows and thickets (Connecticut Botanical Society). As such, on-Site disturbances are not anticipated to affect this species. Erosion Control Site plans have been provided as requested in your response letter of September 9, 2010 to assist you in confirming that the proposed development will not result in an adverse effect on this species. We respectfully request your written concurrence with our findings. Please forward correspondence to my attention.

Very truly yours,

VANASSE HANGEN BRUSTLIN, INC.

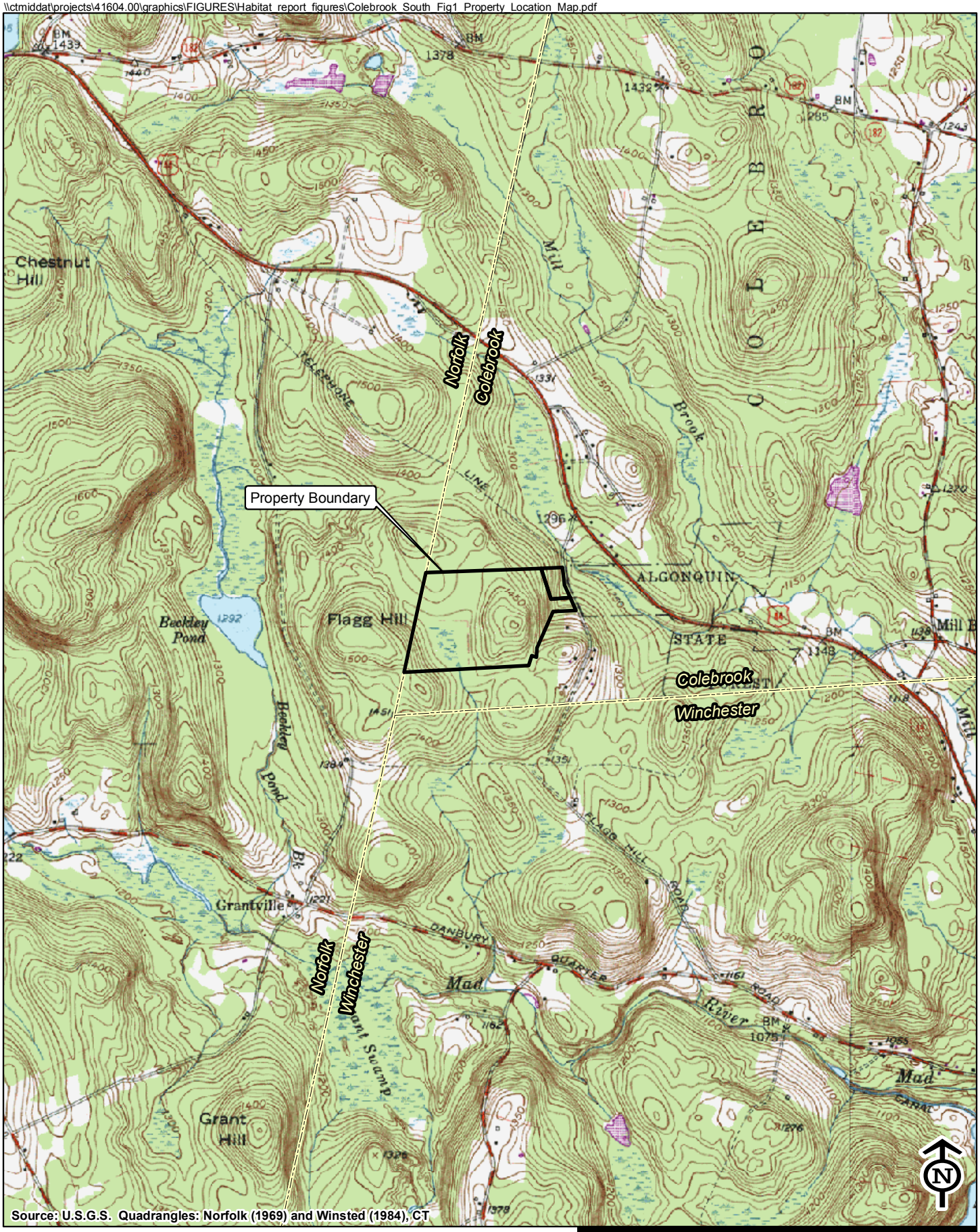
Matthew Davison
Registered Soil Scientist
CT Certified Forester 193

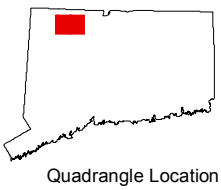
Attachments

54 Tuttle Place
Middletown, Connecticut 06457-1847
860.632.1500 ▪ FAX 860.632.7879
email: info@vhb.com
www.vhb.com

Figure 1

\\ctmiddat\projects\41604.00\graphics\FIGURES\Habitat_report_figures\Colebrook_South_Fig1_Property_Location_Map.pdf





1,000 500 0 1,000 Feet

Vanasse Hangen Brustlin, Inc.

Figure 1
Property Location Map
Wind Colebrook South
BNE Energy, Inc.
29 and 17 Flagg Hill Road
Colebrook, Connecticut

BNE Energy Inc.
Producer of green clean energy

Erosion Control Site Plans
C-200 through C-204

CONSTRUCTION SCHEDULE:

1. INSTALL SILT FENCE, INLET PROTECTION, SEDIMENT TRAPS, DIVERSION DITCHES, TREE PROTECTION, AND OTHER MEASURES AS SHOWN ON PLANS, CLEARING ONLY AS NECESSARY TO INSTALL THESE DEVICES.
2. THE CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES.
3. APPLY SEEDING, TEMPORARY OR PERMANENT, OR OTHER TYPES OF STABILIZATION AS REQUIRED AS SOON AS GRADED AREAS ARE COMPLETE OR WHERE WORK STOPS.
4. COMPLETE FINE GRADING.
5. PREPARE ALL DISTURBED AREAS FOR SEEDING AND GROUND COVER.
6. APPLY PERMANENT SEEDING AND GROUND COVER.
7. AFTER SITE IS STABILIZED AND APPROVALS RECEIVED, ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE REMOVED AND THOSE DISTURBED AREAS SHALL BE SEEDED.
8. COORDINATE WITH EROSION CONTROL INSPECTOR PRIOR TO REMOVAL OF EROSION CONTROL MEASURE.
9. ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
10. APPROVAL OF THIS PLAN IS NOT AN AUTHORIZATION TO GRADE ADJACENT PROPERTIES. WHEN FIELD CONDITIONS WARRANT OFF-SITE GRADING, PERMISSION MUST BE OBTAINED.

MAINTENANCE PLAN:

1. ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL, BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
2. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
3. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES ABOUT 0.5 FEET DEEP AT THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER.
4. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICAL IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS ACTIVITY IN THAT PORTION OF THE SITE WILL RESUME WITHIN 21 DAYS.
5. ALL SEEDED AREAS SHALL BE FERTILIZED, RE-SEEDED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATION TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.

TREE PROTECTION NOTES:

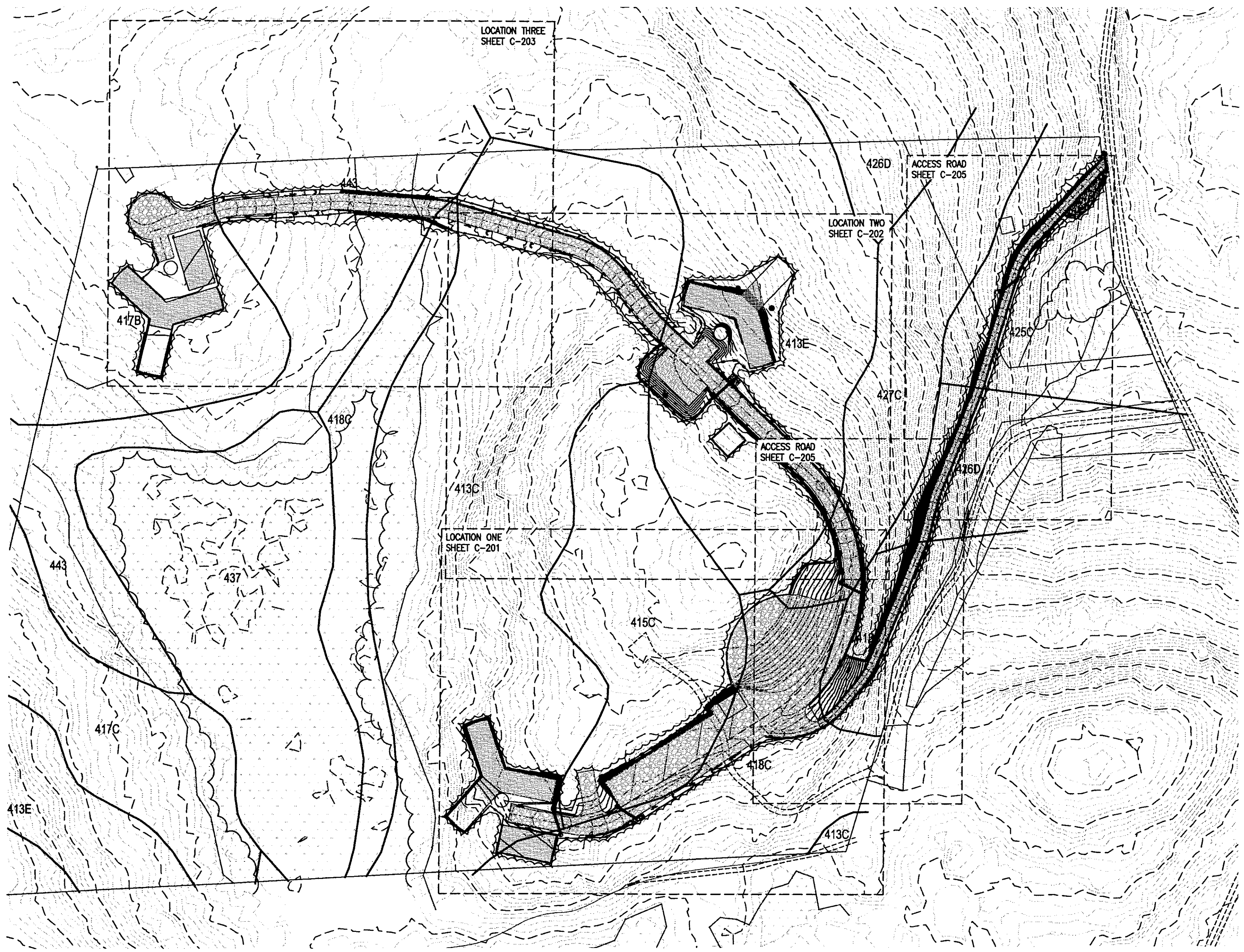
1. TREE BARRICADES MUST BE INSTALLED BEFORE ANY DEMOLITION, CLEARING, GRADING, OR CONSTRUCTION, AND NOT REMOVED UNTIL AFTER FINAL INSPECTION BY URBAN FORESTRY STAFF.
2. NO SOIL DISTURBANCE OR COMPACTION, CONSTRUCTION MATERIALS, BURIAL PITS, TRENCHING OR OTHER LAND DISTURBING ACTIVITY ALLOWED IN TREE PROTECTION AREAS, EXCEPT AS SHOWN ON APPROVED PLANS.
3. VIOLATIONS OF TREE PROTECTION REQUIREMENTS ARE SUBJECT TO FINES, AND/OR IMMEDIATE CORRECTIVE ACTION/MITIGATION.
4. NO GRUBBING WITHIN TREE PROTECTION ZONE. LEAVE SPOIL AND LEAF LITTER UNDISTURBED. SUPPLEMENT WITH 1"-2" OF MULCH. RE-SEED WITH GRASS ONLY IN DISTURBED/GRADED AREAS.
5. BRUSH VINES, AND SMALL TREES (8" DIAMETER, OR AS SMALL AS 2" CALIPER) MAY BE HAND CLEARED ONLY AND CUT FLUSH WITH GROUND SURFACE. EXISTING TREES MAY BE LIMBED UP 6'-0" (LEAVING AT LEAST 2/3 OF THE BRANCHES TO IMPROVE VISIBILITY).
6. EXPOSED TREE ROOTS MUST BE CLEANLY CUT WITH A SHARP PRUNING TOOL; BACKFILL AS SOON AS POSSIBLE TO MINIMIZE EXPOSURE TO THE AIR.
7. TREE PROTECTION FENCE IS TO BE LOCATED 1 FOOT PER TREE DIAMETER INCH AWAY FROM THE TREE IN THE SETBACK.

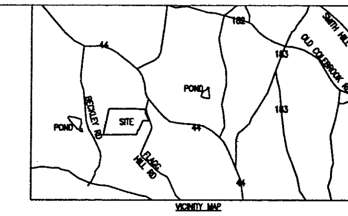
EROSION CONTROL NOTES:

1. STABILIZATION IS THE BEST FORM OF EROSION CONTROL. TEMPORARY SEEDING IS NECESSARY TO ACHIEVE EROSION CONTROL ON LARGE DENUDED AREAS AND ESPECIALLY WHEN SPECIFICALLY REQUIRED AS PART OF THE CONSTRUCTION SEQUENCE.
2. MAXIMUM GRADED SLOPES ARE 2:1. WHEN STEEPER SLOPES MUST BE USED PLANS MUST BE SEALED BY A GEO-TECHNICAL ENGINEER FOR SLOPE STABILITY AND FINAL SURFACE STABILIZATION.
3. DE-WATERING OF SITE DIRECTLY INTO STREAM, WETLAND OR CREEK IS PROHIBITED.

GENERAL CONSTRUCTION NOTES:

1. ALL CONTOURS AND SPOT ELEVATIONS REFLECT FINISH GRADES.
2. CONTRACTOR SHALL BLEND SMOOTHLY NEW GRADING TO EXISTING GRADE.
3. CONTRACTOR SHALL IMMEDIATELY NOTIFY OWNER OR ENGINEER ANY DISCREPANCIES FOUND BETWEEN ACTUAL FIELD CONDITIONS AND CONSTRUCTION DOCUMENTS AND SHALL WAIT FOR INSTRUCTIONS BEFORE PROCEEDING.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL WORK WITH CAUTION DURING EARTHWORK ACTIVITIES NEAR EXISTING UTILITIES. CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE APPROPRIATE AGENCY FOR FIELD LOCATIONS OF ALL UNDERGROUND UTILITIES BEFORE STARTING CONSTRUCTION.





LEGEND

- 84C / 84B — SOIL TYPE BOUNDARY
- TD — TEMPORARY DIVERSION DITCH
- S F — SILT FENCE
- TP — TREE PROTECTION FENCE
- HB — STRAW HAY BALES
- CULVERT PIPE/SLOPE DRAIN
- WETLAND LIMITS
- ROCK CHECK DAM
- FLOW — FLOW ARROW
- TS — TEMPORARY SEEDING
- COMPACTED EARTH
- GRAVEL

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
413C	Bice-Millsite complex. 3 to 15 percent slopes, very rocky	20.1	22.0%
413E	Bice-Millsite complex. 15 to 45 percent slopes very rocky	14.5	15.8%
415C	Westminster-Millsite-Rock outcrop complex 3 to 15 percent slopes	6.4	7.0%
417B	Bice fine sandy loam 3 to 8 percent slopes very stony	8.9	9.7%
417C	Bice fine sandy loam, 8 to 15 percent slopes. very stony	5.5	6.0%
418C	Schroon fine sandy loam 2 to 15 percent slopes, very stony	8.3	9.0%
425C	Shelburne fine sandy loam, 8 to 15 percent slopes, very stony	2.0	2.2%
426D	Shelburne fine sandy loam 15 to 35 percent slopes, extremely stony	2.6	2.9%
427C	Ashfield fine sandy loam 8 to 15 percent slopes very stony	4.6	5.0%
437	Wonsqueak mucky peat	9.1	9.9%
443	Brayton-Loonmeadow complex, extremely stony	9.5	10.4%
Totals for Area of Interest		91.8	100.0%

DIRECT WETLAND IMPACT NOT TO EXCEED 4915 SQ. FT.

11.19.20

0 150 300

BNE Energy Inc.
Producer of green clean energy

MARK	DESCRIPTION	DATE	APPR.
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLK

NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

DESIGNED BY: RSS | DATE: 11-19-10
DWN BY: RSW | CKD BY: TLK
SUBMITTED BY: BNE ENERGY
PLOT SCALE: AS SHOWN | PLOT DATE: 11-19-10 | FILE NUMBER: 1355
SIZE: ANSI D | FILE NAME:

ZAPATA
TRUST · INTEGRITY · QUALITY
6302 FAIRVIEW ROAD #600 PHONE: (704) 358-8240
CHARLOTTE, NC 28210 FAX: (704) 358-8342
ZAPATA@ZAPATAINC.COM WWW.ZAPATAINC.COM

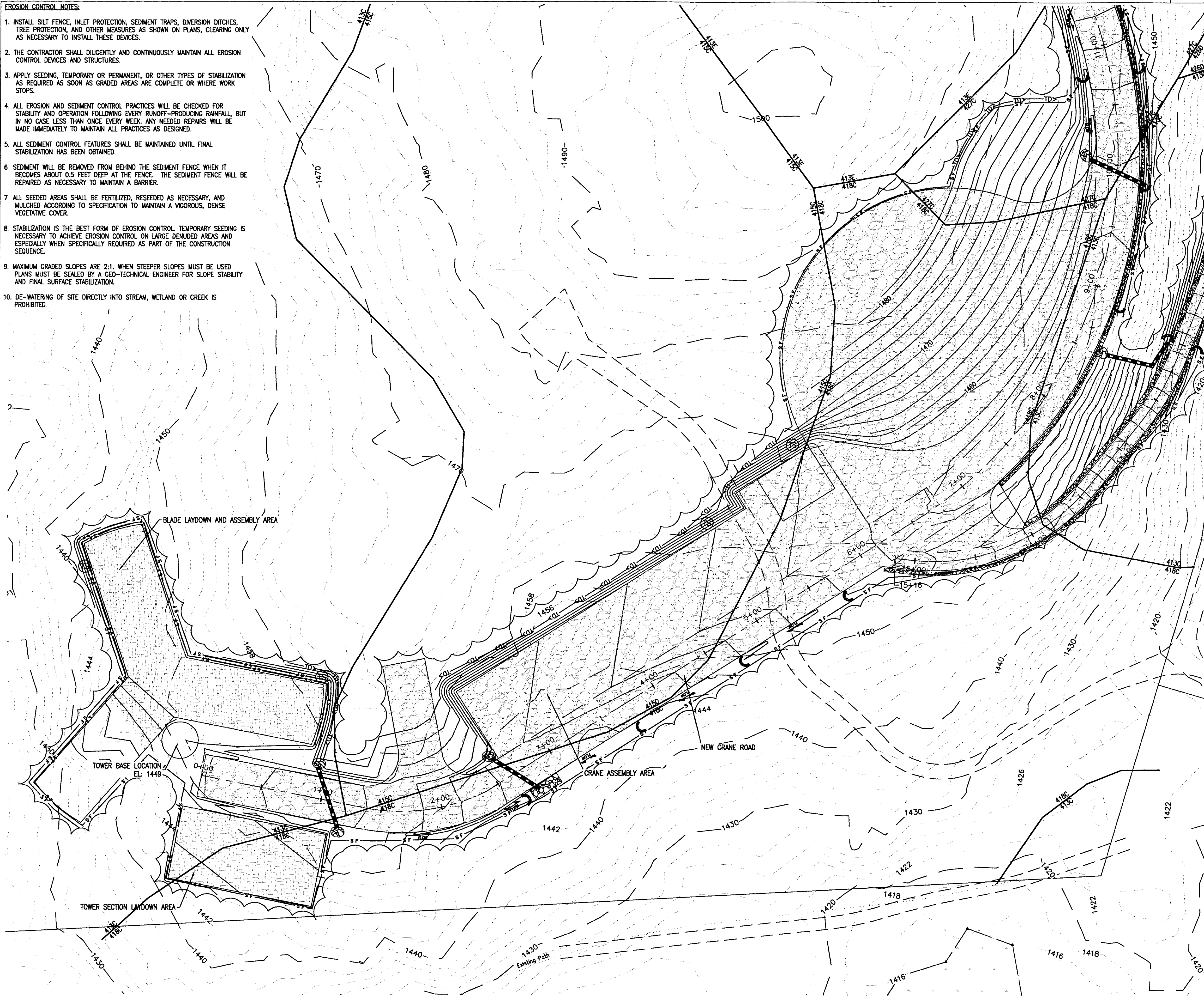
WIND COLEBROOK SOUTH
CONNECTICUT

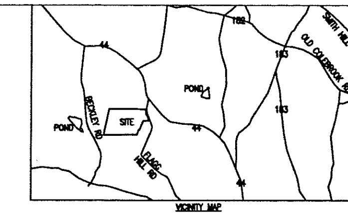
OVERALL EROSION CONTROL PLAN

SHEET IDENTIFICATION
C-200

EROSION CONTROL NOTES:

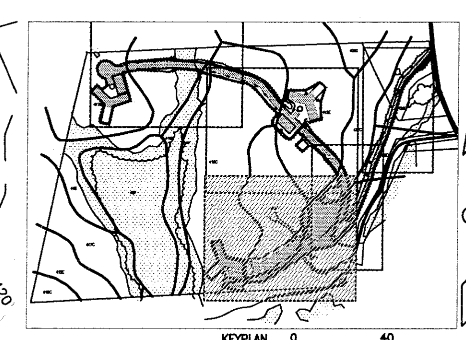
1. INSTALL SILT FENCE, INLET PROTECTION, SEDIMENT TRAPS, DIVERSION DITCHES, TREE PROTECTION, AND OTHER MEASURES AS SHOWN ON PLANS, CLEARING ONLY AS NECESSARY TO INSTALL THESE DEVICES.
2. THE CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES.
3. APPLY SEEDING, TEMPORARY OR PERMANENT, OR OTHER TYPES OF STABILIZATION AS REQUIRED AS SOON AS GRADED AREAS ARE COMPLETE OR WHERE WORK STOPS.
4. ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL, BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
5. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
6. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES ABOUT 0.5 FEET DEEP AT THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER.
7. ALL SEEDED AREAS SHALL BE FERTILIZED, RESEEDED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATION TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.
8. STABILIZATION IS THE BEST FORM OF EROSION CONTROL. TEMPORARY SEEDING IS NECESSARY TO ACHIEVE EROSION CONTROL ON LARGE DENUDED AREAS AND ESPECIALLY WHEN SPECIFICALLY REQUIRED AS PART OF THE CONSTRUCTION SEQUENCE.
9. MAXIMUM GRADED SLOPES ARE 2:1. WHEN STEEPER SLOPES MUST BE USED PLANS MUST BE SEALED BY A GEO-TECHNICAL ENGINEER FOR SLOPE STABILITY AND FINAL SURFACE STABILIZATION.
10. DE-WATERING OF SITE DIRECTLY INTO STREAM, WETLAND OR CREEK IS PROHIBITED.





LEGEND

84C / 84B	SOIL TYPE BOUNDARY
TD	TEMPORARY DIVERSION DITCH
S F	SILT FENCE
TP	TREE PROTECTION FENCE
HB	STRAW HAY BALES
	CULVERT PIPE/SLOPE DRAIN
	WETLAND LIMITS
	ROCK CHECK DAM
FLOW	FLOW ARROW
TS	TEMPORARY SEEDING
	COMPACTED EARTH
	GRAVEL
	RIPRAP



BNE Energy Inc.
Producer of green clean energy

MARK	DESCRIPTION	DATE	APPR.
1	CONNECTICUT SITING COUNCIL SUBMISSION	11-19-10	TLK

NOT FOR CONSTRUCTION - CONNECTICUT SITING COUNCIL USE ONLY

DESIGNED BY: RSS		DATE: 11-19-10
DWN BY: RSW	CKD BY: TLK	
SUBMITTED BY: BNE ENERGY		
PLOT SCALE: AS SHOWN	PLOT DATE: 11-19-10	FILE NUMBER: 1355
SIZE: ANSI D	FILE NAME:	

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WIND COLEBROOK SOUTH
CONNECTICUT

TURBINE LOCATION ONE AND CRANE ASSEMBLY AREA EROSION CONTROL PLAN

SHEET IDENTIFICATION
C-201

EROSION CONTROL NOTES:

1. INSTALL SILT FENCE, INLET PROTECTION, SEDIMENT TRAPS, DIVERSION DITCHES, TREE PROTECTION, AND OTHER MEASURES AS SHOWN ON PLANS, CLEARING ONLY AS NECESSARY TO INSTALL THESE DEVICES.
2. THE CONTRACTOR SHALL DILIGENTLY AND CONTINUOUSLY MAINTAIN ALL EROSION CONTROL DEVICES AND STRUCTURES.
3. APPLY SEEDING, TEMPORARY OR PERMANENT, OR OTHER TYPES OF STABILIZATION AS REQUIRED AS SOON AS GRADED AREAS ARE COMPLETE OR WHERE WORK STOPS.
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5. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
6. SEDIMENT WILL BE REMOVED FROM BEHIND THE SEDIMENT FENCE WHEN IT BECOMES ABOUT 0.5 FEET DEEP AT THE FENCE. THE SEDIMENT FENCE WILL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER.
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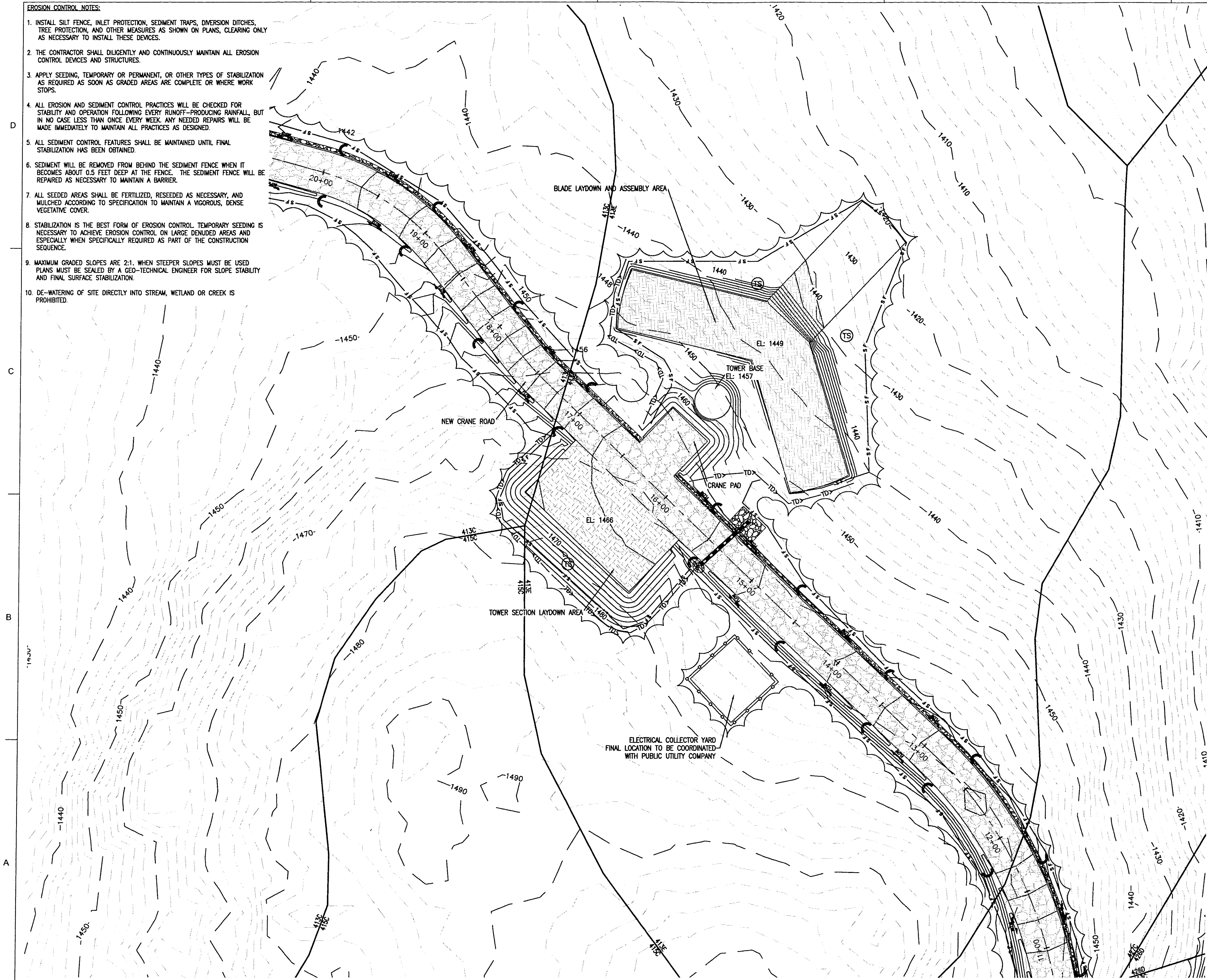

LEGEND

84C / 84B	SOIL TYPE BOUNDARY
TD	TEMPORARY DIVERSION DITCH
S F	SILT FENCE
TP	TREE PROTECTION FENCE
HB	STRAW HAY BALES
	CULVERT PIPE/SLOPE DRAIN
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	ROCK CHECK DAM
FLOW	FLOW ARROW
TS	TEMPORARY SEEDING
	COMPACTED EARTH
	GRAVEL
	RIPRAP

BNE Energy Inc.
Producer of green clean energy

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DESIGNED BY: RSS		DATE: 11-19-10
DWN BY: RSW	CKD BY: TLK	
SUBMITTED BY: BNE ENERGY		
PLOT SCALE: AS SHOWN	PLOT DATE: 11-19-10	FILE NUMBER: 1355
SIZE: ANSI D	FILE NAME:	

WIND COLEBROOK SOUTH
CONNECTICUT

TURBINE LOCATION TWO
EROSION CONTROL PLAN

SHEET IDENTIFICATION
C-202

EROSION CONTROL NOTES:

1. INSTALL SILT FENCE, INLET PROTECTION, SEDIMENT TRAPS, DIVERSION DITCHES, TREE PROTECTION, AND OTHER MEASURES AS SHOWN ON PLANS, CLEARING ONLY AS NECESSARY TO INSTALL THESE DEVICES.
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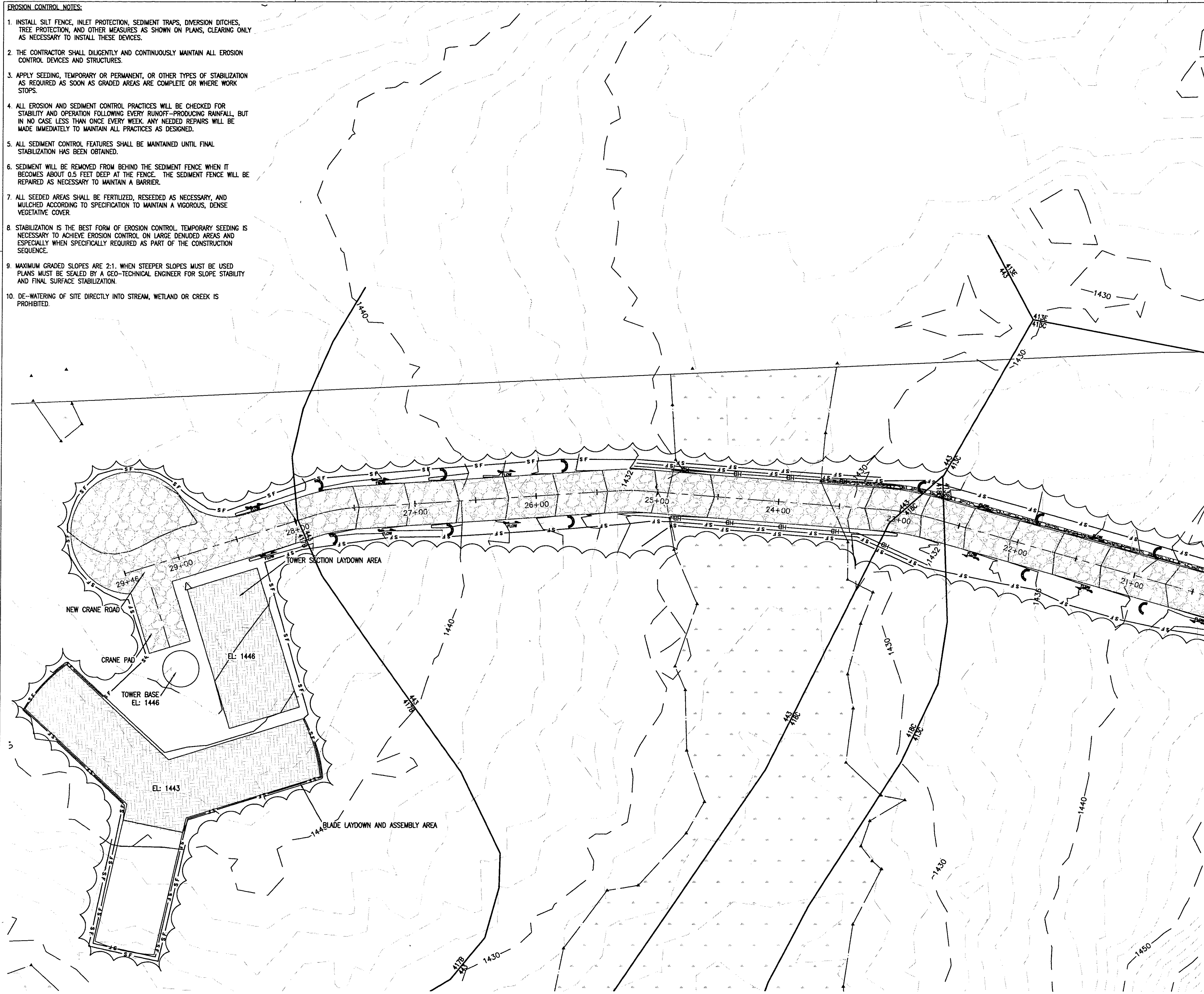

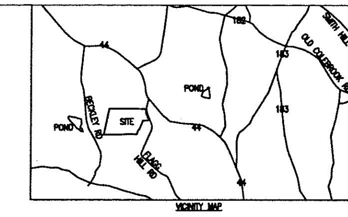

LEGEND

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S F	SILT FENCE
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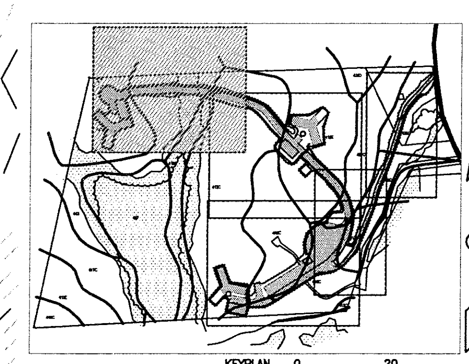
	WETLAND LIMITS
	ROCK CHECK DAM
FLOW	FLOW ARROW
TS	TEMPORARY SEEDING
	COMPACTED EARTH
	GRAVEL
	RIPRAP

DIRECT WETLAND IMPACT NOT TO EXCEED 4915 SQ. FT.

11.19.20



BNE Energy Inc.
Producer of green clean energy

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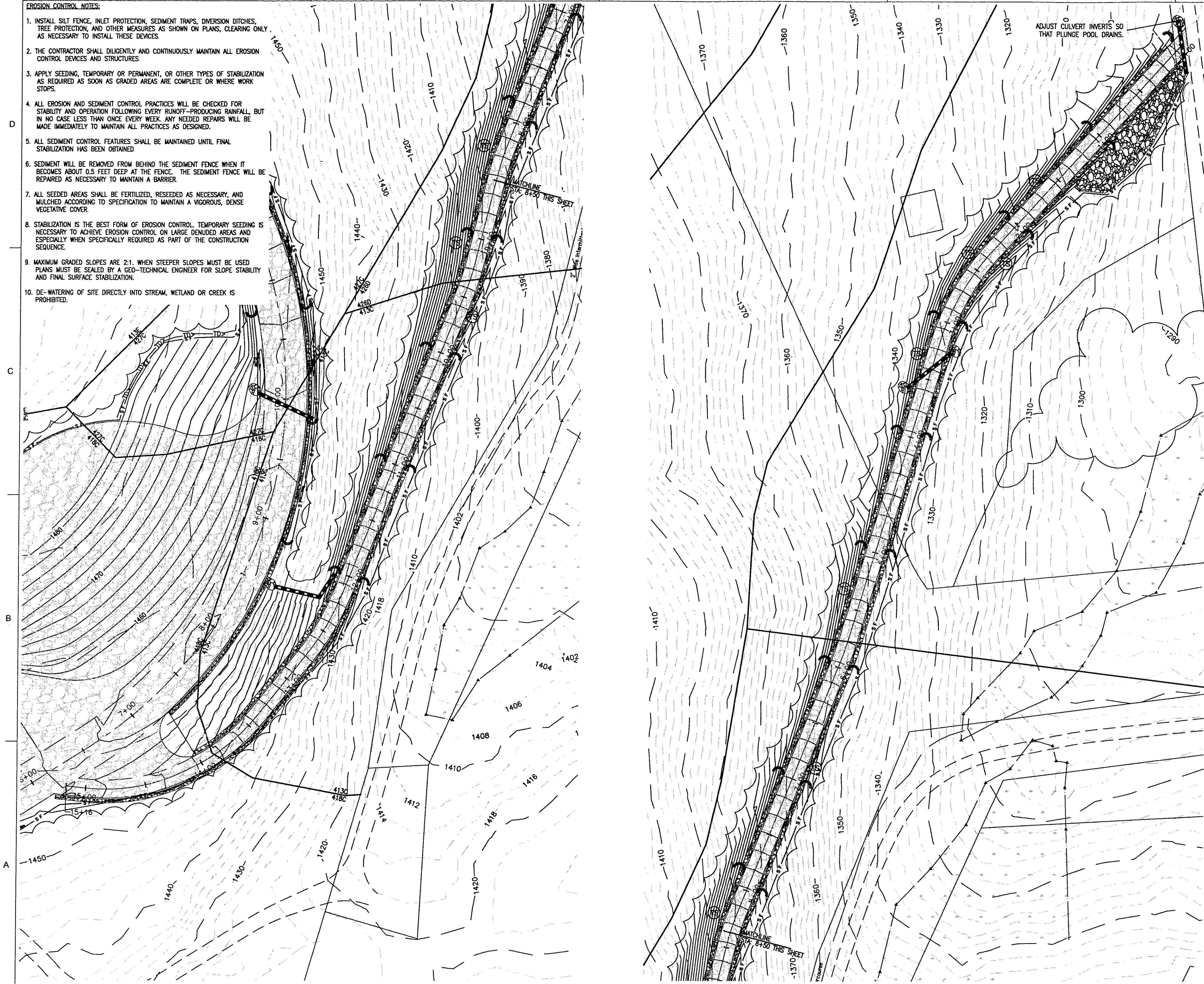
WIND COLEBROOK SOUTH
CONNECTICUT

TURBINE LOCATION THREE
EROSION CONTROL PLAN

SHEET IDENTIFICATION
C-203



ERROSION CONTROL NOTES:

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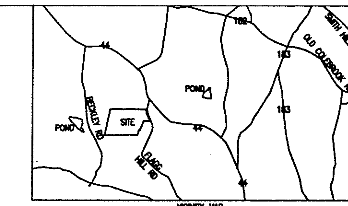
ADJUST CULVERT INVERTS SO THAT PLUNGE POOL DRAINS.

MATCHLINE STA. 8+50 THIS SHEET

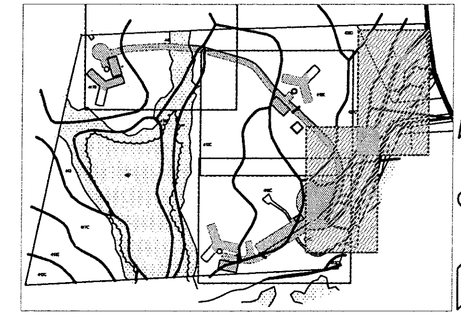


VICINITY MAP

LEGEND

84C / 84B	SOIL TYPE BOUNDARY
TD> TD>	TEMPORARY DIVERSION DITCH
S F	SILT FENCE
TP TP	TREE PROTECTION FENCE
HB	STRAW HAY BALES
	CULVERT PIPE/SLOPE DRAIN
	WETLAND LIMITS
	ROCK CHECK DAM
FLOW	FLOW ARROW
TS	TEMPORARY SEEDING
	COMPACTED EARTH
	GRAVEL
	RIPRAP

11.19.20



KEYPLAN 0 20 40

BNE Energy Inc.
Producer of green clean energy

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SIZE: ANSI D	FILE NAME:	

WIND COLEBROOK SOUTH
CONNECTICUT

ACCESS ROAD STA: 0+00 TO 15+16
EROSION CONTROL PLAN

SHEET IDENTIFICATION
C-204

CTDEP Response Letter dated September 9, 2010

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Bureau of Natural Resources
Inland Fisheries
Natural Diversity Data Base
79 Elm Street, 6th Floor
Hartford, CT 06106-5127

September 9, 2010

Matthew Davison
Vanasse Hangen Brustlin, Inc.
54 Tuttle Place
Middletown, CT 06457

Subject: Colebrook, CT:
Wind Colebrook South

Dear Mr. Davison,

I have reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided and listed above. According to our information, there are no known extant populations of Federal or State Endangered, Threatened or Special Concern Species that occur at the site in question. However we do have a record of a State Special Concern plant adjacent to the site in question. This species is Great St. John's-wort (*Hypericum ascyron*) and is listed as State Special Concern (RCSA Sec. 26-306). The plant grows in the wetland east of the project site. Please refer to the attached map for location. If any direct or indirect activities are proposed for this area, I request that you provide me with a description of the work so we can avoid negative effects to the species and its habitat. As always,erosion and siltation control mechanisms should be utilized to prevent negative impacts to the wetland/riverine habitat. If the proposed project has not been initiated within 12 months of this review, contact the NDDB for an updated review.

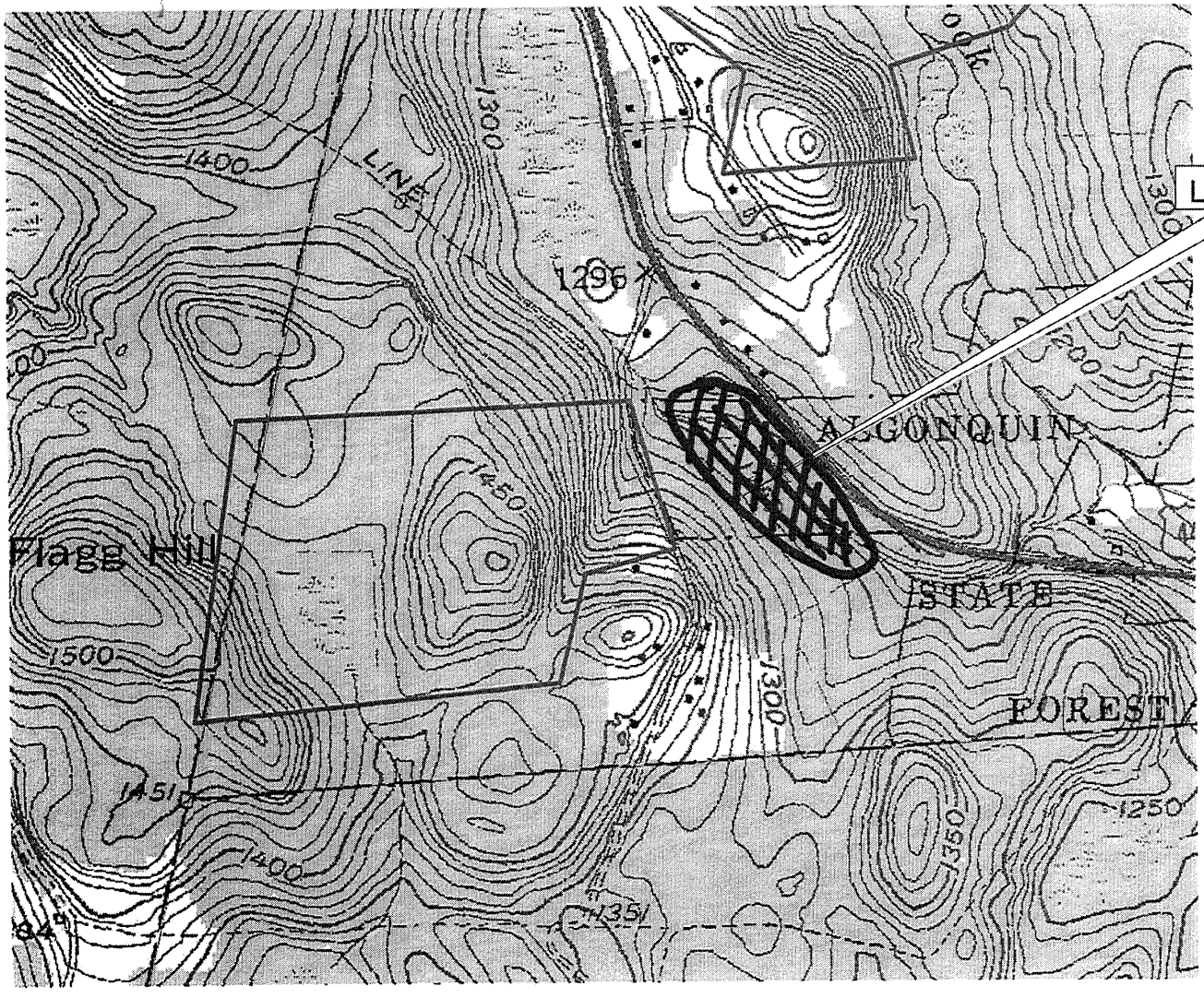
Natural Diversity Data Base information includes all information regarding critical biologic resources available to us at the time of the request. This information is a compilation of data collected over the years by the Environmental & Geographic Information Center's Geological and Natural History Survey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

Please contact me if you have further questions (nancy.murray@po.state.ct.us; 860-424-3589). Thank you for consulting the Natural Diversity Data Base and continuing to work with us to protect State listed species.

Sincerely

Nancy M. Murray
Biologist, NDDB Program Coordinator

State Special Concern plant



Attachment D
Summary of *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A Descriptive Approach* & Wetland Functions and Values Field Forms

The understanding that freshwater wetlands contribute to the quality and integrity of the state's environment has been acknowledged since the enactment of the Connecticut Inland Wetlands and Watercourses Act ("Act") in 1972. The Act recognizes that "…wetlands and watercourses are an interrelated web of nature essential to an adequate supply of surface and underground water; to hydrological stability and control of flooding and erosion; to the recharging and purification of groundwater; and to the existence of many forms of animal aquatic and plant life." The Act also recognizes the need to protect "…the quality of wetlands and watercourses for their conservation, economic, aesthetic, recreational and other public and private uses and values."

There are many methods of evaluating wetlands and these methods have often chosen different parameters to evaluate. This study uses *The Highway Methodology Workbook Supplement, Wetland Functions and Values: A descriptive Approach* issued by the US Army Corps of Engineers New England District (COE NED), September 1999. This evaluation provides a qualitative approach in which wetland functions can be considered primary, secondary, or unlikely to be provided at a significant level. Functions and values can be principal if they are an important physical component of a wetland ecosystem (function only), and/or are considered of special value to society, from a local, regional, and/or national perspective. The COE NED recommends that wetland values and functions be determined through "best professional judgment" based on a qualitative description of the physical attributes of wetlands and the functions and values exhibited.

The basis for determination of this qualitative approach relies on over 20 years of field experience and extensive knowledge of other scientific methods used for wetland evaluation purposes.

The Highway Methodology recognizes 13 separate wetland functions and values, similar to those identified in *Method for the Evaluation of Inland Wetlands in Connecticut*, CTDEP Bulletin No. 9, October 1986, revised March 1991. These functions and values can be grouped into four basic categories as follows:

I. Biological Functions

   A. Fish and Shellfish Habitat — This function considers the effectiveness of seasonal or permanent waterbodies associated with the wetland in question for fish and shellfish habitat.

   B. Wildlife Habitat — This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.

C. Production Export (Nutrient) — This function relates to the effectiveness of the wetland to produce food or usable products for humans or other living organisms

II. Hydrologic Functions

A. Floodflow Alteration (Storage & Desynchronization) — This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.

B. Groundwater Recharge/Discharge — This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where groundwater can be discharged to the surface.

III. Water Quality Functions

A. Sediment/Toxicant/Pathogen Retention — This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens.

B. Nutrient Removal/Retention/Transformation — This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

C. Sediment/Shoreline Stabilization — This function relates to the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.

IV. Societal Values

A. Recreation (Consumptive and Non-Consumptive) — This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive activities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland, whereas non-consumptive activities do not.

B. Educational/Scientific Value — This value considers the effectiveness of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.

C. Uniqueness/Heritage — This value relates to the effectiveness of the wetland or its associated waterbodies to produce certain special values. Special values may include such things as archaeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geologic features.

D. Visual Quality/Aesthetics — This value relates to the visual and aesthetic qualities of the wetland.

E. Threatened or Endangered Species Habitat — This value relates to the effectiveness of the wetland or associated waterbodies to support threatened or endangered species.

The degree to which a wetland provides each of these functions is determined by one or more of the following factors: landscape position, substrate, hydrology, vegetation, history of disturbance, and size. Each wetland may provide one or more of the listed functions at significant levels.

The determining factors that affect the level of function provided by a wetland can often be broken into two categories. The effectiveness of a wetland to provide a specified function is generally dependent on factors within the wetland whereas the opportunity to provide a function is often influenced by the wetland's position in the landscape and adjacent land uses. For example, a depressed wetland with a restricted outlet may be considered highly effective in trapping sediment due to the long residence time of runoff water passing through the system. If this wetland is located in gently sloping woodland, however, there is no significant source of sediment in the runoff therefore the wetland is considered to have a small opportunity of providing this function.

Vanasse Hangen Brustlin, Inc.

54 Tuttle Place
Middletown, Connecticut 06457
860 632-1500
FAX 860 632-7879

Field / Office Wetland Function-Value Evaluation Form

Date(s):	October 24, 2010	Project #/Location:	41604.00 Colebrook South
Inspector(s):	Matthew Davison	VHB Wetland ID:	Wetland 1
Corps Delineation:	Yes☐ No☒	CT Delineation	Yes☒ No☐
Wetland Area:	unknown	Proposed Impact:	filling/clearing
Created Wetland:	Yes☐ No☒	Adjacent Land Use:	undeveloped
Dominate System:	Palustrine Open Water	Nearest Roadway:	approximately 1400 feet
Wildlife Corridor:	Yes☒ No☐	Habitat Island:	Yes ☐ No☒
Tributaries:	Int. headwater stream	Buffer Condition:	undeveloped/forest
Site Photo(s):	yes	Species List(s):	

Separate hydraulic system or part of drainage basin: headwater system

Existing wetland disturbances/ alterations: Logging road (skid road) crossing at area of proposed Impacts.

GROUNDWATER RECHARGE/DISCHARGE FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Public or private wells occur downstream of the wetland.	☒	☐	☐
2. Potential exists for public or private wells downstream of the wetland.	☒	☐	☐
3. Wetland is underlain by stratified drift.	☐	☒	☐
4. Gravel or sandy soils present in or adjacent to the wetland.	☐	☒	☐
5. Fragipan does not occur in the wetland.	☐	☒	☐
6. Fragipan, impervious soils, or bedrock does occur in the wetland.	☒	☐	☐
7. Wetland is associated with a perennial or intermittent watercourse.	☐	☒	☐
8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.	☐	☒	☐
9. Wetland is associated w/ a watercourse but lacks a defined outlet/contains a constricted outlet.	☐	☒	☐
10. Wetland contains only an outlet, no inlet.	☐	☒	☐
11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.	☐	☒	☐
12. Quality of water associated with the wetland is high.	☒	☐	☐
13. Signs of groundwater discharge are present (e.g., springs).	☐	☒	☐
14. Water temperature suggests it is a discharge site.	☐	☒	☐
15. Wetland shows signs of variable water levels	☒	☐	☐
16. Piezometer data demonstrates discharge.	☐	☒	☐

17. **Comments: Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function.**

FLOODFLOW ALTERATION FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Area of this wetland is large relative to its watershed.	☒	☐	☐
2. Wetland occurs in the upper portions of its watershed.	☒	☐	☐
3. Effective flood storage is small or non-existent upslope of or above the wetland.	☒	☐	☐
4. Wetland watershed contains a high percent of impervious surfaces.	☐	☐	☐
5. Wetland contains hydric soils which are able to absorb and detain water.	☒	☐	☐
6. Wetland exists in a relatively flat area that has flood storage potential.	☒	☐	☐
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.	☒	☐	☐
8. During flooding wetland retains higher volumes of water than under normal/average rainfall conditions.	☒	☐	☐
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.	☒	☐	☐
10. During a storm, this wetland may receive and detain excessive flood water from a nearby watercourse.	☐	☒	☐
11. Valuable properties, structures, or resources are located in/near floodplain downstream of the wetland.	☐	☒	☐
12. The watershed has a history of economic loss due to flooding.	☐	☒	☐
13. This wetland is associated with one or more watercourses.	☐	☒	☐
14. This wetland watercourse is sinuous or diffuse.	☐	☒	☐
15. This wetland outlet is constricted.	☐	☒	☐
16. Channel flow velocity is affected by this wetland.	☐	☒	☐
17. Land uses downstream are protected by this wetland.	☐	☒	☐
18. This wetland contains a high density of vegetation.	☒	☐	☐

19. **Comments: Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function.**

FISH AND SHELLFISH HABITAT (FRESHWATER) FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Forest land dominant in the watershed above this wetland.	☒	☐	☐
2. Abundance of cover objects present.	☒	☐	☐
STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE			
3. Size of this wetland is able to support large fish/shellfish populations.	☐	☐	☐
4. Wetland is part of a larger, contiguous watercourse.	☐	☐	☐
5. Sufficient open water size/depth so as not to freeze solid and retain some open water during winter.	☐	☐	☐
6. Stream width (bank to bank) is more than 50 feet.	☐	☐	☐
7. Quality of watercourse associated with wetland is able to support healthy fish/shellfish populations	☐	☐	☐
8. Streamside vegetation provides shade for the watercourse.	☐	☐	☐
9. Spawning areas are present (submerged vegetation or gravel beds).	☐	☐	☐
10. Food is available to fish/shellfish populations within this wetland.	☐	☐	☐
11. Anadromous fish barrier(s) absent from stream reach associated with this wetland.	☐	☐	☐
12. Evidence of fish is present.	☐	☐	☐
13. Wetland is stocked with fish.	☐	☐	☐
14. The watercourse is persistent.	☐	☐	☐
15. Man-made streams are absent.	☐	☐	☐
16. Water velocities are not too excessive for fish usage.	☐	☐	☐
17. Defined stream channel is present.	☐	☐	☐

18. **Comments: Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function.**

FISH AND SHELLFISH HABITAT (MARINE) FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Special aquatic sites (tidal marsh, mud flats, eelgrass beds) are present.	☐	☐	☐
2. Suitable spawning habitat is present at the site or in the area.	☐	☐	☐
3. Commercially or recreationally important species are present or suitable habitat exists.	☐	☐	☐
4. The wetland/waterway supports prey for higher trophic level marine organisms.	☐	☐	☐
5. The waterway provides migratory habitat for anadromous fish.	☐	☐	☐
6. Essential fish habitat (1996 amendments to the Magnuson-Stevens) Fishery & Conservation Act present	☐	☐	☐

7. **Comments: N/A**

SEDIMENT/TOXICANT/PATHOGEN RETENTION FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Potential sources of excess sediment are in the watershed above the wetland.	☐	☒	☐
2. Potential or known sources of toxicants are in the watershed above the wetland.	☐	☒	☐
3. Opportunity for sediment trapping by slow moving water/deepwater habitat is present in wetland.	☐	☒	☐
4. Fine grained mineral or organic soils are present.	☒	☐	☐
5. Long duration water retention time is present in this wetland.	☐	☒	☐
6. Public or private water sources occur downstream.	☒	☐	☐
7. The wetland edge is broad and intermittently aerobic.	☒	☐	☐
8. The wetland is known to have existed for more than 50 years.	☒	☐	☐
9. Drainage ditches have not been constructed in the wetland.	☐	☒	☐
STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE			
10. Wetland is associated with an intermittent or perennial stream or a lake.	☐	☐	☐
11. Channelized flows have visible velocity decreases in the wetland.	☐	☐	☐
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.	☐	☐	☐
13. No indicators of erosive forces are present. No high water velocities are present.	☐	☐	☐
14. Diffuse water flows are present in the wetland.	☐	☐	☐
15. Wetland has a high degree of water and vegetation interspersion.	☐	☐	☐
16. Dense vegetation provides sediment trapping/signs of sediment accumulation are present.	☐	☐	☐

17. **Comments: Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function.**

NUTRIENT REMOVAL/RETENTION/TRANSFORMATION FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland is large relative to the size of its watershed.	☒	☐	☐
2. Deep water or open water habitat exists.	☐	☒	☐
3. Overall potential for sediment trapping exists in the wetland.	☐	☒	☐
4. Potential sources of excess nutrients are present in the watershed above the wetland.	☐	☒	☐
5. Wetland saturated for most of the season. Ponded water is present in the wetland.	☐	☒	☐
6. Deep organic/sediment deposits are present.	☐	☒	☐
7. Slowly drained fine grained mineral or organic soils are present.	☒	☐	☐
8. Dense vegetation is present.	☒	☐	☐
9. Emergent vegetation and/or dense woody stems are dominant.	☒	☐	☐
10. Opportunity for nutrient attenuation exists.	☐	☒	☐
11. Vegetation diversity/abundance sufficient to utilize nutrients.	☐	☒	☐
STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE			
12. Waterflow through this wetland is diffuse.	☐	☐	☐
13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.	☐	☐	☐
14. Water moves slowly through this wetland.	☐	☐	☐

15. **Comments**: **Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function.**

SEDIMENT/SHORELINE STABILIZATION FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Indications of erosion or siltation are present.	☐	☒	☐
2. Topographical gradient is present in wetland.	☒	☐	☐
3. Potential sediment sources are present up-slope.	☐	☒	☐
4. Potential sediment sources are present upstream.	☐	☒	☐
5. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.	☐	☒	☐
6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e., sharp bank) with dense roots throughout.	☐	☒	☐
7. Wide wetland (>10') borders watercourse, lake, or pond.	☐	☒	☐
8. High flow velocities in the wetland.	☐	☒	☐
9. The watershed is of sufficient size to produce channelized flow.	☒	☐	☐
10. Open water fetch is present.	☐	☒	☐
11. Boating activity is present.	☐	☒	☐
12. Dense vegetation is bordering watercourse, lake, or pond.	☐	☒	☐
13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake, or pond.	☐	☒	☐
14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).	☐	☒	☐
15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.	☐	☒	☐

16. **Comments: Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function.**

PRODUCTION EXPORT (Nutrient) FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wildlife food sources grow within this wetland.	☒	☐	☐
2. Detritus development is present within this wetland	☒	☐	☐
3. Economically or commercially used products found in this wetland.	☐	☒	☐
4. Evidence of wildlife use found within this wetland.	☒	☐	☐
5. Higher trophic level consumers are utilizing this wetland.	☒	☐	☐
6. Fish or shellfish develop or occur in this wetland.	☐	☒	☐
7. High vegetation density is present.	☒	☐	☐
8. Wetland exhibits high degree of plant community structure/species diversity.	☒	☐	☐
9. High aquatic vegetative diversity/abundance is present.	☐	☒	☐
10. Nutrients exported in wetland watercourses (permanent outlet present).	☐	☒	☐
11. "Flushing" of relatively large amounts of organic plant material occurs from this wetland.	☐	☒	☐
12. Wetland contains flowering plants that are used by nectar-gathering insects.	☒	☐	☐
13. Indications of export are present.	☐	☒	☐
14. High production levels occurring with no visible signs of export (assumes export is attenuated).	☐	☒	☐

15. **Comments: Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function.**

WILDLIFE HABITAT FUNCTION

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland is not degraded by human activity.	☒	☐	☐
2. H2O quality of watercourse/pond/lake associated w/ wetland meets/exceeds Class A or B standards	☒	☐	☐
3. Wetland is not fragmented by development.	☒	☐	☐
4. Upland surrounding this wetland is undeveloped.	☒	☐	☐
5. > 40% of wetland edge bordered by upland wildlife habitat at least 500 ft in width.	☒	☐	☐
6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.	☒	☐	☐
7. Wildlife overland access to other wetlands is present.	☒	☐	☐
8. Wildlife food sources are within this wetland or are nearby.	☒	☐	☐
9. Wetland exhibits a high degree of interspersion of vegetation classes and/or open water.	☒	☐	☐
10. Two or more islands or inclusions of upland within the wetland are present.	☐	☒	☐
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.	☐	☒	☐
12. > 3 acres shallow permanent open water (< 6.6 feet deep), including in/adjacent streams present.	☒	☐	☐
13. Density of the wetland vegetation is high.	☐	☒	☐
14. Wetland exhibits a high degree of plant species diversity.	☒	☐	☐
15. Wetland exhibits high degree plant community structure diversity (tree/shrub/vine/grasses/mosses)	☒	☐	☐
16. Plant/animal indicator species are present. (List species for project)	☐	☐	☐
17. Animal signs observed (tracks, scats, nesting areas, etc.)	☒	☐	☐
18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.	☒	☐	☐
19. Wetland contains or has potential to contain a high population of insects.	☒	☐	☐
20. Wetland contains or has potential to contain large amphibian populations.	☐	☒	☐
21. Wetland has a high avian utilization or its potential.	☒	☐	☐
22. Indications of less disturbance-tolerant species are present.	☒	☐	☐
23. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc.).	☐	☒	☐

24. **Comments: Wetland 1 was considered in its entirety for this wetland function.**

RECREATION (Consumptive and Non-Consumptive) VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland is part of a recreation area, park, forest, or refuge.	☐	☒	☐
2. Fishing is available within or from the wetland.	☐	☒	☐
3. Hunting is permitted in the wetland.	☐	☒	☐
4. Hiking occurs or has potential to occur within the wetland.	☐	☒	☐
5. Wetland is a valuable wildlife habitat.	☒	☐	☐
6. The watercourse, pond, or lake associated with the wetland is unpolluted.	☐	☒	☐
7. High visual/aesthetic quality of this potential recreation site.	☐	☒	☐
8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.	☐	☒	☐
9. Watercourse associated w/ wetland is wide & deep enough to accommodate canoeing and/or non-powered boating.	☐	☒	☐
10. Off-road public parking available at the potential recreation site.	☐	☒	☐
11. Accessibility and travel ease is present at this site.	☐	☒	☐
12. The wetland is within a short drive or safe walk from highly populated public and private areas	☐	☒	☐

13. **Comments: Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function.**

EDUCATIONAL/SCIENTIFIC VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland contains or is known to contain threatened, rare, or endangered species.	☐	☒	☐
2. Little or no disturbance is occurring in this wetland.	☐	☒	☐
3. Potential educational site contains a diversity of wetland classes & are accessible/potentially accessible.	☐	☒	☐
4. Potential educational site is undisturbed and natural.	☐	☒	☐
5. Wetland is considered to be a valuable wildlife habitat.	☒	☐	☐
6. Wetland is located within a nature preserve or wildlife management area.	☐	☒	☐
7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).	☐	☒	☐
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.	☐	☒	☐
9. Potential educational site is within safe walking distance or a short drive to schools.	☐	☒	☐
10. Potential educational site is within safe walking distance to other plant communities.	☐	☒	☐
11. Direct access to perennial stream at potential educational site is available.	☐	☒	☐
12. Direct access to pond or lake at potential educational site is available.	☐	☒	☐
13. No known safety hazards exist within the potential educational site.	☐	☒	☐
14. Public access to the potential educational site is controlled.	☐	☒	☐
15. Handicap accessibility is available.	☐	☒	☐
16. Site is currently used for educational or scientific purposes.	☐	☒	☐

17. **Comments: Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function.**

UNIQUENESS/HERITAGE VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Upland surrounding wetland is primarily urban.	☐	☒	☐
2. Upland surrounding wetland is developing rapidly.	☐	☒	☐
3. > 3 acres of shallow permanent open water (< 6.6 feet deep), including streams, occur in wetlands.	☒	☐	☐
4. Three or more wetland classes are present.	☒	☐	☐
4. Deep and/or shallow marsh or wooded swamp dominate.	☐	☒	☐
6. High degree of interspersion of vegetation and/or open water occur in this wetland.	☒	☐	☐
7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.	☐	☒	☐
8. Potential educational site is within a short drive or a safe walk from schools.	☐	☒	☐
9. Off-road parking at potential educational site is suitable for school buses.	☐	☒	☐
10. No known safety hazards exist within this potential educational site.	☐	☒	☐
11. Direct access to perennial stream or lake exists at potential educational site.	☐	☒	☐
12. Two or more wetland classes are visible from primary viewing locations.	☒	☐	☐
13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) visible from primary viewing locations.	☒	☐	☐
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.	☒	☐	☐
15. Large area of wetland dominated by flowering plants/plants that seasonally turn vibrant colors	☐	☒	☐
16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.	☒	☐	☐
17. Overall view of the wetland is available from the surrounding upland.	☒	☐	☐
18. Quality of the water associated with the wetland is high.	☒	☐	☐
19. Opportunities for wildlife observations are available.	☒	☐	☐
20. Historical buildings are found within the wetland.	☐	☒	☐
21. Presence of pond or pond site and remains of a dam occur within the wetland.	☐	☒	☐
22. Wetland is within 50 yards of the nearest perennial watercourse.	☒	☐	☐
23. Visible stone or earthen foundations, berms, dams, standing structures, or associated features occur within the wetland.	☐	☒	☐
24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.	☐	☒	☐
25. Wetland is known to be a study site for scientific research.	☐	☒	☐
26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.	☐	☒	☐
27. Wetland has local significance because it serves several functional values.	☒	☐	☐
28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique.	☐	☒	☐
29. Wetland is known to contain an important archaeological site.	☐	☒	☐
30. Wetland is hydrologically connected to a state or federally designated scenic river.	☐	☒	☐
31. Wetland is located in an area experiencing a high wetland loss rate.	☐	☒	☐

32. **Comments: Wetland 1 was considered in its entirety for this wetland value.**

VISUAL QUALITY/AESTHETICS VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Multiple wetland classes are visible from primary viewing locations.	☒	☐	☐
2. Emergent marsh and/or open water are visible from primary viewing locations.	☒	☐	☐
3. A diversity of vegetative species is visible from primary viewing locations	☐	☒	☐
4. Wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.	☐	☒	☐
5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.	☒	☐	☐
6. Visible surrounding land use form contrasts with wetland.	☐	☒	☐
7. Wetland views absent of trash, debris, and signs of disturbance.	☒	☐	☐
8. Wetland is considered to be a valuable wildlife habitat.	☒	☐	☐
9. Wetland is easily accessed.	☐	☒	☐
10. Low noise level at primary viewing locations.	☒	☐	☐
11. Unpleasant odors absent at primary viewing locations.	☒	☐	☐
12. Relatively unobstructed sight line exists through wetland.	☒	☐	☐

13. **Comments: Wetland 1 was considered in its entirety for this wetland value.**

ENDANGERED SPECIES HABITAT VALUE

CONSIDERATIONS/QUALIFIERS	Y	N	Principal
1. Wetland contains or is known to contain threatened or endangered species.	☐	☒	☐
2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.	☐	☒	☐

3. **Comments: Only portion of Wetland 1 in proximity to proposed impacts were considered for this wetland function. State species of Special Concern plant occurs in wetland off-site. Habitat for this species does not exist in the proposed area of wetland impacts.**